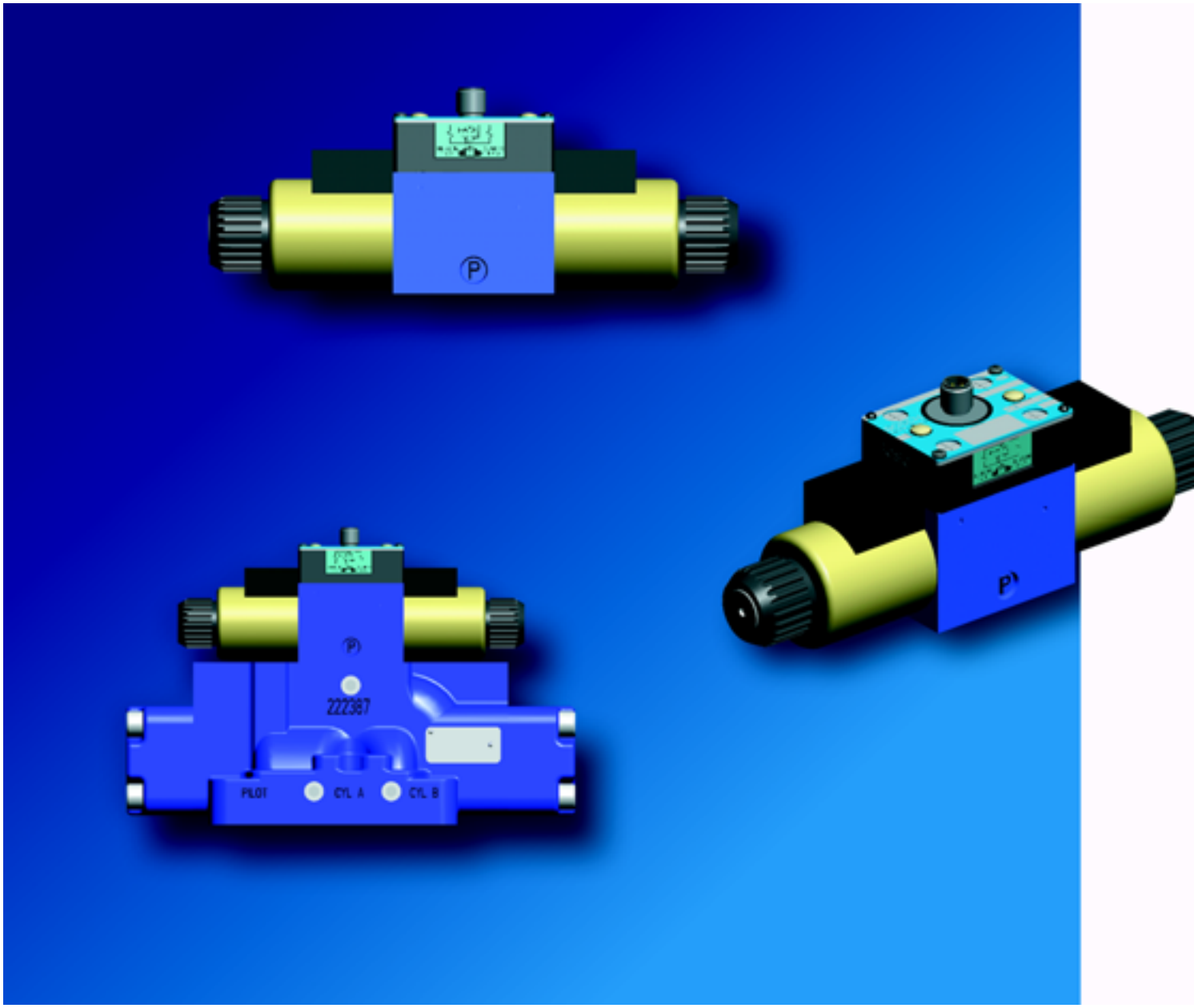
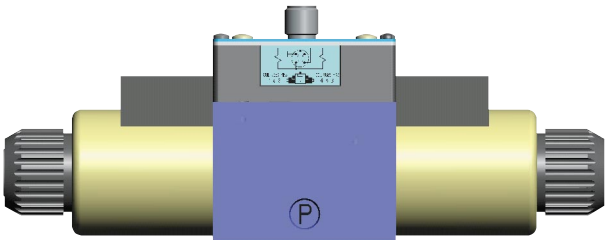
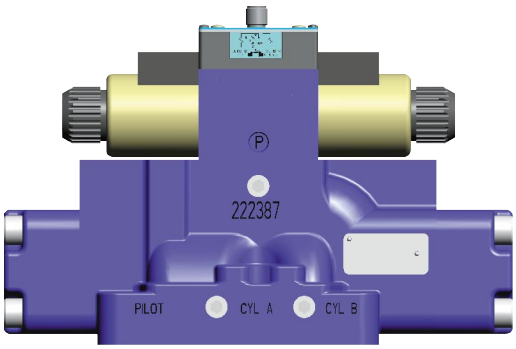
