

Fluid Control, Pressure and Temperature Monitoring and Control

Core Industrial Products

for Distributors and Wholesalers

Easy

selection of future
proof products.





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Documentation

Find data sheets and available products here.

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Danfoss Industrial Automation core products

Fluid controls

Solenoid valves: Direct, servo, assisted lift and proportional operated valves for water, air, oil and steam application. Differential pressure from 0 to 40 bar and connections from G 1/8 to G 2" flange. Thermostatic valves for cooling applications, and solar systems. Regulation ranges from 0 to 90 °C and connections from G 3/8 to G 1" flange.

Externally operated valves for demanding industrial applications. Differential pressure from 0 to 16 bar and connections from G 3/8 to G 2".

Direct operated valve
for closed and drain
systems



Assisted lift operated
valve for closed and
drain systems



Servo operated valve
for open systems



Valve for steam
applications



Thermostatic valve



Externally operated
valve for demanding
applications



Pressure transmitters

Pressure transmitters for industrial and marine applications. Design in cartridge, block and box with measuring range up to 600 bar. Output signal: 4 – 20 mA, 0 – 10 V, ratiometric etc. with an accuracy from 0,1% FS. Versions with marine and ATEX approvals.

Pressure transmitter in
cartridge design
for industrial applications



Pressure transmitter with flush
diaphragm for demanding
industrial applications



Pressure transmitter in
block design for industrial
and marine applications



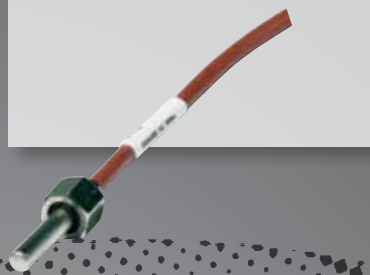
Pressure transmitter in
box design for marine
applications



Temperature sensors

Temperature transmitters for industrial and marine applications with measuring range from -50 to 800 °C. Sensor type Pt100, Pt1000, PTC, NTC, integrated transmitter etc in different designs for example DIN 43650, DIN B, cable etc. Versions with marine and ATEX approvals.

Temperature transmitter in a cable version



Flexible temperature transmitter with different sensing elements and electrical connections



Temperature transmitter equipped with a DIN 43650 for industrial applications



Temperature transmitter equipped with a DIN B (B-head) for industrial and marine applications



Switches

Pressure and temperature switches (on-off) for industrial and marine applications from -60 °to 300 °C or -1 to 400 bar. Degree of enclosure: IP30 – IP67 in different designs, versions with marine, TÜV and ATEX approvals.

Pressure switch for industrial applications (enclosure degree from IP30 to IP55)



Pressure switch for boiler control



Temperature switch for industrial applications (enclosure degree from IP54 to IP66)



Pressure switch for industrial and marine applications in block design



Temperature switch for marine applications (enclosure degree IP67)



The main industries for these products are

Marine



Mobile hydraulics



Air compressors



Wind turbines



Industrial hydraulics



Heating equipment



Industrial water



Fluid control

With Danfoss valves you gain high quality, balanced with cost efficiency, making them the first choice in a many industrial applications.

Our valves are virtually maintenance free and designed to provide reliable service, year after year.

Three ways of efficiently controlling fluids:

Solenoid valves are an easy way to control and regulate fluids and gasses. Our programme consists of direct-operated, servo-operated and assisted lift versions. Solenoid valves are the right choice when you have media with limited dirt content and small to high flow volume.

Our solenoid valve programme consists of two ranges:

- The compact A range
 - offering small physical dimensions for control of flow where space is limited.
- The high performance B range
 - a sturdy and universal broad programme for control of flow in industrial applications and within heating and sanitary systems.

Externally operated valves are designed for specialised and demanding applications. These robust valves are the right choice for media with high dirt content, high viscosity, high ambient and media temperatures and large flow volumes. They are also suitable for humid environments, explosion hazard environments and for applications with low or unknown pressure conditions.

Thermostatic self-acting valves are a simple and reliable way to control the temperature of cooling equipment. They do not require electricity and they are insensitive to dirt and media pressure, making them a highly robust choice.



Example: Heating systems



An EV250B solenoid valve, a great all-round valve, is the preferred choice for many manufacturers in applications with low differential pressures, such as heating systems. Its design not only allows for a wide pressure range, it also reduces noise and increases the lifetime of the system through water hammer dampening.

Other applications

- Water booster pumps
- Membrane filtration units
- Fire-fighting pumping stations and equipment
- Biomass boilers
- Irrigation system
- Ultra and high purity water
- Catering water
- Desalination of saline water
- Water leak protection
- Car wash
- Dentist equipment
- Wind turbines
- Steam boilers
- Steam generators
- Laundry system
- Burners
- Cleaning units
- Dishwashing
- Degassing system
- Sterilizers and autoclaves
- Lubricated screw compressors
- Oil free compressors
- Drainage
- Pool control
- Solar
- Showers
- Saunas
- Sprinklers
- Petrol dispensers
- Heavy duty application

Fluid controls

in this catalogue



Type		EV310A 3/2-way	EV210A 2/2-way	EV220A 2/2-way	EV310B 3/2-way	EV210B 2/2-way	EV220B 6-22 2/2-way
Media	Water						
	Air and neutral gasses						
	Oil						
	Steam						
Characteristics	Dirty media				✓	✓	✓
	Long lifetime				✓	✓	✓
	Soft closing (Low waterhammer)				✓		✓
	System suitability	 Closed and drain	 Closed, drain and open	 Open	 Closed and drain	 Closed, drain and open	 Closed and drain
	Connection	G 1/8 – G 1/4, flange 32 mm	G 1/8 – G 1/4, flange 32 mm	G 1/4 – G 2	G 1/8 – G 3/8, flange 32 mm	G 1/8 – G 1	G 1/4 – G 1
	Function	NC or NO	NC or NO	NC or NO	NC or NO	NC or NO	NC or NO
	Orifice size mm	1.2 – 2	1.2 – 3.5	6 – 50	1.5 – 3.5	1.5 – 25	6 – 22
	Pressure range, bar	0 – 20	0 – 30	0.2 – 16	0 – 20	0 – 30	0.1 – 30
	Medium temperature max.	100 °C	120 °C	100 °C	100 °C	140 °C	100 °C
	Kv value m³/h	0.04 – 0.08	0.04 – 0.26	1 – 32	0.08 – 0.4	0.08 – 8	0.7 – 6
	Special features	Manual override option			Manual override option	Isolating diaphragm	
	Approvals*	WRAS		WRAS	GL	GL, WRAS and DNV	
Material	Valve body	Brass or stainless steel	Brass or stainless steel	Brass	Brass or stainless steel	Brass or stainless steel	Brass or DZR brass
	Internal	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
	Seal material	FKM	EPDM or FKM	EPDM, NBR or FKM	FKM	EPDM or FKM	EPDM or FKM

* Only EPDM versions in Normally Closed (NC) valves are WRAS approved. GL = Germanischer Lloyd. WRAS = Water Regulations Advisory Scheme. VA = Water supply and drainage of ETA Denmark.

								
EV220B 15-50 2/2-way	EV220B 65-100 2/2-way	EV250B 2/2-way	EV224B 2/2-way	EV225B 2/2-way	EV260B 2-way proportional	AVTA 2-way proportional	BVTs 2-way proportional	AV210
								
								
								
								
✓	✓	✓	✓		✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓		✓			
							Back-burning and overheat protection	
Closed and drain	Open	Closed and drain	Open	Open	Open	Closed		Closed, drain and open
G 1/2 – G 2	Flange connections: 2.5, 3 and 4"	G 3/8 – G 1	G 1/2 – G 1	G 1/4 – G 1	G 1/4 – G 3/4	G 3/8 – G 1	G 3/4	G 3/8 – G 2
NC or NO	NC	NC or NO	NC or NO	NC	NC	Thermostatic	Thermostatic	NC or NO
15 – 50	65 – 100	10 – 22	15 – 25	6 – 25	6 – 20	10 – 25	18	15 – 50
0.3 – 16	0.25 – 10	0 – 10	0.3 – 40	0.2 – 10	0.5 – 10	0 – 10	0 – 10	0 – 16
140 °C	90 °C	140 °C	60 °C	185 °C	80 °C	130 °C	110 °C	180 °C
4 – 40	50 – 130	2.5 – 7	4 – 11	0.9 – 6	0.8 – 5	1.4 – 5.5	2.6	4.5 – 74
			High pressure	IP65			Test function	Options: Manual override position indicator
GL, WRAS and DNV		WRAS	GL				TÜV	
Brass, DZR Brass or stainless steel	Cast iron	DZR Brass	Brass	DZR Brass	Brass	Brass or stainless steel	DZR brass	Gun metal or stainless steel
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Brass or stainless steel	Stainless steel	Stainless steel
EPDM, FKM or NBR	EPDM or NBR	EPDM or FKM	NBR	PTFE and AFLAS	FKM and PTFE	EPDM or NBR	EPDM or NBR	PTFE

DNV = Det Norske Veritas. SVGW = Schweizerischer Verein des Gas- und Wasserfaches.

Media list for Danfoss In

Medium	Temperature/ Concentration		DZR-brass Bronze RG5	
			Brass	
Ammonia			-	-
Brine (Potassium formate; without oxygen, closed systems)	-20 °C		✓	✓✓
Butane	20 °C		✓✓	✓✓
Chloric acid HCl			-	-
Citric acid			-	-
CO ₂			✓✓	✓✓
Compressed air			✓✓	✓✓
De-ionized water	80 °C		-	✓✓
Fresh Water	100 °C		✓✓	✓✓
Glycol	80 °C	100 %	✓	✓✓
Methane	20 °C		✓✓	✓✓
NaOH	50 °C	40 %	-	✓
Natural Gas (dry)	40 °C		✓✓	✓✓
Nitrogen (Air)			✓✓	✓✓
Oil; Animal			✓✓	✓✓
Oil; Mineral			✓✓	✓✓
Oil; Vegetable			✓✓	✓✓
Oxygen			✓	✓✓
Ozone			✓	✓✓
Propane	20 °C		✓✓	✓✓
Salt water (sea water)	20 °C	2 %	-	✓
Steam	185 °C		-	✓✓
Sulphuric acid H ₂ SO ₄			-	-
Water electrical conduction < 20 µ-siemens	60 °C		-	✓
Water electrical conduction > 500 µ-siemens	60 °C		✓✓	✓✓
Water electrical conduction between 20 and 500 µ-siemens	60 °C		✓	✓✓

✓✓	=	Suitable
✓	=	Suitable in most cases
-	=	Not recommendable

Industrial Valves

Body material			Seal material			
Stainless Steel AISI 316 / EN 1.44xx	Stainless Steel AISI 430 / EN 1.41xx armature/spring steel quality	Cast Iron	EPDM	NBR	FKM	PTFE
✓✓	✓✓	-	✓✓	✓	-	✓✓
✓✓	✓✓	✓	✓✓	✓	-	✓✓
✓✓	✓✓	✓✓	-	✓✓	✓✓	✓✓
-	-	-	-	-	✓	✓✓
✓	-	-	✓✓	✓✓	✓✓	✓✓
✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
✓✓	✓✓	✓	-	✓✓	✓✓	✓✓
✓✓	✓✓	-	✓✓	✓✓	✓	✓✓
✓✓	✓✓	✓	✓✓	✓	✓	✓✓
✓✓	✓✓	✓	✓✓	✓	-	✓✓
✓✓	✓✓	✓✓	-	✓✓	✓✓	✓✓
✓✓	✓✓	-	✓✓	-	-	✓✓
✓✓	✓✓	✓✓	-	✓	✓✓	✓✓
✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
✓✓	✓✓	✓✓	-	✓	✓✓	✓✓
✓✓	✓✓	✓✓	-	✓	✓✓	✓✓
✓✓	✓✓	✓	✓✓	✓	✓✓	✓✓
✓✓	✓✓	✓	✓✓	-	✓	✓✓
✓✓	✓✓	✓	✓✓	-	-	✓
✓✓	✓✓	✓✓	-	✓✓	✓✓	✓✓
✓	-	-	✓✓	✓✓	✓	✓✓
✓✓	✓✓	-	-	-	-	✓✓
-	-	-	✓	-	✓	✓✓
✓✓	✓	-	✓✓	✓✓	✓	✓✓
✓✓	✓✓	✓	✓✓	✓✓	✓✓	✓✓
✓✓	✓✓	-	✓✓	✓✓	✓	✓✓

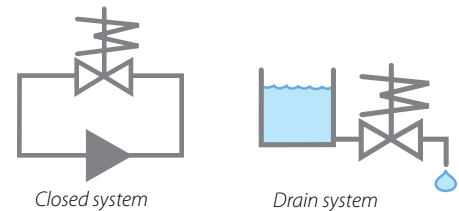
Use the icons to find the right valve

Use the icons to help select the right solenoid valve for your application. Displayed on the top right corner of the following pages, the icons symbolize values and applications for each solenoid valve type.

Application: Select the right valve based on the differential pressure of the system.

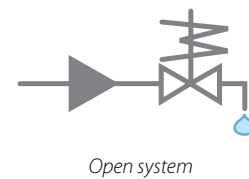
Closed or drain systems

In a closed-circuit system, there is not significant pressure difference between the inlet and outlet. For example, central heating systems are closed-circuit systems – as are tank systems where the drain is located at a low level in the tank.



Open systems

In an open-circuit system, the inlet side of the valve will have a relatively high pressure compared to the outlet side. Tap water and sprinkler systems are examples of applications with open systems.



Value: the following icons indicate values for the different solenoid valves – select according to your needs.

Insensitive to dirt

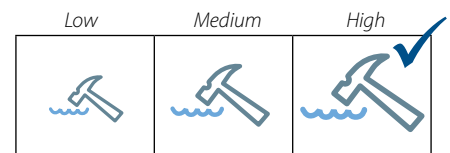
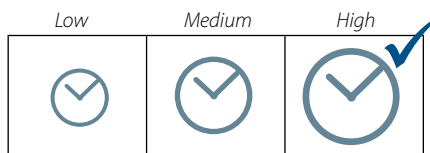
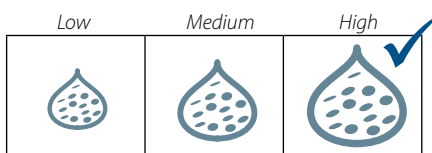
A dirt-resistant valve is fitted with a coaxial, self-cleaning filter which protects the valve pilot. Valves controlled by a B-series coil have a square armature which allows dirt particles to pass through easily.

Long lifetime and high performance

A specially shaped and strengthened diaphragm reduces stress on the rubber, and prolongs valve lifetime. Coil lifetime is also extended, depending on the shape and IPclass.

Effective water hammer damping / soft closing

The valve design protects system damage from water hammer through soft closing. To minimize water hammer, some valves have an optimized diaphragm assembly and equalizing orifice. By changing the equalizing orifice on the EV220B 15-50, you can also increase the closing time.

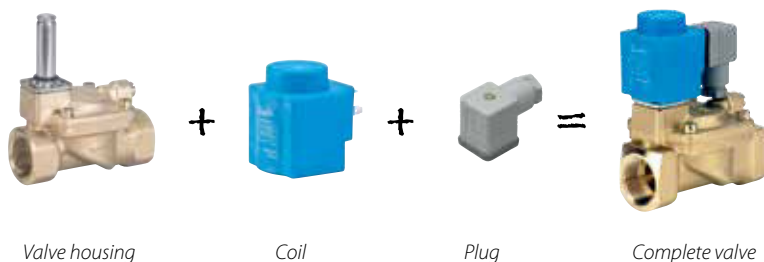


Results are based on comparisons between Danfoss valves only.

Complete valve or valve and coil separately

A complete solenoid valve consists of: Valve + coil + plug.

The valves can be delivered as separate parts – valve housing, coil and plug or as complete valves.



Selection Made Easy

Need help selecting the right component for your application? With only a few clicks, Danfoss product selectors can help you find the right product for, standard applications.

Developed to help wholesalers, retailers, installers and endusers pinpoint their solenoid valve needs, the web-based tool makes product selection quick and easy.

All it takes is an internet connection to access the solenoid valve selector tool from your desk or laptop, tablet or smartphone.

To discover just how easy the product selectors are to use, please visit:

<http://valveselector.danfoss.com>

To visit by mobile, scan the QR code:

The image shows a screenshot of the Danfoss Selector tool interface. The interface is divided into two main sections: 'Pressure Switches' and 'Solenoid valves'.

Pressure Switches Section:

- Welcome:** The Danfoss Switch Selector will help you as installer or end-user to specify the correct industrial pressure switch for your application.
 - > Contact
 - > Click for more information
- Application ①:** Please select (dropdown menu)
- Enclosure:** (dropdown menu)
- Reset function:** (dropdown menu)
- Connection size:** (dropdown menu)
- Setting range:** (dropdown menu)
- Buttons:** > Reset, > Search
- Visit our mobile site:**
 - QR code: Scan the QR code to visit the Danfoss Switch Selector on your mobile device.
 - No scanner? - Search "Barcode Reader" in App-store or Android Market.
 - Image of a smartphone displaying the mobile site.
- Footer:** INDUSTRIAL AUTOMATION, > Privacy Policy, > Country

Solenoid valves Section:

- Code no: 032U7115:** Indirect servo-operated solenoid valve, type EV220B. Connection size: G 1/2. Function: Voltage off > Valve closed (NC). > More details. (Image of a brass valve)
- Code no: 01RF7360:** Coil type BB, dip-on, IP65 with cable plug. Coil voltage: AC ~ 110 V ~ 50/60 Hz. > More details. (Image of a blue coil)
- Code no: 042M0150:** > More details. (Image of a grey component)
- Medium:** Water (max 90°C)
- System:** Sprinkler
- Footer:** INDUSTRIAL AUTOMATION, > Privacy policy, > Country

Common Footer:

- > Print this page
- > Send result as email
- > Send result as text message
- > New search
- > Where to buy

EV310A direct-operated 3/2-way compact solenoid valves

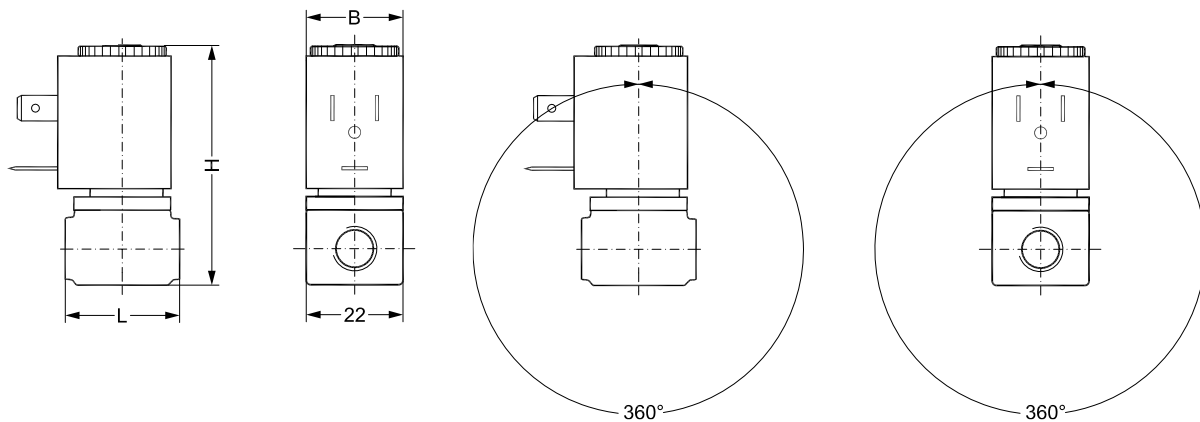


-				+
-				+

EV310A covers a wide range of small competitive, direct-operated 3/2-way solenoid valves for use within industrial applications, for example pilot valve applications.

- 3/2-way
- Direct-operated
- DN 1.2 - DN2
- G 1/8" to G 1/4"
- Ambient temperature: 50 °C
- Brass or stainless steel valve body
- NC (normally closed) and NO (normally open) versions
- Wetted parts: brass, stainless steel, copper and FKM rubber

Dimensions, weight and mounting angle:



Thread ISO 228/1	L [mm]	B [mm] Coil type		H [mm]	A [mm]	Weight without coil [kg]
		AB	AM			
G 1/8	26	22	33	54	13	0.090
G 1/4	35	22	33	59	17.5	0.115

EV310A direct-operated valve, brass, NC



Type	Connection	Kv [m ³ /h]	Media Oil / Air	Seal material	Differential pressure [bar]		Code number
					AM coil Oil	AM coil Air	
EV310A 1.5	G 1/8	0.07	✓	FKM	0 – 5	0 – 12	032H8087
EV310A 2.0	G 1/8	0.08	✓	FKM	0 – 4	0 – 8	032H8089
EV310A 1.2	G 1/4	0.04	✓	FKM	0 – 9	0 – 20	032H8095
EV310A 1.5	G 1/4	0.07	✓	FKM	0 – 5	0 – 12	032H8097
EV310A 2.0	G 1/4	0.08	✓	FKM	0 – 4	0 – 8	032H8099

EV310A direct-operated valve, brass, NO



Type	Connection	Kv [m ³ /h]	Media Oil / Air	Seal material	Differential pressure [bar] AM coil	Code number
EV310A 1.2	G 1/8	0.04	✓	FKM	0 – 13/0 – 9	032H8125

Coils for EV310A



Voltage		Frequency [Hz]	Power consumption [W]		AP coil DIN 43650-A	AM coil DIN 43650-A
[V] AC	[V] DC		AP coil	AM coil		
24		50		7.5		042N0842
24		60	5	5.5	042N4193	042N0842
110		50		7.5		042N0845
110		60		5.5		042N0845
110 – 120		60	5		042N4192	
230		50		9.5	042N4191	042N0840
230		60		6.5		042N0840
208 – 240		60	5.5		042N4191	
240		50		7.5		042N0841
240		60		5.5		042N0841
12		–		8.5		042N0848
24		–		9.0		042N0843

Cable plugs, IP65 enclosure



To use with all AP, AM coils	042N0156	042N0156
To use with AP, AM coils - 24 V AC and DC	042N0263	042N0263
To use with AP, AM coils - 230 V AC	042N0265	042N0265

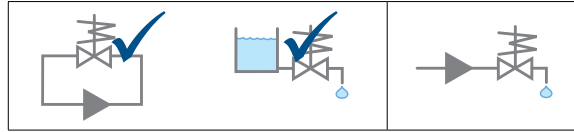
Accessories for EV310A

Electronic timers for coils for pulse start, for IP65 only



Type	Description	Control [50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 – 240	20.0	–10 – 50	042N0185

EV210A direct-operated 2/2-way compact solenoid valves



-			
-			
-			

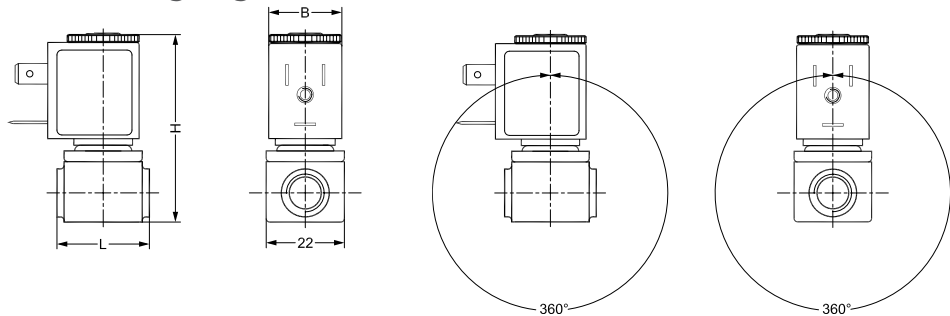
EV210A covers a wide range of small, direct-operated 2/2-way solenoid valves for use in industrial machinery.

The compact design together with the broad range of coils means that EV210A covers a broad variety of industrial applications.

- 2/2-way
- Compact dimensions
- Direct-operated

- DN 1.2 - DN 3.5
- G 1/8 to G 1/4
- Ambient temperature: 50 °C
- Brass or stainless steel valve body
- NC (normally closed)
- Wetted parts: brass, stainless steel, copper, EPDM or FKM rubber

Dimensions, weight and mounting angle:



Thread ISO 228/1	L [mm]	B [mm] Coil type		H [mm]	A [mm]	Weight with AB coil [kg]
		AB	AM			
G 1/8	26	22	33	54	13	0.09
G 1/4	35	22	33	59	17.5	0.115

EV210A direct operated valve, brass or stainless steel (SS), NC



Type	Connection	Kv [m³/h]	Media		Seal material	Body material		Differential pressure [bar]		Code number
			Water 120 °C	Oil / Air		Brass	SS	AB coil [a.c.] / [d.c.]	AM coil [a.c.] / [d.c.]	
EV210A 1.2	G 1/8	0.04	✓		EPDM	✓		0 - 30 / 0 - 17.5	0 - 30 / 0 - 24	032H8000
EV210A 1.2	G 1/8	0.04		✓	FKM	✓		0 - 28 / 0 - 16	0 - 30 / 0 - 24	032H8001
EV210A 1.5	G 1/8	0.08	✓		EPDM	✓		0 - 18 / 0 - 9.5	0 - 28 / 0 - 22.5	032H8002
EV210A 1.5	G 1/8	0.08		✓	FKM	✓		0 - 15 / 0 - 8	0 - 26 / 0 - 19	032H8003
EV210A 1.5	G 1/8	0.08		✓	FKM		✓	0 - 15 / 0 - 8	0 - 26 / 0 - 19	032H8027
EV210A 2	G 1/8	0.11	✓		EPDM	✓		0 - 11 / 0 - 5.5	0 - 23 / 0 - 18.5	032H8004



EV210A direct operated valve, brass or stainless steel (SS), NC

Type	Connection	Kv [m³/h]	Media		Seal material	Body material		Differential pressure [bar]		Code number
			Water 120 °C	Oil / Air		Brass	SS	AB coil [a.c.] / [d.c.]	AM coil [a.c.] / [d.c.]	
EV210A 2	G 1/8	0.11		✓	FKM	✓		0-9/0-5	0-22/0-17	032H8005
EV210A 2	G 1/8	0.11		✓	FKM		✓	0-9/0-5	0-22/0-17	032H8029
EV210A 2.5	G 1/8	0.17	✓		EPDM	✓		0-6/0-3	0-17/0-13	032H8006
EV210A 2.5	G 1/8	0.17		✓	FKM	✓		0-5/0-2.5	0-16/0-12	032H8007
EV210A 2.5	G 1/8	0.17		✓	FKM		✓	0-5/0-2.5	0-16/0-12	032H8031
EV210A 3	G 1/8	0.22	✓		EPDM	✓		0-4/0-1.5	0-13/0-9	032H8008
EV210A 3	G 1/8	0.22		✓	FKM	✓		0-3/0-1.5	0-12/0-8	032H8009
EV210A 3	G 1/8	0.22		✓	FKM		✓	0-3/0-1.5	0-12/0-8	032H8033
EV210A 2.5	G 1/4	0.17	✓		EPDM	✓		0-6/0-3	0-17/0-13	032H8014
EV210A 2.5	G 1/4	0.17		✓	FKM	✓		0-5/0-2.5	0-16/0-12	032H8015
EV210A 2.5	G 1/4	0.17		✓	FKM		✓	0-5/0-2.5	0-16/0-12	032H8039
EV210A 3	G 1/4	0.22	✓		EPDM	✓		0-4/0-1.5	0-13/0-9	032H8016
EV210A 3	G 1/4	0.22		✓	FKM	✓		0-3/0-1.5	0-12/0-8	032H8017
EV210A 3	G 1/4	0.22		✓	FKM		✓	0-3/0-1.5	0-12/0-8	032H8041
EV210A 3.5	G 1/4	0.26	✓		EPDM	✓		0-2.8/0-1.2	0-11/0-6	032H8018
EV210A 3.5	G 1/4	0.26		✓	FKM	✓		0-2/0-0.8	0-10/0-5.5	032H8019
EV210A 3.5	G 1/4	0.26		✓	FKM		✓	0-2/0-0.8	0-10/0-5.5	032H8043

Coils for EV210A

Voltage		Frequency [Hz]	Power consumption [W]		AP coil	AM coil
[V] AC	[V] DC		AP coil	AM coil	DIN 43650-A	DIN 43650-A
24		50		7.5		042N0842
24		60	5	5.5	042N4193	042N0842
110		50		7.5		042N0845
110		60		5.5		042N0845
110-120		60	5		042N4192	
230		50		9.5	042N4191	042N0840
230		60		6.5		042N0840
208-240		60	5.5		042N4191	
240		50		7.5		042N0841
240		60		5.5		042N0841
12		-		8.5		042N0848
24		-		9.0		042N0843

Cable plugs, IP65 enclosure

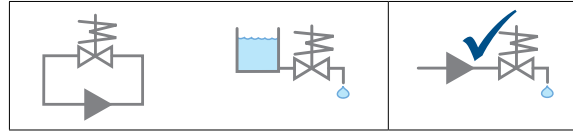
To use with all AP, AM coils	042N0156	042N0156
To use with AP, AM coils - 24 V AC and DC	042N0263	042N0263
To use with AP, AM coils - 230 V AC	042N0265	042N0265

Accessories for EV210A

Electronic timers for coils for pulse start, IP65 only

Type	Description	Control [50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24-240	20.0	-10-50	042N0185

EV220A servo-operated 2/2-way solenoid valves



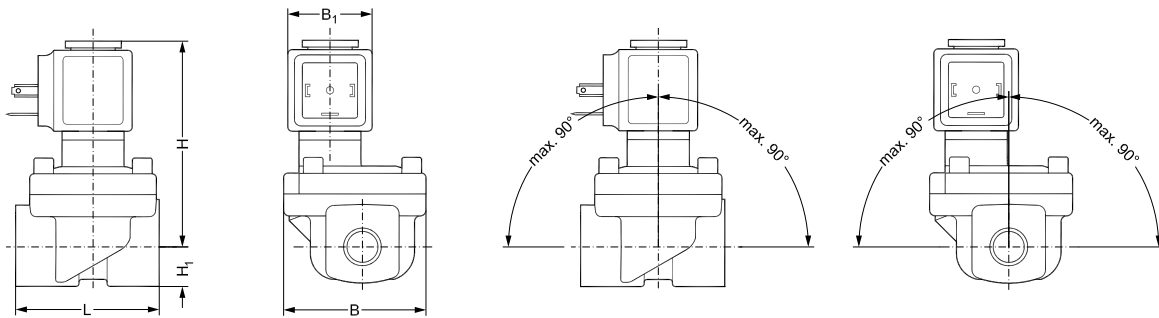
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EV220A is a compact servo-operated 2/2-way solenoid valve program, especially designed for use in machines and equipment with limited space.

- 2/2-way
- Servo-operated
- DN 6 – DN50
- G 1/4" to G 2"

- Ambient temperature: 50 °C
- Brass valve body
- NC (normally closed) and NO (normally open) versions
- ISO 228/1 or NPT thread connection
- Nominal pressure from PN 16
- Wetted parts: brass, stainless steel, copper, EPDM or NBR rubber

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	B [mm]	B ₁ [mm] coil type		H [mm]		H ₁ [mm]	Weight with AM coil [kg]
			AM		NC	NO		
EV220A 6	51	50	33		76	80	13	0.56
EV220A 10	51	50	33		76	80	13	0.54
EV220A 12	58	58	33		77	81	13	0.62
EV220A 14	58	58	33		77	81	13	0.6
EV220A 18	90	58	33		78	82	18	0.82
EV220A 22	90	58	33		83	87	22	1.1
EV220A 32	120	82	33		95	-	27	2.1
EV220A 40	130	95	33		105	-	32	3.3
EV220A 50	162	113	33		111	-	37	4.4



EV220A servo-operated 2/2-way solenoid valves, brass, NC

Type	Connection	Kv [m³/h]	Media			Seal material	Differential pressure [bar]	Code number
			Water 120 °C	Water 90 °C	Oil / Air			
EV220A 6	G ¼	1	✓			EPDM	0.2 – 16	042U4001
EV220A 6	G ¼	1		✓	✓	NBR	0.2 – 16	042U4003
EV220A 10	G ⅜	1.6	✓			EPDM	0.2 – 16	042U4011
EV220A 10	G ⅜	1.6		✓	✓	NBR	0.2 – 16	042U4013
EV220A 10	G ½	1.6	✓			EPDM	0.2 – 16	042U4012
EV220A 10	G ½	1.6		✓	✓	NBR	0.2 – 16	042U4014
EV220A 12	G ½	2.5		✓	✓	NBR	0.3 – 16	042U4023
EV220A 14	G ½	4	✓			EPDM	0.3 – 16	042U4022
EV220A14	G ½	4		✓	✓	NBR	0.3 – 16	042U4024
EV220A 18	G ¾	7	✓			EPDM	0.3 – 16	042U4031
EV220A 18	G ¾	7		✓	✓	NBR	0.3 – 16	042U4032
EV220A 22	G 1	7	✓			EPDM	0.3 – 16	042U4041
EV220A 22	G 1	7		✓	✓	NBR	0.3 – 16	042U4042
EV220A 32	G 1 ¼	15	✓			EPDM	0.3 – 16	042U4085
EV220A 32	G 1 ¼	15		✓	✓	NBR	0.3 – 16	042U4084
EV220A 40	G 1 ½	18	✓			EPDM	0.3 – 16	042U4087
EV220A 40	G 1 ½	18		✓	✓	NBR	0.3 – 16	042U4086
EV220A 50	G 2	32	✓			EPDM	0.3 – 16	042U4089
EV220A 50	G 2	32		✓	✓	NBR	0.3 – 16	042U4088



EV220A servo-operated 2/2-way solenoid valves, brass, NO

Type	Connection	Kv [m³/h]	Media			Seal material	Differential pressure [bar]	Code number
			Water 120 °C	Water 90 °C	Oil / Air			
EV220A 6	G ¼	1		✓	✓	NBR	0.2 – 16	042U4053
EV220A 10	G ⅜	1.6		✓	✓	NBR	0.2 – 16	042U4063
EV220A 14	G ½	4		✓	✓	NBR	0.3 – 16	042U4074
EV220A 18	G ¾	7		✓	✓	NBR	0.3 – 16	042U4082
EV220A 22	G 1	7		✓	✓	NBR	0.3 – 16	042U4092



Coils for EV220A

Voltage		Frequency [Hz]	Effect [W] AM coil	AM coil DIN 43650-A
[a.c.]	[d.c.]			
24		50/60	7.5/5.5	042N0842
110		50/60	7.5/5.5	042N0845
230		50/60	9.5/6.5	042N0840
240		50/60	7.5/5.5	042N0841
	12	-	8.5	042N0848
	24	-	9.0	042N0843

Cable plugs, IP65 enclosure

To use with AM coils		042N0156
To use with AM coils - 24 V a.c. and d.c.		042N0263
To use with AM coils - 230 V a.c.		042N0265

Spare parts and accessories for EV220A



Spare part kits, NC

Application	Seal material	Code number
EV220A 6 - 10	EPDM	042U1000
EV220A 6 - 10	NBR	042U1001
EV220A 12-14	EPDM	042U1003
EV220A 12 - 14	NBR	042U1004
EV220A 18 - 22	EPDM	042U1006
EV220A 18 - 22	NBR	042U1007
EV220A 32	EPDM	042U1037
EV220A 32	NBR	042U1038
EV220A 40	EPDM	042U1039
EV220A 40	NBR	042U1040
EV220A 50	EPDM	042U1041
EV220A 50	NBR	042U1042

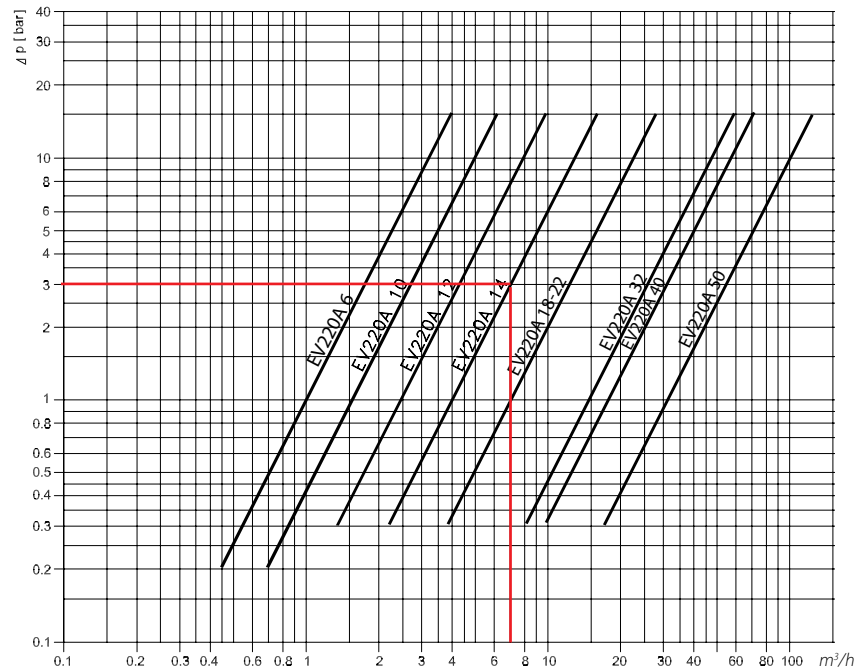
Electronic timers for coils for pulse start, only AM coil



Type	Description	Control [V 50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 – 45 minutes with 1 – 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 – 240	20.0	-10 – 50	042N0185

Capacity diagram for EV220A

Example for water:
Capacity for EV220A at differential
pressure of 3 bar: Approx. 7 m³/h



EV310B direct-operated 3/2-way solenoid valves



-			+
-			+

EV310B covers a wide range of direct-operated 3/2-way solenoid valves for universal use.

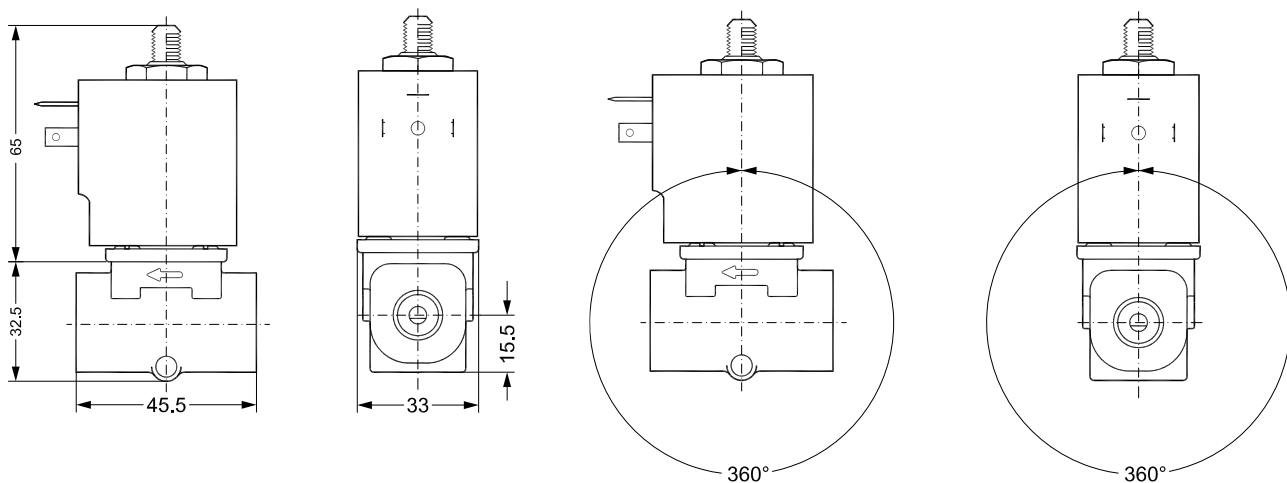
EV310B is a real robust valve program with high performance and can be used in all kind of tough working conditions.

Clip-on coils can not be used on EV310B.

- 3/2-way
- Direct-operated
- DN 1.5 – DN 3.5
- Ambient temperature: 40 °C
- Brass valve body
- Thread (G 1/8" to G 3/8") or flange (32x32 mm) connections
- NC (normally closed) and NO (normally open) versions
- Manual override versions
- Nominal pressure from PN 16
- Wetted parts: brass, stainless steel, copper and FKM rubber

Dimensions, weight and mounting angle:

Weight without coil: 0.220 kg



All dimensions in millimetres

EV310B without coil, brass, NC



Type	Connection	Kv [m³/h]	Media Oil / Air	Seal material	Differential pressure [bar]	Code number
EV310B 2	G 1/8	0.15	✓	FKM	0 – 16	032U4901
EV310B 2	G 1/4	0.15	✓	FKM	0 – 16	032U4904

Media: EPDM: Water (120 °C), FKM: Oil and Air, NBR: Water (90 °C), Oil and Air

EV310B without coil, brass, NC, manual override unit



Type	Connection	Kv [m³/h]	Media Oil / Air	Seal material	Differential pressure [bar]	Code number
EV310B 2	G 1/8	0.15	✓	FKM	0 – 16	032U4916
EV310B 2	G 1/4	0.15	✓	FKM	0 – 16	032U4919

Media: EPDM: Water (120 °C), FKM: Oil and Air, NBR: Water (90 °C), Oil and Air

Coils for EV310B



Voltage		Frequency [Hz]	Effect [W] BA coil	BA coil IP00
[a.c.]	[d.c.]			
24		50	8.5	042N7508
48		50	9.5	042N7510
115		50	9.0	042N7512
220 – 230		50	12	042N7501
240		50	10	042N7502
380 – 400		50	12	042N7504
	12	-	14	042N7550
	24	-	14	042N7551

Cable plug, IP65 enclosure



To use with all BA coils	042N0156
To use with BA coils - 24 V a.c.+d.c.	042N0263
To use with BA coils - 230 V	042N0265

Accessories for EV310B

Electronic timers for coils for pulse start



Type	Description	Control [V 50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 – 45 minutes with 1 – 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 – 240	20.0	-10 – 50	042N0185

The EV210B solenoid valve for tough working conditions

The EV210B is designed to control the flow of water, oil or air in a wide range of applications.

1 Increased performance without increasing coil power

The EV210B's non-fixed valve plate doubles performance without increasing the coil power or reducing the valve's lifetime. When the coil is energised, the armature moves and accumulates energy, and when it hits the valve plate, the impact lifts the plate to increase performance.

2 Modular design for customised solutions

EV210B with direct actuator is extremely durable at high temperature and pressure. The valve has a modular design which is perfect for customised solutions.

3 Long life

Designed to last, the EV210B has a high wall thickness, a unique square-shaped armature and a specially designed spring. And because the spring movements are very close, wear is significantly reduced.

4 Insensitive to dirt

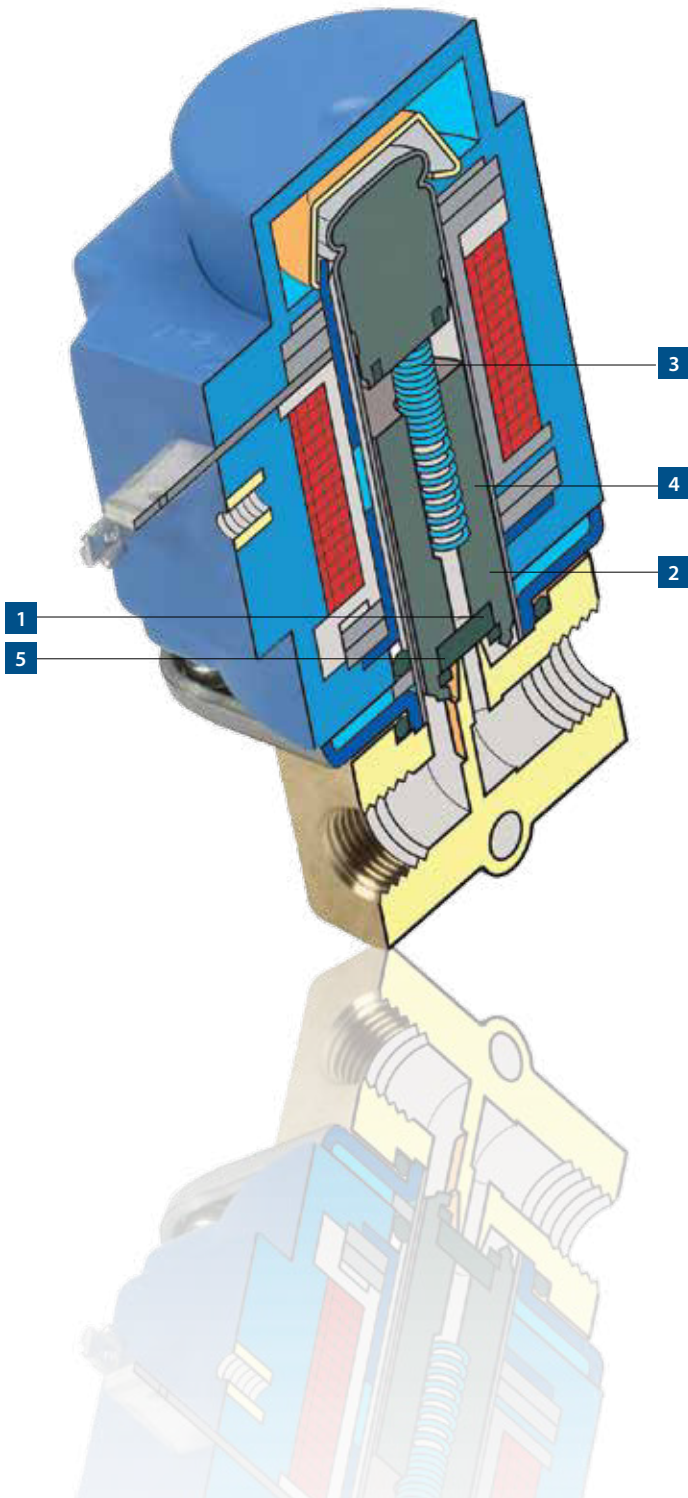
Due to the armature's unique design, there is a low risk of particles sticking to the armature. If particles become lodged between the armature and the armature tube or top, they will be displaced by the fluid when the armature moves.

5 Optimum Kv-values for many connections

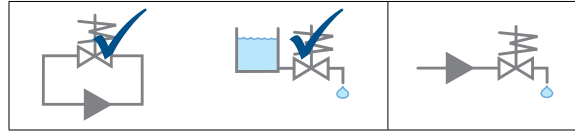
The optimum shape and diameter of the valve plate, as well as the valve plate lift ensure that the EV210B has high Kv-values (capacity).

Secure opening and closing

To prevent particles lodging in the armature, an isolating diaphragm is available for valves up to 4.5 mm.



EV210B direct-operated 2/2-way solenoid valves



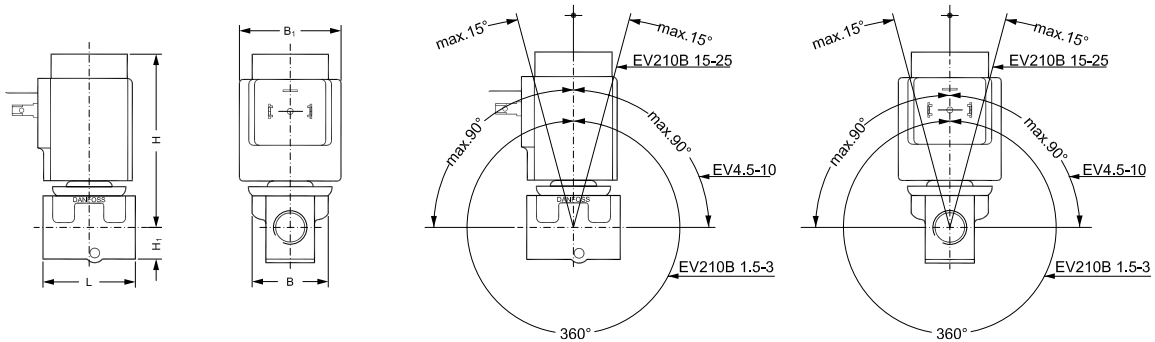
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EV210B covers a wide range of direct-operated 2/2-way solenoid valves for universal use. EV210B is a real robust valve program with high performance and can be used in all kind of tough working conditions.

- 2/2-way
- High Performance series
- Direct-operated
- DN 1.5 – DN 25

- Brass or stainless steel valve body
- NC (normally closed) and NO (normally open) versions
- ISO 228/1 G 1/8" to G 1"
- UL listed version with NPT for North America (EVI)
- Wetted parts: brass, stainless steel, copper, EPDM, FKM or NBR rubber

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	B [mm]	B ₁ [mm] Coil type		H ₁ [mm]	H [mm]	Weight with BB coil [kg]
			BA	BB			
EV210B 1.5/2	35.0	34	32	46	12.0	70.0	0.39
EV210B 3/4.5	38.0	34	32	46	11.0	70.0	0.44
EV210B 6	45.5	34	32	46	15.5	72.5	0.46
EV210B 8/10	49.0	34	32	46	15.5	72.5	0.53
EV210B 15	58.0	53.0	32	46	12.5	92.5	0.69
EV210B 20	90.0	58.0	32	46	18.0	92.0	1.34
EV210B 25	90.0	58.0	32	46	23.0	96.0	1.34

EV210B direct operated valve with coil and plug IP65, brass, NC



Type	Connection	Kv [m³/h]	Media Oil / Air	Seal material	Differential pressure [bar]	Coil BB [V a.c. 50 Hz] [V d.c.]	Code number
EV210B 1.5	G 1/8	0.08	✓	FKM	0 – 30	24	032U145802
EV210B 1.5	G 1/8	0.08	✓	FKM	0 – 30	24	032U145816
EV210B 1.5	G 1/8	0.08	✓	FKM	0 – 30	230	032U145831
EV210B 3	G 1/4	0.30	✓	FKM	0 – 13	24	032U147002
EV210B 3	G 1/4	0.30	✓	FKM	0 – 20	24	032U147016
EV210B 3	G 1/4	0.30	✓	FKM	0 – 20	230	032U147031
EV210B 4.5	G 3/8	0.55	✓	FKM	0 – 4.5	24	032U148002
EV210B 4.5	G 3/8	0.55	✓	FKM	0 – 10	24	032U148016
EV210B 4.5	G 3/8	0.55	✓	FKM	0 – 10	230	032U148031

EV210B direct operated valve, brass, NC



Type	Connection	Kv [m³/h]	Media			Seal material	Differential pressure [bar]		Code number
			Water 120 °C	Water 90 °C	Oil / Air		BA coil [a. c.] / [d. c.]	BB/BE coil [a. c.] / [d. c.]	
EV210B 1.5	G 1/8	0.08	✓			EPDM	0 – 30 / 0 – 30	0 – 30 / 0 – 30	032U5701
EV210B 1.5	G 1/8	0.08			✓	FKM	0 – 30 / 0 – 30	0 – 30 / 0 – 30	032U5702
EV210B 1.5	G 1/8	0.08		✓	✓	NBR	0 – 30 / 0 – 30	0 – 30 / 0 – 30	032U1200
EV210B 1.5	G 1/4	0.08			✓	FKM	0 – 30 / 0 – 30	0 – 30 / 0 – 30	032U3629
EV210B 1.5	G 1/4	0.08		✓	✓	NBR	0 – 30 / 0 – 30	0 – 30 / 0 – 30	032U1205
EV210B 2	G 1/8	0.15			✓	FKM	0 – 30 / 0 – 20	0 – 30 / 0 – 30	032U5704
EV210B 2	G 1/4	0.15	✓			EPDM	0 – 30 / 0 – 20	0 – 30 / 0 – 30	032U5707
EV210B 2	G 1/4	0.15			✓	FKM	0 – 30 / 0 – 20	0 – 30 / 0 – 30	032U5708
EV210B 3	G 1/8	0.30			✓	FKM	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U5706
EV210B 3	G 1/8	0.30	✓			EPDM	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U5705
EV210B 3	G 1/4	0.30		✓	✓	NBR	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U1220
EV210B 3	G 1/4	0.30	✓			EPDM	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U5709
EV210B 3	G 1/4	0.30			✓	FKM	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U5710
EV210B 3	G 3/8	0.30	✓			EPDM	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U3642
EV210B 3	G 3/8	0.30		✓	✓	NBR	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U1225
EV210B 3	G 3/8	0.30			✓	FKM	0 – 15 / 0 – 9	0 – 20 / 0 – 13	032U3643
EV210B 4.5	G 1/4	0.55			✓	FKM	0 – 8 / 0 – 3.5	0 – 10 / 0 – 4.5	032U3601
EV210B 4.5	G 3/8	0.55	✓			EPDM	0 – 8 / 0 – 3.5	0 – 10 / 0 – 4.5	032U3605
EV210B 4.5	G 3/8	0.55			✓	FKM	0 – 8 / 0 – 3.5	0 – 10 / 0 – 4.5	032U3606
EV210B 6	G 3/8	0.70		✓	✓	NBR	0 – 2.5 / 0 – 1	0 – 4 / 0 – 2	032U1231
EV210B 6	G 3/8	0.70	✓			EPDM	0 – 2.5 / 0 – 1	0 – 4 / 0 – 2	032U3607
EV210B 6	G 3/8	0.70			✓	FKM	0 – 2.5 / 0 – 1	0 – 4 / 0 – 2	032U3608
EV210B 8	G 1/2	1.00	✓			EPDM	0 – 1.5 / 0 – 0.5	0 – 2 / 0 – 1.2	032U3615
EV210B 8	G 1/2	1.00			✓	FKM	0 – 1.5 / 0 – 0.5	0 – 2 / 0 – 1.2	032U3616
EV210B 10	G 1/2	1.50	✓			EPDM	0 – 0.8 / 0 – 0.3	0 – 1.2 / 0 – 0.6	032U3617
EV210B 10	G 1/2	1.50			✓	FKM	0 – 0.8 / 0 – 0.3	0 – 1.2 / 0 – 0.6	032U3618

EV210B direct operated valve, DZR brass, NC



Type	Connection	Kv [m ³ /h]	Media		Seal material	Differential pressure [bar]		Code number
			Water 120 °C	Oil / Air		BA/BE coil [a. c.] / [d. c.]	BB coil [a. c.] / [d. c.]	
EV210B 15	G ½	2.85	✓		EPDM	0 – 0.25 / -	0 – 0.3 / 0 – 0.15	032U3619
EV210B 15	G ½	2.85		✓	FKM	0 – 0.25 / -	0 – 0.3 / 0 – 0.15	032U3620
EV210B 20	G ¾	4.50	✓		EPDM	-	0 – 0.28 / 0 – 0.12	032U3621
EV210B 20	G ¾	4.50		✓	FKM	-	0 – 0.28 / 0 – 0.12	032U3622
EV210B 25	G 1	8.00	✓		EPDM	-	0 – 0.25 / 0 – 0.09	032U3623
EV210B 25	G 1	8.00		✓	FKM	-	0 – 0.25 / 0 – 0.09	032U3624

EV210B direct operated valve, brass, NO



Type	Connection	Kv [m ³ /h]	Media		Seal material	Differential pressure [bar]		Code number
			Water 120 °C	Oil / Air		BA/BE/BB coil [a. c.] / [d. c.]		
EV210B 1.5	G ⅛	0.08	✓		EPDM	0 – 30		032U3630
EV210B 1.5	G ⅛	0.08		✓	FKM	0 – 30		032U3631
EV210B 2.0	G ⅛	0.15	✓		EPDM	0 – 12		032U3632
EV210B 2.0	G ⅛	0.15		✓	FKM	0 – 12		032U3633
EV210B 2.0	G ¼	0.15	✓		EPDM	0 – 12		032U3636
EV210B 2.0	G ¼	0.15		✓	FKM	0 – 12		032U3637
EV210B 3.0	G ¼	0.30	✓		EPDM	0 – 5		032U3638
EV210B 3.0	G ¼	0.30		✓	FKM	0 – 5		032U3639
EV210B 4.5	G ¼	0.55	✓		EPDM	0 – 2		032U3640
EV210B 4.5	G ¼	0.55		✓	FKM	0 – 2		032U3641

Coils for EV210B

Voltage		Frequency [Hz]	Power consumption [W]				BA coil IP00	BB coil IP00 clip-on	BY coil IP65 clip-on	BE coil IP67 clip-on
[V] AC	[V] DC		BA	BB	BY	BE				
24		50	8.5	11	14	12	042N7508	018F7358	018F7655	018F6707
24		60			12				018F7655	
48		50	9.5			11	042N7510			018F6709
110		50		15	14			018F7360	018F7663	
110		60		13				018F7360		
110 - 120		60			14				018F7663	
115		50	9.0	11		11	042N7512	018F7361		018F6711
220 - 230		50	12	11		12	042N7501	018F7351		018F6701
230		50			16				018F7658	
208 - 240		60			14				018F7658	
240		50	10	11		11	042N7502	018F7352		018F6702
380 - 400		50	12	14		14	042N7504	018F7353		018F6703
440		60		15		15		018F7353		018F6703
	12		14	13		15	042N7550	018F7396		018F6756
	24		14	16		13	042N7551	018F7397		018F6757

Cable plug, IP65 enclosure

To use with all BA, BB and BY coils



042N0156



042N0156



042N0156

No plug
needed IP67
terminal box
fitted as
standard

To use with BA, BB and BY coils - 24 V AC+DC



042N0263



042N0263



042N0263

To use with BA, BB and BY coils - 230 V AC

042N0265

042N0265

042N0265

Spare parts and accessories for EV210B

Isolating diaphragm kit, NC

Application	Seal material	Code number
EV210B 1.5 - 4.5	EPDM	042U1009
EV210B 1.5 - 4.5	FKM	042U1010



Permanent magnet

Application	Code number
Fits all EV220B valves	018F0091



Electronic timers for coils for pulse start

Type	Description	Control [50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 - 240	20.0	-10 - 50	042N0185



The EV220B 6-22 for medium to large flow

The EV220B 6-22 is a high performance, robust valve programme.

1 Low water hammer

The softest closing valve on the market, the EV220B 6-22 has an optimised diaphragm shape, added reinforcement for internal damping, and a special damping cone to ensure viscous damping in the critical late closing stage.

2 Insensitive to dirt

The square armature design enables the armature to move freely and reduces the risk of dirt particles lodging in the armature. If particles do lodge between the armature and the armature tube walls, they are quickly displaced by the fluid when the valve is activated.

3 Broad range of body and sealing materials

The EV220B 6-22 is available in two body materials. The brass version is ideal for applications with a limited risk of corrosion. Tougher applications should use versions with dezincification resistant brass (DZR brass) bodies and stainless steel inserts.

The EV220B 6-22 is also available with two seal materials. Both the EPDM and FKM seals can cope with all common media and a wide temperature range, while the EPDM versions have water approvals.

4 Long lifetime

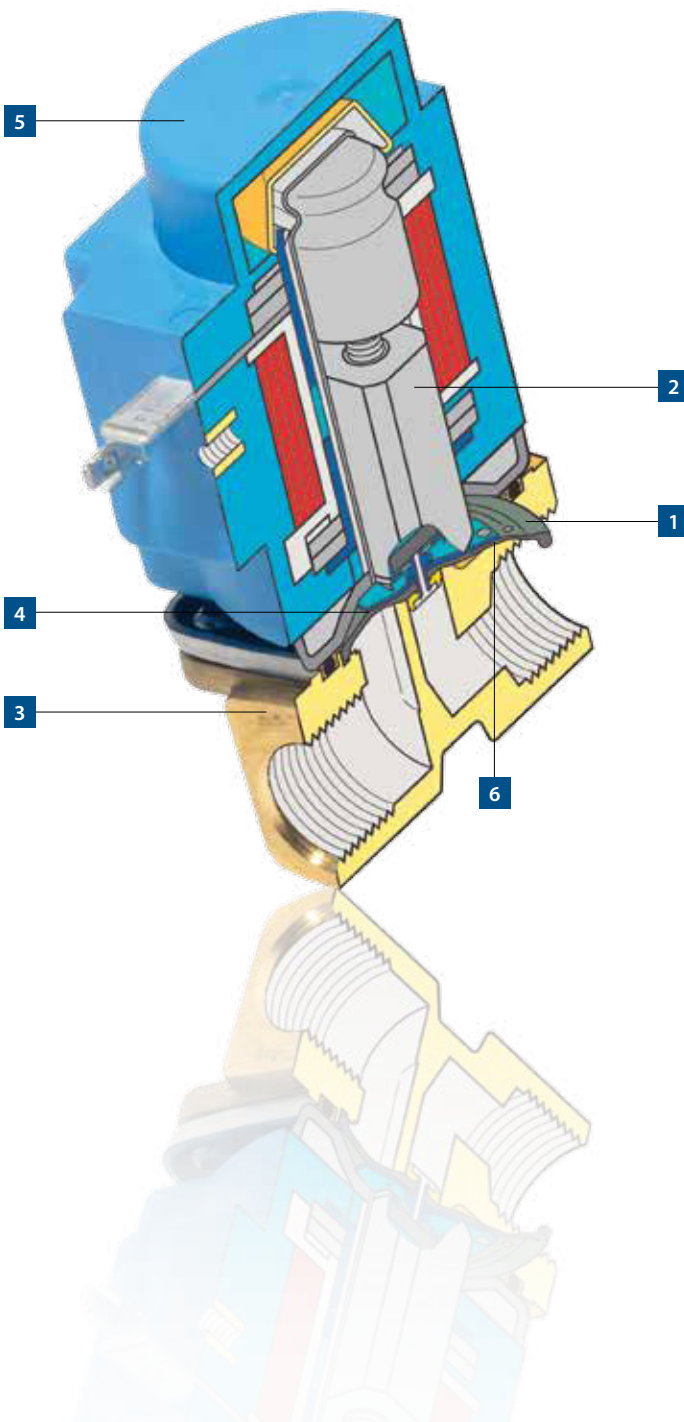
The moulded rubber diaphragm has a special profile that greatly reduces the effects of stress and maximises valve lifetime.

5 Wide coil range

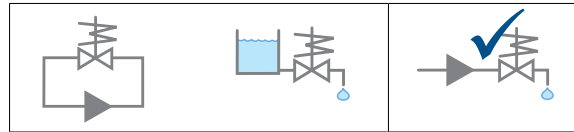
The valves use the standard B-range of coils from IP00 to IP67, including the clip-on system and specialty coils, making it easy to select a coil with the right features. And the special ATEX coil programme is ideal for hazardous environments.

6 High capacity across the entire pressure range

The optimised diaphragm shape gives a very high lift height, providing excellent capacity and tightness at any pressure.



EV220B 6-22 servo-operated 2/2-way solenoid valves

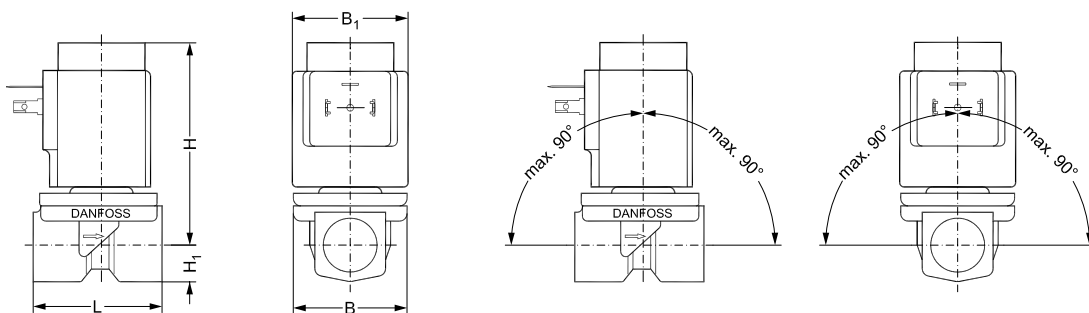


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EV220B 6-22 is a direct servo-operated 2/2-way solenoid valve program with connections from 1/4" – 1". This program is especially for OEM applications demanding a robust solution and moderate flow rates.

- 2/2-way
- Servo-operated
- DN 6 – DN 22
- Brass or DZR (de-zincification resistant) brass valve body
- NC (normally closed) and NO (normally open) versions
- ISO 228/1 or NPT thread connection (EVSI and EVSI-U)
- Nominal pressure from PN 25
- Wetted parts: brass, stainless steel, copper, EPDM, FKM or NBR rubber

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	B [mm]	B ₁ [mm] Coil type		H ₁ [mm]	H [mm]	Weight with BB coil [kg]
			BA	BB/BE			
EV220B 6	45.5	43,5	32	46	13.0	74.0	0.46
EV220B 10	51.5	48.0	32	46	13.0	77.0	0.53
EV220B 12	58.0	54.0	32	46	13.0	77.0	0.59
EV220B 18	90.0	62.0	32	46	18.0	83.0	0.89
EV220B 22	90.0	62.0	32	46	18.0	98.0	0.89



EV220B 6-22 servo-operated valves with coil and plug, IP65, brass, NC

Type	Connection	Kv [m³/h]	Media		Seal material	Differential pressure [bar]	Coil BB		Code number
			Water 90 °C	Oil / Air			[V a.c. 50Hz]	[V d.c.]	
EV220B 10	G 3/8	1.5	✓	✓	NBR	0.1 – 10		24	032U151802
EV220B 10	G 3/8	1.5	✓	✓	NBR	0.1 – 20	24		032U151816
EV220B 10	G 3/8	1.5	✓	✓	NBR	0.1 – 20	230		032U151831
EV220B 12	G 1/2	2.5	✓	✓	NBR	0.3 – 6*		24	032U153802
EV220B 12	G 1/2	2.5	✓	✓	NBR	0.3 – 10	24		032U153816
EV220B 12	G 1/2	2.5	✓	✓	NBR	0.3 – 10	230		032U153831
EV220B 18	G 3/4	6	✓	✓	NBR	0.3 – 6*		24	032U528602
EV220B 18	G 3/4	6	✓	✓	NBR	0.3 – 10	24		032U528616
EV220B 18	G 3/4	6	✓	✓	NBR	0.3 – 10	230		032U528631
EV220B 22	G 1	6	✓	✓	NBR	0.3 – 6*		24	032U528702
EV220B 22	G 1	6	✓	✓	NBR	0.3 – 10	24		032U528716
EV220B 22	G 1	6	✓	✓	NBR	0.3 – 10	230		032U528731

*6 bar max opening differential pressure is measured at 6% under voltage (22.6 volt d.c. hot coil), 50 °C ambient, 90 °C media temperature and nominal pressure PN 6



EV220B 6-22 servo-operated valves, brass, NC

Type	Connection	Kv [m³/h]	Media		Seal material	Differential pressure [bar]	Code number
			Water 100 °C	Oil / Air			
EV220B 6	G 1/4	0.7	✓		EPDM	0.1 – 20	032U1236
EV220B 6	G 1/4	0.7		✓	FKM	0.1 – 20	032U1237
EV220B 6	G 3/8	0.7	✓		EPDM	0.1 – 20	032U1241
EV220B 6	G 3/8	0.7		✓	FKM	0.1 – 20	032U1242
EV220B 10	G 3/8	1.5	✓		EPDM	0.1 – 20	032U1246
EV220B 10	G 3/8	1.5		✓	FKM	0.1 – 20	032U1247
EV220B 10	G 1/2	1.5	✓		EPDM	0.1 – 20	032U1251
EV220B 10	G 1/2	1.5		✓	FKM	0.1 – 20	032U1252
EV220B 12	G 1/2	2.5	✓		EPDM	0.3 – 10	032U1256
EV220B 12	G 1/2	2.5		✓	FKM	0.3 – 10	032U1255
EV220B 18	G 3/4	6	✓		EPDM	0.3 – 10	032U1261
EV220B 18	G 3/4	6		✓	FKM	0.3 – 10	032U1260
EV220B 22	G 1	6	✓		EPDM	0.3 – 10	032U1263
EV220B 22	G 1	6		✓	FKM	0.3 – 10	032U1266



EV220B 6-22 servo-operated valves, brass, NO

Type	Connection	Kv [m³/h]	Media		Seal material	Differential pressure [bar]	Code number
			Water 100 °C	Oil / Air			
EV220B 6	G 3/8	0.7	✓		EPDM	0.1 – 10	032U1238
EV220B 6	G 3/8	0.7		✓	FKM	0.1 – 10	032U1239
EV220B 10	G 1/2	1		✓	FKM	0.1 – 10	032U1249

Coils for EV220B 6 - EV220B 22:



Voltage		Frequency [Hz]	Power consumption [W]				BA coil IP00	BB coil IP00 clip-on	BY coil IP65 clip-on	BE coil IP67 clip-on
[V] AC	[V] DC		BA	BB	BY	BE				
24		50	8.5	11	14	12	042N7508	018F7358	018F7655	018F6707
24		60			12				018F7655	
48		50	9.0			11	042N7510			018F6709
110		50		15	14			018F7360	018F7663	
110		60		13				018F7360		
110 - 120		60			14				018F7663	
115		50	9.0	11		11	042N7512	018F7361		018F6711
220 - 230		50	12	11		12	042N7501	018F7351		018F6701
230		50			16				018F7658	
208 - 240		60			14				018F7658	
240		50	10	11		11	042N7502	018F7352		018F6702
380 - 400		50	12	14		14	042N7504	018F7353		018F6703
440		60		15		15		018F7353		018F6703
	12		14	13		15	042N7550	018F7396		018F6756
	24		14	16		13	042N7551	018F7397		018F6757

Cable plug, IP65 enclosure

To use with all BA, BB and BY coils



042N0156 **042N0156** **042N0156**

To use with BA, BB and BY coils - 24 V AC+DC



042N0263 **042N0263** **042N0263**

To use with BA, BB and BY coils - 230 V AC

042N0265 **042N0265** **042N0265**

No plug
needed IP67
terminal box
fitted as
standard

Spare parts and accessories for EV220B 6-22

Spare part kits, NC

Application	Seal material	Code number
EV220B 6	EPDM	032U1062
EV220B 6	FKM	032U1063
EV220B 10	EPDM	032U1065
EV220B 10	FKM	032U1066



Spare part kits, NC

Application	Seal material	Code number
EV220B 12	EPDM	032U1068
EV220B 12	FKM	032U1067
EV220B 18	EPDM	032U1070
EV220B 18	FKM	032U1069



Spare part kits, NO

Application	Seal material	Code number
EV220B 6	EPDM	032U0165
EV220B 6	FKM	032U0166
EV220B 10	FKM	032U0167





Permanent magnet

Description	Code number
Fits all EV220B valves	018F0091

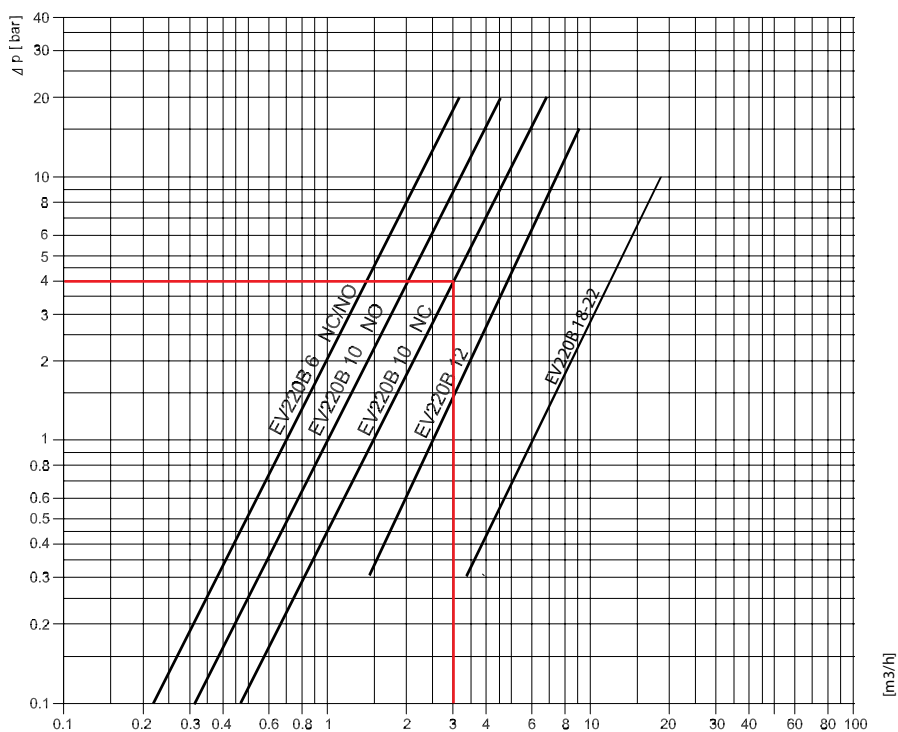


Electronic timers for coils for pulse start, only IP65

Type	Description	Control [50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 - 240	20.0	-10 - 50	042N0185

Capacity diagram for EV220B 6 - EV220B 22:

Example, water: EV220B 10 NC,
at 4 bar diff. pressure: Approx: 3 m³/h



The EV220B 15-50 for large capacities and damping water hammer

A universal indirect servo-operated 2/2 way solenoid valve range, the EV220B 15-50 is ideal for a wide variety of applications.

1 Effective against water hammer

To minimise water hammer, the valve's moulded diaphragm reinforces internal damping, and a special damping cone provides viscous damping in the very late closing stage. The closing speed can be adjusted by changing the equalising orifice.

2 Insensitive to dirt

A self-cleaning coaxial filter in the main valve flow prevents dirt entering the pilot system. However, if the equalising orifice does become blocked, the dirt can easily be removed with compressed air.

3 Broad temperature and material range

With a range of materials, there is an EV220B 15-50 valve suited to your application. The EV220B 15-50 is available in brass, as well as dezincification resistant brass (DZR) and stainless steel versions for aggressive steam applications.

The EPDM seals remain soft even at -30 °C, while the FKM and NBR rubber seals can handle temperatures up to 140 °C.

4 Wide coil range up to IP67

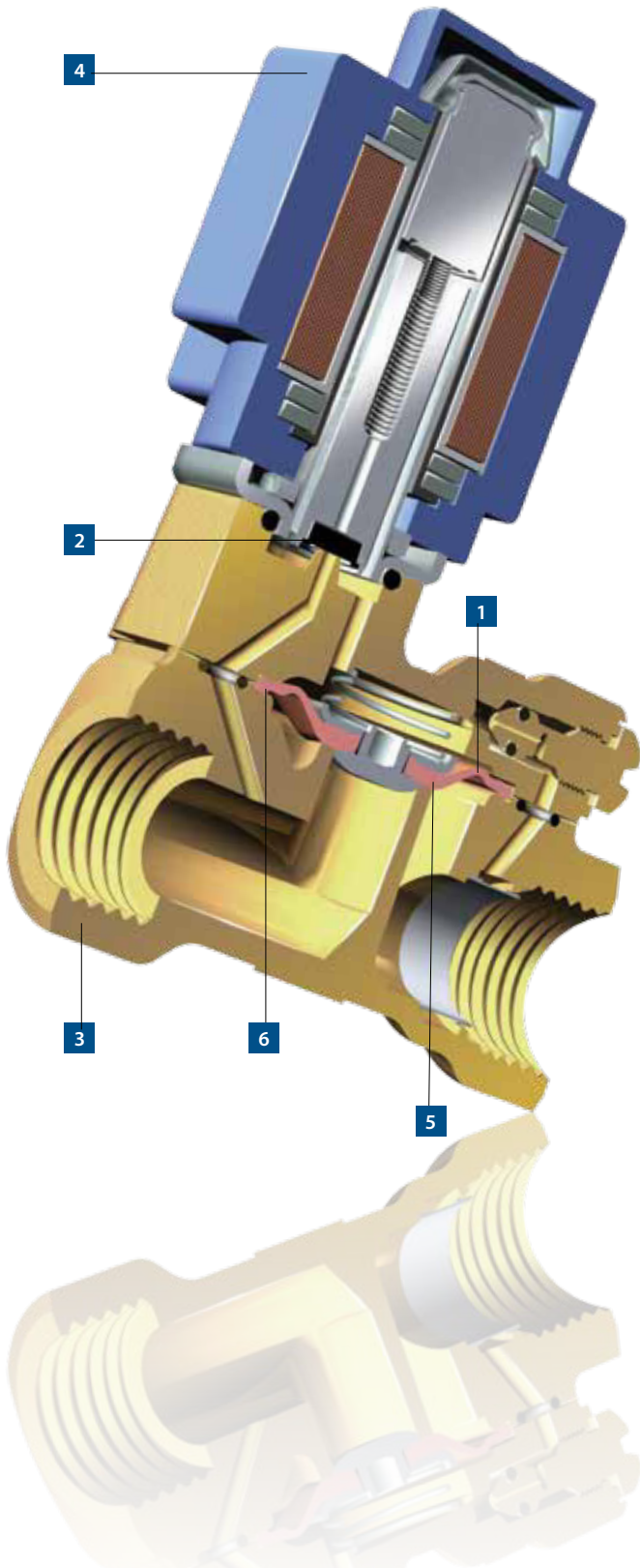
The EV220B range uses the standard B-range of coils from IP00 to IP67. Coils subject to water splash and temperatures up to 80 °C should use the more powerful and robust clip-on coils.

5 High capacity across the entire pressure range

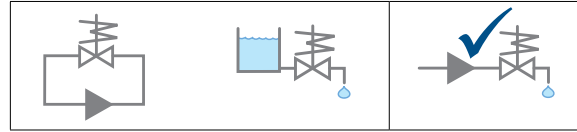
The valve body has a smooth internal shape, and the specially designed diaphragm increases the lift height capacity. In indirect servo-operated valves, the kv-value is determined by the diameter of the orifice and the diaphragm lift height.

6 Good external tightness even at high differential pressures

Pressure in the valve increases the distance between the valve cover and body, so the moulded diaphragm has a built-in O-ring to avoid leakage. This provides an excellent seal between the valve cover and body even at high pressures, ensuring excellent external tightness.



EV220B 15-50 servo-operated 2/2-way solenoid valves



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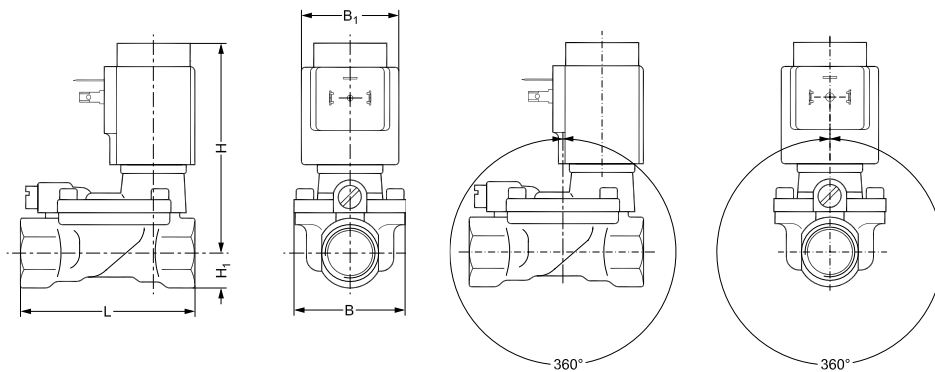
EV220B 15-50 is a universal indirect servo-operated 2/2-way solenoid valve program. Valve body in brass, dezincification resistant brass and stainless steel ensures that a broad variety of application can be covered.

Built-in pilot filter as standard, adjustable closing time and enclosures up to IP67 ensures optimal performance even under critical working conditions.

- 2/2-way
- Servo-operated
- DN 15 – DN 50

- Valve body available in brass, DZR brass, gun metal or stainless steel
- NC and NO versions
- ISO 228/1 or NPT thread connection (EVSI and EVSI-U)
- Built in filter for protection of pilot system
- Water hammer damped
- Adjustable closing time available
- Nominal pressure from PN 10
- Wetted parts: brass, stainless steel, copper, tin, EPDM, FKM or NBR rubber

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	B [mm]	B ₁ [mm] Coil type		H ₁ [mm]	H [mm]	Weight with BB coil [kg]
			BA	BB/BE			
EV220B 15	80	52	32	46	15	99	1.04
EV220B 20	90	58	32	46	18	103	1.24
EV220B 25	109	70	32	46	22	113	1.64
EV220B 32	120	82	32	46	27	120	2.24
EV220B 40	130	95	32	46	32	129	3.46
EV220B 50	162	113	32	46	37	135	4.54

EV220B 15-50 servo-operated valves with coil and plug, brass, IP65, NC



Type	Connection	Differential pressure [bar]	Kv [m³/h]	Media		Seal material	Coil BB		Code number
				Water 90 °C	Oil / Air		[V a.c. 50 Hz]	[V d.c.]	
EV220B 15	G ½	0.3 – 16	4	✓	✓	NBR		24	032U451402
EV220B 15	G ½	0.3 – 16	4	✓	✓	NBR	24		032U451416
EV220B 15	G ½	0.3 – 16	4	✓	✓	NBR	230		032U451431
EV220B 20	G ¾	0.3 – 16	8	✓	✓	NBR		24	032U453002
EV220B 20	G ¾	0.3 – 16	8	✓	✓	NBR	24		032U453016
EV220B 20	G ¾	0.3 – 16	8	✓	✓	NBR	230		032U453031
EV220B 25	G 1	0.3 – 16	11	✓	✓	NBR		24	032U453402
EV220B 25	G 1	0.3 – 16	11	✓	✓	NBR	24		032U453416
EV220B 25	G 1	0.3 – 16	11	✓	✓	NBR	230		032U453431
EV220B 32	G 1 ¼	0.3 – 16	18	✓	✓	NBR		24	032U456802
EV220B 32	G 1 ¼	0.3 – 16	18	✓	✓	NBR	24		032U456816
EV220B 32	G 1 ¼	0.3 – 16	18	✓	✓	NBR	230		032U456831
EV220B 40	G 1 ½	0.3 – 16	24	✓	✓	NBR		24	032U458502
EV220B 40	G 1 ½	0.3 – 16	24	✓	✓	NBR	24		032U458516
EV220B 40	G 1 ½	0.3 – 16	24	✓	✓	NBR	230		032U458531
EV220B 50	G 2	0.3 – 16	40	✓	✓	NBR		24	032U460402
EV220B 50	G 2	0.3 – 16	40	✓	✓	NBR	24		032U460416
EV220B 50	G 2	0.3 – 16	40	✓	✓	NBR	230		032U460431

EV220B 15-50 servo-operated valves, NC

DZR brass, brass or stainless steel (SS)



Type	Connection	Differential pressure [bar]	Kv [m³/h]	Media			Seal material	Body material			Code number
				Water 120 °C	Water 90 °C	Oil / Air		DZR	Brass	SS	
EV220B 15	G ½	0.3 – 16	4	✓			EPDM	✓			032U5815
EV220B 15	G ½	0.3 – 16	4	✓			EPDM		✓		032U7115
EV220B 15	G ½	0.3 – 16	4	✓			EPDM			✓	032U8500
EV220B 15	G ½	0.3 – 10	4			✓	FKM		✓		032U7116
EV220B 15	G ½	0.3 – 10	4			✓	FKM			✓	032U8506
EV220B 15	G ½	0.3 – 16	4		✓	✓	NBR		✓		032U7170
EV220B 20	G ¾	0.3 – 16	8	✓			EPDM	✓			032U5820
EV220B 20	G ¾	0.3 – 16	8	✓			EPDM		✓		032U7120
EV220B 20	G ¾	0.3 – 16	8	✓			EPDM			✓	032U8501
EV220B 20	G ¾	0.3 – 10	8			✓	FKM		✓		032U7121
EV220B 20	G ¾	0.3 – 10	8			✓	FKM			✓	032U8507
EV220B 20	G ¾	0.3 – 16	8		✓	✓	NBR		✓		032U7171
EV220B 25	G 1	0.3 – 16	11	✓			EPDM	✓			032U5825
EV220B 25	G 1	0.3 – 16	11				EPDM	✓			032U5825
EV220B 25	G 1	0.3 – 16	11	✓			EPDM		✓		032U7125
EV220B 25	G 1	0.3 – 16	11	✓			EPDM			✓	032U8502
EV220B 25	G 1	0.3 – 10	11			✓	FKM		✓		032U7126
EV220B 25	G 1	0.3 – 10	11			✓	FKM			✓	032U8508
EV220B 25	G 1	0.3 – 16	11		✓	✓	NBR		✓		032U7172
EV220B 32	G 1 ¼	0.3 – 16	18	✓			EPDM	✓			032U5832



EV220B 15-50 servo-operated valves, NC

DZR brass, brass or stainless steel (SS)

Type	Connection	Differential pressure [bar]	Kv [m³/h]	Water 120 °C	Media		Seal material	Body material			Code number
					Water 90 °C	Oil / Air		DZR	Brass	SS	
EV220B 32	G 1 ¼	0.3 – 16	18	✓			EPDM		✓		032U7132
EV220B 32	G 1 ¼	0.3 – 16	18	✓			EPDM			✓	032U8503
EV220B 32	G 1 ¼	0.3 – 10	18			✓	FKM		✓		032U7133
EV220B 32	G 1 ¼	0.3 – 10	18			✓	FKM			✓	032U8509
EV220B 32	G 1 ¼	0.3 – 16	18		✓	✓	NBR		✓		032U7173
EV220B 40	G 1 ½	0.3 – 16	24	✓			EPDM	✓			032U5840
EV220B 40	G 1 ½	0.3 – 16	24	✓			EPDM		✓		032U7140
EV220B 40	G 1 ½	0.3 – 16	24	✓			EPDM			✓	032U8504
EV220B 40	G 1 ½	0.3 – 10	24			✓	FKM		✓		032U7141
EV220B 40	G 1 ½	0.3 – 10	24			✓	FKM			✓	032U8510
EV220B 40	G 1 ½	0.3 – 16	24		✓	✓	NBR		✓		032U7174
EV220B 50	G 2	0.3 – 16	40	✓			EPDM	✓			032U5850
EV220B 50	G 2	0.3 – 16	40	✓			EPDM		✓		032U7150
EV220B 50	G 2	0.3 – 16	40	✓			EPDM			✓	032U8505
EV220B 50	G 2	0.3 – 10	40			✓	FKM		✓		032U7151
EV220B 50	G 2	0.3 – 10	40			✓	FKM			✓	032U8511
EV220B 50	G 2	0.3 – 16	40		✓	✓	NBR		✓		032U7175



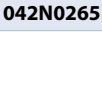
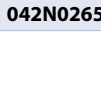
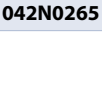
EV220B 15-50 servo-operated valves, brass, NO

Type	Connection	Differential pressure [bar]	Kv [m³/h]	Water 120 °C	Media		Seal material	Code number
					Water 90 °C	Oil / Air		
EV220B 15	G ½	0.3 – 16	4	✓			EPDM	032U7117
EV220B 15	G ½	0.3 – 16	4		✓	✓	NBR	032U7180
EV220B 20	G ¾	0.3 – 16	8	✓			EPDM	032U7122
EV220B 20	G ¾	0.3 – 16	8		✓	✓	NBR	032U7181
EV220B 25	G 1	0.3 – 16	11	✓			EPDM	032U7127
EV220B 25	G 1	0.3 – 16	11		✓	✓	NBR	032U7182
EV220B 32	G 1 ¼	0.3 – 16	18	✓			EPDM	032U7134
EV220B 32	G 1 ¼	0.3 – 16	18		✓	✓	NBR	032U7183
EV220B 40	G 1 ½	0.3 – 16	24	✓			EPDM	032U7142
EV220B 40	G 1 ½	0.3 – 16	24		✓	✓	NBR	032U7184
EV220B 50	G 2	0.3 – 16	40	✓			EPDM	032U7152
EV220B 50	G 2	0.3 – 16	40		✓	✓	NBR	032U7185

Coils for EV220B 15 - EV220B 50

Voltage		Frequency	Power consumption [W]				BA coil IP00	BB coil IP00 clip-on	BY coil IP65 clip-on	BE coil IP67 clip-on
[V] AC	[V] DC	[Hz]	BA	BB	BY	BE				
24		50	8.5	11	14	12	042N7508	018F7358	018F7655	018F6707
24		60			12				018F7655	
48		50	9.0			11	042N7510			018F6709
110		50		15	14			018F7360	018F7663	
110		60		13				018F7360		
110 - 120		60			14				018F7663	
115		50	9.0	11		11	042N7512	018F7361		018F6711
220 - 230		50	12	11		12	042N7501	018F7351		018F6701
230		50			16				018F7658	
208 - 240		60			14				018F7658	
240		50	10	11		11	042N7502	018F7352		018F6702
380 - 400		50	12	14		14	042N7504	018F7353		018F6703
440		60		15		15		018F7353		018F6703
	12		14	13		15	042N7550	018F7396		018F6756
	24		14	16		13	042N7551	018F7397		018F6757

Cable plug, IP65 enclosure

To use with all BA, BB and BY coils				No plug needed IP67 terminal box fitted as standard
	042N0156	042N0156	042N0156	
To use with BA, BB and BY coils - 24 V AC+DC				
	042N0263	042N0263	042N0263	
To use with BA, BB and BY coils - 230 V AC				
	042N0265	042N0265	042N0265	

Spare parts for EV220B 15-50

Spare part kit, NC



Application	Seal material	Code number
EV220B 15	EPDM	032U1071
EV220B 15	FKM	032U1072
EV220B 15	NBR	032U6013
EV220B 20	EPDM	032U1073
EV220B 20	FKM	032U1074
EV220B 20	NBR	032U6014
EV220B 25	EPDM	032U1075
EV220B 25	FKM	032U1076
EV220B 25	NBR	032U6015
EV220B 32	EPDM	032U1077
EV220B 32	FKM	032U1078
EV220B 32	NBR	032U6016
EV220B 40	EPDM	032U1079
EV220B 40	FKM	032U1080
EV220B 40	NBR	032U6017
EV220B 50	EPDM	032U1081
EV220B 50	FKM	032U1082
EV220B 50	NBR	032U6018

Spare part kit, NO



Application	Seal material	Code number
EV220B 15-50	FKM	032U0295
EV220B 15-50	EPDM	032U0296
EV220B 15-50	NBR	032U0299

Manual override kit, tool operated



Application	Description	Code number
EV220B 15-50	Manual override kit. Used for manual override in event of power failure. Note: Valve height is increased by 16 mm	032U0150

Manual override kit, hand operated



Application	Seal material	Description	Code number
EV220B 15-50	EPDM	Manual override kit. Used for manual override in event of power failure. Note: Valve height is increased by 16 mm	032U7390

Spare parts and accessories for EV220B 15-50

Isolating diaphragm kits

Application	Seal material	Description	Code number
EV220B 15-50	EPDM	The isolating diaphragm protects the actuator against dirt and corrosion.	042U1009
EV220B 15-50	FKM		042U1010



Adjustable orifice kit, brass

Application	Seal material	Code number
EV220B 15-50	EPDM	032U0682
EV220B 15-50	NBR	032U0681
EV220B 15-50	FKM	032U0683



Equalizing orifice

Application	Seal material	Dimension [mm]	Description	Code number
EV220B 25-32	FKM	1.2	The valves closing time can be changed by installing an equalizing orifice of a size which deviates from the standard valve.	032U0085
EV220B 15-20	EPDM	0.5		032U0082
EV220B 25-32-40	EPDM	0.8		032U0084
EV220B 50	EPDM	1.2		032U0086
EV220B 40-50	FKM	1.4		032U0087



Permanent magnet

Application	Code number
Fits all EV220B valves	018F0091



Electronic timers for coils for pulse start, only IP65

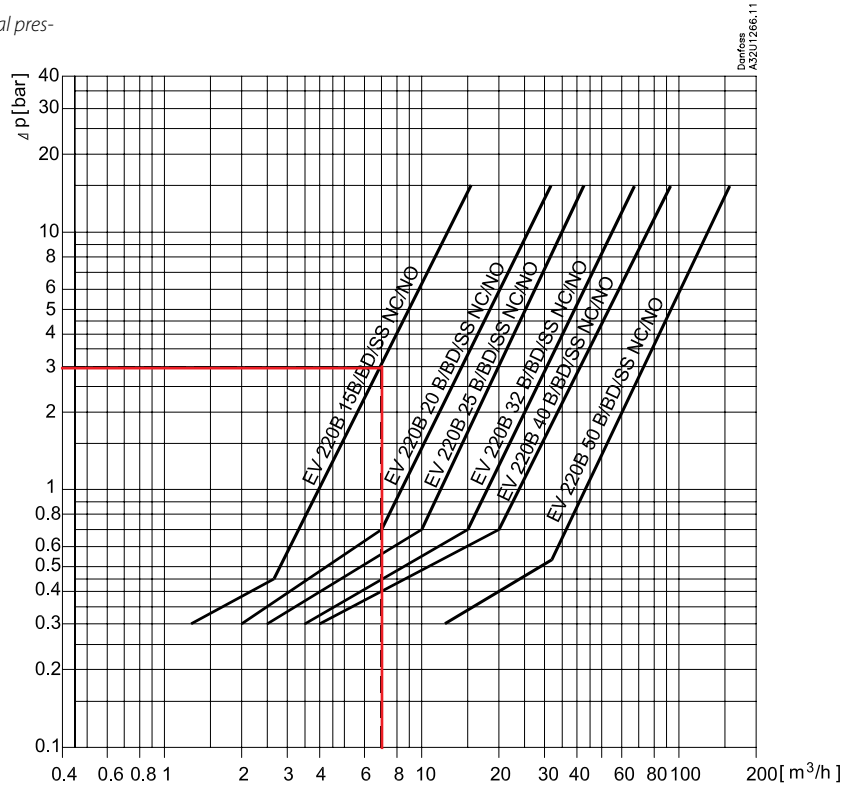
Type	Description	Control [V 50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 – 45 minutes with 1 – 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 – 240	20.0	-10 – 50	042N0185



Capacity diagram for EV220B 15 - EV220B 50:

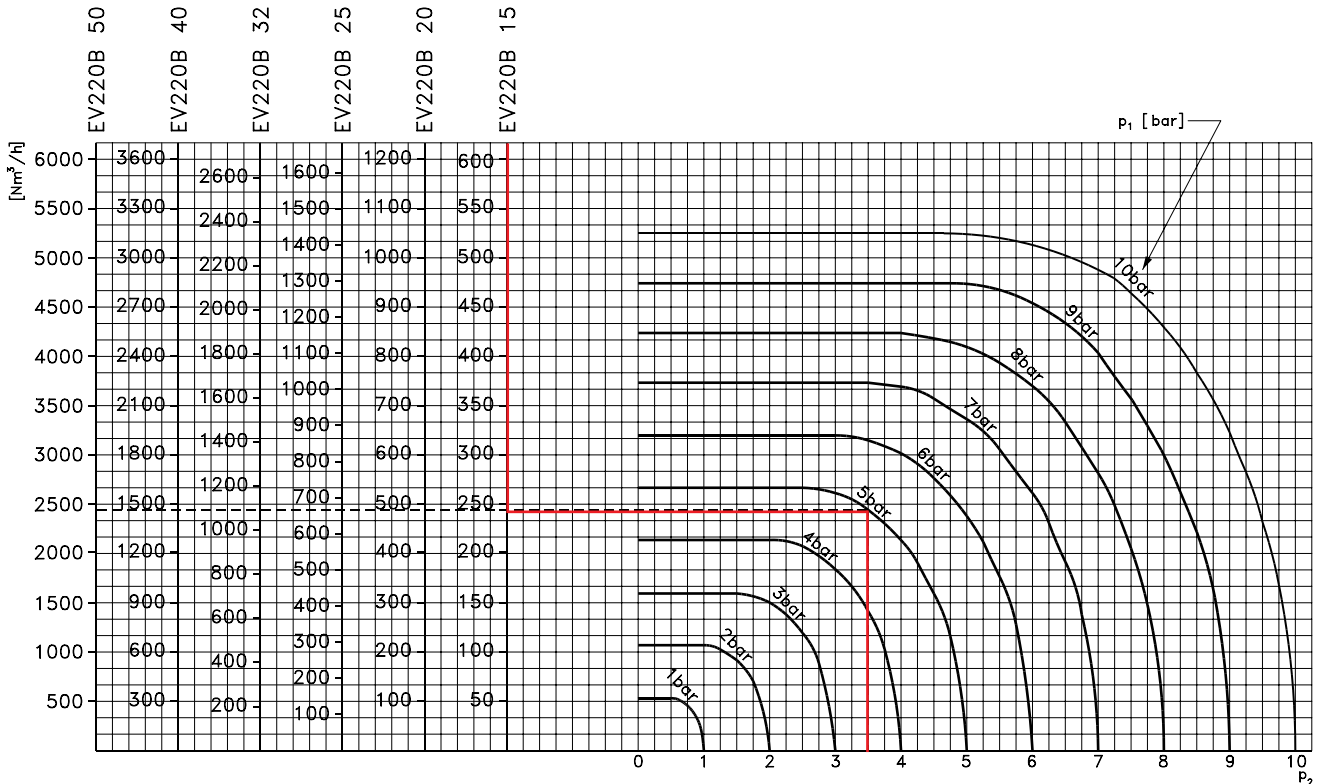
Example, water:

Capacity for EV220B 15 at differential pressure of 3 bar. Approx. 7 m³/h



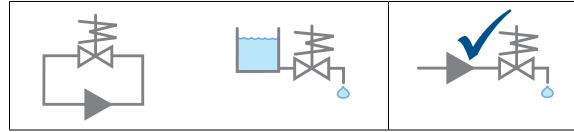
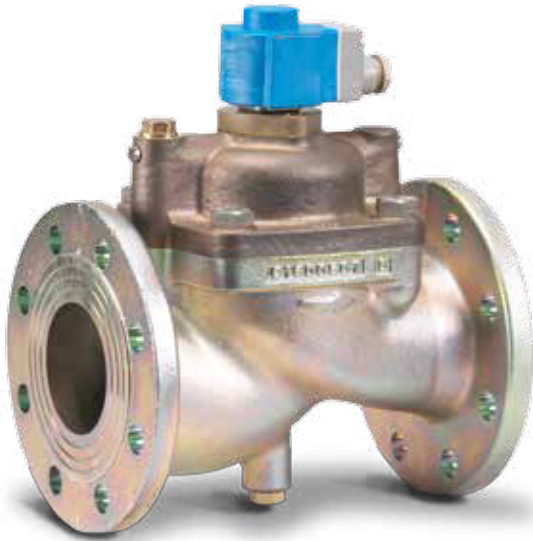
Example, air:

Capacity for EV220B 15 at inlet pressure (p_1) of 5 bar and outlet pressure (p_2) of 3.5 bar: Approx. 245 Nm³/h



Flow information on other media types: Please contact Danfoss.

EV220B 65-100 servo-operated 2/2-way solenoid valves



-			+
-			+
-			+

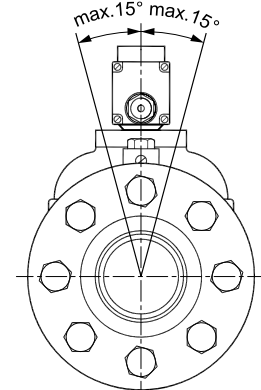
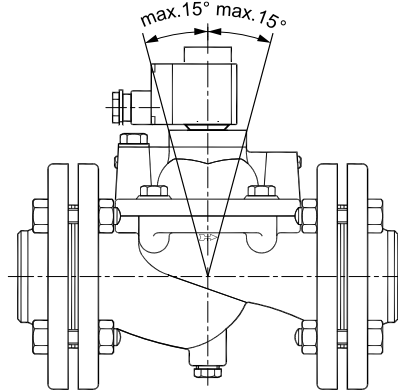
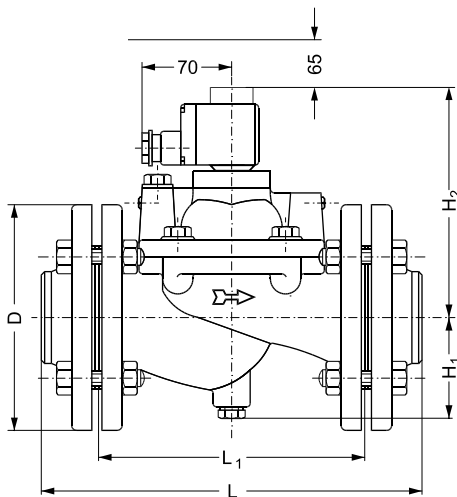
EV220B 65-100 is a 2/2-way solenoid valve program for use in robust industrial applications, demanding high flow rates. The valve is designed with cast iron valve bodies and flanged connection.

Water-hammer damped design and built-in pilot filter ensures a reliable operational period.