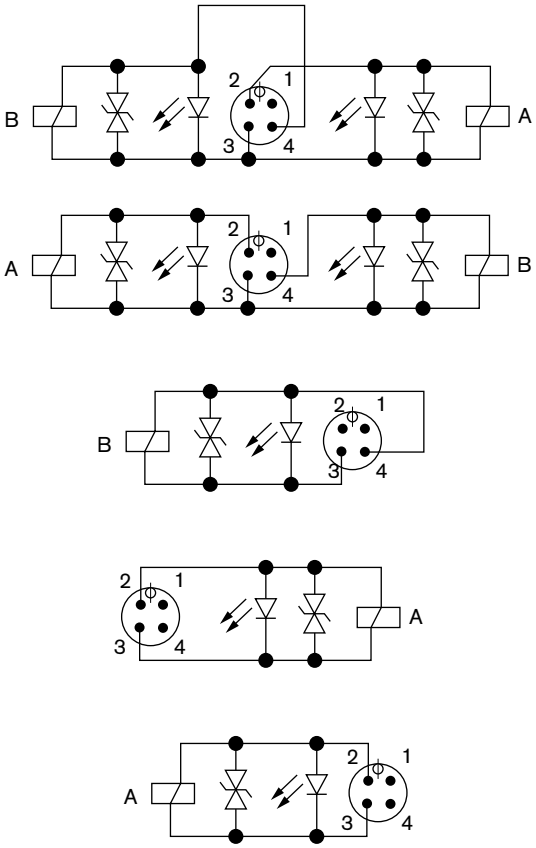
Directional Control Valve
M12 Connector 4 Pin