- 2/2-way
- Servo-operated

- DN 65 – DN 100
- Cast iron valve body
- Flange connection
- Max. medium temperature: 90 °C
- Nominal pressure from PN 10
- Wetted parts: brass, centralen WS 3820 and NBR rubber

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	L ₁ [mm]	Coil width [mm]		Ø D [mm]	H ₁ [mm]	H ₂ [mm]	Weight with BE coil [kg]
			10 W a.c.	20 W d.c.				
EV220B 65	320	224	46	66	185	85	185	24
EV220B 80	370	265	46	66	200	93	215	34
EV220B 100	430	315	46	66	220	103	240	44



EV220B 65-100 servo-operated valves, NC

Type	Connection Flange / [inch]	Kv [m³/h]	Media Water 120 °C Water 90 °C Oil / Air	Seal material	Body material Cast iron	Differential pressure [bar]	Code number
EV220B 65	2 ½	50	✓	✓	NBR	✓	0.25 – 10 016D3330
EV220B 65	2 ½	50	✓		EPDM	✓	0.25 – 10 016D6065
EV220B 80	3	75	✓	✓	NBR	✓	0.25 – 10 016D3331
EV220B 80	3	75	✓		EPDM	✓	0.25 – 10 016D6080
EV220B 100	4	130	✓		EPDM	✓	0.25 – 10 016D6100

Coils for EV220B 65 - EV220B 100

Voltage		Frequency	Power consumption [W]		BB coil IP00 clip-on	BE coil IP67 clip-on
[V] AC	[V] DC	[Hz]	BB	BE		
24		50	11	12	018F7358	018F6707
48		50		11		018F6709
110		50	15		018F7360	
110		60	13		018F7360	
115		50	11	11	018F7361	018F6711
220 - 230		50	11	12	018F7351	018F6701
240		50	11	11	018F7352	018F6702
380 - 400		50	14	14	018F7353	018F6703
440		60	15	15	018F7353	018F6703
	12	–	13	13	018F7396	018F6756
	24	–	16	16	018F7397	018F6757

Cable plug, IP65 enclosure

To use with all BB coils	042N0156	No plug needed - IP67 terminal box fitted as standard
To use with BB coils - 24 V AC+DC	042N0263	
To use with BB coils - 230 V AC	042N0265	

Accessories for EV220B 65-100 servo-operated valves

Permanent magnet

Application	Code number
Fits all EV220B valves	018F0091



Electronic timers for coils for pulse start , only IP65

Type	Description	Control [50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 - 240	20.0	-10 – 50	042N0185



Spare parts for EV220B 65 - EV220B 100 servo-operated valves

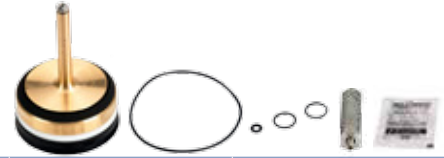
Flange sets. Each set contains 2 flanges.

Application	Connection	Code number
EV220B 65	2½ in. weld	027N3065
EV220B 80	3 in. weld	027N3080
EV220B 100	4 in. weld	027N3100



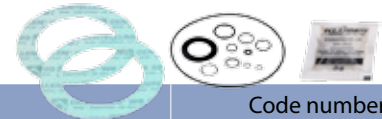
Spare part kit

Application	Code number EPDM	Code number NBR
EV220B 65	016D0078	016D0095
EV220B 80	016D0079	016D0096
EV220B 100	016D0080	



Seal kit

Application	Code number EPDM
EV220B 65	016D0075
EV220B 80	016D0076
EV220B 100	016D0077



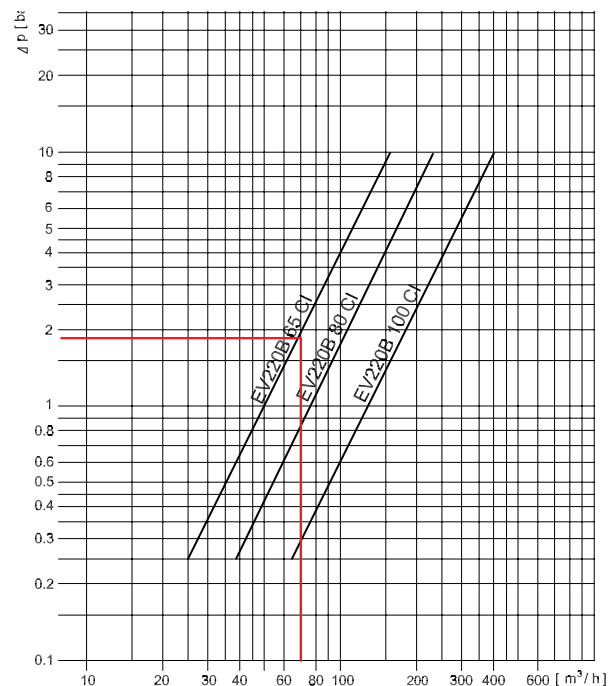
Manual override kit, hand operated

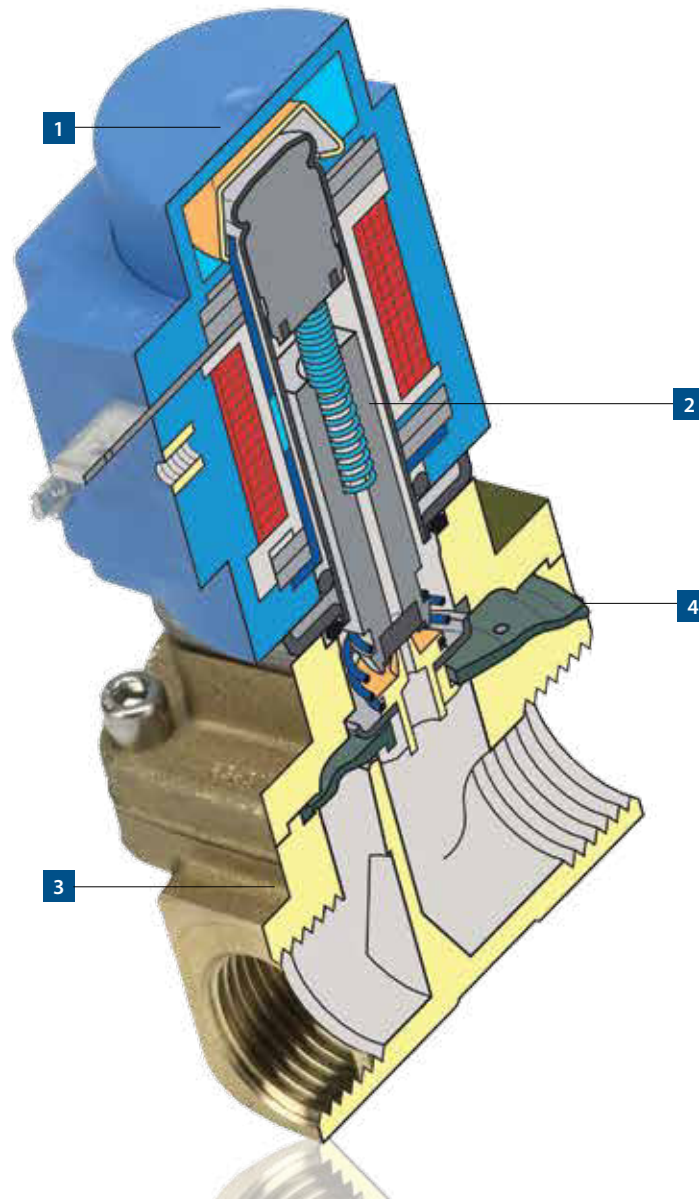
Application	Seal material	Description	Code number
EV220B 65 – EV220B100	EPDM	Manual override kit. Used for manual override in event of power failure. Note: Valve height is increased by 16 mm	032U7390



Capacity diagram for EV220B 65 – EV220B 100:

Example, water:
Capacity for EV220B 65-100 at differential pressure of 2 bar: Approx. 70 m³/h





The EV250B for low and unspecified pressure conditions

Designed for closed circuits, the EV250B 2/2-way assisted-lift solenoid valve range damps water hammer at low differential pressure and moderate flow rates.

1 Clip-on coil systems

Suitable for clip-on coil systems, the EV250B ensures faultless mounting so that both assembly and dismantling is simple and safe. And when needed, a hermetic seal against moisture penetration gives a tighter seal and a safer and more stable fastening.

2 High lift at zero or low differential pressures

High armature lift secures a high opening degree from zero differential pressure.

3 For aggressive low-pressure steam

Made from dezincification resistant brass (DZR), the EV250B valve body is suitable for aggressive technical water and steam.

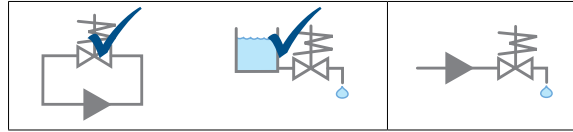
4 Good external tightness even at high differential pressures

The thick valve cover and moulded diaphragm with built-in o-ring secures an excellent seal between valve cover and body even at high pressure.

Extra features

The EV250B is available with a range of water approvals, including the British WRAS approval. It is also available with hum-free coils, American NPT threads and UL approval, IP67 protection, EEx coils, and DNV ship approval.

EV250B assisted lift 2/2-way solenoid valves



-			+
-			+
-			+

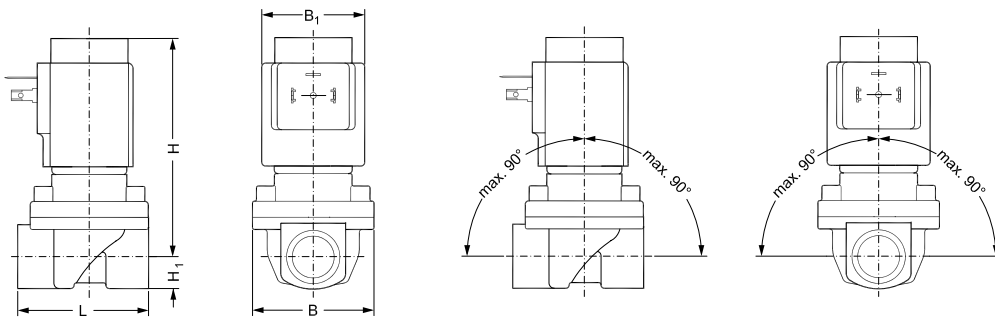
EV250B with assisted lift can operate from zero and up to 10 bar differential pressure.

This 2/2-way valve program is especially to use in closed circuits with low differential pressure, but demanding moderate flow rates. Valve body in dezincification resistant brass for ensuring a long life even in connection with aggressive steam media.

EV250B is compatible with the broad Danfoss coil program with enclosures from IP00 up to IP67. Medium temperatures up to 140 °C (low pressure steam).

- 2/2-way
- Assisted lift
- DN 10 – DN 22
- DZR brass valve body
- NC (normally closed) or NO (normally open)
- From zero differential pressure
- Especially suitable for closed circuits and for emptying tanks
- Available with WRAS, VA and UL approvals
- ISO or NPT thread connections
- Nominal pressure from PN 10
- Wetted parts: brass, stainless steel, copper, EPDM or FKM rubber

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	B [mm]	B ₁ [mm] Coil type	H ₁ [mm]	H [mm]	Weight with BB coil [kg]
			BB/BE			
G 3/8	58	52.3	46	12.5	91	0.84
G 1/2	58	52.3	46	12.5	91	0.84
G 3/4	90.5	58	46	18	92	1.04
G 1	90	58	46	22.3	96.3	1.34

EV250B assisted lift valve with coil and plug IP65, DZR brass, NC



Type	Connection	Kv [m ³ /h]	Media Water 120 °C	Seal material	Differential pressure [bar]	Coil BB [V a.c. 50 Hz] [V d.c.]	Code number
EV250B 10	G 3/8	2.5	✓	EPDM	0 – 6*	24	032U157102
EV250B 10	G 3/8	2.5	✓	EPDM	0 – 10	24	032U157116
EV250B 10	G 3/8	2.5	✓	EPDM	0 – 10	230	032U157131
EV250B 12	G 1/2	4	✓	EPDM	0 – 6*	24	032U158002
EV250B 12	G 1/2	4	✓	EPDM	0 – 10	24	032U158016
EV250B 12	G 1/2	4	✓	EPDM	0 – 10	230	032U158031
EV250B 18	G 3/4	6	✓	EPDM	0 – 6*	24	032U161402
EV250B 18	G 3/4	6	✓	EPDM	0 – 10	24	032U161416
EV250B 18	G 3/4	6	✓	EPDM	0 – 10	230	032U161431
EV250B 22	G 1	7	✓	EPDM	0 – 6*	24	032U162402
EV250B 22	G 1	7	✓	EPDM	0 – 10	24	032U162416
EV250B 22	G 1	7	✓	EPDM	0 – 10	230	032U162431

* 6 bar max opening differential pressure is measured at 6% under voltage (22.6 volt d.c. hot coil), 50 °C ambient, 90 °C media temperature and nominal pressure PN 6



EV250B assisted lift valve with coil and plug IP65, DZR brass, NO

Type	Connection	Kv [m ³ /h]	Media Water 120 °C	Seal material	Differential pressure [bar]	Coil BB [V a.c. 50 Hz] [V d.c.]	Code number
EV250B 18	G 3/4	4.9	✓	EPDM	0 – 10	230	032U537431
EV250B 20	G 1	5.2	✓	EPDM	0 – 10	230	032U537631



EV250B assisted lift valve, DZR brass, NC

Type	Connection	Kv [m ³ /h]	Media Water 120 °C	Oil / Air	Seal material	Differential pressure [bar]	Code number
EV250B 10	G 3/8	2.5	✓		EPDM	0 – 10	032U5250
EV250B 10	G 3/8	2.5		✓	FKM	0 – 10	032U5251
EV250B 12	G 1/2	4	✓		EPDM	0 – 10	032U5252
EV250B 12	G 1/2	4		✓	FKM	0 – 10	032U5253
EV250B 18	G 3/4	6	✓		EPDM	0 – 10	032U5254
EV250B 18	G 3/4	6		✓	FKM	0 – 10	032U5255
EV250B 22	G 1	7	✓		EPDM	0 – 10	032U5256
EV250B 22	G 1	7		✓	FKM	0 – 10	032U5257



EV250B assisted lift valve, DZR brass, NO

Type	Connection	Kv [m ³ /h]	Media Water 120 °C	Seal material	Differential pressure [bar]	Code number
EV250B 10	G 3/8	2.5	✓	EPDM	0 – 10	032U5350
EV250B 12	G 1/2	4	✓	EPDM	0 – 10	032U5352
EV250B 18	G 3/4	4.9	✓	EPDM	0 – 10	032U5354
EV250B 22	G 1	5.2	✓	EPDM	0 – 10	032U5356

Coils for EV250B



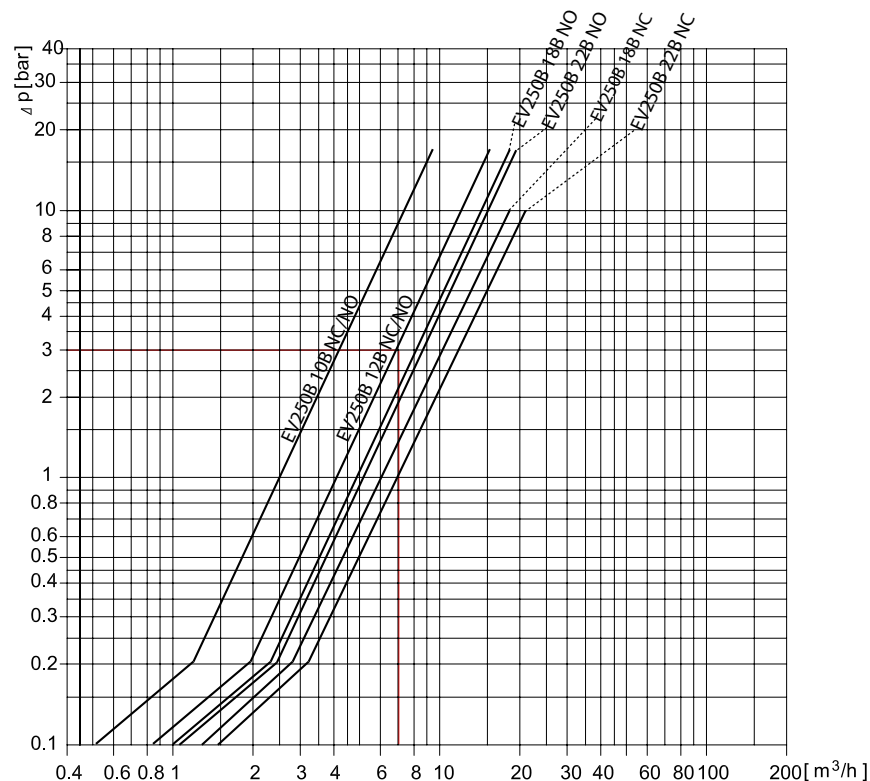
Voltage		Frequency [Hz]	Power consumption [W]			BB coil IP00 clip-on	BY coil IP65 clip-on	BE coil IP67 clip-on
[V] AC	[V] DC		BB	BY	BE			
24		50	11	14	12	018F7358	018F7655	018F6707
24		60		12			018F7655	
48		50			11			018F6709
110		50	15	14		018F7360	018F7663	
110		60	13			018F7360		
110 - 120		60		14			018F7663	
115		50	11		11	018F7361		018F6711
220 - 230		50	11		12	018F7351		018F6701
230		50		16			018F7658	
208 - 240		60		14			018F7658	
240		50	11		11	018F7352		018F6702
380 - 400		50	14		14	018F7353		018F6703
440		60			15	018F7353		018F6703
	12		13		15	018F7396		018F6756
	24		16		13	018F7397		018F6757

Cable plug, IP65 enclosure

To use with all BB and BY coils	042N0156	042N0156	No plug needed IP67 terminal box fitted as standard
To use with BB and BY coils - 24 V AC+DC	042N0263	042N0263	
To use with BB and BY coils - 230 V AC	042N0265	042N0265	

Capacity diagram for solenoid valve EV250B

Example, water: EV250B 12
at differential pressure of 3 bar:
Approx. 7 m³/h



Spare parts and accessories for EV250B



Spare part kits for EV250B EPDM NC

Application	Seal material	Code number
EV250B 10-12	EPDM	032U5315
EV250B 18-22	EPDM	032U5317



Spare part kits for EV250B FKM NC

Application	Seal material	Code number
EV250B 10-12	FKM	032U5271
EV250B 18-22	FKM	032U5273



Sparepart kits for EV250B NO

Application	Seal material	Code number
EV250B 10-12	EPDM	032U5319
EV250B 10-12	FKM	032U5320
EV250B 18-22	EPDM	032U5321
EV250B 18-22	FKM	032U5322



Permanent magnet

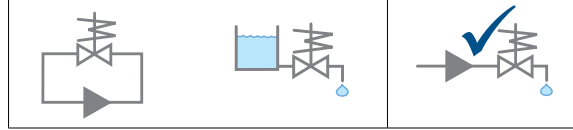
Description	Code number
Fits all EV250B valves	018F0091



Electronic timers for coils for pulse start, only IP65

Type	Description	Control [50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 - 240	20.0	-10 - 50	042N0185

EV224B servo-operated 2/2-way solenoid valves for high pressure air



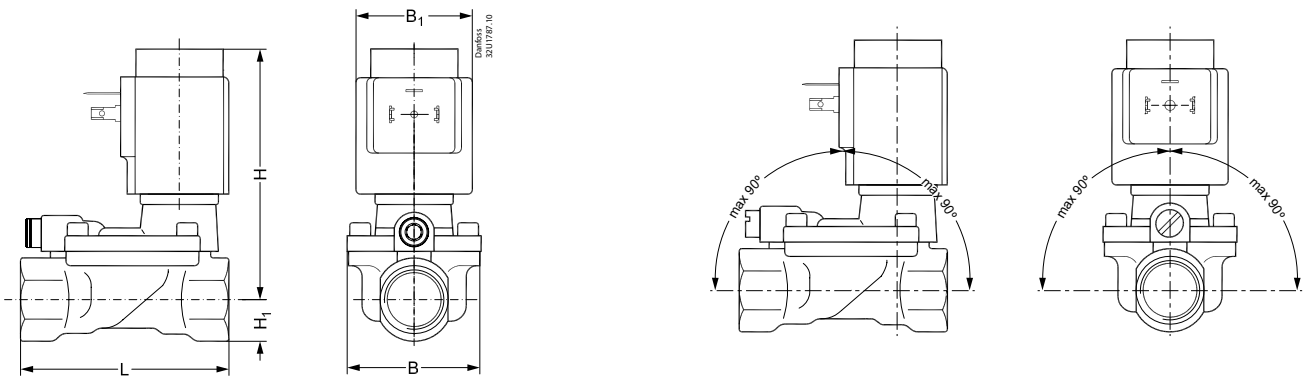
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EV224B is a high pressure indirect servo-operated 2/2-way solenoid valve with working pressure up to 40 bar, medium temperature up to 60 °C and available in NC and NO versions. Built-in pilot filter as standard, adjustable closing time, enclosures up to IP67 (depending on coil) ensure a reliable and satisfactory function.

- For high pressure air applications up to 40 bar
- 2/2-way
- Servo-operated

- DN 15 – DN 25
- Ambient temperature: 80 °C
- NC and NO versions
- Brass valve body
- Built in filter for protection of pilot system
- Based on proven EV220B technology
- Nominal pressure from PN 40
- Wetted parts: brass, stainless steel, copper, tin, PTFE (only NO) and NBR rubber

Dimensions, weight and mounting angle:



Type	L [mm]	B [mm]	B ₁ [mm] Coil type BB/BE	H ₁ [mm]	H [mm]	Weight with BB coil [kg]
EV224B 15	80.0	52.0	46	15.0	99.0	1.04
EV224B 20	90.0	58.0	46	18.0	103.0	1.24
EV224B 25	109.0	70.0	46	22.0	113.0	1.64

EV224B servo-operated valves, NC



Type	Connection	Kv [m ³ /h]	Seal material	Media Air 60 °C	Body material Brass	Differential pressure [bar]	Code number
EV224B 15	G ½	4	NBR	✓	✓	0.3 – 40	032U8360
EV224B 20	G ¾	8	NBR	✓	✓	0.3 – 40	032U8362
EV224B 25	G 1	11	NBR	✓	✓	0.3 – 40	032U8364

EV224B servo-operated valves, NO



Type	Connection	Kv [m ³ /h]	Seal material	Media Air 60 °C	Body material Brass	Differential pressure [bar]	Code number
EV224B 15	G ½	4	NBR	✓	✓	0.3 – 40	032U8361
EV224B 20	G ¾	8	NBR	✓	✓	0.3 – 40	032U8363
EV224B 25	G 1	11	NBR	✓	✓	0.3 – 40	032U8365

Coils for EV220B 65 - EV220B 100



Voltage		Frequency [Hz]	Power consumption [W]		BB coil IP00 clip-on	BE coil IP67 clip-on
[V] AC	[V] DC		BB	BE		
24		50	11	12	018F7358	018F6707
48		50		11		018F6709
110		50	15		018F7360	
110		60	13		018F7360	
115		50	11	11	018F7361	018F6711
220 - 230		50	11	12	018F7351	018F6701
240		50	11	11	018F7352	018F6702
380 - 400		50	14	14	018F7353	018F6703
440		60	15	15	018F7353	018F6703
	12	–	13	13	018F7396	018F6756
	24	–	16	16	018F7397	018F6757

Cable plug, IP65 enclosure



042N0156



042N0263

042N0265

No plug needed -
IP67 terminal box
fitted as standard

Spare parts and accessories for EV224B

Electronic timers for coils for pulse start, only IP65



Type	Description	Control [50/60 Hz]	Power cons. Max [W]	Ambient temp. [°C]	Code number
ET 20 M	External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button) Electrical connection DIN 43650 A / EN 175 301-803-A	24 - 240	20.0	-10 - 50	042N0185

Spare part kits, NC



Application	Seal material	Code number
EV224B 15	NBR	032U6156
EV224B 20	NBR	032U6158
EV224B 25	NBR	032U6160

Spare part kits, NO



Application	Seal material	Code number
EV224B 15	NBR	032U6157
EV224B 20	NBR	032U6159
EV224B 25	NBR	032U6161

Spare part kits for synthetic oil, NC/NO



Application	Seal material	Code number
EV224B 15	FKM	032U8118
EV224B 20	FKM	032U8119

EV225B servo-operated 2/2-way solenoid valves for steam

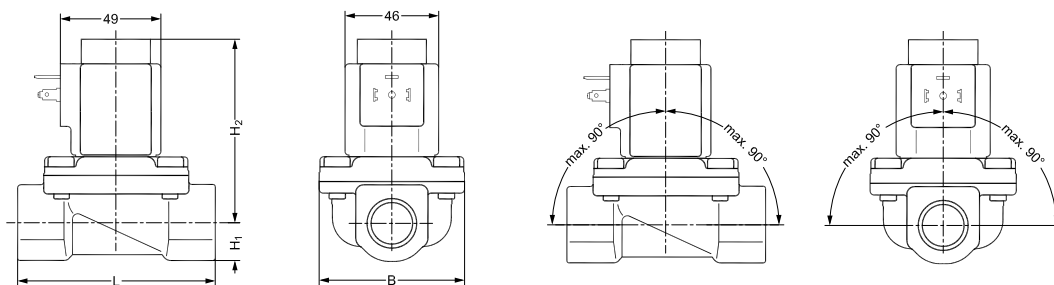


-			+
-			+

EV225B is a servo-operated 2/2-way solenoid valve for use in steam application.
The design is based on a PTFE diaphragm concept, ensuring high reliable function even in connection with contaminated steam.
Valve body in dezincification resistant brass and valve seats made in stainless steel for ensuring a long life even in connection with aggressive steam media.

- 2/2-way
- Specifically designed for steam applications, 160 °C or 185 °C
- Servo-operated
- DN 6 – DN 25
- Ambient temperature: 40 °C
- G 1/4" – G 1"
- DZR brass valve body
- NC (normally closed)
- ISO 228/1 or UL listed version with NPT for North America (EVSIS/UL)

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	B [mm]	H [mm]	H ₁ [mm]	H ₂ [mm]	Weight with BQ/BB coil [kg]	Weight with BN coil [kg]
EV225B 6	62	46	98	13	85	0.75	1.03
EV225B 10	62	46	98	13	85	0.72	1.00
EV225B 15	81	56	102	15	87	0.86	1.14
EV225B 20	98	72	110	18	92	1.40	1.68
EV225B 25	106	72	117	21	96	1.70	1.98

EV225B servo operated steam valve with BQ coil and plug, DZR brass, NC



Type	Connection	Kv [m³/h]	BQ coil, 10 W a.c.		24 V 50 Hz	110 V 60 Hz	230 V 50 Hz	220 V 60Hz	Code number
			Temp. max [°C]	Diff. pressure [bar]					
EV225B 10	G ½	2.2	185	0.2 – 10	✓				032U380416
EV225B 15	G ½	3.0	185	0.2 – 10	✓				032U380516
EV225B 20	G ¾	5.0	185	0.2 – 10	✓				032U380616
EV225B 25	G 1	6.0	185	0.2 – 10	✓				032U380716
EV225B 10	G ½	2.2	185	0.2 – 10		✓			032U380420
EV225B 15	G ½	3.0	185	0.2 – 10		✓			032U380520
EV225B 20	G ¾	5.0	185	0.2 – 10		✓			032U380620
EV225B 25	G 1	6.0	185	0.2 – 10		✓			032U380720
EV225B 10	G ½	2.2	185	0.2 – 10			✓		032U380431
EV225B 15	G ½	3.0	185	0.2 – 10			✓		032U380531
EV225B 20	G ¾	5.0	185	0.2 – 10			✓		032U380631
EV225B 25	G 1	6.0	185	0.2 – 10			✓		032U380731
EV225B 10	G ½	2.2	185	0.2 – 10				✓	032U380429
EV225B 15	G ½	3.0	185	0.2 – 10				✓	032U380529
EV225B 20	G ¾	5.0	185	0.2 – 10				✓	032U380629
EV225B 25	G 1	6.0	185	0.2 – 10				✓	032U380729



EV225B servo operated steam valve with BN coil and plug, DZR brass, NC

Type	Connection	Kv [m³/h]	BN coil, 20 W		24 V d.c.	Code number
			Temp. max [°C]	Diff. pressure [bar]		
EV225B 10	G ½	2.2	160	0.2 – 5	✓	032U380402
EV225B 15	G ½	3.0	160	0.2 – 5	✓	032U380502
EV225B 20	G ¾	5.0	160	0.2 – 5	✓	032U380602
EV225B 25	G 1	6.0	160	0.2 – 5	✓	032U380702



EV225B servo-operated steam valve, DZR brass, NC, PTFE seal material

Type	Connection	Kv [m³/h]	BQ coil, 10 W a.c.		BN coil, 20 W d.c.		BB coil, 10 W a.c.		BB coil, 18 W d.c.		Code number
			Temp. max [°C]	Diff. pressure [bar]	Temp. max [°C]	Diff. pressure [bar]	Temp. max [°C]	Diff. pressure [bar]	Temp. max [°C]	Diff. pressure [bar]	
EV225B 6	G ¼	0.9	185	0.2 – 10	160	0.2 – 5	160	0.2 – 5	140	0.2 – 3.6	032U3802
EV225B 10	G ¾	2.2	185	0.2 – 10	160	0.2 – 5	160	0.2 – 5	140	0.2 – 3.6	032U3803
EV225B 10	G ½	2.2	185	0.2 – 10	160	0.2 – 5	160	0.2 – 5	140	0.2 – 3.6	032U3804
EV225B 15	G ½	3.0	185	0.2 – 10	160	0.2 – 5	160	0.2 – 5	140	0.2 – 3.6	032U3805
EV225B 20	G ¾	5.0	185	0.2 – 10	160	0.2 – 5	160	0.2 – 5	140	0.2 – 3.6	032U3806
EV225B 25	G 1	6.0	185	0.2 – 10	160	0.2 – 5	160	0.2 – 5	140	0.2 – 3.6	032U3807

Coils for EV225B



Voltage		Frequency [Hz]	Power consumption [W]		BQ coil, AC 10 bar, 185 °C IP65 clip-on	BN coil, DC 5 bar, 160 °C IP65 clip-on
[V] AC	[V] DC		BQ	BN		
24		50	10		018F4517	
24		60	9.0		018F4517	
110		50	13.5		018F4519	
230		50	10		018F4511	
208 – 240		60	9.5		018F4511	
240		50				
	24	–		20		018F6968

Cable plug, IP65 enclosure



To use with all BQ and BN coils	042N0156	042N0156
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Spare part kits



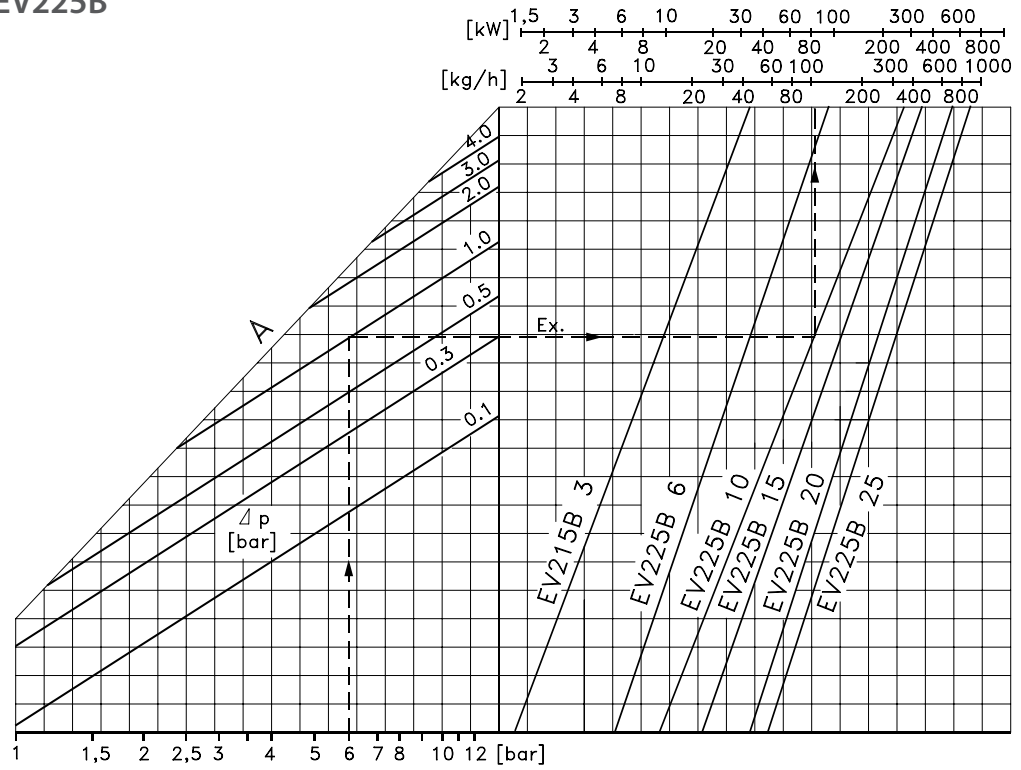
Application	Seal material	Code number
EV225B 6 - EV225B 10	PTFE	032U3171
EV225B 15	PTFE	032U3172
EV225B 20 - EV225B 25	PTFE	032U3173

Capacity diagram for EV225B

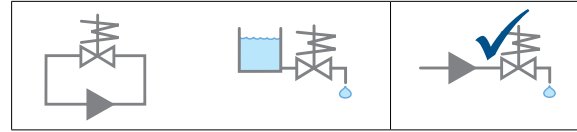
Example, steam:

Capacity for EV225 10 BD; inlet pressure (p_1) of 6 bar absolute; differential pressure at 1 bar:

Approx. 100 kg/h / 80 kW



EV260B servo-operated 2-way proportional solenoid valves



-		+
-		+
-		+

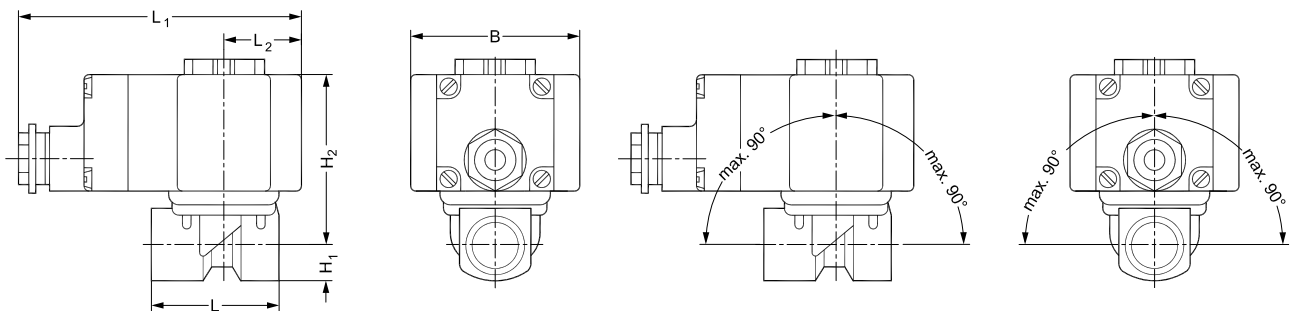
EV260B is a proportional (modulating) servo-operated 2-way solenoid valve program with connections from 1/4" to 3/4". Through stepless regulation of the coil current, the armature can be placed in any position in the armature tube, thus setting the valve to any position between completely closed and completely open.

The valve is fully open when the coil current has reached its maximum value.

- Proportional (modulating)
- For stepless flow regulation
- 2-way
- Servo-operated

- DN 6 - DN 20
- Ambient temperature: 50 °C
- Short reaction time
- Linear characteristic throughout the regulation range
- Closes on power failure (fail-safe function)
- IP67 coil enclosure
- 24 V d.c. supply voltage
- This product is only applicable for liquids
- Nominal pressure from PN 10
- Wetted parts: brass, stainless steel, PTFE, CR, NBR or FKM rubber

Dimensions, weight and mounting angle:



Type / orifice size	L [mm]	L ₁ [mm]	L ₂ [mm]	H ₁ [mm]	H ₂ [mm]	B [mm]	Weight without signal converter [kg]	Weight with signal converter [kg]
EV260B 6	62	112 ¹⁾	30	13	71	68	1.02	1.22
EV260B 10	62	112 ¹⁾	30	13	71	68	1.02	1.22
EV260B 15	81	112 ¹⁾	30	15	74	68	1.17	1.37
EV260B 20	98	112 ¹⁾	30	18	79	68	1.71	1.91

1) With the BM and the BL coil the measurement is 128 mm

EV260B proportional valve, brass, NC



Type	Connection	Kv [m³/h]	Seal material	Medium water [°C]	Differential pressure [bar]	Code number
EV260B 6	G ¼	0.8	PTFE	-10 – 80	0.5 – 10	032U8052
EV260B 6	G ¾	0.8	PTFE	-10 – 80	0.5 – 10	032U8053
EV260B 10	G ¾	1.3	PTFE	-10 – 80	0.5 – 10	032U8054
EV260B 10	G ½	1.3	PTFE	-10 – 80	0.5 – 10	032U8055
EV260B 15	G ½	2.1	PTFE	-10 – 80	0.5 – 10	032U8056
EV260B 20	G ¾	5	PTFE	-10 – 80	0.5 – 10	032U8057

Coils for EV260B



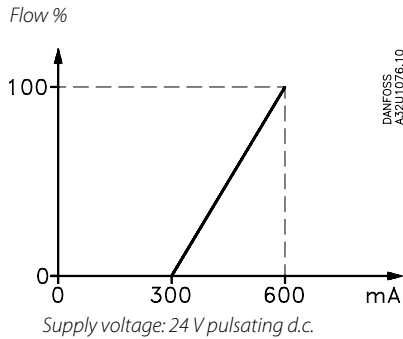
Voltage [d.c.]	BK coil 300-600 mA 018Z6987 IP67 terminal box fitted as standard	BM coil 0-10 V 018Z0290 IP67 terminal box fitted as standard	BL coil 4-20 mA 018Z0291 IP67 terminal box fitted as standard
24			

Spare part kits for EV260B

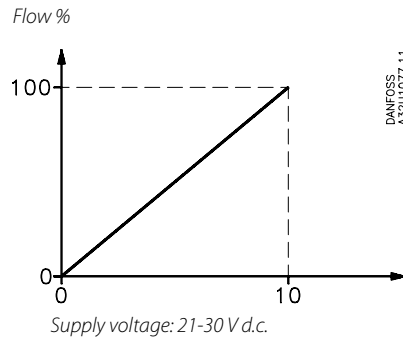


Application	Seal material	Code number
EV260B 6	PTFE	032U8039
EV260B 10	PTFE	032U8040
EV260B 15	PTFE	032U8041
EV260B 20	PTFE	032U8042

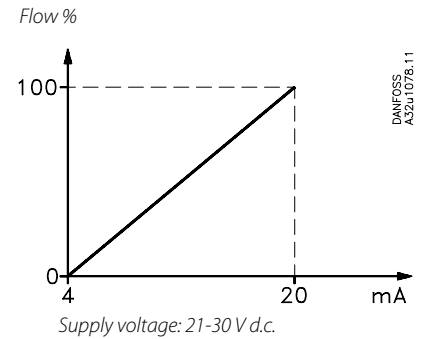
Signal flow characteristics for EV260B



Coil type BK. Without signal converter
The basic version consists of a valve with a coil for pulsating direct current. The supply voltage of 24V d.c. can be established with full-wave rectified alternating current. The valve begins to open at a coil current of approx. 300 mA and is fully open at a coil current of approx. 600 mA. The ration between coil current and flow between the two outer points is directly proportional.



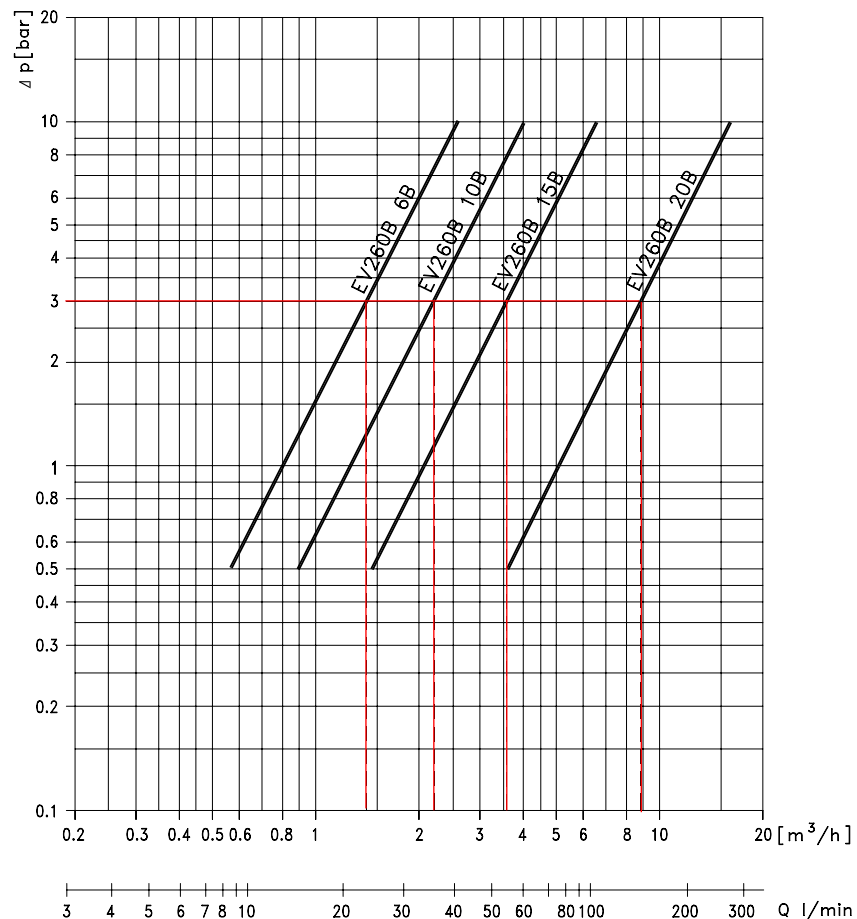
Coil type BM. With signal converter and 0-10 V pilot signal.
The ration between pilot signal and flow is directly proportional throughout the regulation range.



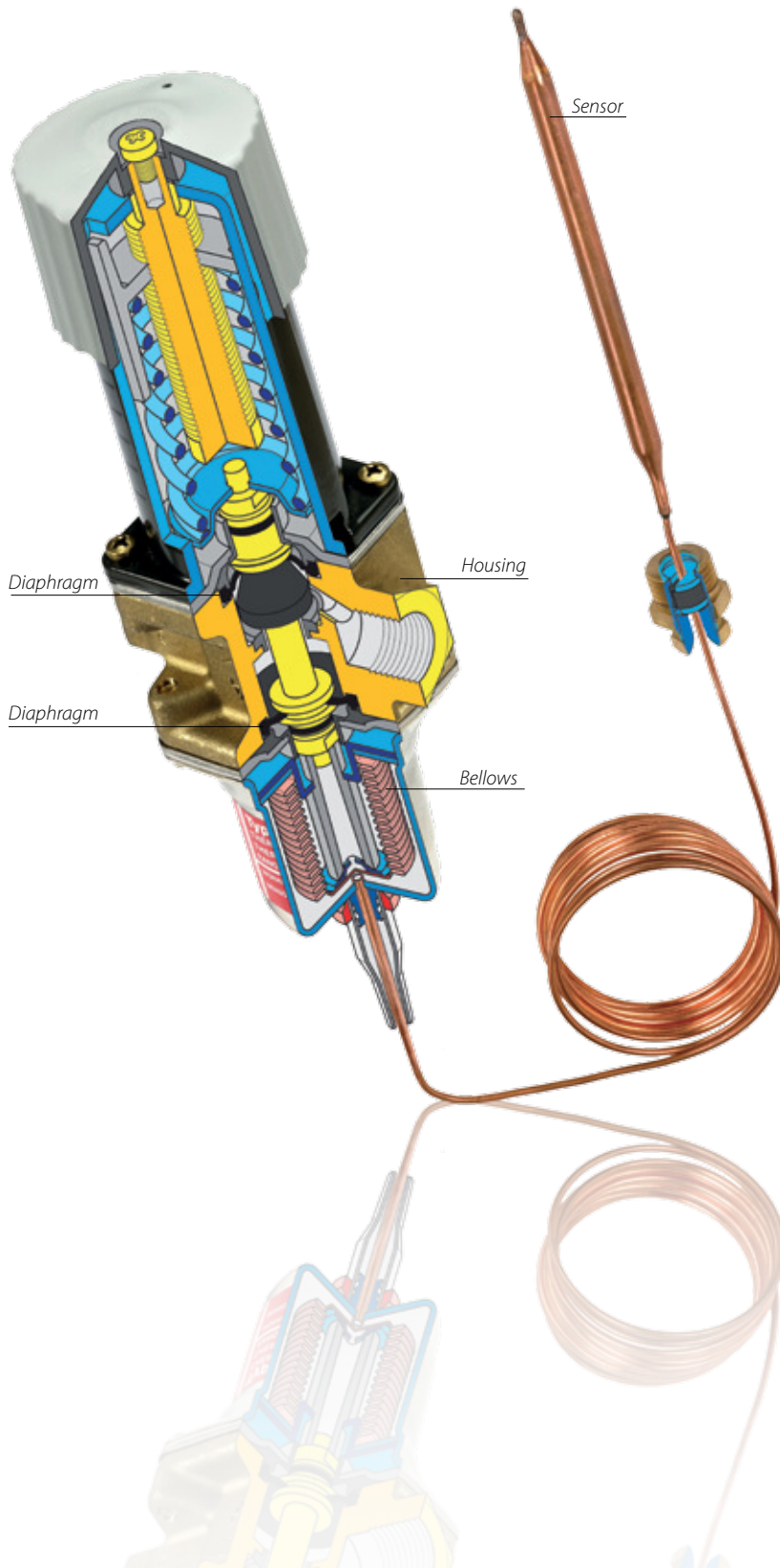
Coil type BL. With signal converter and 4-20 mA pilot signal.
The ration between pilot signal and flow is directly proportional throughout the regulation range.

Capacity diagram for EV260B

For water at fully opened valve
Example: Differential pressure of 3 bar:
EV260B 6 B: Appr. 1.4 m³/h
EV260B 10 B: Appr. 2.2 m³/h
EV260B 15 B: Appr. 3.6 m³/h
EV260B 20 B: Appr. 8.7 m³/h



The 'fit and forget' AVTA thermostatic valve



A self-acting thermostatic valve, the AVTA controls the temperature in cooling water applications. Often referred to as the 'fit and forget' valve due to its proven reliability, the AVTA is easy to install and functions without electrical power.

Self-acting - no electricity required

The AVTA does not require electricity to function because a temperature-dependent pressurised charge or vapour charge provides accurate flow control based on the sensor temperature. And because it needs no power supply, it keeps working as long as the coolant is pressurised.

Exact temperature control

Designed for low hysteresis, the hermetically-sealed thermostatic element consists of a cylindrical sensor connected to a bellows with a capillary tube.

Dirt resistant

The force-balanced design prevents particles from adhering to the large valve opening. But if dirt does become lodged in the valve, the sensor simply detects that more cooling water is needed and the valve opens wider to allow more water to pass and dislodge the particles.

Insensitive to pressure

Pressure equalising diaphragms ensure reliable function across the entire pressure range – from zero to ten bar pressure – by balancing the forces on the bellows and setting sections. And with reinforced EPDM diaphragms, the valve can take up to 25 bar pressure.

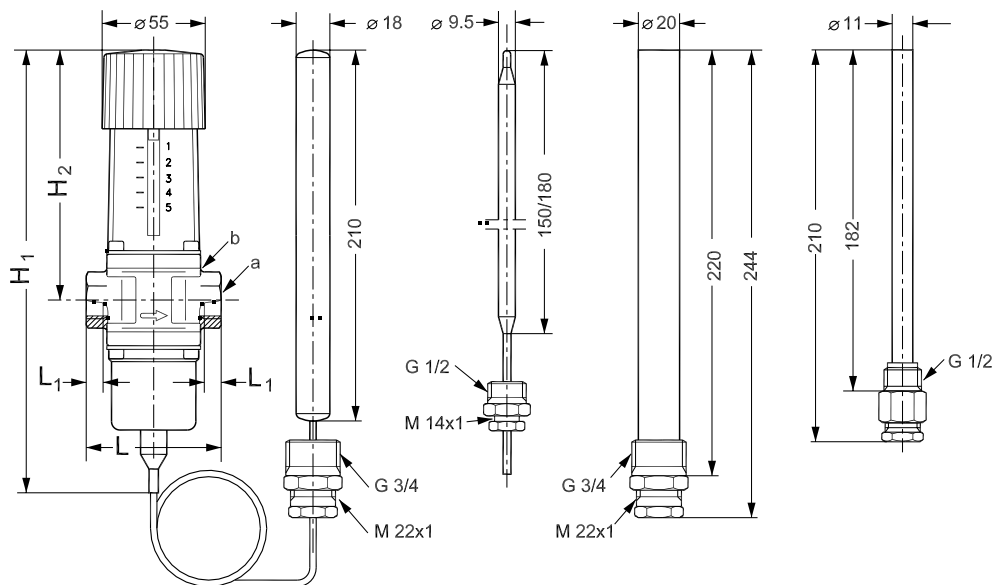
AVTA thermostatic valves for industrial cooling applications



AVTA thermostatic valves are widely used for temperature control in many different sorts of equipment and installations where cooling is required.

- Self-acting thermostatic valves for accurate cooling flow control based on sensor temperature
- Capillary sensor with adsorption charge, mass charge or universal charge, depending on application
- Open on rising temperature
- Brass or stainless steel valve body
- For extremely aggressive media, also available in titanium (please contact Danfoss)

Dimensions, weight and mounting angle:



All dimensions in millimetres

Brass Type	H ₁ [mm]	H ₂ [mm]	L [mm]	L ₁ [mm]	a	b [mm]	Weight [kg]
AVTA 10	240	133	72	14	G 3/8	27	1.45
AVTA 15	240	133	72	14	G 1/2	27	1.45
AVTA 20	240	133	90	16	G 3/4	32	1.50
AVTA 25	240	138	95	19	G 1	41	1.65

AVTA thermostatic valve

Adsorption charge. Brass valve body

Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	Kv [m³/h]	Sensor dimensions Ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 10	G 3/8	10 – 80	130	1.4	9.5 x 150	2.3	003N1144
AVTA 15	G 1/2	10 – 80	130	1.9	9.5 x 150	2.3	003N0107
AVTA 20	G 3/4	10 – 80	130	3.4	9.5 x 150	2.3	003N0108
AVTA 25	G 1	10 – 80	130	5.5	9.5 x 150	2.3	003N0109



Universal charge. Brass valve body

Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	Kv [m³/h]	Sensor dimensions Ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 10	G 3/8	0 – 30	57	1.4	18 x 210	2	003N1132
AVTA 15	G 1/2	0 – 30	57	1.9	18 x 210	2	003N2132
AVTA 20	G 3/4	0 – 30	57	3.4	18 x 210	2	003N3132
AVTA 25	G 1	0 – 30	57	5.5	18 x 210	2	003N4132
AVTA 10	G 3/8	25 – 65	90	1.4	18 x 210	2	003N1162
AVTA 15	G 1/2	25 – 65	90	1.9	18 x 210	2	003N2162
AVTA 20	G 3/4	25 – 65	90	3.4	18 x 210	2	003N3162
AVTA 25	G 1	25 – 65	90	5.5	18 x 210	2	003N4162
AVTA 10	G 3/8	50 – 90	125	1.4	18 x 210	2	003N1182
AVTA 15	G 1/2	50 – 90	125	1.9	18 x 210	2	003N2182
AVTA 20	G 3/4	50 – 90	125	3.4	18 x 210	2	003N3182
AVTA 25	G 1	50 – 90	125	5.5	18 x 210	2	003N4182



Mass charge. Brass valve body

Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	Kv [m³/h]	Sensor dimensions Ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 15	G 1/2	0 – 30	57	1.9	9.5 x 180	2	003N0042
AVTA 20	G 3/4	0 – 30	57	3.4	9.5 x 180	2	003N0043
AVTA 15	G 1/2	25 – 65	90	1.9	9.5 x 180	2	003N0045
AVTA 20	G 3/4	25 – 65	90	3.4	9.5 x 180	2	003N0046
AVTA 25	G 1	25 – 65	90	5.5	9.5 x 180	2	003N0047



Adsorption charge. Stainless steel valve body

Type	Connection	Temperature setting range [°C]	Max sensor temperature [°C]	Kv [m³/h]	Sensor dimensions Ø x L [mm]	Capillary tube, length [m]	Code number
AVTA 15	G 1/2	10 – 80	130	1.9	9.5 x 150	2.3	003N2150
AVTA 20	G 3/4	10 – 80	130	3.4	9.5 x 150	2.3	003N3150
AVTA 25	G 1	10 – 80	130	5.5	9.5 x 150	2.3	003N4150



For all types: Media temperature range: -25 – 130 °C.

For higher Kv values (larger capacities) and other requirements please contact Danfoss.

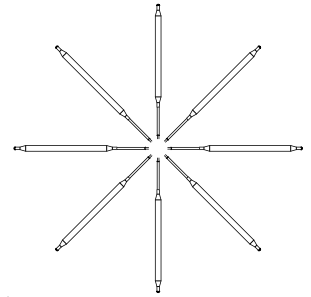
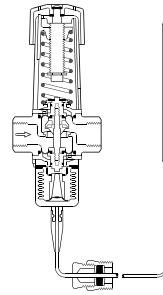
Ask Danfoss or your local wholesaler if larger size than G1 is needed

Charges

Adsorption charge

The charge consists of active carbon and CO_2 which is adsorbed on falling sensor temperature and thereby produce pressure changes in the element.

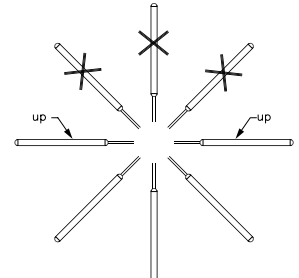
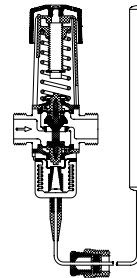
The sensor can be installed in any position as far as orientation and temperature are concerned.



Universal charge

The charge is a mix of liquid and gas where the liquid surface (sensing point) is always inside the sensor.

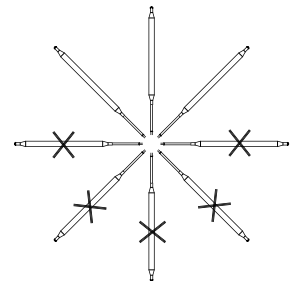
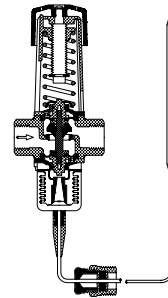
The sensor can be installed colder or warmer than the valve, and oriented as shown.



Mass charge

The charge is a mix of liquid and gas.

Due to the volumetric conditions the sensor must be installed warmer than the valve, since the liquid surface (sensing point) must be in the sensor. Orientation as shown.



Spare parts and accessories for AVTA

Service sensor elements



Sensor size Ø x L [mm]	Cap. tube length [m]	Charge			Temperature range [°C]	Code number
		Adsorption	Universal	Mass		
18 x 210	2		✓		0 – 30	003N0075
18 x 210	2		✓		25 – 65	003N0078
18 x 210	2		✓		50 – 90	003N0062
9.5 x 180	2			✓	25 – 65	003N0091
9.5 x 150	2.3	✓			10 – 80	003N0278

Sensor pockets



Sensor size Ø x L [mm]	Connection standard	Connection size [inch]	Sensor pocket insertion [mm]	Pocket material		Code number
				Brass	Stainless steel	
9.5x180 / 9.5x150	ISO 228-1	½	182	✓		017-436766
9.5x180 / 9.5x150	ISO 7-1	½	182		✓	003N0196
18x210	ISO 228-1	¾	220	✓		003N0050
18x210	ISO 7-1	¾	220		✓	003N0192

Capillary tube glands



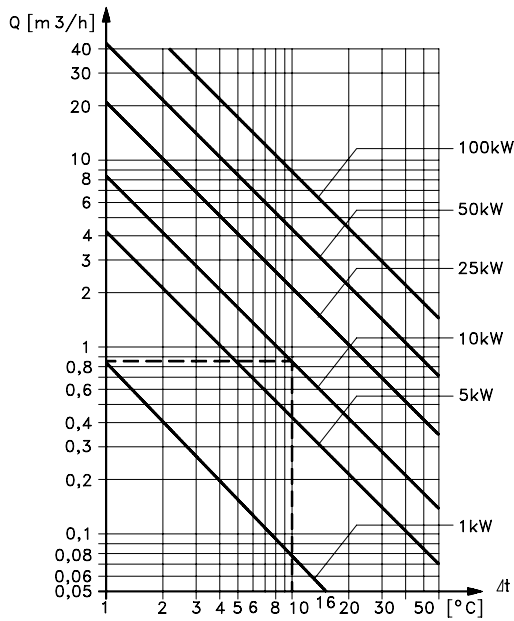
Sensor size Ø x L [mm]	Connection standard	Connection size [inch]	Material	Charge		Code number
				Adsorption / Mass	Universal	
9.5x180 / 9.5x150	ISO 228-1	G ½	Brass	✓		017-422066
18x210	ISO 228-1	G ¾	Brass		✓	003N0155

Bracket



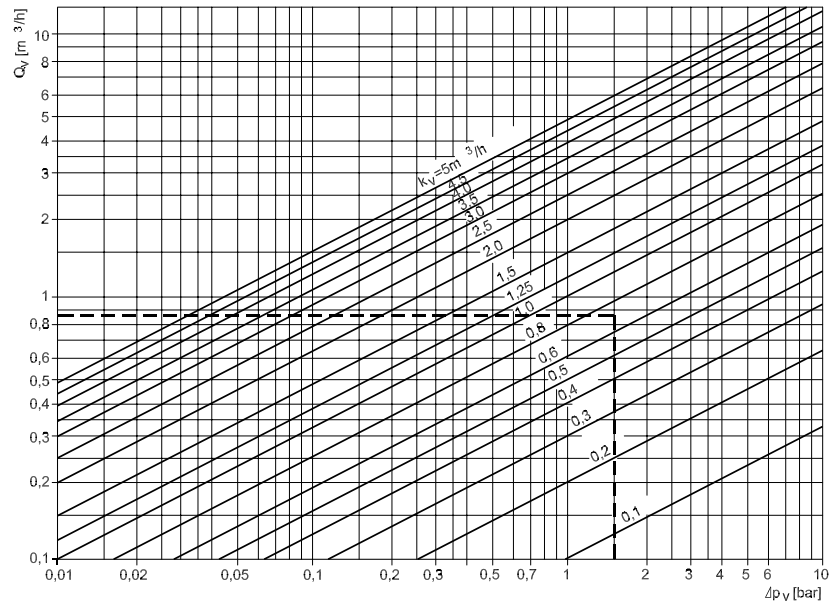
Type	Material	Code number
Bracket	Zinc plated steel	003N0388

AVTA thermostatic valve - sizing



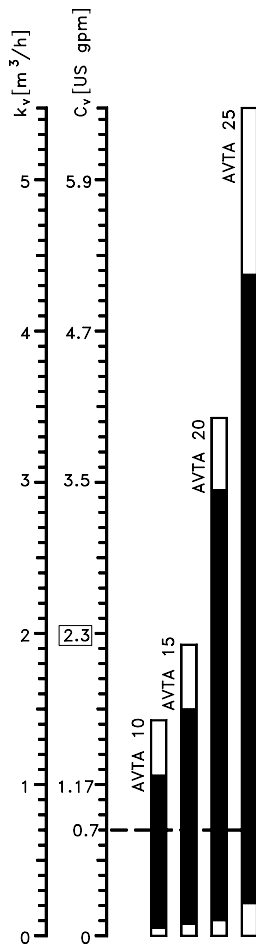
Heating or cooling with water.

Example: Necessary cooling output 10 kW with $\Delta t = 10^\circ\text{C}$.
Required flow 0.85 m^3/h .



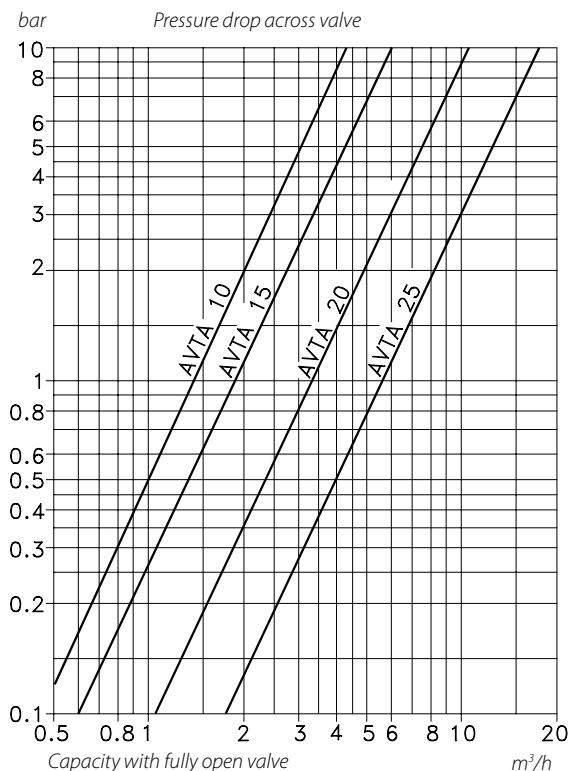
Relation between water quantity and pressure drop across valve.

Example: Flow 0.85 m^3/h with a pressure drop of 1.5 bar.
The K_v value becomes 0.7 m^3/h .



Nomogram showing the valve K_v range.
 K_v values are always given for water flow in m^3/h with a pressure drop Δp of 1 bar.
The valve should be selected so that the necessary K_v value lies in the middle of the regulation range.
Example: AVTA 10 and 15 are the most suitable for a K_v value of 0.7

Valve flow quantity in fully open position, as a function of pressure drop Δp .
With fully open valve the differential pressure should be around 50% of the total pressure drop across the cooling system.



AV210 externally operated valve for high capacity applications

The AV210 can operate at very high medium temperatures and viscosities, and can withstand dirt particles in the medium.

Wide temperature range

Known as the 'trouble-shooter', the AV210 is made from FKM, PTFE, and gun metal (RG5/bronze) or stainless steel (AISI 316), so it can withstand temperatures as low as -30 °C and as high as 180 °C.

Dirt resistant

Mounted on a spindle, the resilient internal valve seat is made of AISI 316, a high grade corrosion-resistant stainless steel. And the PTFE valve plate gives excellent resistance to dirt particles in the medium.

Insensitive to media pressure and viscosity

Made for air, neutral gases and fresh water applications, the valve is designed to operate with media viscosities up to 400cSt and 10 bar pressure – and it is not affected by low flow rates or pressure loss across the opening.

Tight fit even at high differential pressures

As the valve seat is pressurised at the valve opening, the standard AV210 valve closes against the flow. When closed the spindle is not exposed to the medium, significantly reducing water hammer. The AV210 can also close with the flow if required.

High capacity

For optimum capacity, the special control head design and high closing spring allows the valve plate to lift higher than the usual 25 percent of the valve diameter.

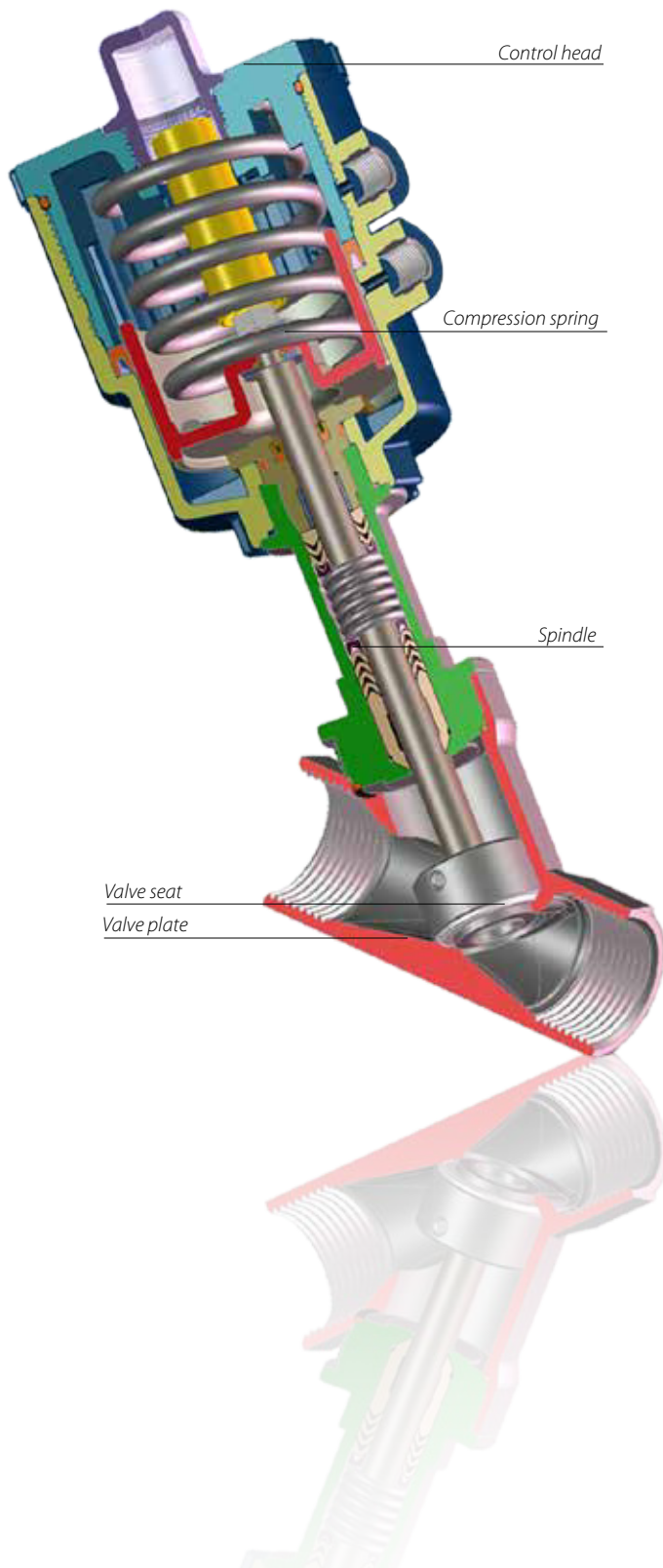
Modular design

Available in five sizes, it is easy to find an AV210 to suit your size and pressure range requirements.

Accessories

For even higher performance and versatility, the AV210 can be fitted with the following accessories:

- Manual override
- Flow limiters
- Valve position indicators



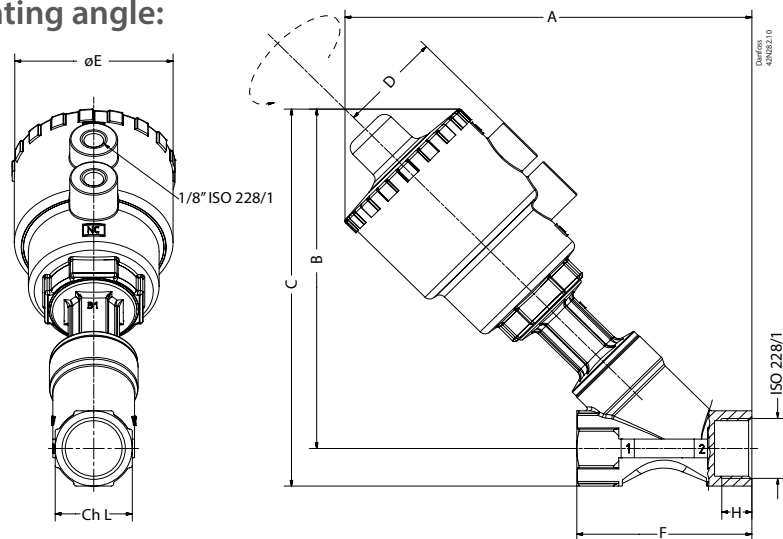
AV210 externally operated valves



AV210 is an externally operated valve for use in demanding industrial applications. The valve can operate at very high medium temperatures and viscosities, and is insensitive to dirt particles in the medium; thus, it is often called a "trouble-shooter" valve. The valve is available in gun metal (RG5/bronze) and stainless steel (AISI316).

- High capacity basic program
- 2/2-way
- Angle-seated piston
- NC version: Both closing against and withflow direction
- NO version: Closing against the flow direction
- Bronze or stainless steel valve body
- Danfoss recommends a EV310A as pilot solenoid valve

Dimensions, weight and mounting angle:



Stainless Steel / Bronze RG5

Type / orifice size	Connec- tion ISO 228/1	Diameter control head [mm]	A [mm]	B [mm]	C [mm]	D [mm]	ØE [mm]	F [mm]	H [mm]	ch.L [mm]	Weight [kg]
15	G 3/8	40	190/144	156/121	169/134	44/35	70/61	85/65	12/12	25/27	1.1
15	G 3/8	50	-/163	-/140	-/153	-/44	-/70	-/65	-/12	-/27	1.1
15	G 1/2	40	-/144	-/121	-/134	-/35	-/61	-/65	-/13	-/27	1
15	G 1/2	50	190/163	156/140	169/153	44/44	70/70	85/65	15/13	25/27	1
20	G 3/4	50	195/173	160/147	176/163	44/44	70/70	95/75	16.3/14.3	31/27.5	1.2
20	G 3/4	63	213/191	178/165	194.4/181	50.5/50.5	84.4/84.4	95/75	16.3/14.3	31/27.5	1.2
25	G 1	63	219/206	182/176	202/196	50.5/50.5	84.4/84.4	105/90	19.5/17.5	38/41	1.6
25	G 1	90	259/246	222/216	242/236	66.2/66.2	116.4/116.4	105/90	19.5/17.5	38/41	1.7
32	G 1 1/4	90	266/255	226/220	249/245	66.2/66.2	116.4/116.4	120/110	19/19	47/50	3
40	G 1 1/2	90	271/270	230/235	258/264	66.2/66.2	116.4/116.4	130/120	18/18	54/58	3.4
40	G 1 1/2	110	307/306	266/271	294/300	77.4/77.4	140.6/140.6	130/120	18/18	54/58	4
50	G 2	110	321/316	276/276	310/311	77.4/77.4	140.6/140.6	150/150	20/20	66/70	5.3

AV210 externally operated valves, PTFE seal material, NC

Closing against flow recommended



Type	Connection	Kv [m ³ /h]	Body material		Differential pressure [bar]	Control pressure [bar]	Control head diameter Ø [mm]	Code number
			Bronze RG5	Stainless steel				
AV210A 15	G 3/8	4.5	✓		0 – 16	4.2 – 10	40	042N4400
AV210B 15	G 3/8	4.9	✓		0 – 16	4 – 10	50	042N4401
AV210B 15	G 3/8	4.9		✓	0 – 16	4 – 10	50	042N4450
AV210A 15	G 1/2	5.3	✓		0 – 16	4.2 – 10	40	042N4402
AV210B 15	G 1/2	5.7	✓		0 – 16	4 – 10	50	042N4403
AV210B 15	G 1/2	5.7		✓	0 – 16	4 – 10	50	042N4451
AV210B 20	G 3/4	10	✓		0 – 10	4 – 10	50	042N4404
AV210B 20	G 3/4	10		✓	0 – 10	4 – 10	50	042N4452
AV210C 20	G 3/4	10		✓	0 – 16	4 – 10	63	042N4453
AV210C 25	G 1	20	✓		0 – 11	4 – 10	63	042N4406
AV210D 25	G 1	20	✓		0 – 16	4 – 8	90	042N4407
AV210C 25	G 1	20		✓	0 – 11	4 – 10	63	042N4454
AV210D 25	G 1	20		✓	0 – 16	4 – 8	90	042N4455
AV210D 32	G 1 1/4	29	✓		0 – 14	4 – 8	90	042N4408
AV210D 32	G 1 1/4	29		✓	0 – 14	4 – 8	90	042N4456
AV210D 40	G 1 1/2	46	✓		0 – 11	4 – 8	90	042N4409
AV210D 40	G 1 1/2	46		✓	0 – 11	4 – 8	90	042N4457
AV210E 50	G 2	67	✓		0 – 10	4 – 8	110	042N4411
AV210E 50	G 2	67		✓	0 – 10	4 – 8	110	042N4459

AV210 externally operated valves, PTFE seal material, NO

Closing against flow recommended



Type	Connection	Kv [m ³ /h]	Body material		Differential pressure [bar]	Control pressure [bar]	Control head diameter Ø [mm]	Code number
			Bronze RG5	Stainless steel				
AV210B 15	G 3/8	4.9	✓		0 – 16	5 – 10	50	042N4430
AV210B 15	G 3/8	4.9		✓	0 – 16	5 – 10	50	042N4480
AV210B 15	G 1/2	5.7	✓		0 – 16	5 – 10	50	042N4431
AV210B 15	G 1/2	5.7		✓	0 – 16	5 – 10	50	042N4481
AV210B 20	G 3/4	10	✓		0 – 16	5 – 10	50	042N4432
AV210B 20	G 3/4	10		✓	0 – 16	5 – 10	50	042N4482
AV210C 25	G 1	20	✓		0 – 16	5 – 10	63	042N4433
AV210C 25	G 1	20		✓	0 – 16	5 – 10	63	042N4483
AV210C 32	G 1 1/4	29		✓	0 – 16	6 – 10	63	042N4484
AV210D 40	G 1 1/2	46	✓		0 – 16	5 – 10	90	042N4435
AV210D 40	G 1 1/2	46		✓	0 – 16	5 – 10	90	042N4485
AV210E 50	G 2	67	✓		0 – 16	5 – 10	110	042N4436
AV210E 50	G 2	67		✓	0 – 16	5 – 10	110	042N4486

* in case control pressure is reduced below 5 or 6 bar max. differential pressure will be reduced accordingly.



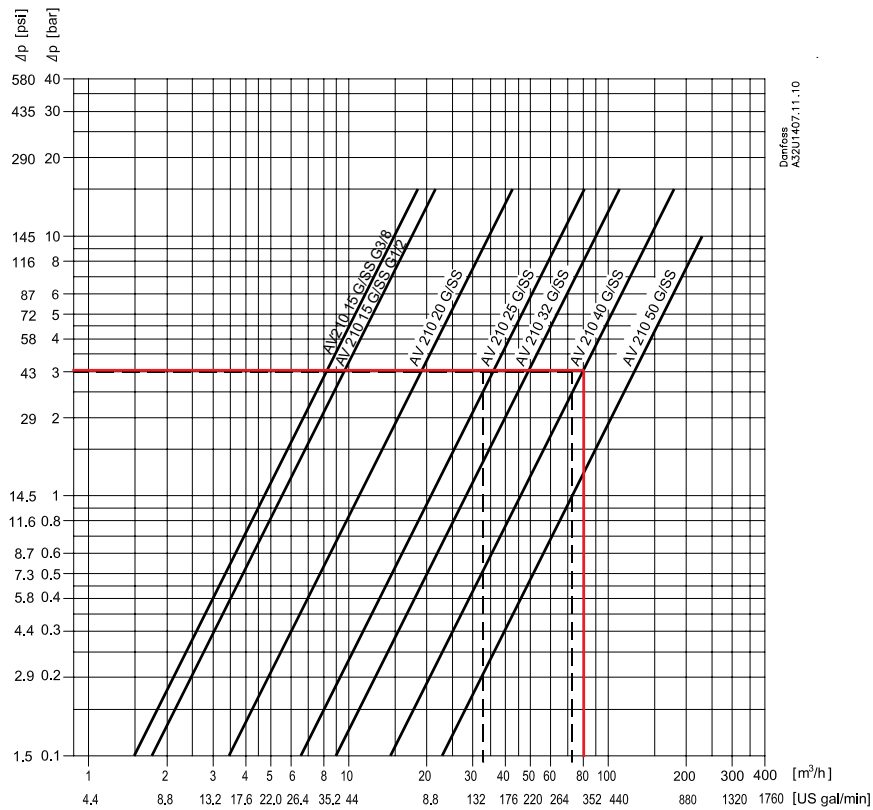
AV210 externally operated valves - accessories & spare parts

Position indicators. Voltage: Max 5A 250 V a.c. / 1A 250 V d.c.

Enclosure	Control head diameter Ø [mm]	Code number
IP65	50	042N4820
IP65	63	042N4821
IP65	90	042N4822
IP65	110	042N4823

Capacity diagram, water

Example for water:
Capacity for AV 210 40 at
differential pressure of 3 bar:
Approx 80 m³/h





Safety application - tilt control - mobile hydraulic

An MBS 3050 pressure transmitter controls the pressure circuit. Its integrated pulse-snubber ensures reliable operation despite cavitation, liquid hammer or pressure peaks



Pressure transmitters

Industries

Serving a broad, global market within diverse and demanding industries, Industrial Automation is your one-stop partner for industrial control components. Through Danfoss Industrial Automation you gain access to the entire Danfoss pool of technology for a wide range of industries.

HYDRAULICS

In a world depending on infrastructure, mobile hydraulic equipment is key to making modern living possible for an ever growing population. Whether used in construction, agriculture or for material handling, mobile hydraulics equipment offers efficiency, economy, safety and environmental advantages.

MARINE

From the handling of sewage water to the treatment of exhaust gasses: A modern ship contains most of the applications found on shore, albeit in a limited space. Danfoss Industrial Automation is a global leader in supplying pressure transmitters to equipment placed in and around the engine room: 2 and 4 stroke diesel and gas engines, propulsion systems, fuel treatment, oil separators among others.

AIR COMPRESSORS

Spanning from very small units for medical use to very large industrial compressors operating in the kilowatt power band, the air compressor industry covers a huge range of equipment. Equally varied are the fundamental compressor technologies used.

PUMPS

The global need for clean water is enormous and on the rise, calling for a dedicated common effort to control the water cycle. Danfoss is well prepared to contribute to such endeavors. To us, the pump is the key to controlling the water cycle – from intake to effluent. Consequently, we have developed a range of sensors and switches for pumps, tailored for the most common applications in the water industry.

Pressure transmitters

in this catalogue



Type	Standard	MBS 3000	MBS 3200	MBS 3100	MBS1900
	Pulse-snubber	MBS 3050	MBS 3250	MBS 3150	
Industries	Transportation				
	Heating and sanitation				
	Machine and equipment				
	Energy				
Characteristics	Sensor technology	Piezo resistive	Piezo resistive	Piezo resistive	Piezo resistive
	Accuracy FS (typ)	± 0.5%	± 0.5%	± 0.5%	± 1%
	Max. measuring range	600 bar 9,000 psi	600 bar 9,000 psi	600 bar 9,000 psi	25 bar 362 psi
	Output signal	4 – 20 mA and absolute voltage	4 – 20 mA and absolute voltage	4 – 20 mA	4 – 20 mA Ratiometric
	Medium temperature	-40 – 85 °C -40 – 185 °F 	-40 – 125 °C -40 – 257 °F 	-40 – 85 °C -40 – 185 °F 	0 – 80 °C 32 – 176 °F
	Enclosure IP	IP65 IP67	IP65 IP67	IP65 IP67	IP65
	Wetted parts material	AISI 316L	AISI 316L	AISI 316L	AISI 304/AISI 316
	Housing material	AISI 316L, PA 6.6	AISI 316L, PA 6.6	AISI 316L, PA 6.6	AISI 316L
	Zero point and span adjustment				
	Marine approvals			•	
	ATEX approvals	Zone 2	Zone 2	Zone 2	UL
	UL HazLoc	Class 1, Div. 2	Class 1, Div. 2	Class 1, Div. 2	



Railways and marine



Industrial hydraulics, air compressors, water pumps and industrial engines



Electric power and wind turbines



Boiler and boiler room equipment, sterilisers and autoclaves, mobile hydraulic

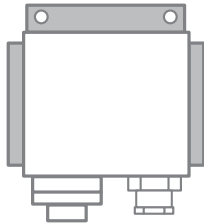
      							
MBS1200 MBS1250		MBS1300 MBS1350		MBS 5100 MBS 5150		MBS 4510 MBS 9200 MBS 9300 EMP 2	
						  	
 							
							
							
Thin film		Thin film		Piezo resistive		Piezo resistive	
± 0.5%		± 0.5%		± 0.3%		± 0.5%	
2200 bar 32000 psi		2200 bar 32000 psi		600 bar 9,000 psi		25 bar 360 psi	
4 – 20 mA Voltage Ratiometric				4 – 20 mA		4 – 20 mA 4 – 20 mA	
-40 – 125 °C -40 – 257 °F		-40 – 125 °C -40 – 257 °F		-40 – 85 °C -40 – 185 °F		-10 – 85 °C 14 – 185 °F	
IP67		IP67		IP65 IP67		IP65 IP67	
17-4PH		17-4PH		AISI 316L		AISI 316L	
AISI 304 or plastic		AISI 304 or plastic		AISI 316L, PA 6.6		AISI 316L, PA 6.6	
				•		•	
				•		•	
				Zone 2		Zone 2	
				Class 1, Div. 2		Class 1, Div. 2	

Sensor packages designed for customer needs

The extent of automation in both mobile and stationary applications has over the past decade increased dramatically and the demand for sensors and controls has increased accordingly.

Danfoss has followed this development closely, and as a result we now have a programme of products perfectly aligned to our customer's needs.

Box transmitter



Often used in applications requiring robust performance and enclosures. The Danfoss Box solution has been on the market for more than 30 years. It is still widely used within the marine sector.

Block transmitter



Used in applications where space has become an issue. The Danfoss "Block" design is more compact compared to the traditional "Box" design. Where a combination of sensor and valve is needed, Danfoss also offers the "Block" valve - MBV.

Cartridge transmitter



The cartridge transmitter can be mounted directly to the customer's system at the point of measurement, even where there is very little space. This eliminates the need for extra piping and joints.

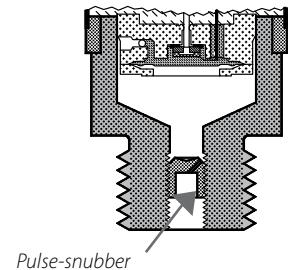
Cartridge transmitter with flush diaphragm



Often used in applications where measurement have to be made on highly viscous or slurry media. The front mounted diaphragm prevents blocking of the pressure port.

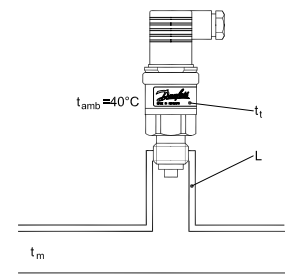
Pulse-snubber

In applications where there is a risk of liquid hammering and cavitation it is recommended to select a transmitter with an integral pulse-snubber. The Danfoss pressure transmitters with a pulse-snubber are indicated with a "5" in the third type digit (example: MBS 1750).



Temperature influence

Media temperature (t_m) [°C]	Heat isolator (L) [cm]	Transmitter temperature (t_t) [°C]
120	2	85
	5	75
	10	70
100	2	75
	5	65
	10	60



MBS transmitter made from expert know-how

A typical pressure transmitter has three general functional elements:

- The electronics
- The sensing element
- The packaging

It is the solution of each of these elements and the combination that determines the performance of the products. All Danfoss pressure transmitters are certified according to ISO 9001 and ISO 14001.

A variety of electrical connections available

1 Electronics

Danfoss MBS pressure transmitters are available with analogue electronic solutions and offer unique specifications in terms of:

- Accuracy
- Temperature range coverage
- EMI/RFI protection

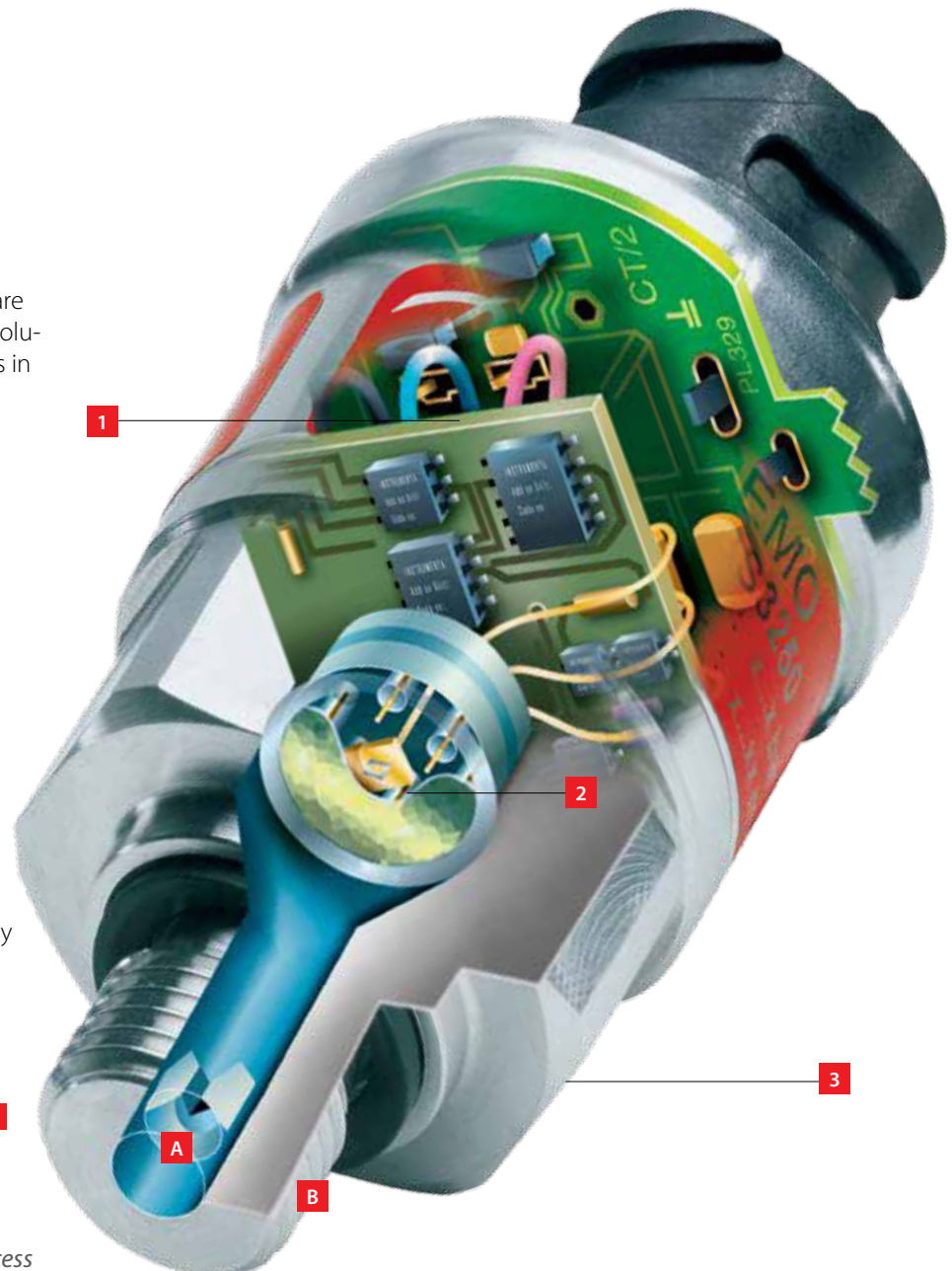
2 Sensing element

- Piezoresistive semi-conductor technology covering pressure ranges from 0 – 600 bar. This technology is available in absolute or gauge versions.

3 Packaging

The transmitter design offers long-life stability through:

- High shock and vibration stability
- High enclosure grade IP67
- Pulse restriction solution which prevents liquid hammering and cavitation. (pulse-snubber) **A**
- Wetted parts that are all made from stainless steel (AISI 316L) **B**

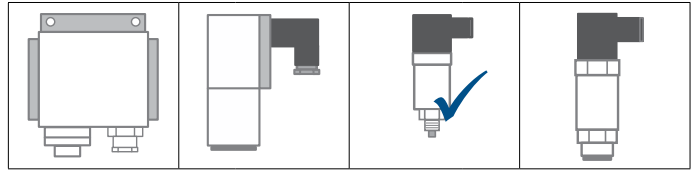


A variety of process connections available

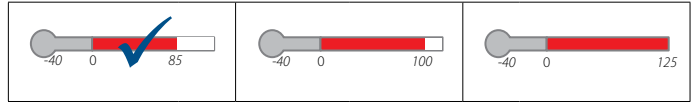
MBS 3000 compact pressure transmitter



Design



Temperature



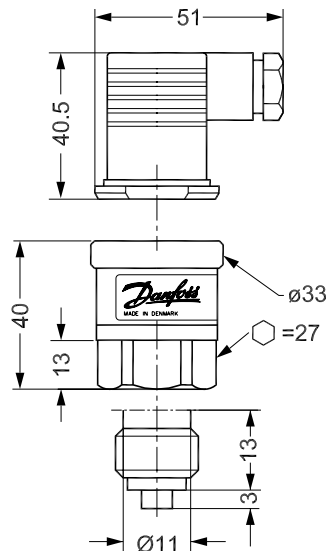
The compact pressure transmitter MBS 3000 is designed for use in almost all industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions. The flexible pressure transmitter programme covers a 4 – 20 mA output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar and a wide range of pressure- and electrical connections.

Excellent vibration stability, robust construction, and a high degree of EMC/EMI protection equip the pressure transmitter to meet the most stringent industrial requirements.

- 4 – 20 mA output signal
- Operating temperature -40 – 85 °C
- Measuring range 0 – 600 bar
- Standard pressure connection G 1/4A ISO 228/1
- For use in severe industrial environments such as pumps, compressors, pneumatics and water treatment
- Wetted parts: stainless steel (AISI 316)

Dimensions:

Weight: 0.17 kg



All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost

MBS 3000 compact pressure transmitter

Accuracy: $\pm 0.5\%$ FS (typ.)

Media temperature: $-40 - 85^{\circ}\text{C}$

Output signal: $4 - 20\text{ mA}$

Electrical connections: EN175301-803A, Pg 9

Range: Flexible, different electrical and pressure connections available



Measuring range P_e [bar] ¹⁾	Pressure connection			Output signal		Code number
	G 1/4 EN 837	G 1/4 A	M20 x 1.5	4 – 20mA	0 – 10V	
0 – 1	✓			✓		060G1113
0 – 1.6	✓			✓		060G1429
0 – 2.5	✓			✓		060G1122
0 – 4	✓			✓		060G1123
0 – 4		✓			✓	060G3812
0 – 4			✓		✓	060G3828
0 – 6	✓			✓		060G1124
0 – 6		✓			✓	060G3902
0 – 6			✓		✓	060G3829
0 – 10	✓			✓		060G1125
0 – 10		✓			✓	060G1650
0 – 10			✓		✓	060G3830
0 – 16	✓			✓		060G1133
0 – 16		✓			✓	060G3813
0 – 16			✓		✓	060G3831
0 – 25	✓			✓		060G1430
0 – 25		✓			✓	060G3814
0 – 25			✓		✓	060G3832
0 – 40	✓			✓		060G1105
0 – 40		✓			✓	060G3815
0 – 40			✓		✓	060G3833
0 – 60	✓			✓		060G1106
0 – 100	✓			✓		060G1107
0 – 160	✓			✓		060G1112
0 – 250	✓			✓		060G1111
0 – 400	✓			✓		060G1109
0 – 600	✓			✓		060G1110

¹⁾ Gauge / relative

Spare parts and accessories for MBS 3000

Plug



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, Pg 11 plug	060G0007
EN 175301-803-A, plug with 5 m cable	060G1034

Plug in display

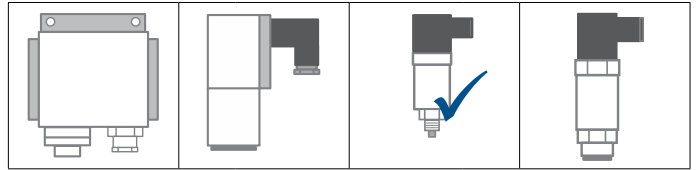


Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850

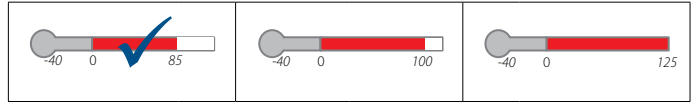
MBS 3050 compact pressure transmitters with pulse snubber



Design



Temperature



The compact heavy duty pressure transmitter MBS 3050 is designed for use in hydraulic applications with severe medium influences like cavitation, liquid hammer or pressure peaks and offers a reliable pressure measurement, even under harsh environmental conditions.

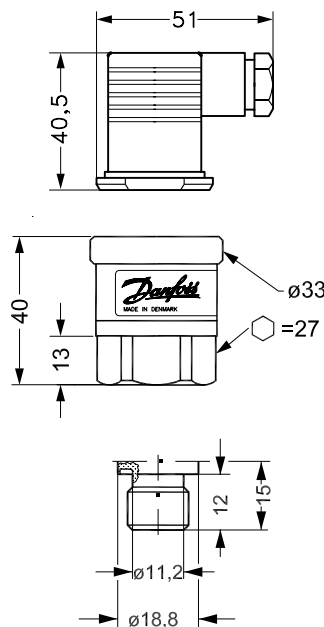
The flexible pressure transmitter programme covers a 4 – 20 mA output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar and a wide range of pressure- and electrical connections.

Excellent vibration stability, robust construction, and a high

degree of EMC/EMI protection equip the pressure transmitter to meet the most stringent industrial requirements.

- 4 – 20 mA output signal
- Operating temperature -40 – 85 °C
- Measuring range 0 – 600 bar
- Standard pressure connection DIN 3852 - G 1/4A
- With integrated pulse-snubber to protect against cavitation, liquid hammer or pressure peaks
- Especially suited for hydraulic applications
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:



Weight: 0.17 kg

All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost

MBS 3050 compact pressure transmitters with pulse-snubber

Accuracy: + / - 0.5 % FS (typ.)

Media temperature: -40 – 85 °C

Electrical connections: EN175301-803A, Pg 9

Range: Flexible, different electrical and pressure connections available



Pressure range P _e [bar] ¹⁾	Output signal		Pressure connection:		Code number
	mA	V	G ¼ DIN3852-E	G ¼ DIN3852-G Special	
0 – 250	4 – 20		✓		060G3582
0 – 400	4 – 20		✓		060G3583
0 – 250		1 – 5	✓		060G3584
0 – 400		1 – 5	✓		060G3585
0 – 250		0 – 10	✓		060G3557
0 – 400		0 – 10	✓		060G3586
0 – 60	4 – 20			✓	060G1411
0 – 100	4 – 20			✓	060G1151
0 – 250	4 – 20			✓	060G1153
0 – 400	4 – 20			✓	060G1154

¹⁾Gauge/relative

Spare parts and accessories for MBS 3050

Plug in display



Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850

Plug

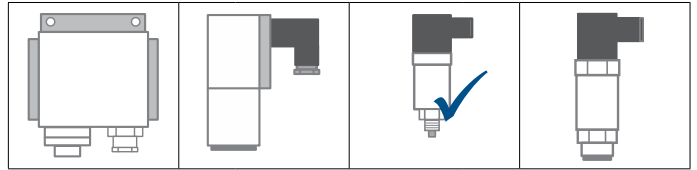


Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
En 175301-803-A, Pg 11 plug	060G0007
En 175301-803-A, plug with 5 m cable	060G1034

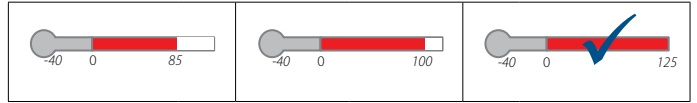
MBS 3200 compact pressure transmitters



Design



Temperature



The compact high temperature pressure transmitter MBS 3200 is designed for use in almost all industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

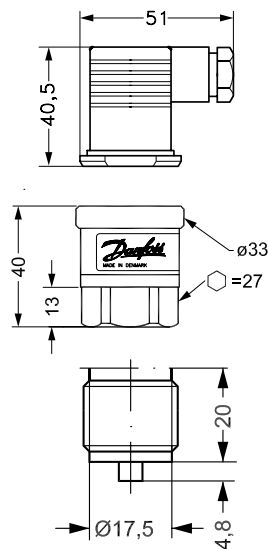
The flexible pressure transmitter programme covers 4 – 20 mA, 0 – 5 V, 1 – 5 V, 1 – 6 V and 0 – 10 V output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar and a wide range of pressure and electrical connections. Excellent vibration stability, robust construction, a high degree of EMC/EMI protection and a high operating temperature, equip

the pressure transmitter to meet the most stringent industrial requirements.

- 4 – 20 mA, 0 – 5 V, 1 – 5 V, 1 – 6 V and 0 – 10 V output signal
- Operating temperature -40 – 125 °C
- Measuring range 0 – 600 bar
- A wide range of pressure and electrical connections are available
- For use in severe industrial environments
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:

Weight: 0.17 kg



All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost

MBS 3200 compact pressure transmitters

Accuracy: +/- 0.5% FS (typ.)
Media temperature: -40 – 125 °C
Output signal: 4 – 20 mA
Electrical connections: EN175301-803A, Pg 9
Range: Flexible - different electrical and pressure connections available



Pressure range P _e [bar] ¹⁾	Pressure connection: G ½ EN 837	Code number
0 – 6	✓	060G1874
0 – 10	✓	060G1875
0 – 16	✓	060G1876
0 – 25	✓	060G1877

¹⁾ Gauge / relative

Spareparts and accessories for MBS 3200

Plug in display



Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850

Plug



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
En 175301-803-A, Pg 11 plug	060G0007
En 175301-803-A, plug with 5 m cable	060G1034

Adapters

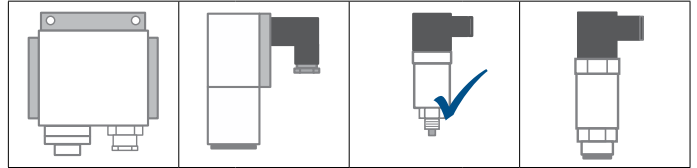


Description	Code number
G ½ female to G ¼ male	060G1021
G ½ female to G ¼ (DIN3852) male	060G1022
G ½ female to G ¾ male	060G1023
G ½ female to ¼ flare male	060G1024
G ½ with pulse-snubber	060G0252

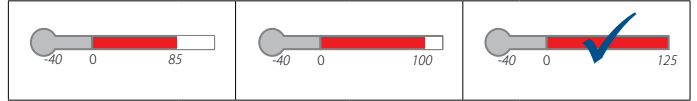
MBS 3250 compact pressure transmitters with pulse-snubber



Design



Temperature



The compact high temperature pressure transmitter MBS 3250 is designed for use in hydraulic applications with severe medium influences like cavitation, liquid hammer or pressure peaks and offers a reliable pressure measurement, even under harsh environmental conditions.

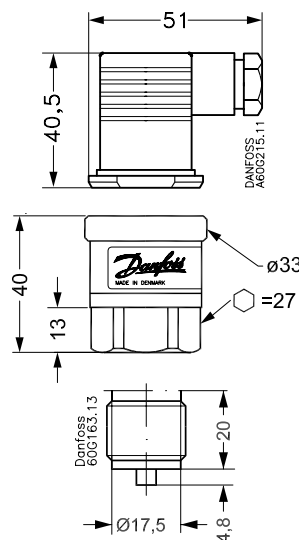
The flexible heavy duty pressure transmitter programme covers 4 – 20 mA, 0 – 5 V, 1 – 5 V, 1 – 6 V and 0 – 10V output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar and a wide range of pressure- and electrical connections.

Excellent vibration stability, uniquely robust construction, a high degree of EMC/EMI protection and a high operating temperature equip the pressure transmitter to meet the most stringent industrial and hydraulic requirements.

- 4 – 20 mA, 0 – 5 V, 1 – 5 V, 1 – 6 V and 0 – 10 V output signal
- Operating temperature -40 – 125 °C
- Measuring range 0 – 600 bar
- A wide range of pressure and electrical connections are available
- For use in severe industrial environments
- With pulse-snubber
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:

Weight: 0.17 kg



All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost

MBS 3250 pressure transmitters with pulse-snubber

Accuracy: $\pm 0.5\%$ FS (typ.)
Media temperature: $-40 - 125^{\circ}\text{C}$
Output signal: $4 - 20\text{ mA}$
Electrical connections: EN175301-803A, Pg 9
Range: Flexible - different electrical and pressure connections available



Pressure range P_e [bar] ¹⁾	Pressure connection G 1/4 DIN 3852-E	Code number
0 - 2.5	✓	060G1861
0 - 4	✓	060G1862
0 - 6	✓	060G1863
0 - 10	✓	060G1791
0 - 16	✓	060G1864
0 - 25	✓	060G1865
0 - 40	✓	060G1790
0 - 60	✓	060G1866
0 - 100	✓	060G1867
0 - 160	✓	060G1868
0 - 250	✓	060G1779
0 - 400	✓	060G1869
0 - 600	✓	060G1778

¹⁾ Gauge / relative

Spareparts and accessories for MBS 3250

Plug in display



Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850

Plug



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
En 175301-803-A, Pg 11 plug	060G0007
En 175301-803-A, plug with 5 m cable	060G1034

Adapters

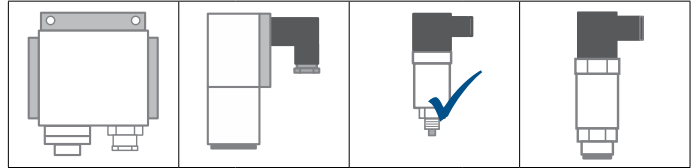


Description	Code number
G 1/2 female to G 1/4 male	060G1021
G 1/2 female to G 1/4 (DIN3852) male	060G1022
G 1/2 female to G 3/8 male	060G1023
G 1/2 female to 1/4 flare male	060G1024

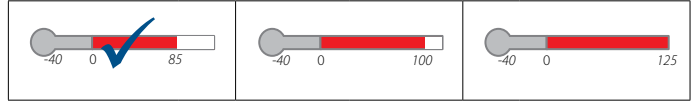
MBS 3100 compact pressure transmitter



Design



Temperature



The compact ship approved pressure transmitter MBS 3100 is designed for use in almost all marine applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

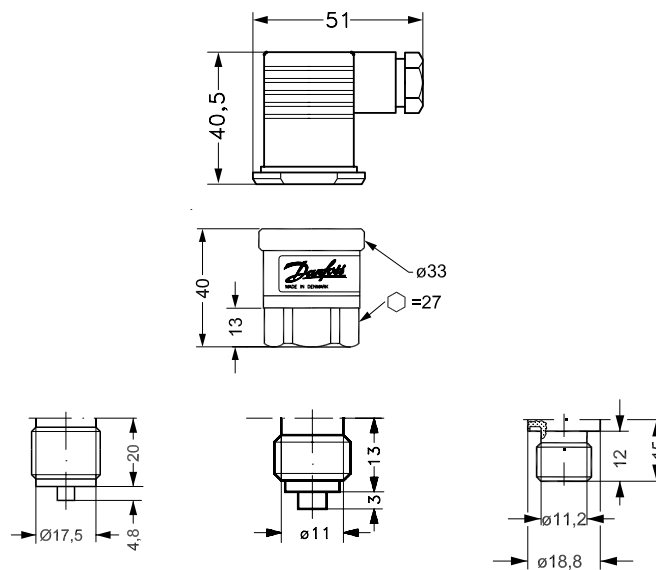
The flexible pressure transmitter programme covers a 4 – 20 mA output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar, plug and cable connections and a wide range of pressure connections.