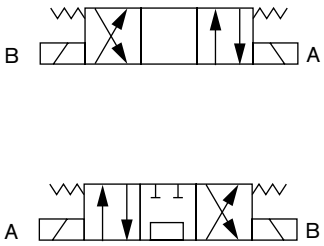


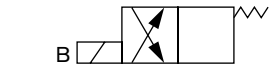
BOSCH
Automation

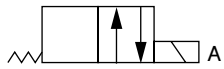












Pin Assignments

PIN 1	not assigned
PIN 2	Solenoid A
PIN 3	0V
PIN 4	Solenoid B

Features

Conforms to IEC 529 IP67 requirements
CSA Certified for C22.2
M12 plug connector incorporated to wiring cap
4 pin assignment according to ISO
Incorporated yellow test lights
Incorporated surge suppressors
Field interchangeable coils utilizing plug in design
Solenoid identification to ANSI B93.9 (P ⇒ A, when the A coil is energized)

Table of Contents

Order Code

Single Stage Valve

This order code describes the devsired model variances of the D03 (NG6) and D05 (NG10) directional control valves.
Standard models are assigned to 10-digit number.

0	8	1	W	V	0	6	P	1	V	1	0	0	1	W	C	0	2	4	/	0	0	–	"E"	5	1

SIZE
06 – D03 (NG 6, ISO – 4401)
10 – D05 (NG 10, ISO – 4401)

SEALS
V – VITON STD.

CONTROL TYPE

1 ELECTRICAL 

SPOOL CODE
*** – SEE SPOOL CHART ON PAGES 2 & 3 (OTHER SPOOLS AVAILABLE UPON REQUEST)

SOLENOID IDENTIFICATION
51 – U.S. STANDARD
(U.S. ANSI B93.9 STD.)

E – DESIGN SERIES

SOLENOID VOLTAGES
DC – 024/00

ELECTRICAL CONNECTIONS
WC – WIRING CAP, M12 CONNECTOR,
SURGE SUPPRESSOR & SENTINEL LIGHTS

Two Stage Valve

This order code describes the desired model variances of the D05 (NG10/2), D07 (NG16), D08 (NG25) and D10 (NG32) directional control valves.
Standard models are assigned to 10-digit number.

0	8	1	W	V	1	6	P	1	V	3	0	0	1	F	R	H	X	Y	W	C	0	2	4	/	0	0	–	"E"	5	1		

SIZE
10/2 – D05 (NG10, ISO – 4401)
16 – D07 (NG16, ISO – 4401)
25 – D08 (NG25, ISO – 4401)
32 – D10 (NG32, ISO – 4401)

SEALS
V – VITON STD.

CONTROL TYPE

3 ELECTRICAL 

SPOOL CODE
*** – SEE SPOOL CHART ON PAGES 2 & 3
(OTHER SPOOLS AVAILABLE UPON REQUEST)

PILOT CHOKES*
F – FIXED
T – ADJUSTABLE

R – PILOT PRESSURE VALVE IN P*

H – ADJUSTABLE POOL STOPS*

55 – LOW PRESSURE VERSION*
(OPTIONAL ONLY ON NG25)

SOLENOID IDENTIFICATION
51 – U.S. STANDARD
(U.S. ANSI B93.9 STD.)

E – DESIGN SERIES

SOLENOID VOLTAGES
DC – 024/00

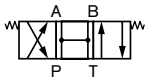
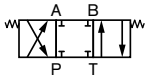
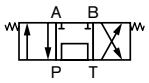
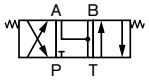
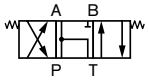
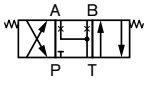
ELECTRICAL CONNECTIONS
WC – WIRING CAP, M12 CONNECTOR,
SURGE SUPPRESSOR & SENTINEL LIGHTS

PILOT AND DRAIN
XY – EXTERNAL PILOT, EXTERNAL DRAIN
PT – INTERNAL PILOT, INTERNAL DRAIN
PY – INTERNAL PILOT, EXTERNAL DRAIN
XT – EXTERNAL PILOT, INTERNAL DRAIN

* If these options are not needed, omit them from the code

PRODUCT LITERATURE DISCLAIMER
SPECIFICATIONS AND/OR DIMENSIONS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE CONSULT FACTORY.

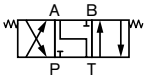
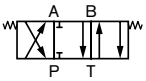
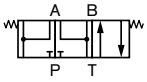
Part Numbers

Directional	Symbols	NG6	NG10	NG10 2/STAGE	NG16	NG25-55 3000 PSI	NG25 High	NG32
Spool No.		24 VDC M12 Connector, 4-pin						
		Part Numbers 9 810 230						
000		400						
001		401	500	600 PT	630 TPT	700 PT	730 TPY	
						701 THPT		
						702 FPY		
002		402						
002*			501					
004		403	502	601 TPT	631 PT	703 PT		
					632 TPT			
006						704 XT		
010		404	503		638 PY	705 PT	731 PT	
011		405	505					
012		406	504			706 PT		
014		407						
014*			506					
016		408	507					
018		409	508	602 XY	633 XY			
				603 PY	634 XY			
				604 HPT	635 TPT			
				605FXHPT				
				606 TPT				

* metered spool

Coding of part numbers can be found on the bottom of Page 1.
i.e. TPT T = Adjustable chokes; P = Internal pilot; T = Internal drain.