Excellent vibration stability, robust construction, and a high degree of EMC/EMI protection equip the pressure transmitter to meet the most stringent marine requirements.

- 4 – 20 mA output signal
- Operating temperature -40 – 85 °C
- Measuring range 0 – 600 bar
- Standard pressure connection G 1/4A DIN 16288, G 1/4A, O-ring DIN 3852 G 1/2A DIN 16288
- Available with all relevant marine approvals
- Suited for marine applications
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:

Weight: 0.2 kg



All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost, LR, DNV, GL, RINA, ABS, BV, NKK, PRS, MRS, CSS

MBS 3100 compact pressure transmitter

Accuracy: +/- 0.5% FS (typ.)

Media temperature: -40 – 85 °C

Output signal: 4 – 20 mA

Electrical connections: EN 175301-803-A, Pg 11

Range: Flexible – many different electrical and pressure connections available



Measuring range P _e [bar] ¹⁾	Pressure connection			Code numbers
	G ¼ A EN 837	G ¼ A, O-ring DIN 3852	G½ A EN 837	
0 – 4	✓			060G1367
0 – 6	✓			060G1368
0 – 10	✓			060G1369
0 – 16	✓			060G1370
0 – 25	✓			060G1371
0 – 40	✓			060G1372
0 – 4		✓		060G1463
0 – 6		✓		060G1464
0 – 10		✓		060G1465
0 – 16		✓		060G1466
0 – 25		✓		060G1467
0 – 40		✓		060G1468
-1 – 1.5 ²⁾			✓	060G5600
-1 – 5 ²⁾			✓	060G5601
0 – 4			✓	060G1469
0 – 6			✓	060G1470
0 – 10			✓	060G1471
0 – 16			✓	060G1472
0 – 25			✓	060G1473
0 – 40			✓	060G3388

¹⁾ Gauge / relative

²⁾ Sealed gauge

Spare parts and accessories for MBS 3100

Plugs



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, Pg 11 plug	060G0007
EN 175301-803-A, Pg 13.5 plug	060G0005
EN 175301-803-A, plug with 5 m cable	060G1034

Adapters



Description	Code number
G ½ female to G ¼ male	060G1021
G ½ female to G ¼ (DIN 3852) male	060G1022
G ½ female to ⅜ male	060G1023
G ½ female to ¼ flare male	060G1024
G ½ female with pulse-snubber	060G0252



Plug in display

Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850



Isolating valve for pressure connection in compliance with DIN 3852-E

Type	Female thread	Male thread	Code number
MBV 2000	G ¼ DIN 3852	G ¼ DIN 3852-E	061B6001
MBV 2000	G ¼ DIN 3852	G ½ DIN 3852-E	061B6002
MBV 2000	G ½ DIN 3852	G ½A DIN 3852-E	061B6003
MBV 2000	G ¼ DIN 3852	¼-18 NPT DIN 3866-A	061B6004



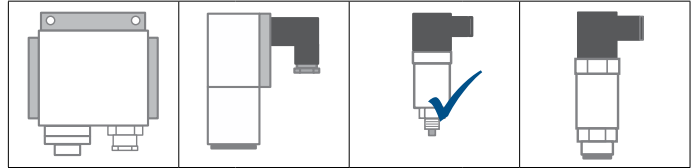
Test valve

Type	Pressure range [bar]	Pressure connection	Transmitter connection	Code number
MBV 3000	0 – 120	DIN 3852-E-G¼	DIN 3852-X-G½	061B6100

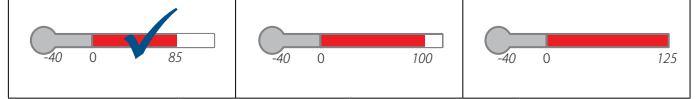
MBS 3150 compact pressure transmitter with pulse-snubber



Design



Temperature



The compact ship approved pressure transmitter MBS 3150 is designed for use in marine applications with severe medium influences like cavitation, liquid hammer or pressure peaks and offers a reliable pressure measurement, even under harsh environmental conditions.

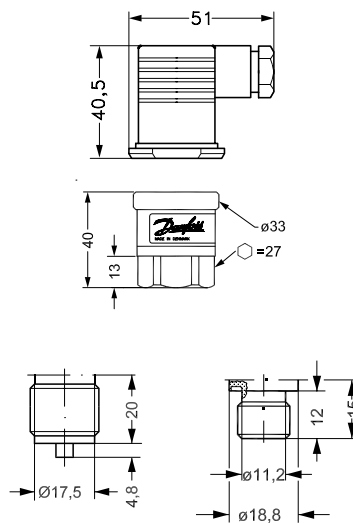
The flexible pressure transmitter programme covers a 4 – 20 mA output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar, plug and cable connections and a wide range of pressure connections.

Excellent vibration stability, uniquely robust construction, and a high degree of EMC/EMI protection equip the pressure transmitter to meet the most stringent marine requirements.

- 4 – 20 mA output signal
- Operating temperature - 40 – 85 °C
- Measuring range 0 – 600 bar
- Standard pressure connection G ¼A, O-ring DIN 3852, G ½A DIN 16288
- With integrated pulse-snubber
- Available with all relevant marine approvals and designed to meet the strict demands on marine equipment
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:

Weight: 0.2 kg



All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost, LR, DNV, GL, RINA, ABS, BV, NKK, PRS, MRS, CSS

MBS 3150 compact pressure transmitter with pulse-snubber

Accuracy: $\pm 0.5\%$ FS (typ.)
Media temperature: $-40 - 85^{\circ}\text{C}$
Output signal: $4 - 20\text{ mA}$
Electrical connections: EN 175301-803-A, Pg 11
Range: Flexible – many different electrical and pressure connections available



Measuring range P_e [bar] ¹⁾	Pressure connection		Code numbers
	G ½ A EN 837	G ¼ A, O-ring DIN 3852	
0 – 6	✓		060G1476
0 – 10	✓		060G1477
0 – 6		✓	060G1474
0 – 10		✓	060G1475

¹⁾ Gauge / relative

Spare parts and accessories for MBS 3150

Plugs



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, Pg 11 plug	060G0007
EN 175301-803-A, Pg 13.5 plug	060G0005
EN 175301-803-A, plug with 5 m cable	060G1034

Adapters



Description	Code number
G ½ female to G ¼ male	060G1021
G ½ female to G ¼ (DIN 3852) male	060G1022
G ½ female to ⅜ male	060G1023
G ½ female to ¼ flare male	060G1024
G ½ female with pulse-snubber	060G0252

Plug in display



Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850

Isolating valve for pressure connection in compliance with DIN 3852-E



Type	Female thread	Male thread	Code number
MBV 2000	G ¼ DIN 3852	G ¼ DIN 3852-E	061B6001
MBV 2000	G ¼ DIN 3852	G ½ DIN 3852-E	061B6002
MBV 2000	G ½ DIN 3852	G ½A DIN 3852-E	061B6003

Test valve

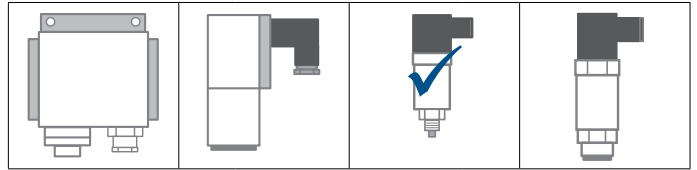


Type	Pressure range [bar]	Pressure connection	Transmitter connection	Code number
MBV 3000	0 – 120	DIN 3852-E-G½	DIN 3852-X-G¼	061B6100

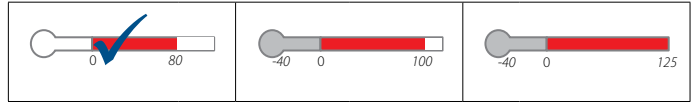
MBS 1900, OEM pressure transmitter for compressed air and water pump applications



Design



Temperature °C

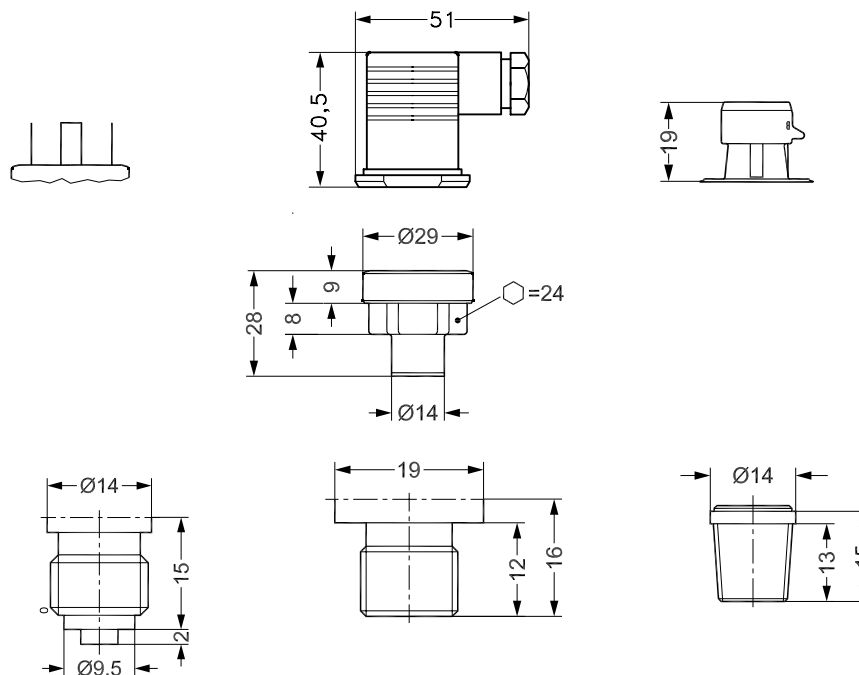


Pressure transmitter, type MBS 1900 is designed for use in air and water applications like booster pumps and air compressors. The pressure transmitter programme covers different output

signals, absolute and gauge (relative) versions, measuring ranges from 0 – 4 bar to 0 – 25 bar and a range of pressure and electrical connections.

Dimensions and weight:

Weight: 0.15 – 0.3 kg, depending on pressure / electrical connection



All dimensions in millimetres

Approvals: CE, UL

MBS 1900 pressure transmitter

Accuracy: $\pm 1\%$ FS

Media temperature: $0 - 80^{\circ}\text{C}$

Digitally compensated



Measuring range P_e [bar] ¹⁾	Output signal		Pressure connection			Electrical connection			Code number
	[mA]	Ratio-metric	G 1/4 A EN 837	R 1/4 ISO 7-1	G 1/4 DIN 3852-E	No plug (EN 175301- 803-A)	Plug Pg 9 (EN 175301- 803-A)	Round Pack- ard Metripack 150.2	
0 - 6	4 - 20		✓			✓			064G6501
0 - 10	4 - 20		✓			✓			064G6502
0 - 10	4 - 20			✓			✓		064G6543
0 - 16	4 - 20		✓				✓		064G6523
0 - 16	4 - 20				✓	✓			064G6511
0 - 16	4 - 20				✓			✓	064G6533
0 - 16		✓			✓			✓	064G6532
0 - 16	4 - 20			✓			✓		064G6542
0 - 25	4 - 20		✓			✓			064G6504

¹⁾ Gauge / relative

Spareparts and accessories for MBS 1900



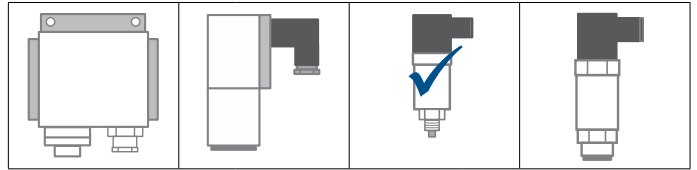
Plug

Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, plug with 5 m cable	060G1034

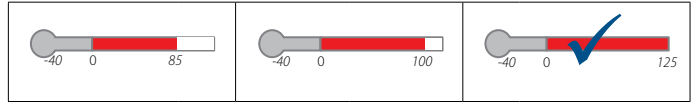
MBS 1200/1250 OEM pressure transmitters for use in severe hydraulic applications



Design



Temperature



The OEM pressure transmitter, types MBS 1200 & MBS 1250 are based on a thin-film technology ensuring an excellent vibration stability and an exceptional robustness as well as a high degree of EMI protection which enable them to meet the most severe hydraulic applications.

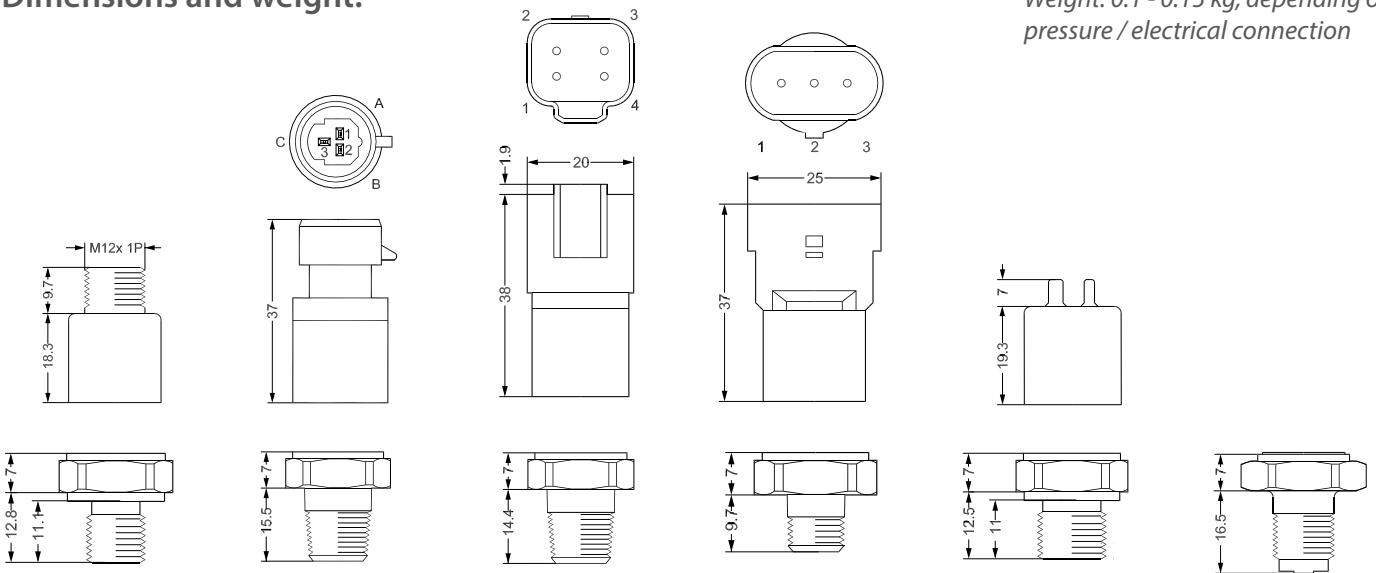
A wide choice of electrical outputs as well as pressure connections mean that the transmitters are suitable for most applications within the mobile hydraulic segment.

And the compact designs make them ideal for installations where space is at a premium.

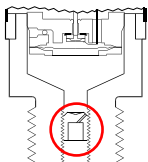
- Measuring range: 0 – 20 bar to 0 – 2200 bar
- Accuracy: $\pm 0.5\%$ FS
- Pressure reference: Gauge (relative)
- Output signal: mA, voltage and ratiometric

Dimensions and weight:

Weight: 0.1 - 0.15 kg, depending on pressure / electrical connection



All dimensions in millimetres



MBS 1250 has an integrated pulse-snubber offering a high degree of protection against cavitations and liquid hammer. Cavitation, liquid hammer and pressure peaks may occur in liquid filled hydraulic systems with changes in flow velocity, e.g. fast closing of a valve or pump starts and stops. The problem may occur on the inlet and outlet side, even at rather low operating pressures.

For ordering please contact your nearest Danfoss dealer.

MBS1200

Accuracy: ± 0.5 FS

Media temperature: -40 -125°C

Measuring range P_e [bar] ¹⁾	Output signal		Pressure connection DIN 3852-E G 1/4	Electrical connection		Code number
	[mA]	[V]		EN 60947-5-2 M12x1	Rectangular connector	
0 – 7	4 – 20		✓	✓		063G1407
0 – 10		✓	✓	✓		063G1632
0 – 40	4 – 20		✓	✓		063G1159
0 → 250	4 → 20		✓	✓		063G1410

MBS1250

Accuracy: ± 0.5 FS

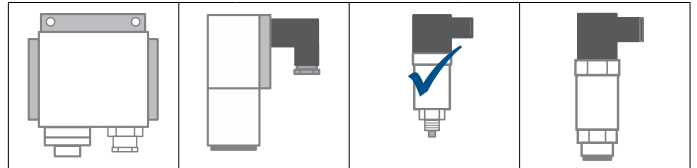
Media temperature: -40 -125°C

Measuring range P_e [bar] ¹⁾	Output signal		Pressure connection DIN 3852-E G 1/4	Electrical connection		Code number
	[mA]	[V]		EN 60947-5-2 M12x1	Rectangular connector	
0 – 400	4 – 20		✓	✓		063G1123
0 – 600	4 – 20		✓	✓		063G1125
0 – 10	4 – 20		✓	✓		063G1133
0 – 250		✓	✓	✓		063G1068
0 – 16	4 – 20		✓		✓	063G1218
0 – 250	4 – 20		✓	✓		063G1229

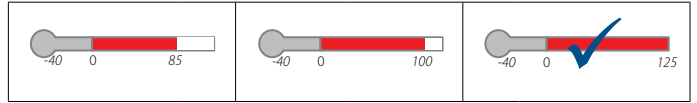
MBS 1300/1350 OEM electronic pressure switch with dual output for severe hydraulic applications



Design



Temperature



The OEM pressure switch and transmitter, types MBS 1300 and MBS 1350 are based on thin-film technology providing excellent vibration stability, robust construction and a high degree of EMI protection. These features among others ensure that the transmitters meet the most stringent industrial standards.

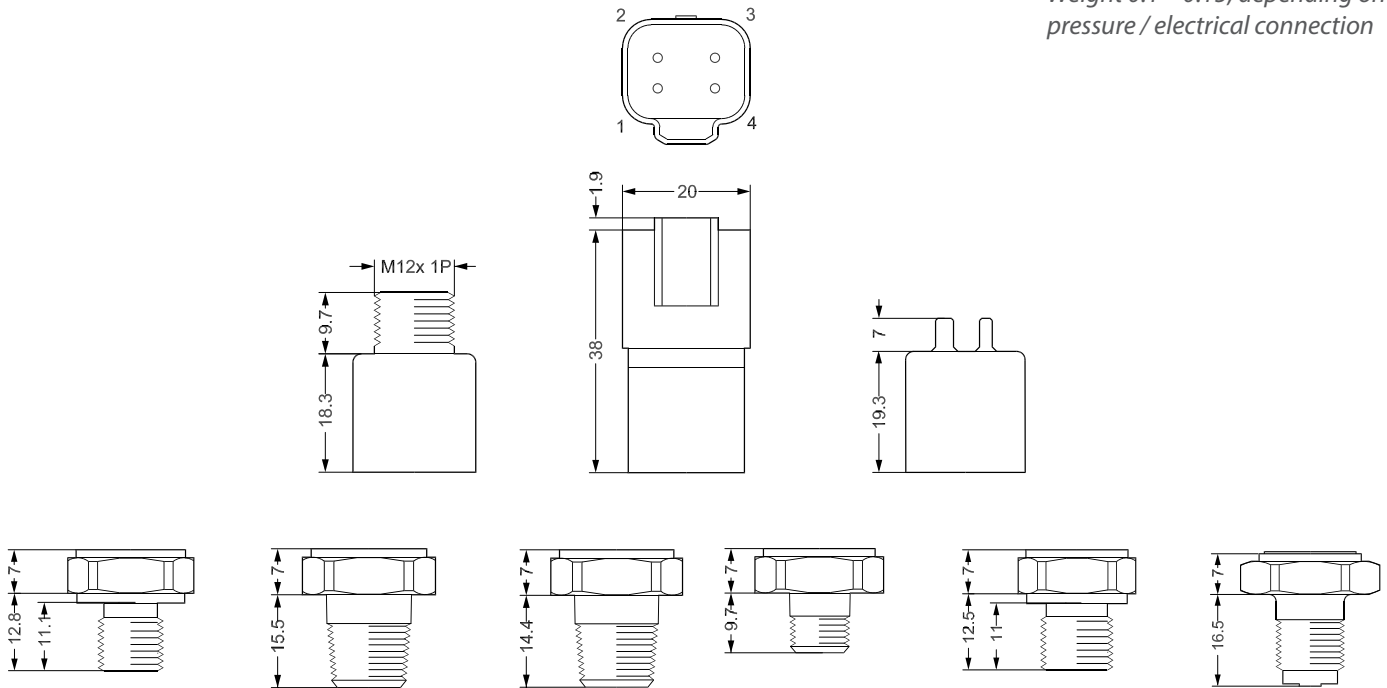
Two products in one:

The range is a compact dual-output product dedicated for hydraulic applications, where a combination of pressure signal output and/or pressure switch function is requested.

Pressure ranges (system):	20 – 2,200 bar
Pressure set point (typical):	10 – 110% calibrated range - switch point set at factory
DC switch current limit:	350mA (at 125 Centigrade)
Switch Options:	PNP (switch to Battery) or NPN (Open Collector format, switch to ground)
Mobile Hydraulic Certifications:	Designs compliant with ISO7637 standards
Supply voltage:	Compatible with 12V or 24V regulated supplies

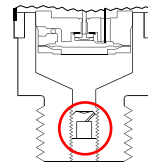
Dimensions and weight:

Weight 0.1 – 0.15, depending on pressure / electrical connection



All dimensions in millimetres

MBS 1350 has an integrated pulse-snubber offering a high degree of protection against cavitations and liquid hammer. Cavitation, liquid hammer and pressure peaks may occur in liquid filled hydraulic systems with changes in flow velocity, e.g. fast closing of a valve or pump starts and stops. The problem may occur on the inlet and outlet side, even at rather low operating pressures.



For ordering please contact your nearest Danfoss dealer.

MBS 5100 pressure transmitter

Accuracy: $\pm 0.1\%$ FS (typ.)

Media temperature: $-40 - 85^{\circ}\text{C}$

Output signal: $4 - 20\text{ mA}$

Electrical connections: EN 175301-803-A, Pg 11

Zero and span adjustment



Measuring range P_e [bar] ¹⁾	Pressure connection G 1/4 with flange	Code number
0 – 1	✓	060N1032
0 – 2,5	✓	060N1033
0 – 4	✓	060N1034
0 – 6	✓	060N1035
0 – 10	✓	060N1036
0 – 16	✓	060N1037
0 – 25	✓	060N1038
0 – 40	✓	060N1039
0 – 60	✓	060N1040
0 – 100	✓	060N1041

¹⁾ Gauge / relative

Spare parts and accessories for MBS 5100



Plugs

Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, Pg 11 plug	060G0007
EN 175301-803-A, Pg 13.5 plug	060G0005
EN 175301-803-A, plug with 5 m cable	060G1034

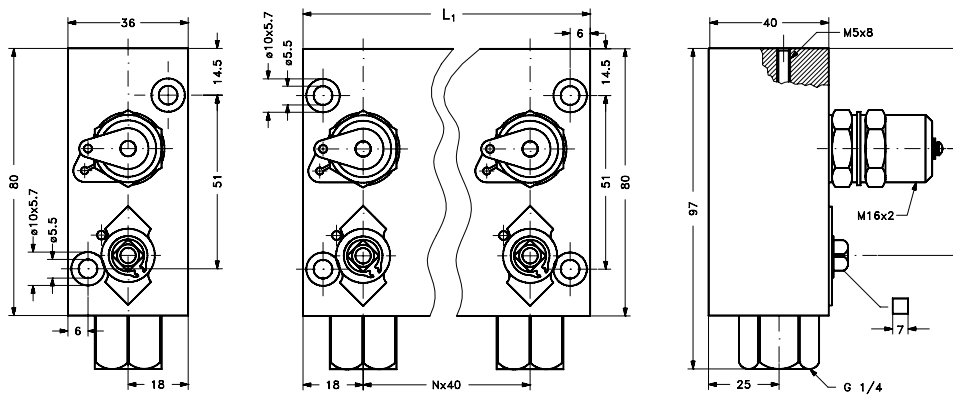
MBV 5000 pressure test valve

Media temperature: -20 – 120 °C

Pressure connection: G 1/4 (Input)
Flange / M5 x 8 (Output)

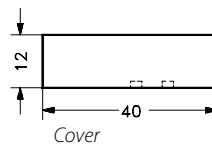


Output no.	Length (L ₁) [mm]	Code numbers
x1	36	061B7000
x2	76	061B7001
x3	116	061B7002
x4	156	061B7003
x5	196	061B7004
x2	76	061B7005
x3	116	061B7006
x4	156	061B7007
x5	196	061B7008
x2	76	061B7009
x3	116	061B7010
x4	156	061B7011
x5	196	061B7012

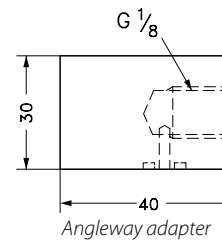


Weight: 0.4 - 2 kg
depending on the
different configurations

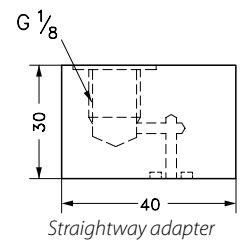
All dimensions in millimetres



Cover



Angleway adapter



Straightway adapter

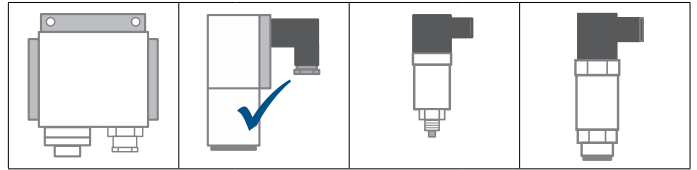
Standard flange - G 1/8 adapters

Description	Code number
Cover	061B720001
Angleway adapter	061B720101
Straightway adapter	061B720201

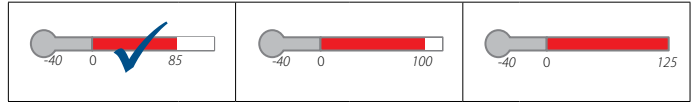
MBS 5150 pressure transmitters with pulse-snubber



Design



Temperature



The ship approved high accuracy pressure transmitter MBS 5150 is designed for use in marine applications with severe medium influences like cavitation, liquid hammer or pressure peaks, and offers a reliable pressure measurement, even under harsh environmental conditions.

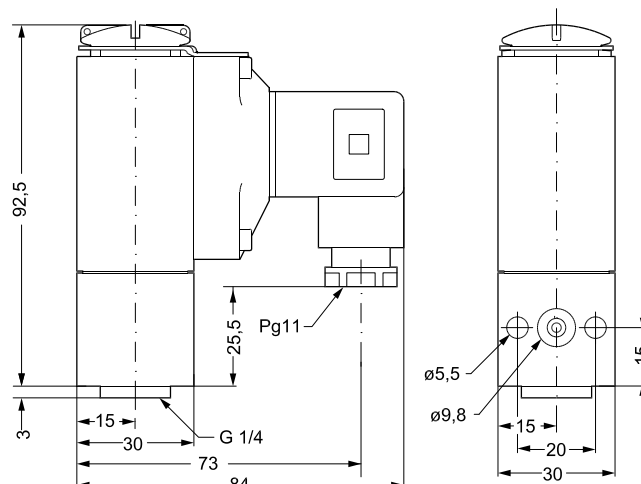
The pressure transmitter programme in block design covers a 4 – 20 mA output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar, zero point and span adjustment, plug connection and female/flange pressure connections.

Excellent vibration stability, robust construction, and a high degree of EMC/EMI protection equip the pressure transmitter to meet the most stringent industrial requirements.

- 4 – 20 mA output signal
- Operating temperature -40 – 85 °C
- Measuring range 0 – 600 bar
- Pressure connection G 1/4 female
- With integrated pulse-snubber
- Available with all relevant marine approvals
- Designed to meet the strict demands in marine equipment
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:

Weight: 0.4 kg



All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost, LR, DNV, GL, RINA, ABS, BV, NKK, PRS, MRS, CSS

MBS 5150 pressure transmitter with pulse-snubber

Accuracy: $\pm 0.1\%$ FS (typ.)
Media temperature: $-40 - 85^{\circ}\text{C}$
Output signal: $4 - 20\text{ mA}$
Electrical connections: EN 175301-803-A, Pg 11
Zero and span adjustment



Measuring range P_e [bar] ¹⁾	Pressure connection G 1/4 with flange	Code number
0 – 1	✓	060N1081
0 – 2,5	✓	060N1083
0 – 4	✓	060N1084
0 – 6	✓	060N1063
0 – 10	✓	060N1064
0 – 16	✓	060N1065
0 – 25	✓	060N1085
0 – 40	✓	060N1066
0 – 60	✓	060N1086
0 – 100	✓	060N1087

¹⁾ Relative / gauge

Spare parts and accessories for MBS 5150

Plugs



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, Pg 11 plug	060G0007
EN 175301-803-A, Pg 13.5 plug	060G0005
EN 175301-803-A, plug with 5 m cable	060G1034

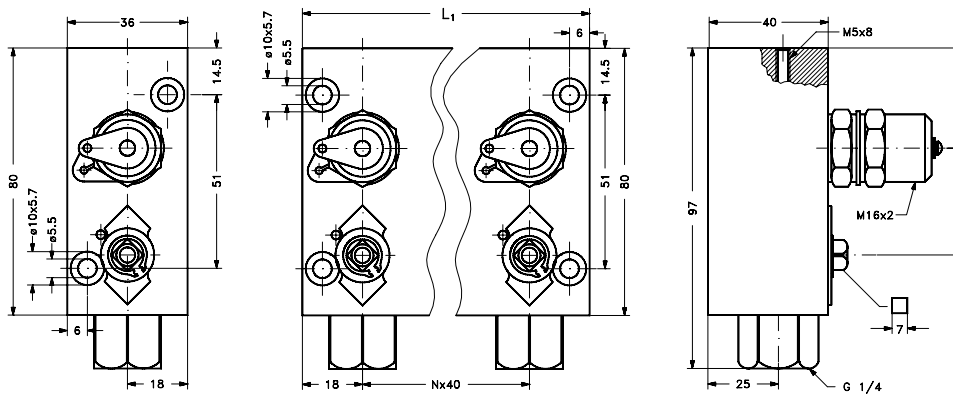
MBV 5000 pressure test valve

Media temperature: -20 – 120 °C

Pressure connection: G 1/4 (Input)
Flange / M5 x 8 (Output)



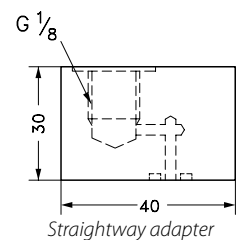
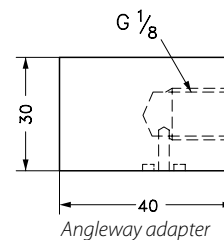
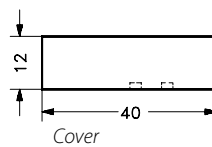
Output no.	Length (L ₁) [mm]	Code numbers
x1	36	061B7000
x2	76	061B7001
x3	116	061B7002
x4	156	061B7003
x5	196	061B7004
x2	76	061B7005
x3	116	061B7006
x4	156	061B7007
x5	196	061B7008
x2	76	061B7009
x3	116	061B7010
x4	156	061B7011
x5	196	061B7012



Weight: 0.4 - 2 kg
depending on the
different configura-
tions

All dimensions in millimetres

Standard flange - G 1/8 adapters

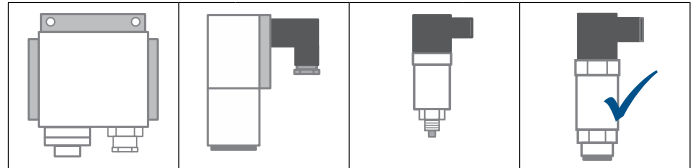


Description	Code number
Cover	061B720001
Angleway adapter	061B720101
Straightway adapter	061B720201

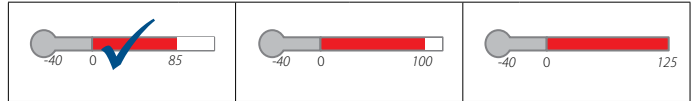
MBS 4510 flush diaphragm pressure transmitter



Design



Temperature



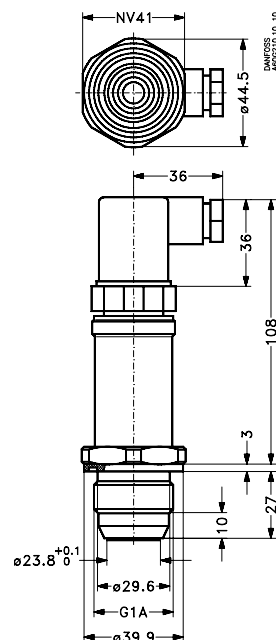
The high accuracy flush diaphragm pressure transmitter MBS 4510 is designed for use in non-uniform, high viscous or crystallizing media within industry, food and beverage, and offers a reliable pressure measurement, even under harsh environmental conditions.

The pressure transmitter programme covers a 4 – 20 mA output signal, absolute and gauge (relative) versions, measuring ranges from 0 – 250 mbar til 0 – 25 bar, zero point and span adjustment, plug connection and a G1A conic pressure connection with a flush mounted diaphragm.

Excellent vibration stability, robust construction, and a high degree of EMC/EMI protection equip the pressure transmitter to meet the most stringent industrial requirements.

- 4 – 20 mA output signal
- Operating temperature -10 – 85 °C
- Measuring ranges 0 – 250 mbar to 0 – 25 bar
- Available with many different pressure connections
- With zero point and span adjustment
- With flush diaphragm
- For use in food and beverage industry as well as industrial applications with aggressive, heterogeneous and highly viscous media
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:



Weight: 0.4 kg

All dimensions in millimetres

Approvals: CE, UL, UL Hazloc, Ex-N, Gost

MBS 4510 flush diaphragm pressure transmitter

Accuracy: $\pm 0.2\%$ FS (typ.)
Media temperature: $-10 - 85^{\circ}\text{C}$
Output signal: $4 - 20\text{ mA}$
Electrical connections: EN 175301-803-A, Pg 9
Zero and span adjustment



Measuring range P_e [bar] ¹⁾	Pressure connection G 1 A with cone	Code number
0 – 0.25	✓	060G2418
0 – 0.4	✓	060G2419
0 – 0.6	✓	060G2420
0 – 1	✓	060G2421
0 – 1.6	✓	060G2422
0 – 2.5	✓	060G2423
0 – 4	✓	060G2424
0 – 6	✓	060G2425
0 – 10	✓	060G2426
0 – 16	✓	060G2427
0 – 25	✓	060G2428

¹⁾ Gauge / relative

Spare parts and accessories for MBS 4510

Adapters

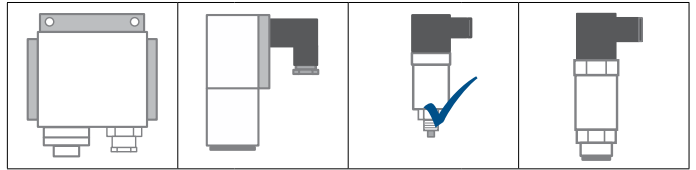


Description	Code number
Welding nipple for conic metal/metal seal	060G2501
DIN 11851 (diary connection) DN40	060G2505
DIN 11851 (diary connection) DN50	060G2506
Clamp, ISO 2852, 1½ in	060G2502
Clamp, ISO 2852, 2 in	060G2510
SMS 1145 connection, 1½ in	060G2503

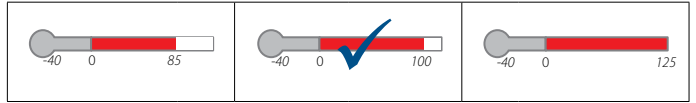
MBS 9200 Low pressure transmitter



Design



Temperature



The compact pressure transmitter MBS 9200 is designed for use in industrial applications e.g. crankcase and turbocharger on industrial engines, filter monitoring as well as applications within level measurement.

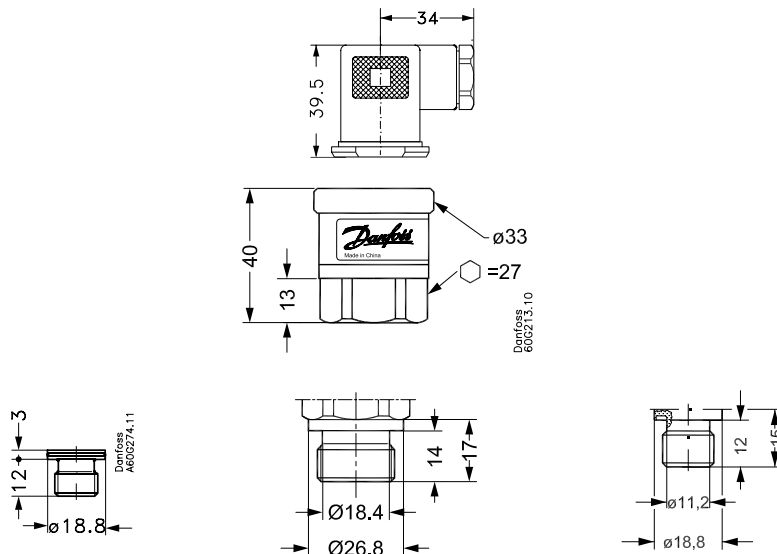
The programme cover 4 – 20 mA and ratiometric output signal, gauge versions, pressure span from 40 – 250 mbar as well as bidirectional ranges e.g. -70 – 70 mbar etc.

Excellent vibration stability, robust construction, and a high degree of EMC / EMI protection equip the pressure transmitter to meet the most stringent industrial requirements..

- 4 – 20 mA or ratiometric output signal
- Full scale span from 40 – 250 mbar as well as bidirectional ranges e.g. -70 – 70 mbar etc. (lowest zero point -100 mbar)
- Digital temperature compensated
- Reverse polarity protection
- With build-in clipping function and self-dianostic on request
- Enclosure and wetted parts of stainless steel (AISI 316L)
- Customer specific version on request

Dimensions and weight:

Weight: 0.2 kg



All dimensions in millimetres

Approvals: CE

MBS 9200 Low pressure transmitter

Accuracy: $\pm 0.5 - \pm 2\%$ FSS (depending on pressure span)
Media temperature: $-25^{\circ} - 100^{\circ}\text{C}$ (depending on gasket material)
Output signal: 4 – 20 mA
Electrical connections: EN 175301-803-A, Pg 9
Range: Flexible, different electrical and pressure connections available



Measuring range P_e [bar] ¹⁾	Pressure connection		Gasket		Code numbers
	DIN 3852-E-G1/4 Gasket: DIN 3869-14	DIN 3852-E-G1/4 Gasket: DIN 3869-14	FPM	NBR	
0.02 – 0.02		✓	✓		064G5225
0 – 0.1	✓		✓		064G5214
0 – 0.1		✓		✓	064G5222
0 – 0.15	✓		✓		064G5216
0 – 0.25	✓		✓		064G5215
0 – 0.25	✓			✓	064G5218

¹⁾ Gauge / relative

Spare parts and accessories for MBS 9200

Plugs



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, Pg 11 plug	060G0007

Plug in display

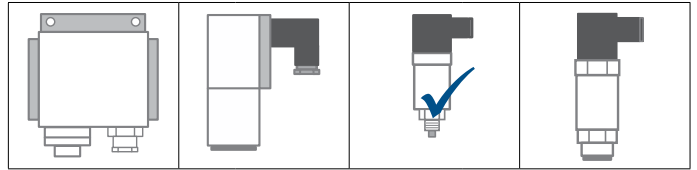


Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850

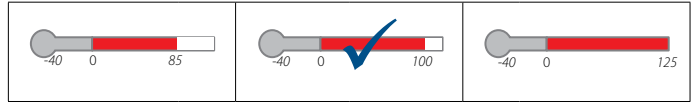
MBS 9300 Low pressure transmitter



Design



Temperature



The compact pressure transmitter MBS 9300 is designed for use in industrial applications e.g. crankcase and turbocharger on marine engines, filter monitoring as well as applications within level measurement.

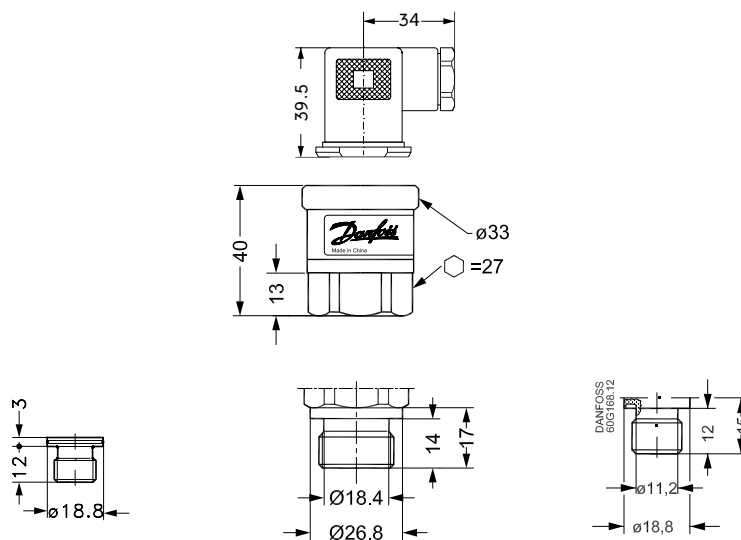
The programme cover 4 – 20 mA output signal, gauge versions, pressure span from 40 – 250 mbar as well as bidirectional ranges e.g. -70 – 70 mbar etc.

Excellent vibration stability, robust construction, and a high degree of EMC / EMI protection equip the pressure transmitter to meet the most stringent industrial requirements..

- 4 – 20 mA output signal
- Full scale span from 40 – 250 mbar as well as bidirectional ranges e.g. -70 – 70 mbar etc. (lowest zero point -100 mbar)
- Digital temperature compensated
- Reverse polarity protection
- With build-in clipping function and self-dianostic on request
- Enclosure and wetted parts of stainless steel (AISI 316L)
- Customer specific version on request

Dimensions and weight:

Weight: 0.2 kg



All dimensions in millimetres

Approvals: CE, DNV, BV, ABS, LR, RINA, KR

MBS 9300 Low pressure transmitter

Accuracy: $\pm 0.5 - \pm 2\%$ FSS (depending on pressure span)
Media temperature: $-25^{\circ} - 100^{\circ}\text{C}$ (depending on gasket material)
Output signal: 4 – 20 mA
Electrical connections: EN 175301-803-A, Pg 9
Range: Flexible, different electrical and pressure connections available



Measuring range P_e [bar] ¹⁾	Pressure connection		Gasket		Code numbers
	DIN 3852-E-G1/4 Gasket: DIN 3869-14	DIN 3852-E-G1/2 Gasket: DIN 3869-14	FPM	NBR	
- 0.07 – 0.07	✓		✓		064G5202
- 0.03 – 0.03	✓		✓		064G5201
- 0.02 – 0.02	✓			✓	064G5207
0 – 0.25	✓		✓		064G5228
0 – 0.04	✓		✓		064G5221
0 – 0.06	✓		✓		064G5219
0 – 0.1	✓			✓	064G5224
0 – 0.1		✓		✓	064G5226

¹⁾ Gauge / relative

Spare parts and accessories for MBS 9300

Plugs



Description	Code number
EN 175301-803-A, Pg 9 plug	060G0008
EN 175301-803-A, Pg 11 plug	060G0007
EN 175301-803-A, Pg 13.5 plug	060G0005

Plug in display

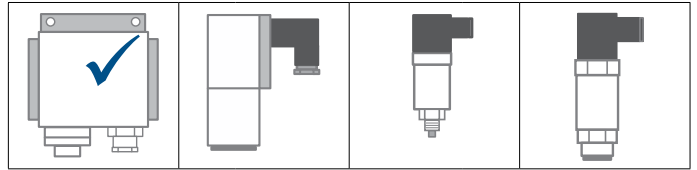


Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850

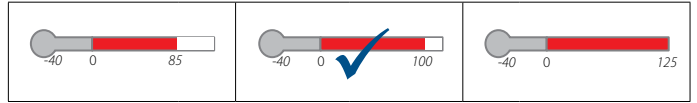
EMP 2 pressure transmitters



Design



Temperature



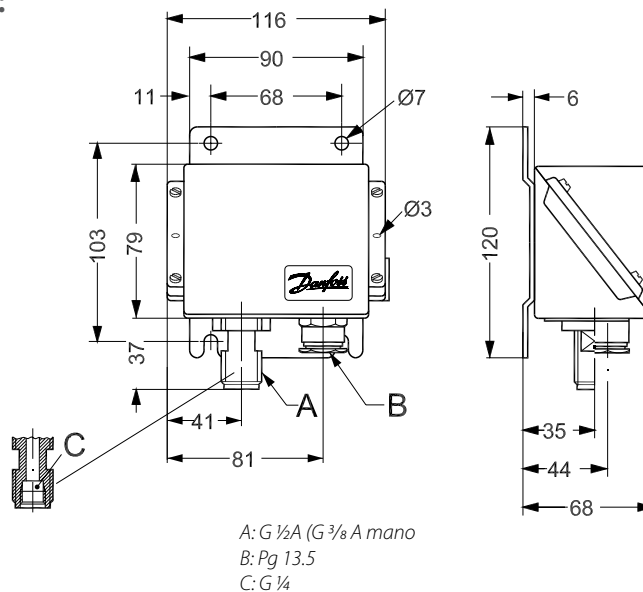
The ship approved pressure transmitter EMP 2 is designed for use in almost all marine and industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

The pressure transmitter programme in box design covers a 4 – 20 mA output signal, gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 400 bar, zero point and span adjustment, Pg 13.5 cable entry and different pressure connections. A robust construction enables the pressure transmitter to meet the strictest requirements.

- 4 – 20 mA output signal
- Operating temperature -10 – 70 °C
- Measuring range 0 – 400 bar
- Pressure connections G ¼, G ½ standard, G ¾ A mano
- With zero point and span adjustment
- Available with all relevant marine approvals
- For use in harsh industrial / marine environments
- Wetted parts: stainless steel (AISI 316)

Dimensions and weight:

Weight: 1 kg



All dimensions in millimeters

Approvals: CE, UL, UL Hazloc, Ex-N, Gost, LR, DNV, GL, RINA, ABS, BV, NKK, PRS, MRS, CSS

EMP 2 pressure transmitters

Accuracy: $\pm 0.3\%$ FS

Media temperature: $-40 - 100\text{ }^{\circ}\text{C}$

Output signal: $4 - 20\text{ mA}$

Electrical connections: Terminal block, Pg 13.5

Zero and span adjustment



Operating pressure P_e [bar] ¹⁾	Pressure connection		Code number
	G 1/2 A	G 3/8 A	
-1 - 1.5 ¹⁾	✓		084G2100
-1 - 5 ¹⁾	✓		084G2101
0.2 - 1	✓		084G2102
0 - 1	✓		084G2103
0 - 1.6	✓		084G2104
0 - 2.5	✓		084G2105
0 - 4	✓		084G2106
0 - 4		✓	084G2206
0 - 6	✓		084G2107
0 - 6		✓	084G2207
0 - 6	✓		084G2108
0 - 10	✓		084G2109
0 - 10		✓	084G2209
0 - 10	✓		084G2110
0 - 16	✓		084G2111
0 - 16		✓	084G2211
0 - 25	✓		084G2112
0 - 40	✓		084G2113
0 - 40		✓	084G2213
0 - 60	✓		084G2114
0 - 100	✓		084G2115
0 - 160	✓		084G2116
0 - 250	✓		084G2117
0 - 400	✓		084G2118
-1 - 9 ¹⁾	✓		084G2120

¹⁾ Gauge / relative

Spareparts and accessories for EMP



Damping coil

Description	Material	Code number
G 3/8 unions and 1.5 m capillary tube.	Copper	060-104766
G 1/2 unions and 1 m capillary tube.	Stainless steel	060-016966
G 3/8 unions and 1 m capillary tube. Armoured.	Copper	060-333366

Nipple

Description	Material	Code number
G 1/4 A x G 3/8 A with copper washer.	Brass	060-333266
G 1/4 A x M10 ext. x 1 with copper washer.	Brass	060-333866



Temperature sensors

Serving a broad, global market within diverse and demanding industries, Industrial Automation is your one-stop partner for industrial control components. Through Danfoss Industrial Automation you gain access to the entire Danfoss pool of technology for a wide range of industries.

HYDRAULICS

In a world depending on infrastructure, mobile hydraulic equipment is key to making modern living possible for an ever growing population. Whether used in construction, agriculture or for material handling, mobile hydraulics equipment offers efficiency, economy, safety and environmental advantages.

MARINE

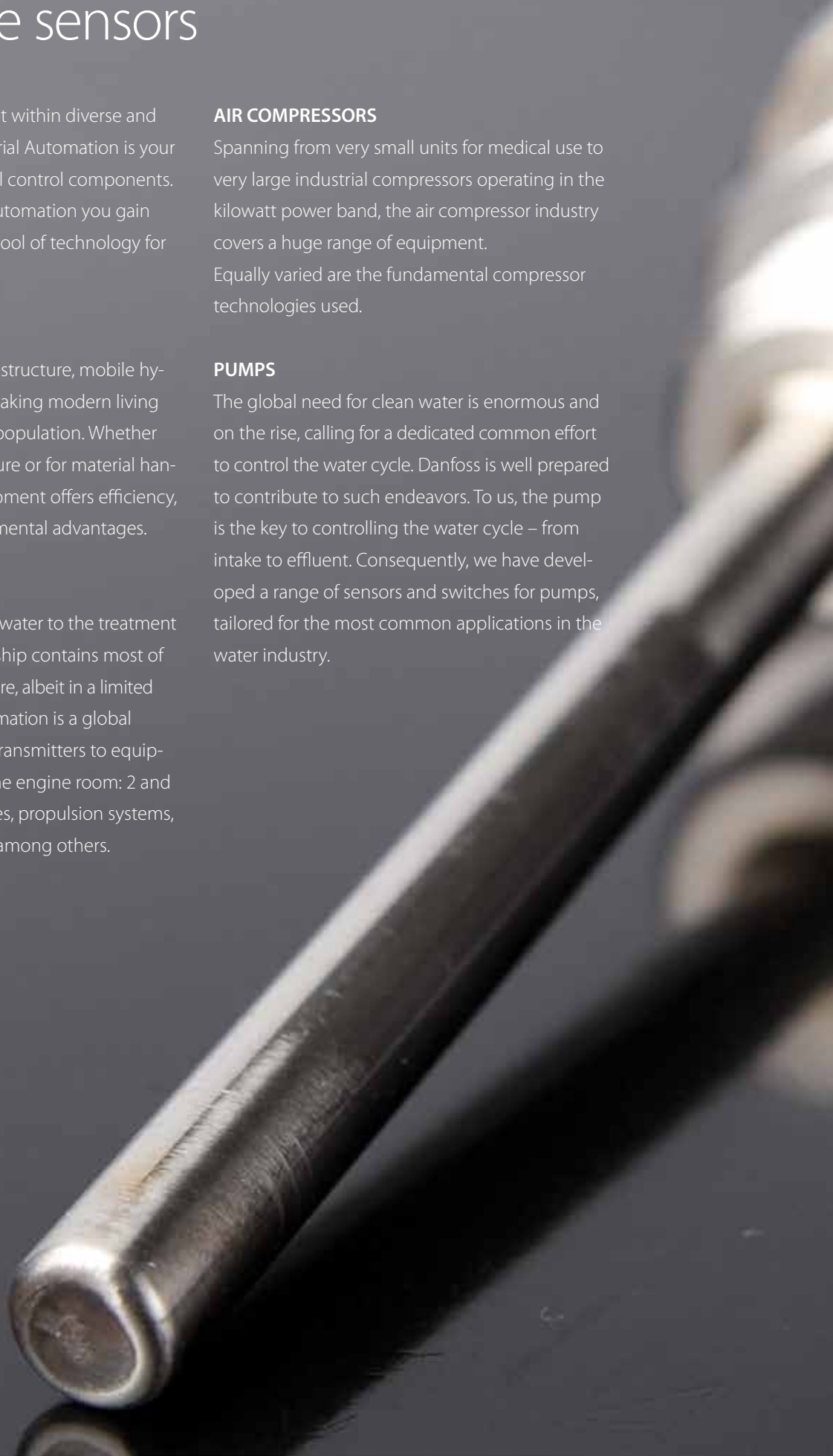
From the handling of sewage water to the treatment of exhaust gasses: A modern ship contains most of the applications found on shore, albeit in a limited space. Danfoss Industrial Automation is a global leader in supplying pressure transmitters to equipment placed in and around the engine room: 2 and 4 stroke diesel and gas engines, propulsion systems, fuel treatment, oil separators among others.

AIR COMPRESSORS

Spanning from very small units for medical use to very large industrial compressors operating in the kilowatt power band, the air compressor industry covers a huge range of equipment. Equally varied are the fundamental compressor technologies used.

PUMPS

The global need for clean water is enormous and on the rise, calling for a dedicated common effort to control the water cycle. Danfoss is well prepared to contribute to such endeavors. To us, the pump is the key to controlling the water cycle – from intake to effluent. Consequently, we have developed a range of sensors and switches for pumps, tailored for the most common applications in the water industry.



Examples



Onboard complex, new ships, the MBT temperature sensor control that vital parts of the propulsion system all run perfectly, within the parameters of safe operation.

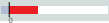
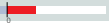
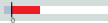
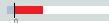


On wind turbines, helping to increase the amount of wind-produced power worldwide, the MBT temperature sensor gives reliable readings of hydraulic oil temperatures.

Temperature sensors

in this catalogue



		MBT3250	MBT 3270	MBT 3560	MBT 153	MBT 5250	MBT 5252	MBT 5113	MBT 5116
Segments	Transportation								
	Heating and sanitation								
	Machine and equipment								
	Energy								
Characteristics	Pt 100/Pt 1000	✓	✓		✓	✓	✓		✓
	NTC/PTC	✓	✓		✓	✓	✓	✓	
	Transmitter	mA/V d.c.							
	Transmitter as option						mA	mA	
	Measuring insert	Changeable	Fixed	Fixed	Fixed	Changeable	Changeable	Changeable	Changeable
	Medium temperature	-50 – 200 °C (-58 – 392 °F) 	-50 – 300 °C (-58 – 572 °F) 	-50 – 200 °C (-58 – 392 °F) 	-50 – 200 °C (-58 – 392 °F) 	-50 – 200 °C (-58 – 392 °F) 	-50 – 400 °C (-58 – 752 °F) 	-50 – 800 °C (-58 – 1472 °F) 	-50 – 600 °C (-58 – 1112 °F) 
	Enclosure	IP65 (NEMA 4)	IP65 (NEMA 4)	IP65/IP67 (NEMA 4/ NEMA 6)	IP67 (NEMA 6)	IP65 (NEMA 4)	IP65 (NEMA 4)	IP65 (NEMA 4)	IP65 (NEMA 4)
	Material protection tube	W.no. 1.4571 (AISI 316 Ti)	W.no. 1.4571 (AISI 316 Ti)	W.no. 1.4571 (AISI 316 Ti)	W.no. 1.4571 (AISI 316 Ti)	W.no. 1.4571 (AISI 316 Ti)	W.no. 1.4571 (AISI 316 Ti)	W.no. 1.4571 (AISI 316 Ti)	W.no. 1.4571 (AISI 316 Ti)
	Reaction time t0.5 in water (sec)	9 s	1.5 s	10 s	1 s	9 s	12 s	30 s	30 s
	Marine approvals					✓	✓	✓	✓



Marine and mobile hydraulics



Boiler and boiler room equipment, sterilisers and autoclaves



Industrial hydraulics, air compressors, water pumps and industrial engines

Temperature sensors that can take the heat

An outstanding temperature sensor performance is characterised by:

- The element
- The ability to react fast and precise
- The packaging

1 Elements

- RTD (Pt100/Pt1000) – for standardised signals and high accuracy the RTD's are a perfect choice
- Changeable measuring insert

2 The ability to react fast and precise

Special care has been put into the design of the sensor in relation to the reaction time. A specially developed sensor element fixture ensures contact between the element and the housing material in order to secure a fast heat transfer from the media to the sensor element. On top of this the sensor construction ensures minimum radiation of heat, which results in a measurement very close to the actual temperature of the media.

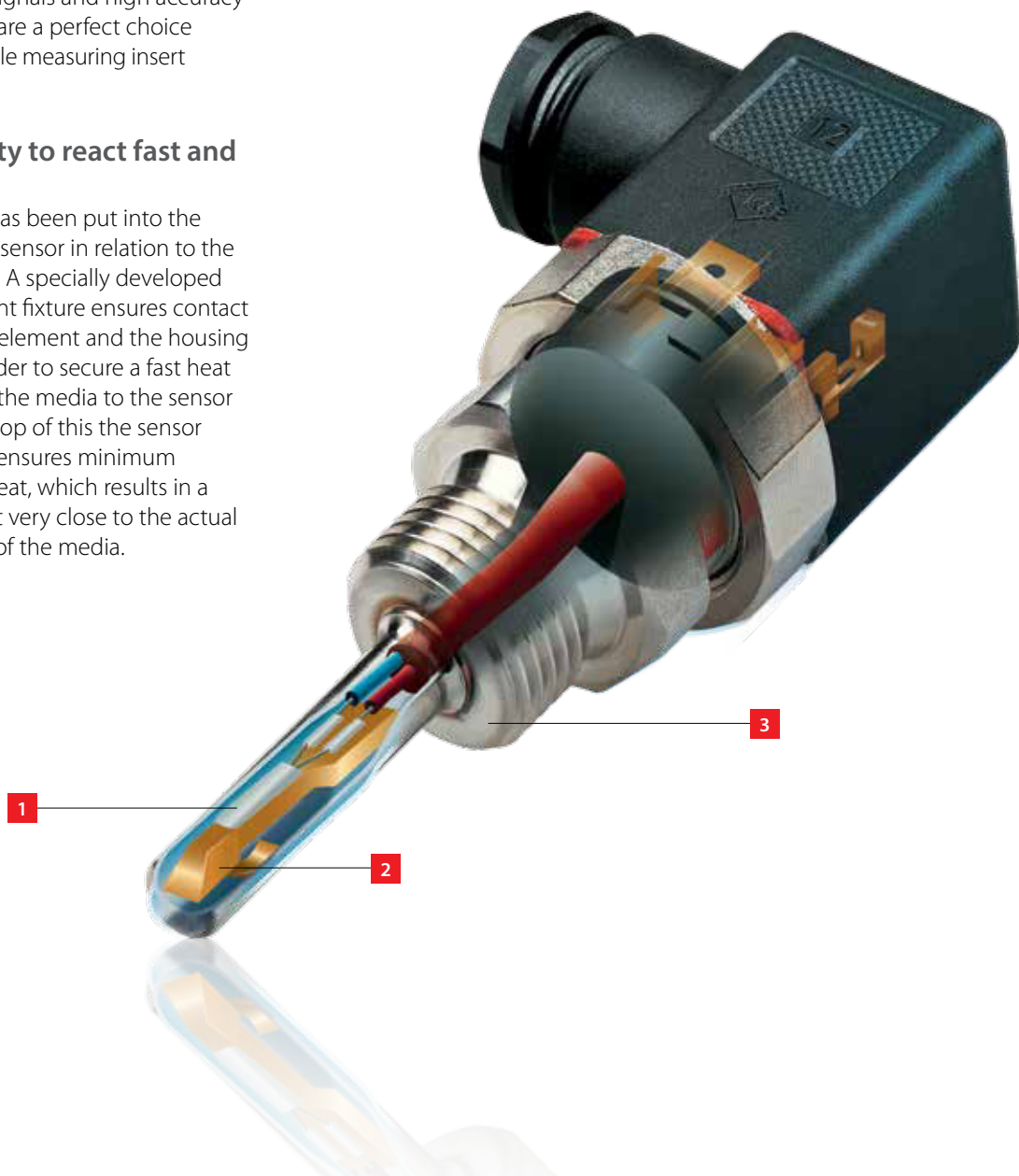
3 Packaging

The sensor design offers long-life stability through:

- High shock and vibration stability
- High enclosure grade IP65

Sensor material:

- Stainless steel (AISI 316)
- Gold plated contacts to secure flawless signal



MBT 3250 temperature sensor



The MBT 3250 is a heavy-duty temperature sensor that can be used for controlling cooling water, lubrication oil, hydraulic oil and refrigeration plants within general industry applications.

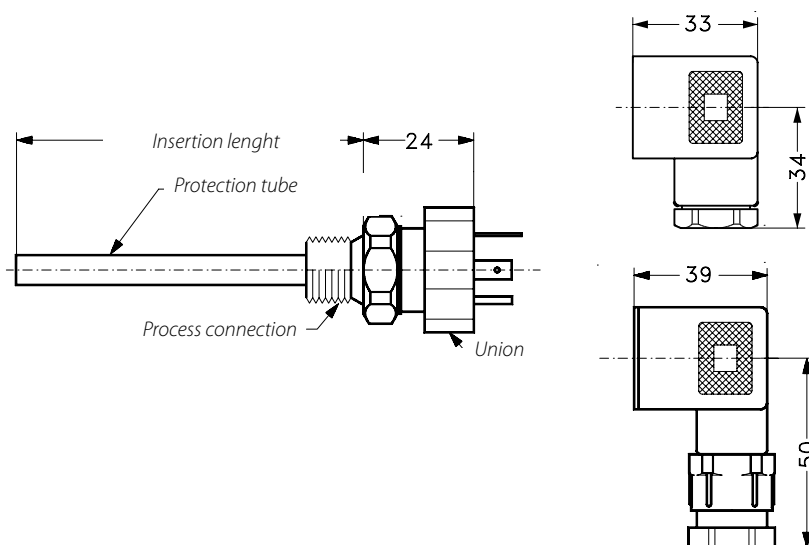
This temperature sensor is based on a standardized Pt100 or Pt1000 element, which gives a reliable and accurate measurement. The MBT 3250 can be delivered with NTC/PTC elements on request.

The measuring insert is based on a silicone cable, which makes the sensor very resistant towards vibrations. All parts in contact with the media are made of stainless steel AISI 316 Ti. The MBT 3250 is equipped with a EN 175301-803-A, Pg 9 plug as standard, but can be delivered with M12 or DIN 72585 Bayonet on request.

- For gaseous or liquid media, e.g. air, gas, vapour, water or oil
- Up to 200 °C media temperatures
- Pt100 or Pt1000 resistance element
- Can be used with 2- or 3-wire connections
- Gold plated male and female connector
- Interchangeable measuring insert
- Wetted parts: Stainless Steel (AISI 316)

Dimensions and weight:

Weight: 0.145 – 0.220 kg
depending on insertion
length



All dimensions in millimetres

Approvals: CE

MBT 3250 temperature sensor

Measuring range: -50 – 200 °C

Resistance element: 1 x Pt 100

Extension length: None



Insertion length [mm]	Process connection size	Electrical connection: EN 175301-803-A		Code number
		Pg 9	Pg 11	
50	G ½ A	✓		084Z2446
50	G ½ A		✓	084Z2447
50	G ¾ A		✓	084Z2448
100	G ¾ A		✓	084Z2449
100	G ½ A	✓		084Z2450
100	G ½ A		✓	084Z2451
150	G ½ A		✓	084Z2452
150	G ½ A	✓		084Z2453
150	G ¾ A			084Z2454
150	G ¾ A		✓	084Z2455
200	G ½ A	✓		084Z2456
200	G ½ A		✓	084Z2457
200	G ¾ A			084Z2458
200	G ¾ A		✓	084Z2459
50	G ¾ A			084Z2460
100	G ¾ A			084Z2461

MBT 3270 temperature sensors



The flexible temperature sensor MBT 3270 can be used in many industrial applications such as: Air Compressors, Mobile Hydraulics and Exhaust gas return systems.

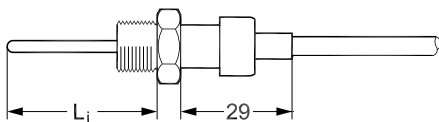
In other words application where robustness, size and performance are essentials.

The sensor can be equipped with different sensing element (RTD, NTC and PTC) and is available with different electrical connections (Cable, Delphi Metri Pack, AMP junior power Timer, Deutsch DT04).

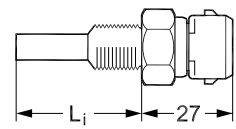
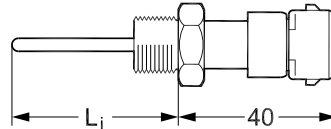
- Robust, high protection against moisture
- Fixed measuring insert
- Brass or stainless steel
- Very low response times
- Temperature range up to 300 °C
- Wetted parts: Stainless Steel (AISI 316)

Dimensions and weight:

Weight: 0.085 kg



-50 – 300 °C



-50 – 150 °C

All dimensions in millimetres

MBT 3270 temperature sensors

Fixed measuring insert

Very low response times



Resistance element		Insertion length (L _i) [mm]	Temperature range [°C]	Insertion Ø [mm]	Electrical connection			Code number
Pt 100	Pt 1000				AMP	Cable [m]	Deutsch	
✓		24	-50 – 150	6	✓			084Z2014
	✓	28	-50 – 150	4.2	✓			084Z2012
✓		40	-50 – 300	3	✓			084Z2018
✓		40	-50 – 300	3			✓	084Z2019
✓		40	-50 – 300	3		2		084Z2021

Approvals: CE

MBT 3560 temperature sensors with built-in transmitter

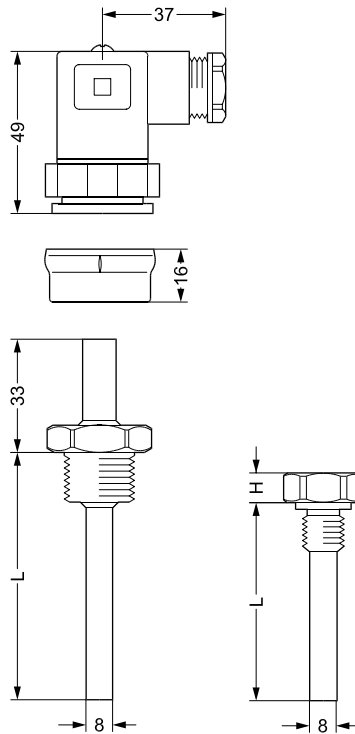


With MBT 3560 we have combined the technology of our standard temperature sensors and the electrical connections from the MBS pressure transmitters with a new developed electronics which has resulted in a compact temperature sensor with a built-in transmitter. The MBT 3560 is designed for use in harsh industrial environments where reliable, robust and accurate equipment is required. Available with a wide selection of process and electrical connections. Can be delivered with a 33 mm extension length which makes it possible to measure temperatures up to 200 °C without damaging the built-in electronics.

- Ultra compact design
- Acid-resistant stainless steel enclosure (AISI 316L)
- Temperature range -50 – 200 °C
- Pt 1000 resistance element
- Output signals: 4 – 20 mA or Ratiometric
- Protection tube: $\varnothing$ 8 mm
- Multiple insertion lengths: 50 – 250 mm
- Wetted parts: Stainless Steel (AISI 316)

Dimensions and weight:

Weight: 0.15 kg – 0.22 kg
depending on insertion length



L = Insertion length
 H = 9 mm

All dimensions in millimetres

MBT 3560 Temperature sensors with built-in transmitter

Measuring range: -50 – 200 °C
Electrical connection: EN175301-803A, Pg 9
Resistance element: Pt 1000
Protection tube: Ø 8 mm
Process connection: G ¼ A



Insertion length [mm]	Transmitter output 4 – 20 mA	Transmitter settings [°C]	Extension length [mm]	Code number
50	✓	0 – 100	-	084Z4030
100	✓	0 – 100	-	084Z4031
150	✓	0 – 100	-	084Z4032
200	✓	0 – 100	-	084Z4033
250	✓	0 – 100	-	084Z4034
50	✓	0 – 200	33	084Z4035
100	✓	0 – 200	33	084Z4036
150	✓	0 – 200	33	084Z4037
200	✓	0 – 200	33	084Z4038
250	✓	0 – 200	33	084Z4039

Spare part and accessories

Sensor pocket

Insertion length [mm]	Pocket insertion length [mm]	Process connection G ½ A	Protection tube Ø 11 [mm]	Code number
50	37.50	✓	✓	084Z7258
100	87.50	✓	✓	084Z7259
150	137.50	✓	✓	084Z7260
200	187.50	✓	✓	084Z7261
250	237.50	✓	✓	084Z7262



Plug in display

Type	Description	Code number
MBD 1000	Microprocessor controlled plug-in display	060G2850



MBT 153 cable-type temperature sensors



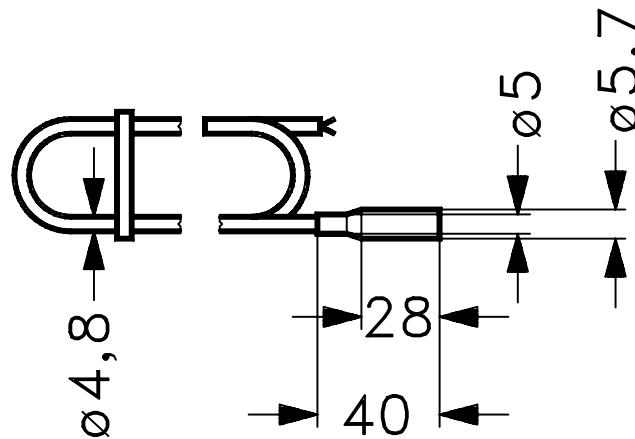
The MBT 153 is a heavy-duty temperature sensor that can be used for controlling cooling water and ventilation systems within general industry and marine applications.

This temperature sensor is based on a standardized Pt100 or Pt1000 element, which gives a reliable and accurate measurement. On request the MBT 153 can also be delivered with NTC/PTC elements. The sensor is based on a stainless steel housing with a cable, which makes the sensor extremely flexible.

The MBT 153 can be combined with a sensor pocket to protect the silicone cable from the media. The MBT 153 has a PVC or silicone cable as standard but it can be delivered with teflon cable on request.

- Temperature range -50 – 200 °C
- Short response times
- Pt100 or Pt1000 resistance element
- 2- or 4-wire connection
- Wetted parts: Stainless Steel (AISI 316)

Dimensions and weight:



Weight: 0.120 kg – 0.425 kg
depending on cable length

All dimensions in millimetres

Approvals: CE, LR, DNV, ClassNK

MBT 153 cable-type temperature sensors

Measuring range: -50 – 200 °C

Short response time

Resistance element		Cable length [m]	Cable type		Wires [pcs]	Code number
Pt 100	Pt 1000		PVC	Silicone		
✓		3.5	✓		2	084Z6030
✓		8.5	✓		2	084Z6032
	✓	3.5	✓		2	084Z6033
	✓	5.5	✓		2	084Z6034
	✓	8.5	✓		2	084Z6035
✓		3.5		✓	2	084Z6036
✓		5.5		✓	2	084Z6037
✓		8.5		✓	2	084Z6038
	✓	3.5		✓	2	084Z6039
✓		3.5		✓	4	084Z6215
✓		5.5		✓	4	084Z6042
✓		8.5		✓	4	084Z6216

Spare parts and accessories

Sensor pocket MBT 120

Insertion length [mm]	Process connections G ½ A	External diameter [mm]	Code number
50	✓	8	084Z6050
100	✓	8	084Z6051
200	✓	8	084Z6053
250	✓	8	084Z6054

MBT 5250 temperature sensor

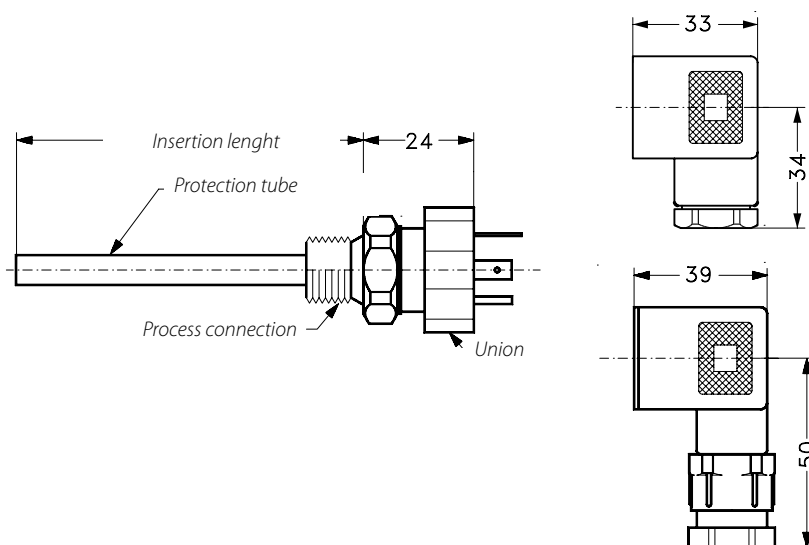


The MBT 5250 is a heavy-duty temperature sensor that can be used for controlling cooling water, lubrication oil, hydraulic oil and refrigeration plants within general industry and marine applications. This temperature sensor is based on a standardized Pt100 or Pt1000 element, which gives a reliable and accurate measurement. The MBT 5250 can be delivered with NTC/PTC elements on request. The measuring insert is based on a silicone cable, which makes the sensor very resistant towards vibrations. All parts in contact with the media are made of stainless steel AISI 316 Ti. The MBT 5250 is equipped with a EN 175301-803-A, Pg 9 plug as standard, but can be delivered with M12 or DIN 72585 Bayonet on request.

- For gaseous or liquid media, e.g. air, gas, vapour, water or oil
- Up to 200 °C media temperatures
- Pt100 or Pt1000 resistance element
- Can be used with 2- or 3-wire connections
- Gold plated male and female connector
- Interchangeable measuring insert
- Available with all relevant marine approvals
- Wetted parts: Stainless Steel (AISI 316)

Dimensions and weight:

Weight: 0.145 – 0.220 kg
depending on insertion
length



All dimensions in millimetres

Approvals: CE, LR, GL BV, DNV, ClassNK, RINA, ABS, CCS

MBT 5250 temperature sensor

Measuring range: -50 – 200 °C

Resistance element: 1 x Pt 100

Extension length: None



Insertion length [mm]	Process connection size	Electrical connection: EN 175301-803-A			Code number
		Pg 9	Pg 11	Pg 13.5	
50	G ½ A	✓			084Z8011
50	G ½ A		✓		084Z8036
50	G ¾ A		✓		084Z8037
100	G ¾ A		✓		084Z8006
100	G ½ A	✓			084Z8012
100	G ½ A		✓		084Z8039
150	G ½ A		✓		084Z8008
150	G ½ A	✓			084Z8010
150	G ¾ A			✓	084Z8014
150	G ¾ A		✓		084Z8041
200	G ½ A	✓			084Z8022
200	G ½ A		✓		084Z8043
200	G ¾ A			✓	084Z8218
200	G ¾ A		✓		084Z8044
50	G ¾ A			✓	084Z8058
100	G ¾ A			✓	084Z8013

MBT 5252 temperature sensors



The MBT 5252 is a heavy-duty temperature sensor that can be used for controlling cooling water, lubrication oil, hydraulic oil and refrigeration plants within general industry and marine applications. This temperature sensor is based on a standardized Pt100 or Pt1000 element, which gives a reliable and accurate measurement. NTC/ PTC elements available on request.

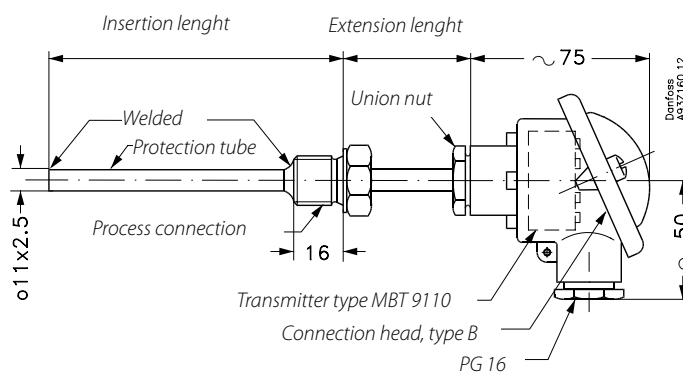
MBT 5252 can also be delivered with transmitter insert for 4 – 20 mA output. In the low temperature version (-50 – 200 °C) the measuring insert is based on a silicone cable, which makes the sensor very resistant towards vibrations.

All parts in contact with the media are made of stainless steel AISI 316 Ti. The MBT 5252 is equipped with a B-head as standard, but can be delivered with B-mini on request.

- For gaseous or liquid media, e.g. air, gas, vapour, water or oil
- Up to +400 °C media temperatures
- Available with built-in transmitter
- Available with all relevant marine approvals
- Wetted parts: Stainless Steel (AISI 316)

Dimensions and weight:

*Weight: 0.37 – 0.45 kg
depending on insertion length*



All dimensions in millimetres

Approvals: CE, LR, BV, DNV, ClassNK, RINA, ABS, KRS, CCS

MBT 5252 temperature sensors

Measuring range: -50 – 200 °C

Resistance element: Pt 100

Connection head: B-head

Extension length: 50 mm



Insertion length [mm]	Transmitter output 4 – 20 mA	Transmitter setting 0 – 100 °C	Code Number G ½A	Code Number G ¾A
50	-	-	084Z8210	084Z8230
80	-	-	084Z6140	084Z6164
100	-	-	084Z8211	084Z8231
150	-	-	084Z8212	084Z8232
200	-	-	084Z8213	084Z8233
250	-	-	084Z6139	084Z6141
50	✓	✓	084Z8214	084Z8234
80	✓	✓	084Z6142	084Z6144
100	✓	✓	084Z8215	084Z8235
150	✓	✓	084Z8216	084Z8236
200	✓	✓	084Z8217	084Z8237
250	✓	✓	084Z6143	084Z6145

MBT 5113 Temperature sensor



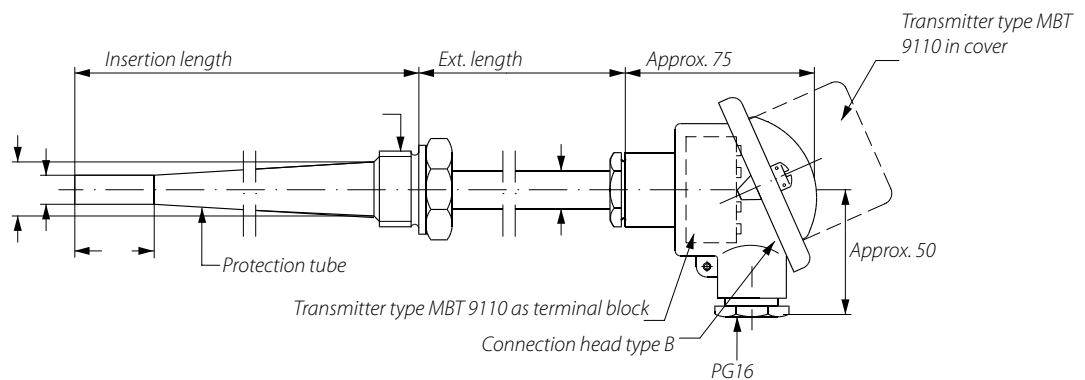
The MBT 5113 is a heavy-duty temperature sensor that can be used for measuring and regulating exhaust gas from diesel engines, turbines and compressors within stationary and marine applications. This temperature sensor is based on a type K thermo couple, which measures temperatures up to 800 °C. The measuring insert can be changed even while operating the application.

All parts in contact with the media are made of stainless steel AISI 316 Ti. The sensor is delivered with B-head as standard and, if needed, a transmitter (MBT 9110) can be ordered as an integrated part of the sensor.

- With thermocouple up to 800 °C media temperature
- Available with built-in transmitter - with or without Eex ia IIC T4/T6 approval
- Available with all relevant marine approvals

Dimensions and weight:

*Weight: 0.48 – 1.04 kg
depending on insertion length
and process connection
(excl. transmitter)*



All dimensions in millimetres

Approvals: CE, LR, BV, DNV, GL, Class NK, RINA, ABS, KRS CCS

MBT5113 Temperature sensor

Measuring range: -50 – 800 °C
 Measuring element: Thermocouple
 Connection head: B-head
 Process connection: $\frac{3}{4}A$

Insertion length [mm]	Transmitter output 4 – 20 mA	Transmitter range 0 – 600 °C	Extension length [mm]	Code number
100	-	-	50	084Z5052
200	-	-	50	084Z5248
100	✓	✓	100	084Z5276
200	✓	✓	100	084Z5277

MBT 5116 Temperature sensors



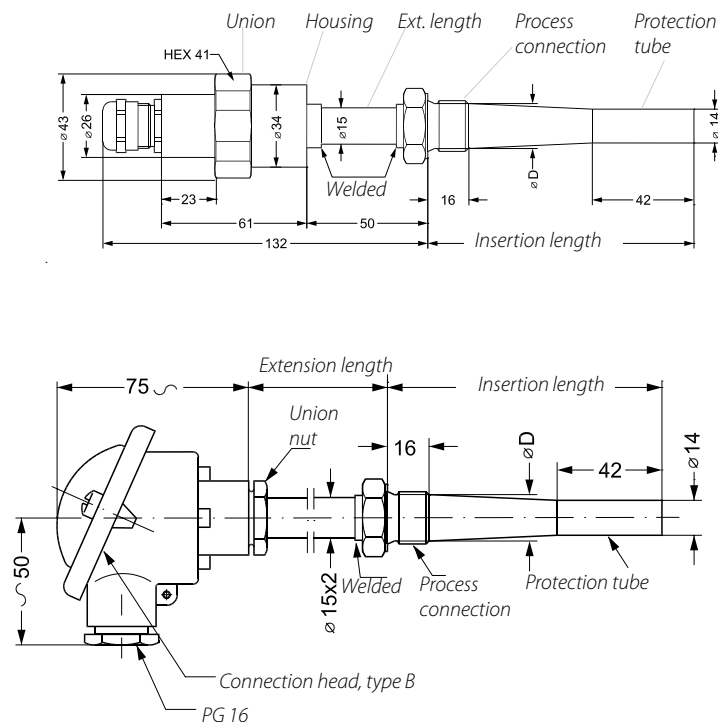
The MBT 5116 is a heavy-duty temperature sensor that can be used for measuring and regulating exhaust gas from diesel engines, turbines and compressors within stationary and marine applications. This temperature sensor is based on a standardized Pt100 element, which gives a reliable and accurate measurement. The Pt100 element is a thin film element specially designed for heavy-duty applications up to 600 °C.

The measuring insert can be changed even while operating the application. All parts in contact with the media are made of stainless steel AISI 316 Ti. The sensor is constructed to fit where there is limited space.

- Up to 600 °C media temperature
- Can be used with 2- or 3-wire connections
- Robust and compact construction with extremely high resistance to shock and vibration according to IEC 68-2-6
- Easy exchange of measuring insert
- Pt 100 thin film technology specially developed for heavy duty applications
- Can be mounted in all positions
- Solid drilled protection tube
- Available with all relevant marine approvals

Dimensions and weight:

*Weight: 0.52 – 1.04 kg
depending on insertion length
and process connection
(excl. transmitter)*



All dimensions in millimetres

Approvals: CE, LR, GL, RINA, ABS, BV, DNV, Class NK, KRS, CCS

MBT5116 Temperature sensors

Measuring range: -50 – 600 °C

Measuring element: Pt 100

Extension length: 50 mm

Process connection: $\frac{3}{4}$ A

B-head	Sensor design		Insertion length [mm]	Code number
	Slim-line Pg 9	Slim-line Pg 13.5		
✓			100	084Z5160
✓			200	084Z5025
✓			250	084Z5034
✓			300	084Z5026
	✓		100	084Z3257
	✓		200	084Z3260
	✓		250	084Z3261
	✓		300	084Z3262
		✓	100	084Z8150
		✓	200	084Z8154
		✓	250	084Z8155
		✓	300	084Z8156

Pressure and temperature switches

When it comes to demanding applications, Danfoss' know-how and expertise is unsurpassed. Our robust switches offer flawless performance day after day and are trusted in the most challenging situations in a variety of industries and applications, of which some are mentioned in the following.

Marine and railway equipment

Break down of essential functions in trains and ships due to failures in the controls and safety equipment can be dangerous, very costly and time consuming. These customers therefore choose partners who have a good reputation and superior products to offer, among others:

- Temperature and pressure control and alarm functions in lubrication oil systems – type KPS, CAS and MBC.
- Pressure control for air compressors – type MBC, KP and RT.
- Essential safety control on trains – type RT and CAS.

Water pumps and air compressors

In water pumps and air compressors it is important to keep a constant pressure and a continuous flow. To ensure this Danfoss offers a range of switches for:

- Monitoring and direct start/stop of single or three phase motors – type RT, MBC, CS, CAS and KP/KPI.
- Dry run protection of pumps – type KP/KPI and RT.

Industrial boilers and boiler room equipment

For boilers and in boiler rooms, accurate monitoring of steam/hot water installations, heat exchangers and water treatment equipment for feed water is vital. Danfoss' programme for steam and high-pressure hot water boilers and burners includes:

- Safety approved pressure controls – type BCP and RT.
- Reliable alarm and safety functions – type BCP, RT and KP.



Hydraulic equipment and windmills

Danfoss switches are intended for flawless alarm indication, shut down, control and diagnostics in a variety of demanding applications:

- Cooling and lubrication systems for generators and gear-boxes – type MBC, KPS, KPI, KP, CAS and RT.
- Hydraulic units such as disk brakes and pitch cylinders – type MBC, KPS and RT.
- Power packs – type MBC and KP.

Autoclaves and sterilisers

High control and safety are essential within the autoclave process.

Temperatures and pressures must be controlled within narrow limits over time by products with high repeatability and trustworthy performance:

- Check of door sealing – type KP, BCP and RT.
- Pressure controls of steam supply – type KP, RT and BCP.
- Control and alarm of pressure in the process chamber – type BCP, KP and RT.

Examples



The BCP pressure switch packs all our expertise into a sleek, modern design. The advanced technology built into this durable boiler control sets new standards for reliability - and ensures a long life with a minimum of maintenance.



Marine applications where space and reliability are the most important features are the natural habitat of the MBC 5100 block-type pressure switch. With their high vibration resistance and all common marine approvals, they are trusted at high seas.



On wind turbines, helping to increase the amount of wind-produced power world-wide, the KPS temperature switch provides on-off limits when critical temperatures are reached.

Industrial Switches

In this catalogue

Pressure switches



Type

RT

BCP

KPS

CAS

KP/KPI

CS

Segments	Marine and railway equipment						
	Industrial boilers and boiler room equipment						
	Autoclaves and sterilisers						
	Water pumps and air compressors						
	Hydraulic equipment						
	Windmills						
Characteristics	Setting range	-1 – 30 bar	0.03 – 40 bar	0 – 60 bar	0 – 60 bar	-0.2 – 28 bar	2 – 20 bar
	Contact system	SPDT	SPDT	SPDT	SPDT	SPDT	TPST and SPST
	Electrical rating AC-3	4 A, 400 V	3 A, 250 V	6 A, 400 V	-	16/ 6 A, 400 V	12 A, 400 V
	Electrical rating AC-15	3 A, 400 V	2 A, 250 V	4 A, 400 V	0.1 A, 220 V	10/4 A, 400 V	-
	Electrical connection	Screw terminals	DIN plug	Screw terminals	Screw terminals	Screw terminals	Screw terminals
	Contact material	Silver or Gold	Silver or Gold	Gold	Silver	Silver or Gold	Silver
	Differential	Adjustable	Adjustable	Adjustable	Fixed	Adjustable	Adjustable
	Special approvals	Marine, TÜV	TÜV	Marine, UL	Marine	Marine	
	Degree of enclosure	IP66 or IP54	IP65	IP67	IP67	IP30, IP44 or IP55	IP43 or IP55
	Design	Box industrial	Box industrial	Box heavy duty	Box heavy duty	Box	Box
	Adjustable neutral zone	Yes					

Railways and marine

Industrial hydraulics, air compressors and water pumps

Electric power and wind turbines

Boiler and boiler room equipment, sterilisers and autoclaves

Differential pressure switches				Temperature switches			
							
MBC	RT	CAS	MBC	RT	KPS	KP	MBC
							
							
							
							
							
							
-0.2 – 400 bar	0 – 11 bar	0.2 – 2.5 bar	0.3 – 5 bar	-60 – 300 °C	-10 – 200 °C	0 – 150 °C	-10 – 200 °C
SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT
3 A, 250 V 0.5 A, 250 V	4 A, 400 V 3 A, 400 V	- 0.1 A, 220 V	3 A, 250 V 0.5 A, 250 V	4 A, 400 V 3 A, 400 V	6 A, 400 V 4 A, 400 V	16 A, 400 V 10 A, 400 V	3 A, 250 V 0.5 A, 250 V
DIN plug	Screw terminals	Screw terminals	DIN plug	Screw terminals	Screw terminals	Screw terminals	DIN plug
Silver	Silver or Gold	Silver	Silver	Silver or Gold	Gold	Silver	Silver
Fixed	Fixed	Fixed	Fixed	Adjustable	Adjustable	Adjustable	Fixed
Marine	Marine	Marine	Marine	Marine	Marine, UL	Marine, UL	Marine
IP65	IP66	IP67	IP65	IP66 or IP54	IP67	IP30, IP44 or IP55	IP65
Compact	Box industrial	Box heavy duty	Compact	Box industrial	Box heavy duty	Box	Compact
	Yes			Yes			

Discover a variety of built-in benefits



Ongoing development of new technology and new features is at the very heart of Danfoss. We want our switches to be among the very best on the market – living up to your expectations.

1 Adjustable differential switching

Pressure and temperature controls have either fixed or adjustable differential settings, good readability, and high accuracy of range setting with use of the scale.

2 Bellows technology

The lifetime of a pressure and temperature switch is determined by the quality of the bellows. Using advanced technology, and being world leader, Danfoss' bellows are manufactured without any welding points, which makes them stress free and completely tight.

3 Designed for various applications

Danfoss offers a very broad range of purpose-specific enclosures and connections.

4 Snap action contacts

All contacts are "snap-action" types, maintaining the contact force until the moment of contact break. Units with gold-plated contacts are ideal for low electrical loads while the silver-cadmium contacts are developed for high loads.

15 international approvals

Danfoss offers a wide range of approvals suited for different industries and geographical markets.

High vibration stability

Outstanding vibration stability in switches ensures flawless operation even in heavy-duty applications.

Wide pressure ranges

The programme covers working ranges from -1 bar up to 400 bar.

High reliability

All switches feature high accuracy, repeatability and stability over time.

Different temperature sensing elements

As experts in charging technologies Danfoss offers temperature switches that operate in a wide temperature range.

Selection Made Easy

Need help selecting the right component for your application? With only a few clicks, Danfoss product selectors can help you find the right product for standard applications.

Developed to help wholesalers, retailers, installers and end-users pinpoint the solenoid valve needs, the web-based tool makes product selection quick and easy.

All it takes is an internet connection to access the pressure switch selector tool from your desk or laptop, tablet or smart-phone.

To discover just how easy the product selectors are to use, please visit:

<http://switchselector.danfoss.com>

To visit by mobile, scan the QR code:



Pressure and temperature switches – Introduction

Setting range

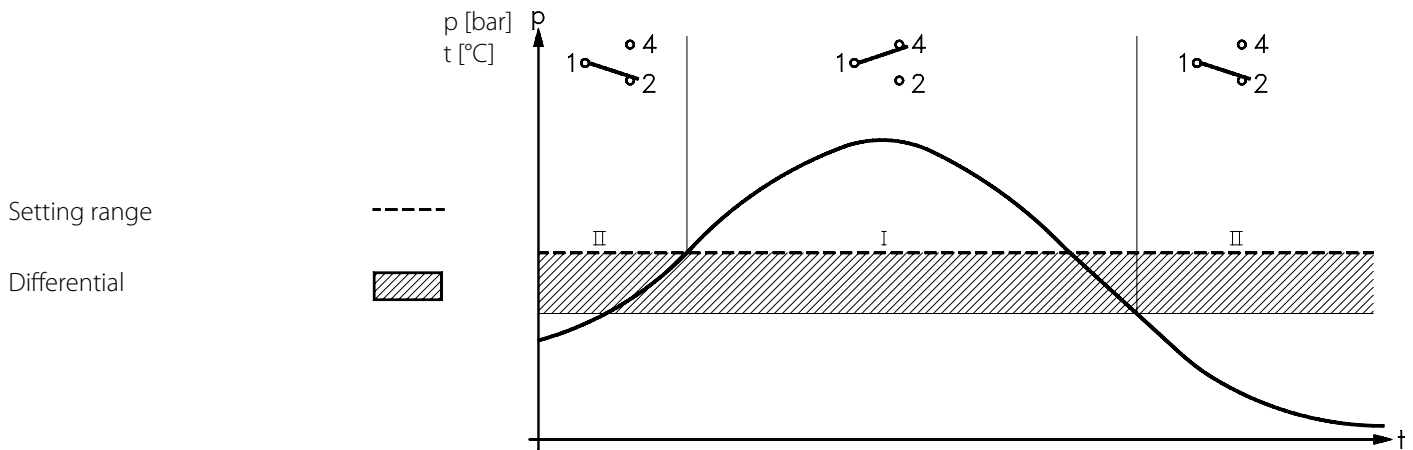
All Danfoss pressure and temperature switches have a given pressure / temperature range which can be set by the user from a scale on the unit. The given cut-in / cut-out temperature or pressure is indicative only. For accurate setting a thermometer or pressure gauge must be used.

Differential

Differential is a difference between cut-in and cut-out values. It is not recommended to see small differential as it causes system hunting. The bigger differential the less switch over cycles per ahour what benefits in longer life of the contact system.

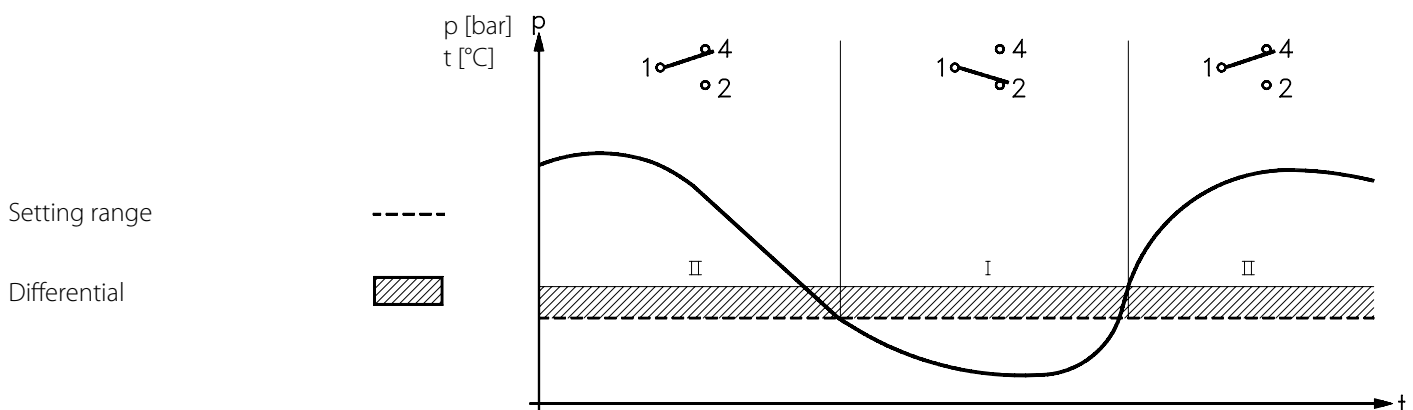
Contact function, setting for rising pressure / temperature

- RT with maximum reset
- KPI
- KP and BCP with automatic and maximum reset
- KPS (except KPS 31)



Contact function, setting for falling pressure / temperature

- RT with automatic and minimum reset
- KP and BCP with minimum reset
- CAS
- KPS 31



RT pressure switches



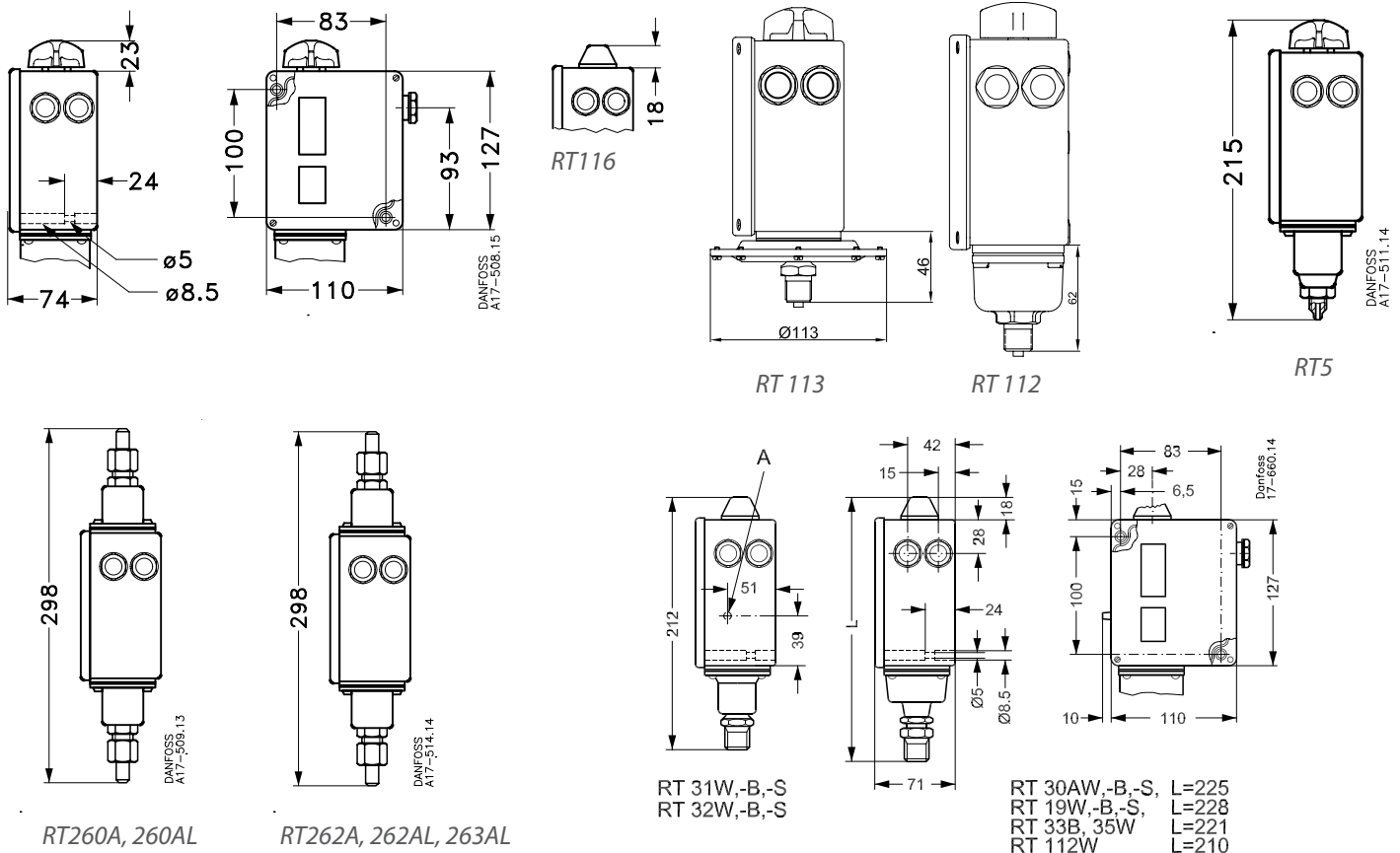
RT switches are used in general industrial, heating and marine sectors. The RT single pressure switches series consist of a variety of controls including neutral zone pressure switches and safety pressure switches for steam boiler plant.

RT switches have been in service for more than 70 years.

- Pressure ranges: -1 – 30 bar
- Replaceable contact system
- Also available with gold plated contact systems
- Fail-safe design
- Adjustable differential
- Adjustable neutral zone
- Enclosure IP66
- Available with TÜV approvals
- Available with min. and max. reset function (IP54)
- Also available as differential switch
- Available with all relevant marine approvals

Dimensions and weight:

Weight: Appr. 1 kg



All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-4/-5. Relevant marine approvals.

RT pressure switches

Contact type: Single pole double throw (SPDT)
Contact material: Silver cadmium oxide (other contact types - see accessories)
Loads: AC-1 ohmic 10A 400V
AC-3 (motor) 4A 400V
AC-15 (inductive) 3A 400V
Ambient temperature: -50 – 70 °C
Media temperature: -40 – 100 °C

RT pressure switches

Pressure connection: G 3/8 A



Type	Setting range P _e [bar]	Mechanical differential [bar]	Max. working pressure P _e [bar]	Reset			Code number
				Auto- matic	Min.	Max.	
RT121	-1 – 0	0.09 – 0.4	7.0	✓			017-521566
RT113 ¹⁾	0 – 0.3	0.01 – 0.05	0.4	✓			017-519666
RT112	0.1 – 1.1	0.07 – 0.16	7.0	✓			017-519166
RT112	0.1 – 1.1	0.07	7.0			✓	017-519266
RT110	0.2 – 3	0.08 – 0.25	7	✓			017-529166
RT200	0.2 – 6	0.25 – 1.2	22	✓			017-523766
RT200	0.2 – 6	0.25	22			✓	017-523866
RT200	0.2 – 6	0.25	22		✓		017-523966
RT116	1 – 10	0.3 – 1.3	22	✓			017-520366
RT116	1 – 10	0.3	22			✓	017-520466
RT116	1 – 10	0.3	22		✓		017-519966
RT116 ²⁾	1 – 10	0.3 – 1.3	22	✓			017-520066
RT5	4 – 17	1.2 – 1.3	22			✓	017-509466
RT5	4 – 17	1.2 – 4	22	✓			017-525566
RT117	10 – 30	1 – 4	42	✓			017-529566

¹⁾Ambient temperature: -10 – 70 °C

²⁾Tamper proof setting knob

RT pressure switches with neutral zone

Pressure connection: G 3/8 A



Type	Setting range P _e [bar]	Mechanical differential [bar]	Adjustable neutral zone [bar]	Max. working pressure P _e [bar]	Code number
RT 200L	0.2 – 6	0.25	0.25 – 0.7	22	017L003266

RT pressure switches for steam plant

Pressure connection: G $\frac{1}{2}$ A



Type	Setting range P _e [bar]	Mechanical differential [bar]	Max. working pressure P _e [bar]	Reset			Code number
				Auto- matic	Min.	Max.	

PED approved. For rising pressure. Ambient temperature: -40 – 70 °C

RT112W	0.1 – 1.1	0.07	7	✓			017-528266
RT35W	0 – 2.5	0.1	7	✓			017-528066
RT30AS	1 – 10	0.4	22			✓	017-518966
RT30AB	1 – 10	0.6	22			✓	017-518866
RT30AW	1 – 10	0.8	22	✓			017-518766
RT19B	5 – 25	1.0	42			✓	017-518266
RT19W	5 – 25	1.2	42	✓			017-518166

PED approval. For falling pressure. Ambient temperature: -40 – 70 °C

RT33B	0 – 2.5	0.1	7		✓		017-526266
RT31W	2 – 10	0.3 – 1	22	✓			017-526766
RT31B	2 – 10	0.3	22		✓		017-526866
RT31S	2 – 10	0.3	22		✓		017-526966

All RT pressure switches for steam plant are TÜV approved. Media temperature: -40 – 150 °C

Differential pressure switches

Pressure connection: G $\frac{3}{8}$ A



Type	Setting range P _e [bar]	Mechanical differential [bar]	Operation range [bar]	Max. working pressure P _e [bar]	Code number
RT262A	0.1 – 1.5	0.1	-1 – 9	11	017D002566
RT262A	0 – 0.3	0.035	-1 – 10	11	017D002766
RT260A	0.5 – 4	0.3	-1 – 18	22	017D002166
RT260A	0.5 – 6	0.5	-1 – 36	42	017D002366
RT260A	1.5 – 11	0.5	-1 – 31	42	017D002466

Differential pressure switches with adjustable neutral zone

Pressure connection: G $\frac{3}{8}$ A



Type	Setting range P _e [bar]	Mechanical differential [bar]	Adjustable neutral zone [bar]	Operation range [bar]	Max. working pressure P _e [bar]	Code number
RT263AL	0.1 – 1	0.05	0.05 – 0.23	-1 – 6	7	017D004566
RT260AL	0.5 – 4	0.3	0.3 – 0.9	-1 – 18	22	017D004866

Spareparts and accessories for RT pressure switches

Type	Version	Description	
Contact system	Standard	Snap action single-pole changeover switch (SPDT) with silver cadmium oxide contact. Fitted in all standard versions of type RT	017-403066
Contact system	Standard	Snap action single-pole changeover switch (SPDT) with gold plated (oxide free) contact surfaces. Increases cut-in reliability on alarm and monitoring systems etc.	017-424066
Contact system	Max reset	Snap action single-pole changeover switch (SPDT) with silver cadmium oxide contact. Designed for RT units performing max reset function.	017-404266
Contact system	Min reset	Snap action single-pole changeover switch (SPDT) with silver cadmium oxide contact. Designed for RT units performing min reset function.	017-404166



Type	Description	
Setting knob	Replacement. Pale grey Ral 7035	017-436366
Seal cap	Seal cap to replace setting knob so that setting can only be altered with tools (tamper proof seal cap). Black	017-436066
Screws	Seal screws for cover and seal cap	017-425166
Solder nipple	Pipe thread ISO 228/1, G 3/8 connector, nipple and AL washer (10 mm ext. / 8 mm int. diam). for soldering onto steel or copper tubing. Steel span of jaws: 22	017-436866
Reducer	Pipe thread ISO 228/1, G 1/2 A x G 3/8, steel, span of jaws 22	017-421966
Reducer	Pipe thread ISO 228/1, G 3/8 x 7/16 - 20 UNF reducer, washer, brass, span of jaws 22	017-420566
Adaptor	Pipe thread ISO 228/1, G 3/8 A x R 3/8 (ISO 7/1) brass, span of jaws 17	060-324166



Type	Description	
Damping coil	1 m. damping coil with 7/16 - 20 UNF connectors. Reducer code no 017-420566 is necessary if the damping coil is to be used with RT units with pipe thread: ISO 228/1, G 3/8 connection.	060-019166
Damping coil	Pipe thread ISO 228/1, damping coil with G 3/8 connector and 1.5 m copper capillary tube. Standard washers are supplied	060-104766
Armoured damping coil	Pipe thread ISO 228/1, damping coil with G 3/8 connector and 1 m. copper capillary tube. Standard washers are supplied	060-333366
Air bell for liquid level control	Air bell for liquid level control RT113. 62 mm diam. ext x 204 mm length. Pipe thread ISO 228/1, G 3/8 connector and nipple (10 mm o.d./6.5 mm i.d.) for welding or brazing on to steel or copper tubing. Brass.	017-401366

The BCP pressure switch for reliable boiler control

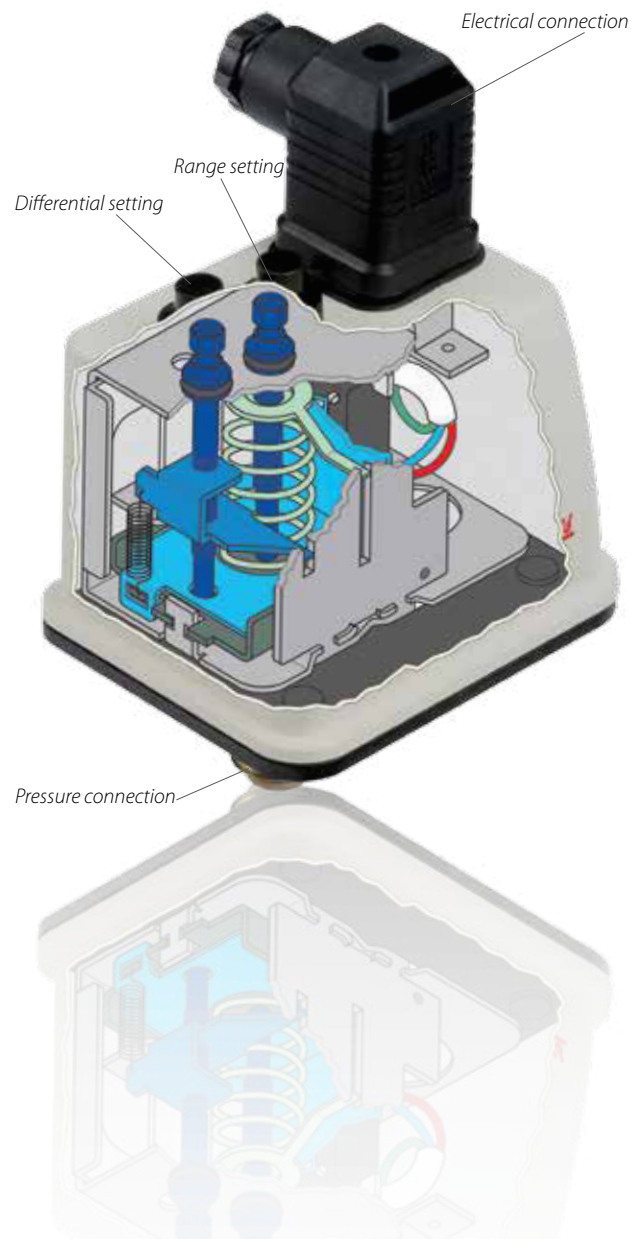
A series of dedicated pressure switches, BCPs control, monitor and limit the pressure in steam and hot water boilers. Simple to install and operate, BCP pressure switches combine advanced technology, durability and design to provide failsafe boiler operation.

Fluid temperature

The BCP can cope with fluid temperatures up to 120 °C. For temperatures above 120°C, a water-filled loop must be installed.

Pressure range from 0 to 40 bar

The BCP is designed to handle a wide pressure range from low pressure BCP1 with a narrow differential, to high pressure BCP7.



Plug and play (DIN 43650)

A DIN 43650 plug and an external reset – operated by a screwdriver – makes electrical installation and operation easy.

Manual reset with a standard screwdriver

All BCP pressure switches are available with an automatic reset for boiler operations, or a manual reset to be used as a safety limit switch.

Failsafe versions

For added safety, dual bellows enable an off function (safety cut-out) if a fault occurs.

Approvals

The BCP range is CE-marked in accordance with EN 60730-1, VdTÜV-Merkblatt Druck 100 TÜV. SDWFS/SDBFS. 08 – 335 and PED 97/23/ED, category IV, safety equipment. It is tested according to EN12952-11 and EN12953-9.

Bracket for wall and DIN rail mounting

The BCP can be directly mounted on the pressure connection or wall mounted with a bracket.

User friendly

- Easy external adjustment of the pressure setting and pressure differential
- Separate scales for pressure setting and differential setting

BCP pressure controller / pressure limiter

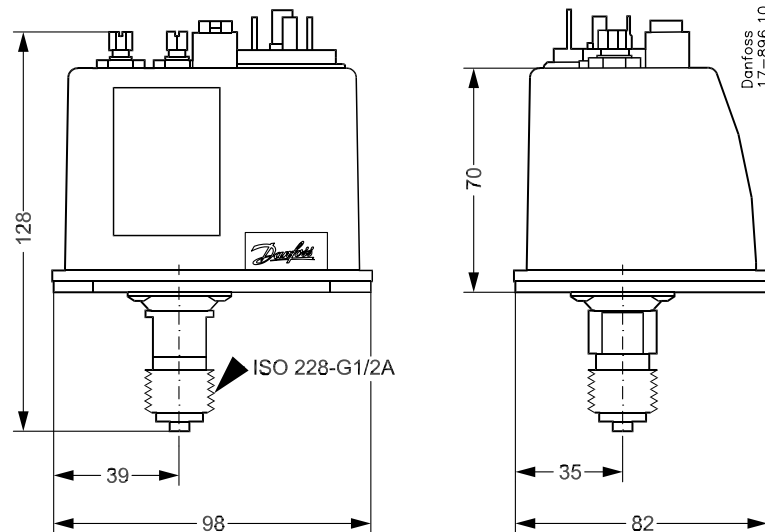


The BCP type is a series of dedicated pressure switches for control, monitoring and safety of steam and hot water boilers. The BCP incorporates a single-pole changeover microswitch where the contact position depends on the pressure in the connection port and the range set value. For installations, in which operation is particularly critical for safety reason, the use of fail-safe control is recommended.

- Available as high and low pressure limiters as well as pressure controllers
- Wide pressure range: from low pressure BCP1 with narrow differential to high pressure BCP7
- The fail-safe dual bellows enable premature cut-out when fault occurs
- Din plug mounted on the top of control for easy electrical wiring
- Single-pole changeover switch (SPDT), switch + alarm
- Direct mounting on pressure connection or wall mounting by means of a bracket
- Versions with automatic and manual resets available
- Screw adjustments made on top of housing
- Manual reset for pressure limiters possible only by means of tools
- Version with gold plated contact for electronic devices

Dimensions and weight:

Weight: 0.5 kg



Dimensions in millimetres

Approvals: CE marked in accordance with EN60730-1 and PED 97/23.

BCP pressure controller/ pressure limiter

Contact type:	Single pole double throw (SPDT)
Contact material:	Gold plated silver. <i>(On request silver cadmium oxide is available for higher loads)</i>
Loads:	AC-1 (ohmic) 6A 250V AC-15 (inductive) 1 A 250V
Pressure connection:	G $\frac{1}{2}$ A
Enclosure:	IP65
Ambient temperature:	-20 – 70 °C
Media temperature:	Up to 120 °C



BCP pressure controller, automatic reset

Type	Setting range P _e [bar]	Differential [bar]	Max. working pressure P _e [bar]	Max. test pressure P _e [bar]	Code number
BCP1	0.1 – 1.1	0.15 – 0.6	6	7	017B0002
BCP2	0 – 2.5	0.4 – 1	10	11	017B0006
BCP3	0 – 6	0.7 – 1.4	16	18	017B0010
BCP4	1 – 10	1 – 2.5	25	28	017B0014
BCP5	2 – 16	2 – 3.2	32	35	017B0018
BCP6	5 – 25	2.5 – 4	40	45	017B0022
BCP7	10 – 40	3 – 6	63	70	017B0026



BCP pressure limiter

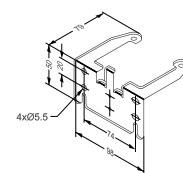
Type	Setting range P _e [bar]	Differential [bar]	Max. working pressure P _e [bar]	Max. test pressure P _e [bar]	Code number
For falling pressure, minimum reset					
BCP2L	0 – 2.5	0.2	10	11	017B0058
BCP3L	0 – 6	0.4	16	18	017B0062
BCP4L	1 – 10	0.45	25	28	017B0066
BCP5L	2 – 16	1.2	32	35	017B0070
BCP6L	5 – 20	1.2	40	45	017B0074

For rising pressure, maximum reset

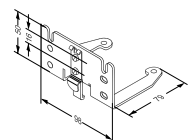
BCP1H	0.1 – 1.1	0.1	6	7	017B0030
BCP2H	0 – 2.5	0.2	10	11	017B0034
BCP3H	0 – 6	0.4	16	18	017B0038
BCP4H	1 – 10	0.45	25	28	017B0042
BCP5H	2 – 16	1.2	32	35	017B0046
BCP6H	5 – 25	1.5	40	45	017B0050
BCP7H	10 – 40	2.3	63	70	017B0054

Spareparts for BCP pressure switch

Description	Code numbers
Bracket for wall mounting	017B1018
Bracket for 35 mm rail mounting	017B1019



For wall mounting



For 35 mm rail mounting

KPS heavy-duty pressure switches

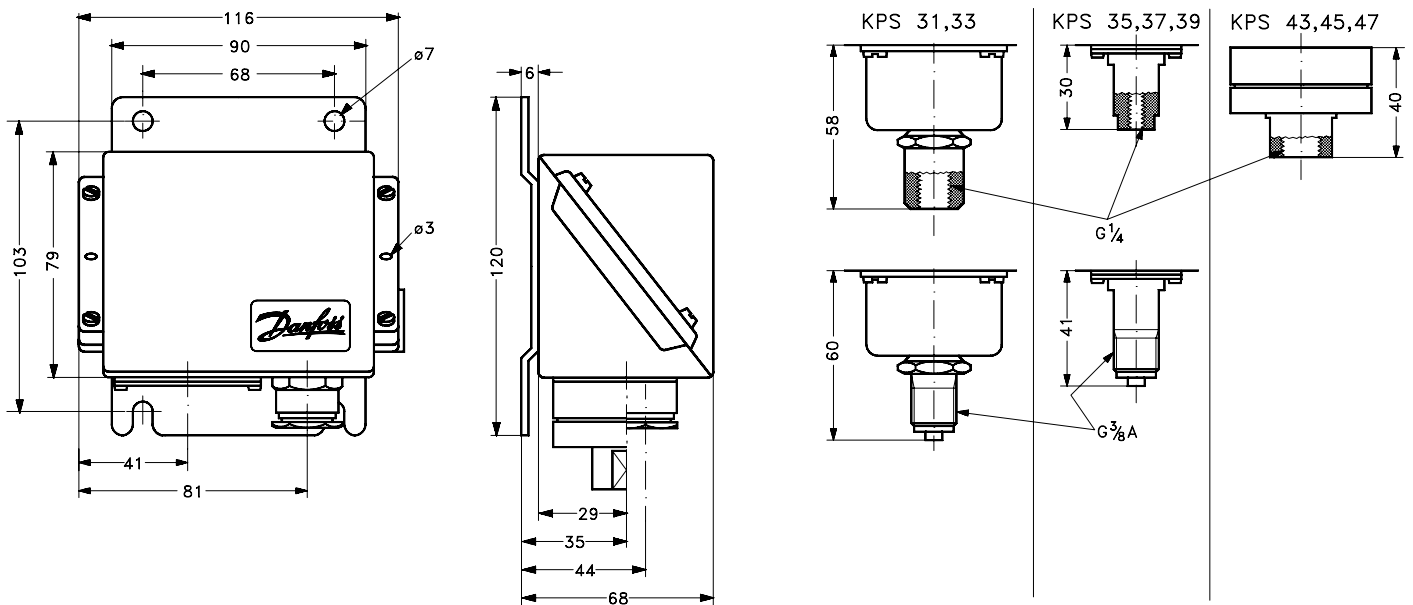


In the KPS series, special attention has been given to meeting important demands for a high level of enclosure, a robust, compact construction and resistance to shock and vibration. The KPS range covers most outdoor as well as indoor application requirements, and are suitable for use in alarm and regulation systems in factories, diesel plant, compressors, powerstation and on board ships.

- Pressure ranges: 0 – 60 bar
- Gold plated contact systems
- Adjustable or fixed differential
- Robust and compact construction
- Resistance to shock and vibrations
- Diaphragm version for applications with: Pulsations/pressure peaks
- Also sea water as media
- Enclosure IP67. Sturdy and sea water resistant.
- Available with all relevant marine approvals

Dimensions and weight:

Weight:
KPS 31 – 39: 1.0 kg
KPS 43 – 47 1.3 kg



Dimensions in millimetres

Approvals: CE marked in accordance with EN60947-4/-5. UL E73170. All relevant marine approvals

KPS heavy-duty pressure switches

Contact type: Single pole double throw (SPDT)
Contact material: Gold plated silver
Loads: AC-1 (ohmic) 10A 440V
AC-3 (motor) 6A 440V
AC-15 (inductive) 4A 440V
Enclosure: IP67



Type	Setting range	Differential	Max. working pressure	Connection size		Code number
	P _e [bar]	[bar]	P _e [bar]	G ¼ A	G ¾ A	

Controls for low and medium pressure. Ambient temperature: -40 – 70 °C. Media temperature: -40 – 100 °C.

KPS31	0 – 2.5	0.1	6		✓	060-310966
KPS31	0 – 2.5	0.1	6	✓		060-311066
KPS33	0 – 3.5	0.2	10		✓	060-310366
KPS33	0 – 3.5	0.2	10	✓		060-310466
KPS35	0 – 8	0.4 – 1.5	12		✓	060-310066
KPS35	0 – 8	0.4 – 1.5	12	✓		060-310566
KPS35	0 – 8	0.4	12	✓		060-310866
KPS37	6 – 18	0.85 – 2.5	22		✓	060-310166
KPS37	6 – 18	0.85 – 2.5	22	✓		060-310666
KPS39	10 – 35	2 – 6	45		✓	060-310266
KPS39	10 – 35	2 – 6	45	✓		060-310766

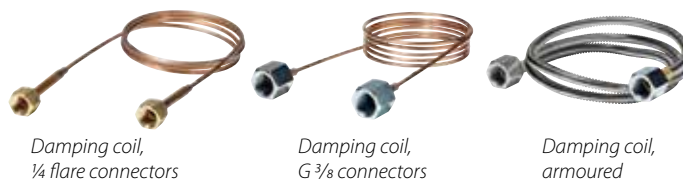
Controls for high pressure and strongly pulsating media. Ambient temperature: -25 – 70 °C. Media temperature: -25 – 100 °C.

KPS43	1 – 10	0.7 – 2.8	120	✓		060-312066
KPS45	4 – 40	2.2 – 11	120	✓		060-312166
KPS47	6 – 60	3.5 – 17	120	✓		060-312266

Spareparts for KPS



Description	Code numbers
Reducer. G ¾ x 7/16 - 20 UNF (¼ flare) reduction with washer	017-420566
Adaptor G ¾ A x ¼ - 18 NPT with washer	060-333666
Nipple G ¼ A x G ¾ A	060-333266
Damping coil with ¼ flare connectors and 1 m copper capillary tube. Damping coils used for applications with ¾ RG connector requires the use of reducer.	060-007166
Damping coil with G ¾ connectors and 1.5 m copper capillary tube	060-104766
Armoured damping coil with ¾ connectors and 1 m armoured capillary tube. Standard washers included.	060-333366



CAS heavy-duty pressure switches



In the CAS pressure switches series, special attention has been given to meeting demands for a high level of enclosure, low differential, robust, compact construction and resistance to shock and vibration. The CAS series covers most outdoor as well as indoor application requirements. CAS pressure switches are suitable for use in alarm and regulation systems in factories, diesel plant, compressors, power stations and on board ships.

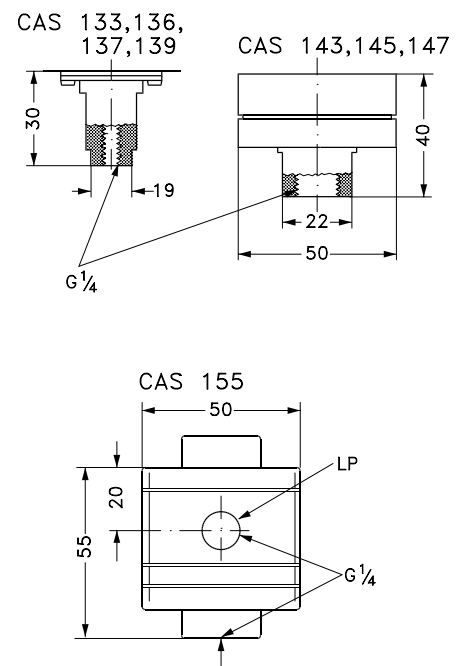
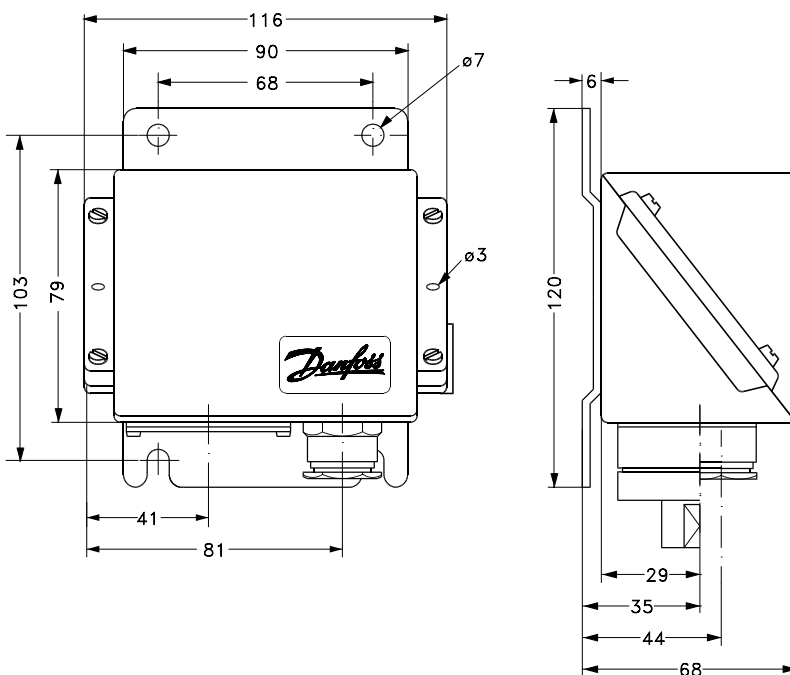
- Pressure ranges: 0 – 60 bar
- Low differential (fixed) micro switch
- Enclosure IP67. Sturdy and sea water resistant
- Robust and compact construction
- Resistance to shock and vibrations
- Diaphragm version applications with: Pulsations/pressure peaks and seawater as media
- Also available as differential pressure switch
- Available with all relevant land and marine approvals

Dimensions and weight:

Weight:

CAS 133 – 139 1.0 kg.

CAS 143 – 147 1.3 kg.



All dimensions in millimetres

Approvals: CE marked in accordance with EN 60947-5. All relevant land and marine approvals.

CAS Heavy-duty pressure switches with pipe thread connection

Contact type: Single pole double throw (SPDT)

Loads: AC-1 (ohmic)
AC-3 (motor)
AC15 (inductive) 0.1 A 220V

Pressure connection: G 1/4 A



Type	Setting range P _e [bar]	Differential [bar]	Max. working pressure P _e [bar]	Code number
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Ambient temperature: -40 – 70 °C. Media temperature: -40 – 100 °C.

CAS133	0 – 3.5	0.1	10	060-315066
CAS136	0 – 10	0.2	22	060-315166
CAS137	6 – 18	0.3	27	060-315266
CAS139	10 – 35	0.6	53	060-315366

CAS pressure switches for high pressure and strongly pulsating media

Ambient temperature: -25 – 70 °C. Media temperature: -25 – 100 °C.

CAS143	1 – 10	0.2 – 0.6	120	060-316066
CAS145	4 – 40	0.8 – 2.4	120	060-316166
CAS147	6 – 60	1 – 3	120	060-316266

CAS differential pressure switch

Pressure connection: 2 x G 1/4. Ambient temperature: -25 – 70 °C



Type	Setting range P _e [bar]	Differential [bar]	Max. working pressure P _e [bar]	Code number
CAS155	0.2 – 2.5	0.1	0 – 8	060-313066

Spare parts for CAS pressure switch

Description	Code numbers
Connector with nipple. Pipe thread ISO 228/1, G 3/8 connector, nipple and AL washer (10 mm ext. / 8 mm int. diam). for soldering onto steel or copper tubing. Steel span of jaws: 22	017-436866
Connector with nipple. G 3/8 connector nipple and washer (10 mm ext. / 6.5 mm int. diam). For welding. Steel span of jaws: 22	017-422966
Reducer. G 3/8 x 7/16 - 20 UNF (1/4 flare) reduction with washer	017-420566
Adaptor G 3/8 A x 1/4 - 18 NPT with washer	060-333666
Nipple G 1/4 A x G 3/8 A	060-333266
Damping coil with G 3/8 connectors and 1.5 m copper capillary tube	060-104766
Armoured damping coil with 3/8 connectors and 1 m armoured capillary tube. Standard washers included.	060-333366



The KPI pressure switch for liquid and gaseous media

Designed to control and monitor industrial application systems, the KPI is a compact and robust solution that offers safety and longevity.

Wide setting range

Available in pressure ranges from -0.2 – 28 bar, there is a KPI with the pressure setting you require.

Pressure control for most industrial applications

Easy and stable setting values make it easy to control liquid and gaseous media in most industrial applications, e.g. pumps and compressors

Easy to install

The small dimensions of the KPI saves space and makes it easy to install.

Shock and impact resistant

Vibration-proof from 0 – 1000 Hz, 4g (1g = 9.81 m/s²), the KPI is ideal for mobile applications where shock and strokes occur.

Ultra-short bounce times

The perfect Single Pole Double Throw (SPDT) snap-function minimises wear during each operation and extends contact life.

Cable entry for 6 – 14 mm diameter cables

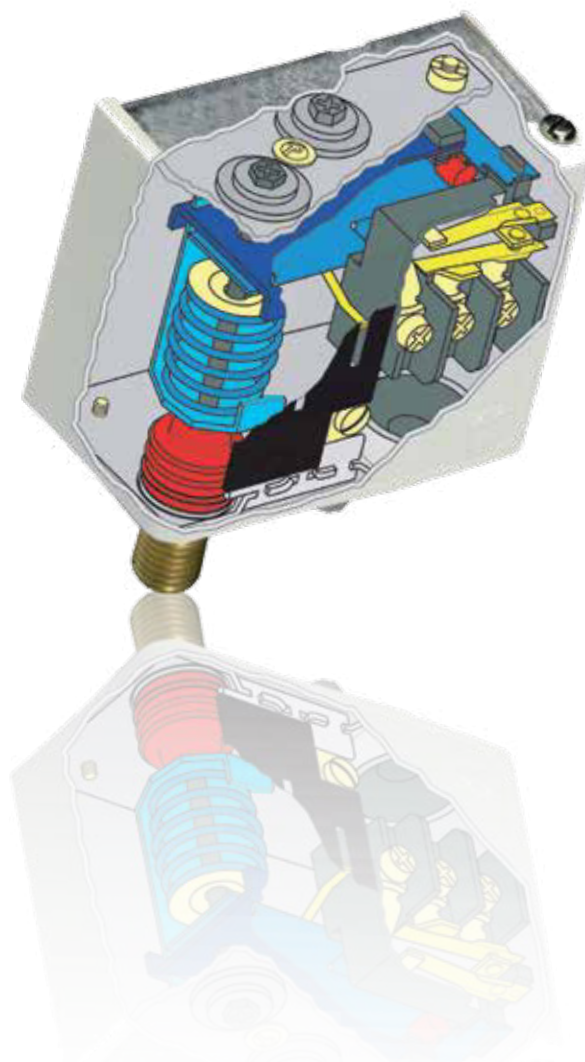
Two cable entries on the front of the pressure switch provide a number of possible electrical cable connections.

High contact load

The SPDT's silver contacts can cope with loads up to 16A, 400V AC3. And gold contacts are also available to ensure perfect function with low electrical loads.

Longevity

On average, the KPI can perform more than 400,000 electrical operations during its lifetime, which is four times more than approval requirements.



KPI pressure switches for light industry

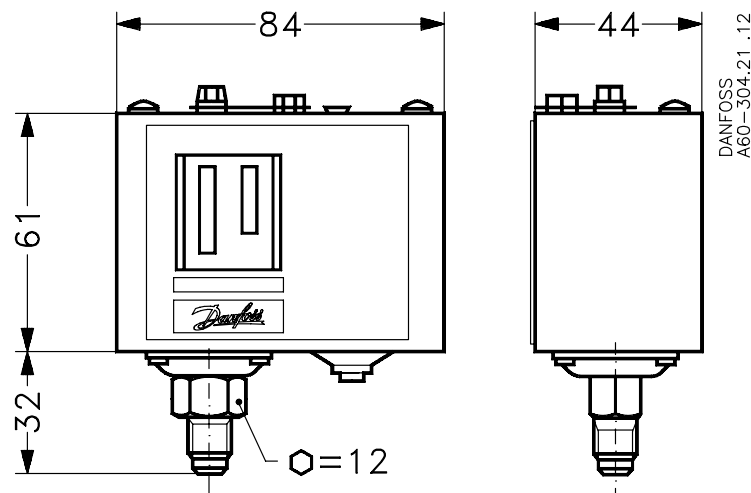


Danfoss KPI pressure switches are used for control, monitoring and alarm systems in industrial applications. The KPI series are suitable for plant in connection with liquid and gaseous media. They are fitted with a single-pole switch changeover (SPDT).

- Pressure ranges: -0.2 – 28 bar
- High contact load
- Ultra short bounce-time
- Available with gold plated contact systems
- Adjustable differential
- Scale for setting of range and differential
- Enclosure IP44 when mounted with top cover and back plate
- Snap action contact system with omega spring

Dimensions and weight:

Weight: 0.3 kg



All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-4/-5. Electrical safety certificate - FM. UL E31024.

KPI pressure switches for light industry with pipe thread connection

Contact function: Single pole double throw (SPDT)
Contact material: Silver cadmium oxide
Loads: AC-1 ohmic 10A 440V
AC-3 (motor) 6A 440V
AC-15 (inductive) 4A 440V
Reset: Automatic
Pressure connection: G 1/4A
Ambient temperature: -40 – 65 °C
Media temperature: -40 – 100 °C
Enclosure: IP30, IP33 when wall mounted, IP44 with top plate



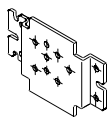
Type	Setting range P _e [bar]	Differential [bar]	Max. working pressure P _e [bar]	Code number
KPI 35	-0.2 – 8	0.4 – 1.5	18	060-121766
KPI 35 ¹⁾	-0.2 – 8	0.4 – 1.5	18	060-316466
KPI 35	-0.2 – 8	0.5 – 2	18	060-121966
KPI 36	2 – 12	0.5 – 1.6	18	060-316966
KPI 36 ¹⁾	4 – 12	0.5 – 1.6	18	060-113866
KPI 36	2 – 12	0.5 – 1.6	18	060-319366
KPI 36	4 – 12	0.5 – 1.6	18	060-118966
KPI 38	8 – 28	1.8 – 6	30	060-508166

¹⁾ Contact material: Gold plated silver

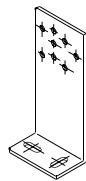
Spareparts and accessories for KPI pressure switch

Type	Description	Code numbers
Wall bracket	Mounting screw and washers included	060-105566
Angle bracket	Mounting screw and washers included	060-105666
Seal screw for locking plate	Seal screw according to DIN 405, for locking of setting point	060-105766
Screwed cable entry	Pg 13.5 with special nut. For 6 – 14 mm diameter cables	060-105966
Top cover	For single control. If a wall or angle bracket is mounted on the backplate of the housing, the KP will have an IP44 grade of enclosure by means of this cover	060-109766
IP55 enclosure	For single control. Specially designed IP55 enclosure , not transparent	060-033066

Brackets



For wall mounting



For 35 mm rail mounting



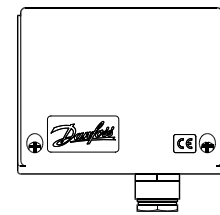
Seal screw



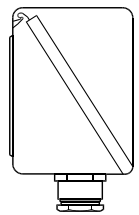
Screwed cable entry



Top cover



IP55 enclosure



KP pressure switches for light industry



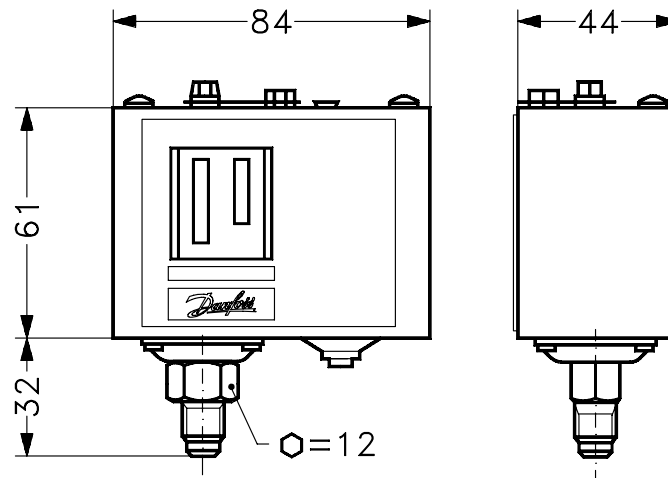
Danfoss KP pressure switches are used for control, monitoring and alarm systems in industrial applications.

The KP series are suitable for gaseous media and air. They are fitted with a single-pole switch changeover (SPDT), and can control single-phase ac motors of up to 2 kW directly.

- Pressure ranges: -0.2 – 21 bar
- High contact load - Ultra short bounce-time
- Also available with gold plated contact systems
- Media: Gaseous media and air
- Enclosure IP44 when mounted with top cover and back plate
- Small dimensions - space saving - easy to install

Dimensions and weight:

Weight: 0.34 kg



KP 35 and KP 36

All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-4/-5. Electrical Safety Certificate - FM. UL E31024. Relevant marine approvals.

KP pressure switches for light industry with pipe thread connection

Contact system: Single pole double throw (SPDT)
Contact material: Silver cadmium oxide
Loads: AC-1 ohmic 16A 400V
 AC-3 (motor) 16A 400V
 AC-15 (inductive) 10A 400V
Reset function: Automatic
Ambient temperature: -40 – 65 °C
Media temperature: -40 – 100 °C



Type	Setting range P _e [bar]	Differential P _e [bar]	Max. working pressure P _e [bar]	Enclosure	Code number
Pressure connection: G 1/4A					
KP2	-0.2 – 3.5	0.3 – 1.0	10	IP30	060-131866
KP35	-0.2 – 7.5	0.7 – 4	17	IP30	060-113366
KP35	-0.2 – 7.5	0.7 – 4	17	IP55	060-538666
KP35 ¹⁾	-0.2 – 7.5	0.7 – 4	17	IP30	060-504766
KP36 ¹⁾	2 – 14	0.7 – 4	17	IP30	060-113766
KP36	2 – 14	0.7 – 4	17	IP30	060-110866
KP36	2 – 14	0.7 – 4	17	IP55	060-538766
KP36 ¹⁾	4 – 12	0.5 – 1.6	17	IP30	060-114466
KP36	4 – 12	0.5 – 1.6	17	IP30	060-122166

¹⁾ Contact material: Gold plated silver

KP pressure switches for boilers

Contact system: Single pole double throw (SPDT)
Contact material: Silver cadmium oxide
Loads: AC-1 (ohmic) 16 A 400 V
 AC-3 (motor) 16 A 400 V
 AC-15 (inductive) 10 A 400 V
Reset function: Manual or Automatic
Ambient temperature: -40 – 65 °C
Media temperature: - 40 – 100 °C
Pressure connection: G1/2 A
Enclosure: IP30, IP33 when wall mounted, IP44 with top plate

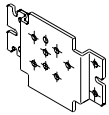


Type	Setting range P _e [bar]	Differential P _e [bar]	Max. working pressure P _e [bar]	Reset	Code number
KP 34	0.1 – 1	0.1 – 4	4.0	Automatic	060-216466
KP 34	0.1 - 1	0.2 fixed	4.0	Manual	060-216366
KP 35	0.4 – 3.4	0.4 – 2.2	10	Automatic	060-216666
KP 35	0.4 – 3.4	0.5 fixed	10	Manual	060-216566
KP36	1 – 10	0.7 – 4	17	Automatic	060-215966
KP 36	1 - 10	0.7 fixed	17	Manual	060-216066
KP 37	4 – 20	1.8 – 3.1	28	Automatic	060-216166
KP 37	4 – 20	3.0 fixed	28	Manual	060-216266

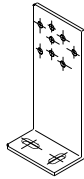
Spareparts and accessories for KP pressure switch

Type	Description	
Wall bracket	Mounting screw and washers included	060-105566
Angle bracket	Mounting screw and washers included	060-105666
Seal screw for locking plate	Seal screw according to DIN 405, for locking of setting point	060-105766
Screwed cable entry	Pg 13.5 with special nut. For 6 – 14 mm diameter cables	060-105966
Top cover	For single control. If a wall or angle bracket is mounted on the backplate of the housing, the KP will have an IP44 grade of enclosure by means of this cover	060-109766
IP55 enclosure	For single control. Specially designed IP55 enclosure , not transparent	060-033066

Brackets



For wall mounting



For 35 mm rail mounting



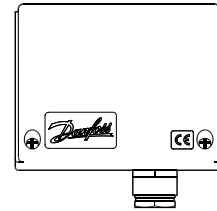
Seal screw



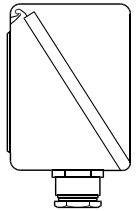
Screwed cable entry



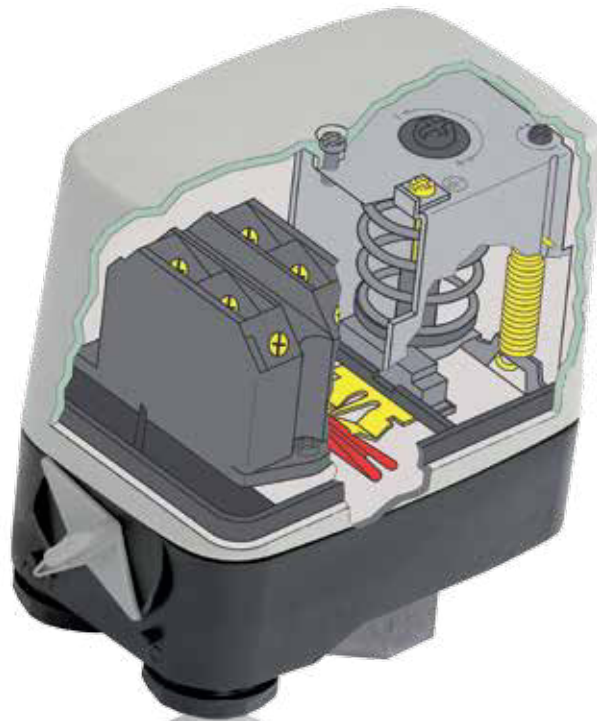
Top cover



IP55 enclosure



The CS pressure switch for excellent pressure control



Designed for air compressors and water pump applications, the CS pressure switch has a built-in, pressure-operated three-pole contact system. Made for the direct start of pumps and as on/off functions in control circuits, the CS switch is robust and reliable.

Adjustable range and differential

The CS switch can be adjusted to suit a variety of working conditions and pressures, ranging from 2 – 20 bar.

Special compressor application accessory

To prevent air compressors starting under load, a pressure relief valve can be used with the CS switch to relieve pressure on the compressor piston.

Robust and tight

Enclosed in heavy-duty plastic, the CS switch is available in IP43 or IP55 versions to ensure high performance in wet or dusty environments.

Safe and reliable

For added safety in the event of system failure or maintenance purposes, the CS is fitted with a manual switch to lock the contact system in the open position, independent of the pressure in the system.

CS pressure switches for air and water



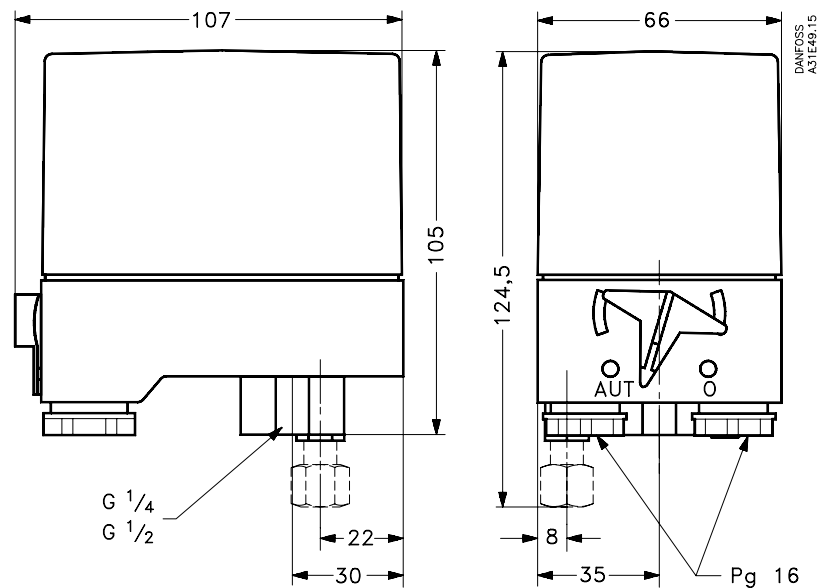
CS pressure switches have a three-pole switch and adjustable differential.

The pressure switches are fitted with a manual switch that will lock the contact system in the open position independently of the pressure in the system.

- For automatic start and stop of air compressors and water pumps
- Pressure ranges: 2 – 20 bar
- Contact system: 3-pole (standard) and 1-pole (accessory)
- Adjustable differential from 0.7 – 7 bar
- Manual switch to lock the contact system
- Relief valve (accessory)
- Enclosure IP43 or IP55
- Versions for drinking water

Dimensions and weight:

Weight: 0.5 kg



All dimensions in millimetres

Approvals: CE according to EN 60947-4-5

CS pressure switches

Contact function: Triple pole single throw (TPST)
Contact material: Silver cadmium oxide
Loads: AC-3 12A 220 – 415V
 9A 600V
Ambient temperature: -20 – 70 °C
Media temperature: Water: 0 – 70 °C
 Air: -20 – 70 °C



Setting range P _e [bar]	Factory setting P _e [bar]	Min. differential [bar]	Max. differential [bar]	Max. working pressure P _e [bar]	Connection size		Enclosure	Code number
					G ¼ A	G ½ A		
2 – 6	4	0.72 – 1	1 – 2	6	✓		IP43	031E020066
2 – 6	4	0.72 – 1	1 – 2	6	✓		IP55	031E020566
2 – 6	4	0.72 – 1	1 – 2	6		✓	IP43	031E021066
2 – 6	4	0.72 – 1	1 – 2	6		✓	IP55	031E021566
4 – 12	4	1 – 1.5	2 – 4	12	✓		IP43	031E022066
4 – 12	4	1 – 1.5	2 – 4	12	✓		IP55	031E022566
4 – 12	4	1 – 1.5	2 – 4	12		✓	IP43	031E023066
4 – 12	4	1 – 3	2 – 4	12		✓	IP55	031E023566
7 – 20	7	2 – 3.5	3.5 – 7	20	✓		IP55	031E024566
7 – 20	7	2 – 3.5	3.5 – 7	20		✓	IP43	031E025066
7 – 20	7	2 – 3.5	3.5 – 7	20		✓	IP55	031E025566



Contact function: SPST

Setting range P _e [bar]	Min. differential [bar]	Max. differential [bar]	Max. working pressure P _e [bar]	Connection size G ¼ A	Enclosure	Code number
2 – 6	0.72 – 1	1 – 2	6	✓	IP43	031E020266

Spareparts for CS pressure switch

Description	Code number
Three pole contact system TPST	031E029166
Pressure relief valve, incl. fixing screw for 6 mm pipe/hose	031E029866
Pressure relief valve, incl. fixing screw for ¼ in. pipe/hose	031E029766
Two Pg 16 screwed cable entries with gaskets, cable diam. 6.5 – 15 mm	031E029366
Nipple with 7/16 - 20 UNF and M10 x 1 int.	031E029666

TPST contact system



Pressure relief valve



Screwed cable entries

Nipple

MBC 5100 block-type compact pressure switches



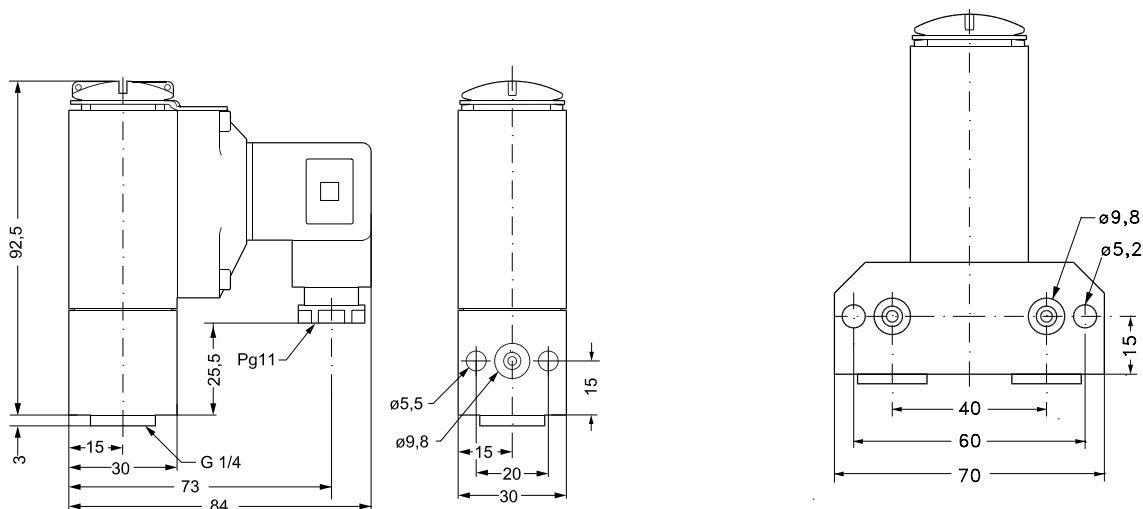
MBC pressure switches are used in industry and marine applications where space and reliability are the most important features. MBCs are compact pressure switches, designed according to our new block design to survive in the harsh conditions known from machine rooms onboard ships.

MBCs have high vibration resistance and feature all commonly marine approvals. The fixed, but low differential guarantees accurate monitoring of critical pressures. MBV test valves can be delivered as standard option for MBC pressure switches.

- All relevant marine approvals
- Pressure ranges: -0.2 – 400 bar
- Low differential (fixed) micro switch
- Resistant to shock and vibrations
- Enclosure IP65
- Diaphragm version for applications with pulsations/pressure peaks
- Compact design
- Low installations costs
- Fast and easy to operate
- Easy to mount on block test valve
- Available as differential pressure switch

Dimensions and weight:

Weight: 0.4 kg.



All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-5. All relevant marine approvals

MBC 5100 block-type compact pressure switches

Contact function: Single pole double throw (SPDT)

Contact material: Silver

Loads: AC-1 (ohmic) 10A, 250V

AC-3 (motor) 3A, 250V

AC-15 (inductive) 0.5A, 250V

Plug Pg 11. Other electrical connections available on request



Setting range P _e [bar]	Min. differential setting [bar]	Max differential setting [bar]	Max. working pressure P _e [bar]	Connection		Code number
				G ¼ A	Flange	
Low pressure bellows. Ambient temperature: -40 to 85 °C						
-0.2 – 1	0.15	0.45	15	✓	✓	061B000566
-0.2 – 4	0.15	0.45	15	✓	✓	061B000466
-0.2 – 4	0.15	0.45	15	✓		061B001066
-0.2 – 10	0.15	0.6	15	✓	✓	061B000266
Low pressure diaphragm. Ambient temperature: -10 to 85 °C						
1 – 10	0.30	2.5	150	✓	✓	061B100466
1 – 10	0.30	2.5	150	✓		061B100866
5 – 20	0.4	2.5	150	✓	✓	061B100266
High pressure diaphragm. Ambient temperature: -10 to 85 °C						
5 – 40	1.0	7	150	✓	✓	061B100566
10 – 100	1.7	14	150	✓	✓	061B100366
High pressure piston. Ambient temperature: -40 to 85 °C						
16 – 160	12	30	600	✓		061B510066
25 – 250	12	40	600	✓		061B510166
40 – 400	15	50	600	✓		061B510266



MBC 5180 block-type differential pressure switch

Setting range P_e [bar]	Operating range LP side P_e [bar]	Max. working pressure P_e [bar]	Connection		Code number
			G ¼ A	G ¼ A w. flange	
0.3 – 5	0 – 30	45		✓	061B128066
0.3 – 5	0 – 30	45	✓		061B129066

Spareparts for MBC5100

Type	Description	
Pulse-snobber	Male, G ¼A, length 20 mm	061B400101
Pulse-snobber	Male, G ¼A, length 34 mm	061B400201
Pulse-snobber	For flange connection	061B722101



Pulse snubber
20 mm



Pulse snubber
34 mm



Pulse snubber for
flange connection

MBV 5000 pressure test valve



The MBV 5000 is a part of a block concept covering block pressure switches, block pressure transmitters, block test valves and accessories.

The block concept has been developed to save space, weight, and costs and meet the strict demands on marine equipment, including EU stipulations on such products.

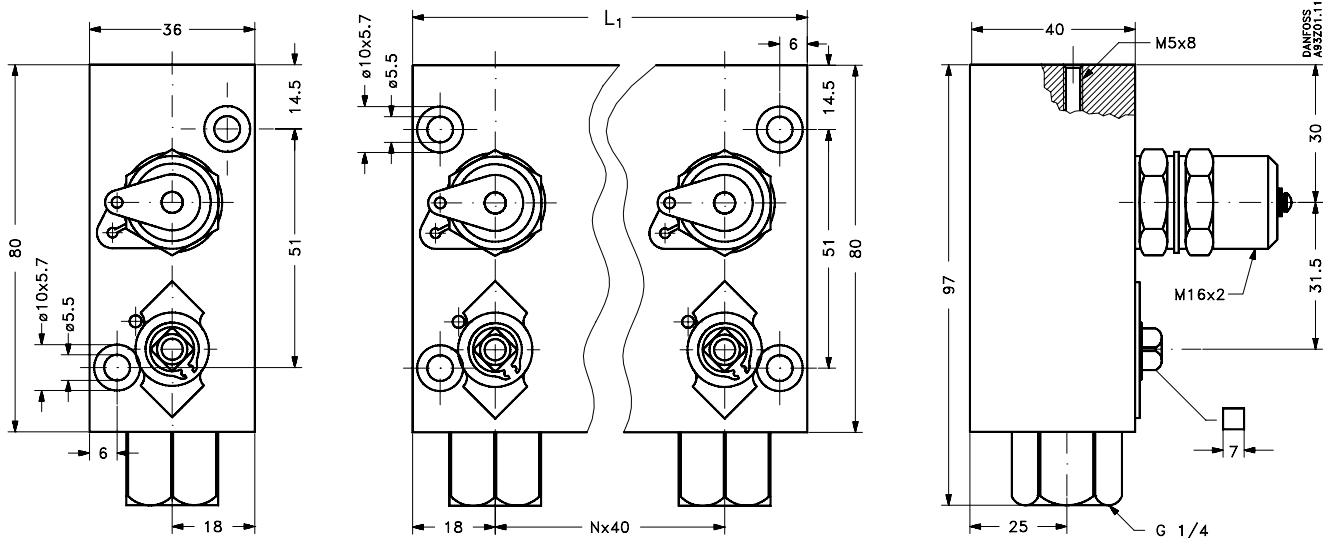
MBV 5000 is designed in many different configurations for use in many different marine applications, for example: Monitoring, alarm indication, shut-down, diagnosing on equipment such as motors, gears, thrusters, pumps, filters, compressors, etc.

The block valve meets demands for fast installation, simple isolation, and easy test pressure connection.

- The MBV block valves designed in many configurations are for use with the MBC pressure switch or the MBS block pressure transmitter within the marine industry
- The valve meets demands for fast installation, simple isolation and easy test pressure connection

Dimensions and weight:

Weight: 0.4 – 2.0 kg



All dimensions in millimetres

MBV 5000 pressure test valve

Max working pressure, liquid media: 180 bar P_e / gaseous media: 120 bar P_e

Ambient temperature: -20 – 120 °C

Media temperature: -20 – 120 °C

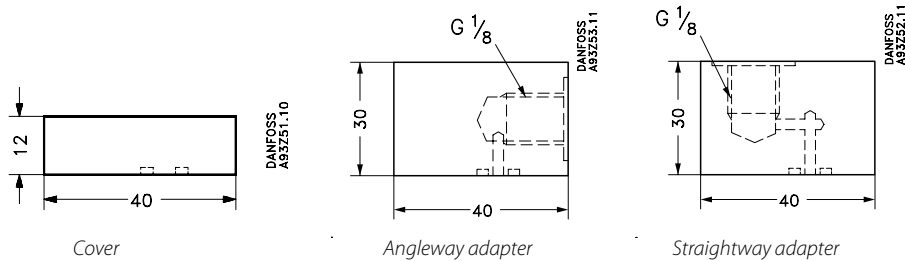


Type	Output no.	Length [mm]	Weight [kg]	Code number
MBV5000-1111	x1	36	0.4	061B7000
MBV5000-1211	x2	76	0.8	061B7001
MBV5000-1311	x3	116	1.2	061B7002
MBV5000-1411	x4	156	1.6	061B7003
MBV5000-1511	x5	196	2.0	061B7004
MBV5000-2211	x2	76	0.8	061B7005
MBV5000-2311	x3	116	1.2	061B7006
MBV5000-2411	x4	156	1.6	061B7007
MBV5000-2511	x5	196	2.0	061B7008
MBV5000-3211	x2	76	0.7	061B7009
MBV5000-3311	x3	116	1.0	061B7010
MBV5000-3411	x4	156	1.3	061B7011
MBV5000-3511	x5	196	1.6	061B7012

Spareparts for MBV 5000

Standard flange - G 1/8 adapters

Description	Code number
Cover	061B720001
Angleway adapter	061B720101
Straightway adapter	061B720201



RT temperature switches for temperature regulation



Suitable for a wide range of demanding industrial applications, RT temperature switches are designed to maintain a specific temperature difference between two media.

Wide regulating range

The RT has a wide temperature regulating range from $-60 - 300^{\circ}\text{C}$. Precise scales make it easy to set the temperature range and differential.

Variety of sensors and functions

An IP66 enclosure and a range of sensor types – such as capillary tube sensors, room sensors and duct sensors – enable neutral zone adjustment and manual reset functions.

Contact systems

RT temperature switches are available with standard contact systems for 3A, 400V AC15 loads and 4A, 400V AC3. Special contact versions are also available as spare parts.

Ultra-short bounce times

The perfect Single Pole Double Throw (SPDT) snap function minimises wear during each operation and extends the contact life.

Cable entry for 6-14 mm diameter cables

Two cable entries provide a number of possible electrical cable connections.

Longevity

The RT has a mechanical lifetime of one million cycles over the full temperature range, and an electrical lifetime of 100,000 cycles at maximum load.

RT temperature switches

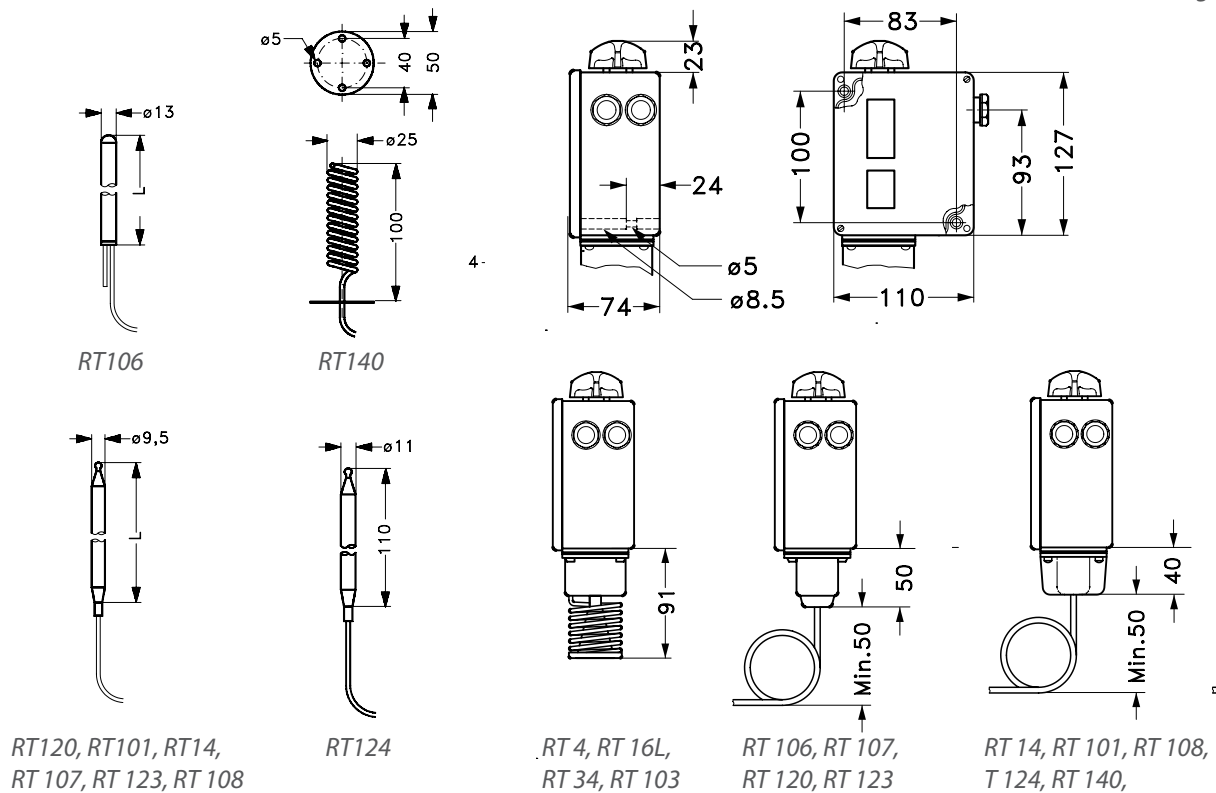


RT controls are used in general industrial and marine sectors. The RT temperature switch series consist of a variety of room temperature switches and remote sensor temperature switches including neutral zone temperature switches. RT temperature switches are generally recommended for applications where safety or economical consequences are critical factors. RT controls have been in service for more than 70 years.

- Temperature range: -60 – 300 °C
- Replaceable contact system
- Also available with gold plated contact systems
- Adjustable differential
- Enclosure IP66
- Available with external max. reset function (IP54)
- Available with dead zone
- Available with all relevant marine approvals

Dimensions and weight:

Weight: Appr. 1 kg



All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-4/-5. Relevant marine approvals

RT temperature switches - remote sensor with capillary tube

Contact function: Single pole double throw (SPDT)
Contact material: Silver cadmium oxide (other contact material - see accessories)
Loads: AC-1 ohmic 10A 400V
AC-3 (motor) 4A 400V
AC-15 (inductive) 3A 400V
Ambient temperature: -50 – 70 °C
Media Temperature: -40 – 100 °C



Type	Setting range [°C]	Adjustable differential range		Max sensor temperature [°C]	Capillary tube length [m]	Code number
		at lowest setting [°C]	at highest setting [°C]			

Reset: Automatic. Enclosure: IP66

RT14	-5 – 30	2 – 8	2 – 10	150	2	017-509966
RT106	20 – 90	4 – 20	2 – 7	120	2	017-504866
RT101	25 – 90	2.4 – 10	3.5 – 20	300	2	017-500366
RT101	25 – 90	2.4 – 10	3.5 – 20	300	3	017-500666
RT101	25 – 90	2.4 – 10	3.5 – 20	300	5	017-502266
RT108	30 – 140	5 – 20	4 – 14	220	2	017-506066
RT107	70 – 150	6 – 25	1.8 – 8	215	2	017-513566
RT107	70 – 150	6 – 25	1.8 – 8	215	3	017-513966
RT107	70 – 150	6 – 25	1.8 – 8	215	5	017-514066
RT120	120 – 215	7 – 30	1.8 – 9	260	2	017-520866
RT123	150 – 250	6.5 – 30	1.8 – 9	300	2	017-522066
RT124	200 – 300	5 – 25	2.5 – 10	350	2	017-522766

Reset: Max. Enclosure: IP54

RT101	25 – 90	2.4	4.1	300	2	017-500466
RT107	70 – 150	6	1.8	215	2	017-513666
RT107	70 – 150	6	1.8	215	5	017-514166
RT120	120 – 215	7	1.8	260	2	017-521466
RT123	150 – 250	6.5	1.8	300	2	017-522466
RT124	200 – 300	5	2.5	350	2	017-523166

RT temperature switches - room sensor

Enclosure: IP66



Type	Setting range [°C]	Adjustable differential range		Max sensor temperature [°C]	Code number
		at lowest setting [°C]	at highest setting [°C]		
RT4	-5 – 30	1.5 – 7	1.2 – 4	75	017-503666
RT103	10 – 45	1.3 – 7	1 – 5	100	017-515566
RT34	-25 – 15	2 – 10	1 – 12	100	017-511866
RT16L ¹⁾	0 – 38	1.5 – 5	0.7 – 1.9	100	017L002466

¹⁾ Neutral zone setting: 0.7 – 1.5 bar

RT temperature switches - duct sensor

Enclosure: IP66

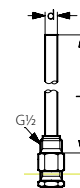


Type	Setting range [°C]	Adjustable differential setting range		Max sensor temperature [°C]	Capillary tube length [m]	Code number
		at lowest setting [°C]	at highest setting [°C]			
RT140	15 – 45	1.8 – 8	2.5 – 11	240	2	017-523666

Spareparts and accessories for RT temperature switches

Sensor pockets with stuffing box

Type / application	Sensor length [mm]	Pocket material		Pocket dimensions		Code number
		Brass	18/8 steel	L [mm]	d [mm]	
RT120, RT101, RT14, RT107, RT123	80	✓		112	11	017-437066
RT120, RT101	80/97		✓	112	11	017-436966
RT14	150	✓		182	11	017-436766
RT108	410	✓		465	11	017-421666
RT106	76	✓		110	15	060L333066



Type	Version	Description	
Contact system	Standard	Single-pole changeover switch (SPDT) with terminal board proof against leakage current. Fitted in all stand versions of type RT	017-403066
Contact system	Standard	Single-pole changeover switch (SPDT) with gold plated (oxide free) contact surfaces. Increases cut-in reliability on alarm and monitoring systems etc.	017-424066
Contact system	Max reset	Snap action single-pole changeover switch (SPDT) with silver cadmium oxide contact. Designed for RT units performing max reset function.	017-404266

Type	Description	
Setting knob	Replacement. Pale grey Ral 7035	017-436366
Seal cap	Seal cap to replace setting knob so that setting can only be altered with tools (tamper proof seal cap). Black	017-436066
Screws	Seal screws for cover and seal cap	017-425166
Stuffing box kit	For all thermostats with remote sensor. G 1/2A (pipe thread ISO228/1), oil resistant rubber washer for max 110 °C/90 bar	017-422066
Stuffing box kit	For all thermostats with remote sensor. G 3/4A (pipe thread ISO228/1), oil resistant rubber washer for max 110 °C/90 bar	003N0155
Sensor clip	For all RT units with remote sensor. L = 76 mm	017-420366
Heat conductive compound	For RT thermostats with the sensor insert in a pocket. Tube with 3.5cm ³ compound to be filled in the sensor pocket to improve heat transfer between pocket and sensor. Application range for compound: -20 – 150 °C, momentarily up to 220 °C.	041E0114



KPS temperature switches

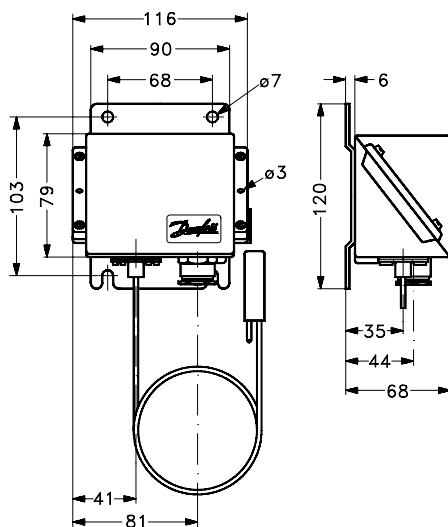


In the KPS thermostats series, special attention has been given to meeting important demands for a high level of enclosure, a robust, compact construction and resistance to shock and vibration. The KPS range covers most outdoor as well as indoor application requirements, and are suitable for use in monitoring, alarm and regulation systems in factories, diesel plant, compressors, powerstation and on board ships.

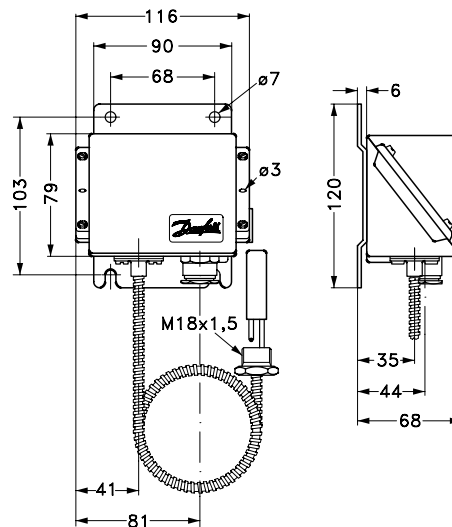
- Temperature setting ranges: -10 – 200 °C
- Gold plated contact systems
- Adjustable or fixed differential
- Robust and compact construction
- Resistance to shock and vibrations
- Enclosure IP67. Sturdy and sea water resistant.
- Available with all relevant marine approvals

Dimensions and weight:

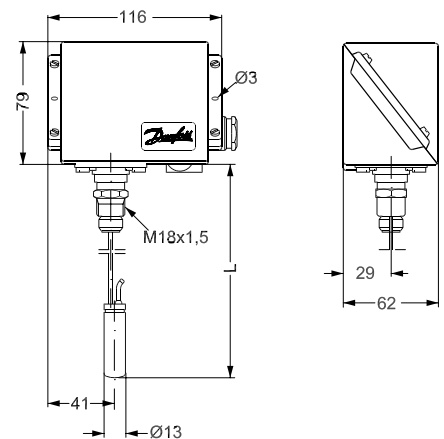
Weight: 1.0 – 1.4 kg



Weight:
Including 2 m capillary tube:
Appr. 1.2 kg



Weight:
Including 2 m armoured
capillary tube: Appr. 1.4 kg



Weight:
Including rigid sensor:
Appr. 1.0 kg

All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-4/-5. UL E73170. All relevant marine approvals.

KPS temperature switches

Contact function: Single pole double throw (SPDT)
Contact material: Gold plated silver
Load: AC-1 (ohmic): 10A, 440V
AC-3 (motor): 6A, 440V
AC-15 (inductive): 4A, 440V

Ambient temperature: -40 – 70 °C

KPS, remote sensor with armoured capillary tube



Type	Setting range [°C]	Adjustable differential range [°C]	Max sensor temperature [°C]	Capillary tube length [m]	Sensor size (ØxL) [mm]	Code number
KPS76	-10 – 30	3 – 10	80	2	13 x 63	060L311266
KPS77	20 – 60	3 – 14	130	2	13 x 63	060L310166
KPS79	50 – 100	4 – 16	200	2	13 x 63	060L310466
KPS81	60 – 150	5 – 25	250	2	13 x 63	060L310666
KPS80	70 – 120	4.5 – 18	220	2	13 x 63	060L312866
KPS80	70 – 120	4.5 – 18	220	5	13 x 90	060L313066
KPS80	70 – 120	4.5 – 18	220	3	13 x 63	060L315666
KPS83	100 – 200	6.5 – 30	300	2	13 x 63	060L310866

KPS, rigid sensor



Type	Setting range [°C]	Adjustable differential range [°C]	Max sensor temperature [°C]	Sensor size (ØxL) [mm]	Code number
KPS77	20 – 60	3 – 14	130	13 x 63	060L310066
KPS77	20 – 60	3 – 14	130	13 x 63	060L311866
KPS79	50 – 100	4 – 16	200	13 x 63	060L310366
KPS79	50 – 100	4 – 16	200	13 x 63	060L312166
KPS80	70 – 120	4.5 – 18	220	13 x 63	060L312666

KPS, remote sensor with capillary tube

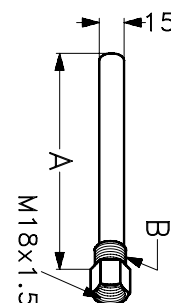


Type	Setting range [°C]	Adjustable differential range [°C]	Max sensor temperature [°C]	Capillary tube length [m]	Sensor size (ØxL) [mm]	Code number
KPS77	20 – 60	3 – 14	130	2	13 x 63	060L310266
KPS79	50 – 100	4 – 16	200	2	13 x 63	060L310566
KPS80	70 – 120	4.5 – 18	220	2	13 x 63	060L312966

Spareparts and accessories for KPS temperature switches

Sensor pockets without stuffing box

Pocket length - A [mm]	Pocket thread - B				Pocket material		Code number
	G 1/2 A	G 3/8 A	G 3/4 A	ISO 228/1 G 1/2 A	Brass	18/8 steel	
75	✓				✓		060L326266
75		✓			✓		060L326666
75				✓	✓		060L328166
110	✓				✓		060L327166
110			✓		✓		060L340366
160	✓				✓		060L326366
200	✓				✓		060L320666
250	✓				✓		060L325466
75	✓					✓	060L326766
110	✓					✓	060L326866
160	✓					✓	060L326966



Stuffing box kits



Description	Code number
For KPS thermostats without armoured capillary tube	060L327366
For KPS thermostats with armoured capillary tube	060L036666

Heat conductive compound

Description	Code number
For KPS thermostats with sensor fitted in a sensor pocket. Compound for filling sensor pocket pocket to improve heat transfer between pocket and sensor. Application temperature range: -20 to 150 °C, momentarily up to 220 °C	041E0114

KP temperature switches

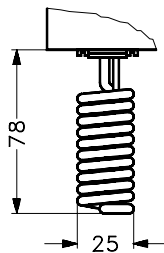


Danfoss KP thermostats are used for control, monitoring and alarm systems in industry. The KP thermostat series are temperature activated electric switches fitted with a single-pole double throw switch (SPDT), which can control single-phase ac motors of up to 2 kW directly.

- Temperature ranges: -30 – 150 °C
- High contact load - Ultra short bounce-time
- Also available with gold plated contact systems
- Enclosure IP44 when mounted with top cover and back plate
- Also available with enclosure IP55 for OEM customers
- Small dimensions - space saving - easy to install

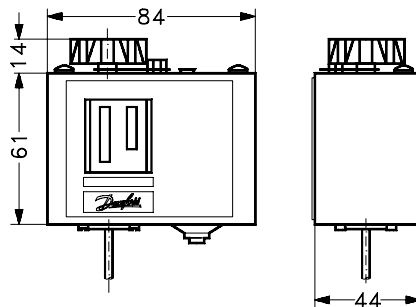
Dimensions and weight:

Weight: Appr. 0.4 kg

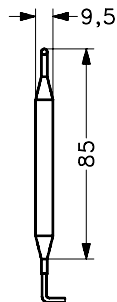


KP 62

KP 75: Sensor tinned copper Cu/Sn 5



KP 61, 62, 68, 75, KP 78, KP 79, KP 81



KP 78, 79, 81: Sensor tinned copper Cu/Sn 5

All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-4/-5. Electrical Safety Certificate - FM. UL E31024. Relevant marine approvals

KP temperature switches

Contact system: Single pole double throw (SPDT)
Contact material: Silver cadmium oxide
Load: AC-1 (ohmic): 16A 400V
AC-3 (motor): 16A 400V
AC-15 (inductive): 10A 400V
Enclosure: IP30
Ambient temperature: -40 – 65 °C
Reset: Automatic
Remote sensor with capillary tube



Type	Setting range [°C]	Adjustable differential range [°C]	Max sensor temperature [°C]	Sensor size (ØxL) [mm]	Capillary tube length [m]	Code number
KP71	-5 – 20	2.2 – 10	80	9.5 x 115	2	060L111366
KP77	20 – 60	3.5 – 10	130	9.5 x 85	2	060L112166
KP78	30 – 90	5 – 15	150	9.5 x 85	2	060L118466
KP79	50 – 100	5 – 15	150	9.5 x 85	2	060L112666
KP81	80 – 150	7 – 20	200	9.5 x 85	2	060L112566
KP81 ¹⁾	80 – 150	8	200	9.5 x 85	2	060L115566

¹⁾ Maximum reset function

Straight capillary tube sensor



Type	Setting range [°C]	Adjustable differential range [°C]	Max sensor temperature [°C]	Sensor Ø [mm]	Capillary tube sensor length [m]	Code number
KP61	-30 – 15	1.5 – 23	120	2.5	5	060L110166
KP61	-30 – 15	1.5 – 23	120	2.5	2	060L110066

Room sensor



Type	Setting range [°C]	Adjustable differential range [°C]	Max sensor temperature [°C]	Sensor size (ØxL) [mm]	Code number
KP62	-30 – 15	2 – 20	80	25 x 78	060L111066
KP68	-5 – 35	1.8 – 25	120	40 x 30	060L111166
KP75 ¹⁾	0 – 40	3 – 10	80	25 x 78	060L117166
KP76	5 – 45	2 – 20	120	25 x 78	060L120066

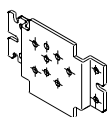
¹⁾ Contact material: Gold plated silver

Spareparts and accessories for KP temperature switch



Type	Description	Code numbers
Wall bracket	Mounting screw and washers included	060-105566
Angle bracket	Mounting screw and washers included	060-105666
Screwed cable entry	Pg 13.5 with special nut. For 6 – 14 mm diameter cables	060-105966
Top cover	For single control. If a wall or angle bracket is mounted on the backplate of the housing, the KP will have an IP44 grade of enclosure by means of this cover	060-109766
IP55 enclosure	For single control. Specially designed IP55 enclosure , not transparent	060-033066
Sensor pocket	Application: KP 77, 78, 79, 81. Brass. Pocket dimension: L 110 x Ø 15 mm. With stuffing box	060L333066
Sensor pocket	Application: KP 77, 78, 79, 81. Stainless steel. Pocket dimension: L 110 x Ø 15 mm. With stuffing box	060L333166
Heat conductive compound	For sensor pockets. Tube with 3.5cm ³ compound to be filled in the sensor pocket to improve heat transfer between pocket and sensor. Application range for compound: -20 – 150 °C, momentarily up to 220 °C.	041E0114

Brackets



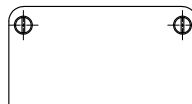
For wall mounting



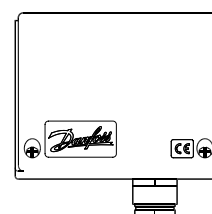
For 35 mm rail mounting



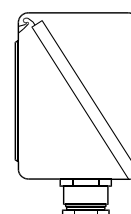
Screwed cable entry



Top cover



IP55 enclosure



The MBC 8100 compact temperature switches

MBC 8100 temperature switches are suitable for use in monitoring and alarm systems in factories, diesel plants, compressors and power stations, as well as in marine applications.

Alarm and monitoring

As part of alarm and control circuits, the switches give signals within narrow non-drifting limits, typically in lubrication and cooling oil applications, including diesel engines and gear boxes.

Compact space-saving solution

The block design allows packed mounting, providing a high degree of integrity for your machinery.

Excellent vibration and shock resistance

Ideal for heavy-duty applications, the MBC 8100's high vibration resistance increases the reliability of the entire system.

Adjustable range with fixed differential

The MBC 8100 comes pre-set from the factory, but it also has as an adjustable range and low fixed differential for accurate monitoring of critical temperatures.

Resistance to media

The sensor pocket is available in brass or stainless steel.



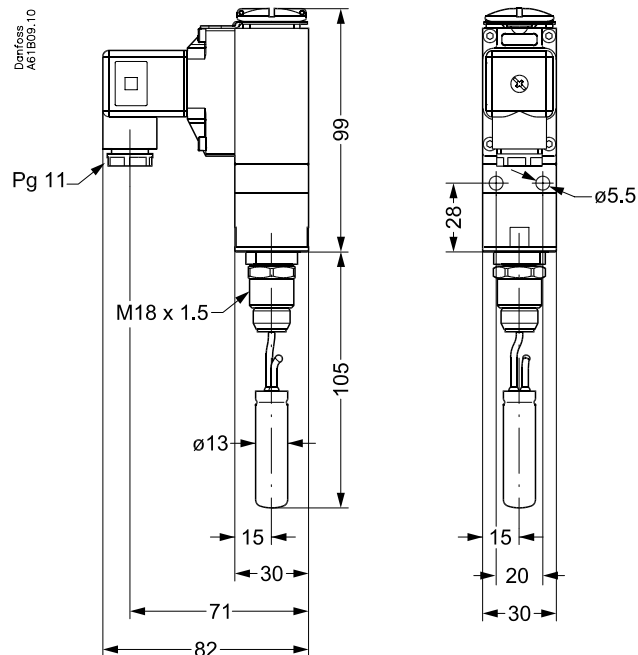
MBC 8100 block-type compact temperature switches for marine applications



MBC 8100 thermostats are used in marine applications where space and reliability are the most important features. MBCs are compact thermostats, designed according to our new block design to survive in the harsh conditions known from machine rooms onboard ships. MBCs have high vibration resistance and feature all commonly marine approvals. The fixed, but low differential guarantees accurate monitoring of critical temperatures. Also available without marine approvals (MBC 8000; please contact Danfoss for information)

- Block design
- Fully electromechanical
- -10 – 200 °C temperature range
- Available with all relevant marine approvals
- Designed to meet the strict demands in the marine equipment

Dimensions and weight:



All dimensions in millimetres

Approvals: CE marked in accordance with EN60947-5. All relevant marine approvals.

MBC 8100 block-type compact temperature switches

Contact function: Single pole double throw (SPDT)
Loads: AC-1 (ohmic) 10A, 250V
AC-3 (motor) 3A, 250V
AC-15 (inductive) 0.5A, 250V
Ambient temperature: -40 – 85 °C
Enclosure: IP65
Electrical connection: Plug Pg 11. Other connections available on request.



MBC 8100 with rigid sensor

Temp. setting range [°C]	Fixed diff. [°C]	Max. sensor temp. [°C]	Sensor size (ØxL) [mm]	Sensor pocket, length [mm]	Code number
20 – 60	3	130	13 x 50	75	061B800266
50 – 100	4	200	13 x 50	75	061B800366
60 – 150	6	250	13 x 50	75	061B800566
70 – 120	5	220	13 x 50	75	061B800466



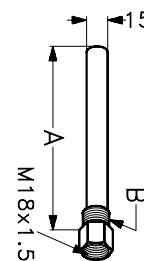
MBC 8100 with armoured capillary tube, length: 2 m

Temp. setting range [°C]	Fixed diff. [°C]	Max. sensor temp. [°C]	Sensor size (ØxL) [mm]	Code number
-10 – 30	3	80	13 x 50	061B810166
20 – 60	3	130	13 x 50	061B810266
50 – 100	4	200	13 x 50	061B810366
70 – 120	5	220	13 x 50	061B810466
60 – 150	6	250	13 x 50	061B810566

Spareparts and accessories for MBC 8100 temperature switches

Sensor pockets without stuffing box

Pocket length - A [mm]	Pocket thread - B				Pocket material		Code number
	G ½ A	G ¾ A	G ¾ A	ISO 228/1 G½ A	Brass	18/8 steel	
75	✓				✓		060L326266
75		✓			✓		060L326666
75				✓	✓		060L328166
110	✓				✓		060L327166
110			✓		✓		060L340366
160	✓				✓		060L326366
200	✓				✓		060L320666
250	✓				✓		060L325466
75	✓					✓	060L326766
110	✓					✓	060L326866
160	✓					✓	060L326966



Stuffing box kits

Description	Code number
For MBC thermostats without armoured capillary tube	060L327366
For MBC thermostats with armoured capillary tube	060L036666



Type	Description	Code number
Heat conductive compound	For thermostats with sensor fitted in a sensor pocket. Compound for filling sensor pocket to improve heat transfer between pocket and sensor. Application temperature range: -20 – 150 °C, momentarily up to 220 °C	041E0114

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ENGINEERING TOMORROW

Danfoss Ltd. | Industrial Automation | 3F, 4F 651, Non hyeon-ro, Gang nam-gu, seoul 06116, Korea
| danfosskorea@danfoss.com | ia.danfoss.kr
Tel: 82-2-567-0090



Danfoss is a leading global player within the development and production of mechanical and electronic products and controls. Since 1933, our extensive know-how has made modern life easier and we continue to break new ground within our core business areas.

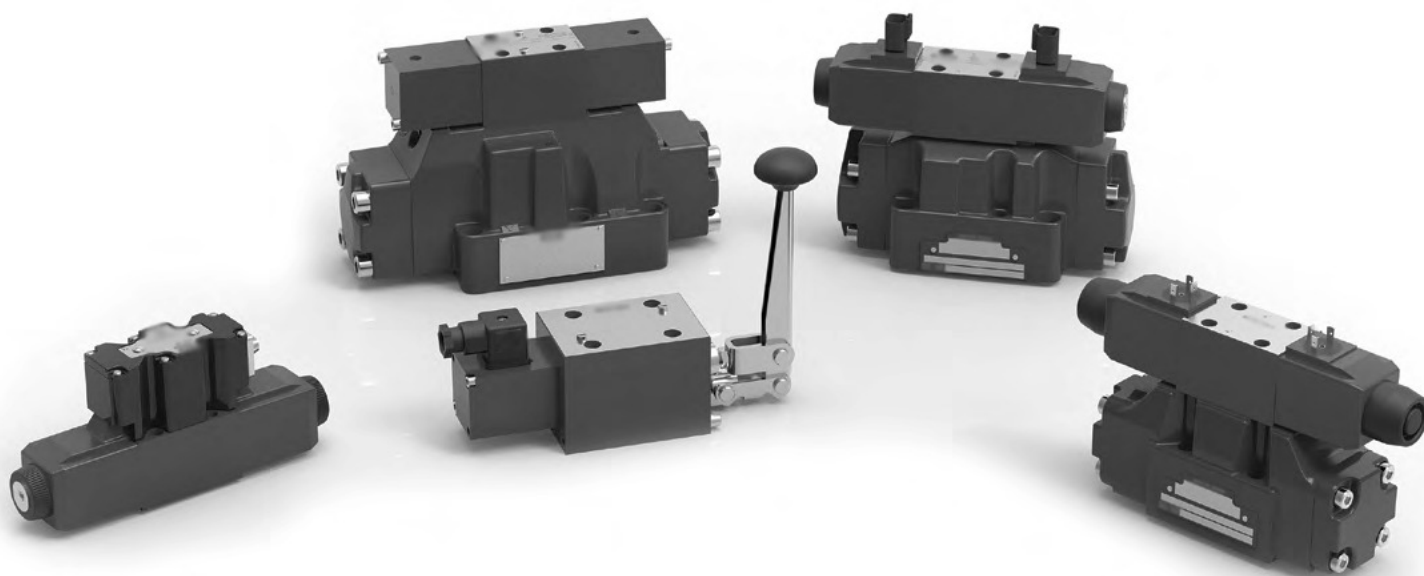
Every day, more than 250,000 items are produced at 70 factories in 25 countries. Impressive as these figures are, we are most proud of the way our dedicated employees apply the high-quality components in customer solutions, adding value to the end products. Building strong partnerships is of great importance to us, because it is purely by understanding our customers' needs that we can meet the expectations of tomorrow.

This is also true in Industrial Automation, a Danfoss entity dedicated to focusing on the industrial world of today. Through us, you gain access to the entire Danfoss pool of technologies, with special emphasis on sensors and controls.

We offer safer, more reliable and more efficient solutions in a close cooperation based on firm values.

Directional Control Valves
Technical Information

BC475984423737en-000101



Industrial valves

For over years, Danfoss brands have provided its customers with quality products and innovative solutions for all their power and motion control needs. The products featured in this catalog represent the very best in Industrial Valves technology. Danfoss is committed to maintaining this position by offering the most comprehensive range of Industrial Valves for stationary and on/off highway equipment. This catalog gives detailed specifications for the entire line of Danfoss' Industrial Valves. Its purpose is to provide a quick, convenient reference tool when choosing Industrial Valves or designing a system using these components. It is divided into sections according to valve function.

Global support

Danfoss' world-wide distribution and service network is quick, reliable, and responsive to the customer's needs. Our customers can rest assured that no matter where they're located, Danfoss will be there with unrivaled products and technical expertise.

Technical support

Quality products are only part of Danfoss' commitment to our customers. We also provide advisory, planning and design services specifically geared to your application and backed by on-time delivery.

Directional Control Valves

A/ Size 02

DG4V2 Solenoid operated directional valves	05
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B/ Size 03

Manual lever/Cam/Plunger operated directional valve DG3/17/18/20/21-3 60 Design	13
Solenoid operated directional valve DG4V-3-60 Design	32
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C/ Size 05

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D/ Size 07

DG5V-7 30 Design & DG3V-7 20	137
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E/ Size 08

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A/ Size 02

I-A

B/ Size 03

II-B

C/ Size 05

III-C

D/ Size 07

IV-D

E/ Size 08

V-E

Directional control valves

Danfoss DG valves mount on industry standard surfaces and provide 3- or 4-way control in a broad range of applications, industrial and mobile. Their primary function is to direct fluid flow to a cylinder or to control the direction of rotation of a hydraulic motor. These valves can be actuated by solenoid, hydraulic or pneumatic pilot, lever, or mechanically. A full range of complementary pressure, flow and check valve functions are available in the Danfoss SystemStak™ family of sandwich mounted valves. Danfoss DG valves are available in 10 different frame sizes.

Specifications:

Rated Flow: Up to 1,100 lpm (290 gpm).
 Rated Pressure: Up to 350 bar (5,000 psi).
 Size: NG4-32 (D02-10).

Benefits & costumer values

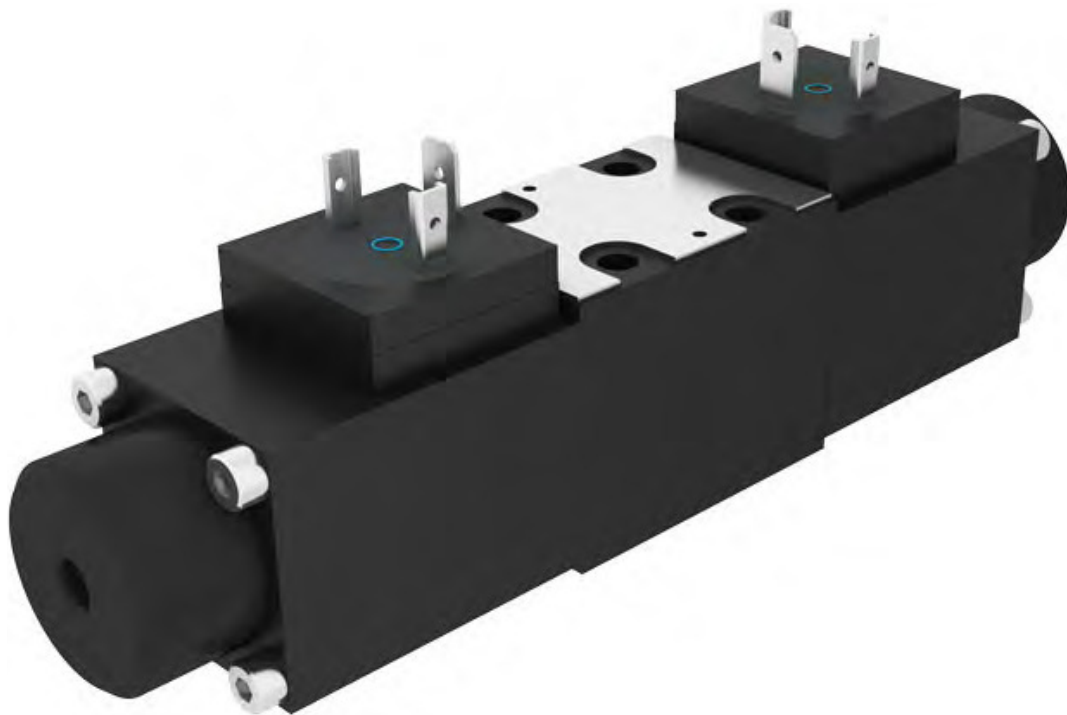
Complete function (type of actuation)
 Complete size range
 Wide variety of voltage & wattage
 Various electrical connections

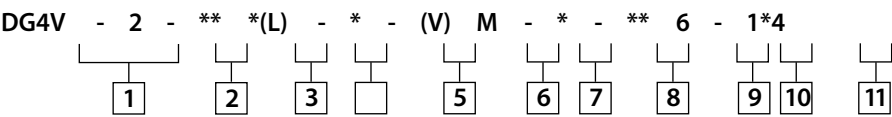
Directional control valve product portfolio.

	Cam plunger	Oil pilot	Solenoid	Lever	Air pilot	Cam lever	Plunger
D02/NG4			DG4V2				
D03/NG6	DG2V3	DG3V3 DG3VP3	DG4V3 DG4V3M DG4VP3	DG17V3	DG18V3	DG20V3	DG21V3
D05/NG10			DG4V4 DG4V5 DG4V5M	DG17V4	DG18V4		
D05/NG10		DG3V5	DG5V5				
D07/NG16		DG3V7	DG5V7				
D08/NG20		DG3V8	DG5V8	DG17V8	DG19V8		
D10/NG32		DG3V10	DG5V10	DG17V10			



ISO4401 Size D02; ANSI/B93.7M-D02
DG4V2
Solenoid operated directional valves





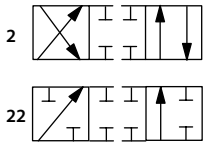
I-A

☐	Model series DDirectional valve GSubplate/manifold mounted 4Solenoid operated VPressure rating 250 bar (3600 psi)2	☐	Solenoid energization identity BlankNone VSolenoid "A" is at port "A" end and/or solenoid "B" is at port "B" end, independent of spool type NOTEType "8" spool valves conform to both U.S. and European solenoid designations . When ordering an "8" spool, designate a "V" in the model code .7
☐	Interface 2ISO/DIS 4401-02-023	☐	Flag symbol MElectrical options and features8
☐	Spool typeRefer page 8 for spool type4	☐	Coil type UISO4400, DIN43650 connector U1ISO4400 with ￼tted DIN plug KUFlying leads from top of the solenoid KUP4Junior timer (amp) connector KUP6Flying lead with deutsch connector9
☐	Spool spring arrangement ASpring ofiset, end-to-end ALSame as "A" but left hand build BSpring ofiset, end to center BLSame as "B" but left hand build CSpring centered NNo-spring detented5	☐	Coil rating G 12V DC 38 watt H 24V DC 38 watt HL24V DC 32 watts10
☐	Manual override. BlankPlain Overrides ZNo Overrides	☐	Tank port rating 6160 bar tank pressure rating11
		☐	DesignSubject to change . Installation dimensions same for designs 10 thru 19 .

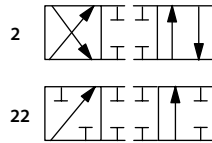
I-A

The schematics of the valve function applies to both U.S. and European valves.

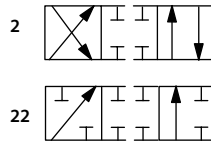
DG4V-2*N(V) valves



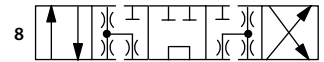
DG4V-2*A(V) valves



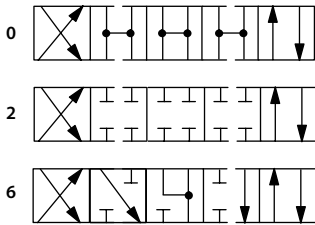
DG4V-2*AL(V) valves



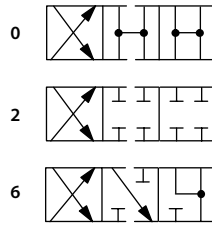
DG4V -2-8 CV valves



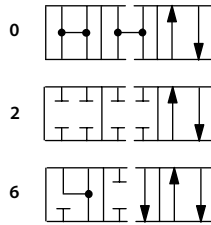
DG4V -2-*C (V) valves



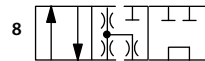
DG4V -2-*B(V) valves



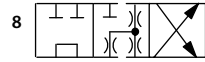
DG4V -2*BL(V) valves



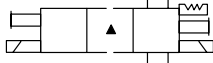
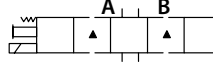
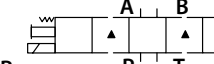
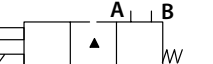
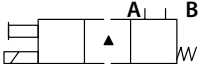
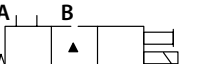
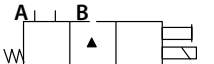
DG4V -2-8 BLV valves



DG4 V-28 BV valves



Solenoid identified to US and European standards

▼ Transient condition only.

I-A

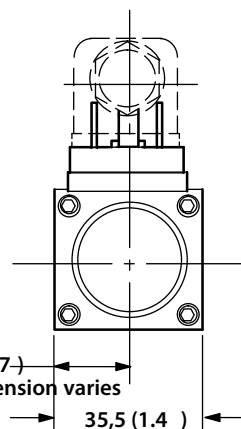
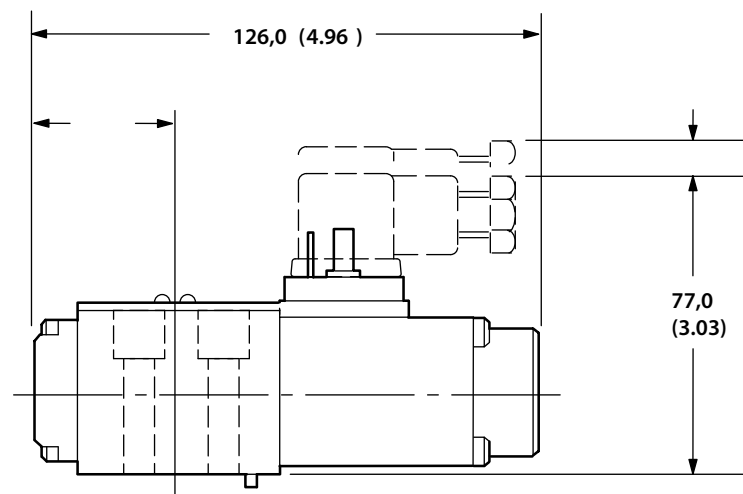
Open

Single solenoid models

DG4V-2-A(L)

Spring offset

DG4V-2-B(L)

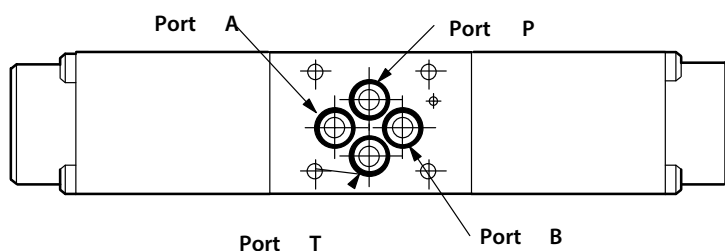
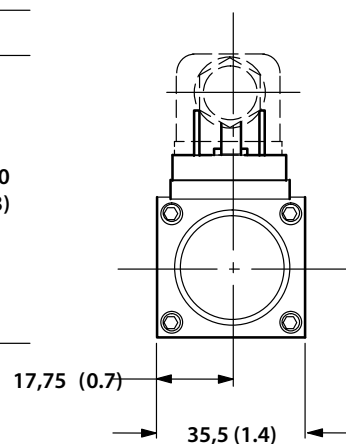
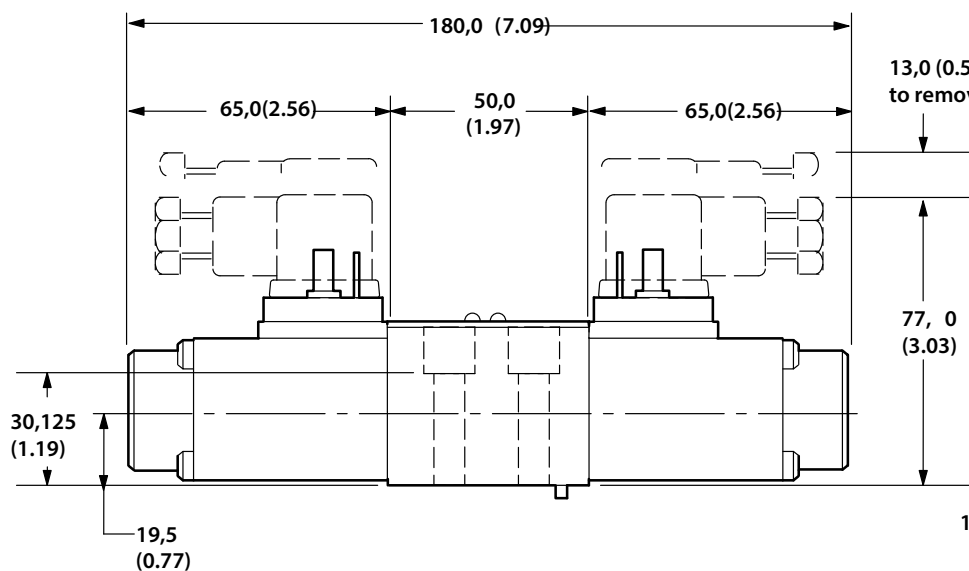


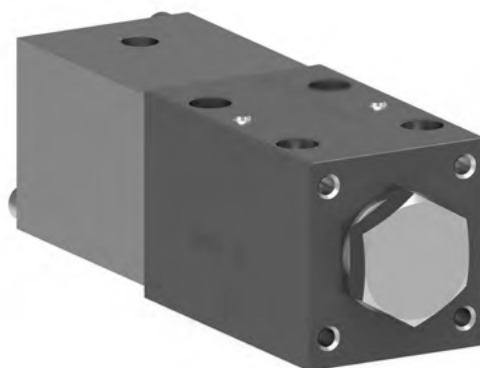
Dimensions are shown for standard connectors. For connectors with rectifiers and/ or LED this dimension varies up to 84,0 (3.31) maximum. Refer to double solenoid models below for port designations.