Part Numbers, continued

Directional	Symbols	NG6	NG10	NG10 2/STAGE	NG16	NG25-55 3000 PSI	NG25 High	NG32
Spool No.		24 VDC M12 Connector, 4-pin						
		Part Numbers 9 810 230						
020		410	509		636 PT	710 PT	732 PY	
					637 TPT			
024		411	510					
026		412						
028		413						
033		415						
042		416						
045		417						
061		418						

* metered spool

Coding of part numbers can be found on the bottom of Page 1.
i.e. TPT T = Adjustable chokes; P = Internal pilot; T = Internal drain.

Plug-in Orifice for Pilot Valves

Orifice Size in. (mm)	Part Number
0.030 (0.8)	9 525 230 385
0.040 (1.0)	9 525 230 382
0.050 (1.2)	9 525 230 383
0.060 (2.0)	9 525 230 384

Directional Control Valve D03 (NG6)

Characteristics

General	
Design	Spool valve (three chamber system)
Mounting type	Subplate, D03 (NG6) ISO 4401
Mounting Position	as desired (Horizontal preferred)
Ambient temperature	-13 to 120°F (-25 to 50°C)
Seals	Viton
CSA Certified	File Number: LR 93267-6

Hydraulic	
Fluid	Premium quality petroleum and water glycol fluids. Refer to the following bulletins for recommendations: S106 - Petroleum Fluids S107 - Fire Resistant Fluids Consult factory for use of water in oil emulsions, high water content and synthentic fluids. Mineral-oil based hydraulic-fluids (DIN/ISO) others on request
Viscosity	60 1600 SUS (100 500 mm^2/s)
Fluid temperature	-13 to 175°F (-25 to 80°C)
Filtration	Contamination class 19/16, according to ISO 4406 to be realized with filter ß25=75
Direction of flow	As shown on symbol
Operating pressure	Port P, A, B: 4600 PSI (315 bar) Port T: 2300 PSI (160 bar)
Rated flow	See Δp/Q-curves for symmetrical flow
Maximum flow	Up to 14 GPM (50 L) spool dependent, see operating limits

Electric		
Duty factor	100%	
Solenoid identification	Meets ANSI B93.9 - 1969 (R 1988) Standards	
Enclosure type	* Conforms to IP 67 // CSA - C22.2 Certified	
Insulation class	C VDE 10 ω 5	
Voltage and frequency	24 VDC	
Voltage tolerance	U_{NOM} ± 10%	
Power rating DC	33W 17.5 Ohms	
Response time** DC	Switch-on: 20 to 60 ms	Switch-off: 10 to 60 ms
Switching frequency	max. 18,000/h	
Power supply	Plug connector to 4 pin micro M12 male: spacing per IEC 947-5	
Recommended connector	5 pin female receptacle M12	

*Note IP 67
- Protected against water immersed under defined conditions
- Dust tight

**Response time measured from the switching signal to opening of control edge

Performance Data D03 (NG6)

Performance Characteristics
Valve Pressure vs. Flow Performance

Curve Reference Numbers					
Spool Number	Curve Numbers				
	A B P T		A B P T	A B P T	
Spool Number	PA	PB	AT	BT	PT
000	1	1	3	1	2
001	2	2	3	3	
002	7	7	7	7	6
004	2	2	3	1	
005	4	4	1	1	
006	5	3	2	3	6
010	2	3	5	4	
011	4	4	3	3	
012	3	2	4	5	
014	3			4	6
016	2			3	
018	2	2	3	3	
020	2	3	5	4	
024	2		3		
026	2	2	3	3	
027	3			3	
028	2			1	
032	2	3			
033	1	1	3	1	2
040	2	3	3		
042	2	2	3	3	
045		2	3		
062	4	1		1	
068	3	2			
070		2	3	3	
087	2		3		
089	1	1		4	
091	6	5	4	2	