Double solenoid models

DG4V-2-C Spring centered

DG4V-2-N No-spring detented





II-B

greater profits for your company.

Manual lever/Cam/Plunger valves

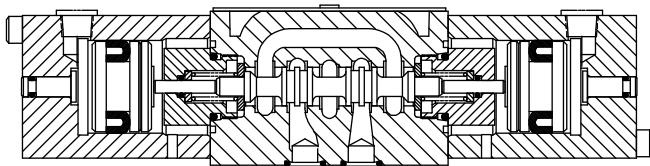
valves are rated at flows to 75 l/min (20 USgpm) and 350 bar (5000 psi) maximum pressure. Plunger, offset, detented, spring centred, or I models are available.

Air operated

Available in an NFPA D03 interface with rated flows to 75 l/min

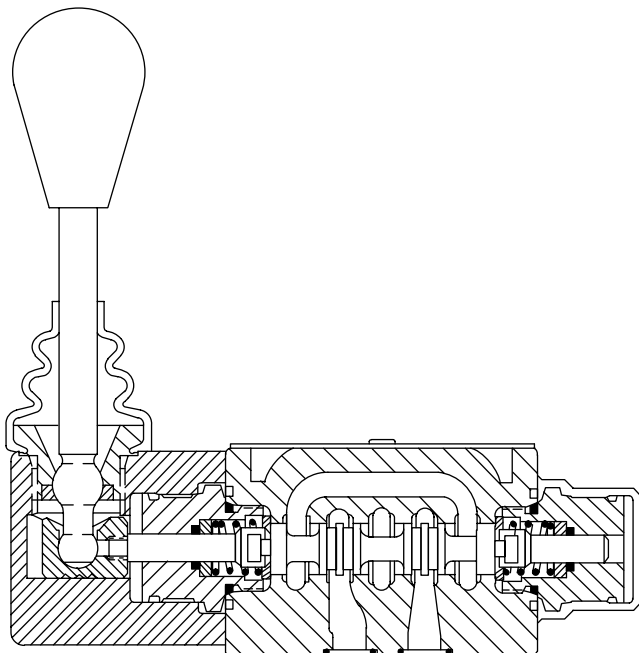
DG18V-3-* -60

Air operator



DG17V-3-* -60

Lever operator



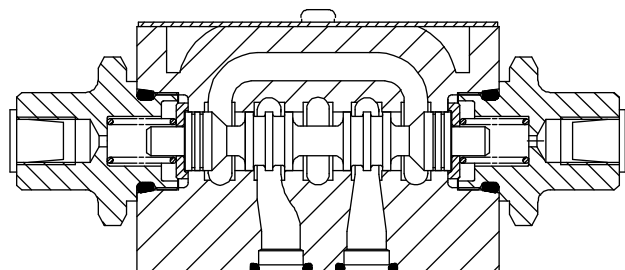
Hydraulic pilot operated

Valves are rated at flows to 151 l/min (40 USgpm) and maximum pressure of 350 bar (5000 psi)

Feature and benefits

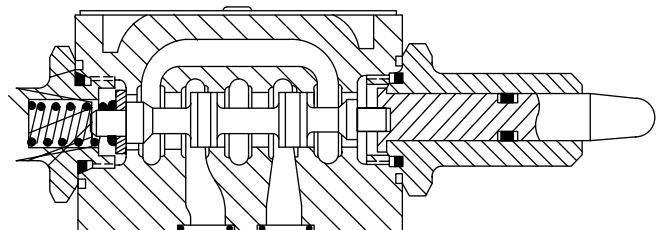
DG3V-3-* -60

Hydraulic operator



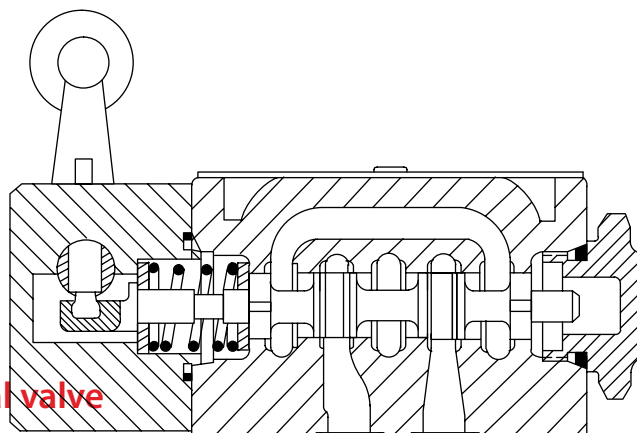
DG21V-3-* -60

Plunger operator



DG20V-3-* -60

Cam operator



Manual lever/Cam/Plunger operated directional valve

DG18V-3-**-60 Air operated

II-B

for controlling the starting, stopping and direction of fluid flow in system .

The valves belong to a well-known series of DG4V-3-60 series air operated valves (see figure X-B-C-2015) . These manual valves are available with a c

to nine different spool types, depending on valve configuration.

All spools have been designed to provide good low-shock characteristics . External regulation by

hydraulic, pneumatic, cam or plunger operation allows

matching to virtually any requirement where electrical control is

not appropriate . Models include offset spools,

centered and detented versions .

The identification label is asymmetrical and fixes the "A" and "B" operators in relation to the "P" port . Designers should note for installation on vertical panels .

On all right hand models, when operator "A" is pressurized, flow is always P to A. When operator "B" is pressurized, flow is always P to B . Operators "A" and "B" are identified on the identification plate on top of the valve. For left hand assembly this is reversed (P to B when the "A" operator is pressurized) .

Shift time

DG3V-3-**-60 Hydraulic operated

used to control the direction of flow in a hydraulic circuit, which would control the movement of a work cylinder or rotation of a fluid motor.

DG**V-3-**-60 Lever/Cam/ Plunger operated

Operating information

at rated flow and pressure assuming minimal back pressure in the pilot line .

Shifting action

positioned unless sufficient pilot pressure is maintained at pilot port to shift and lift the valve spool . No-spring (offered as pilot valves for spring detented models only) require only momentary pressurization of pilot port to shift spool (approx 0.1 seconds) . When pilot pressure is released, spool will remain in last position attained provided there is no severe shock, vibration or unusual pressure transients .

No surges of oil in a common tank line serving these and other valves can be of sufficient magnitude to cause inadvertent shifting of these valves . This is particularly critical in the no-spring and no-spring detented type valves . Separate tank lines or a vented manifold with a continuous downward path to tank is preferred . Any sliding spool, if held shifted under pressure

of time, may stick and not spring return due to fluid residue formation (silting) and therefore, should be cycled periodically to prevent this from happening . If this valve is used for purposes other than a 4-way valve or as shown in the graphical symbol on the valve, consult your distributor or sales engineer .

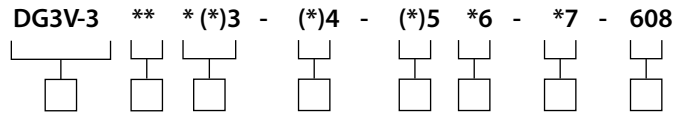
Mounting position

Port connections

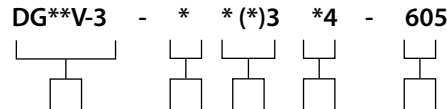
NFPA-D03 (ISO-4401-03) configurations.

Actuation force

II-B

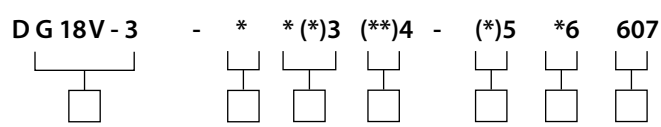


☐ Valve type 3Hydraulically operated V350 bar (50 psi) on P, A & B ports 3ISO 4401-03 (CETOP 3,NFPA D03) ISO 4401-AB-03-4-B2	☐ Manual override optionA, B & F models in non-operator end P1Manual override6
☐ Spool typeRefer page 18 for spool type3	☐ Tank pressure limit 7210 bar (100 psi)7
☐ Spool spring arrangement ASpring ofiset, end-toend ALSame as "A" but left hand build BSpring ofiset, end to center BLSame as "B" but left hand build CSpring centered NNo-spring detent4	☐ Thread for pilot/drain connection BG18 BSP threads SSAE threads8
☐ Internal drain(omit if not required) A, B & F models only for designs (F models must have internal drain) TInternal drain	☐ DesignInstallation dimensions remain as shown for design numbers 60 thru 69 .



☐ Valve type *Operator 17 - Lever operated 20 - Roller cam operated 21 - Plunger operator V350 bar (50 psi) on P, A & B ports 3ISO 4401-03 (CETOP 3,NFPA D03) ISO 4401-AB-03-4-B2	☐ Tank port ratingOmit if not required 210 bar max for DG21V only5
☐ Spool typeRefer page 19 for spool type3	☐ DesignInstallation dimensions remain as shown for design
☐ Spool spring arrangement ASpring ofiset, end-to-end ALSame as "A" but left hand build BSpring ofiset, end to center BLSame as "B" but left hand build centered t	

Model code

☐

Valve type

18Air Operated

V350 bar (50 psi) on P, A & B ports

3ISO 4401-03 (CETOP 3,NFPA D03)

ISO 4401-AB-03-4-B2

☐

Manual override option(Applicable for A(L), B(L) & F(L) models only)

BlankOverrides in operator end only

P2Override in both ends of single operators5

☐

Spool type (center condition)Refer page 19 for spool type3

☐

Actuator identity

BlankStandard arrangement

(i.e.apply air tooperator Ato give flow Rto A)

(Ref. US ANSI B93 .9)

VOoperator identification determined by position

of operator(i .e.operatorA at A port end of

valveoperatorB at B portend of valve)

Note: type8 spool conforms tobothmethods .

All type8 spools mustdesignateV in model

code.6

☐

Spool spring arrangement

ASpring ofiset to A, (single operator)

ALSpring ofiset to B, L .H. build (single operator)

BSpring centered, operator Aover

(single operator)

BLSpring centered, operator Bover

(single operator

entered (dual operator)

ed

☐

Pilot source thread connections

B1/8" BSP threads7

☐

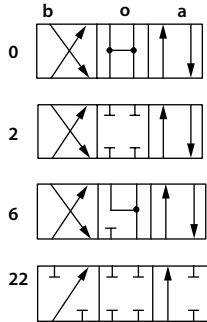
DesignInstallation dimensions remain as shown for

design numbers 60 thru 69 .Model code

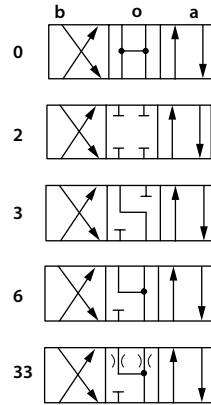
Solenoid identified to US and European standards

II-B

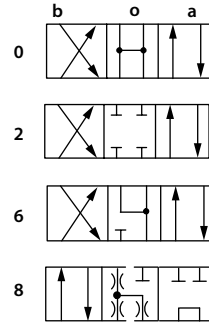
DG3V-3-**-A



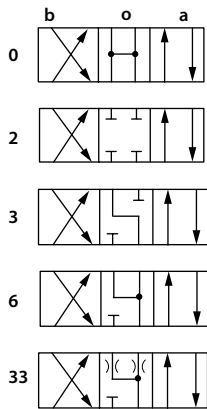
DG3V-3-**-B



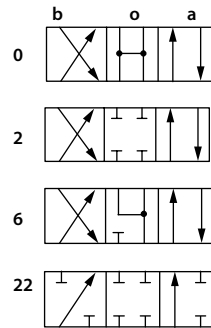
DG3V-3-**-C



DG3V-3-**-F



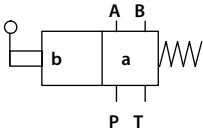
DG3V-3-**-N



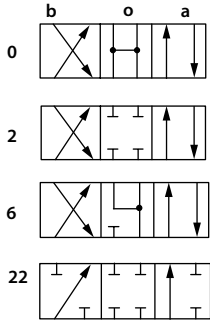
Functional symbols

DG17V-3-33**AA

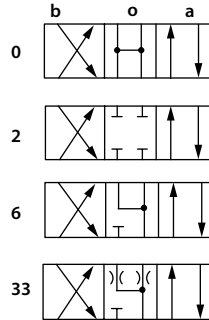
Basic valve symbol Basic valve symbol



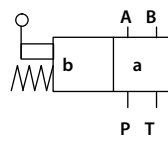
Usable spool options



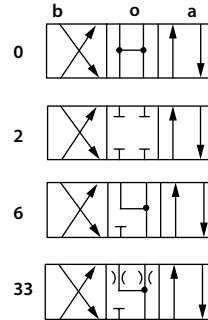
Usable spool options



Basic valve symbol

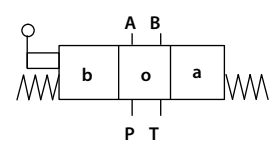


Usable spool options

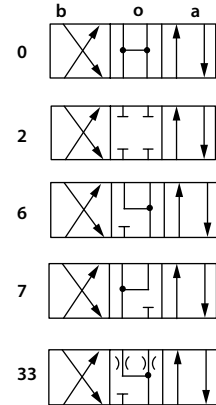


DG17V-3-33**C

Basic valve symbol

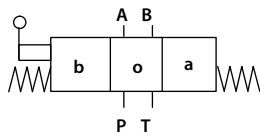


Usable spool options

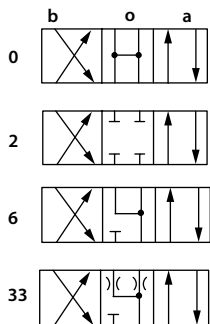


DG20V-3-33**C

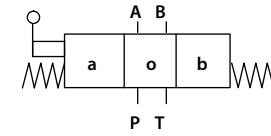
Basic valve symbol



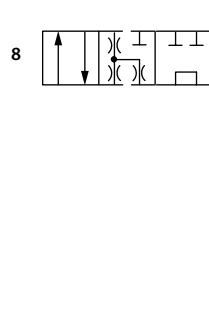
Usable spool options



Basic valve symbol

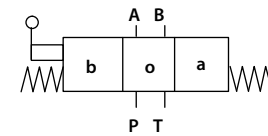


Usable spool options

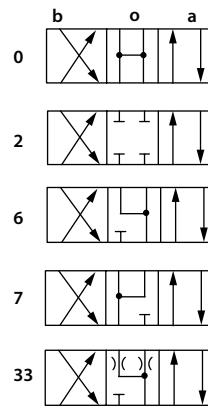


DG17V-3-33**8C

Basic valve symbol

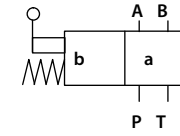


Usable spool options

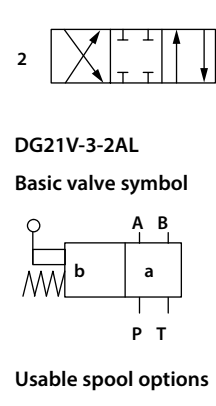


DG17V-3-33**N

Basic valve symbol



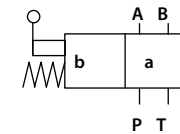
Usable spool options



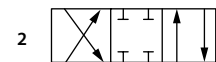
DG21V-3-2A

DG21V-3-2AL

Basic valve symbol



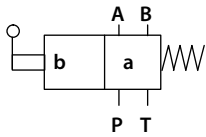
Usable spool options



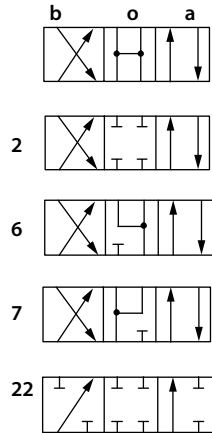
II-B

DG18V-3-**B

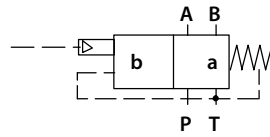
Basic valve symbol



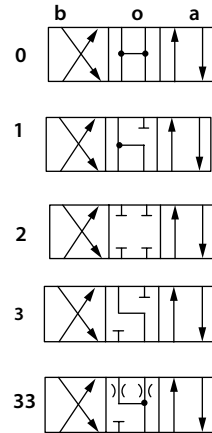
Usable spool options



Basic valve symbol

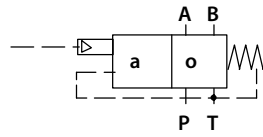


Usable spool options

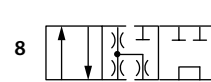


DG18V-3-**8B

Basic valve symbol

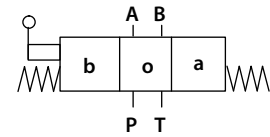


Usable spool options

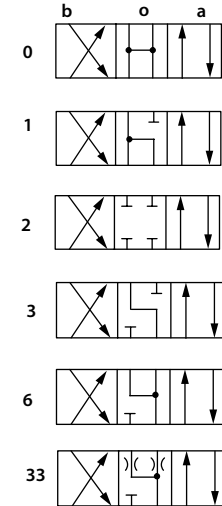


DG18V-3-**C

Basic valve symbol

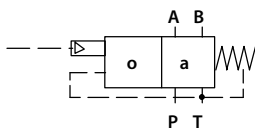


Usable spool options

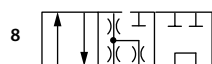


DG18V-3-**8C

Basic valve symbol

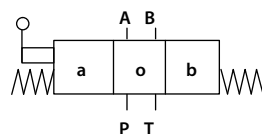


Usable spool options

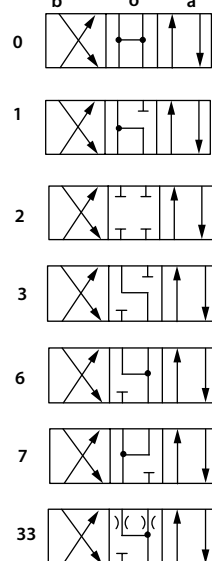


DG18V-3-**F

Basic valve symbol

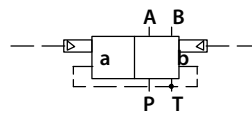


Usable spool options

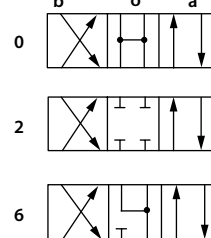


DG18V-3-**N

Basic valve symbol



Usable spool options



Functional symbols

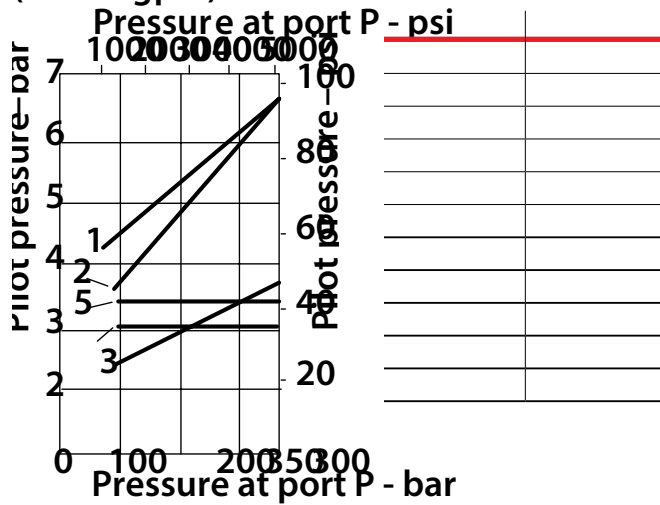
[illegible][illegible]

DG3V-3""B(L)/F(L)center-t	3 (0.219 in)
DG3V-3""C/Lcenter-t	3 (0.109 in) 1,8 cm
Endend	3 (0.109 in) 1,8 cm
	3 (0.219 in) 3,6 cm

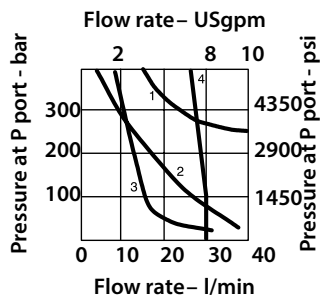
Pilot pressure requirements

II-B

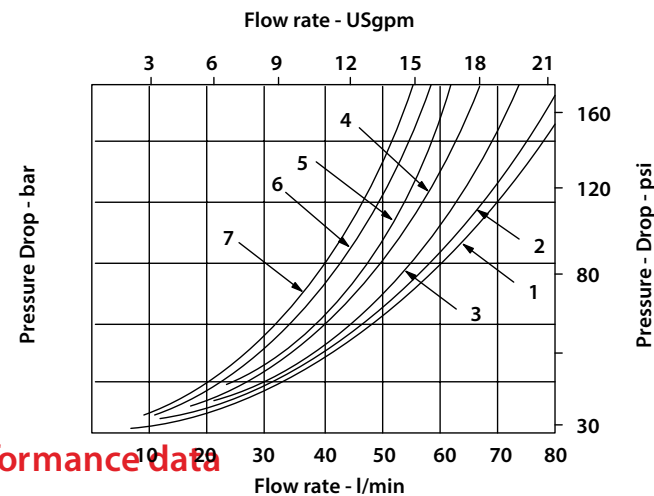
graph below to overcome the spring force and any flow forces.
Some spool valves allow to spring return valve
Minimum pilot pressure required at a flow rate of 20 l/min
(5.5 USgpm):



Maximum flow rates



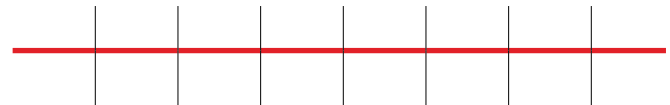
Pressure drop curves



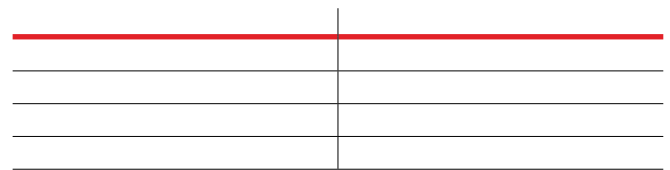
Performance data

Pressure drop characteristics

The pressure drop c
when passing 21 cSt (100 SUS) fluid(s) having .87 specific gravity. For any other specific gravity (G1) the pressure drop P will be as follows:



For any other specific gravity (G1) * the pressure drop P will be



					▼	38 (10)
0A	5	2	5	2	4 ▼	■
0B, 0C, 0F	4	2	4	2	4	38 (10)
0N	3	7	3	7	4 ▼	38 (10)
2	5	2	5	2	-	38 (10)
2A	6	5	6	5	-	■
2B, 2C, 2F	5	2	5	2	-	38 (10)
2N	6	3	6	3	-	38 (10)
3B, 3C, 3F	6	3	6	1	-	38 (10)
6	6	1	6	1	-	38 (10)
6A	5	7	5	7	-	■
6B, 6C, 6F	6	1	6	1	-	38 (10)
6N	7	1	7	1	-	38 (10)
22A	6	-	6	-	-	■
33B, 33C, 33F	5	2	5	2	▲	38 (10)

▲ Type "33" spool at center will pass approx. 20 l/min (5.3 USgpm) at 124 bar (1800 psi) pressure drop from port A or B (the other being plugged) to T.

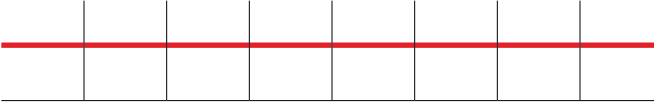
▼ Transient condition.

■ See graph above, Max. Flow Rates.

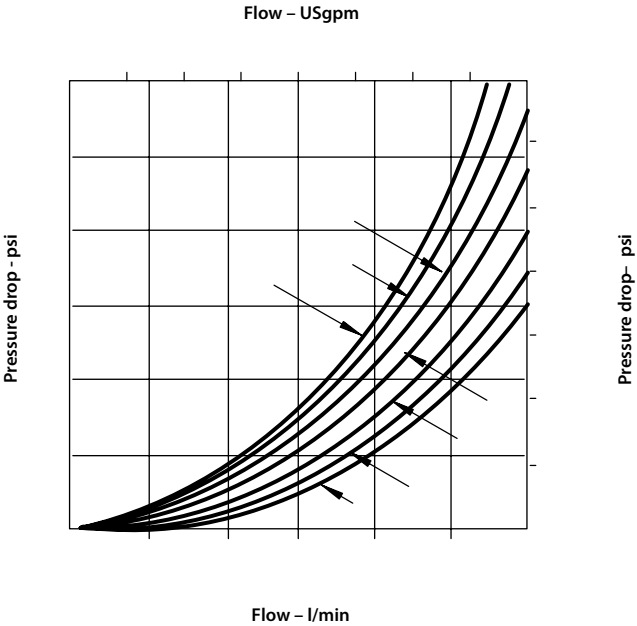
when passing 36 cSt (100 SUS) fluid(s) having .87 specific gravity.

For any other viscosity the pressure drop ΔP will change as follows:

Viscosity



For any other specific gravity (G)



	A	B	B	A	P-T @center	Maximum flow @35 bar (500 psi) "0C"	4
						"2C"	5
						"6C"	6
						"7C"	4
						"33C"	5
						"0A"	5
						"2A"	6
						"6A"	5
						"22A"	6
						"0N"	4
						"2N"	5
						"6N"	6
						"7N"	4
						"33N"	5

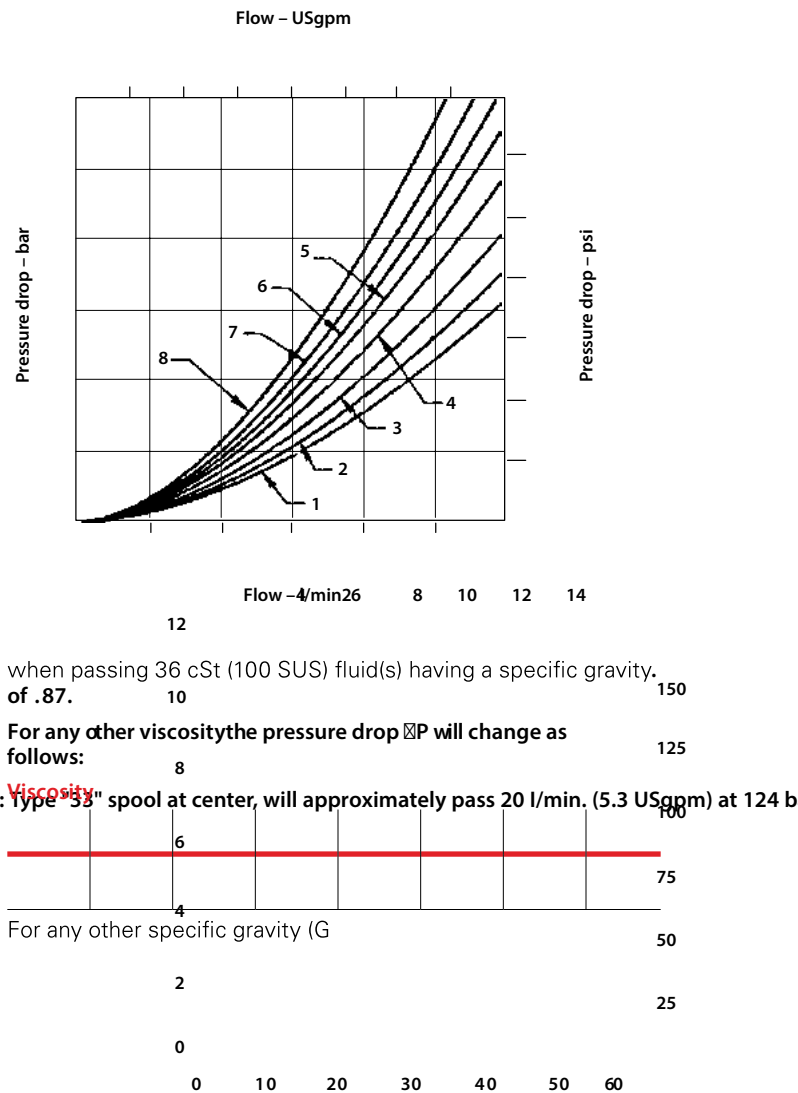
2 4 6 8 10 12 14

II-B

			"1"	"2"	"3"	"6"	"7"	"8"	"33"
	"22A"	—	—	15 (4)	—	—	—	—	—
	"*A"	57 (15)	—	57 (15)	—	30 (8)	26 (7)	—	—
	"*B"	76 (20)	19 (5)	57 (15)	76* (20)	26 (7)	57 (15)	38 (10)	57* (15)
	"*C"	76 (20)	19 (5)	57 (15)	76* (20)	26 (7)	57 (15)	38 (10)	57* (15)
	"*F"	76 (20)	19 (5)	57 (15)	76* (20)	26 (7)	57 (15)	—	57* (15)
	"*N"	53 (14)	76 (20)	45 (12)	—	—	—	—	—**Note type "33" sp

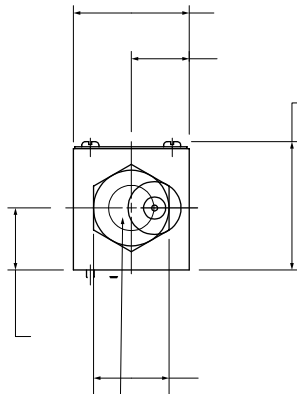
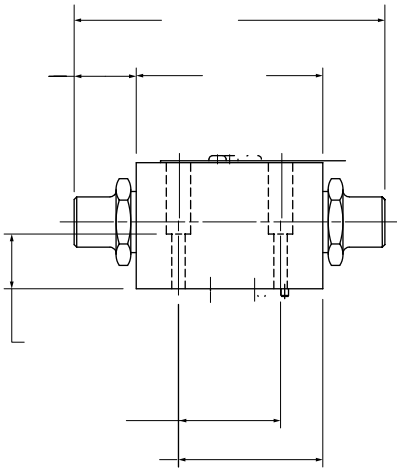
Pressure drop curve reference chart

		-A	-B	-B	-A	P-T @center
	"1B"	5	3	5	3	6
	"1C"					
	"2B"	5	2	5	2	-
	"2C"					
	"3B"	6	3	6	1	-
	"3C"					
	"6B"	6	1	6	1	-
	"6C"					
	"8B"	4	3	4	3	-
	"8C"					
	"33B"	6	2	5	2	**
	"33C"					
	"0A"	5	2	5	2	—
	"2A"	6	5	6	5	—
	"6A"	5	7	5	7	—
	"22A"	6	—	6	—	—
	"0N"	3	7	3	7	—
	"2N"	6	3	6	3	—
	"6N"	7	1	7	1	—** NOTE: (1798 psi) inlet pressure.

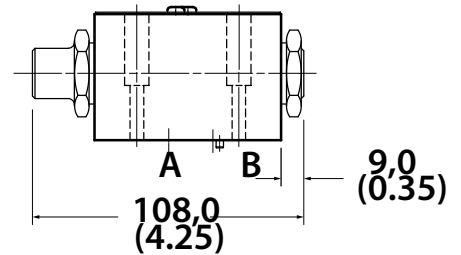


DG3V-3-*-60 Hydraulic operated

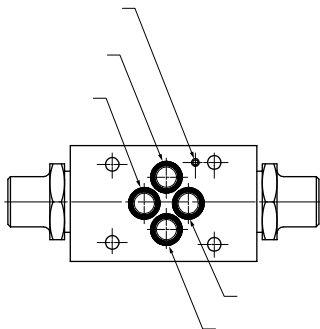
II-B



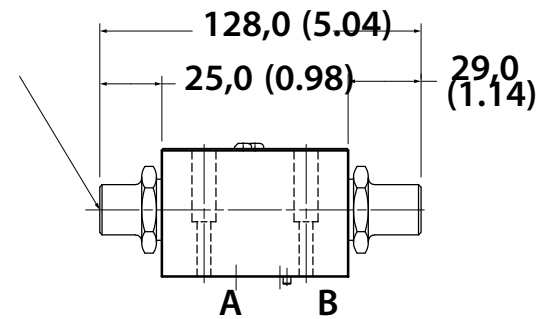
Pilot/drain connection
B - G1/8 thread
S - SAE straight thread
(7/16" - 20 UNF)



DG3V-3-**-A-T-7-*-60
DG3V-3-**-B-T-7-*-60
DG3V-3-**-F-T-7-*-60



DG3V-3-**(L)-7-*-60
DG3V-3-**-A(L)-7-*-60
DG3V-3-**-B(L)-7-*-60
DG3V-3-**-C-7-*-60
DG3V-3-**-N-7-*-60



DG3V-3-**-A-T-P1-7-*-60
DG3V-3-**-B-T-P1-7-*-60
DG3V-3-**-F-T-P1-7-*-60

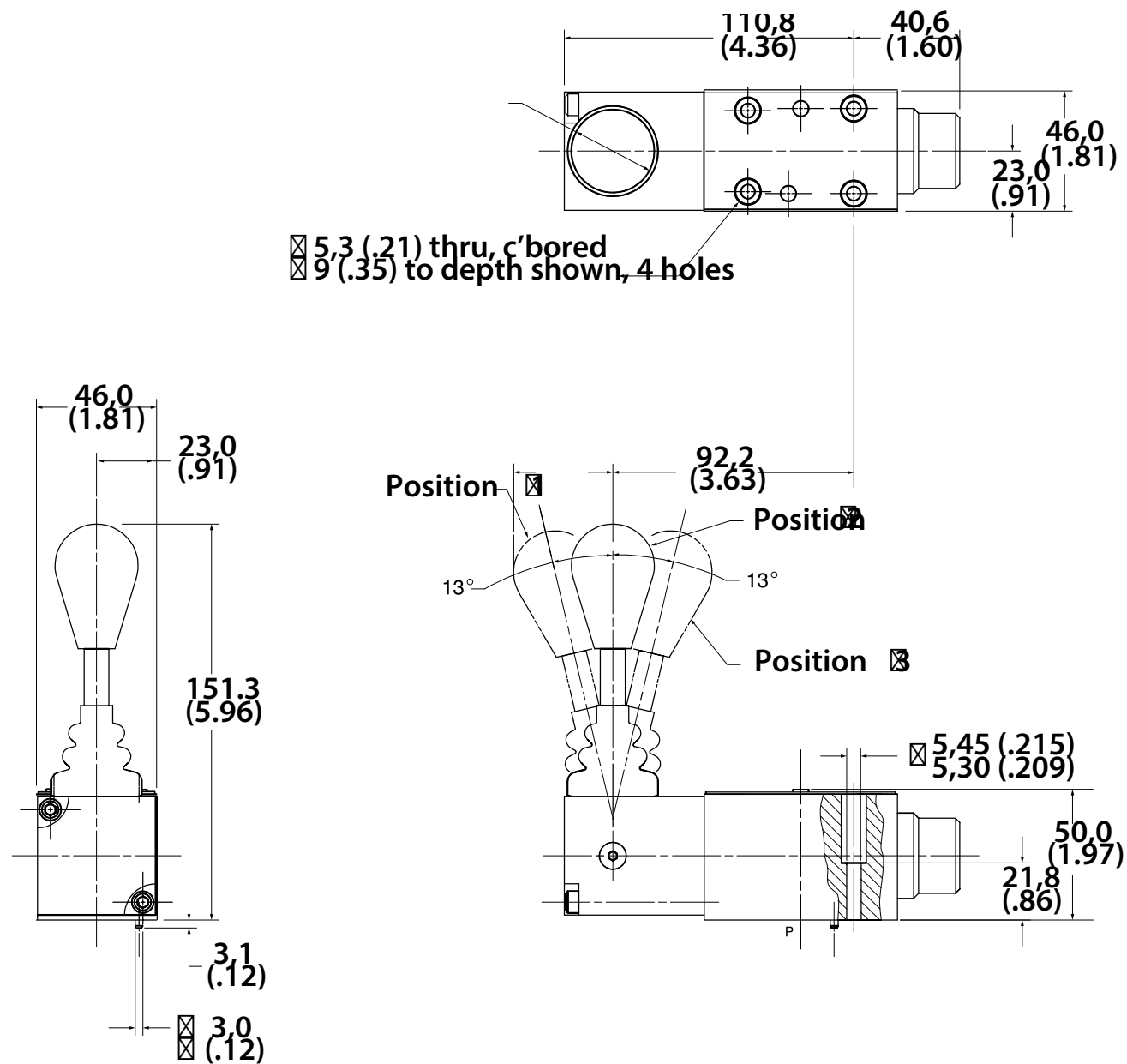
Installation dimensions

Dimensions (inches)

48,0 (1.89)

DG17V-3-*-60 Lever operated

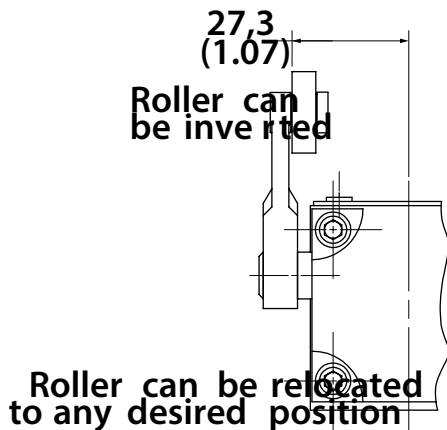
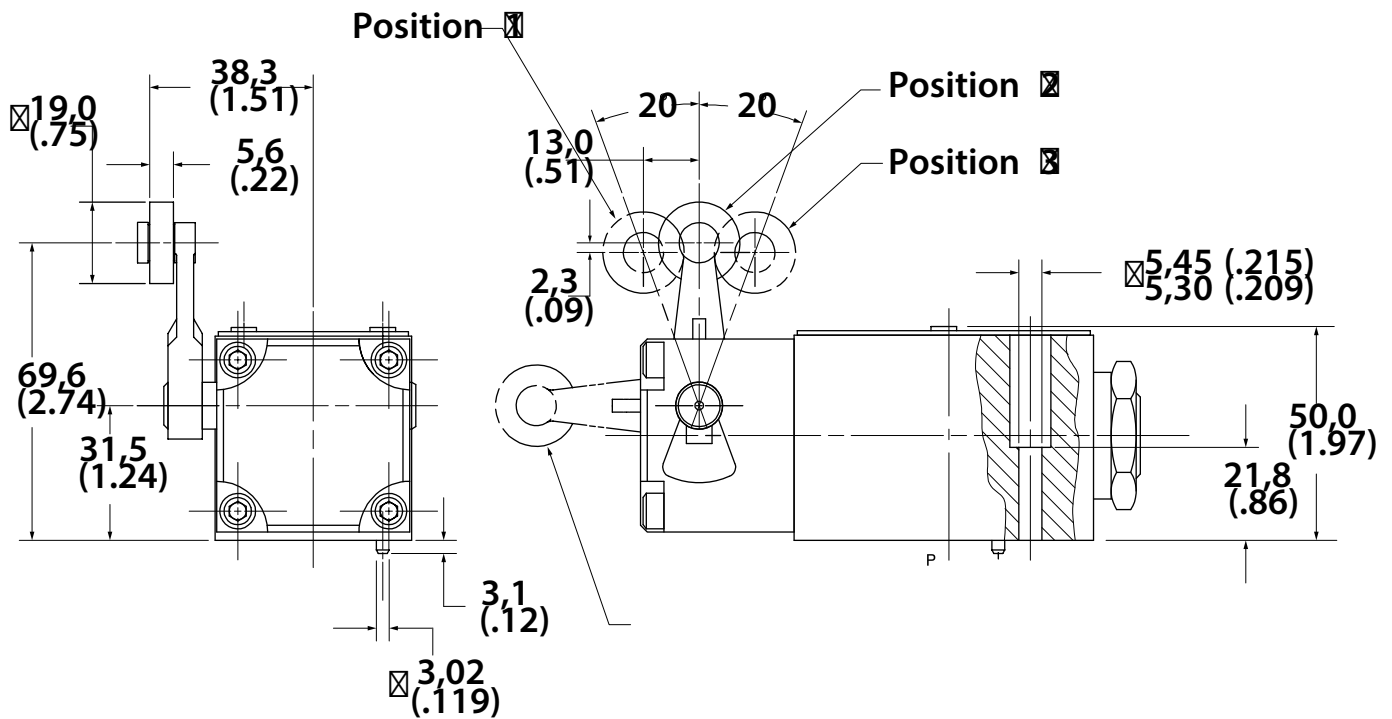
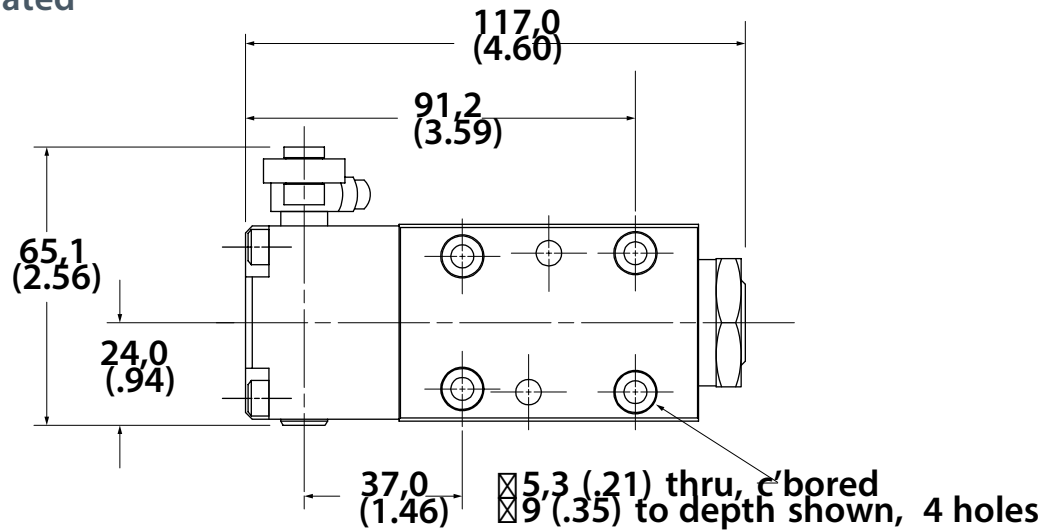
II-B



ist all

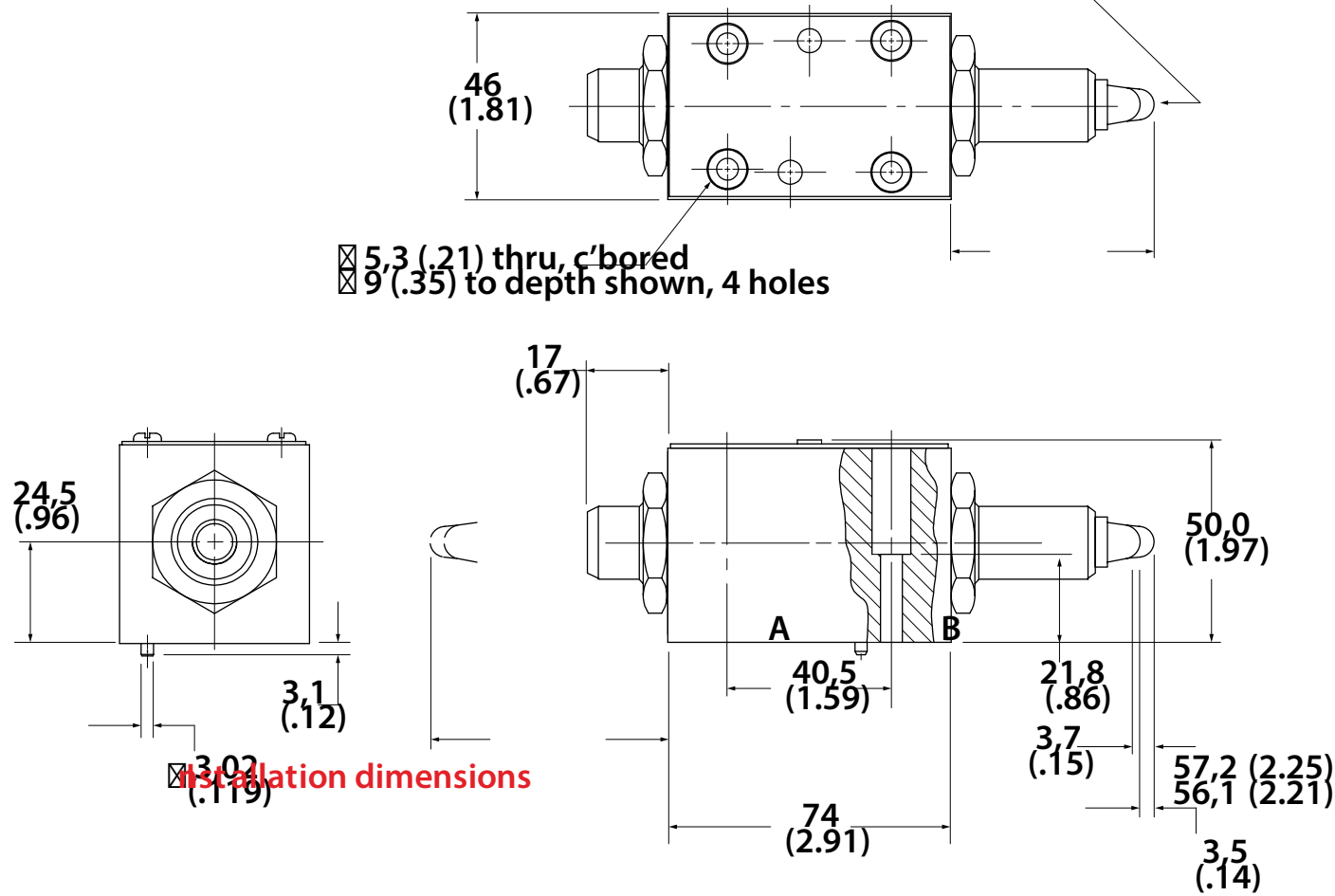
DG20V-3-*-60 Cam operated

II-B



DG21V-3-A(L)-2-60 Plunger operated

Operating force, is dependent on hydraulic conditions and from 100-250 Nm (22-56 lb ft), must be applied axially .



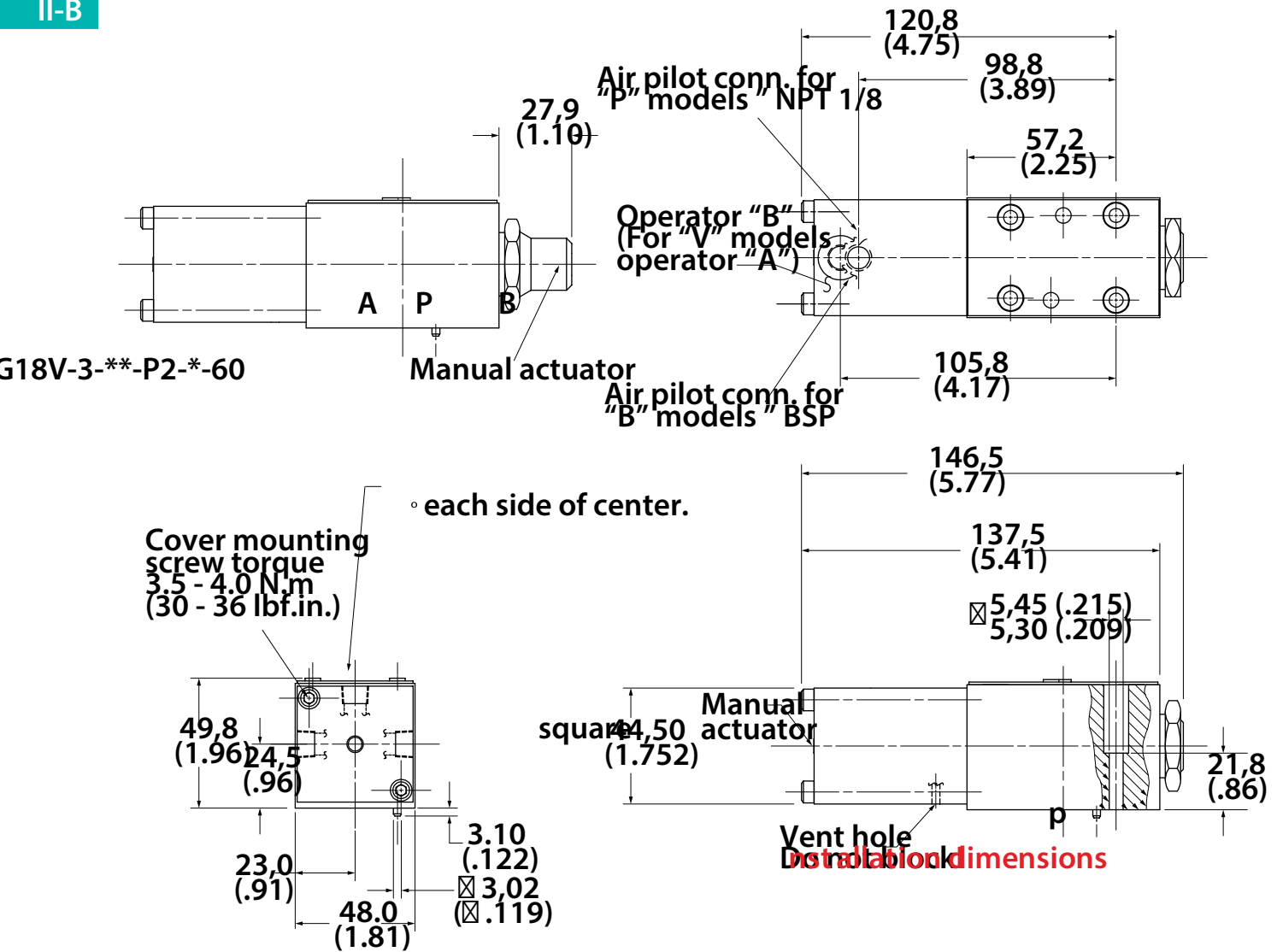
57,2 (2.25)
56,1 (2.21)

Max.
stroke

Nom.
stroke

DG18V-3-*-60 Air operated

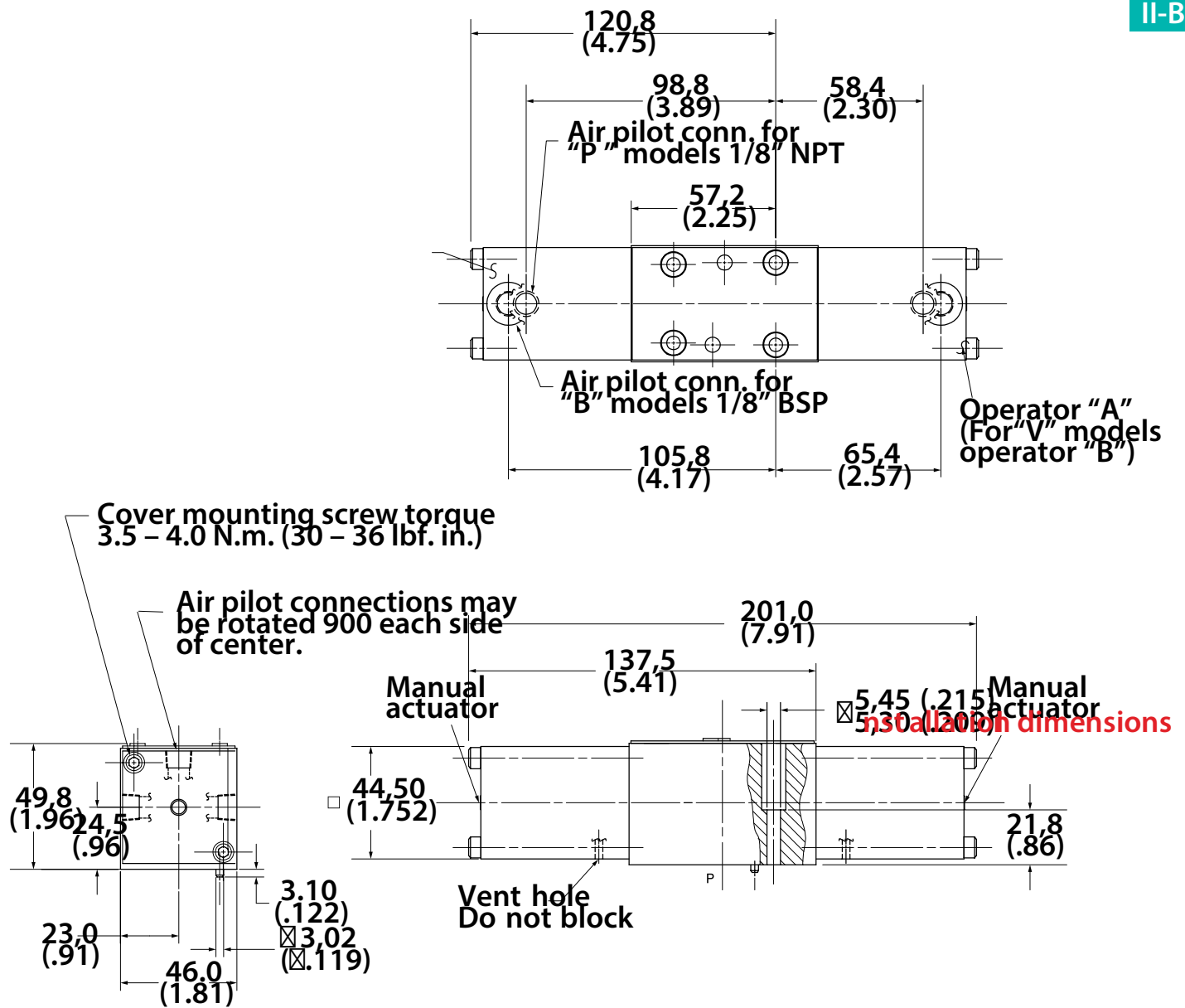
II-B



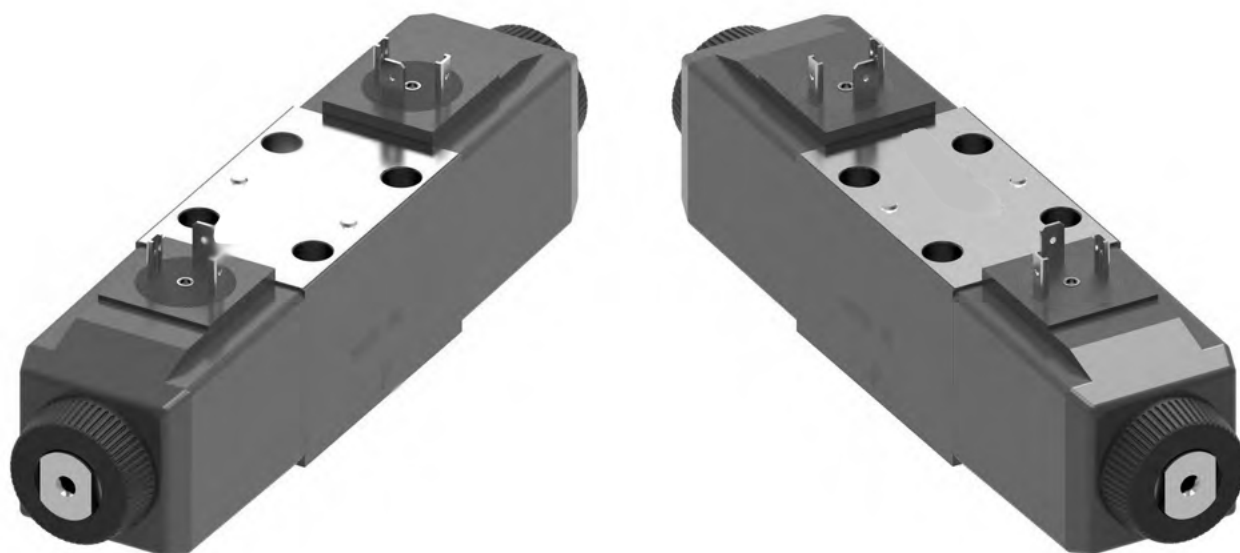
At 10 bar (150 psi) the valve may be rotated

DG18V-3-*-60 Air operated

II-B



Oper
(For "V"



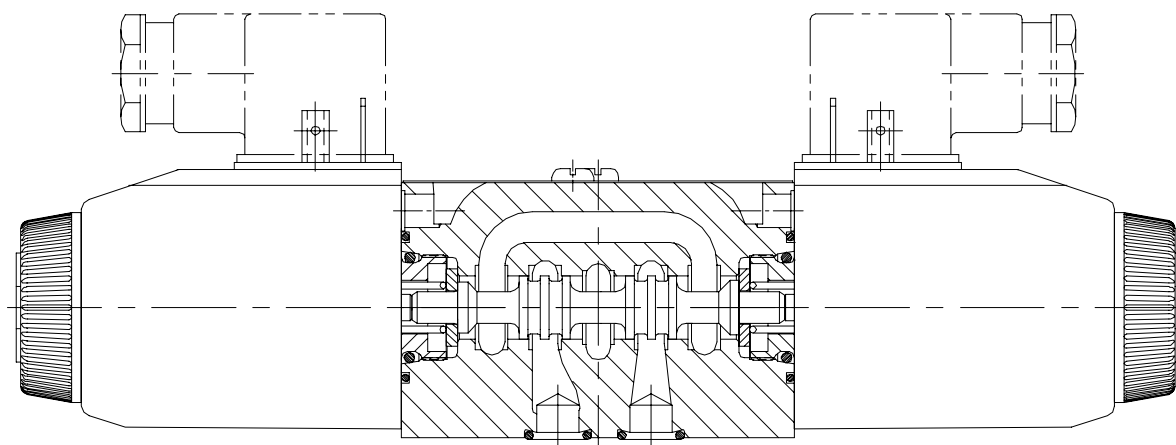
General description

stopping flow at any point in a hydraulic system.

DG4V-3-S/R - High performance and standard performance valves.

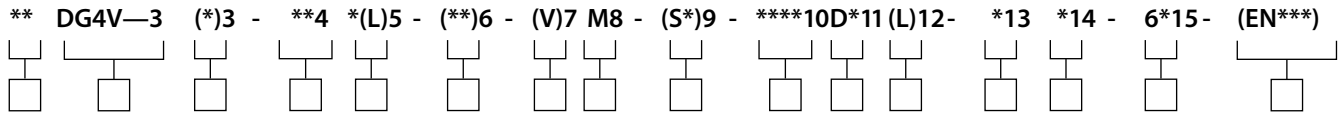
II-B

Bolt kit and seal kit:



Solen

II-B



☐	Seal type
	BlankViton
	F6Buna Nitrile/High CAN2
☐	Model series
	4 –Solenoid operated
	V –Pressure rating 3500psi on P, A & B ports
	3 –ISO4401 Size 033
☐	Performance
	BlankHigh performance
	SSStandard performance4
☐	Spool typePlease refer functional symbols on Page 37 for spool types .5
☐	Spool spring arrangement
	A Spring ofiset, end-to-end
	ALSame as “A” but left hand build
	BSpring ofiset, end to center
	BLSame as “B” but left hand build
	CSpring centered
	NNNo-spring detented6
☐	Manual override option
	BlankPlain
	HWWater resistant override(s) on solenoid end(s)
	ZNoverrides at either end
	WTwist and lock override in solenoid ends•
	▲ No override in non-solenoid end of single solenoid valves
	•DC high performance only7
☐	Solenoid Energization identity
	BlankNone
	VSolenoid “A” is at port “A” end and/ or solenoid “B” is at port “B” end, independent of spool type
	Note:Used to select the identification of the solenoid . Refer to table on page 36 .

☐	Flag symbol
	MElectrical options and features9
☐	Spool indicator switch
	S3Switch, wired normally open
	S4Switch, wired normally closed
	S7Spool position monitoring switch . Single solenoid valves only .
	NoteRefer page 38 and 42 for further details10
☐	Coil type
	UIISO4400, DIN43650 connector
	U1ISO4400 fitted with PG11 plug
	KUTop exit flying lead (150mm)
	KUP4Junior timer (Amp) connector
	KUP5Integral Deutsch connector
	FPM44-Pin micro - (12mm) brad Harrison connector
	KUPM4LIntegral M12, 4-Pin connector
	FWFlying lead with 1/2” NPT thread wiring housing
	FTWFly. Lead wired terminal block & 1/2” NPT thread wiring housing
	FPA3WFly. Lead, 3 Pin connector & 1/2” NPT thread wiring housing
	FPA5WFly. Lead, 5 pin connector & 1/2” NPT thread wiring housing
	KUP6Flying lead external to coil with Deutsch connector
	KUP7Packard connector pins (male)
	KUP8Special packard connector pins with seals (female)
	X5Atex approved coil, ‘d’ type ▲
	▲ Also CSA and UL approved11
☐	Solenoid indicator lights
	BlankNone
	LSolenoid indicator lights ▲
	▲ Flying lead coil type only

Model code

**** DG4V—3 (*)3 - **4 *(L)5 - (**6 - (V)7 M8 - (S*)9 - ****10D*11 (L)12- *13 *14 - 6*15- (EN***)**
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

II-B

☐	Surge suppressor/ damper D1Diode positive bias D2Negative bias D7Transorb type See Page 45 for circuit details13	☐	Design number 60Basic design 61Type 8 spool16
☐	Coil rating B110V AC 50Hz/120V AC 60 Hz D220V AC 50 Hz/240V AC 60 Hz DS28V DC 30 watt G12V DC GL-12V DC H24V DC HL24V DC HM24V DC 8 watt *HM COIL IS DG4V-3-R Standard performance with 8 Watt coil14	☐	Special features "EN***" Code number assigned as required . EN21CSA approved models with 1/2" NPT entry conduit box, type FW and solenoid coil letter B,D,G, or H . EN38Leakage version . Typical leakage 5ml/ min/land at 100 bar . Note:EN38 valve specifies additional overlap and resulting 2X pressure drop compared to standard valve spools .
☐	Tank pressure ratingRefer to "Operating Data" for port T pressure ratings . 470 bar(100 psi) ▲ 5100 bar (1500 psi) for standard performance models, DG4V-3S, with AC or DC solenoids . 6207 bar(180 psi) for AC high performance models, DG4V-3, including spool position indicator type S6 . 7207 bar (3000 psi) for DC high performance models, DG4V-3, including spool position indicator type S6 . 8160 bar (2300 psi) for AC high performance models with lower tank port rating . ▲ X5 coil type only		

DC model type "S7"



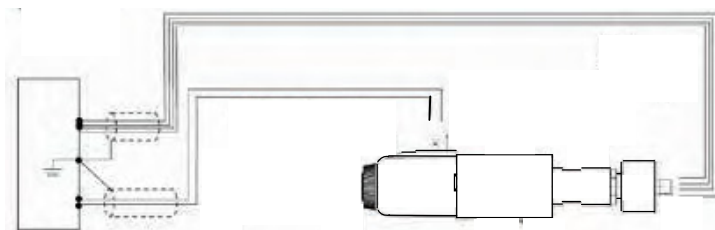
This product has been designed and tested to meet specific standards outlined in the European Electromagnetic Compatibility Directive (EMC) 2004/108/EC. For instructions on installation and effective protection levels see this leaflet and the Installation Wiring Practices for Vickers Electronic Products leaflet 2468. Wiring practices relevant to this Directive are indicated. Electromagnetic Compatibility (EMC).



WARNING Electromagnetic Compatibility

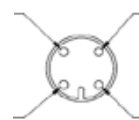
It is necessary to ensure that the unit is in accordance with the connection arrangement above. For effective protection the user must connect the valve subplate or manifold and the cable to efficient ground points. The valve and cable should be kept as far away from any sources of electromagnetic radiation as possible, e.g. cables carrying heavy current, relays and portable radio transmitters, etc. . Diagnostics mean that extra screening may be necessary to prevent interference .

Wiring Connections



Pin number 1,
Supply ☒ Me

Switch



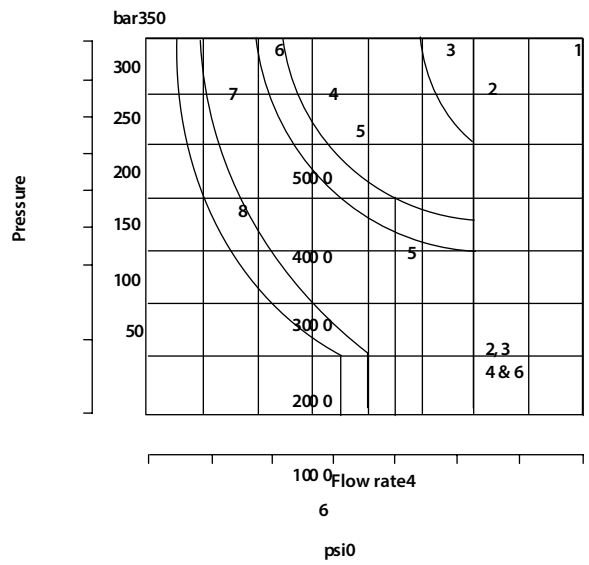
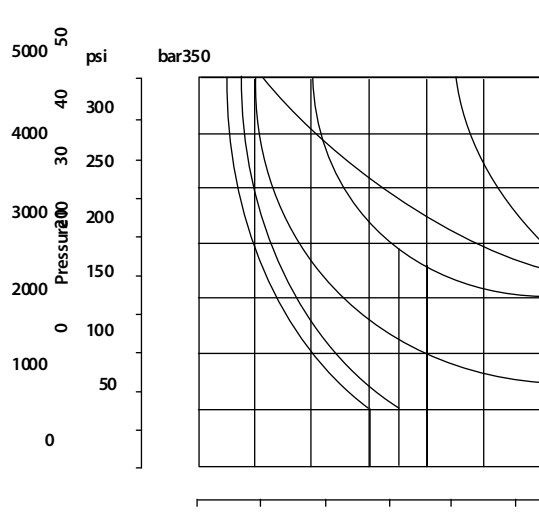
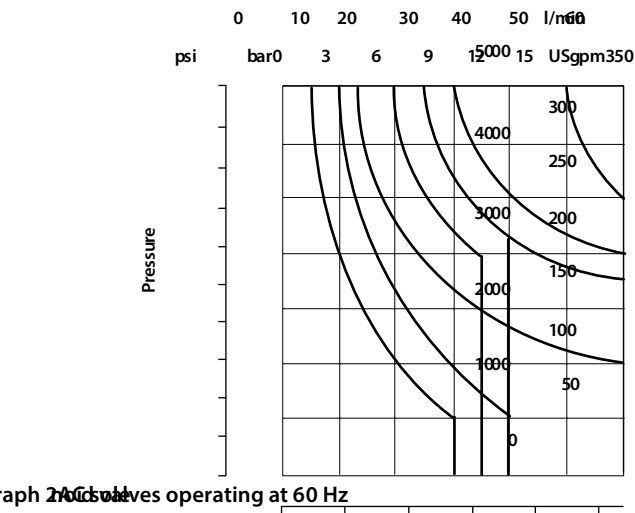
Pin number 3,
0V



Customer's protective ground connection

Operating data

II-B



22A(L)	8	7	
22B(L) & 22C	7	6	
33B(L) & 33C	4	3	
52BL, 52C	6	5	
521B	6	5	

II-B

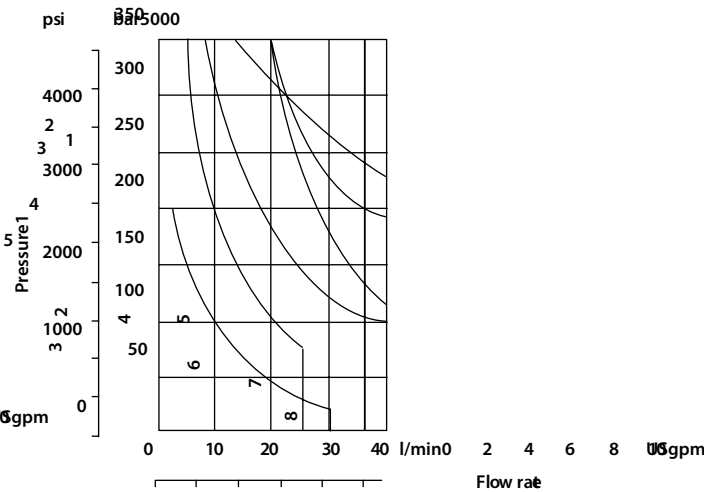
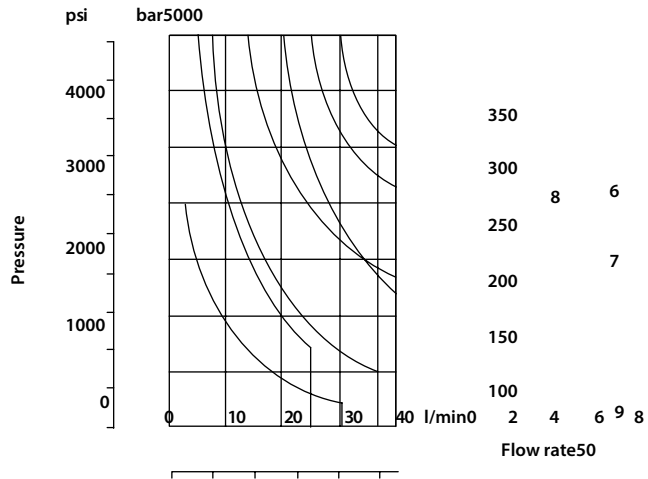
gravity of 0.87.

6 SUS) and a specific

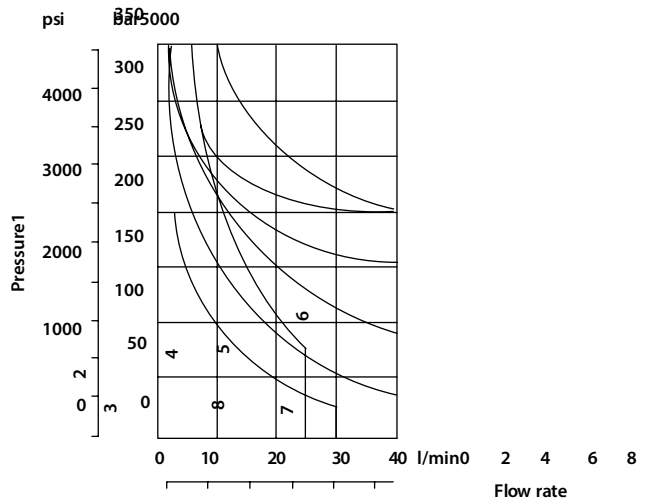
Maximum flow rates

Performance based on full coils and operating at 90% rated voltage. See note at bottom of next page.
using low power coils (DG4V-3 models only.)

Graph 4000 psi valves operating at 50 Hz



Graph 6000 psi valves

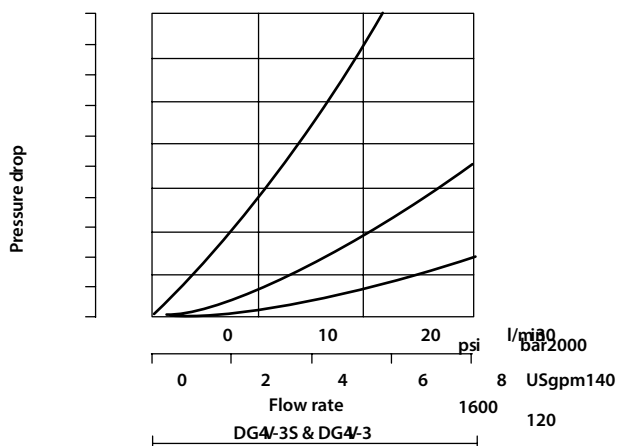


	▲	7 ▲	8 ▲	
22A(L)	9	8	7	
22B(L) & 22C	7	7	6	
33B(L) & 33C	4	4	4	
52BL, 52C	6	6	5	
521B	6	6	5	

▲ Consult Danfoss regarding each application that will jointly have flow rates approaching this curve and a pressurized volume exceeding 2000 cm3 (122 cu.in.)

Performance data

Typical with mineral oil at 36 cSt (168 SUS)



15

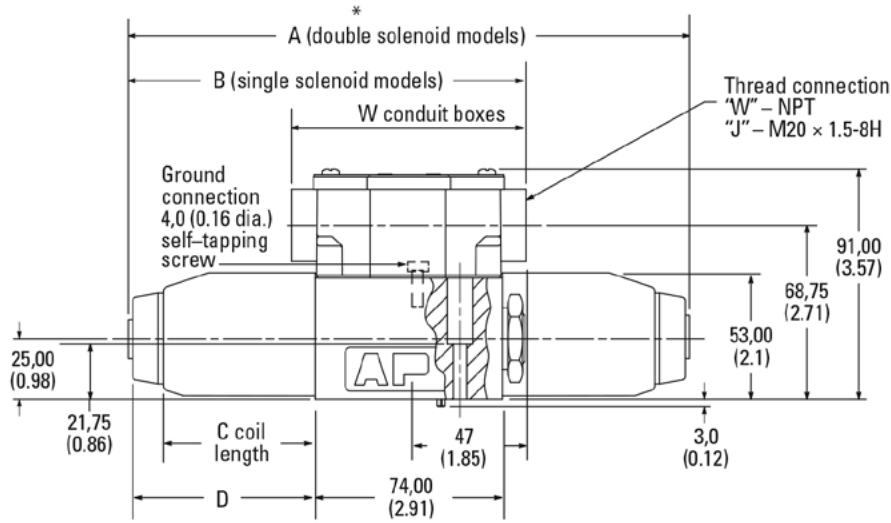
						20	
						▲	
Energized	4	4	2	2	-	-	
Both	6	6	5	5	-	-	
Energized	5	5	2	2	-	-	
Both	6	6	3	3	-	-	
De-energized	-	-	3	▲	3	-	
Energized	6	6	1	1	-	-	
Energized	4	4	3	▲	3	-	-
8B(L) & 8C	All	9	9	5	5	3	-
22A(L), 22B(L) & 22C	All	6	6	-	-	-	-
33B(L) & 33C	De-energized	-	-	15▲	15	-	
Energized	5	5	2	2	-	-	
Energized	6	▲	6	-	-	10	○
	Energized	6▲	6	-	-	10	○
521B	All	6▲	6	-	-	10	○
	De-energized	-	-	10▲	11	10	○
	Energized	6	6	-	-	10	○

▲ B" plugged ☒ "A" plugged ○ "P" plugged

A change to another specific gravity will yield an approximately **proportional change in pressure drop** . The specific gravity of a fluid may be obtained from its producer. Fire resistant fluids usually have higher specific gravities than oil.

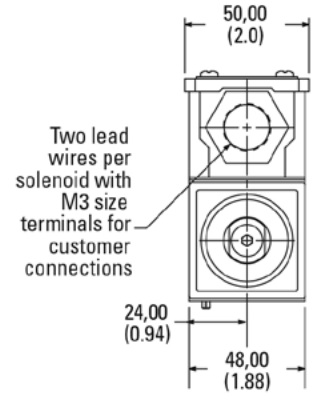
Single solenoid coils
DG4V-3(S)-*A(-**)
DG4V-3(S)-*B
DG4V-3(S)-8BL(-**)

As shown

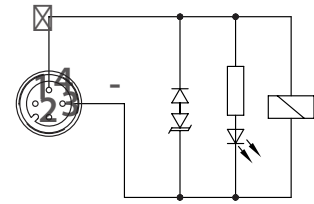
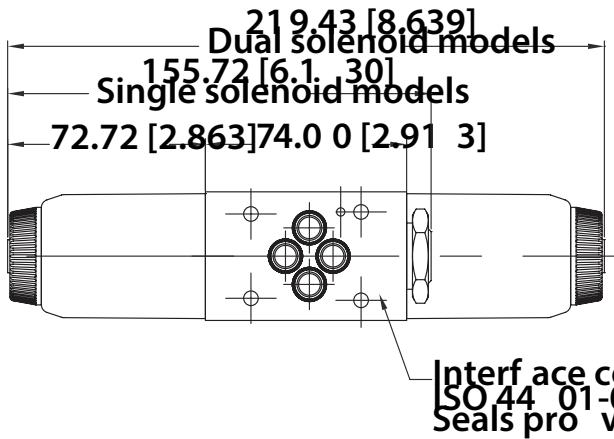
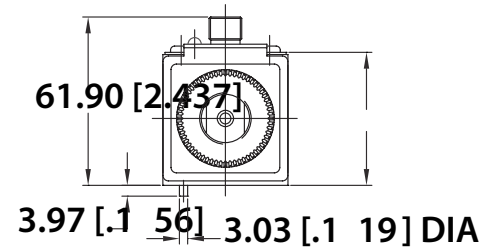
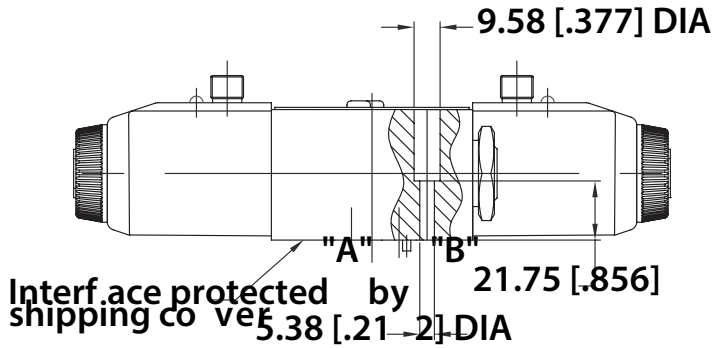
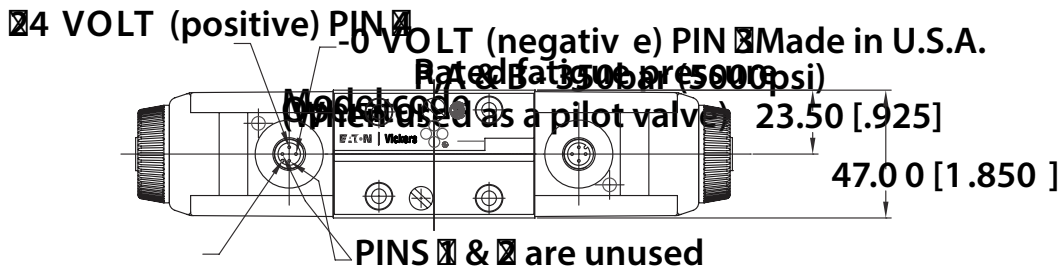


* 89 (3.5) for FPB – W conduit boxes
104 (4.0) All plug-in conduit boxes

Dimensions in mm(in).



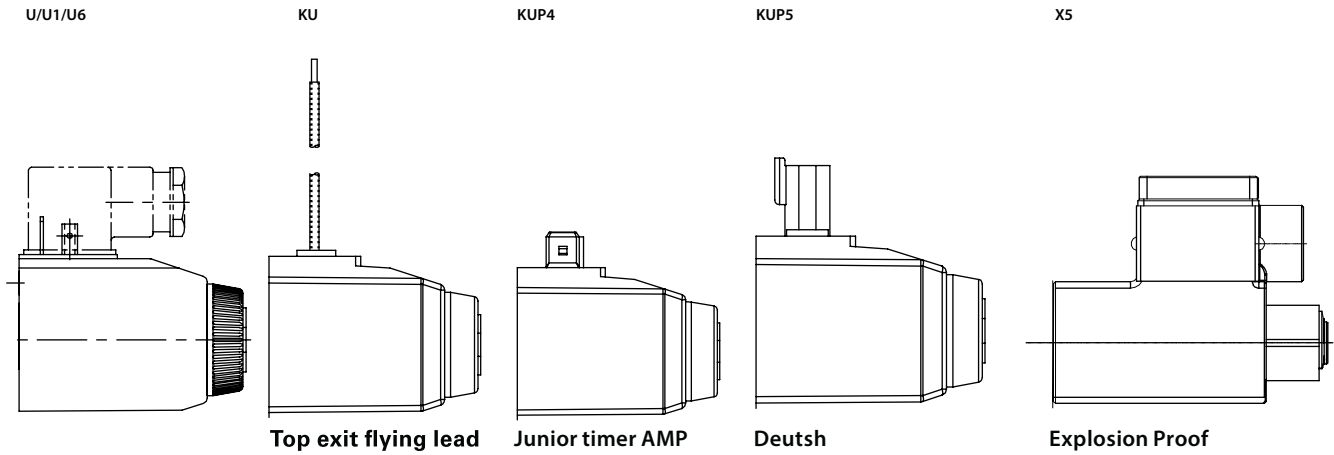
II-B



Electrical Schematic

Installation dimension

B
 11 for type

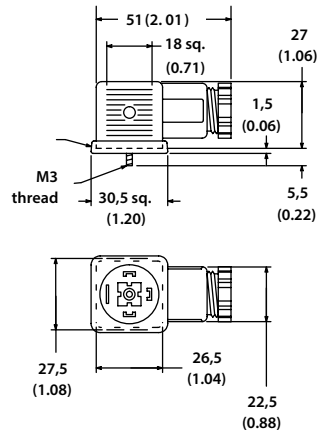


DIN 43650 Connector

Cable diameter range: 6–10 mm (0.24–0.40 in)

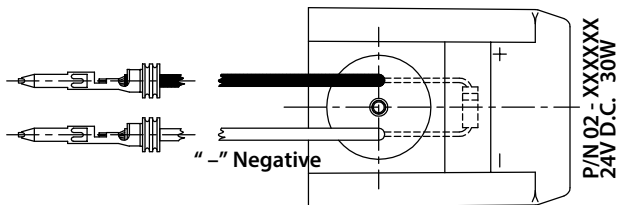
Cable section range: 0.085–0.50 mm² (0.0012–0.0075 in²)

IEC144 class IP65, when plugs are fitted



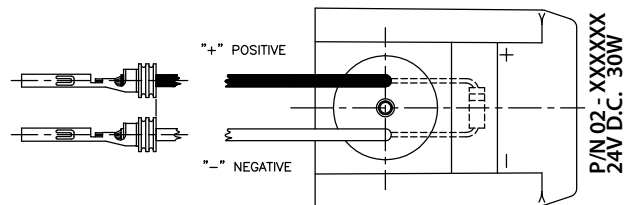
KUP 7

Packard connector pins - Male



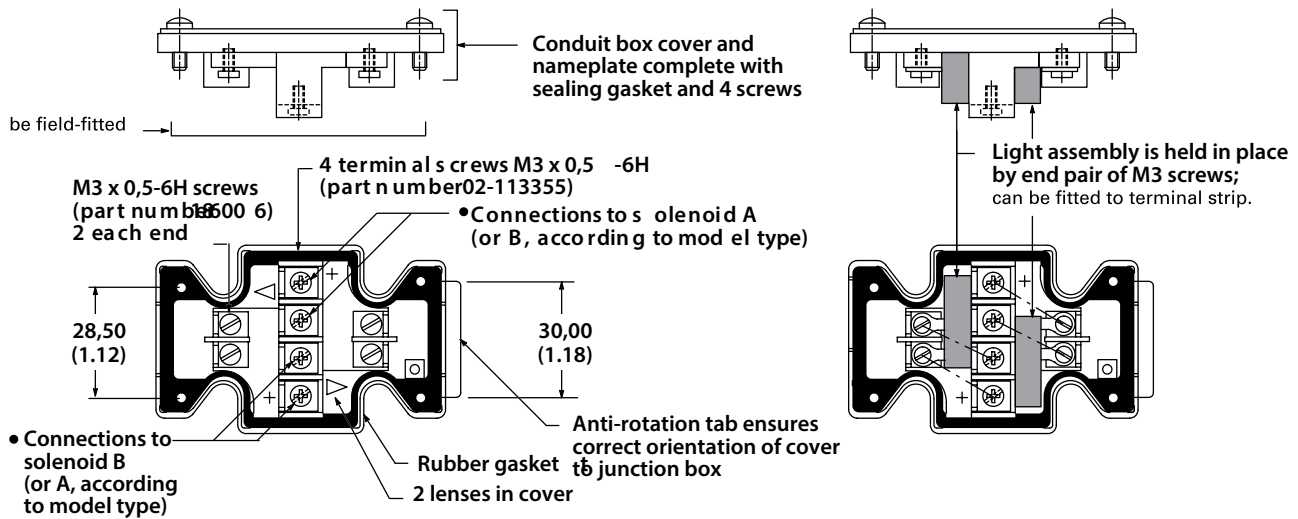
KUP 8

Special packard connector pins with seals - Female



II-B

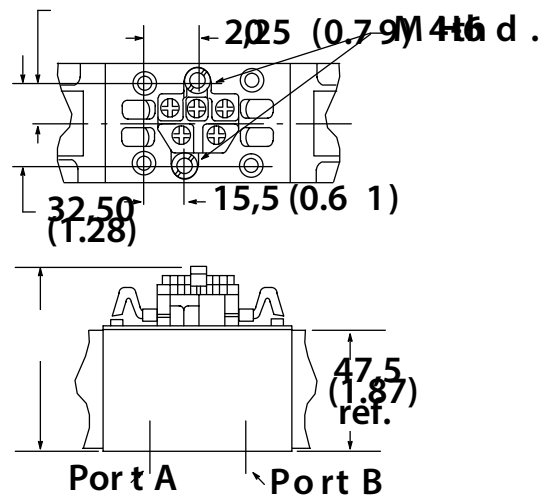
b. For correct light indication of energized solenoid ensure that solenoid leads are correctly connected: light terminals are common with each outer pair of solenoid terminals according to the side with mark .



Insta-Plug

PA configuration

A longer ground post provides first make/break ground connection .



16,25
(0.64)

Electrical plugs and connectors

3 pin connector

Use with single solenoid valve Key model code designations: DG4V-3(S)-*A(L)-** MFPA3W(L)

DG4V-3(S)-*B(L)-*(*)-(V) MFPA3W(L)

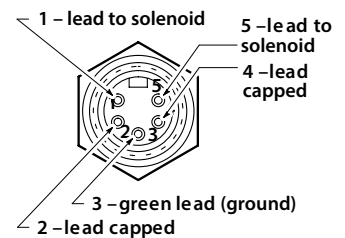
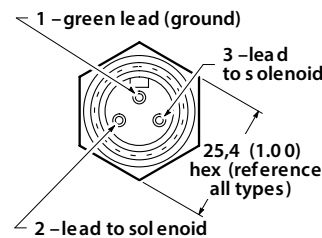
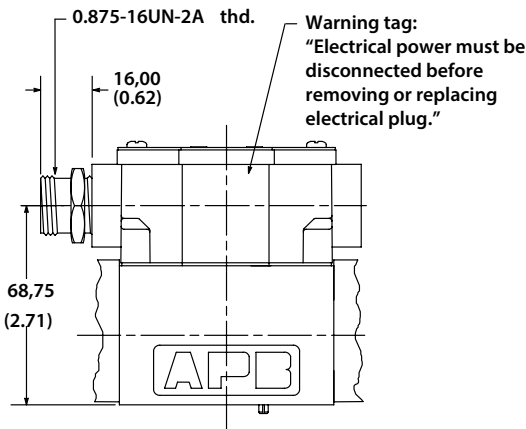
5 pin connector

Use with single solenoid valve Key model code designations: DG4V-5(S)-*A(L)-** MFPA5W(L)

DG4V-3(S)-*B(L)-*(*)-(V) MFPA5W(L)

The receptacle is a standard three or five pole connector with shortened leads and a 16 pin (4 and one 17 pin) The three pole plug has two leads and one 10, 7, 8 (7-0). All wires have underwriter approved insulation eyelet to terminate green wire ground (earth) connection (No . 8 screw furnished) . Valves are supplied pre-wired .

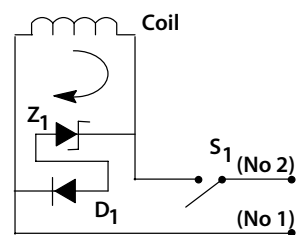
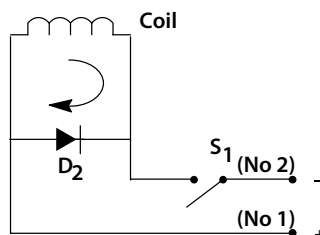
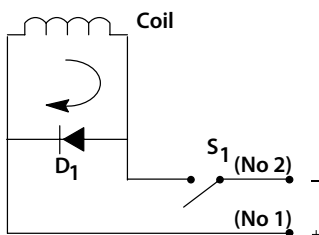
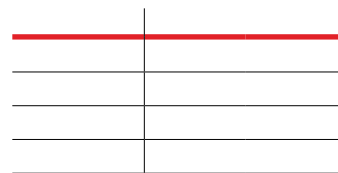
Connection details and model type/model code references



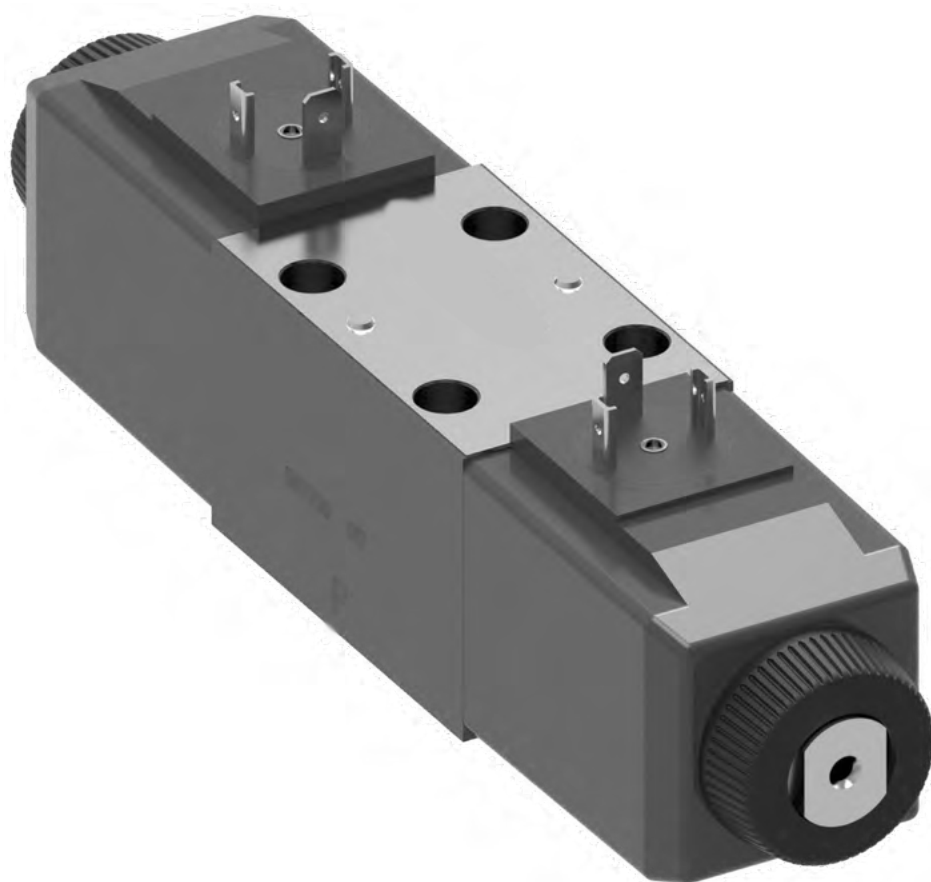
Surge suppression devices (for DC valves) Standard diode (D1), (D2)

Transzorb (D7)

Surge suppression devices (for DC valves) Standard diode (D2)



These surge suppression devices are "Polarity Dependent." Proper biasing conditions must be met when installing/connecting a coil in a system . Times represent cessation/application of voltage to coil versus velocity (start/stop) of a cylinder using a single solenoid, spring offset valve (time in milliseconds) .



II-B

-

DG4V-3

(*)3

*4

*(L)5

*6

-

**7

(**)8

(V)9

M10

****11

D*12

(L)13

*14

*15

60

☐

Seal type

BlankViton

F6Buna Nitrile/High CAN2

☐

Valve type

4Solenoid operated

VPressure rating 350 bar(5000 psi) on P, A & B ports

3ISO4401 Size 033

☐

Performance

BlankHigh performance

SStandard performance4

☐

Spool type

Please refer functional symbols on Page 52 for spool types .5

☐

Spool spring arrangement

Apring ofiset, end-to-end

ALSame as "A" but left hand build

BSpring ofiset, end to center

BLSame as "B" but left hand build

☐

Orifice type

2Variable type

3Optimized Fixed type

▲ High performance only7

☐

Soft shift orifice size

070.7 mm dia*Minimum Oriice Size recommended for high performance type "8C" spool8

☐

Manual override

BlankOverride in solenoid end only

HWWater-resistant override(s) on solenoid end(s) No override in non-solenoid end of single solenoid valves9

DTH18VDC

☐

Solenoid energization

Blank12VDC

V54V220VDC

VSolenoid "A" is at port "A" end and/or solenoid "B" is at port "B" end, independent of spool type

Note:Used to select the identification of the solenoid . Refer to table on page 52 .10

☐

Flag symbol

MElectrical options and features

☐

Coil type

UISO4400, DIN43650 connector

U1ISO4400 fitted with PG11 plug

U6ISO4400 with fitted DIN plug with lights

KUTop exit flying lead (150mm)

KUP4Junior timer (Amp) connector

KUP5Integral Deutsch connector n

FWFly lead with 1/2" NPT thread wiring housing

FWFly lead with 1/2" NPT thread wiring terminal block & 1/2" NPT thread Wiring housing

FPA3WFly. lead, 3 Pin connector & 1/2" NPT thread Wiring housing

FPA5WFly. lead, 5 pin connector & 1/2" NPT thread Wiring housing

X4AteX approved coil, 'me' type

X5AteX approved coil, 'd' type

• Also CSA and UL approved P12L12

☐

Surge suppressor/ damper

BlankNo diode

D1diode positive bias

D2negative bias

See Page 60 for circuit details13

☐

Solenoid indicator lights

BlankNo Solenoid indicator lights

LSolenoid indicator lights

▲ Flying lead coil type only14

☐

Coil rating

GH12 VDC

HH24 VDC

PH110VDC

DJH98VDC

Model code

DG43 of Shift Model Series

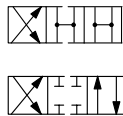
The valve function schematics apply to both U.S. and european valves.

II-B

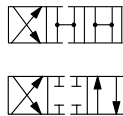
DG4V-3(S)-*N(V)



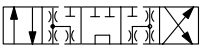
DG4V-3(S)-*A(V)



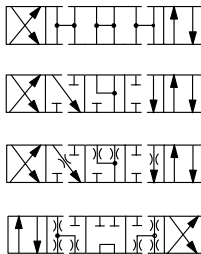
DG4V-3(S)-*AL(V)



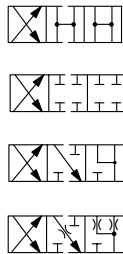
DG4V-3(S)-8CV



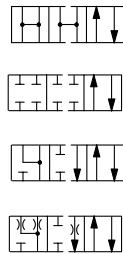
DG4V-3(S)-*C(V)



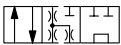
DG4V-3(S)-*B



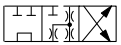
DG4V-3(S)-*BL



DG4V-3(S)-8BLV



DG4V-3(S)-8BV



Solenoid Identified to US and European Standards

▲

Functional symbols

These times are influenced by flow, pressure, applied solenoid voltage, oil viscosity and ambient temperature. Response times can be fine tuned to the application by orifices that are interchangeable via manual actuator end.

See model code for available orifices.

Response times shown for spool type “A”

pressure of 210 bar (3000 psi), flow at 19 L/min (5 USgpm)

solenoid voltage at 100% of rating and 38°C (100°F) oil temperature. Times are determined on power

on to the point of maximum cylinder velocity (shift) or end of cylinder movement (return). All notes are with

arc suppression diodes. Spring return times can be expected to increase with diodes in place. Response times greater than 700 msec are not recommended.

Note: the high performance type “8C” model, core tube orifice sizes smaller than 2 .0 mm diameter are not recommended.

Orifice changing procedure

Warning

- a. Before breaking a circuit connection make certain that power is off and system pressure has been released. Lower all vertical cylinders, discharge accumulators and block any load whose movement could generate pressure. Plug all removed units and cap all lines to prevent entry of dirt into the system.
2. Using a 5/32" hexkey, remove manual actuator plug and spring from the end of solenoid (Tightening torque 6 .2–7.3 N.m 55–65 lbf .in.)

- b. Insert extraction tool (878495) into solenoid via the manual actuator opening. Rotate tool until aligned and push pin into slot in armature.

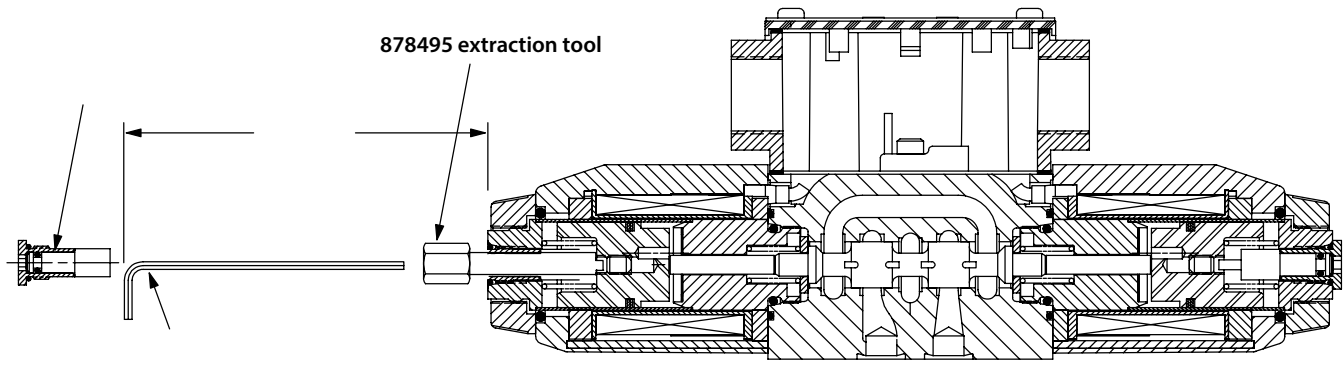
- c. Using 1/2" wrench and tool to pivot the armature from rotating, insert 3/32" hex key down the center of tool and remove orifice plug.

- d. Replace by the same method, tightening orifice snug to ensure bottoming of threads. Smaller orifices increase response times, larger orifices decrease response time.

Orifice & tool kit 02-140211

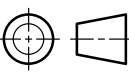
For fine tuning shift performance, orifices must be ordered

orifices, (1) installation tool, (1) 5/32" hex key and (1) 3/32" hex key.

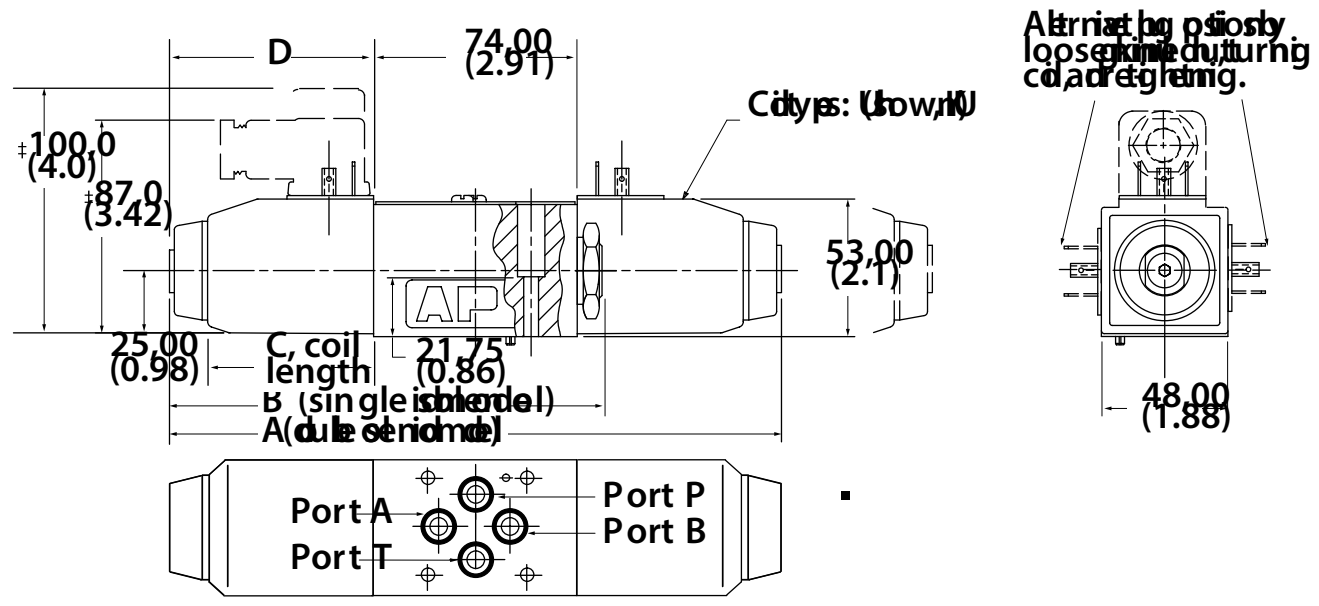


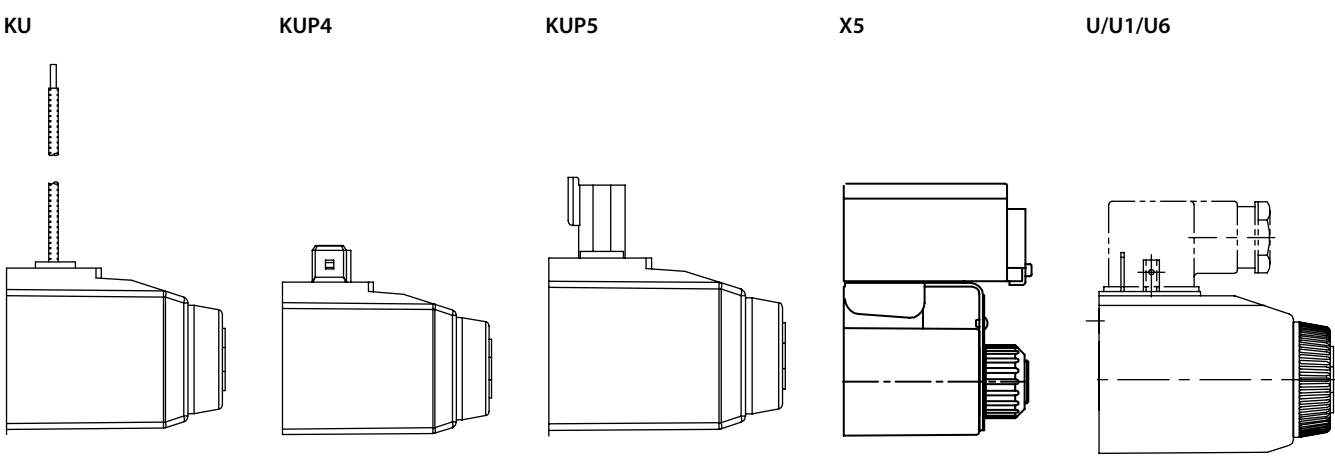
Function: Applications where valves are to remain pressurized (or bled or de-energized) at pressure.

II-B



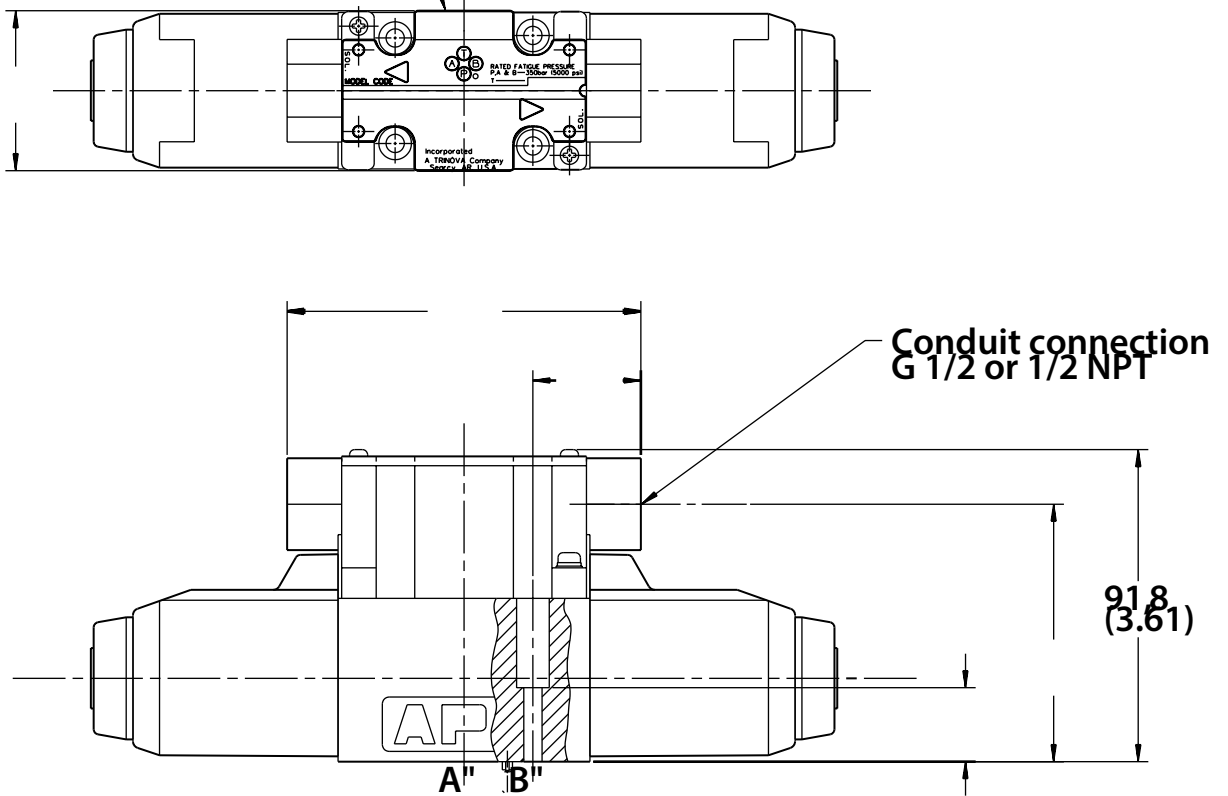
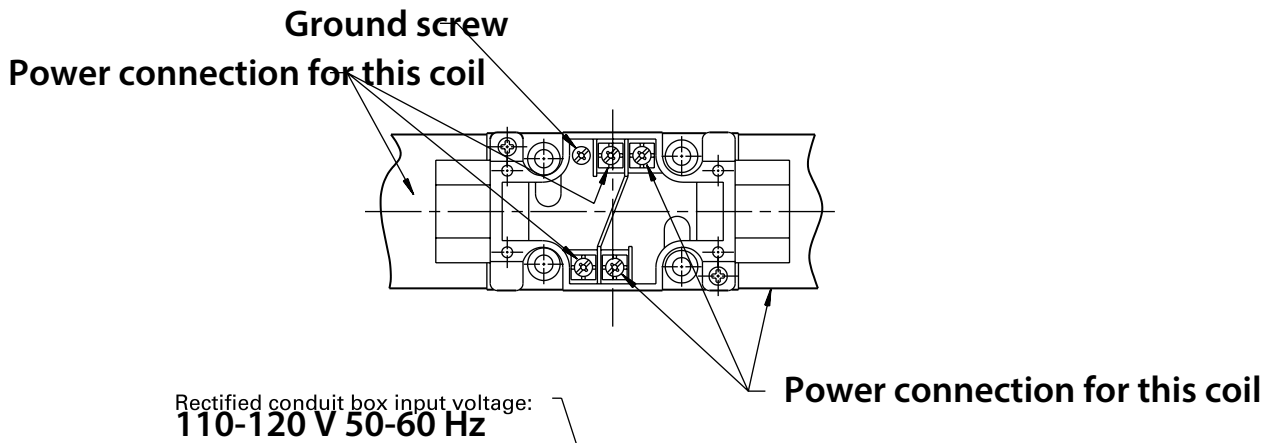
Double solenoid m Single solenoid m
DG4V-3(S)-*C-**-*(V) M-G4V-3(S)-*A(-**) As shown DG4V-3(S)-*AL(-**) Solenoid and end
DG4V-3(S)-*M-U-**-*(V) M-G4V-3(S)-*B(-**) cap image
DG4V-3(S)-8BL(-**)





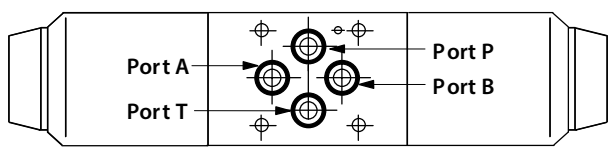
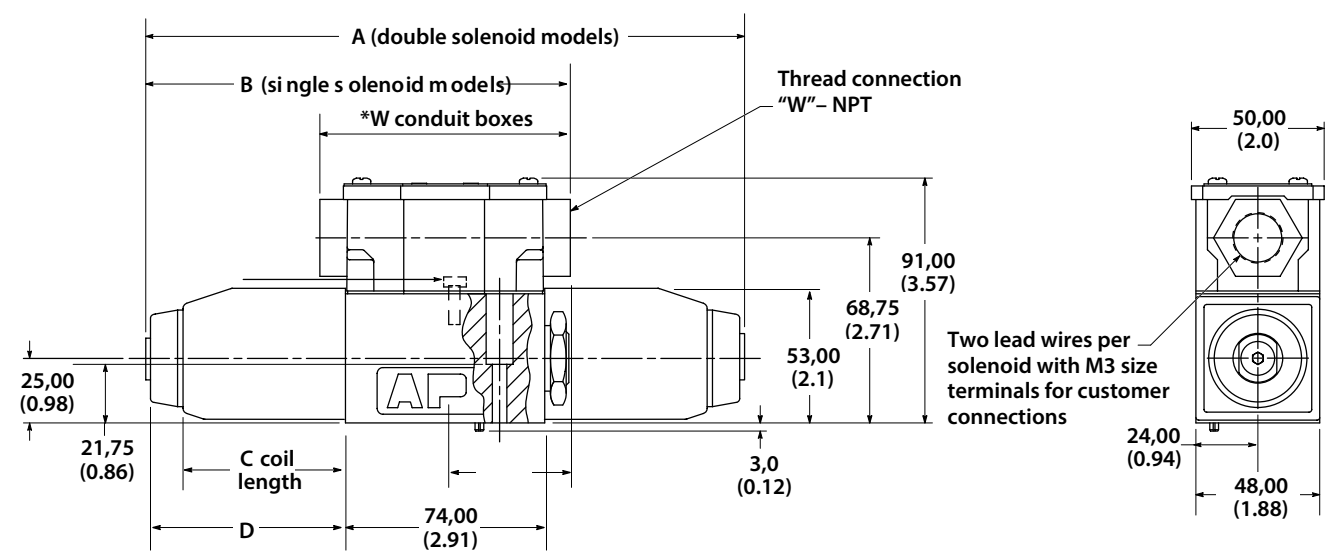
Installation dimensions

II-B



II-B

Single solenoid models
DG4V-3(S)-*C-**-*(V)M-F-**-60
DG4V-3(S)-*A(-**)
DG4V-3(S)-*B(-**)
DG4V-3(S)-8BL(-**)
As shown
DG4V-3(S)-*AL(-**)
DG4V-3(S)-*BL(-**)
DG4V-3(S)-8B(-**)
Solenoid and end cap code



*89 (3.5) for FPB - J & W conduit boxes
104 (4.0) All plug-in conduit boxes

Dimensions in mm(in).

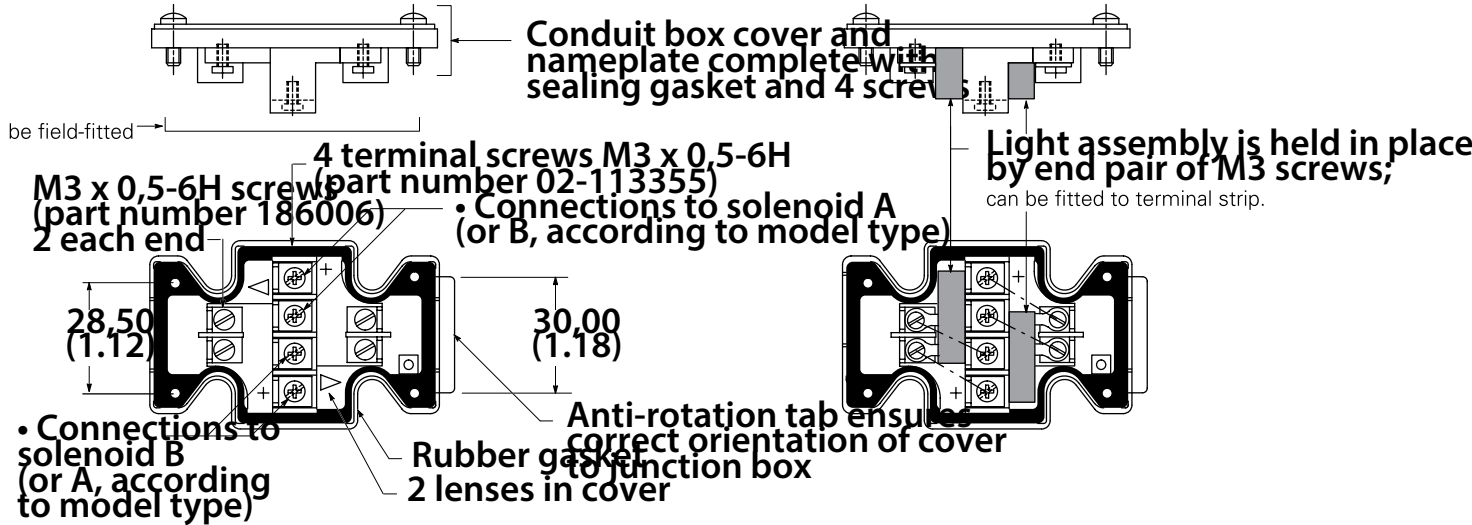
Installation dimensions

Codes "FW" : 2 lead wires for each solenoid approximately 150,00 (6 .00) long . M3 (6) terminals provided for customer connections

a. For DC coils the ~~the~~ lead(s) must be connected to the terminal(s) marked ~~the~~. When using 3-wire incoming leads to double solenoid valves (i.e. common neutral) the inner pair of terminals must be interconnected.

b. For correct light indication of energized solenoid ensure that solenoid leads are correctly connected: light terminals are common with each outer pair of solenoid terminals according to the side with ~~the~~ mark.

For valves with type "F" coils.



Insta-Plug

DIN 43650 Connector

Cable diameter range:

Wire section range:

Terminals:

Type of protection:

Connector can be positioned at 90° intervals on valve by re-assembling contact holder into appropriate position inside connector housing. Connectors with and without indicator lights are available (order separately):

6-10 mm (0.24-0.40)

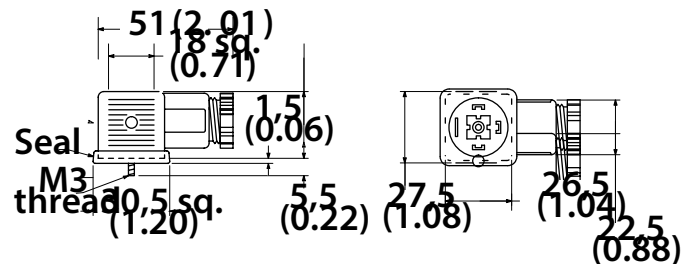
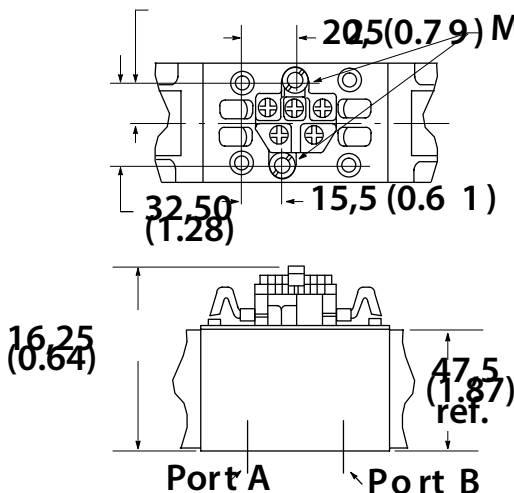
5-1,5 mm² (0.0008-

0.0023 in²)

PA configuration

Screw type

IEC144 class IP65, when plugs are fitted correctly to the valves



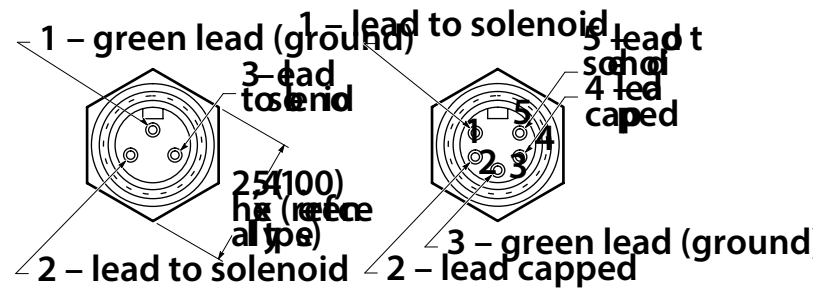
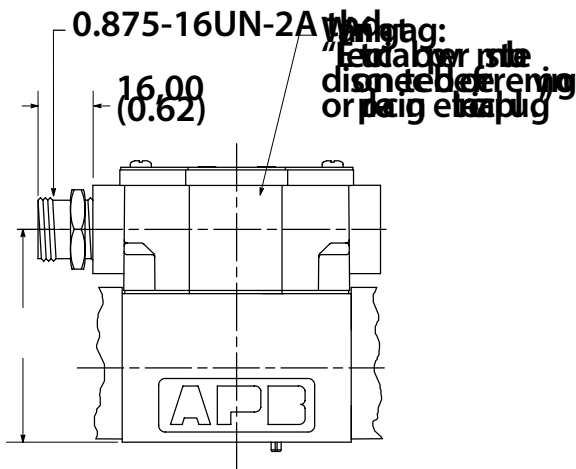
NFPA Connector T3.5.29-1980

3 pin connector

II-B

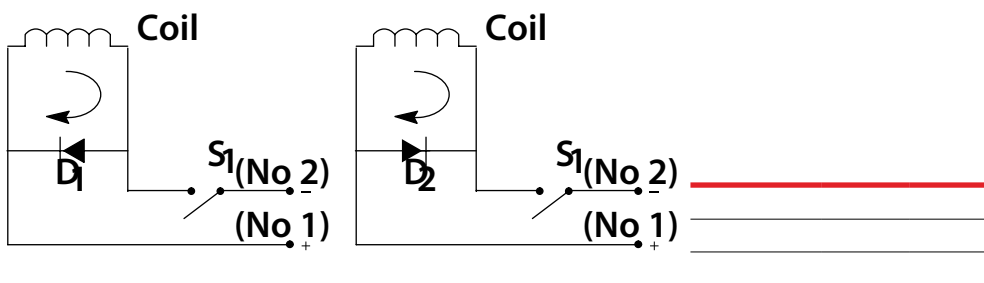
The receptacle is a standard three or five pole connector with shortened leads and a three pole plug has four leads 101, 104 and one 177, 107, 8 (7 .0). The three pole plug has two leads and one 107, 8 (7 .0). All wires have underwriter approved non-sheathed green wire is ground (earth) connection (No .8 screw furnished) . Valves are supplied pre-wired.

Connection details and model type/model code references

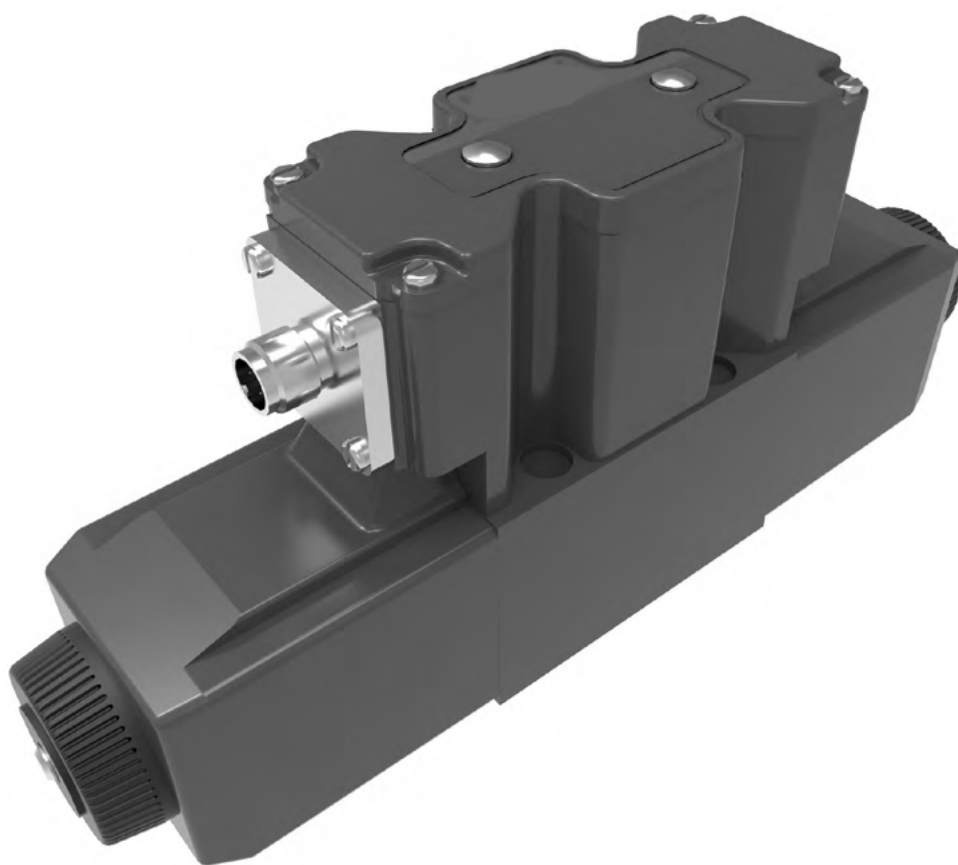


Surge suppression devices
(For DC valves)
Standard diode (D1), (D2)

Surge suppression devices
(For DC valves)
Standard diode (D2)



Electrical plugs and connectors



II-B

Standard features
include surge suppression and LED's indicating voltage to the
active coil .

eliminating the cost and heat associated with having this
function in the machine controls cabinet . 24 VDC power is
supplied separately to pin1 of the M12 connector, while pin
2 or 4 control the solid state switch connection to either
solenoid A or B . Pin 3 is common .

The "Z" option adds the switching amplifier on board,

3. Summary features and benefits

Hydraulic

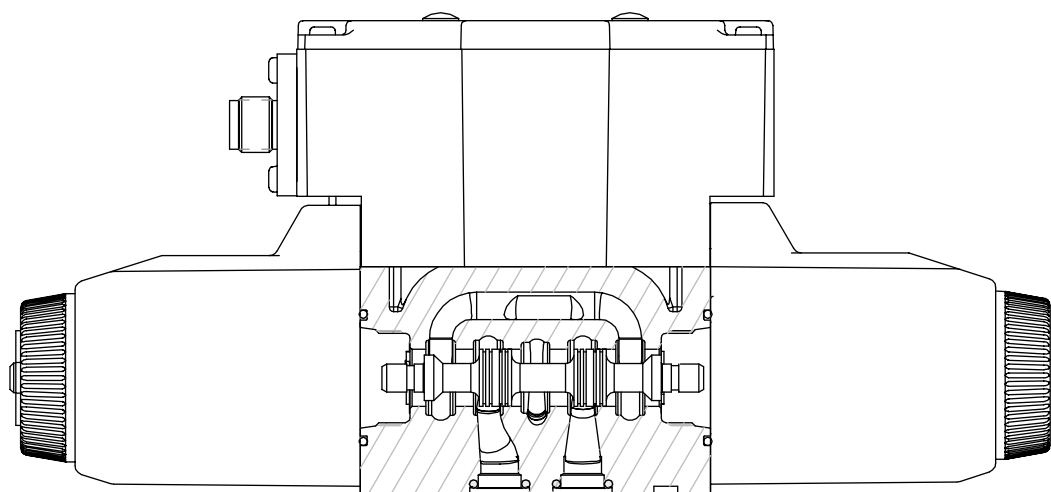
Maximum flow: up to 80 l/m (21 USgpm) depending on spool
type and coil wattage .

Environmental

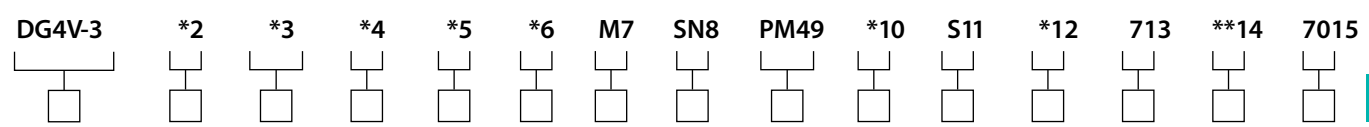
EMC qualified
to EN 61326 CE certified, CE mark on the valve.

Electrical•

Cross sectional view



Solenoid operated directional valve



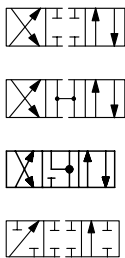
☐	Directional control valve 4Solenoid operated VPressure rating 350 bar (5000 psi) on P, A & B ports 3ISO4401 Size 032
☐	Spool TypeSee "Functional Symbols" Section on page 653
☐	Spool/spring arrangement single solenoid models ASpring offset, Right hand build (standard) ALSpring offset, Left hand build (optional) BSpring centered, Right hand build (standard) BLSpring centered, Left hand build (optional) Dual solenoid models Spring centered . No R or L option Spring centered . No R or L option .4
☐	Manual override HWaterproof override in solenoid ends only ZNo overrides in either end5
☐	Seal type F3Viton A (standard) F6Buna Nitrile/High CAN6
☐	Solenoid Energization identity ASolenoid identification based on ANSI B93.9 (i.e. energize solenoid A TO GIVE flow P to A) (standard) VSolenoid identification determined by position of solenoid (i.e. solenoid 'A' at port 'A' end, solenoid 'B' at port 'B' end) Required for 8C-type spool .

☐	Flag symbol MElectrical options and feature8
☐	Spool Indicator Switch SNNNo Switch (standard)9
☐	Electrical connector PM44 Pin M12 Connector10
☐	Wiring convention APins 2, 3 & 4 direct connection used ZOn board switching amplifier11
☐	Configuration SStandard configuration (diodes and lights included)12
☐	Coil rating H24 VDC, 30W HL24 VDC, 18W HM24 VDC, 10W13
☐	NP No port orifices (standard)14
☐	Design number 70Design number

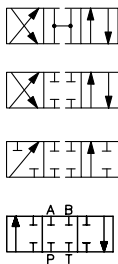
The valve function schematics apply to both U.S. and European valves

II-B

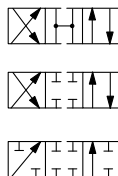
DG4V-3(S)-*N(V)



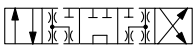
DG4V-3(S)-*A(V)



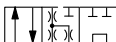
DG4V-3(S)-*AL(V)



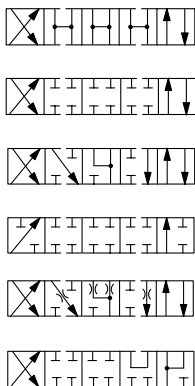
DG4V-3(S)-8C(V)



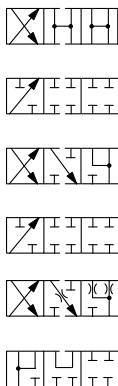
DG4V-3(S)-8BL(V)



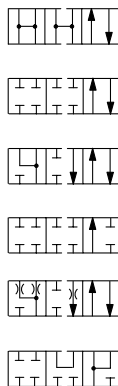
DG4V-3(S)-*C(V)



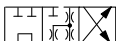
DG4V-3(S)-*B/F(V)



DG4V-3(S)-*BL/FL(V)



DG4V-3(S)-8B(V)



Solenoid Identified to US and European standards

▲ Transient conditions only

0

0

8

0

2

2

6

22

22

8

Functional symbols

22

35

5000

4000

6 SUS) and a specific

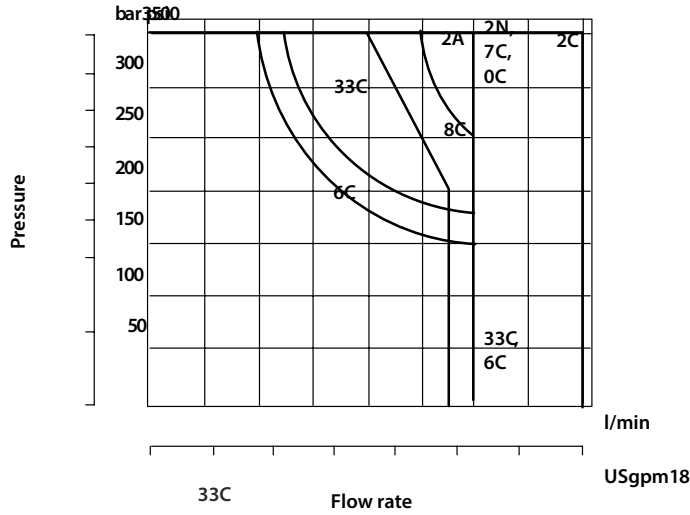
gravity of 0.87.

Maximum flow rates

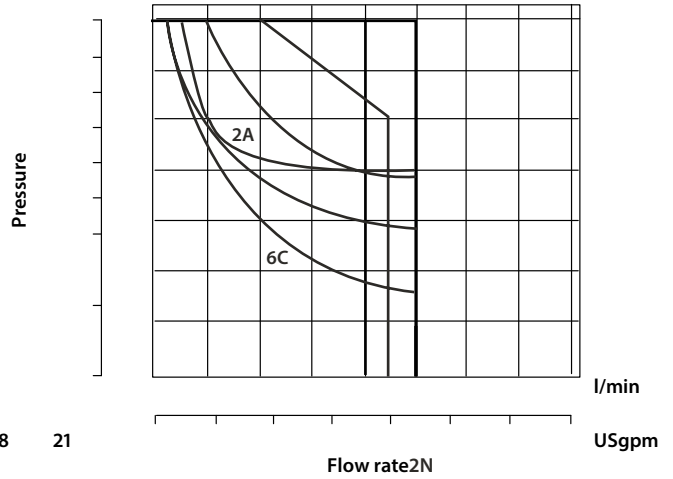
Performance based on full power and
operating at 90% rated voltage .

II-B

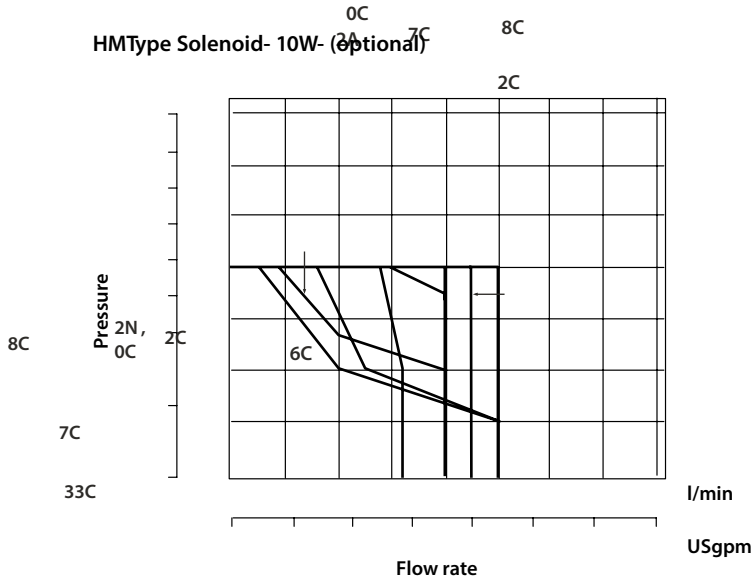
HType Solenoid- 30W



HL Type Solenoid- 18W- (optional)



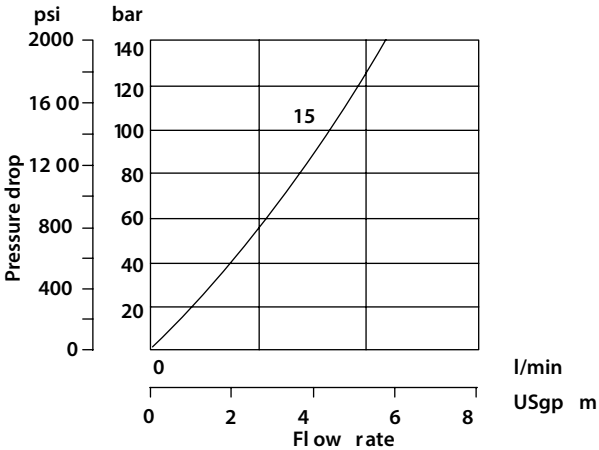
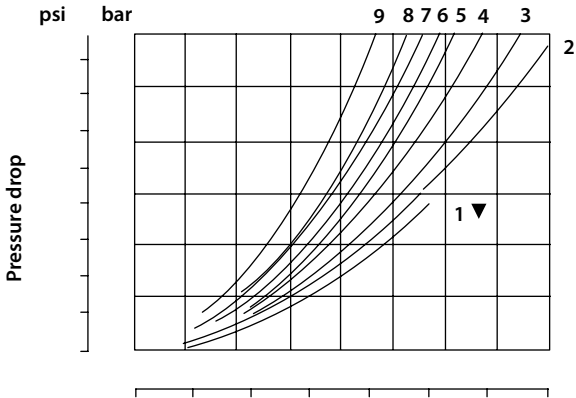
HMType Solenoid- 10W- (optional)



Performance data

Typical with mineral oil at 36 cSt (168 .

Pressure drop curves by spool type



▼ Curve for spool type 6: not recommended for flows in

						▲ ■	-
	Energized	4	4	2	2	-	-
2A(L)	Both	6	6	5	5	-	-
2B(L), 2C, 2F	Energized	5	5	2	2	-	-
2N (H and HL coil)	Both	6	6	3	3	-	-
2N (HM coil)	Both	8	8	5	5	-	-
6B(L), 6C, 6F	De-energized	-	-	3▲	3■	-	-
	Energized	6	6	1	1	-	-
8B(L), 8C	All	9	9	5	5	3	-
33B(L), 33C	De-energized	-	-	15▲	15■	-	-
	Energized	5	5	2	2	-	-

▲ ■ "A" plugged "P" plugged

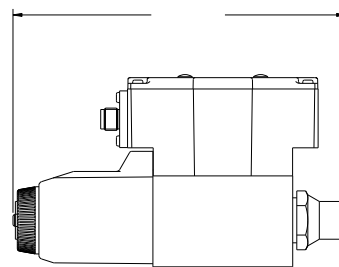
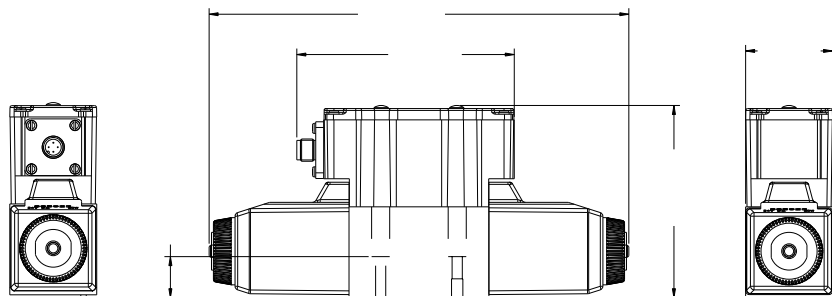
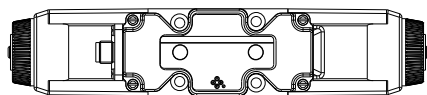
For other viscosities, pressure drops approximate to:

▲ ■ "A" plugged "P" plugged

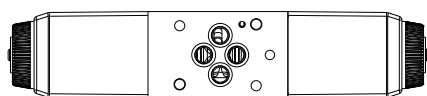
A change to another specific gravity will yield an approximately

The specific gravity of a fluid may be obtained from its **producer**. Fire resistant fluids usually have higher specific gravities than oil .

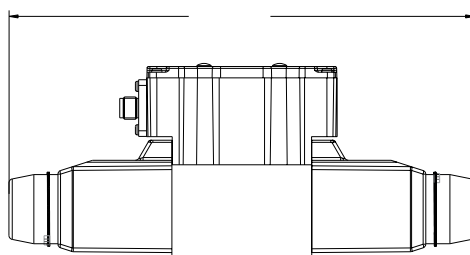
II-B



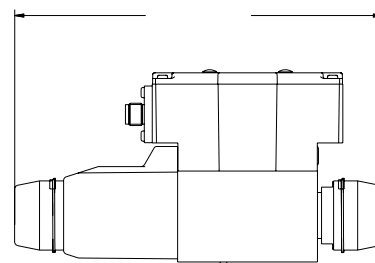
DG4V-3-**-A/B/F(L)-P2 -*M-PM4*S-***7-70



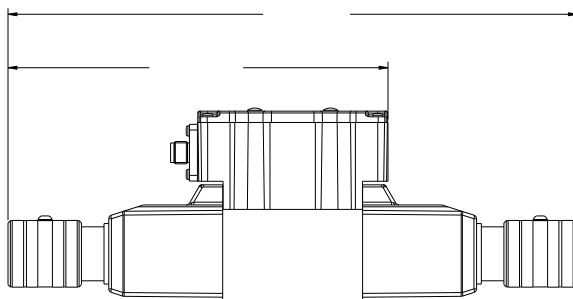
DG4V-3-*C/N -*-M-PM4*S-***7-70



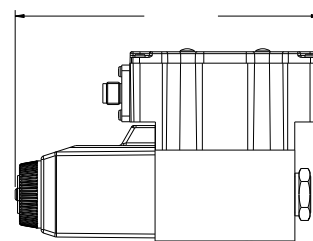
DG4V-3--*C/N-H-*M-PM4*S-***7-70



DG4V-3-*A/B/F(L)-H2 -*M-PM4*S-***7-70



DG4V-3-****(L)-W-*M-PM4*S-***7-70

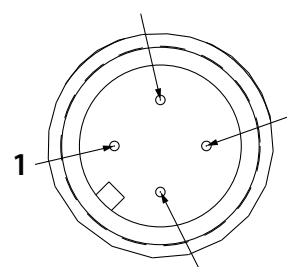
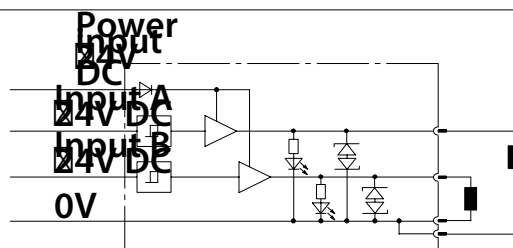
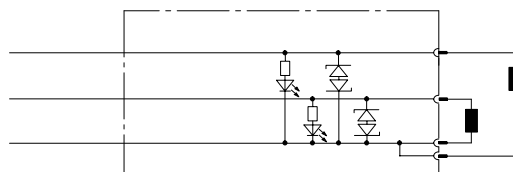


DG4V-3-* A/B/F(L)-*M-PM4*S-***7-70

Installation dimensions

46
[1.8 1]

176
[6.93]



⚡ WARNING Electromagnetic Compatibility (EMC)

It is necessary to ensure that the valve is wired up in accordance with the connection arrangements shown in this leaflet.

For effective protection, the user's electrical cabinet, the valve subplate or manifold and the cable screens should be connected to efficient ground points.

In all cases, both valve and cable should be kept as far away as possible from any source of electromagnetic radiation such as cables carrying heavy current, relays and certain kinds of portable radio transmitters, etc.

Difficult environments could mean that extra screening may be necessary to avoid interference.

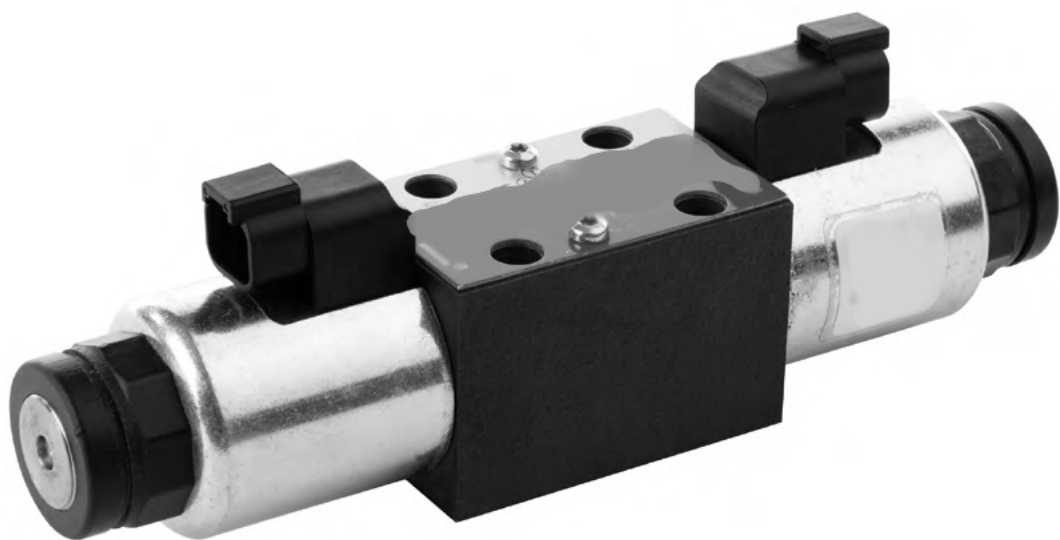
Pin 1 is only used in the "Z" option for 24 VDC power to the valve.

Pin 2 always controls ("Z" option) or power ("A" option) the solenoid on the "B" port side of the valve.

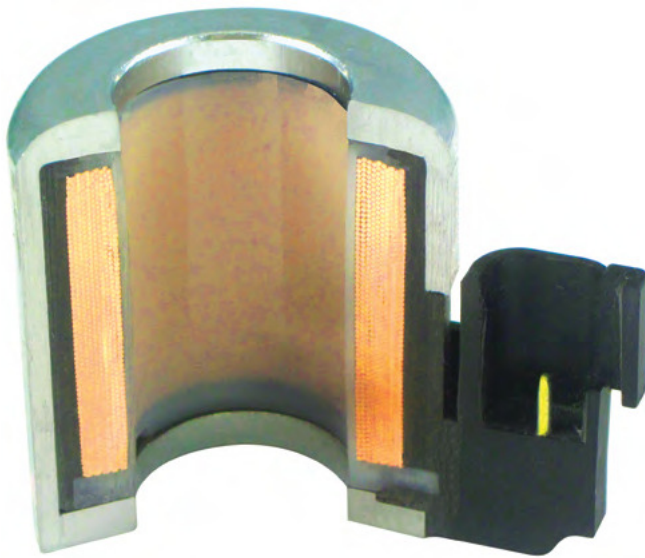
Pin 3 is always common or 0 volt, both A and Z control option.

Pin 4 always controls ("Z" option) or power ("A" option) the solenoid on the "A" port side of the valve.

The circuit on the Z-option is reverse polarity. The circuit on the A-option is standard polarity. The circuit on the Z-option is reverse polarity. The circuit on the A-option is standard polarity.



II-B



You can rely on Danfoss ToughCoils OEM's strive to build dependable machines that can be done without interruption – no matter the conditions. Our new ToughCoils provides industry leading environmental protection and performance in a compact and rugged package.

Electro-hydraulic components are being utilized in an array of off-highway and industrial applications. Electrical wiring integrity is critical. ToughCoils are encapsulated in a plastic surrounding by a one-piece deep drawn metal frame. IP69K rating (Deutsch type only), it has the highest ingress protection from dust and water. Most valve coils in the market only meet an ingress protection (IP) rating of 65.

ToughCoils passed Danfoss' own rigorous tests for added protection against physical and environmental damage:

and rotated to any degree allowing more wiring flexibility in difficult locations

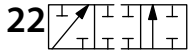
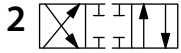
Danfoss tough coils

☐	Seal type BlankViton F6Buna Nitrile/High CAN2	☐	Flag symbol MElectrical options and features9
☐	Model series 4Solenoid operated VPressure rating 350 bar (50 psi) on P, A & B ports 3ISO4401 Size 033	☐	Coil type UISO4400, DIN43650 connector U1ISO4400 fitted with PG11 plug KUElectrical Deutsch connector10
☐	Performance MMobile high performance4	☐	Surge suppressor/ damper DZer Diode11
☐	Spool type Please refer functional symbols on Page 76 for spool types .5	☐	Coil Rating G12V DC GL12V DC H24V DC HL24V DC12
☐	Spool spring arrangement A Spring offset, end-to-end ALSame as "A" but left hand build B Spring offset, end to center BS" but left hand build	☐	Tank pressure rating Refer to "Operating Data" for po 7207 bar (1050 psi)13
☐	Manual override option BlankPlain override(s) in solenoid end(s) only ▲ HWater-resistant override(s) on solenoid end(s) ▲ ZNo overrides at either end ▲ No override in non-solenoid end of single solenoid valves7	☐	Design number 65Basic design15
☐	Solenoid energization identity BlankNone VSolenoid "A" is at port "A" end and/ or solenoid "B" is at port "B" end, independent of spool type NUsed to select the identification of the solenoid. Refer to table on page 4 .	☐	Reverse coil option RCBoth Coils reversed RCAA Coils reversed RCBB coils reversed NSee page 10 .

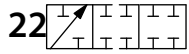
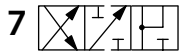
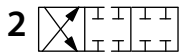
The valve function schematics apply to both U.S. and European valves.

II-B

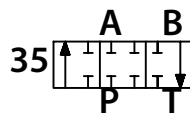
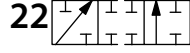
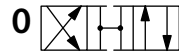
DG4V-3(S)-*NV



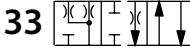
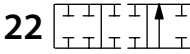
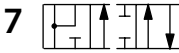
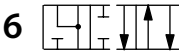
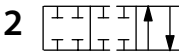
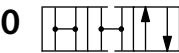
DG4V-3(S)-*BV



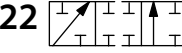
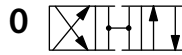
DG4V-3(S)-*AV



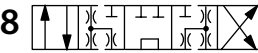
DG4V-3(S)-*BLV



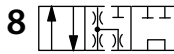
DG4V-3(S)-*ALV



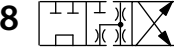
DG4V-3(S)-8CV



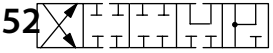
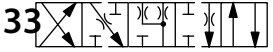
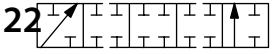
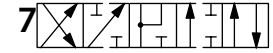
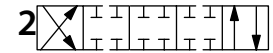
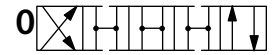
DG4V-3(S)-8BLV



DG4V-3(S)-8BV



DG4V-3(S)-*CV



Solenoid identified to US and European standards

Double solenoid valves, solenoid centered		
Single solenoid valves, solenoid at port A end		
Single solenoid valves, solenoid at port B end		

Functional symbols

II-B

▲

Oper

Power supply is a transformer with 20A 60Hz B1K power coils 12V, model type "GDG

II-B

gravity of 0.87.

6 SUS) and a specific

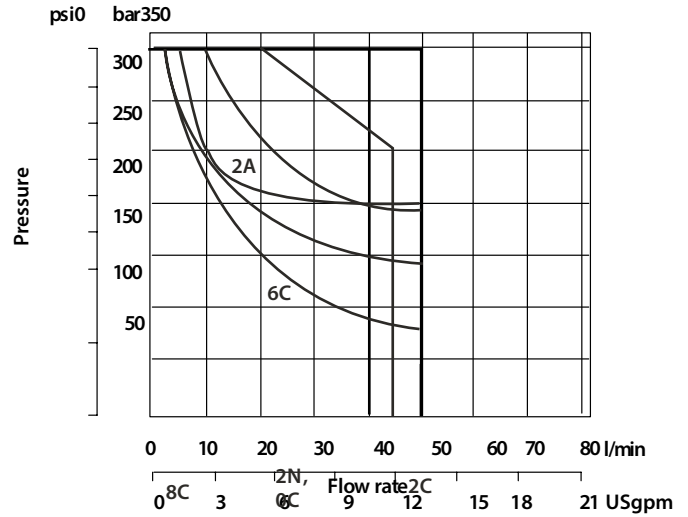
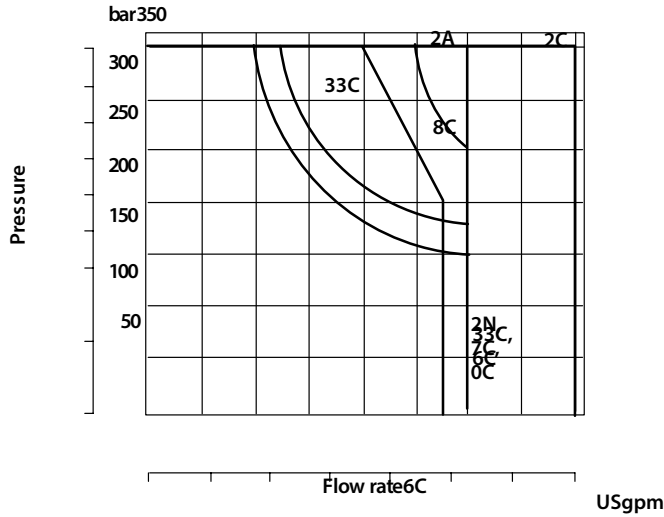
Maximum flow rates

Performance based on full power and operating at 90% rated voltage.

H type solenoid - 30W

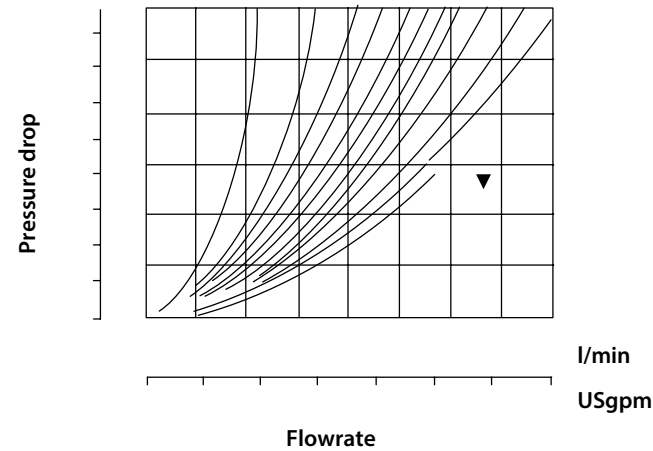
1000

HL type solenoid - 18W- (Optional)



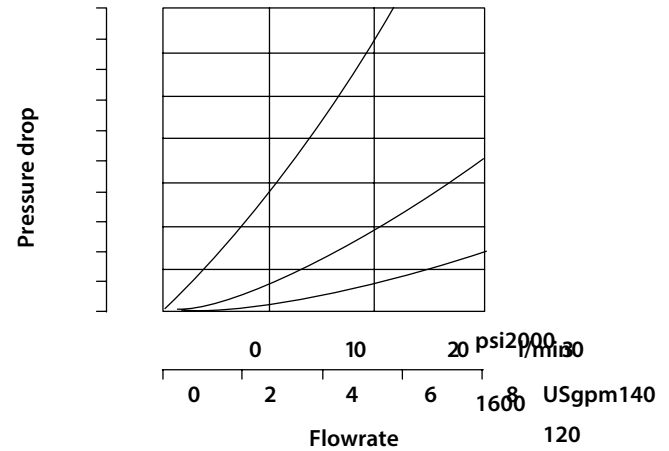
Pressure drops

psi 12 bar 11 10 9 8 7 6 5 4 3 2



7C

bar 33C

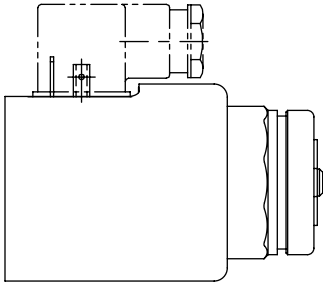


Performance data

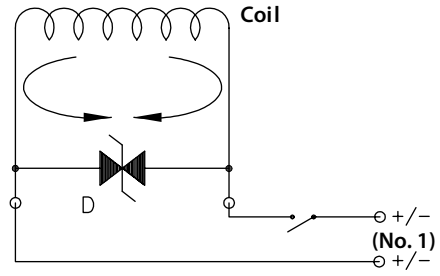
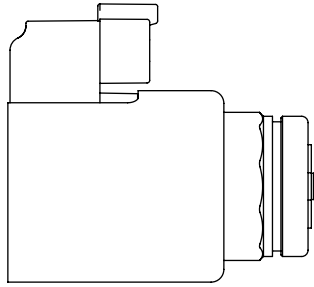
Typical with mineral oil at 36 cSt (168 SUS) and a specific gravity of 0.87. Flow rate of 60 l/min (15.8 USgpm).

4.3.5 Deutsch connector

U/U1



KUP5



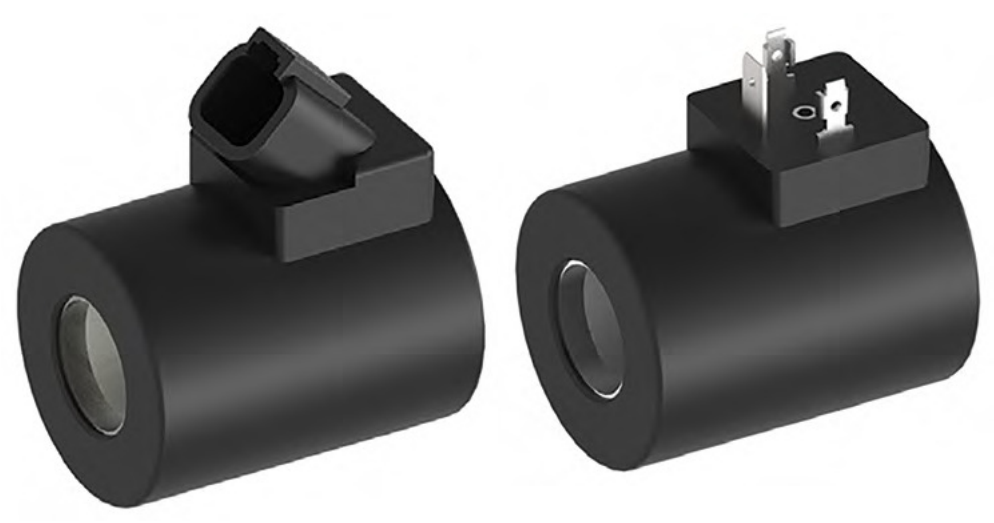
Surge suppression device Bi - directional Zener Diode (D) is connected in parallel with the energy stored in the coil and the coil resistance.



DG3VP-3, DG4VP-3, CVUA-6 20 Design Technical data

II-B

Description



Solen

II-B

(F3) — 3DG*VP-3 — 10** — V M — * — * — 20

☐

Seals
F3Viton seals
BlankNitrile seals2

☐

Function
3Three-way
4Fourway 3

☐

Spool and spring arrangement
102ANormally open, spring ofiset,
for DG3VP models
103ANormally closed, spring ofiset,
for DG3VP models
104CNormally open, spring centered,
for DG4VP models
Normally closed , spring centered,
for DG4VP models4

G12V DC
H24V DC

OJ48V D

Other voltages on request8

☐

Solenoid identification
BlankNone

VSolenoid "A" is at port "A" end and / or
solenoid "B" is at port "B" end independent
of spool type

☐

Flag symbol

MElectrical options and features .6

☐

Coil type

UIISO4400, DIN43650

KUP5D3Deutsch Connector H and G coils only7

☐

Coil rating

B110V AC 50Hz / 115V AC 60 Hz

D220V AC 50Hz / 230V AC 60Hz

ED240V AC 50Hz

☐

Design number 20 series 3

(F3) — CVUA-6-PD * — * — M — U — * — 20

☐

Seals
F3Viton seals
BlankNitrile seals2

☐

Cartridge Valve Unit NG63

☐

Mounting FlangeType
NNarrow thickness flange
WWide thickness flange4

G12V DC

☐

Function
2Two Way
3Three Way5
H24V DC
OJ48V DC
Other voltages on request8

☐

Coil type

UIISO4400, DIN43650

KUP5D3Deutsch Connector H and G coils only7

☐

Coil rating

B110V AC 50Hz / 115V AC 60 Hz

D220V AC 50Hz / 230V AC 60Hz

ED240V AC 50Hz

☐

Design number 20 series

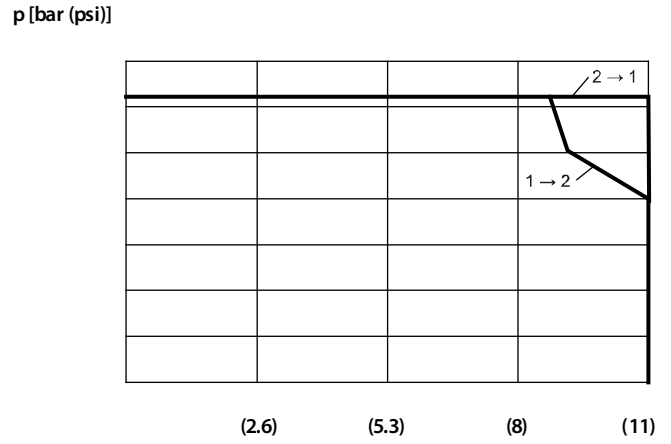
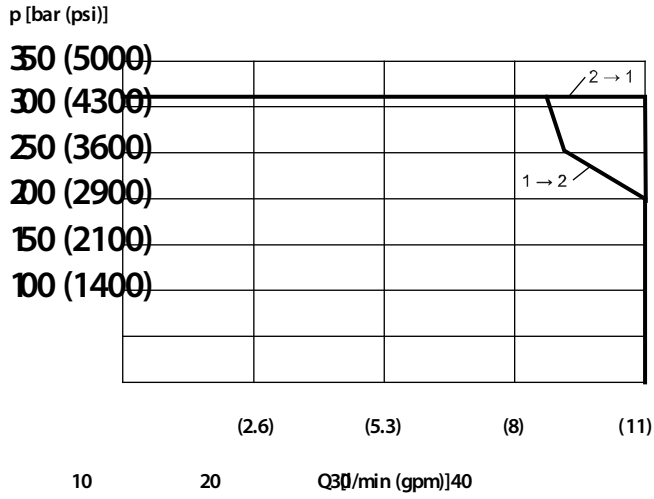
☐

Flag symbol

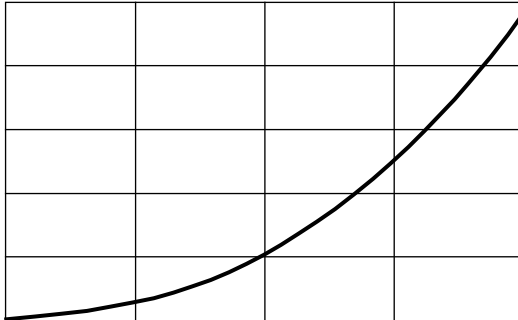
MElectrical options and features .

CVUA-6

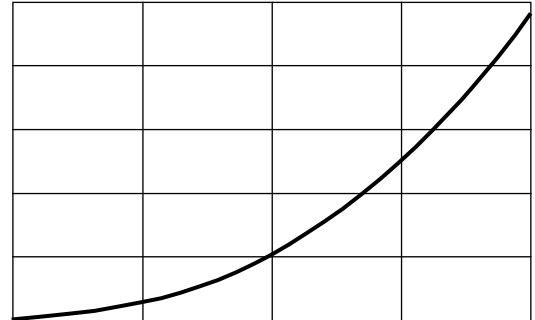
II-B



Δ

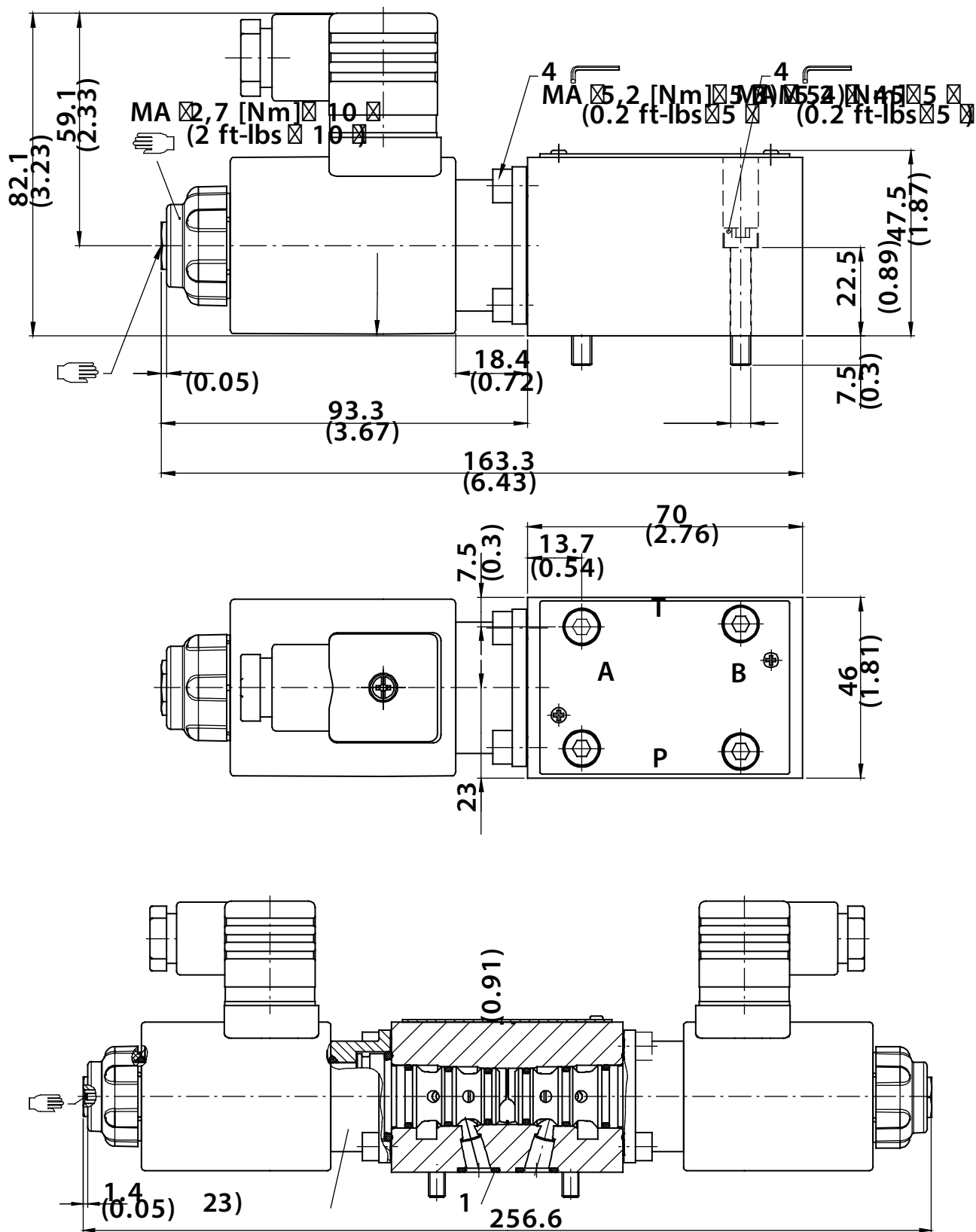


Δ



Performance graphs

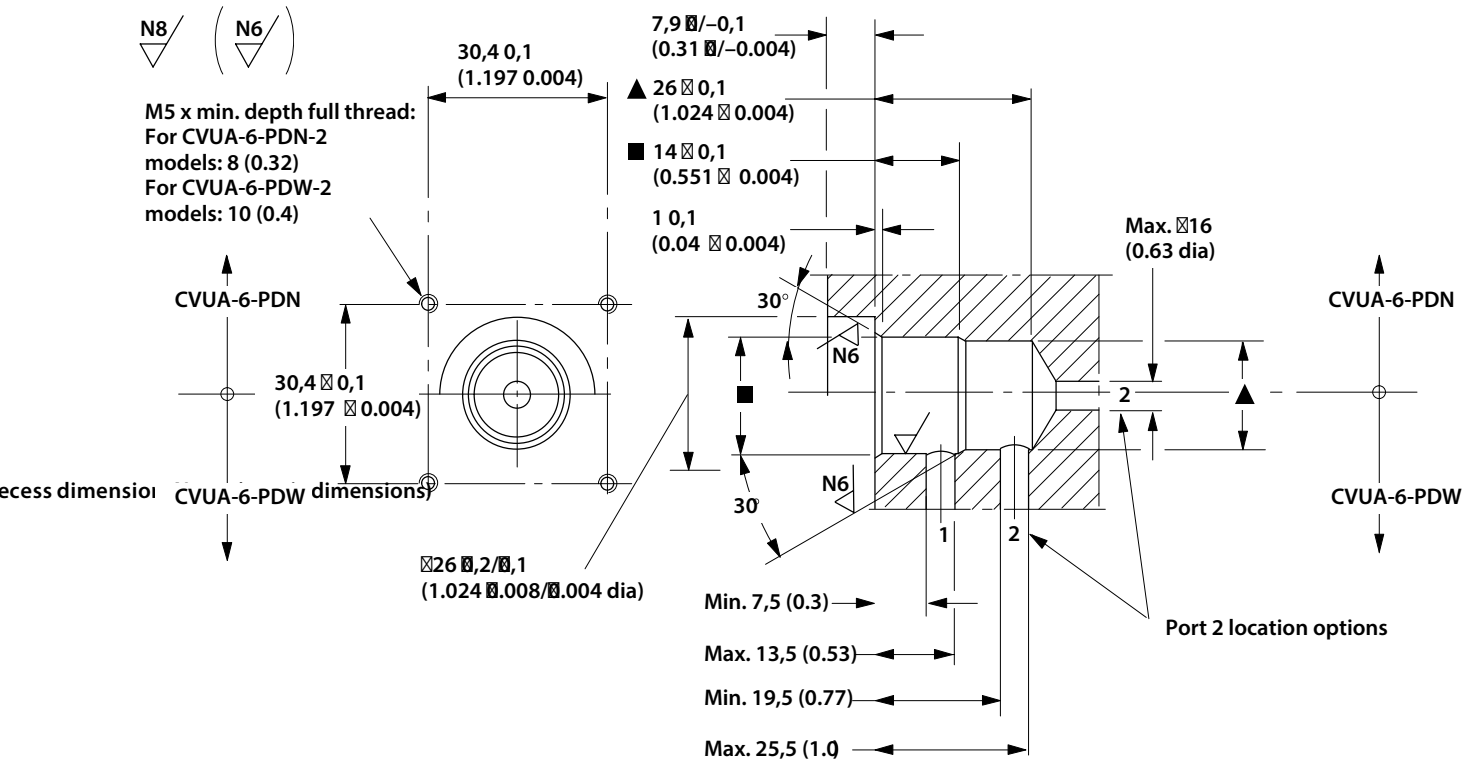
000)
with oil viscosity 33 mm²/s (cSt), coil at steady-state



Notes (inch dimensions)

- ▲ $\varnothing 18 \text{ } \pm 0,2 \times 26 \text{ } \pm 0,1$ deep: Ream $\varnothing 18 \text{ H7} \times 20$ deep min
- $\varnothing 19 \text{ } \pm 0,2 \times 14 \text{ } \pm 0,1$ deep: Ream $\varnothing 19 \text{ H7} \times 8$ deep min

- Diameter $0.748 \text{ } \pm 0.008 \times 0.551 \text{ } \pm 0.004$ deep: Ream $\varnothing 19 \text{ mm H7} \times 0.32$ deep min



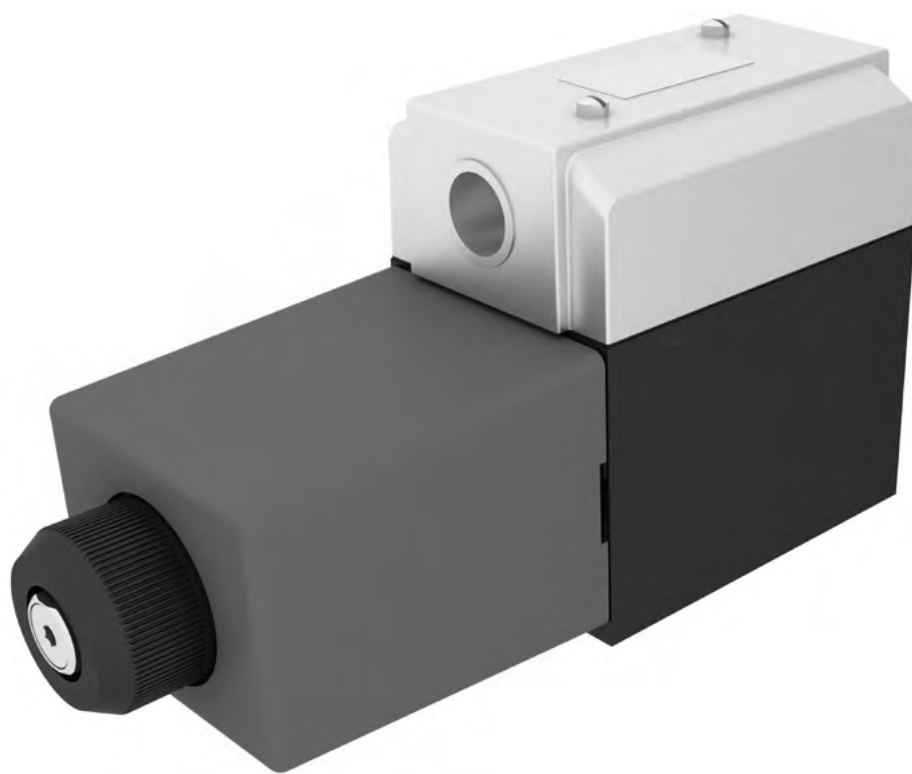
Seal kits

6045235-001 Seal Kit for CVUA-6 10 and 20 Design

6045236-001 Seal Kit for F3-CVUA-6 10 and 20 Design

6045237-001 Seal kit for DG3/4VP-3 10 and 20 Design

6045238-001 Seal kit for F3-DG3/4VP-3 and 20 Design



III-C

is for directing and stopping flow at any point in a hydraulic system. Its primary function is to determine the fluid flow in a work cylinder or determine the direction of rotation of a fluid motor.

These valves are designed for use in high performance hydraulic systems operating at pressures up to 315 bar (4570 psi) and flows to 115 L/min (30 USgpm). They have a size 05 mounting surface. The performance of conventional spool directional valves is limited by the flow forces acting on the spool in opposite directions and retaining it in position is often a problem. Attention is given to the design of the series 5 valve.

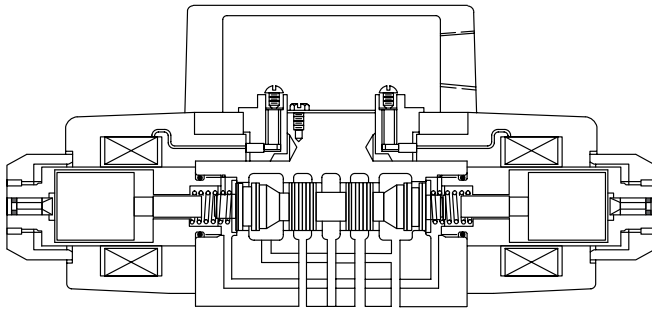
Features and benefits

High performance

High pressure and flow capability with performance comparable

Reliability

Service ability



*1 - DG4V4-01 - **3 - *4 (L)5- (Z)6- (V)7 M8 - (S*)9 - **10- ***11- *12- (L)13 **14 *(L)15 *16 1*17 S***18

☐

Special seals
F3Viton

☐

Coil typeOmit for plug-in . Coils with junction box
UIISO 4400 (DIN 43650) mounting

F6Buna nitrile/high can2

U1Connector 12

☐

Model series
DG4V4-01Subplate mounted
Pressure 15 bar (4570 psi) for
ports P, A & B .3

KUTop exit flying lead (150mm)

KUP6Flying lead external to coil with Deutsch

☐

Spool type Please refer functional symbols on Page
4 for spool types .4

♦ Refer to pages 102 - 103 for more
information . Female connector to be
supplied by customer .11

☐

Spool/spring arrangement
A5Spring offset, end-to-end

ALSame as 10But left hand build

☐

Junction box with electrical connectors
PA3WThree pin connector

PA5WFive pin connector

PM4WM12 connector13

☐

Solenoid indicator lightsOmit if not required .
LLights 14

☐

Manual override optionsOmit if serviceable .
ZNo manual override

HWater-resistant over(s) on
solenoid end(s)7

G12V DC

H24V DC

Omit for standard power .

☐

Surge suppressorOmit for low power
B110V AC 50 Hz/120V AC 60 Hz

D220V AC 50 Hz/240V AC 60 Hz

☐

Solenoid energization identify
HL24V DC (low watt)
*F6 seals not available with DC low
power voltages .16

Omit for U .S. ANSI B93 .9 standard
requiring solenoid "A" energization to
connect P to A and/ or solenoid "B" to
connect P to B, independent of solenoid
location.8

☐

Port T code
470 bar (100 psi) (low power)
5120 bar (1750 psi) (standard)17

☐

Flag symbol
MElectrical options and features9

☐

Design numberSubject to change,
dimensions remain as shown for design
numbers 10 through 19 .18

☐

Spool indicator switch
BlankWithout switch

S3Switch, wired normally open

S4Switch, wired normally closed

☐

Special features
SSpecial suΔx
S324CSA approved

III-C

Model

Maximum flow data

Maximum recommended flow data is for AC or DC solenoids

Fluids and seals

oil emulsions, high water base fluids and petroleum oils.
For phosphate ester fire resistant fluids, Viton seals must be specified.
Saf for glycol based fluids.
Maximum operating pressure for high water base fluids is 1000 psi.

Maximum

Valve function, symbol and recommended maximum flow

Application recommendations

(See page 97 for maximum flow curves)

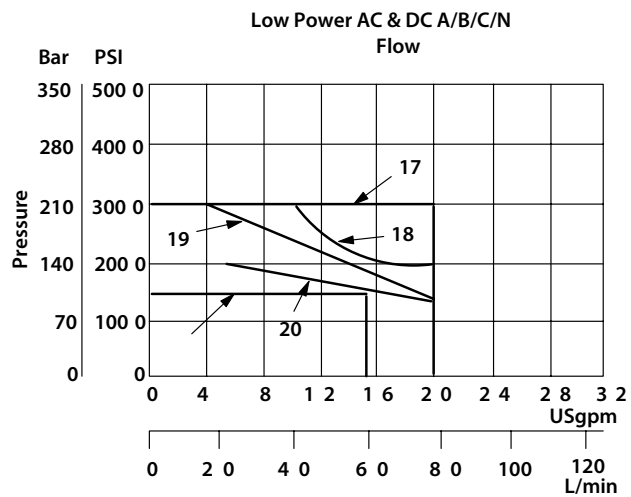
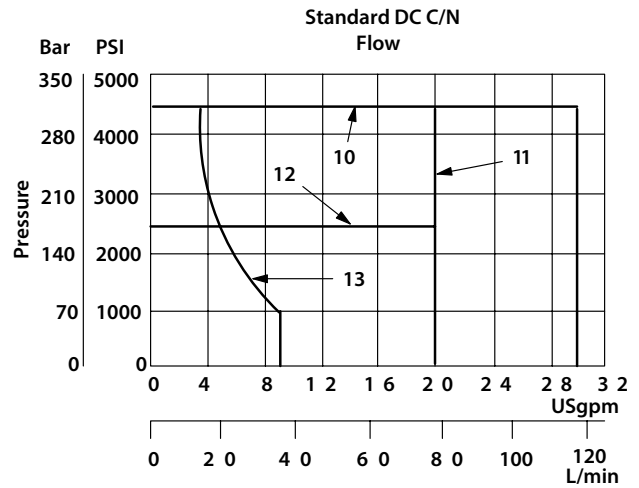
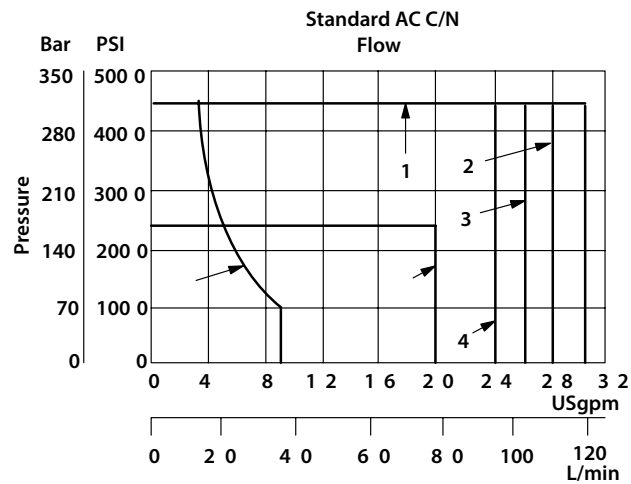
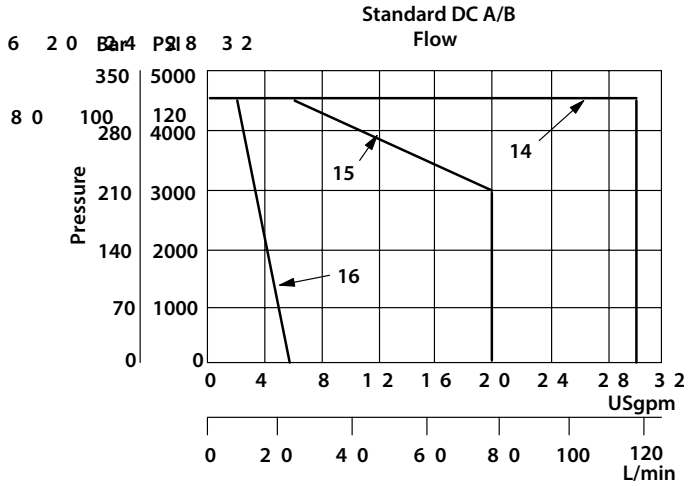
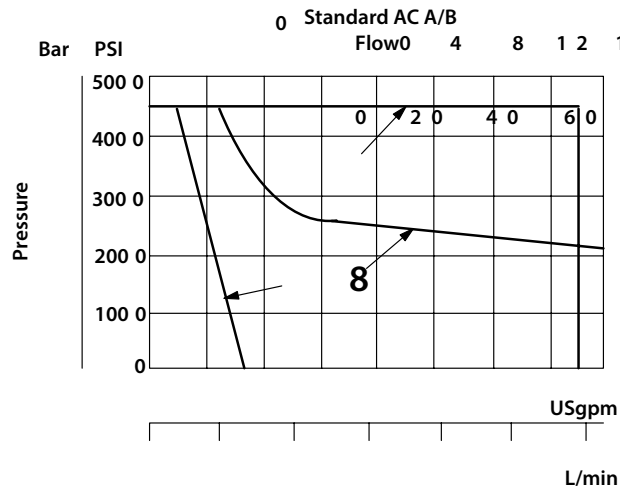
		1	10	17	21		0	1	11	17	N/A
-					6	a		b	N/A	112	18
2		1	b	10	17	21	-	set to Port 2 (B)	140	17	21
-					4			7	21	140	17
6		3		11	18	6		7	14	17	21
-					1			9	21	1622	N/A
8		5		12	20	21	-	set to Port 2 (B)	140	17	21
-					1			7	21	140	17
33		2		11	18	6		8	15	19	21
-					-	-		9	-	1622	N/A

Spec

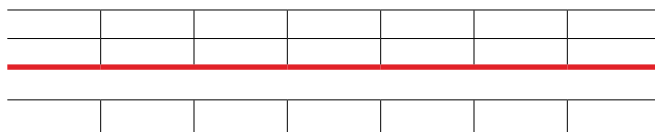
350
280
210
140
70
0

Maximum flow curves

III-C



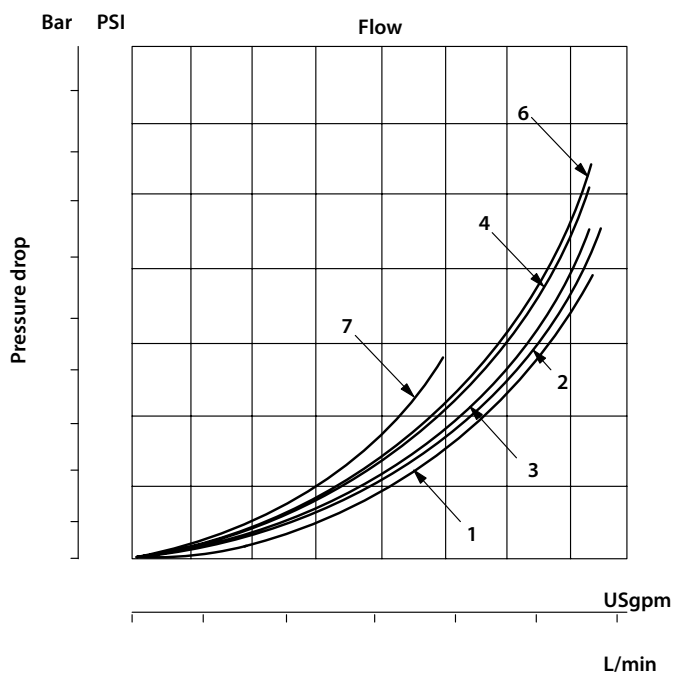
Flow curves



A change to another specific gravity will yield an approximately

The specific gravity of a fluid may be obtained from its
producer's resistant fluids usually have higher specific
gravities than oil .

Drain



CAUTION Surges of oil in a common line valves can be of sufficient magnitude to shifting of these valves . This is particularly no-spring detented type valves . Separate a vented manifold with a continuous drain tank are necessary . Consult your Vickers instructions .

III-C

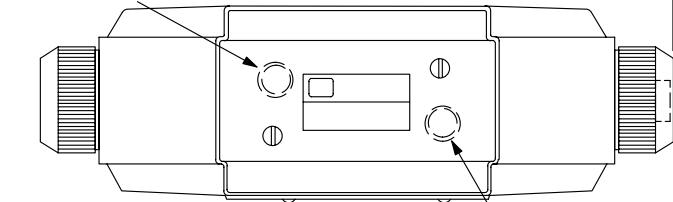
Electrical current
Signal light ("Lights" & "PB")
2 places Sol. A Light

46,8 (1.84) AC
87,4 (3.44) DC

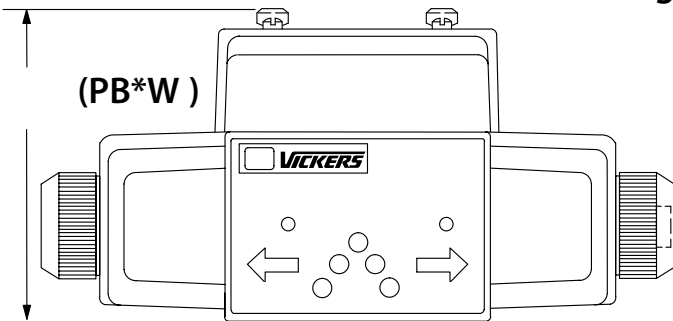
3rd angel projection

Clearance required for Coil
removal (both ends)

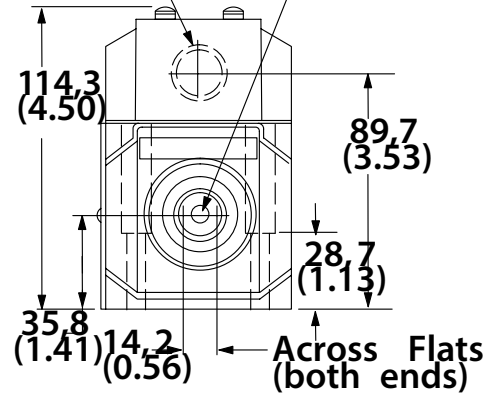
"G" - BSP
"J" - 20mm thread
"W" - 1/2" NPT
Connection box
may be rotated 180°
Manual operating
Pin (both ends)



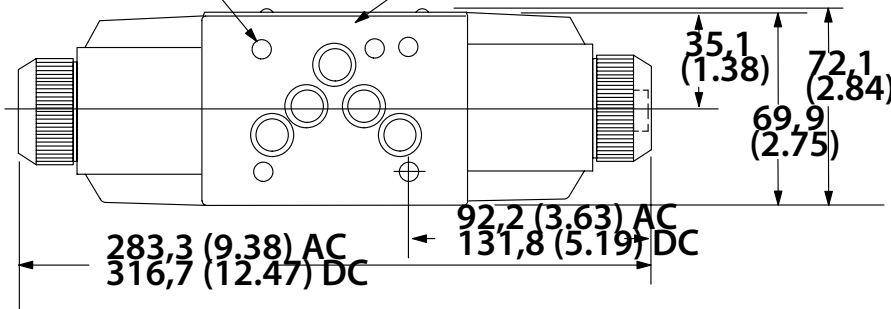
Sol. B Light



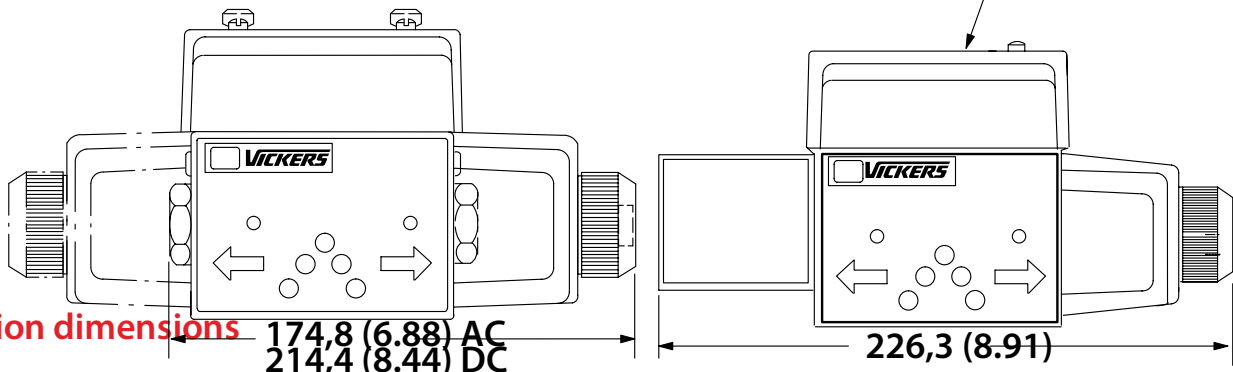
(PB*W)



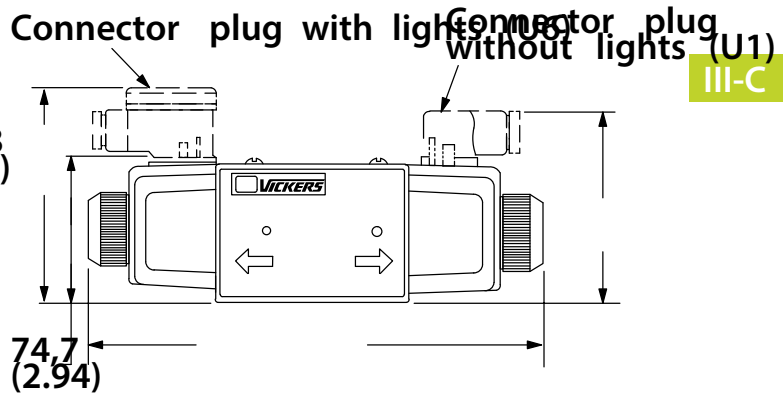
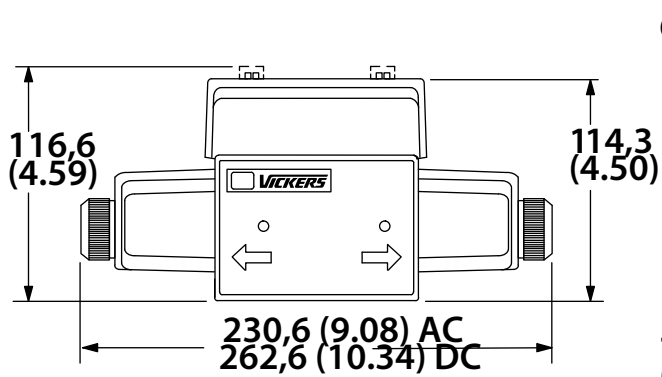
4-Valve mounting holes
for socket head cap screws
1/4-20x1-1/2 or M6x40 metric
SAE Grade 8 or better, metric IPAC D029
Torque 12-15 N.m (110-130 lbf-in)
ISO 4401-AC-05-4-A)



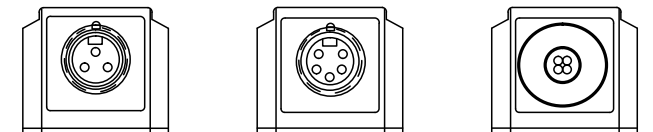
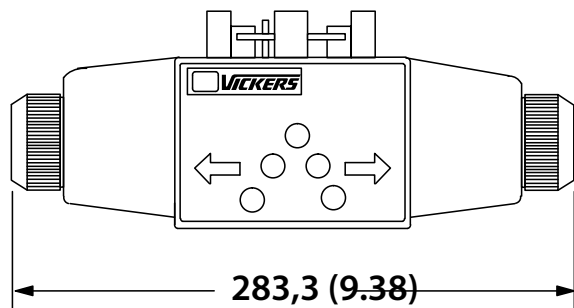
S3, S4 Switch



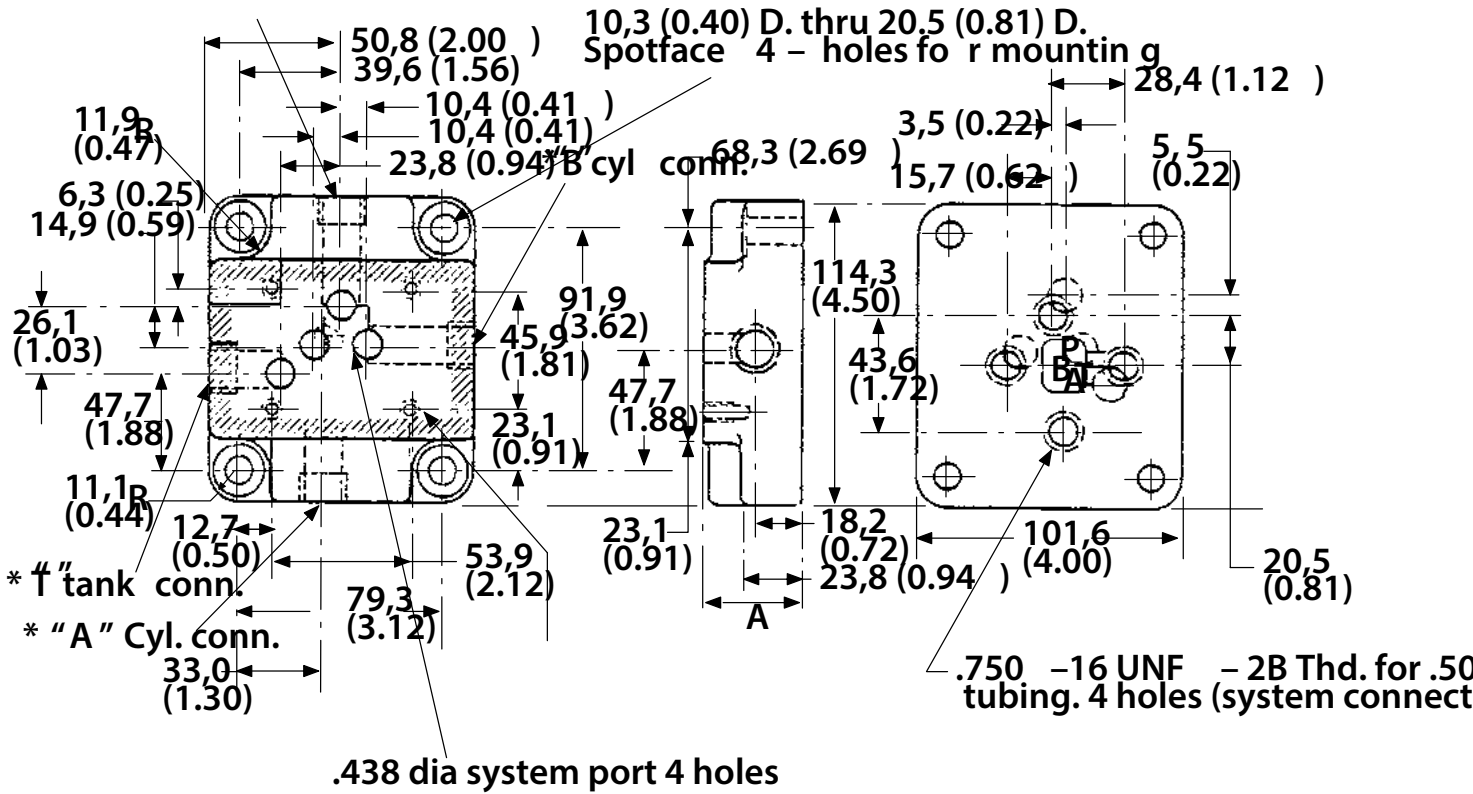
Installation dimensions



*Connector plug not included with v



III-C



be flat within 0.0127 mm (. 0005 inch) and smooth within 1 .6 flm (63 microinch).

Fluid cleanliness

Bolt kits

*Ports on model DGSME-01-20-T8 only

hydraulic fluid is included in Vickers publication 561 "Vickers Guide to Systemic Contamination Control" available from local Vickers distributor or by contacting Vickers.

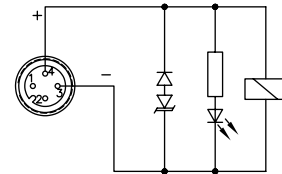
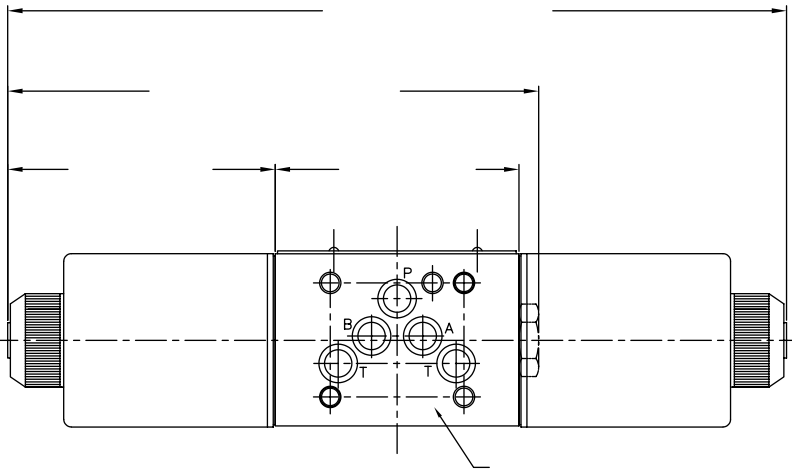
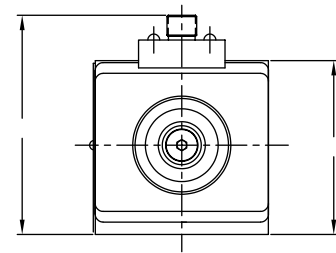
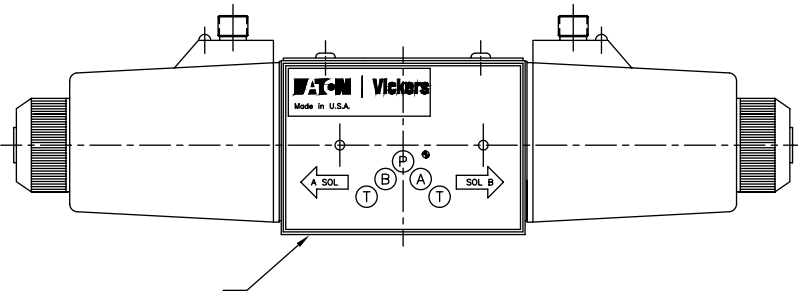
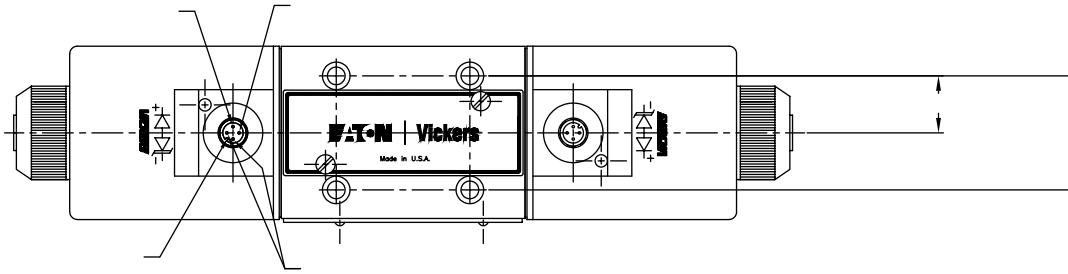
Recommendations on filtration and the selection of products to control fluid condition are included in 561.

Recommended cleanliness: petroleum oil under common conditions, are based on the highest fluid pressure less in the system. Filtration petroleum, service cycles, and extremes are cause for adjustment cleanliness codes. See Vickers p 561 for details.

Filtration requirements

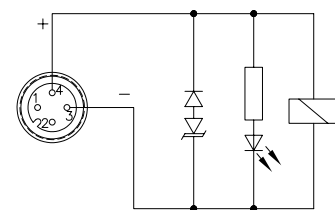
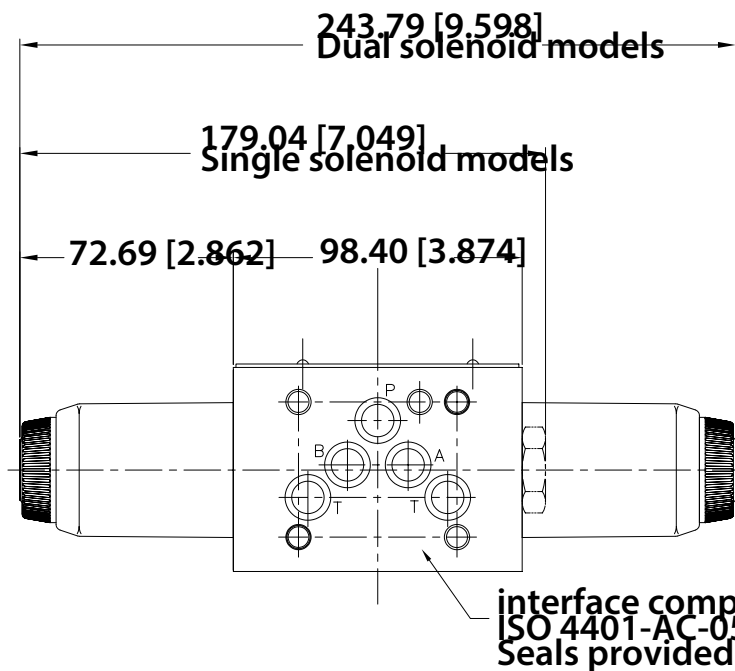
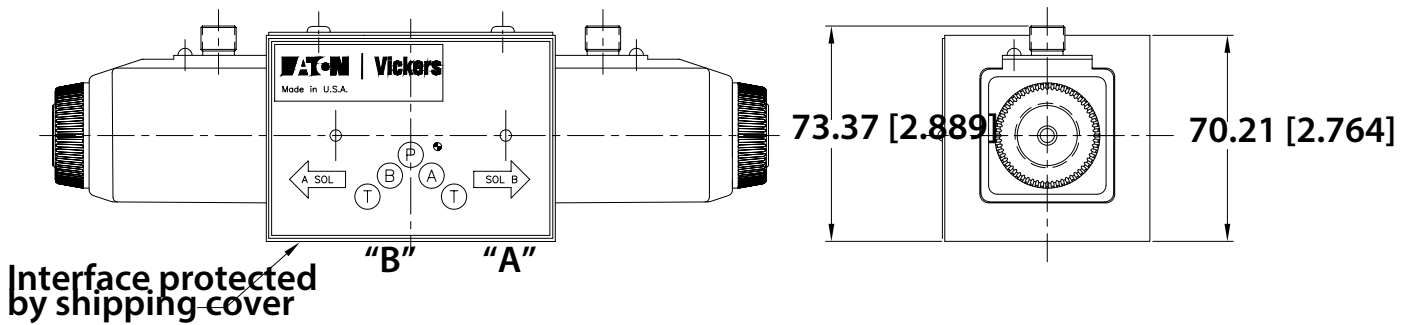
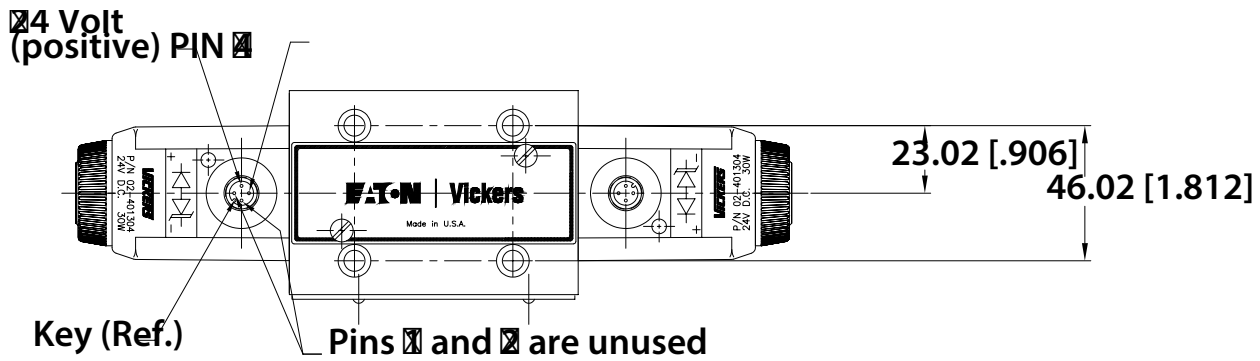
Subplate and mounting surface

III-C



T

III-C



Electrical schematic

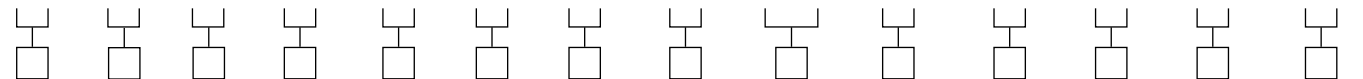
(F*) - DG4V4 - 01*** (L) - (Z) - (V)M - KUPM4L - D7 - *L - 4 10 Series
Low watt

M12 Connectors feature

0 Volt (negative) PIN 4



(F*)1 G3 1*4 V45 - 016 *7 *8 - (H)10 (M11 - S*12 - U(1)13 - 1014



III-C

☐

Interface seals
BlankBuna N (std .)
F3VIton (Fire resistant)

☐

Spool/Spring arrangement
A Spring ofiset (handle out)
B Spring ofiset (handle in)

F6Nitrile seals (water glycol)2

C Spring centered

☐

Directional control3 N Spring detented9

☐

Mounting type
GManifold or subplate4

☐

Left hand buildOmit for standard right hand assembly10

☐

Control type
17Manual/lever operated5

☐

Handle
HBooted handle for harsh environment
Omit if not required11

☐

Flow direction
V4Four-way, 310 bar (4500 psi)6

☐

Design numberSubject to change . Installation
dimensions remain as shown for design
numbers 10 through 19 .

☐

Valve size
01ISO-04-05, NFPA-D05 interface7

☐

Spool type (crossover condition)
0Open center

2Closed center

6Closed center, P only

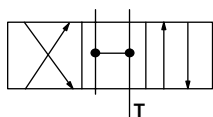
center, A and B blocked

/

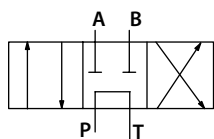
Model code

Spool variations

DG**V4-010*-10

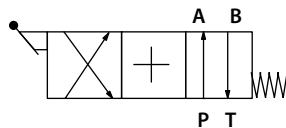


DG**V4-018*-10

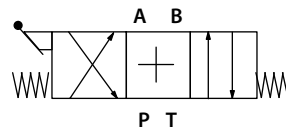


Spool variations

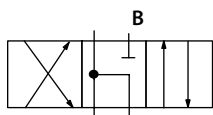
DG17V4-01*A-10



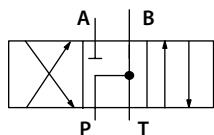
DG17V4-01*C-10



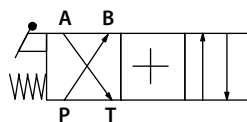
DG**V4-011*-10



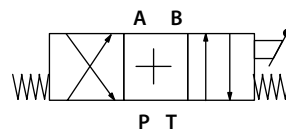
DG**V4-011*-10



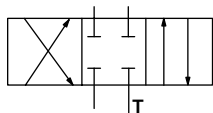
DG**V4-011*-10



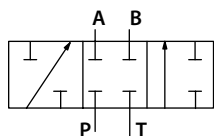
DG**V4-011*-10



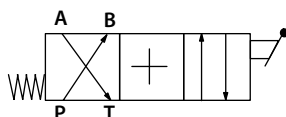
DG**V4-010*-10



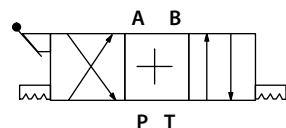
DG**V4-0122*-10



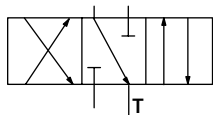
DG17V4-01*AL-10



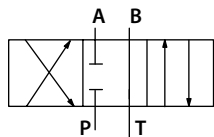
DG17V4-01*N-10



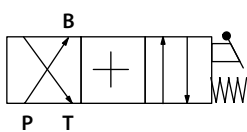
DG**V4-013*-10



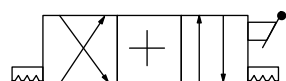
DG**V4-013*-10



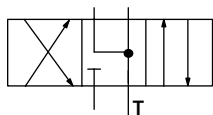
DG17V4-01*A2L-10



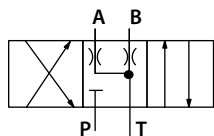
DG17V4-01*NL-10



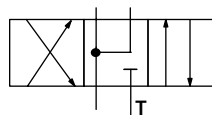
DG**V4-016*-10



DG**V4-033*-10

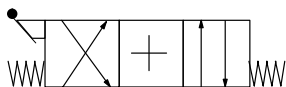


DG**V4-017*-10



Operator variations

DG17V4-01**-10 Lever operator



III-C

flow:

Handle shift force:

Operating temperature:

Bolt kits:

(metric) - BK855993M

(inch) - BDKG01-633

grade 8 (metric grade 12,9) or better required Max . bolt
ue: 12,6 Nm (112 lb . in.)

plate: 2 kg (4 .5 lbs .)

75-250 SUS (15-51 cSt)

ee page 114 .

Fluids & seals

oil emulsions, high water based fluids, and petroleum oil. **"F3"**
(Viton) are compatible with phosphate "F6"
seals are for water glycol . Maximum operating p
water based fluids is 69 bar (1000 psi).

Mounting Interface

Shifting action

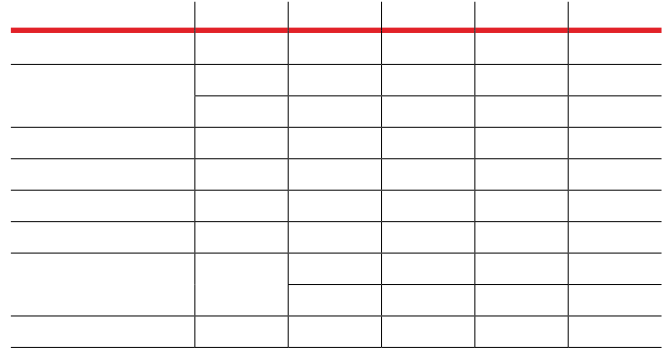
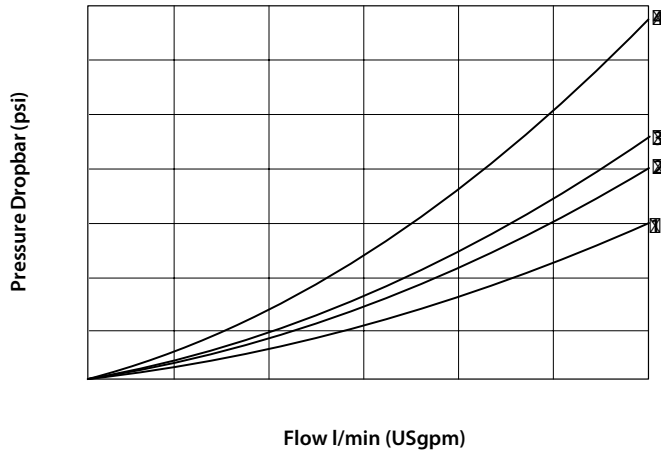
Mounting position

Installation data



CAUTION Surges of oil in a common ta
valves can be of sufficient magnitude to
shifting of these valves . This is particu
no-spring detented type valves . Sepa
vented manifold with a continuous dow
necessary .

General information



a. Figures in the pressure drop chart give approximate pressure drops (ΔP) when passing 20,5 cSt (100 SUS) fluid having .865 specific gravity .

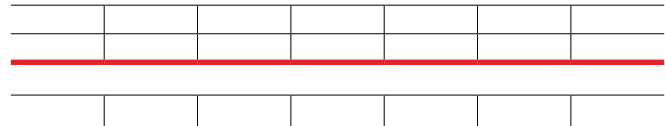
b. For any other flow rate (Q_1), the pressure drop (ΔP_1) will be

approximately: $\Delta P_1 = \Delta P (Q_1/Q_2)^2$

any other viscosity(s), the pressure drop (ΔP) will change as follows:

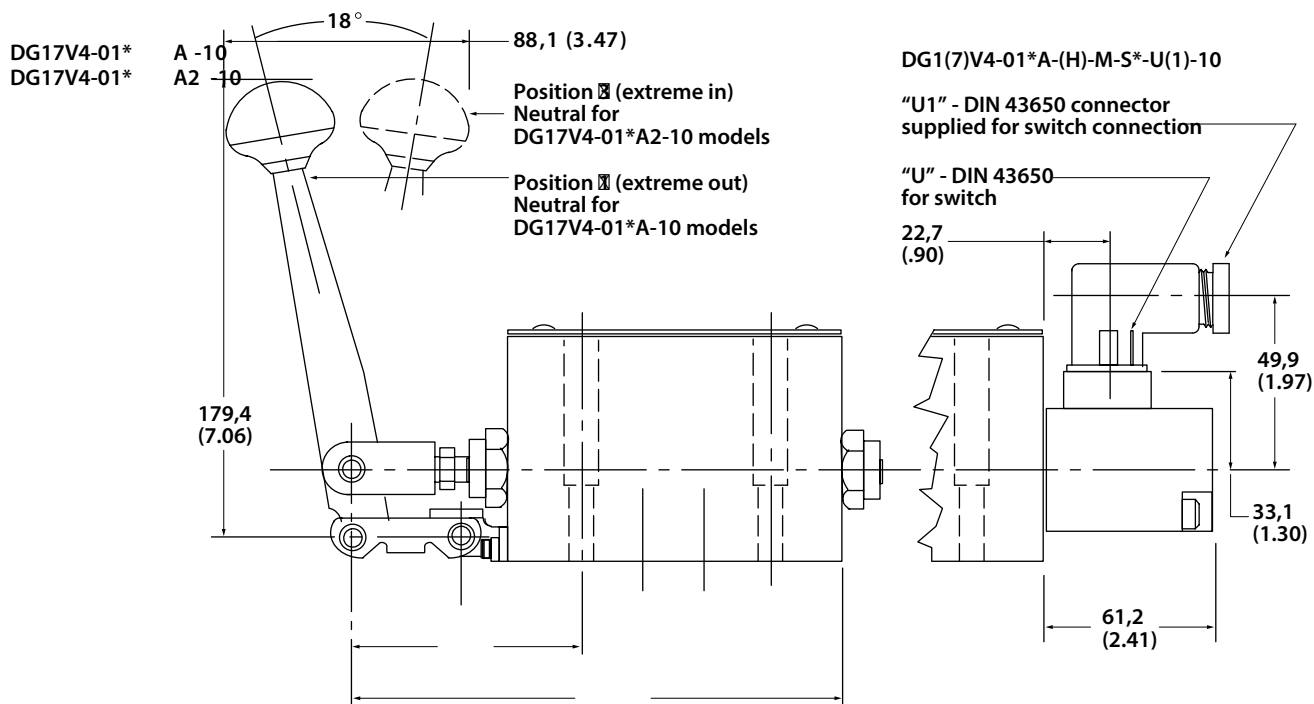
by other specific gravity (G_1)*, the pressure drop (ΔP_1), obtained from its producer. The value is higher for re-

For other viscosities, pressure drops approximate to:



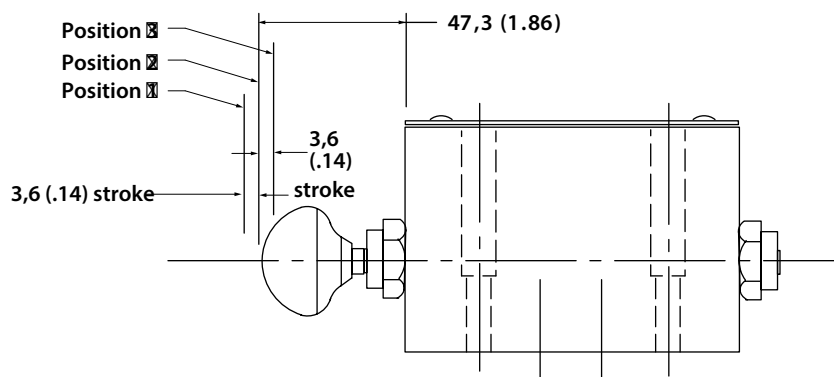
Manual lever operated valves

III-C



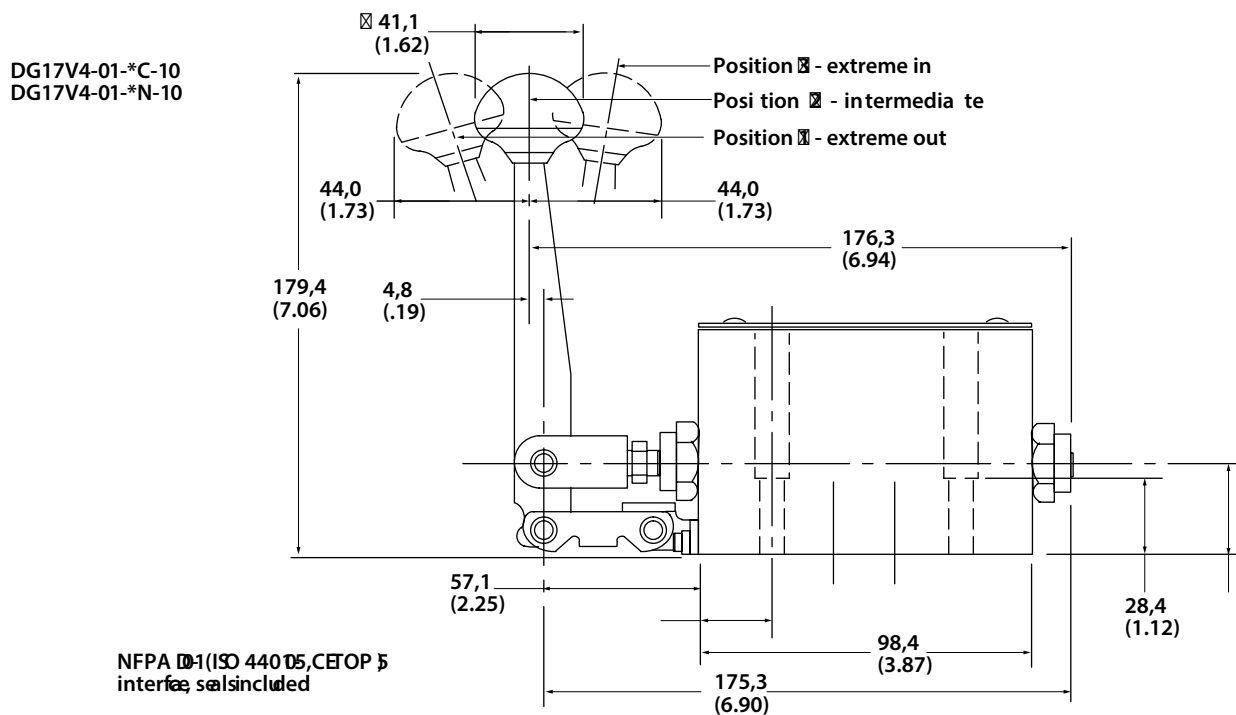
Manual knob operated valve

DG1V4-01**-10



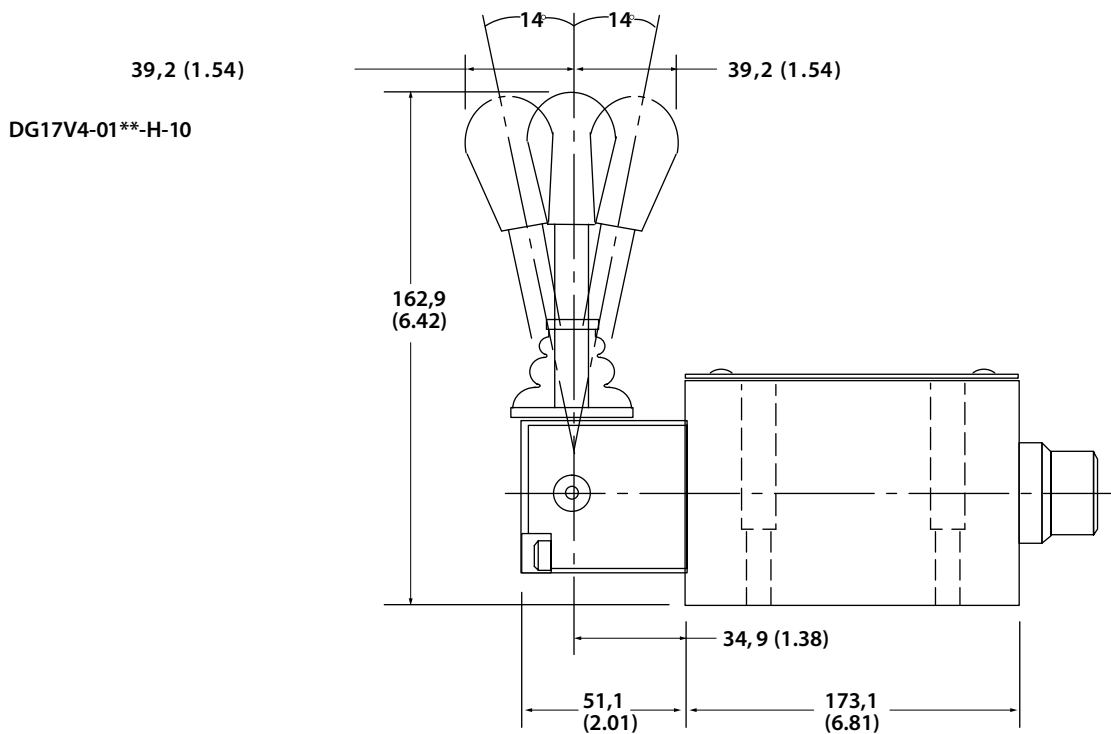
Installation dimensions

Spring centered & no-spring detented manual lever operated valves



III-C

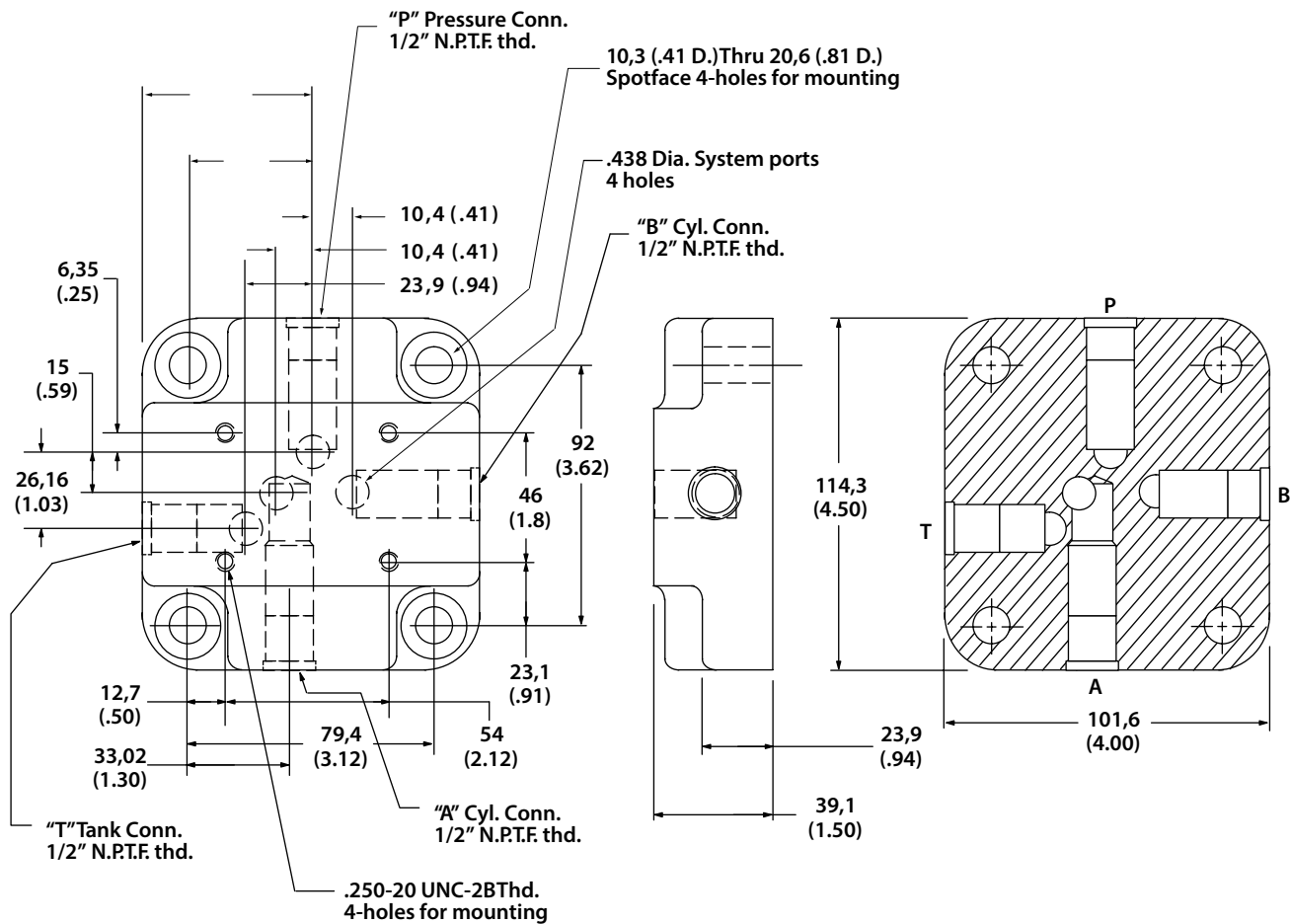
Mechanically operated for harsh environments



istall

Mounting subplate DGSME-01-20-T8

III-C



Subp

Proper fluid condition is essential for long and satisfactory life of

the correct balance of cleanliness, and additives for protection against wear. Hydraulic fluid must have phosphate ester type fluids or their blends, water glycol, water-in-oil emulsions, and petroleum oil. Refer to 694 for hydraulic fluid and temperature recommendations.

Essential information on correct methods for treating

hydraulic fluid is included in Vickers publication 561 "Vickers

Guide to Systemic Contamination Control" available from your local distributor by contacting Vickers, Incorporated.

Recommendations on filtration and the selection of products to control fluid condition are included in 561.

Recommended cleanliness: hydraulic petroleum oil under

common conditions, are based on the highest fluid pressure

levels less system and are coded in below . Fluids
dier than petroleum, severe service cycles, or temper
extremes are causeptide cleanliness codes
See Vickers publication for details. Vickers products,
as arnponents,

will operate with apparent satisfaction in fluids with higher

cleanliness codes than those required. It will often recommend levels above those specified. Experience

has shown, however, that life expectancy hydraulic c

shortened in fluids with higher cleanliness codes than those

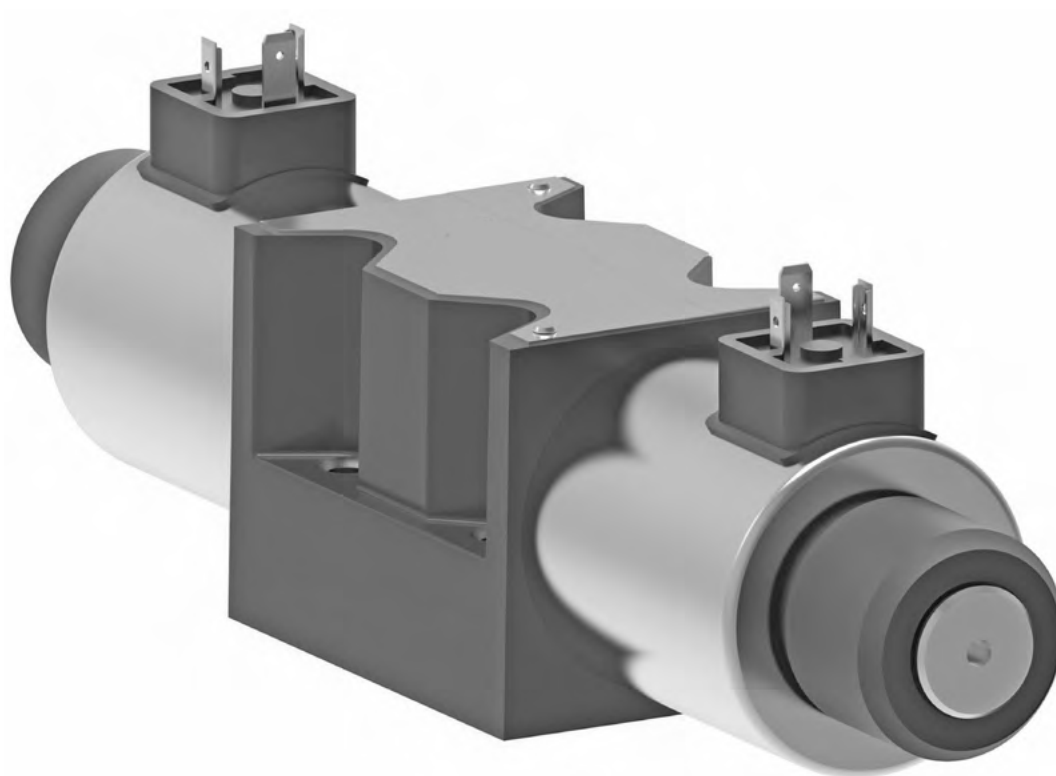
troubled below . These codes have been proven to provide a trouble-free service products shown, regardless of the manufacturer .

System pressure level bar (psi)

[illegible]

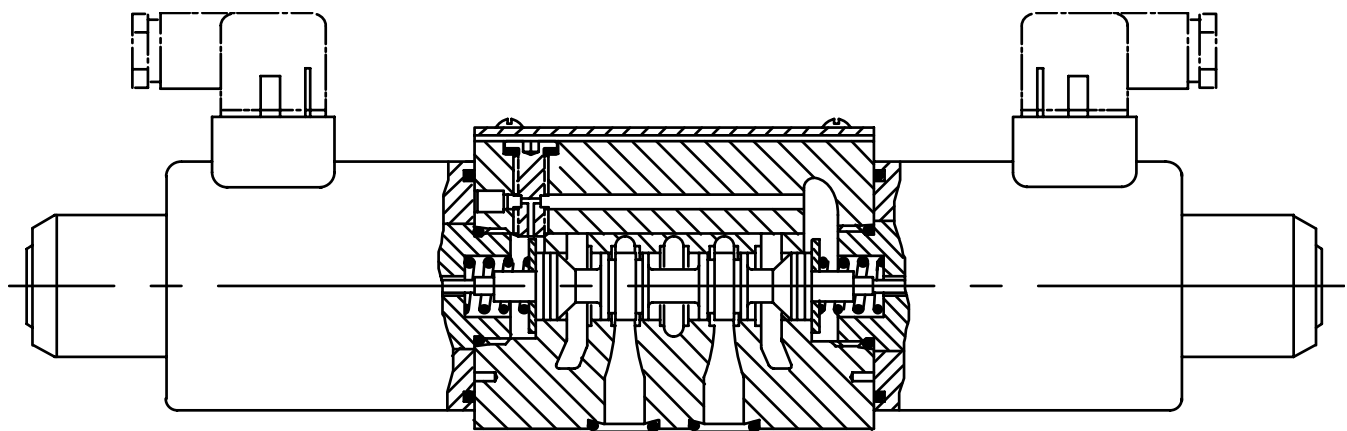
Fluids and seals

Application data



General description

III-C



Solenoid operated directional valve

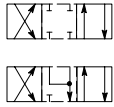
DG4V-5F13-1 ***3 *(L)4 (J)5 (-*)6 - (V) M7 (S6)8 - U9 **10 611 - 2012- J**13

III-C

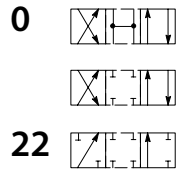
☐	Prefix, fluid compatibility Blank AC or DC-voltage models for petroleum oils, water-in-oil (invert) emulsions or phosphate esters . AC - voltage models for water glycols . F13DC-voltage models for water glycols	☐	Coil type UIISO 4400 (DIN 43650) mounting(s) without plug(s) U1ISO 4400 with fitted DIN plug U6ISO 4400 with fitted DIN plug with lights
☐	Model series KUM 4Solenoid operated KUP4Junior timer (AMP) connector VPressure rating 315 bar A & B ports KUP6D2Flying lead with Deutsch connector with diode	☐	Coil rating A110V AC 50 C220V AC 50 ED240V AC 50 EK115V AC 60 EH230V AC 60 G12V DC H24V DC HL24V DC (32W) J48V DC
☐	Spool typeSee "Functional Symbols" section4	☐	Tank pressure rating 6160 Bar Tank Pressure Rating12
☐	Spool spring arrangement ASpring offset to A . Single end . ALAs left hand build BSpring centered . Single end . left hand build ole End . J48V DC	☐	Design numberSubject to change . Installation dimensions unaltered for design numbers 20 to 29 inclusive .13
☐	Spool design Blank-"0A" DC-valves and all AC valves except "8B(L)" and "8C"spool/pring arrangements . JAll DC valvesexcept "0A"spool/ pring arrangements . AC valves with "8B(L)" and "8C" spoolspring arrangements .6	☐	Coil rating J060,6 mm ori J080,8 mm ori J101,0 mm ori J121,2 mm ori J199No ori - Must be fitted No override in non-solenoid end of single solenoid valves . Fitting of ori is required, see page 126, "Spool Speed Control" Ori
☐	Manual override option Blank-Standard plain overe(s) in solenoid end(s) only HWater-resistant overe(s) in solenoid end(s) WTwist and lock override in solenoid end only ZNo overrides at either end Omit for standard plain overe(s) in solenoid end(s) only	☐	Solenoid energization identity VSolenoid "A" is at port A end and/ or solenoid "B" is at port B end, independent of spool type Note:Used to set the identification of the solenoid . Refer to page 119 .8
☐	Spool position indicator switch BlankNo spool position monitoring switch . S75pl position monitoring switch . Single solenoid valves only	☐	

III-C

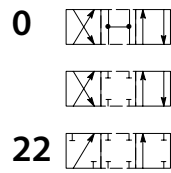
DG4V-5-*N valves



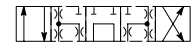
DG4V-5-*A valves



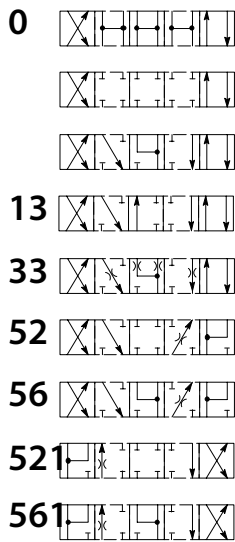
DG4V-5-*AL valves



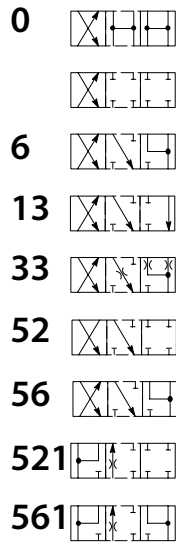
DG4V-5-8CV valves



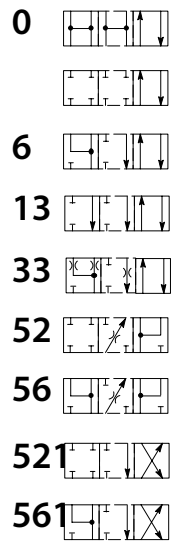
DG4V-5-*C valves



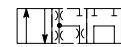
DG4V-5-*B valves



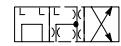
DG4V-5-*BL valves



DG4V-5-8BLV valves



DG4V-5-8BV valves



Solenoid identified standards

▲ Transient conditions only

 de-energized		 *Power on AC solenoids (45 models)
 Full power coils and dual frequency coils on DC solenoids at rated voltage and 20 C (68 F).		 Holding VA (RMS)
 Dual frequency coils on DC solenoids		 Full power coils:
Others		
Model type "HL"		
Mass, Approx. kg (lb)		
Single solenoid models, AC coils		88)
Single solenoid models, DC coils		06)
Double solenoid models, AC coils		99)
Double solenoid models, DC coils		
Temperature		
Minimum ambient		1 (-4 1F)
Maximum ambient:		
AC 50 valves		1 (122 1F)
AC 60 valves		1 (104 1F)
DC valves		1 (158 1F)

Spool speed control orifice

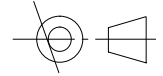
For fine tuning of valve spool speed Only applicable to valves already fitted with an orifice or blank plug, see model code, page 118.

Orifice kit

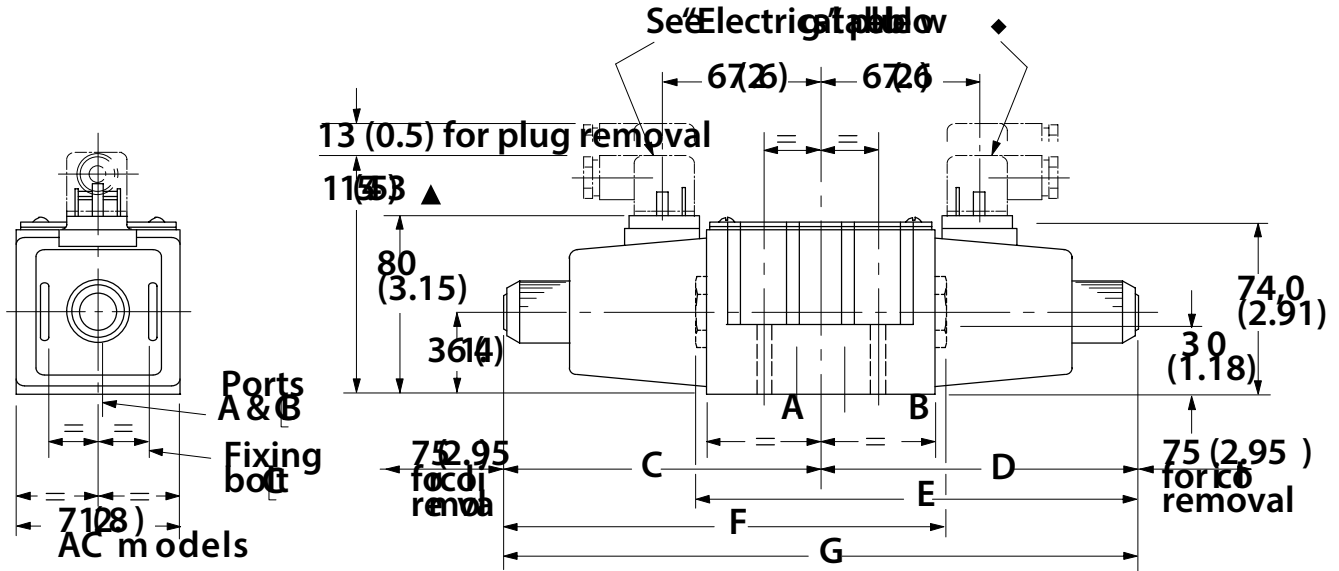
Orifice kits must be ordered separately, part number 02-350116. **Kinship is not responsible for conditions caused by the**

- **DG4V-5-2CJ valves.** Longer response times can be obtained by fitting an orifice plug in a smaller differing orifice size, can be ordered separately. Ask your Danfoss representative for details.

AC Solenoid models



III-C

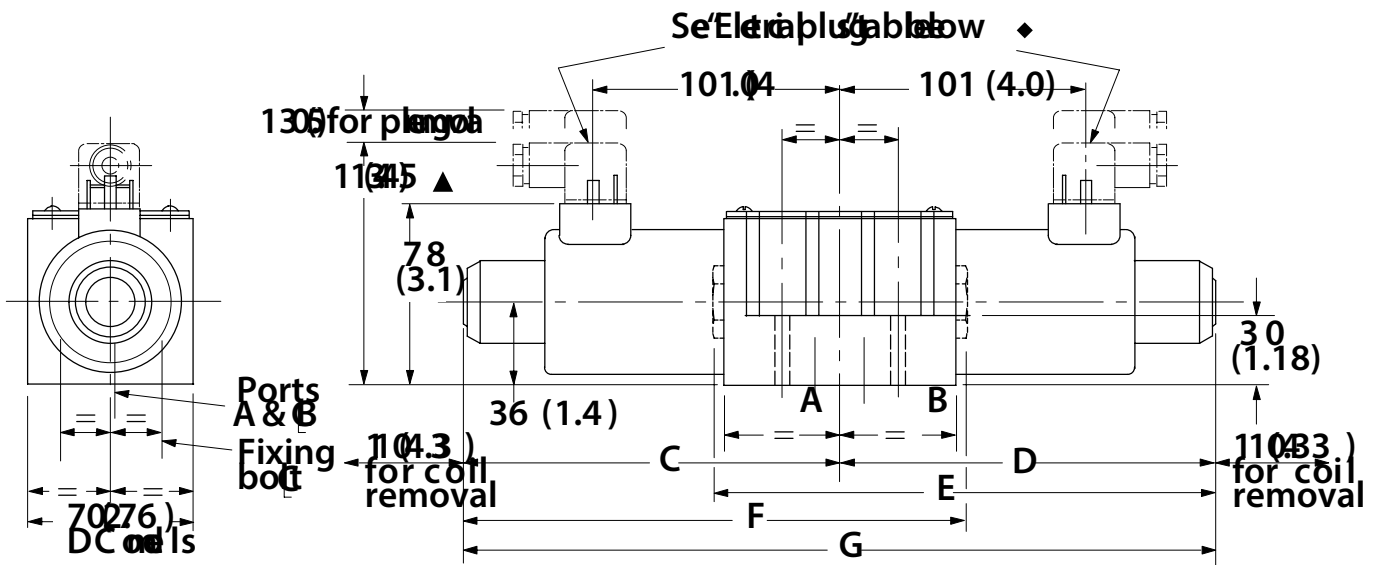


- ▲ The cable entry can be repositioned at 90° intervals from the position shown. This is done reassembling the contact holder into the appropriate position inside the plug housing.

ist all

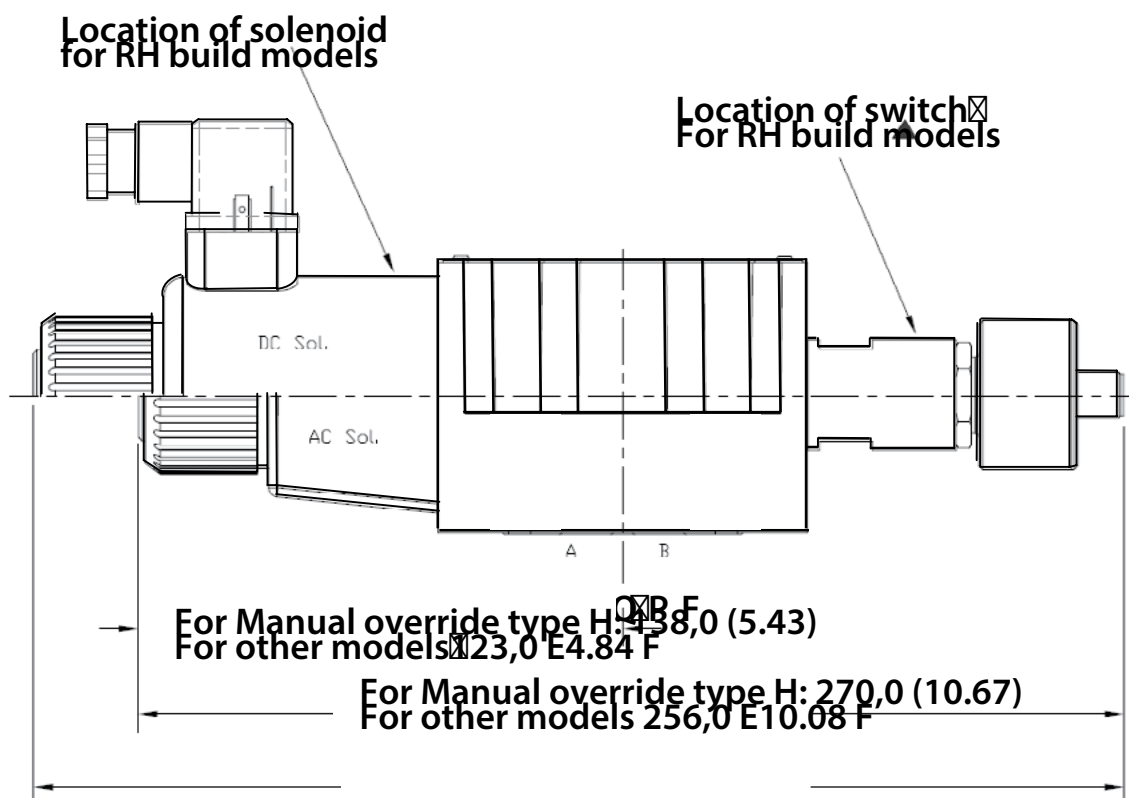
III-C

3rd angle projection

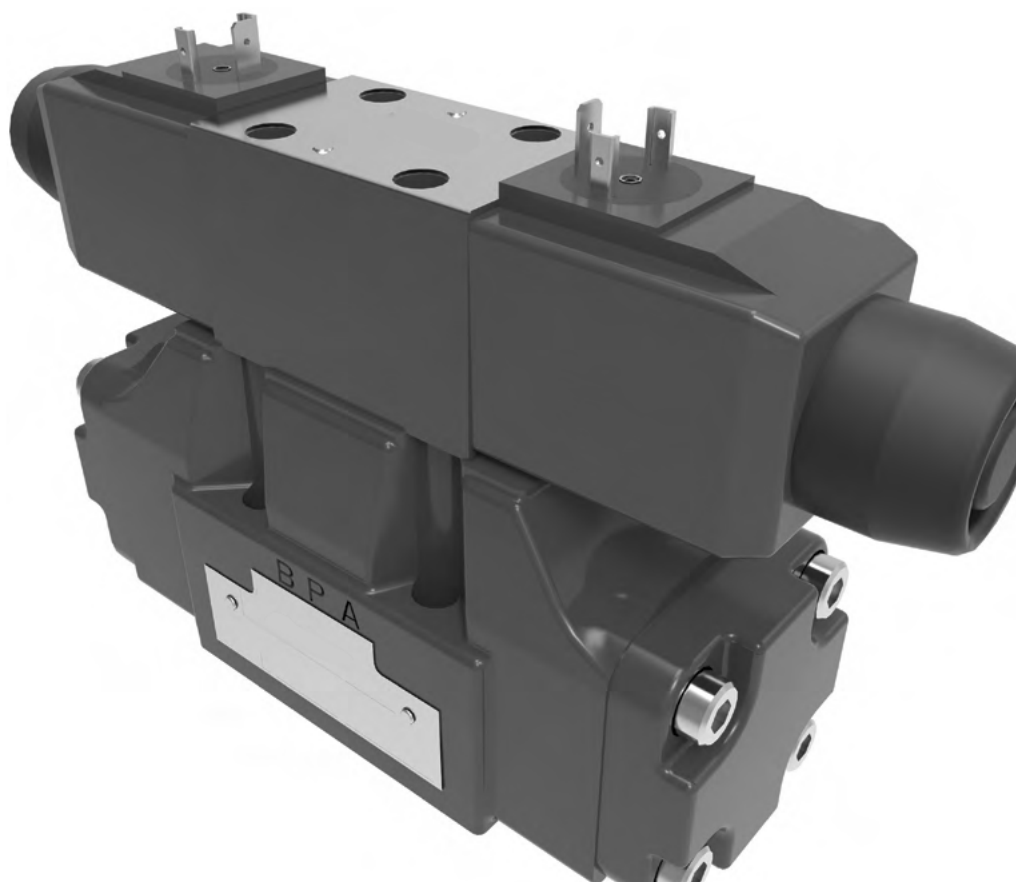


- ▲ The cable entry can be repositioned at 90° intervals from the position shown. This is done by reassembling the contact holder into the appropriate position inside the plug housing.

Installation dimensions



▲ ☐
△ Wiring: See warning note on page 118



General description DG*V-5 valves are used for hydraulic control

Features and Benefits

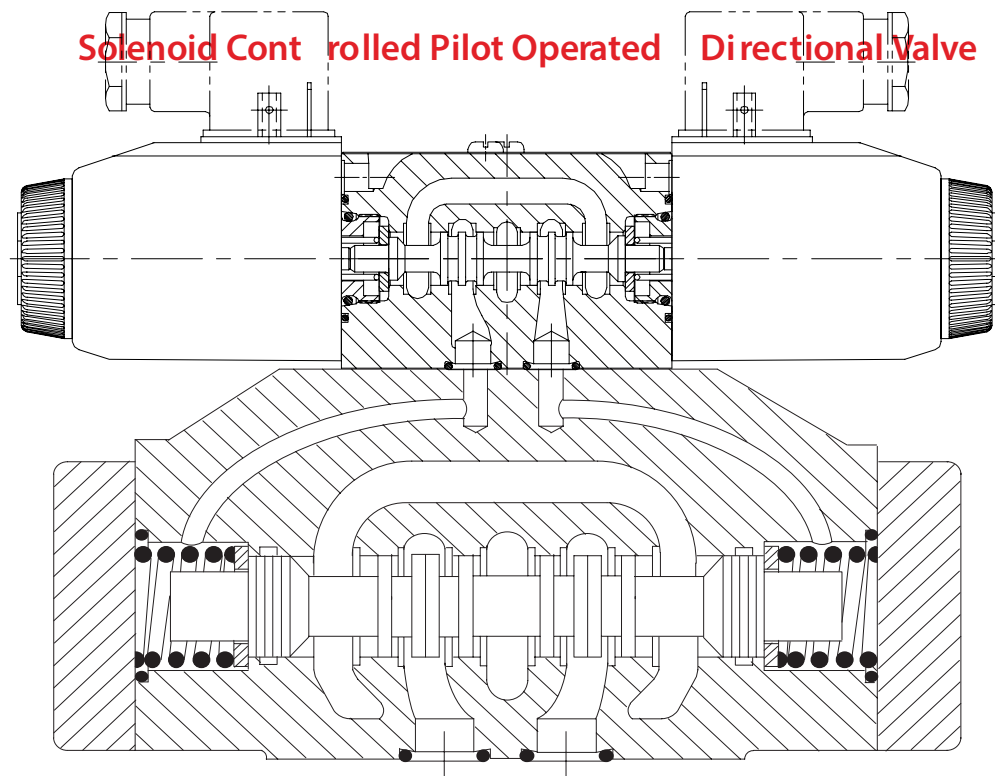
stopping and direction of fluid flow.

Two series of valves, DG5V solenoid controlled, pilot operated and DG3V pilot operated models are available with a wide selection of spools. These include meter in and meter-out spools and a regeneration type that can obviate extra valves essential in traditional circuit arrangements. All spools have been designed to provide good low shock, fast response characteristics which can be enhanced by optional stroke and/or pilot choke adjustments.

Models include spring offset, spring centered and detented versions.

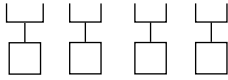
III-C

Typical Section DG5V Direct Pilot Operated



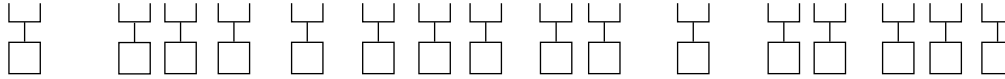
For pilot operated valves:

DG3V-5- *3 (-*)4 -1*14



For solenoid controlled, pilot operated valves:

(F6-)DG5V-5-1 ** **3 (***)4 (-P**)5 (-E)6 (-T)7 (*)8 - (V)9 M10 *****11 - (L)12**13 *14_*15-1016



☐ BlankViton

☐ Pilot drain arrangement ◆

F6B Nitrite/High CAN2

☐ Spool typeSee "Functional Symbols" section on pages 133-134 .3

☐ Spool spring arrangement

A Spring offset, end-to-end

ALSame as "A" left hand build

B Spring offset, end-to-center

BLSame as "B" left hand build

C Spring centered

NN Spring detented

▲ Not available for DG3V-54

☐ Spool control

1 Stroke adjustments, both ends

▼ ▲ ■

28 Dual pilot choke and stroke adjustment "B" port end only

3 Pilot choke and stroke adjustments

7 Stroke adjustment "A" port end only

8 Stroke adjustment "B" port end only

▲ Not applicable to DG5V-5-*B(L) models

▼ Not applicable to models shown in the "Spring offset, end-to-center, opposite hand" section on page 134

■ Not applicable for spool "8" models5

☐ Main stage spool monitoring switch

BlankNone

PCACentering switch on "A" port end

PCBCentering switch on "B" port end

PDADouble offseting switch on "A" port end

PDADouble offseting switch on "B" port end

Note: The spool position monitoring switch shown on this technical document is CE marked and certified and complies to European Standard EN 6000-6-4: 2001 (Emissions) for Class A and European Standard EN 61000-6-2: 2001 (Immunity) . 6

☐ Pilot pressure supply

E Valve configured for external pilot supply to port "X"

BlankInternal pilot supply (port "X" must be blanked off, e.g. at the valve mounting face, when using internal pilot supply)

◆ See 15 for pressure limits .8

☐ Pilot valve manual override option

BlankPlain override(s) on solenoid end(s) only . ▲

HWWater-resistant override(s) on solenoid end(s) ▲

ZNo override at either end

▲ No override in non solenoid end of single solenoid valve .9

☐ Solenoid identity method

VSolenoid "A" at port "A" end of pilot valve body and/or solenoid "B" at port "B" end of pilot valve body, independent of main-stage port locations and spool type. Omit (except as noted below) for US ANSI B93 .7 standard requiring solenoid "A" energization to connect main ports P and A and/or solenoid "B" energization to connect P and B, independent of solenoid location .

Note: The code is always used for valves with type "8" spool as the solenoid identity is the same for both methods of identification .10

☐ Flag symbol

MElectrical options and features11

☐ Solenoid type/ connection(s)

UISO4400, DIN43650 connector

U1ISO4400 fitted with PG11 plug

KUTop exit flying lead (150mm)

KUPJunior timer (Amp) connector

KUPJunior Deutsch connector

FWFlying lead with 1/2" NPT thread wiring

FTWFly, lead wired in a block & 1/2" NPT thread

☐ Indicator lights

BlankNone

LSolenoid indicator lights
•Flying lead coil type only

III-C

(F6-)DG5V-5-1 ** **3 (***)4 (-P**)5 (-E)6 (-T)7 (*)8 - (V)9 M10 *****11 - (L)12**13 *1415151015

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☐ Surge suppressor/ damper

D1Diode positive bias

D2Negative bias

D7Transorb type14

☐ Coil ratingSee Page 7 for circuit details

B110V AC 50Hz/120V AC 60 Hz

BL110V 50 Hz/120V 60 Hz

C 50 Hz/240V AC 60 Hz

☐ PortT orY maximum pressure†

6160 bar (2300 psi), for AC solenoids only

7210 bar (300 psi), for DC solenoids only16

☐ Design number

- a. Pilot pressure must always exceed tank line pressure by at least the requisite minimum pilot pressure . This also applies when combining open center spools (0, 1, 8, 9 and 11) with internal pilot pressure, but they should be used only with externally drained valves .
 - b. Internally drained valves may be used only when surges in the tank line cannot possibly overcome the minimum pilot pressure differential referred to above . When the possibility of pressure surges in the tank line exist, externally drained valves are recommended .
 - c. When DG5V-7-*N valves are de-energized the pilot and main spools remain in the last selected position, provided that pilot pressure is maintained . If pilot pressure fails, or falls below the minimum, the main spool will spring center .
- Caution:** Because of this in-built feature the flow conditions of both the direction of flow and the pilot pressure.

Stroke adjustment options

any particular flow rate can be controlled. Stroke can be fitted at either or both ends of the main-stage valve for adjusting stroke in one or both directions. One use of stroke adjusters is for long or metering characteristics of "X*" or "Y*" - type spools . (See model code 4 .)

Pilot choke adjustment

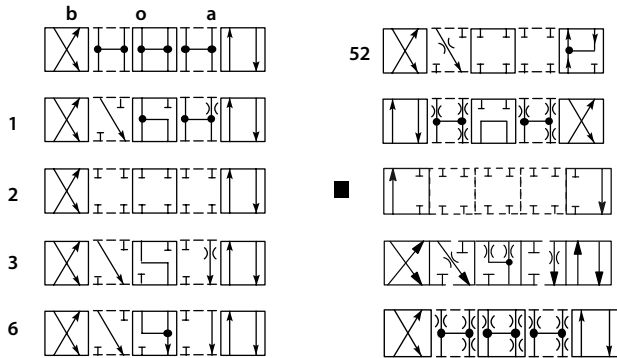
Options These provide a meter-out flow control system to the fluid in the pilot chambers of main-stage valves

Control data, general

- a. Dependent on the application and the system filtration, any sliding spool valve, if held shifted under pressure for long periods of time, may stick and not move readily due to fluid residue formation . It may therefore need to be cycled periodically to prevent this from happening .
- b. Surges of fluid in a common drain line serving two or more valves can be of sufficient magnitude to cause inadvertent shifting of the spools . It is recommended that circuit protection be used, such as separate drain lines .
- c. Control by stroke adjusters, pilot chokes and minimum-pilot pressure generator options is described on this page .

Spool types

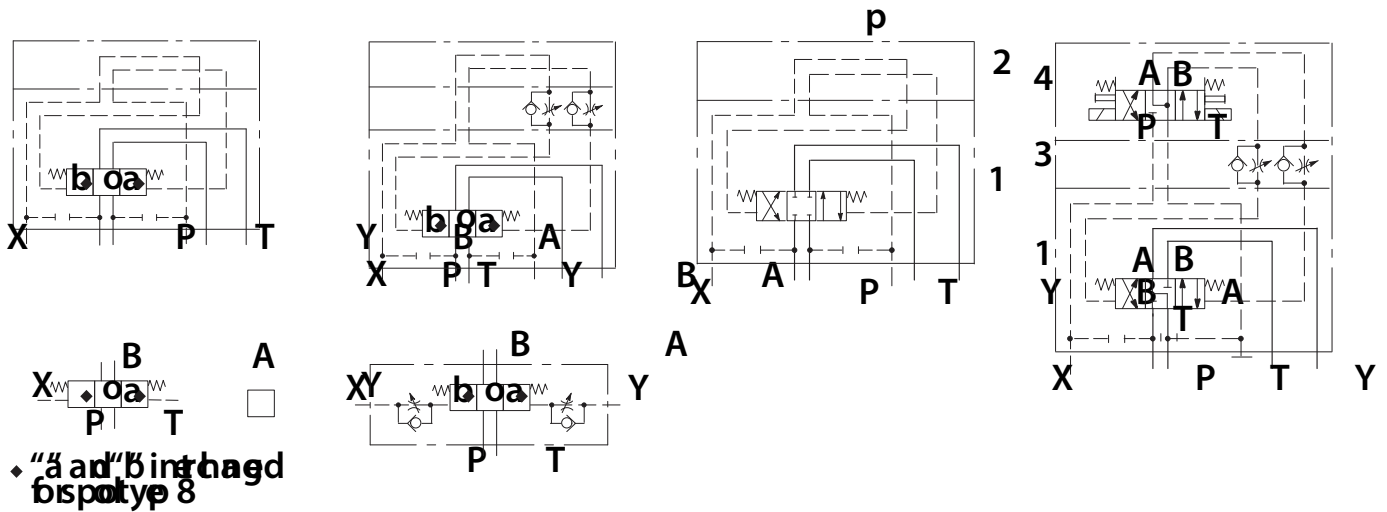
III-C



■ Only 35A available .

DG3V-5 Pilot operated models

Comprehensive and simplified symbols



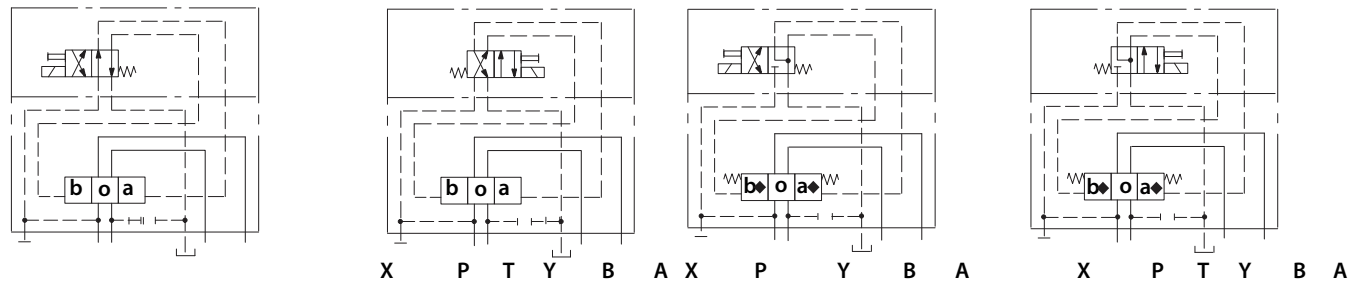


Comprehensive and simplified symbols shown configured for

Spring offset, End-to-end,
DG5V-5-**-**ASpool types: 0, 2, 6, 35, 52

Spring offset, end-to-end,
opposite hand,
DG5V-5-**-**ALSpool types: 0, 2, 6, 52

Spring offset, end-to-end,
opposite hand, Models sp
DG5V-5-**-** B 0, 2, 52 DG5V-5-**-** B 8
DG5V-5-**-** BL 8 DG5V-5-**-** BL 0, 2, 52



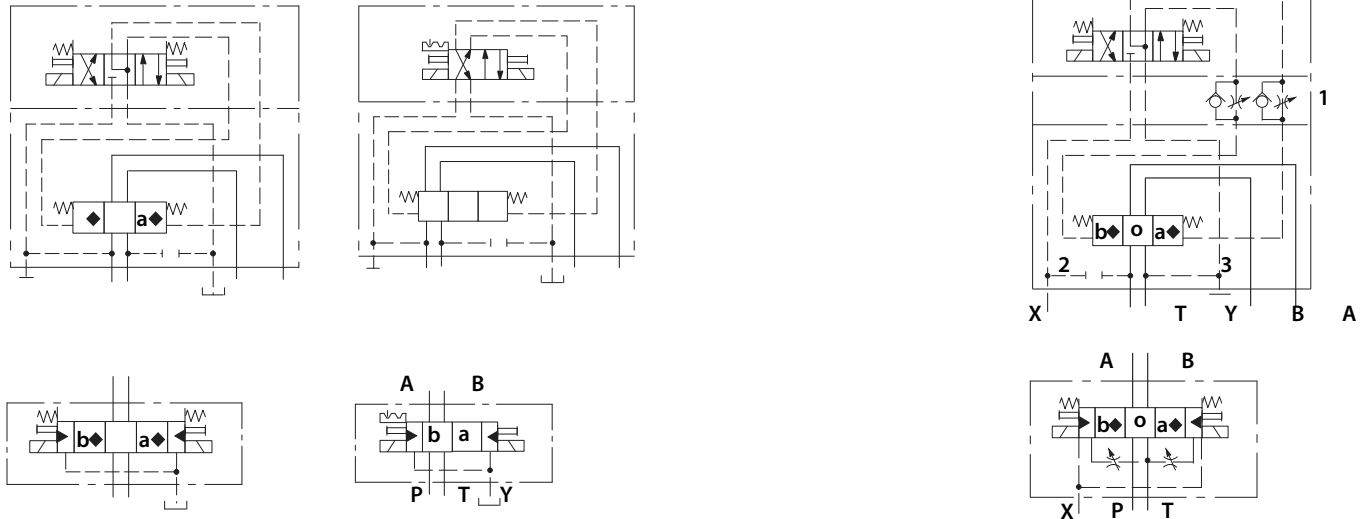
Spring centered, DG5V-5-**-**CSpool types: All

Detented, DG5V-5-**-**N

■ Spool types: 0, 2, 6, 52

DG5V-5 OptionsThe following are shown in a
DG5V-5-**-**C example:

1. Pilot choke module
2. External pilot connection
3. Internal drain



▲ All main-stage assemblies are spring-centered .
The conditions described depend on the availability of pilot
pressure in excess of 4 .5 bar (65 psi) to move the spools
against these springs . This is particularly important when using
external pilot pressure supply

Solenoid Identification (refers to installation drawing,
page 10 - 12) For model code variants: Position 3, spooling arrangement
Position 8, solenoid identity method

Func

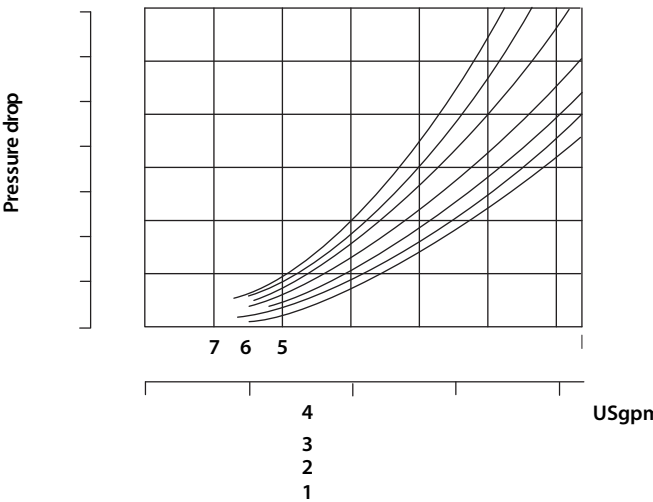
Pilot pressures
DG5V-5-**-N

III-C

- Minimum (for max. flow):
For spool types 0, 1, 8 ♦, 11 4,5 bar (65 psi)
For spool type 6 8 bar (116 psi)
For spool types 2, 3, 31, 33, 52 10 bar (145 psi)

ages are spring centered . Selection of spool offset
a" or "b" requires pilot pressure equal to or excess
ve minimums to move the spool against the spring
is particularly important when using external pilot
upply .

♦ When using a type 8 spool with the valve configured for
internal pilot supply, flow through the valve should be at least
80 L/min (21 USgpm) to generate 4,5 bar (65 psi) pressure drop
when the spool is in the center position (flow P to T).



position after solenoid has been de-energized .
The main stage is spring-centered and requires at le
minimum pilot pressure to move spool in its offset
("detent-held") position . When pilot pressure falls below
recommended minimum main-stage spool move to
position "o" the action of centering springs . The
system designer should ensure that under conditions
the flow condition at center position "o" is appropriate for the
application.

▲ See comment in "Mounting Attitude" .

Pilot choke module

→ A	→ B	→ B	→ A	→ A	→ B	→ P0	4
						11	4
						2	1
						3	2
						6	1
						8	4
						33	2
						35A	See page 14
						52	2
							3

0 25 50 75 100 125 150 160 L/min
Flow rate
10 20 30 40

Performance data

See also the following information in the product literature (P) or port (X)

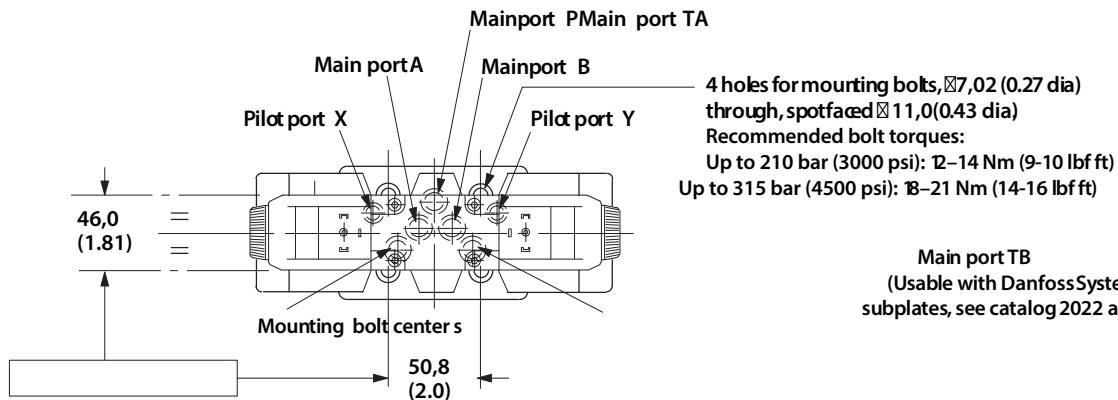
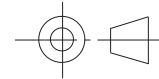
Solenoid controlled models with ISO 4400 (DIN 43650)
electrical connection and pilot port for solenoid

identification see previous page.

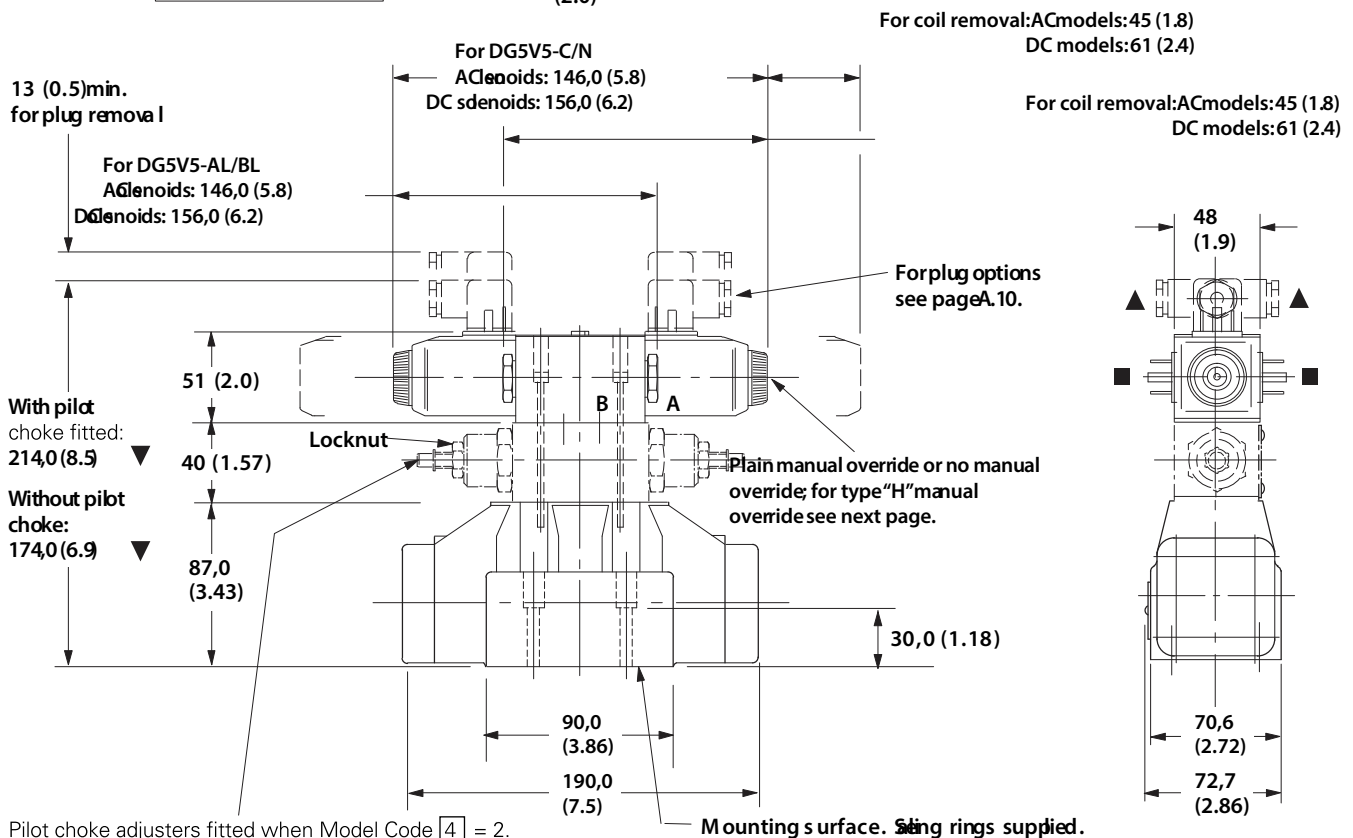
Milimeters (inches)

- ▼ May vary according to plug source .
- Alternative plug positions by loosening knurled nut counter-clockwise, turning coil and re-tightening nut .
- ▲ Cable entry can be positioned at 90° either way from position shown, by re-assembling the contact holder into the appropriate position inside the plug connector housing .

III-C



Main port TB
(Usable with Danfoss SystemStack valve and some subplates, see catalog 2022 and 2425 respectively)



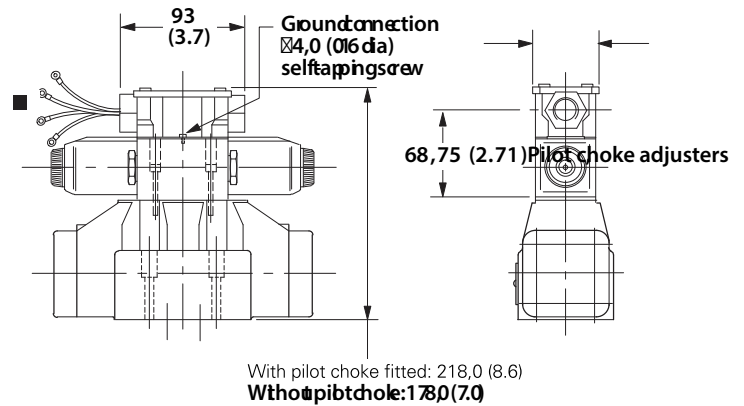
Pilot choke adjusters fitted when Model Code $\square 4 = 2$.

To adjust, turn locknut counter-clockwise, then turn screw clockwise to slow down rate of spool travel, or counter-clockwise to increase the rate. Re-tighten locknut to 25-30 Nm (18-22 lbf ft).

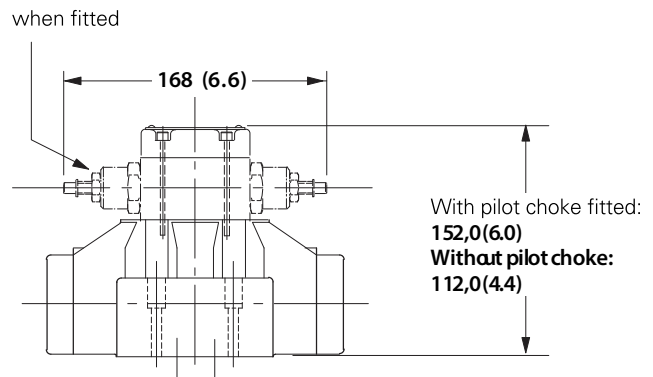
Solenoid controlled models with junction box having optional terminal strip and pilot light example

For solenoid identification see page A.7.

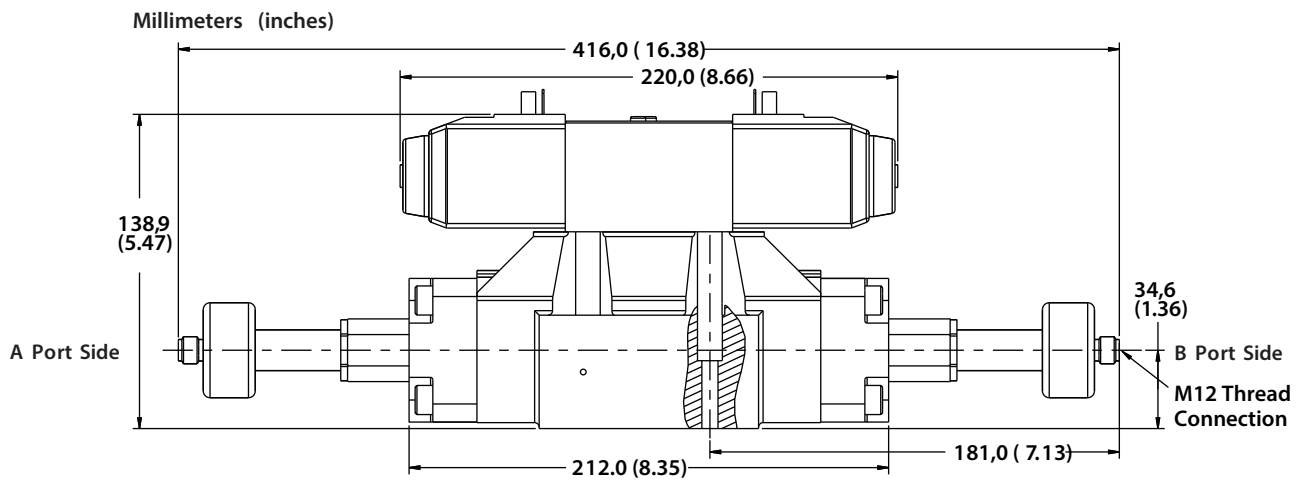
Available also with other options shown on previous and following pages .



Pilot operated models with optional pilot choke DG3V-5-**-C(-2) example



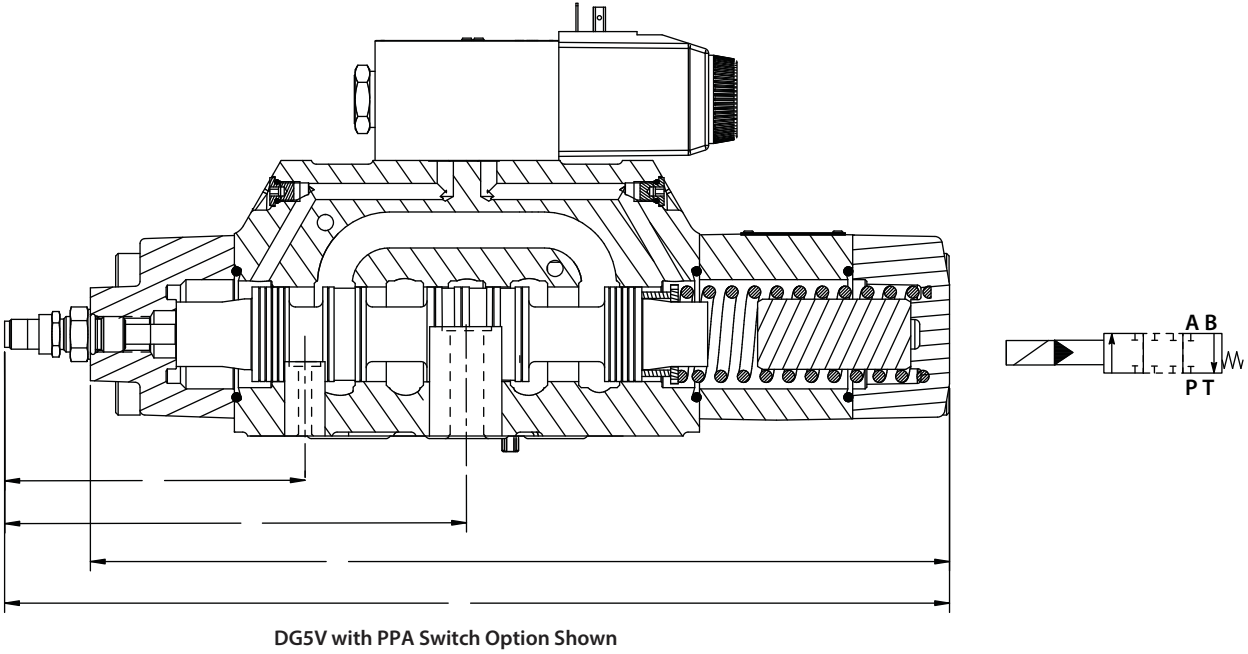
DG5V-5 with main stage spool monitoring switch "PCA", "PCB", "PDA", "PDB" models (LVDT style)



Installation dimensions

Valve for safety circuit application (35A Spool)

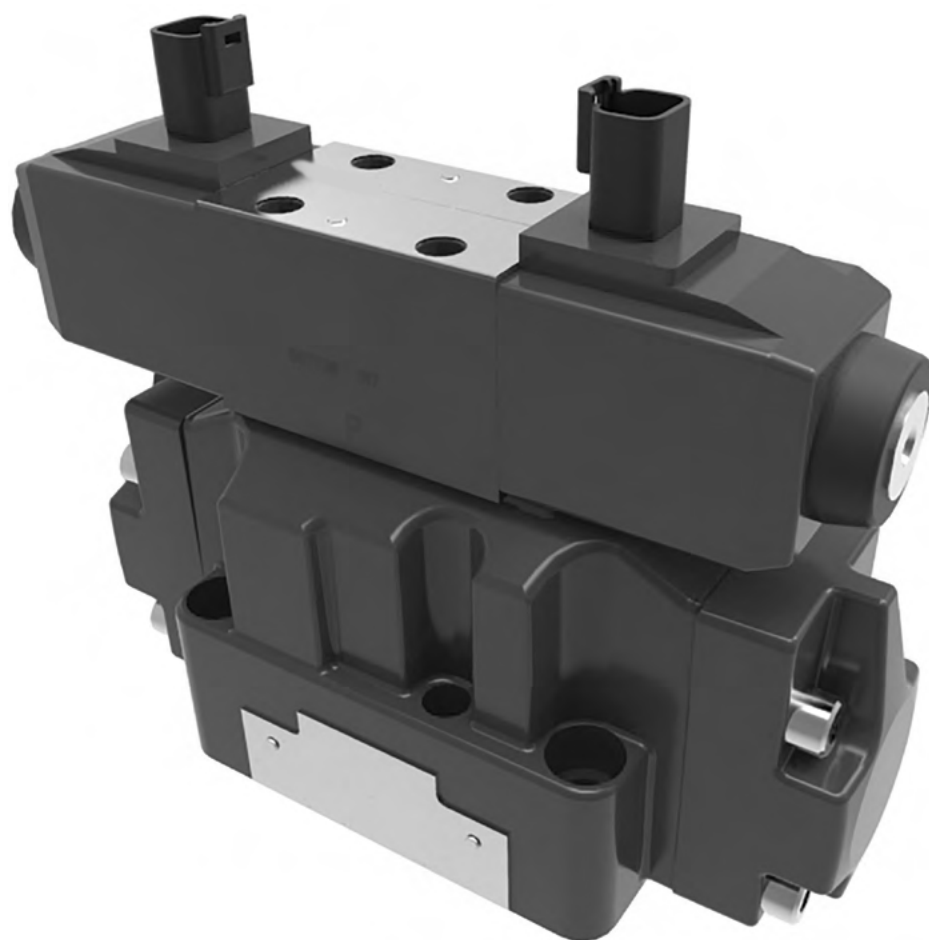
III-C



Main Stage Hydraulic Symbol

rst all

[illegible]



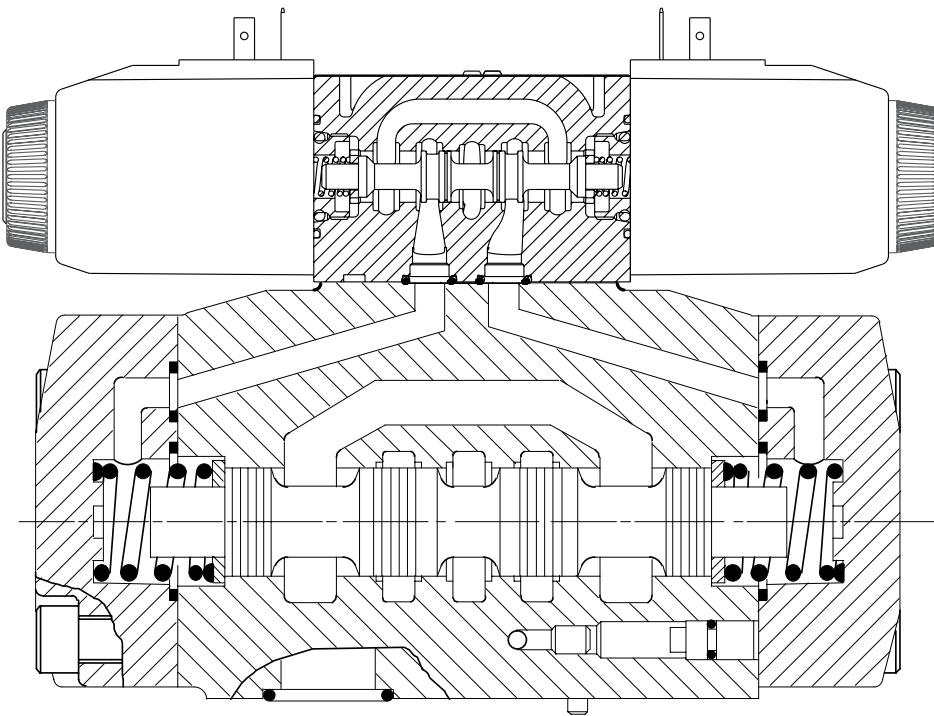
General description DG*V-7 valves are used for starting, stopping and direction of fluid flow.

Features and benefits

Two series of valves, DG5V solenoid controlled, pilot operated and DG3V pilot operated models are available with a wide selection of spools. These include meter-in and meter-out spools and a regeneration type that can obviate extra valves essential in traditional circuit arrangements.

All spools have been designed to provide good low shock response characteristics which can be enhanced by optional stroke and/or pilot choke adjustments.

Models include spring offset, spring centered and detented versions.



IV-D

IV-D

For solenoid controlled, pilot operated valves:

* - DG5V-7-1 ** **3 (-**)4 (-P**)5 (-E)6 (-T)7 - (-K)8 - (-*)9 (V)M10 - *****11 (L)12 **13- ***14 -*15 - 3016

☐

Solenoid type connection(s)

UIISO4400, DIN43650 connector

U1ISO4400 fitted with PG11 plug

KUTop exit flying lead (150mm)

ior timer (Amp) connector

sch connector

thread wiring

T thread

HL24V DC

HM24V DC 8 watt

☐

Indicator lights

BlankNone

LSolenoid indicator lights•

• Flying lead coil type only13

☐

Surge suppressor/ damper

D1Diode positive bias

D2Negative bias

D7Transorb type

☐

Coil ratingSee Page 7 for circuit details

B110V AC 50Hz/120V AC 60 Hz

BL110V 50 Hz/120V 60 Hz

D220V AC 50 Hz/240V AC 60 Hz

DS28V DC 30 watt

G12V DC

GL12V DC

H24V DC

☐

Tank port rating

6210 bar (900 psi) for AC performance .

7210 bar (1000 psi) for DC performance .16

☐

Design number

20Series for DG3V valves .

30Series for DG5V valves .

Subject to change .

Model code (Continued)

a. Pilot pressure must always exceed tank line pressure by at least the requisite minimum pilot pressure . This also applies when combining open center spools (0, 1, 8, 9 and 11) with internal pilot pressure, but they should be used only with externally drained valves .

b. Internally drained valves may be used only when surges in the tank line cannot possibly overcome the minimum pilot pressure differential referred to above . When the possibility of pressure surges in the tank line exist, externally drained valves are recommended .

c. When DG5V-7-*N valves are de-energized the pilot and main spools remain in the last selected position, provided that pilot pressure is maintained . If pilot pressure fails, or falls below the minimum, the main spool will spring center .

Caution Because of this in-built feature the flow conditions of the center position must be selected with care, for the effect on both the direction of flow and the pilot pressure .

Stroke adjustment options

any particular flow rate can be controlled. **Stroke adjusters** can be fitted at either or both ends of the main-stage valve for **adjusting the stroke in one or both directions** . One use of stroke adjusters is for controlling the metering characteristics of "X*" or "Y*" - type spools . (See model code 4 .)

Pilot choke adjustment options

These provide a meter-out flow control system to the fluid in

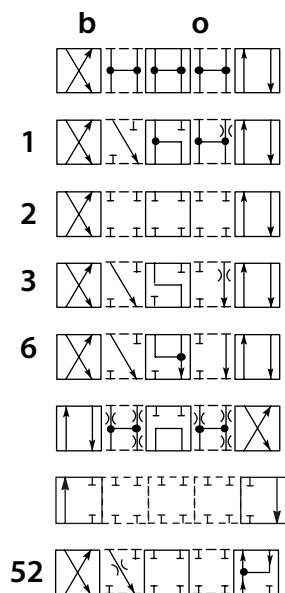
Control data, general

a. Dependent on the application and the system filtration, any sliding spool valve, if held shifted under pressure for long periods of time, may stick and not move readily due to fluid residue formation . It may therefore need to be cycled periodically to prevent this from happening .

b. Surges of fluid in a common drain line serving two or more valves can be of sufficient magnitude to cause inadvertent shifting of the spools . It is recommended that circuit protection be used, such as separate drain lines .

c. Control by stroke adjusters, pilot chokes and minimum-pilot-pressure generator options is described on this page .

IV-D



Note:

1. In the detailed and simplified symbols on this and the previous pages, the transient positions are omitted for simplicity.

2. In certain 2-position valves, the "o" position becomes an additional transient, i.e. in DG5V-7-*A(L) and DG5V-7-*N valves.

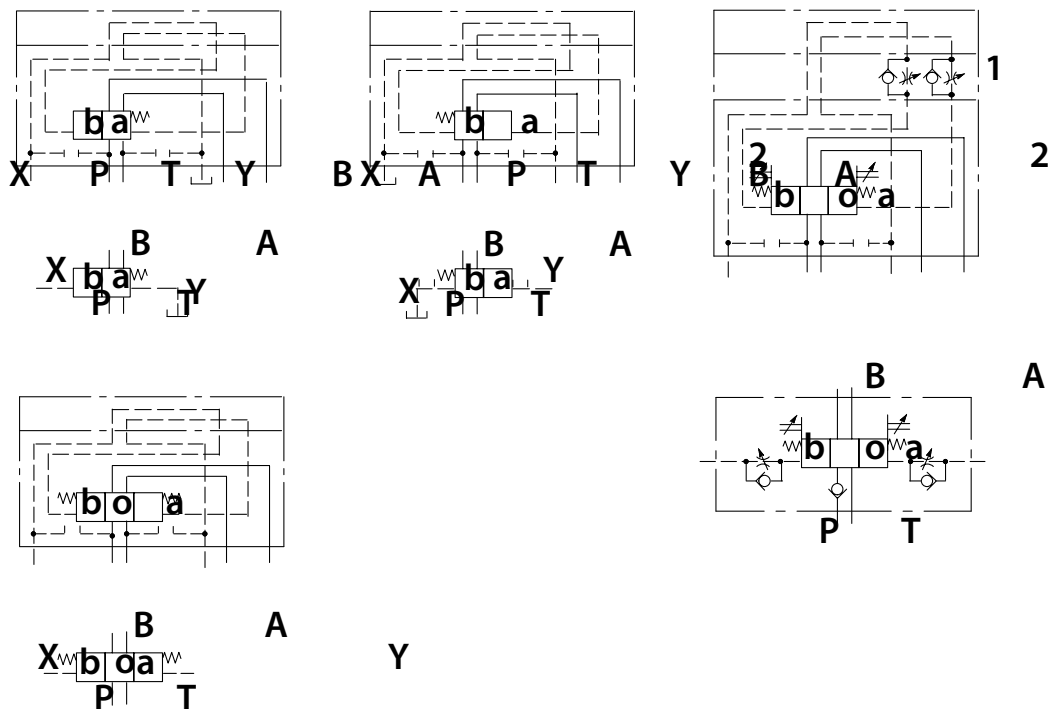
Your Danfoss representative can provide further details.

■ Only 35A available

DG3V-7 options

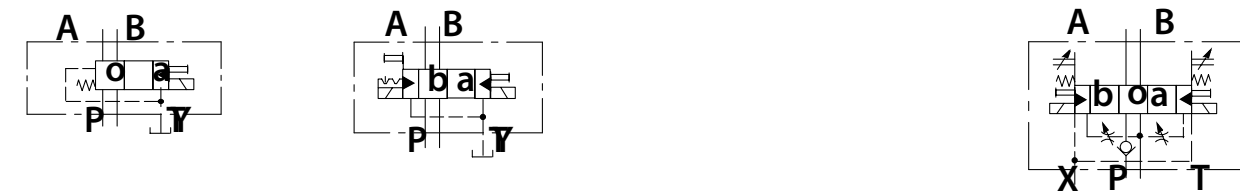
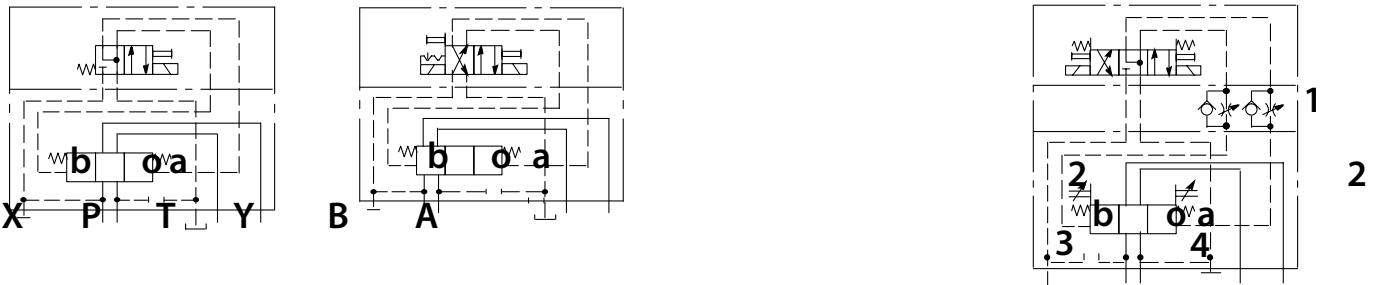
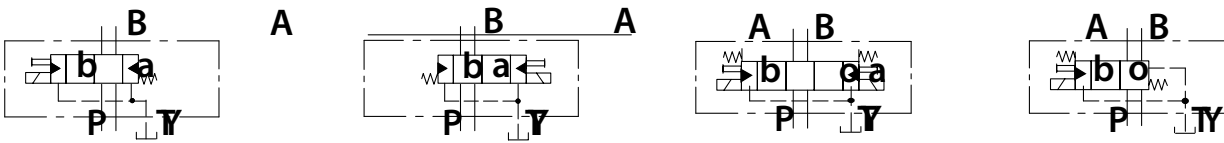
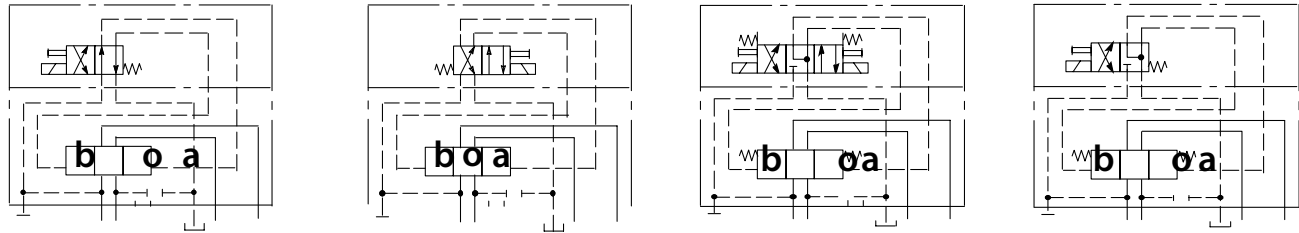
DG3V-7 pilot operated models

Comprehensive and simplified symbols



Comprehensive and simplified symbols shown configured for

IV-D

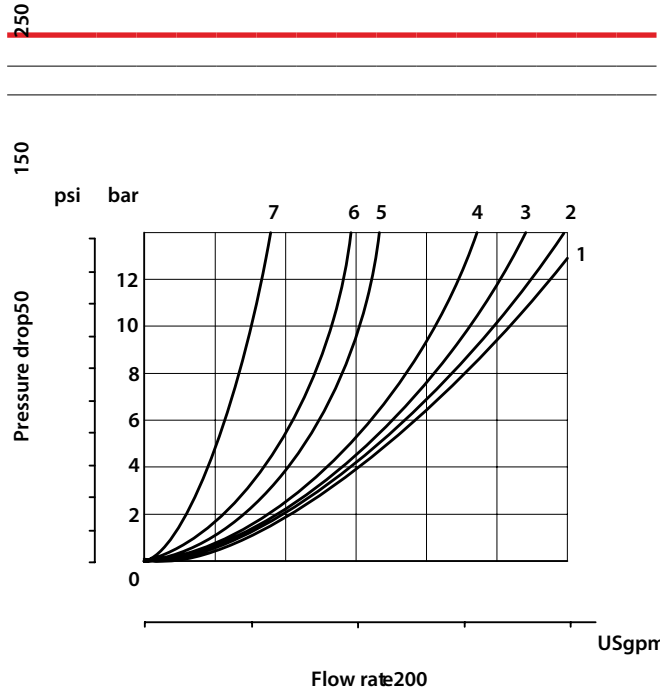
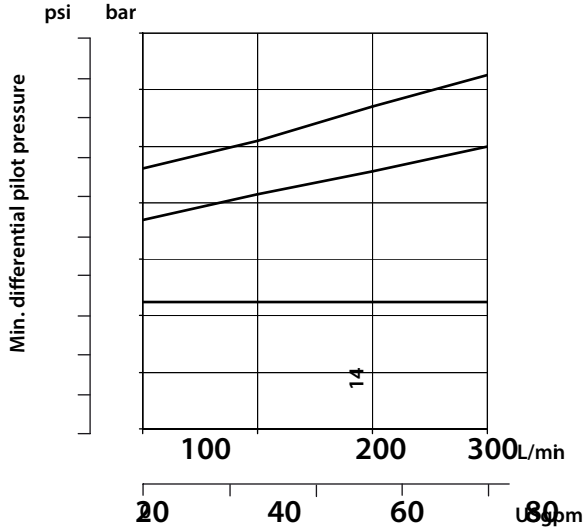


Solenoid identification

[illegible]

flow through P to A to B to T under standard test conditions.

IV-D



As drawn
All
20, 26, 41, 52, X2 &
▲ DG5V-7-52BL models only.

Pilot pressures

Δp) at flow rates
(Q) are based on standard test conditions, using oil of
0,865 specific gravity. Except where otherwise stated, for
any other flow rate (Q1) the pressure drop (Δp_1) will be
approximately $\Delta p_1 \propto \Delta p (Q_1/Q)^2$.

Flow-direction curve reference

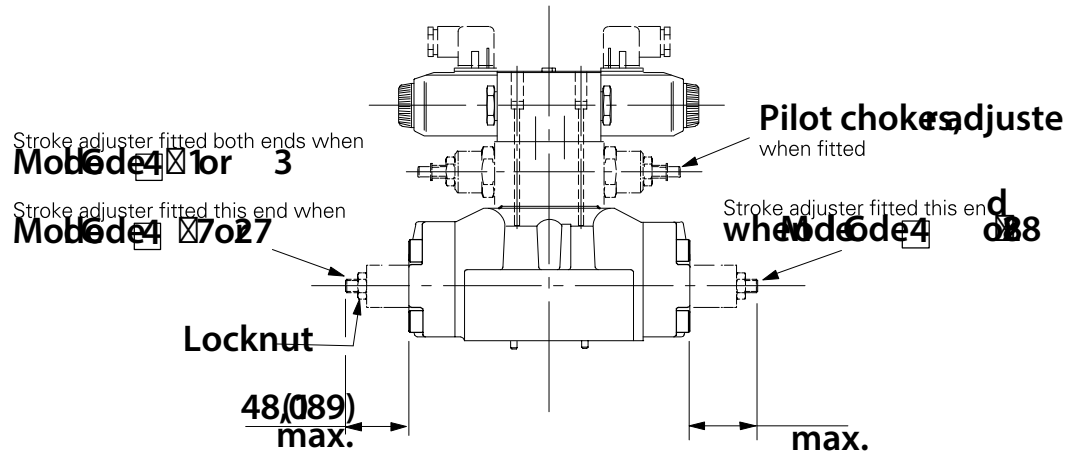
	As drawn				
	1	2	1	2	▼
3	1	2	1	3	-
4	2	2	2	1	6
6	1	1	1	3	-
8	2	2	2	1	5
9	1	2	1	3	7
11	2	3	1	2	4
31	1	3	1	2	-
33	1	2	1	2	-
52▲	2	-	3▼	-	-
52◆	-	-	3	3	-

0
0
2
0
0
8
0
6
4

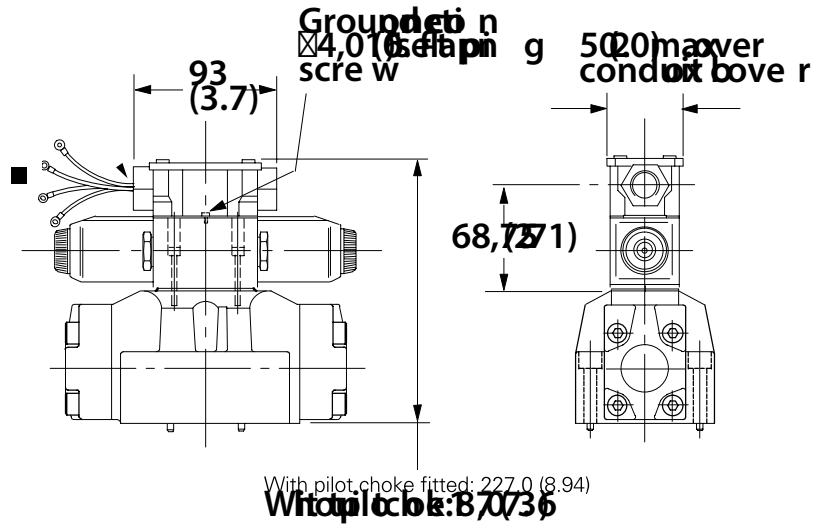
3
2
1

identification see page 16

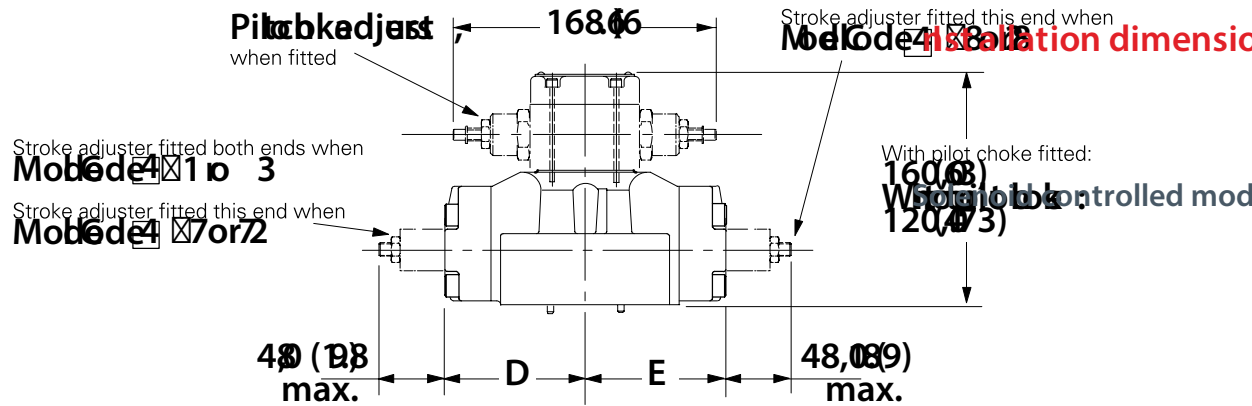
IV-D

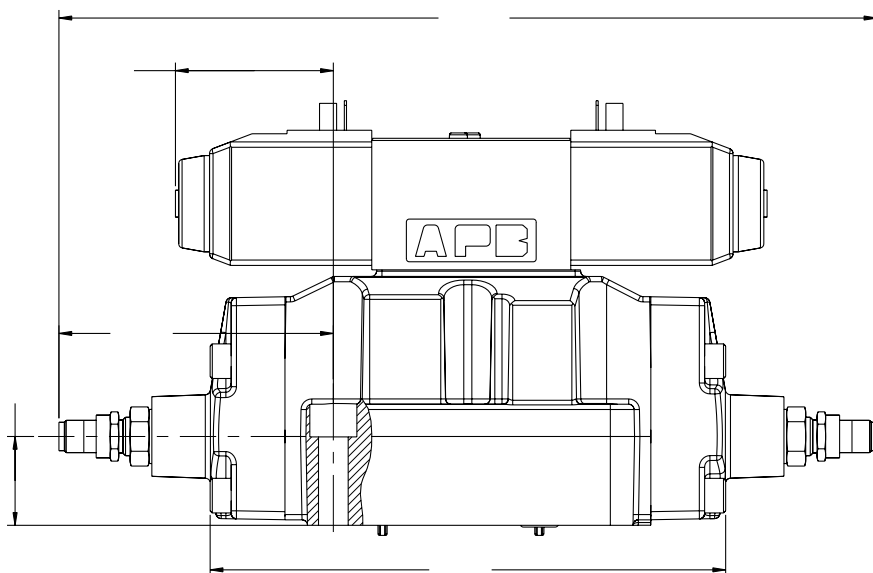


To adjust:

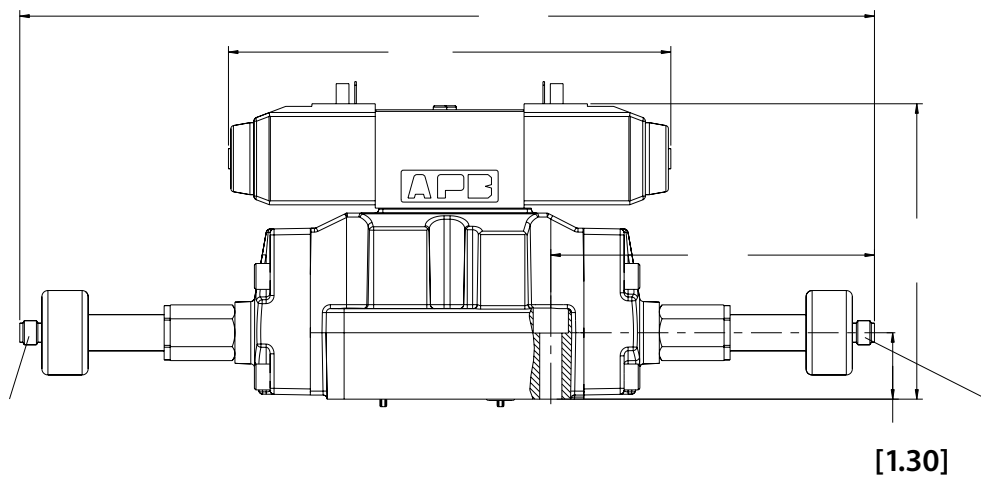


For solenoid identification see page 150
Available with the options shown above and on previous page .



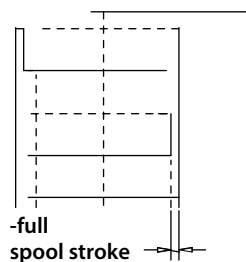


DG5V-7 with main stage spool monitoring switch
"PPA", "PPB" or "PPD" models (LVDT style)

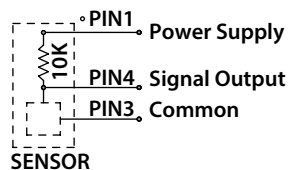


Electrical information shown in this window is for offset sensing, proximity switch "PPA" , "PPB" or "PPD" models

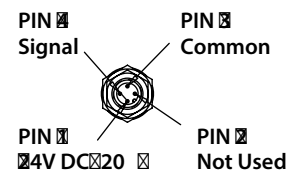
Functional diagram - spring offset



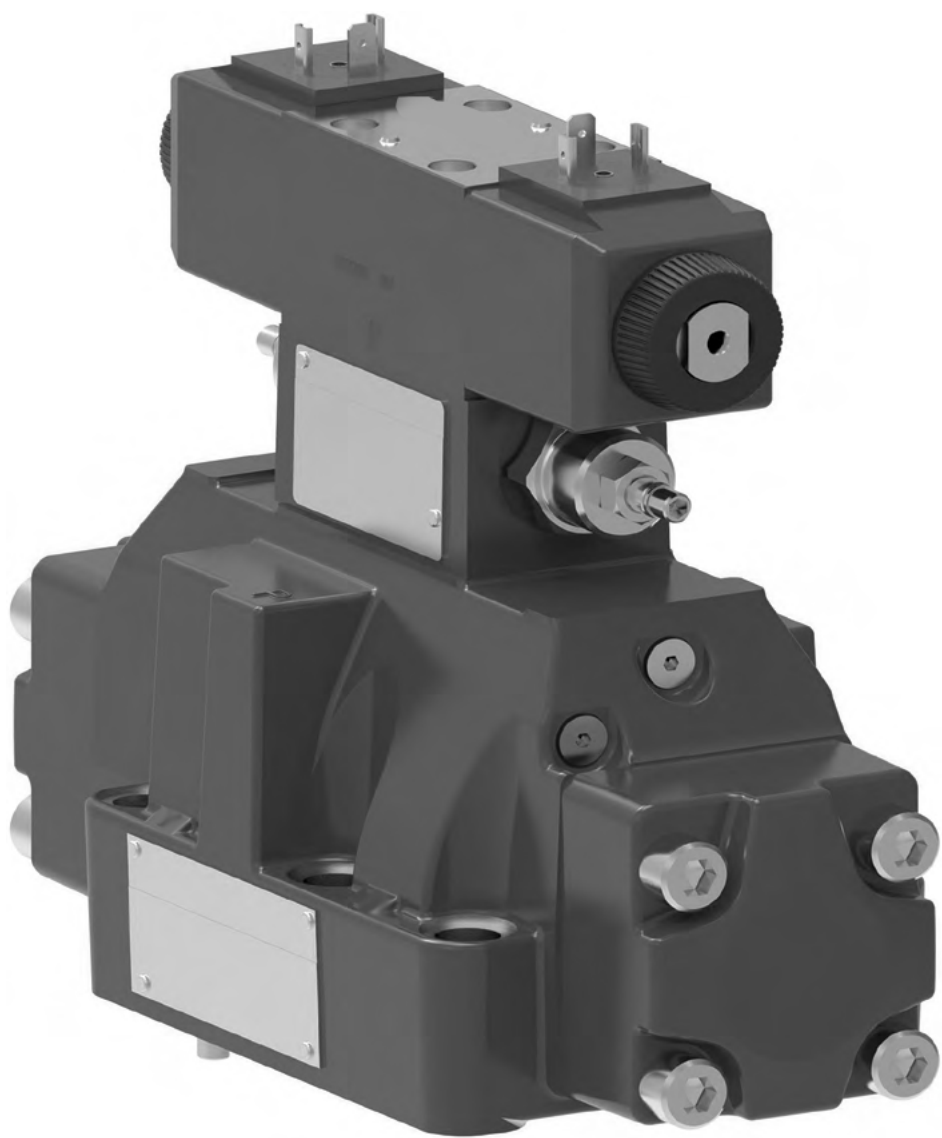
Output circuit wiring instructions



Connector detail



0% voltage at pin 4 0.5V min.



General description

Features and benefits

The valves are generally used to control large flows up to 700 l/min (185 USgpm) at 350 bar (5000 psi) and provide low pressure drops . The range includes:

V-E

DG3V-8 - remote pilot operated valve .

DG5VM-8-H - DG4V-3-60 high performance D03 pilot valve

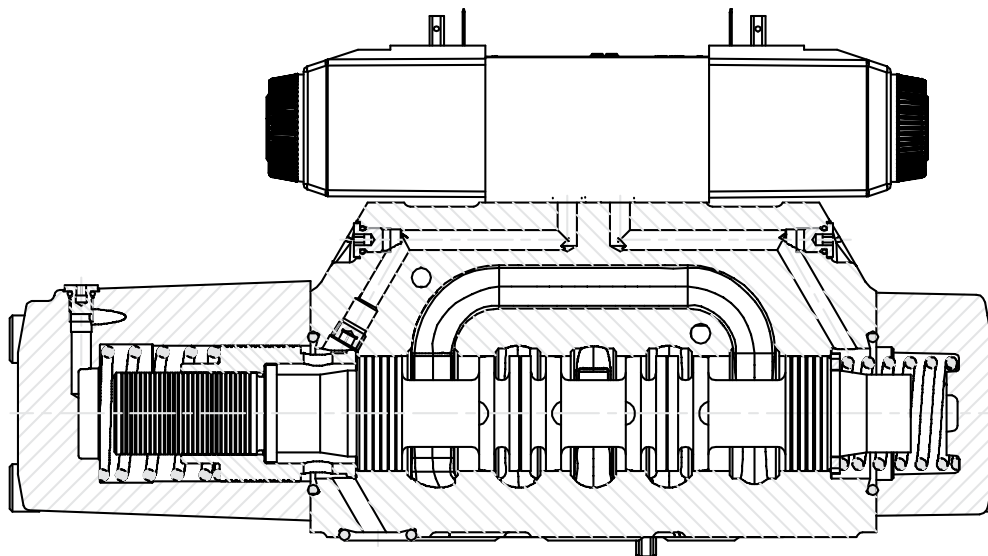
210 bar (3000 psi) tank line rating .

Each valve contains a mainstage spool which is positioned in the valve by special arrangement . The four arrangements are:

Spring offset - For single stage operation, one spring returns spool to an offset position . For two-stage operation, springs and washers are removed from main stage and offset action is obtained from pilot valve .

Spring centered - Spring and washer are located on both ends of main stage spool to control centering .

No spring for DG3 - Springs and washers are provided so in the event of pilot pressure failure, the main spool will go center .

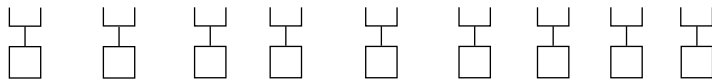


Remote pilot operated directional valve

Solenoid controlled pilot operated directional valve

DG3V-8-10 Directional Control Valve serves as a control valve

(F*)1 - DG3V - 83 - (B)4 - *109 - (L)6 - (*)7 - (*)8 -



☐ Seals

☐ Spool control modifications

F35 for fire resistant fluids

1 Stroke adjustment (both ends)
(available on C & B lank (no spring) models)

F65 for water glycol .2

2 Pilot choke adjustment (available on all models)

☐ Directional control valve

3 Pilot choke and stroke adjusters (both ends)

DG3V Subplate mounted; pilot operated remote operator

(available on C & Blank (no spring) models)

Pressure rating 350 bar (500 psi) for all ports .3

Stroke adjusters on cylinder A end only

☐ Valve size

(available on A, C & Blank (no spring) models)

8 Valve size CE TOP 8, NFPA D085

7 Stroke adjusters on cylinder A end only

(available on A, C & Blank (no spring) models)

☐ Spool types Please refer functional symbols for spool types .6

8 Stroke adjusters on cylinder 'B' end only
(available on AL, C, & Blank (no spring) models)

27 If both are required (available on A, C, & Blank
(no spring) models)9

☐ Spool spring arrangement

☐ Check valve in pressure port

A Spring offset to cylinder 'A'

K0,35 bar (5 psi) check

A Spring offset to cylinder "B" remove section 7

Q2,42 bar (35 psi) check

C Spring centered

R3,45 bar (50 psi) check

Pressure centered

S5,20 bar (75 psi) check10

☐ Design number Subject to change without notice
shown for design numbers 10 through 19

V-E

Model

(F*)-DG5V-81 - * - (B)3- *4 - **5 - (**)6- (*)7- P**8- (E)9- (T)10 (*)11 (V)12 M13 * * * *14 - (L)15 (*)16 **17 1018

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

☐ Flag symbol

MElectrical options and features14

☐ CoilType

UIISO4400, DIN43650 connector

U1ISO4400 fitted with PG11 plug

KUTop exit flying lead (150mm)

or timer (Amp) connector

ch connector

hread wiringing

T thread

V-E

☐ Indicator lights

BlankNone

LSoleid indicator lights•

• Flying lead coil type only13

☐ Surge suppressor/ damper

D1Diode positive bias

D2Negative bias

D7Transorb type14

☐ Coil ratingSee Page 7 for circuit details

B110V AC 50Hz/120V AC 60 Hz

BL110V 50 Hz/120V 60 Hz

50 Hz/240V AC 60 Hz

☐ Design number

cylinder or the rotation of a fluid motor.

Pressure centered models

V-E

Performance characteristics

Shift times

Shift times are defined as the time from pilot pressure

flow, and the pilot pressure. (The "9" main spool will not ensure sufficient pilot pressure in the center position for internal pilot pressure models) .

Pressure centered models:

(At spring centered valve flow rates).

Caution: of oil in a common tank line serving these and other

valves can be sufficient enough to cause inadvertent shifting of these valves . This is very critical in the no- spring detented valves . Separate tank lines or a vented manifold with a continuous downward path to tank is necessary .

Note: sliding spool valve, if held for long periods of time, may

stick and not spring return due to fluid residue formation and therefore, should be cycled periodically to prevent this from happening.

Shifting action

Spring offset models

Spring centered models

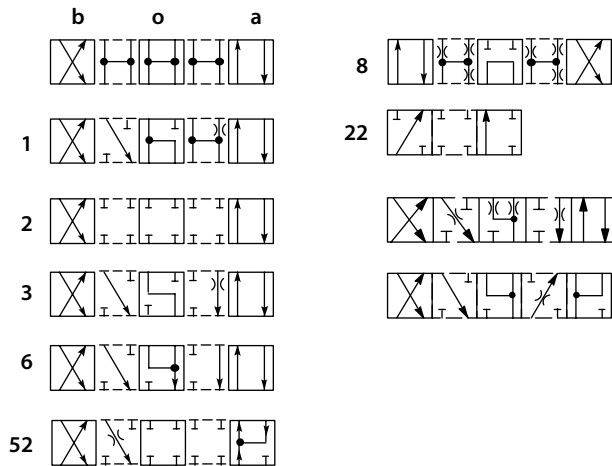
No-Spring models

spring centered flow rates), but will not drift to a reversal of flow position. The pilot stage will maintain detented position.

When used as a normal 4-way valve, consult your Danfoss representative

Application notes

Spool types



In the detailed and simplified symbols on this and the previous pages, the transient positions are omitted for simplicity.

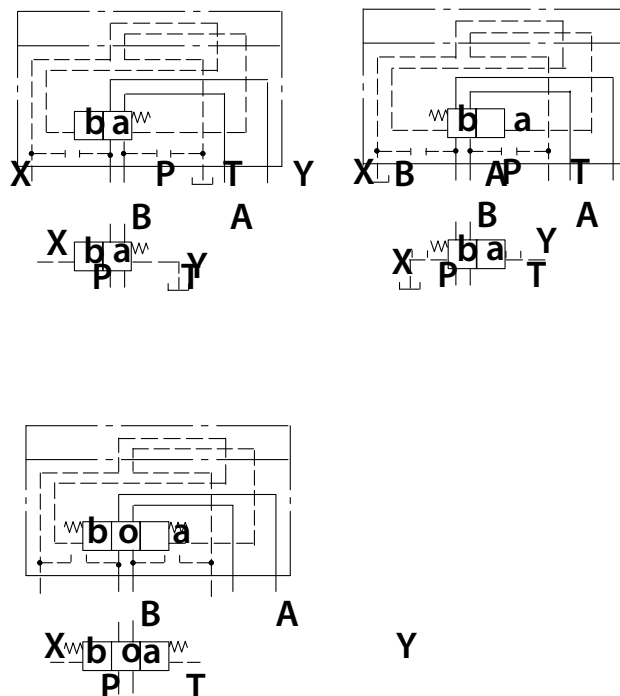
2. In certain 2-position valves the "o" position becomes an additional transient, i.e. in DG5V-8-*A(L) and DG5V-8-*N valves.

Your Danfoss representative can provide further details.

V-E

DG3V-8 pilot operated models

Comprehensive and simplified symbols



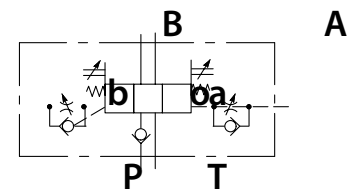
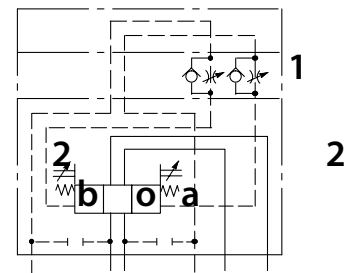
DG3V-8 options The following are shown in a DG3V-8-*C example:

1. Pilot choke module

2. Stroke adjusters at either

or at both ends (shown at both ends in example) One or more options can be built into any DG series valve.

any DG series valve



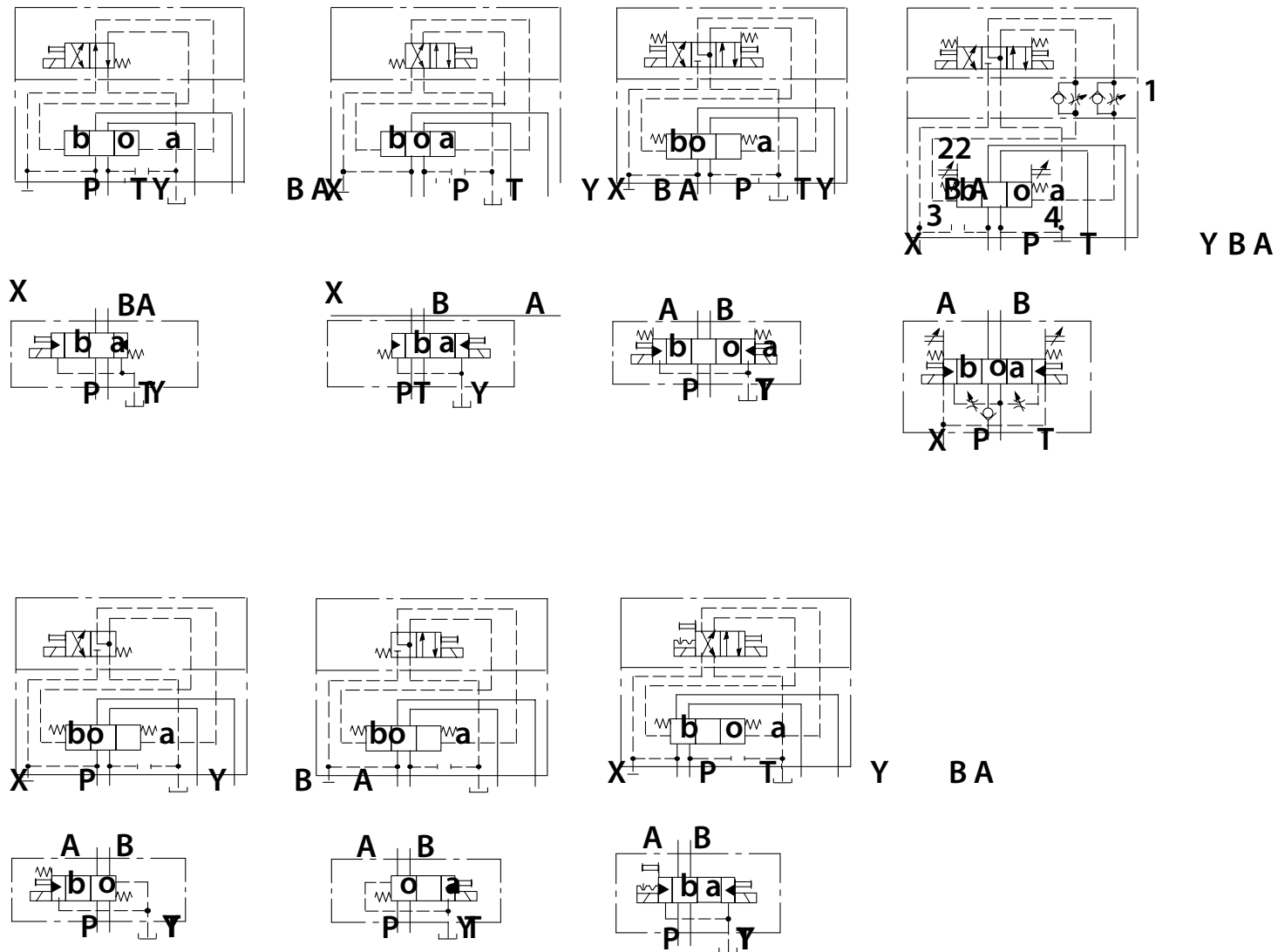
Notes:1.

Spool type B and T for B position 2 transients

DG5V-8, solenoid controlled, pilot operated models

Comprehensive and simplified symbols shown configured for external pilot

V-E



Functional symbols

XP T Y BA

pressures" are 150 Electrical information see 143 in "model

Operational

Maximum pressures:

V-E

De-energizing

24V DC	110V 50 Hz	15 (218)	75	40	
		50 (730)	50	40	
		150 (2180)	40	40	
		210 (3000)	40	40	
		250 (3600)	40	40	
		15 (218)	90	45	▲
		50 (730)	65	45	▲
		150 (2180)	55	45	▲
		210 (3000)	55	45	▲
		250 (3600)	55	45	▲



▲ In pure switched circuit conditions, devoid of the effects of any suppression diodes and full-wave rectifiers.

DG3V-8-*/B(L)/*C	7,3 (16.1)	◆
DG5V-8-*/B (AC voltages)	8,4 (18.5)	◆
DG5V-8-*/B (DC voltages)	8,5 (18.7)	◆
DG5V-8-*/C/N (AC voltages)	8,7 (19.2)	◆
DG5V-8-*/C/N (DC voltages)	9,1 (20.0)	◆



▲ In pure switched circuit conditions, devoid of the effects of any suppression diodes and full-wave rectifiers.

Operating data

6 SUS) and a specific

gravity of 0.87.

Maximum flow rates

Performance based on full power and operating at 90% rated voltage.

Pressure drop & malfunction flow

The following table provides appropriate pressure drop curve

and malfunction flow curve between ports for each spool type.

Use the following example to determine pressure drop for a selected spool.

Example: Pressure drop for Type 7 spool.

Using the table find numeral 7 in the spool type column.

right of numeral 7 find the reference curve 2 (from pressure

drop curve chart at bottom of page) under P

The pressure drop for Type 7 spool would be obtained on curve 2.

would be found on curve 1 (from malfunction flow curve chart

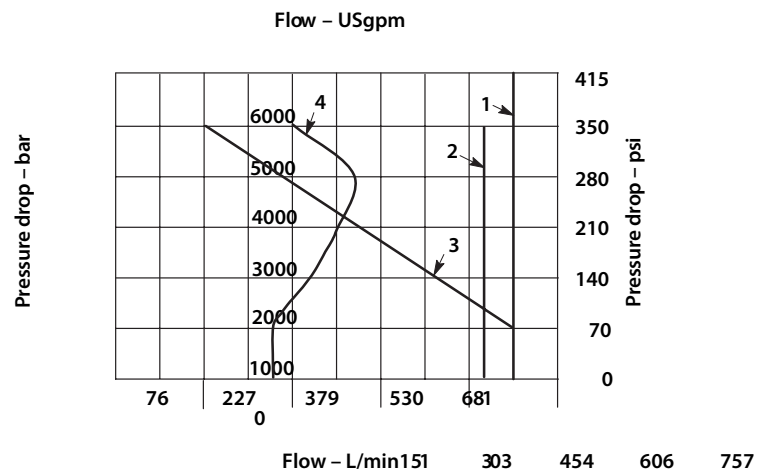
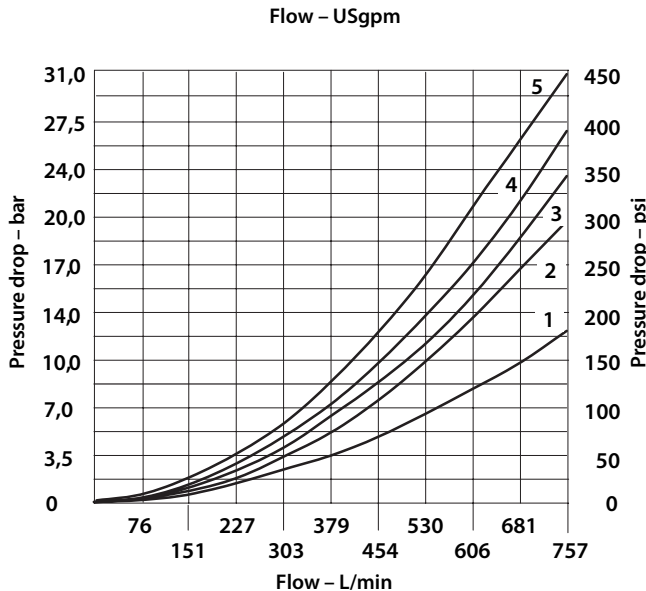
at bottom of page).

1. Figures in the pressure drop chart give approximate pressure drop (P) when passing 473 l/min (125 USgpm) flow (Q) of 35 cSt (164 SUS) fluids(s) having 0.865 specific gravity.

2. For any other flow rate (Q1), the pressure drop (P1) will be

→ A	B→T	P→B	A→T	P → T in center	2	2	2
				1	1	2	1
				2	1	2	1
				3	1	2	1
				8	4	3	4
				33	1	3	1
				35	See		1
					page 28		2
				52	2	-	4
							4

V-E



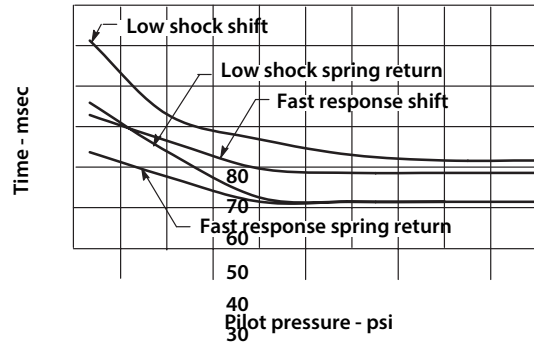
Perfo

Response time

The response time shown in the charts are defined as the time

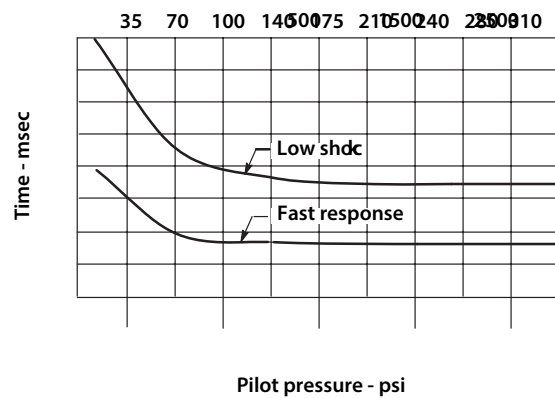
Offset to offset

Pilot pressure - bar

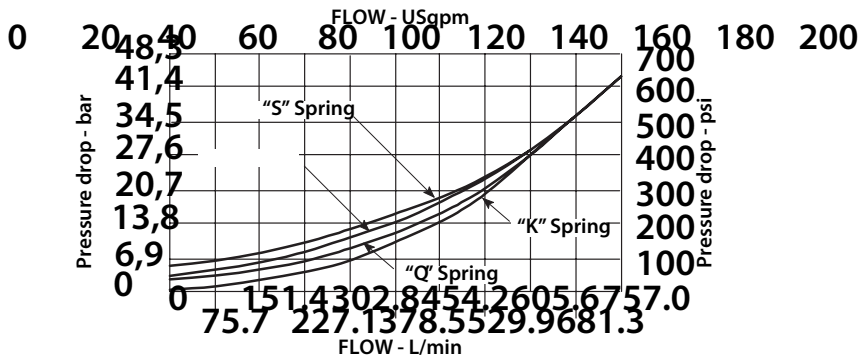


Center to offset

Pilot pressure - bar



Pressure drop across check valve



Performance data

Pressure drop & malfunction flow

and malfunction flow curve between ports for each spool type.

Use the following example to determine pressure drop for a selected spool.

Example 1: Pressure drop for Type 7 spool

Using the table find numeral 7 in the spool type column.

To the right of numeral 7 find the reference curve 2 (from pressure drop curve chart at bottom of page) under P column.

The pressure drop for Type 7 spool would be obtained on curve 2.

For malfunction for numeral 7 would be found on curve 1 (from malfunction flow curve chart at bottom of page).

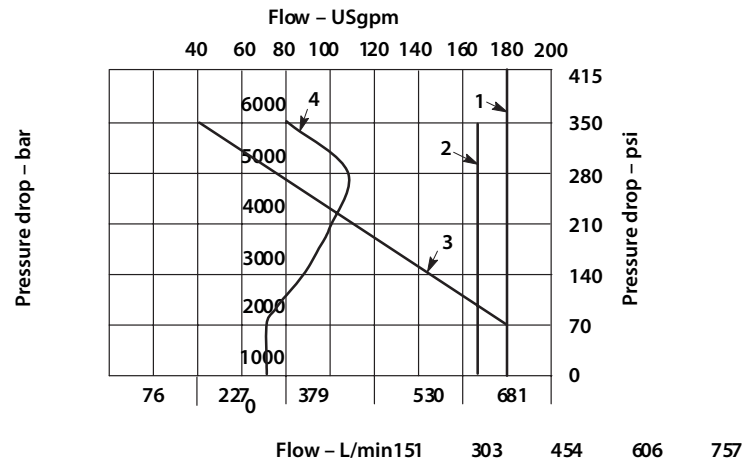
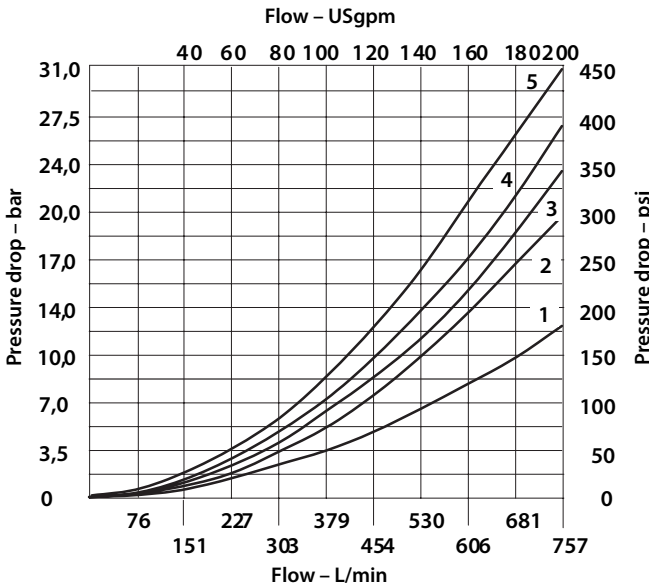
1. Figures in the pressure drop chart give approximate pressure drop (ΔP) when passing 473 l/min (125 USgpm) flow (Q) of 35 cSt (164 SUS) fluids(s) having .865 specific gravity.

2. For any other flow rate(Q1), the pressure drop ($\Delta P1$) will be

	A → B	B → T	P → B	A → T	P → T in centre	20
	1 →	2 →	2 →	2 →	3 →	1
1	1	2	1	3	2	3
2	1	2	1	1	-	2
3	1	2	1	4	-	2
6	1	3	1	4	-	1
8	1	3	4	2	5	1
33	1	3	1	2	-	2
35	1	3	1	2	-	2
52	2	-	4	4	-	1

See page 165

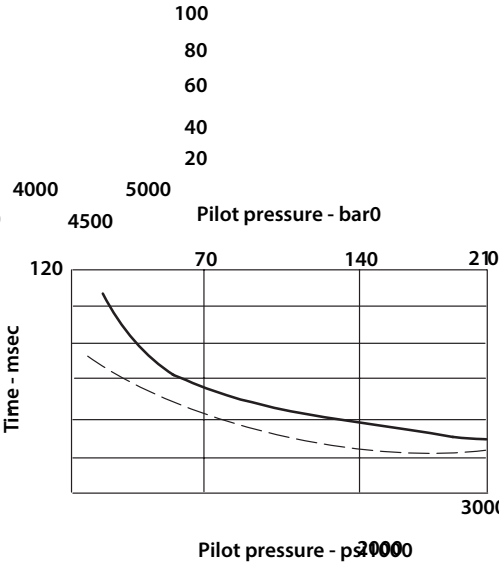
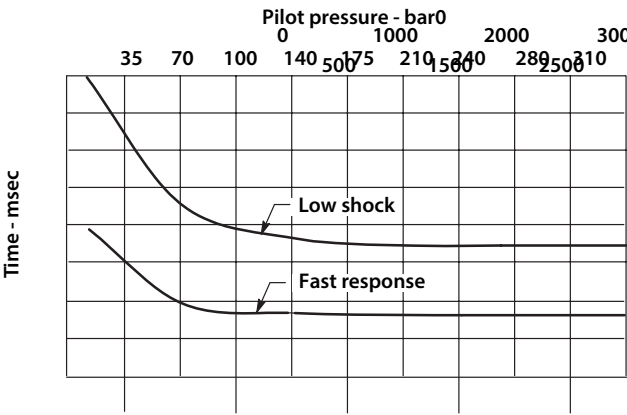
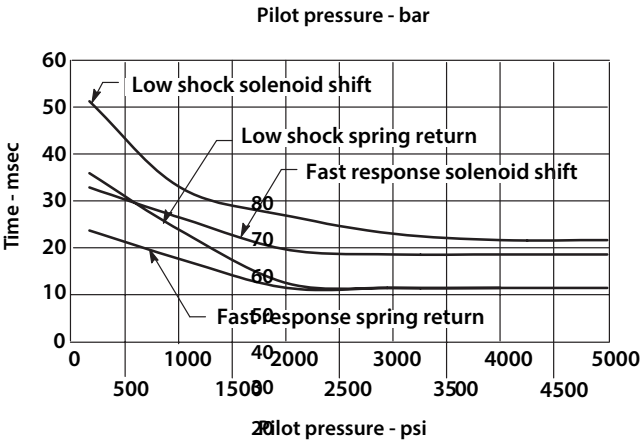
V-E



Perfo

Response times are defined as the time from solenoid

V-E

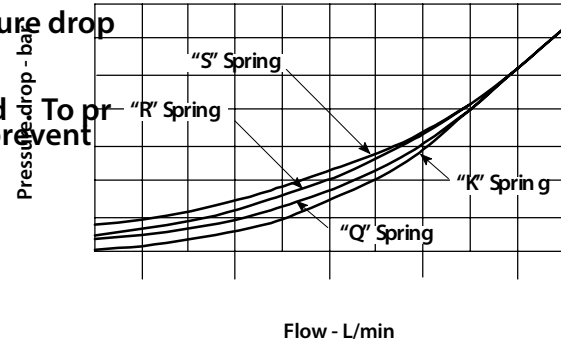


Performance data

Pressure drop across check valve

Flow - USgpm

→ To drop the valve in center condition, pressure drop through the check, plus the pressure at tank port .
For proper operation, total pressure drop must be greater than the minimum required pilot pressure (see table) . To prevent reverse flow from a cylinder port to pressure port. If using as reverse flow check, maximum reverse pressure is limited to 210 bar (30 psi) .



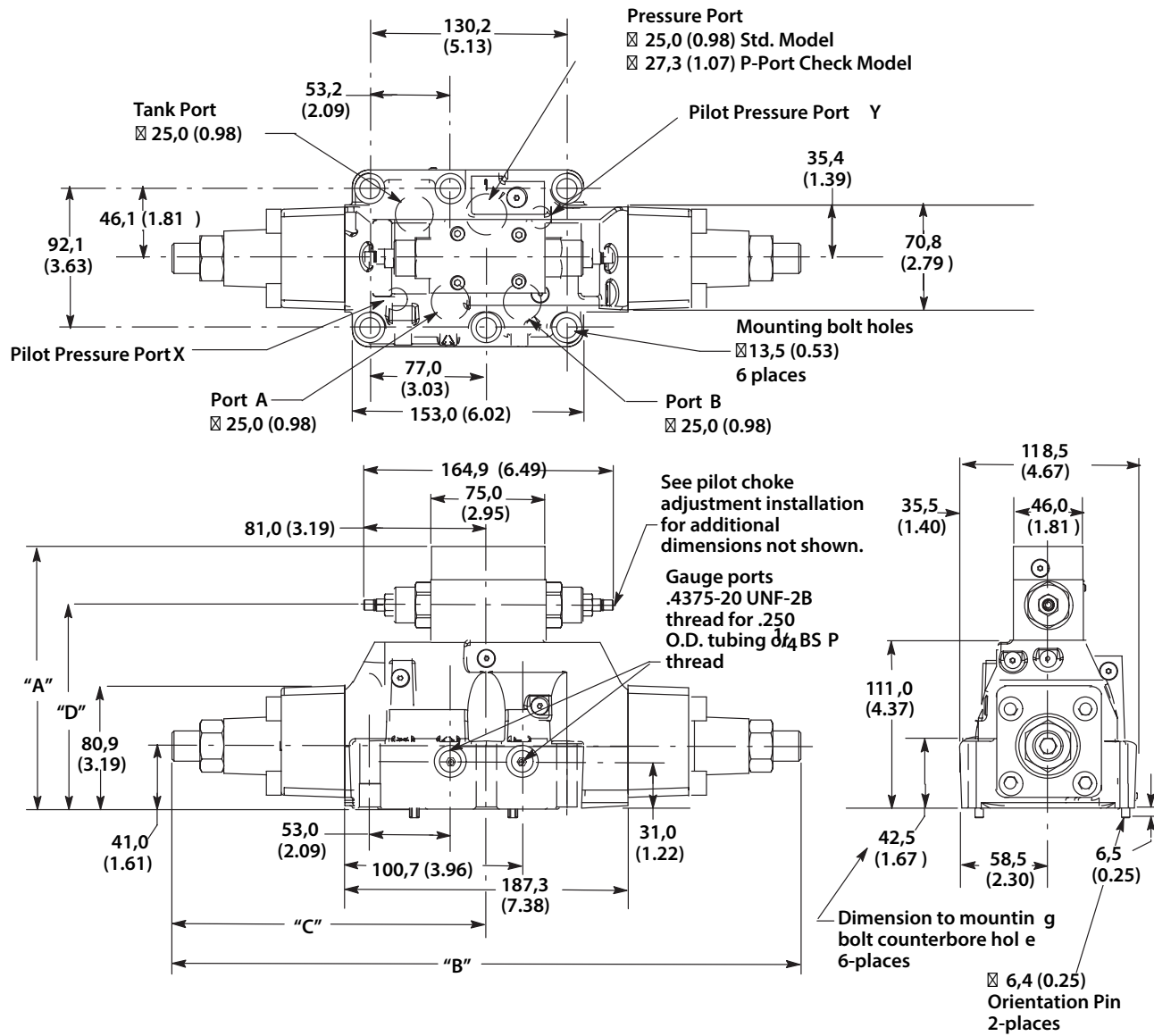
Pressure drop - psi

V-E

Optio

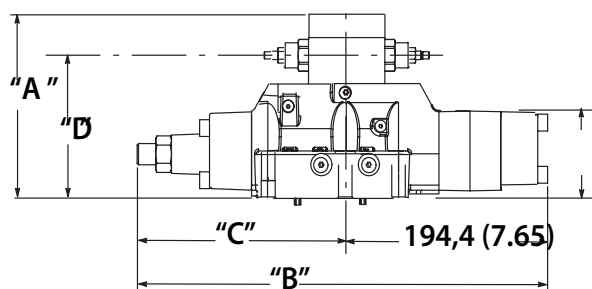
DG3V-8-(C)*-*-10 spring centered model Millimeters (inches)

V-E

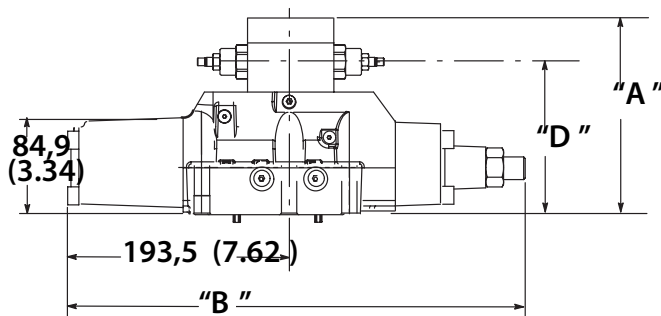


Installation dimensions

DG3V-8-(L)-*-*-10 spring offset modelMillimeters (inches)



DG3V-8-D-*-*-10 pressure centered model Millimeters (inches)



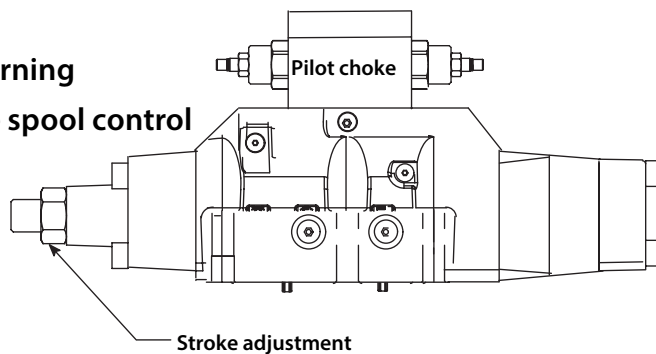
V-E

Pilot choke DGMFN-3-Y-A2W-B2W-41

pool, lowering the possibility of large flow transients in the circuit. It is adjusted by backing off locknuts and turning adjusting screws inward to decrease rate of spool travel and outward to increase spool travel rate. See spool control modifications in model code.

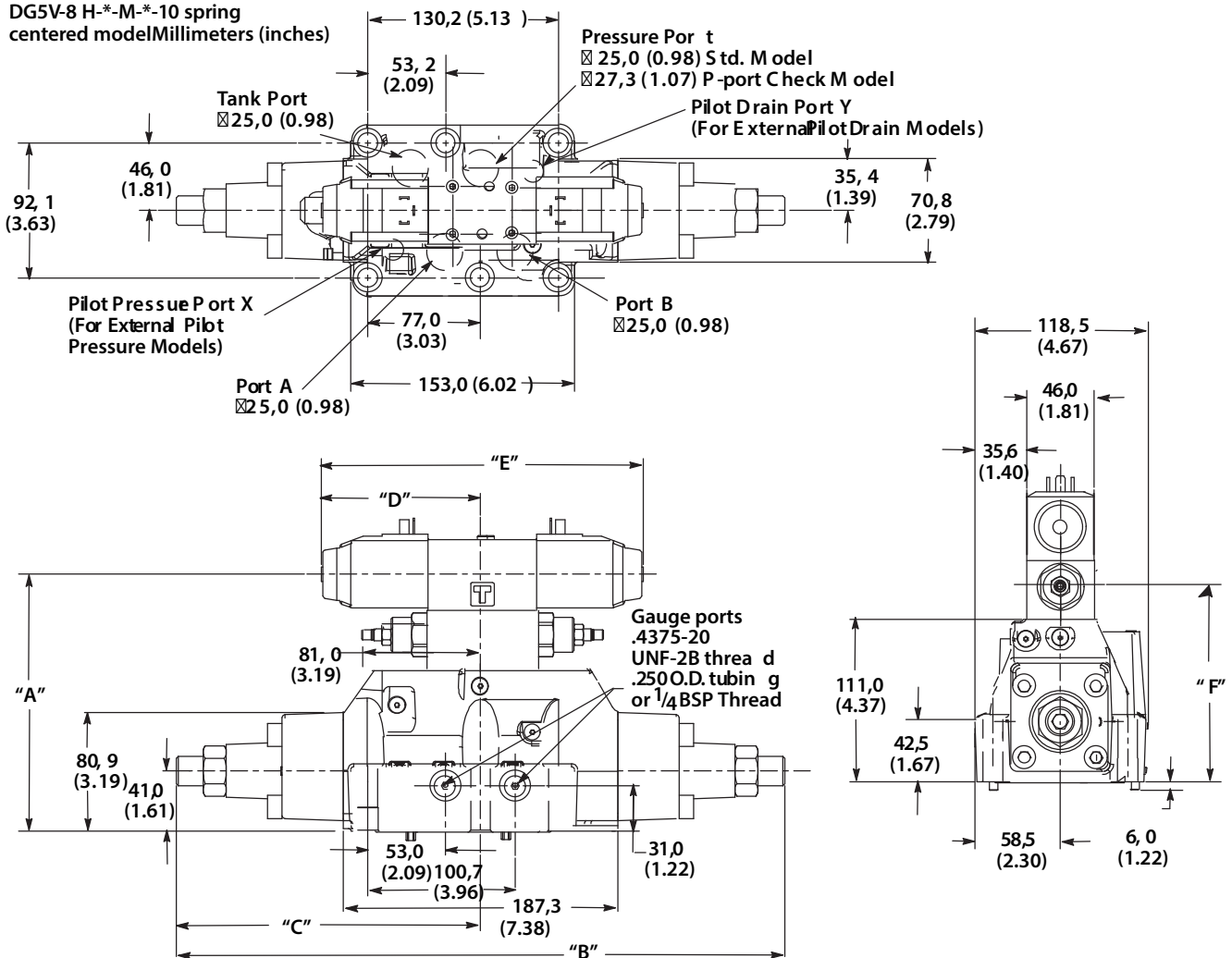
Stroke adjustment

model code .). See spool control modifications in



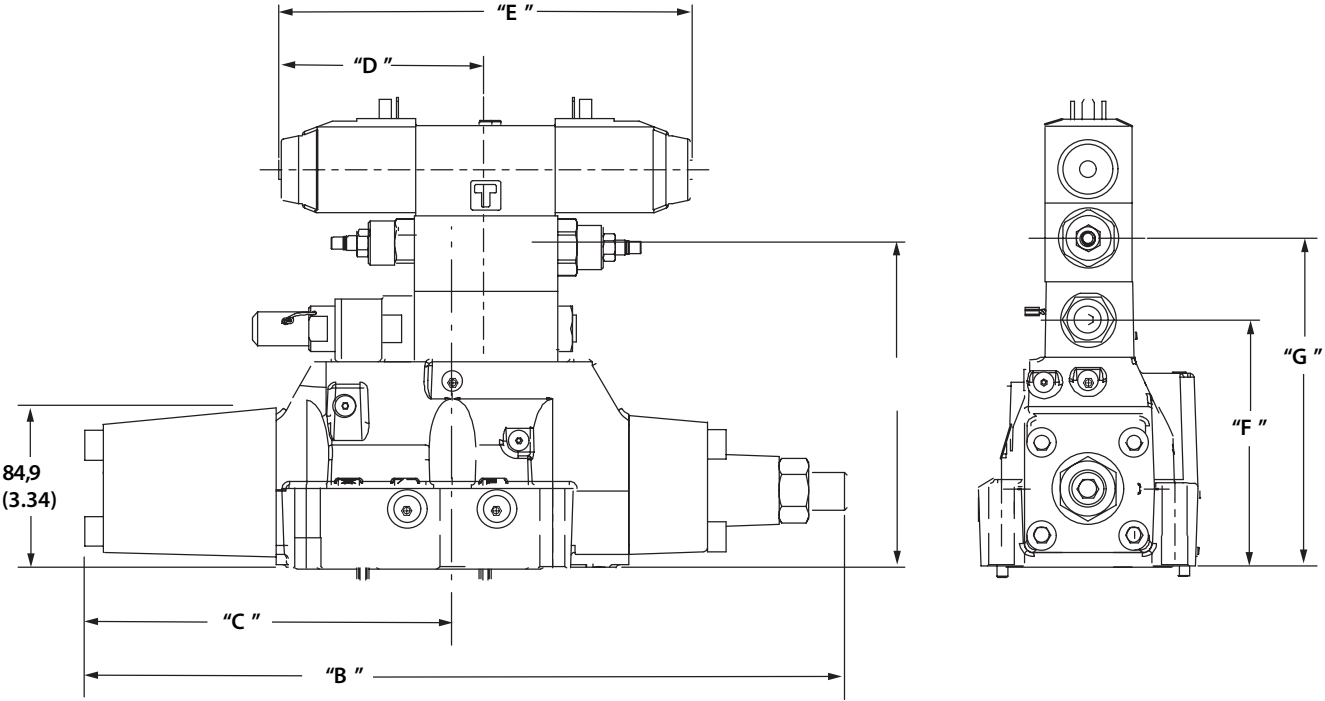
DG5V-8 H-*-M-*-10 spring
centered model

V-E



Installation dimensions

V-E



DG5V-8-A(L)-*-10 spring offset model

Millimeters (inches)

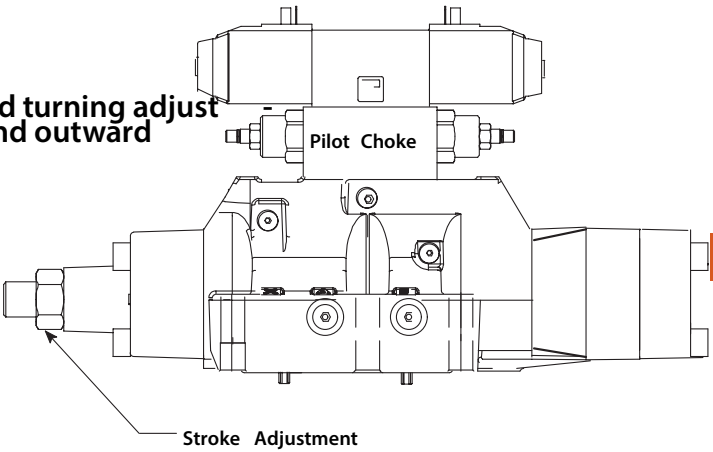
DG5V-8-A(L)-*-#10 spring offset model											
Millimeters (inches)											

spool, lowering the possibility of large flow transients in the circuit. It is adjusted by backing off locknuts and turning adjusting screwward to decrease rate of spool travel and outward to increase spool travel rate.

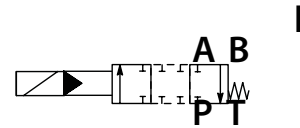
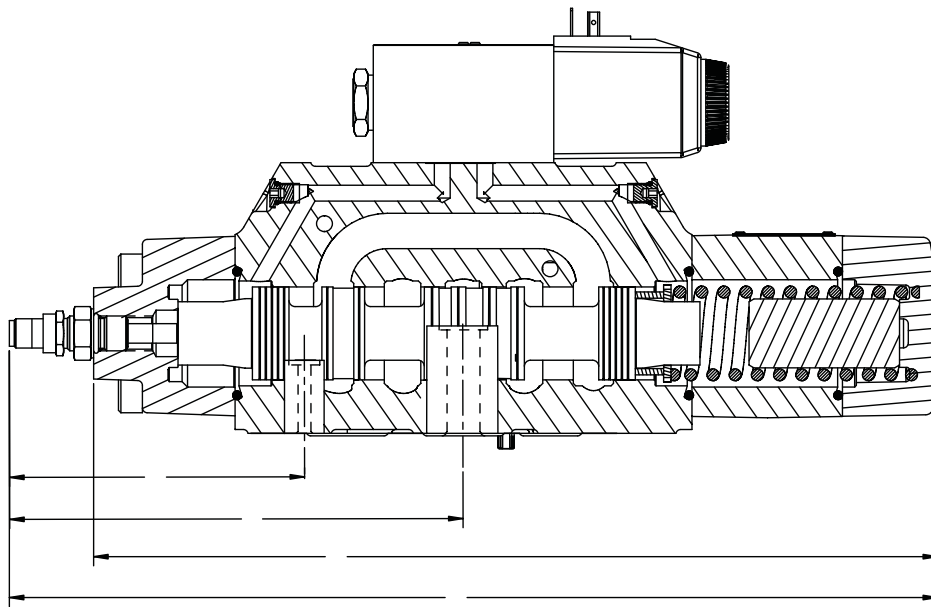
Stroke adjustment

model code .

See spool control modifications in



V-E



Installation dimensions

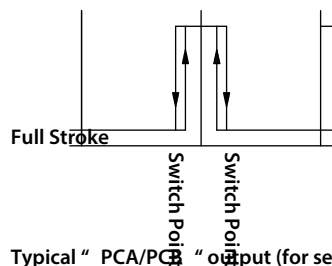
Main Stage Hydraulic Symbol

DG5V-8 with main stage spool monitoring switch "PC*" or "PD*" Models (LVDT Style Switch) Millimeters (inches)

Full Stroke

Full Stroke

V-E

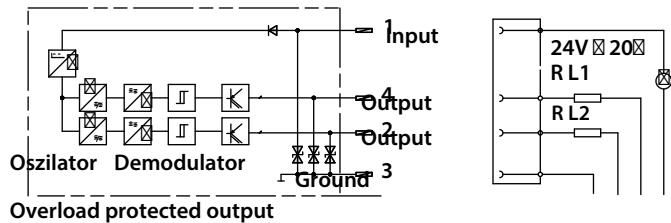


Typical " PCA/PCB " output (for sensing center position)

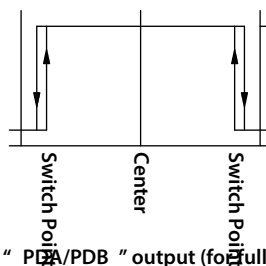
Signal 0 Voltage at pin 2/4 $\approx .8V$ Signal 1
Signal 1 Voltage at pin 2/4 $\approx V_s - 2.5V$

Full Stroke

Electrical schematic and Mating connector detail



R L1, R L2 e.g. Coil Resistance of the switch relay ≈ 60 OHMS



Typical " PDA/PDB " output (for full shift sensing) Center

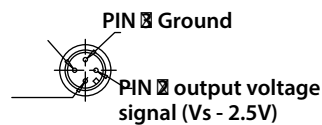
Signal 0 Voltage at pin 2/4 $\approx .8V$ Signal 1
Signal 1 Voltage at pin 2/4 $\approx V_s - 2.5V$

Connector detail Signal 0

Signal 0

PIN 1 (Vs - 2.5V)
output voltage

PIN 1 Input Voltage (Vs)
 $\approx 4VDC \approx 20\Omega$

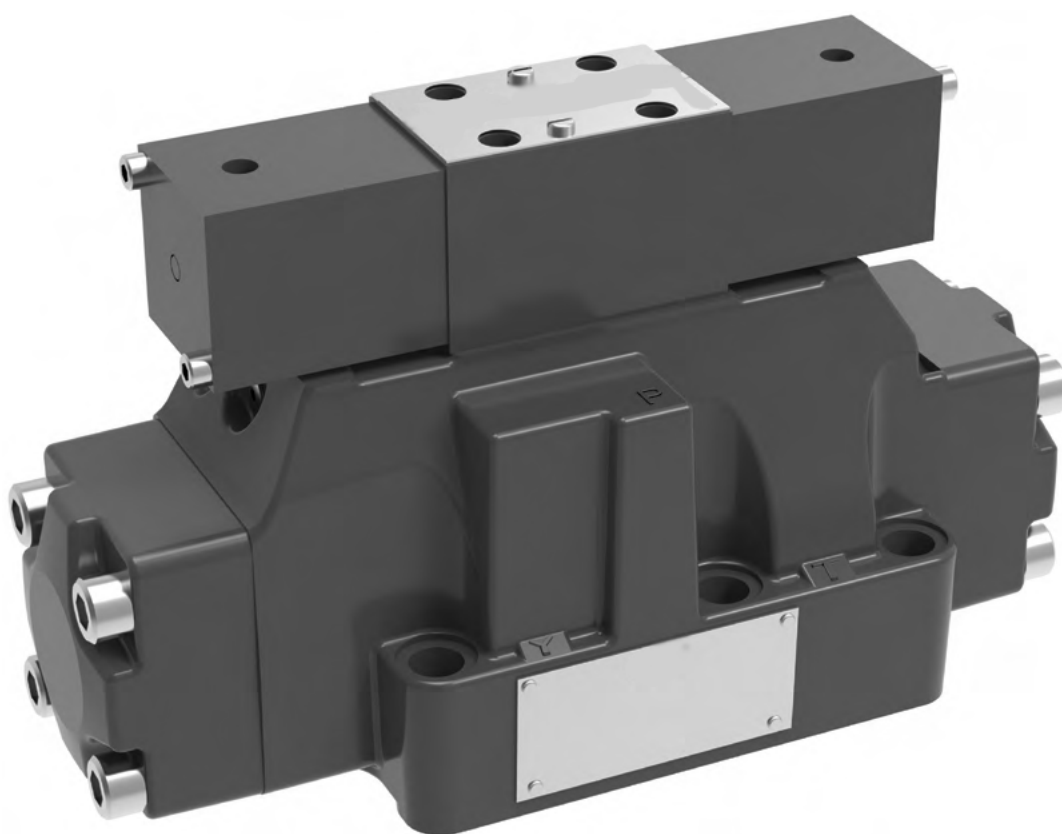


Pilot valves are identified in the model code by the following

V-E

Minimum pilot pressure requirements

Pilot valves

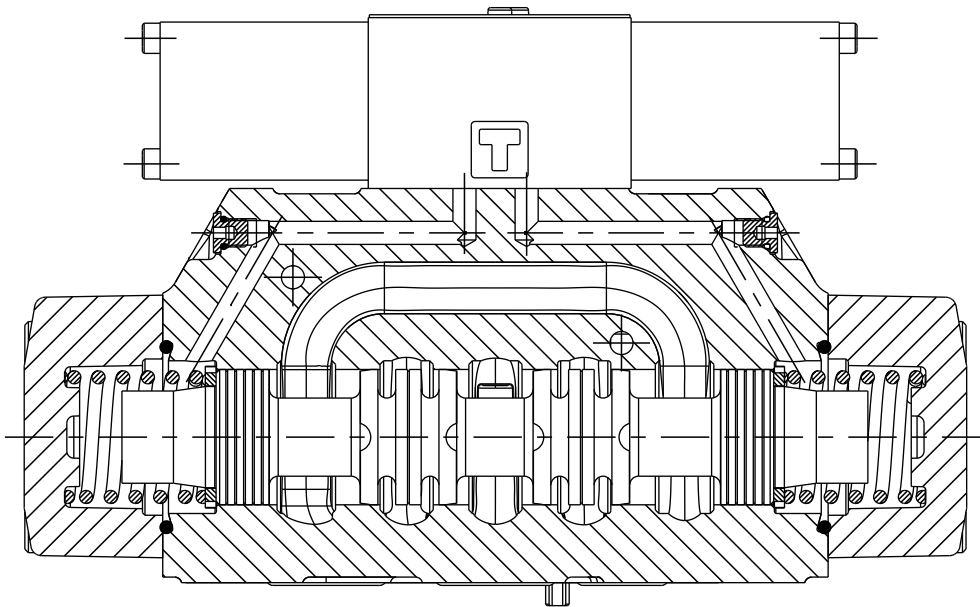


General description

Features and benefits

flow. The valves are generally used to control large flows up to **700 l/min (185 USgpm)** at **350 bar** and provide low pressure drops. The range includes:

V-E



Air controlled pilot operated directional valve

(F*)1 - DG3V - 83 - - 109*6 - (*)7 - (*)8 -



☐ Seals

BlankStandard seals

F35 for fire resistant fluids .

F65 for water glycol .2

☐ Spool control modifications

BlankNone

1Stroke adjustment (both ends) (available on C & Blank (no spring) models)

2Pilot choke adjustment (available on all models)

☐ Directional control valve

3Pilot choke and stroke adjusters (both ends) (available on C & B blank (no spring) models)

DG3VSubplate mounted; pilot operated remoteoperator on C & B blank (no spring) models)
Pressure rating 350 bar (500 psi) for all ports 75 stroke adjusters on cylinder A end only (available on A, C & Blank (no spring) models)

☐ Valve size

8Stroke adjusters on cylinder 'B' end only (available on A, C, & Blank (no spring) models)

8Valve size CE TOP 8, NFPA D085

☐ Spool typesPlease refer functional symbols used (table 6) for A, C & Blank (no spring) models)9

☐ Check valve in pressure port

BlankNone

K0,35 bar (5 psi) check

Q2,42 bar (35 psi) check

R3,45 bar (50 psi) check

S5,20 bar (75 psi) check10

☐ Spool spring arrangement

BlankNo spring

A5Spring offset to cylinder 'A'

C5Spring centered

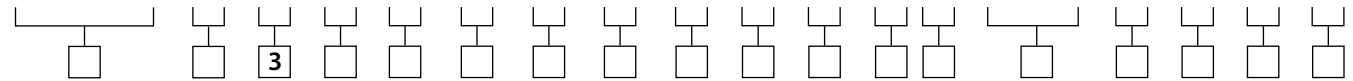
DPressure centered

☐ Design numberSubject to change without notice
shown for design numbers 10 through 19 .

V-E

Model

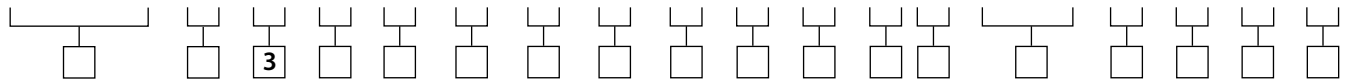
(F*)-DG5V-81 - * - - *4 - (E)5 - (**)6 - (*)7- P**8 - - (T)10 (*)11 (V)12M13 * * * *14 - (L)15 (*)16 **17 1018



☐	Special seals(Omit if not required .)	☐	Main stage spool monitoring switch
☐	F35 for fire resistant fluids .	☐	BlankNone
☐	F65 for water glycol .2	☐	PPAOfsetting proximity switch "A" port end (not available on "D", pressure centered, and 1/3/7/27, stroke adjust models)
☐	Pilot valve type	☐	PPBOfsetting proximity switch "B" port end (not available on 1/3/8/28, stroke adjust models)
☐	HCETOP 3, High performance3	☐	PPDOfsetting proximity switch both ends (not available on "D", pressure centered, and 1/3/7/8/27/28, stroke adjust models)
☐	Spool typesPlease refer functional symbols on page 7 for spool types .4	☐	NoteThe spool position monitoring switch shown on this technical document is CE marked and certified and complies to European Standard EN 61000-6-4: 2001 (Emissions) for Class A and European Standard EN 61000-6-2: 2001 (Immunity) .9
☐	Spool spring arrangement	☐	External pilot pressure
☐	AOffset, end to end (P to B when shifted)	☐	EEternal pilot pressure .
☐	AOffset, end to end, left hand build (P to A when shifted)	☐	BlankFor internal pilot pressure models .10
☐	BOffset, end to end, single solenoid (P to B when shifted) .	☐	Internal pilot drain
☐	BOffset, end to end, left hand build (P to B when shifted) .	☐	Internal pilot drain to 'T' port .
☐	Manual override option	☐	BlankFor external pilot drain models .11
☐	BlankPlain override in solenoid end(s) only	☐	Check valve in pressure port(Omit if not required .)
☐	HWater-resistant manual override on solenoid end(s)	☐	K0,35 bar (5 psi) check
☐	ZNo override in non-solenoid end of single-solenoid valves .	☐	S5,20 bar (75 psi) check12
☐	▲ No override in non-solenoid end of single-solenoid valves .6	☐	Solenoid energization identity
☐	Spool control	☐	BlankStandard arrangement for ANSI B93 .9 (i.e. energize solenoid A to follow flow P to A).
☐	OmitNone required	☐	VSolenoid identification determined by position of solenoid (i .e. solenoid A at port A end/solenoid B at port B end) .
☐	1Stroke adjustment both ends (not available on "D" pressure centered, models)	☐	Note4 and 8 type spools are always V . Solenoid energization identity is independent of mainstage porting .
☐	2Pilot choke adjustment		
☐	3Pilot choke adjustment and stroke adjustment both ends (not available on "D" pressure centered, models)		
☐	4Pilot choke adjustment on 'A' port end		
☐	5Pilot choke adjustment on "D", pressure centered		
☐	6Pilot choke adjustment on 'B' port end		
☐	7Pilot choke adjustment on 'T' port end		
☐	8Pilot choke adjustment on 'D' port end		
☐	9Pilot choke adjustment on 'A' port end		
☐	10Pilot choke adjustment on 'B' port end		
☐	11Pilot choke adjustment on 'T' port end		
☐	12Pilot choke adjustment on 'D' port end		

Model codes

(F*)-DG5V-81 - * - - *4 - **5 - (**)6(E)*7- P**8 - - (T)10 (*)11 (V)12M13 * * * *14 - (L)15 (*)16 **17 1018



☐	Flag symbol	☐	Surge suppressor damper(DC voltages only, omit if not required) Refer DG4V3 catalog for more options17
☐	MElectrical options and features14		
☐	Coil type UISO4400, DIN43650 connector U1ISO4400 fitted with PG11 plug KUTop exit flying lead (150mm) KUP4Junior timer (Amp) connector KUP5Integral Deutsch connector FPM44-Pin micro - (12mm) brad Harrison connector KUPM4LIntegral M12, 4-Pin connector FWFlying lead with 1/2" NPT thread wiring housing FTWFly. Lead wired terminal block & 1/2" NPT thread wiring housing FPA3WFly. Lead, 3 Pin connector & 1/2" NPT thread wiring housing FPA5WFly. Lead, 5 pin connector & 1/2" NPT thread wiring housing15	☐	Coil voltageSee electrical information on page 9 for voltages available . Others available upon request . B110V AC 50Hz/120V AC 60 Hz D220V AC 50 Hz/240V AC 60 Hz
☐	Indicator lights BlankNone LSolenoid indicator light•Flying lead coil type only	☐	Design number

V-E

Model

Pressure centered models:

cylinder or the rotation of a fluid motor.

Pressure centered models

V-E

(At spring centered valve flow rates).

Caution: of oil in a common tank line serving these and other valves can be sufficient enough to cause inadvertent shifting of these valves . This is very critical in the no-spring detented valves . Separate tank lines or a vented manifold with a continuous downward path to tank is necessary .

Note: sliding spool valve, if held for long periods of time, may stick and not spring return due to fluid residue formation and therefore, should be cycled periodically to prevent this from happening .

Shifting action

Spring offset models

spring centered flow rates), but will not drift to a reversal of flow position. **The pilot stage maintains detented position.**

When used less than a normal 4-way valve, consult your Danfoss representative

Spring centered models

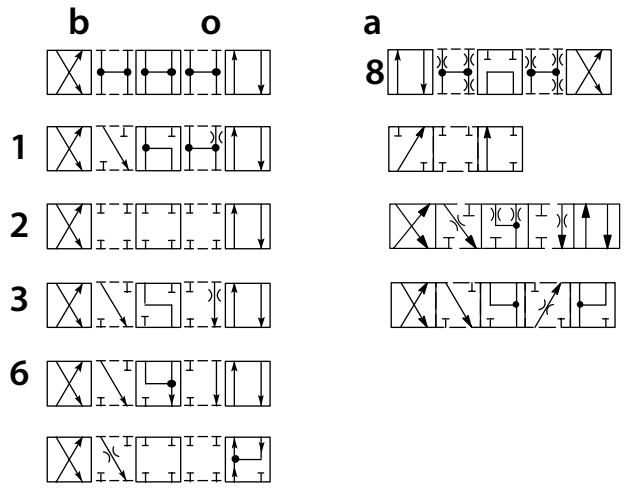
No-spring models

Performance Characteristics

Shift times

Shift times are defined as the time from pilot pressure

Application notes

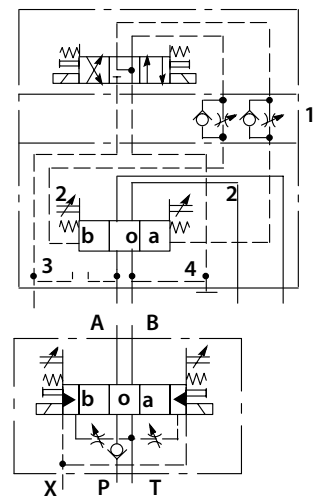
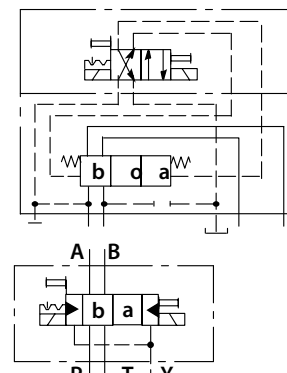
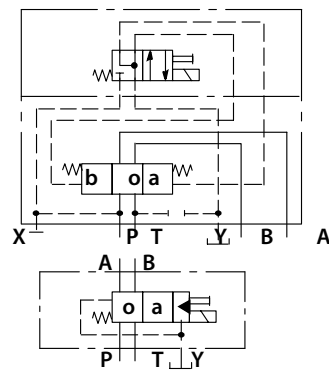
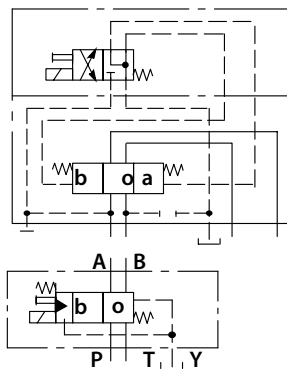
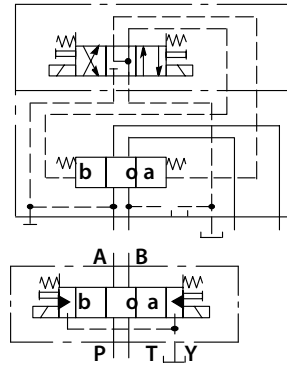
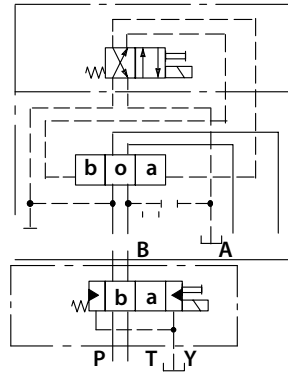
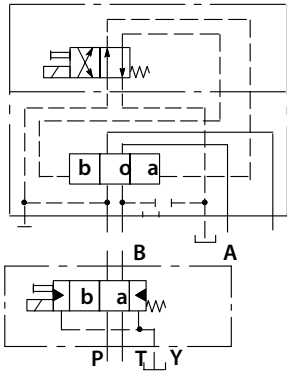


Notes:

1. In the detailed and simplified symbols on this and the

Comprehensive and simplified symbols shown configured for

V-E



Functional symbols

	▲	210 Bar
Y ☒	350 bar (5000 psi)	210 Bar
DG5V-8 valves, (internally drained)P, A, B and X	350 bar (5000 psi)	
	▲	210 Bar
T ☒	350 bar (5000 psi)	210 Bar
Maximum flow without mal-function (DG3V-8 and DG5V-8)	700 L/min (185 Usgpm)	32 Usgpm
See "Pilot Pressures" on page 191		

- ▲ The DG5V, 10 design two-stage valves have been designed to satisfy the needs of most applications . Consult your Danfoss representative about an alternative model if:
- a) Valves are required to remain pressurized for long periods without frequent switching, and /or
 - b) Back pressure on the drain port of externally drained models (or the tank port of internally drained models) is required to rise above 350 bar (5000 psi).
- * The method for verifying the rated fatigue pressure of the complete unit conforms to NFPA/T2 .6.1 R1-1991 (Catalog C/90), Fluid Power Systems and Products method for verifying the fatigue pressure rating of the pressure containing envelope .
- ☒ Internal drain models drain the pilot valve through the tank port of the mainstage . External drain models drain the pilot valve through the "Y" port of the mainstage . To provide proper operation without malfunction, the pilot pressure must always exceed tank or drain line pressure by the minimum pilot pressure required per valve and spool type (see charts on page 16) . Tank or drain line surges which would reduce this differential are to be avoided as they may cause the mainstage to shift . Mainstage tank pressure is limited to the tank line rating of the pilot valve on internally drained models (with "T" included in the model code) . Internal drains may be used with all models except pressure centered "D" models . Pressure centered models must be externally drained through "Y" and "W" ports . To achieve the maximum tank line rating of 350 bar (5000 psi) of the mainstage, an external pilot drain must be used and it is recommended that a separate line be provided directly to the tank .

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6 SUS) and a specific

gravity of 0 .87.

Maximum flow rates

Performance based on full power and operating at 90% rated voltage .

Pressure drop & malfunction flow

The following table shows appropriate pressure drop curve

and malfunction flow curve between ports for each spool type.

Use the following example to determine pressure drop for a selected spool .

Example: Determine pressure drop for Type 7 spool .

Using the table find numeral 7 in the spool type column. To

right of numeral 7 find the reference curve 2 (from pressure

drop curve chart at bottom of page) and the

pressure drop from Type 7 spool would be obtained on curve 2 . The malfunction for numeral 7 would be

found on curve 1 (from malfunction flow curve chart at bottom of page) approximately: $\Delta P_1 \propto (Q_1/Q)^2$

→ A	B→ T	P→ B	A→ T	P → T in center	0	2	2
				1	1	2	1
				2	1	2	1
				3	1	2	1
				6	1	3	1
				8	4	3	4
				33	1	3	V-E
				35	See page 191		
				52	2	-	4

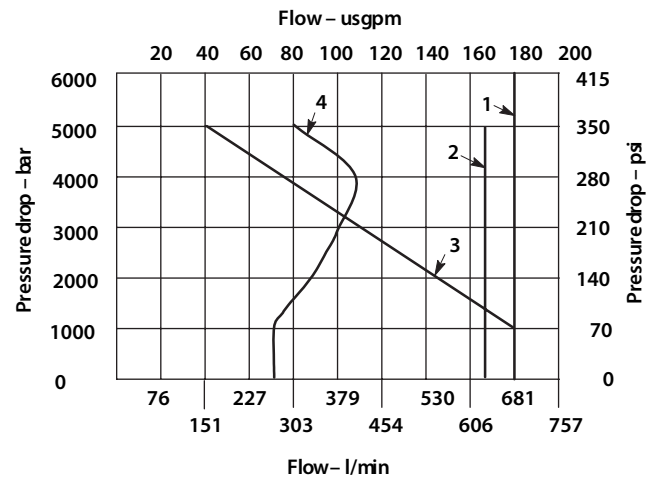
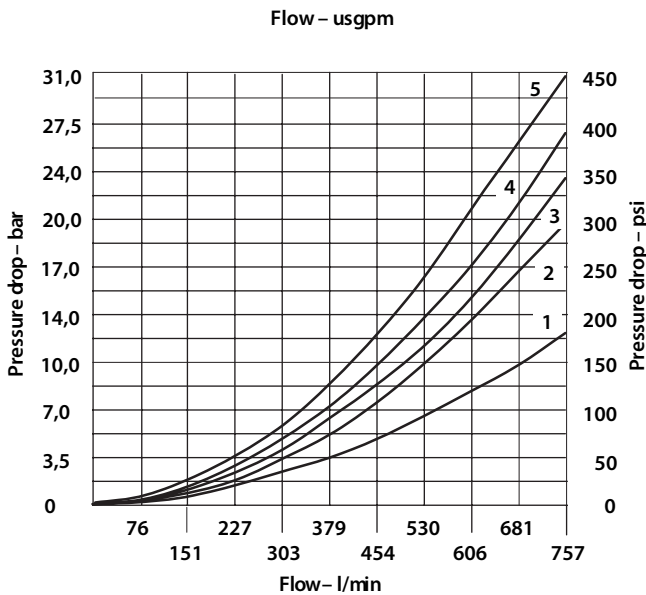
Figures in the pressure drop chart give approximate pressure drop (ΔP) when passing 473 l/min (125 USgpm) flow (Q) of 35 cSt (62 SUS) fluids(s) having .865 specific gravity .

2. For any other flow rate (Q1), the pressure drop (ΔP_1) will be $\Delta P_1 \propto (Q_1/Q)^2$.

3. For any other viscosity(s), the pressure drop (ΔP), will change as follows:

4. For any other specific gravity (G1), the pressure drop (ΔP_1) will

be approximately: $\Delta P_1 \propto \Delta P(G_1/G)$.



Pressure drop & malfunction flow

and malfunction flow curve between ports for each spool type.

Use the following example to determine pressure drop for a selected spool.

Example 1: Pressure drop for Type 7 spool

Using the table find numeral 7 in the spool type column.

To the right of numeral 7 find the reference curve 2 (from pressure drop curve chart at bottom of page) under P column.

The pressure drop for Type 7 spool would be obtained on curve 2. Malfunction for numeral 7 would be found on curve 1 (from malfunction flow curve chart at bottom of page).

1. Figures in the pressure drop chart give approximate pressure drop (P) when passing 473 l/min (125 USgpm) flow (Q) of 35 cSt (164 SUS) fluids(s) having .865 specific gravity.

2. For any other flow rate (Q¹), the pressure drop (P¹) will be calculated as follows: $P_1 = P(Q^1/Q)^2$

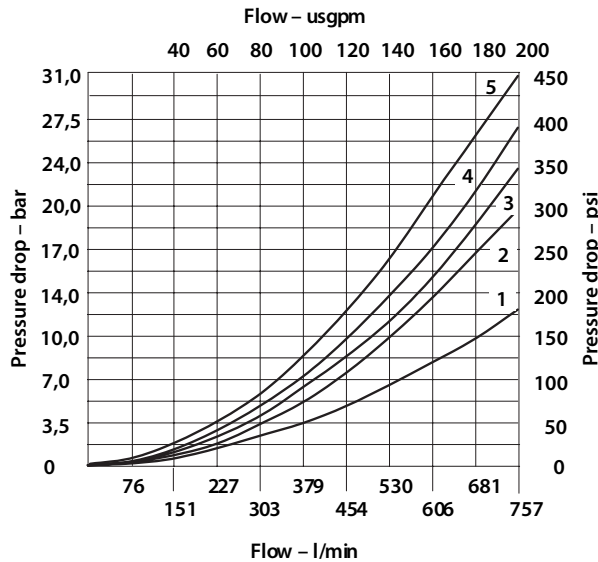
Pressure drop (P), will change

Pressure drop (P¹)

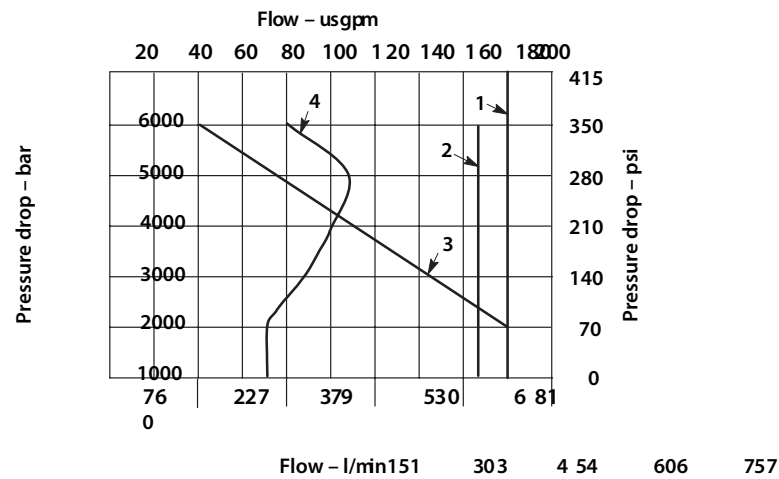
	A → B	B → T	P → B	A → T	P → T in center	20
1	1	2	1	3	2	3
2	1	2	1	1	-	2
3	1	2	1	4	-	2
6	1	3	1	4	-	1
33	1	3	1	2	-	2
39	1	3	1	2	-	2
52	2	-	4	4	-	1

V-E

Pressure drop curves



Malfunction flow curves



Perfo

Response times

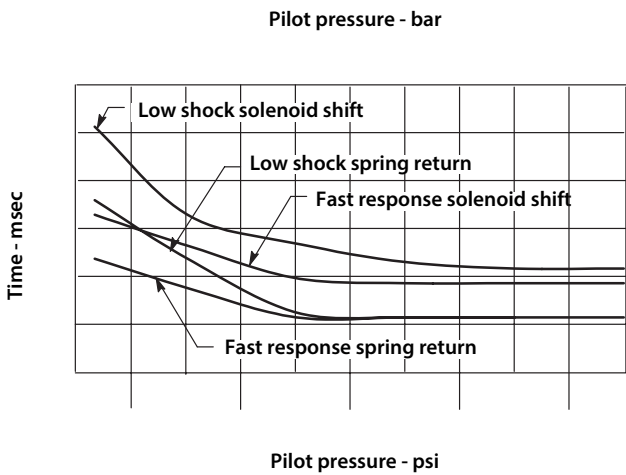
Response times are defined as the time from solenoid

Solenoid energizing

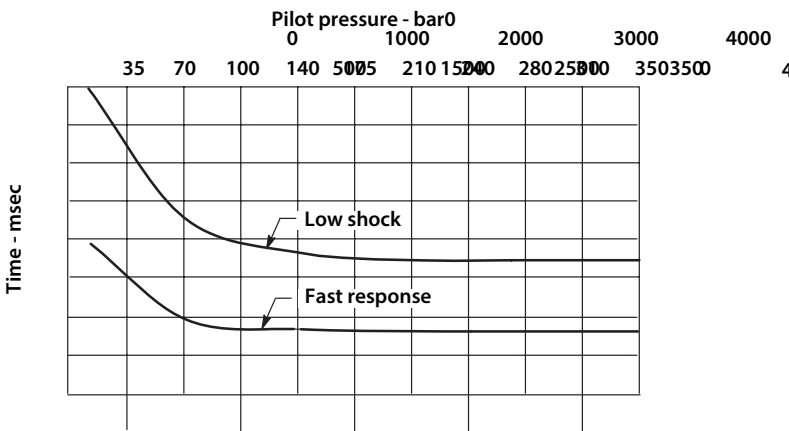
V-E

Mounting position

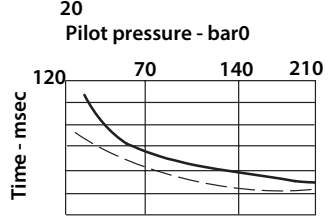
Offset to Offset



Center to Offset



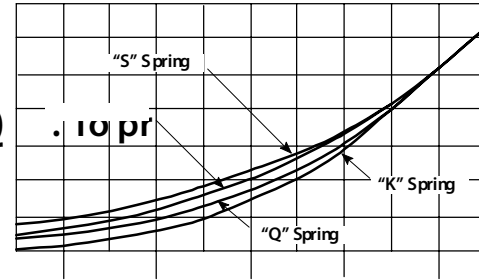
Centering times for pressure centered valves @ rated pressure (A to P or B to P)



Performance data

Pressure drop across check valve

→ Total valve in addition, pressure drop through the check valve, pressure tank port
For proper operation, total pressure drop must be the minimum required pilot pressure (see chart)
drop, a check valve pressure port can be used to prevent reverse flow from a cylinder port to pressure port. Using as reverse flow check, maximum reverse pressure is limited to 210 bar (3000 psi) .

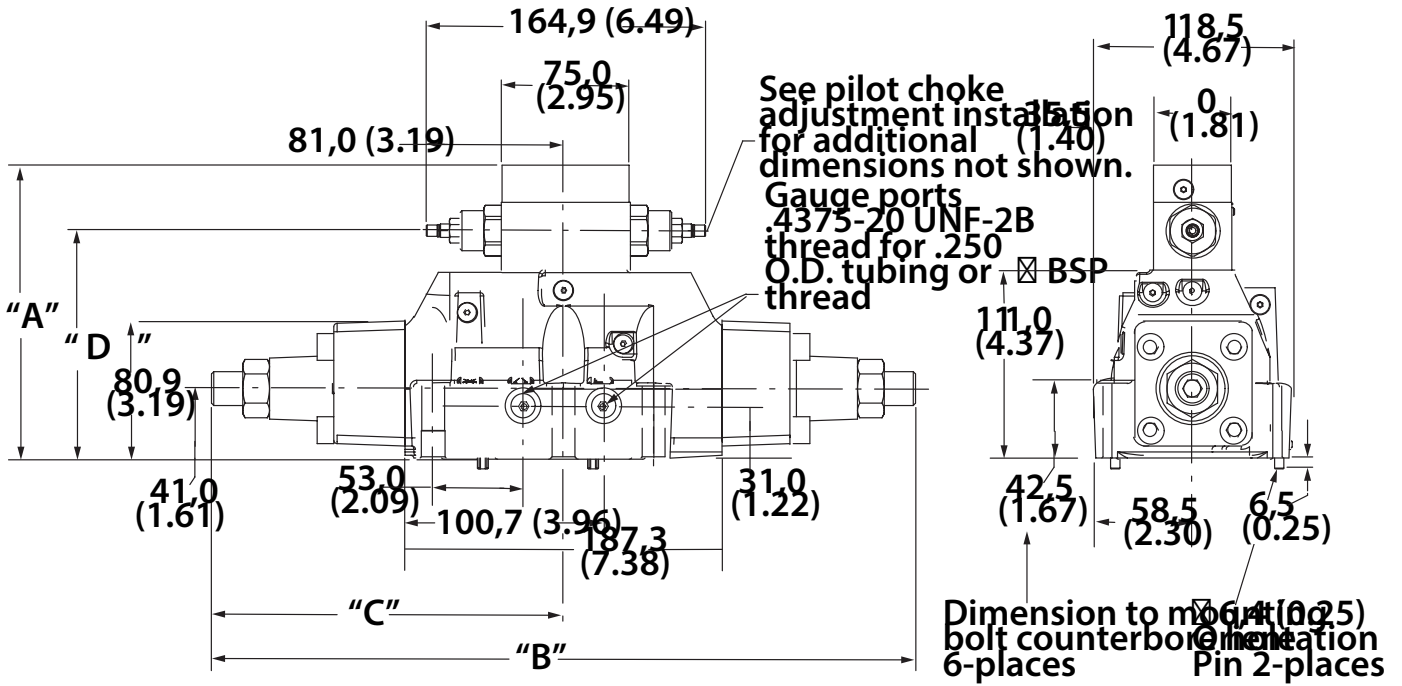
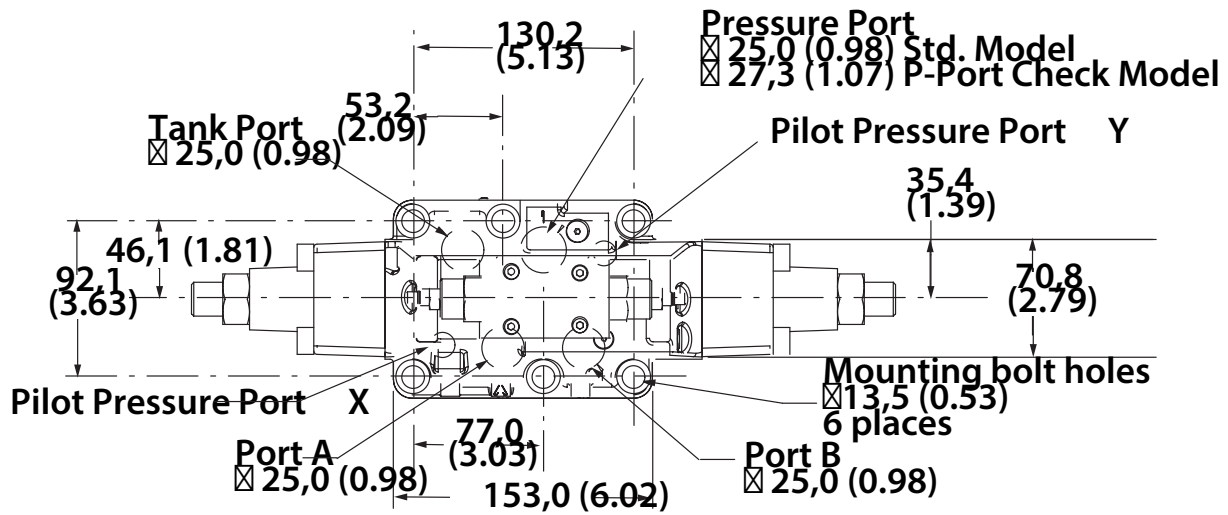


Pressure drop - psi

V-E

Optio

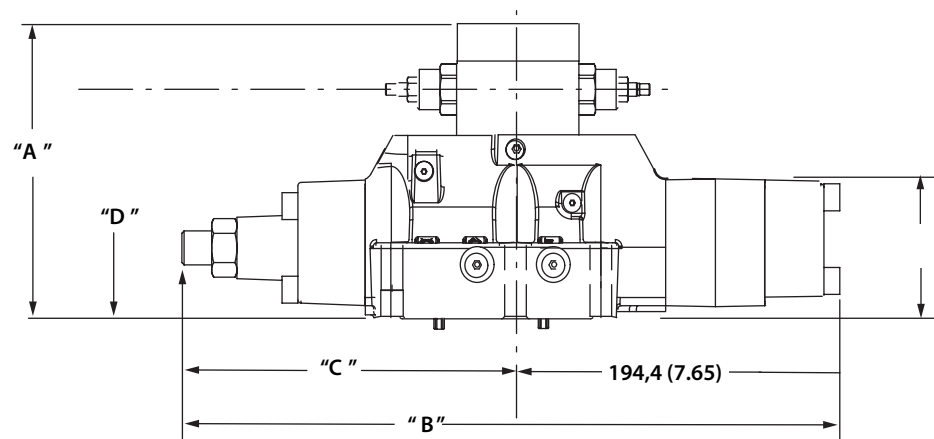
V-E



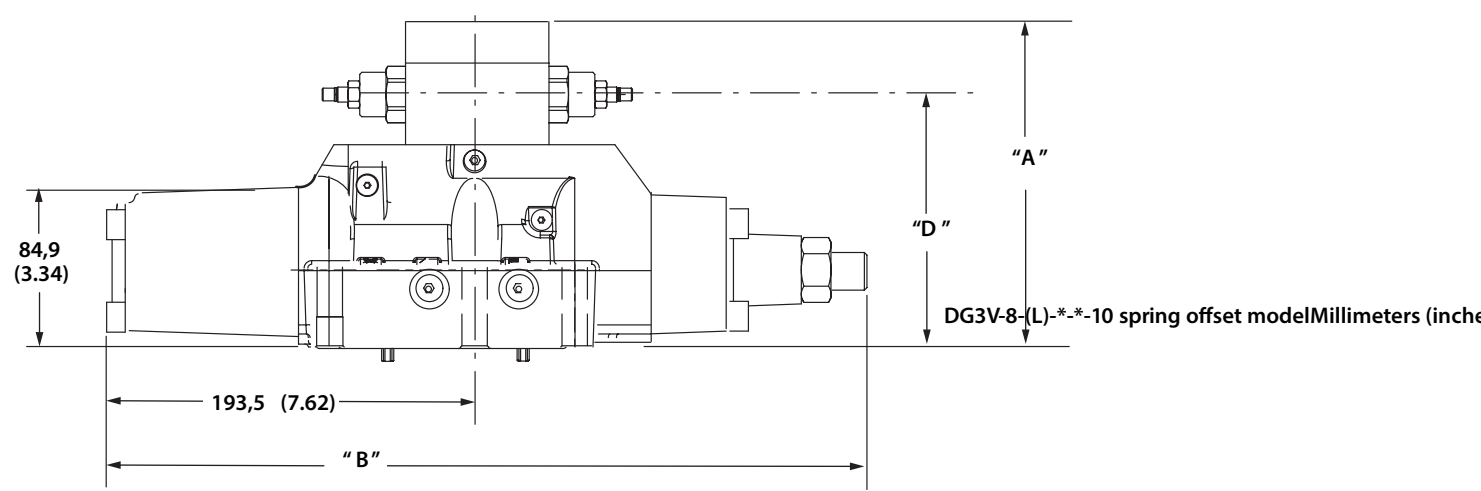
Installation dimensions

Special modifications

"D" dimension (pilot choke) without pilot line 263,0 (10.31)



V-E



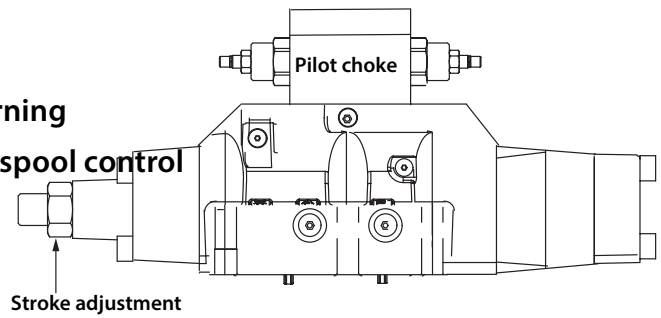
ist all

spool, lowering the possibility of large flow transients in the circuit. It is adjusted by backing off locknuts and turning adjusting screws inward to decrease rate of spool travel and outward to increase spool travel rate. See spool control modifications in model code.

Stroke adjustment

See spool control modifications in

model code .).



Installation dimensions

Stroke is the amount of time the shift stage .

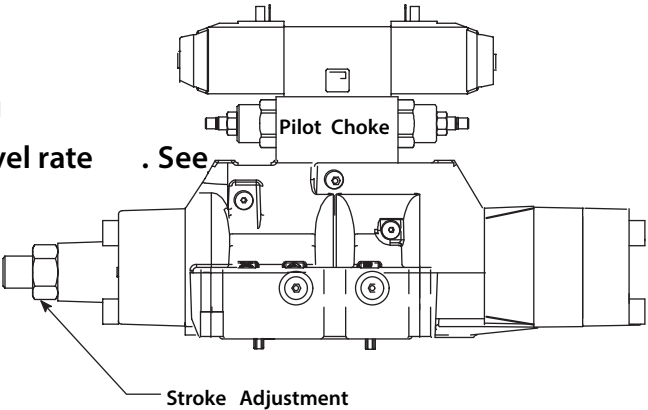
large flow transients in the circuit. It is adjusted by backing off of locknuts and turning screws inward to decrease rate of spool travel and outward to increase spool travel rate . See spool control modifications in model code.

Stroke adjustment

V-E

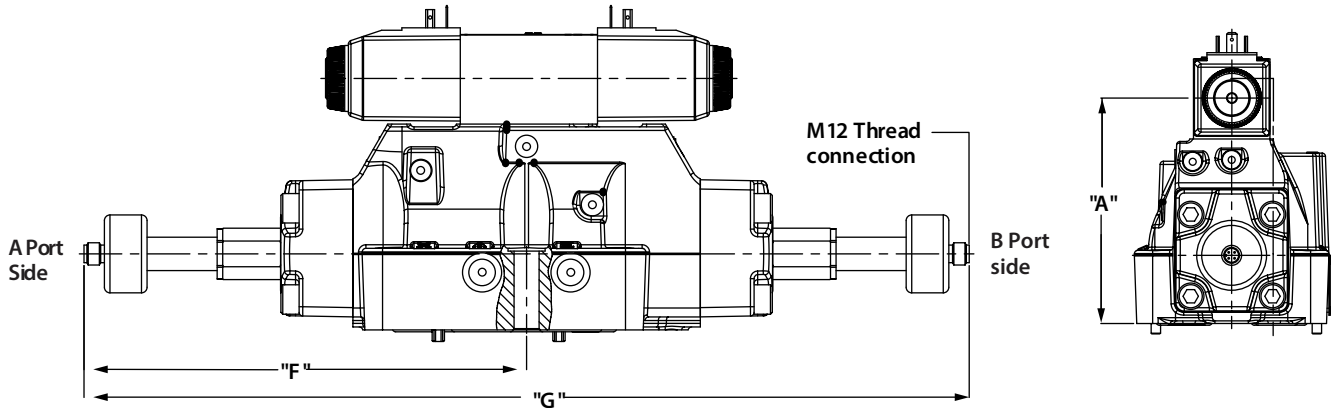
model code .

See spool control modifications in



Optional features

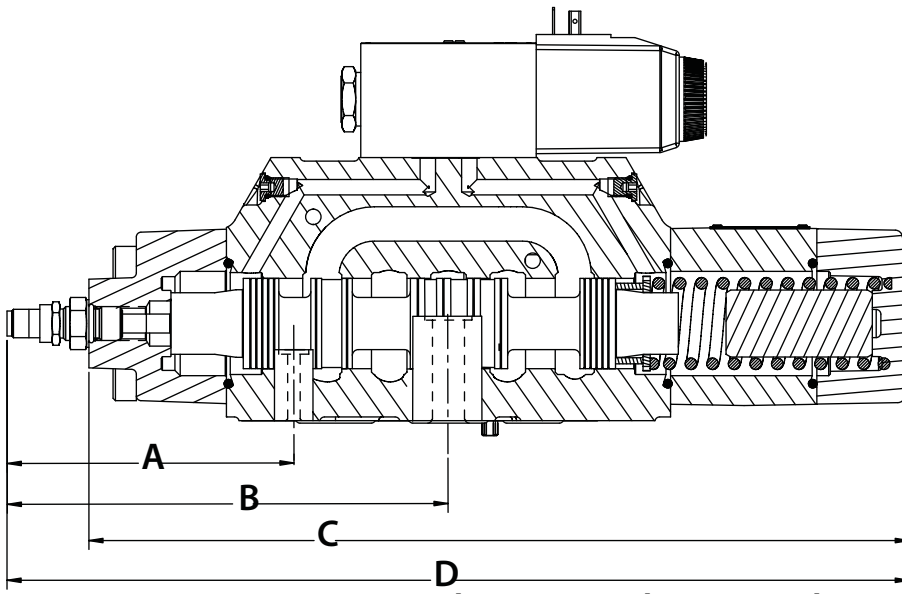
DG5V-8 with main stage spool monitoring switch “PC*” or “PD*” models (LVDT style switch)Millimeters (inches)



V-E

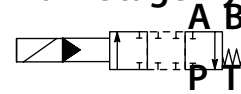
			371.3[14.62]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-PCA/PDA(*)-(VM)*-10	175.6[91]	238.7[9.40]	371[14.62]
DG5V-8-H-(B)-*A/B/C/F/N(L)-2-PCA/PDA(*)-(VM)*-10	175.6[91]	238.7[9.40]	371[14.62]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-2-PCA/PDA(*)-(VM)*-10	15.6[8.49]	238.7[9.40]	371[14.62]
DG5V-8-H-(B)-*A/B/C/F/N(L)-8-PCA/PDA(*)-(VM)*-10	1356[5.34]	238.7[9.40]	46[17.58]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-8-PCA/PDA(*)-(VM)*-10	175.6[91]	238.7[9.40]	46[17.58]
DG5V-8-H-(B)-*A/B/C/F/N(L)-28-PCA/PDA(*)-(VM)*-10	175.6[91]	238.7[9.40]	46[17.58]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-28-PCA/PDA(*)-(VM)*-10	205.6[8.49]	238.7[9.40]	46[17.58]
DG5V-8-H-(B)-*A/B/C/F/N(L)-PCB/PDB(*)-(VM)*-10	1356[5.34]	132.7[5.22]	371[14.62]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-PCB/PDB(*)-(VM)*-10	175.6[91]	132.7[5.22]	371[14.62]
DG5V-8-H-(B)-*A/B/C/F/N(L)-2-PCB/PDB(*)-(VM)*-10	175.6[91]	132.7[5.22]	371[14.62]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-2-PCB/PDB(*)-(VM)*-10	15.6[8.49]	132.7[5.22]	371[14.62]
DG5V-8-H-(B)-*A/B/C/F/N(L)-7-PCB/PDB(*)-(VM)*-10	1356[5.34]	208.0[8.19]	46[17.58]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-7-PCB/PDB(*)-(VM)*-10	175.6[91]	208.0[8.19]	46[17.58]
DG5V-8-H-(B)-*A/B/C/F/N(L)-27-PCB/PDB(*)-(VM)*-10	175.6[91]	208.0[8.19]	46[17.58]
DG5V-8-H-R-(B)-*A/B/C/F/N(L)-27-PCB/PDB(*)-(VM)*-10	205.6[8.49]	208.0[8.19]	46[17.58]
DG5V-8-H-(B)-*D-(*)-PCB/PDB-(VM)*-10	135[5.34]	193.5[7.62]	432.1[17.01]
DG5V-8-H-R-(B)-*D-(*)-PCB/PDB-(VM)*-10	175.6[91]	193.5[7.62]	432.1[17.01]
DG5V-8-H-(B)-*D-(*)-2-PCB/PDB-(VM)*-10	175.6[91]	193.5[7.62]	432.1[17.01]
DG5V-8-H-R-(B)-*D-(*)-2-PCB/PDB-(VM)*-10	215.6[49]	193.5[7.62]	432.1[17.01]

V-E



DG5V with PPA Switch Option Shown

Main Stage Hydraulic Symbol



Installation dimensions

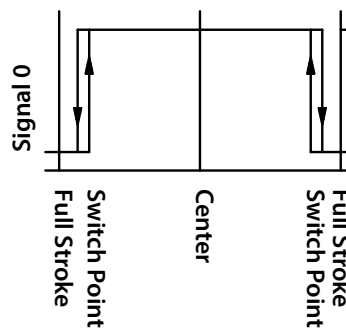
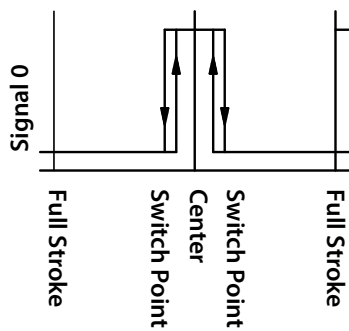
Use for safety circuit application (35A Spool)

D

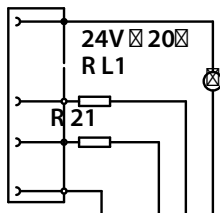
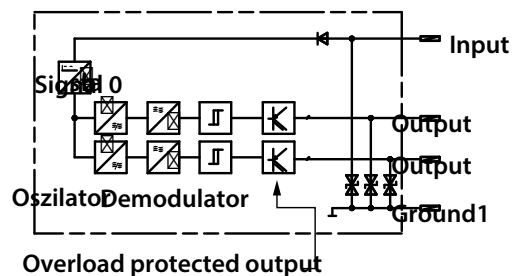
Leakage P-A

DG5V-8 with main stage spool monitoring switch "PC*" or "PD*" models (LVDT Style Switch) Millimeters (inches)

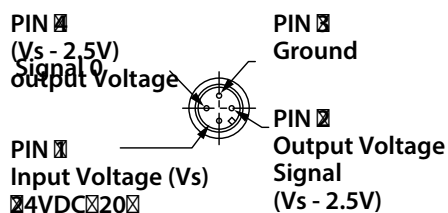
V-E



Electrical schematic and mating connector detail



Sigma factor detailSignal 1



RL1, RL2 e.g. Coil Resistance of the switch relay 60 OHMS

3

Signal on 16 tape deck in 2/4 w 8V bridge with cap 240pF $\times$ 20

Signal 0 Voltage at pin 2/4 0.8V

General description

Pilot valves are identified in the model code by the following

ENGINEERING
TOMORROW

Danfoss

Danfoss
WWW.SUMY.IR

Local address:

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