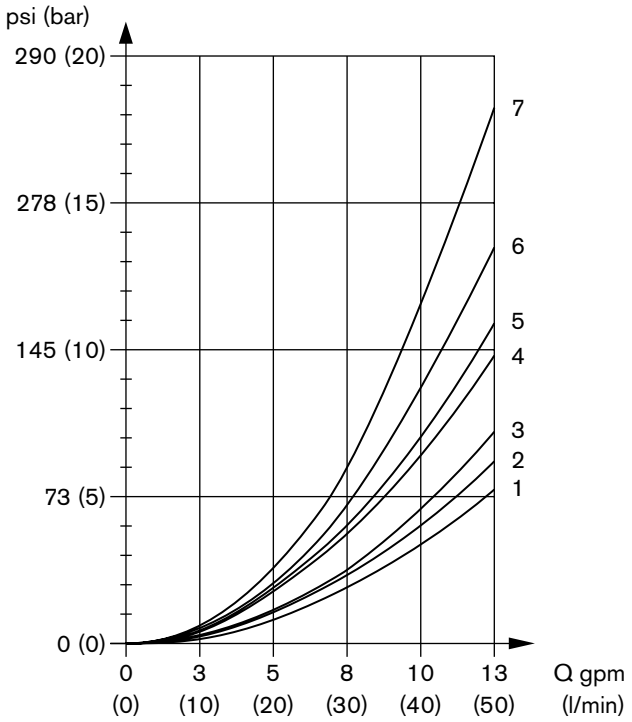
SERIES E
DC Solenoids

Curve Reference Numbers		
Spool Number	Curve Numbers	
	(A)	(B)
001	1	1
002	2	2
004	3	1
010	1	1
012	1	1
018	1	1
020	1	1
045	1	1
068	4	3

Operating Limits

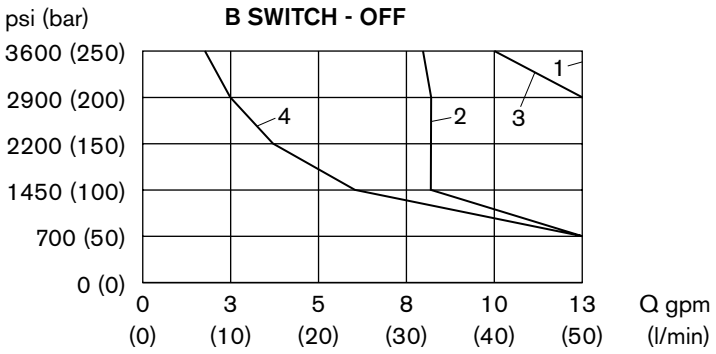
The curves refer to applications with symmetrical flow.
In the case of asymmetrical flow (e.g. one port not used) reduced values may result.

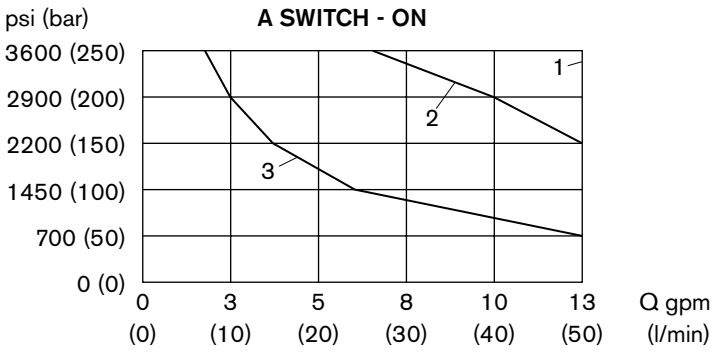
PRESSURE vs. FLOW CURVE



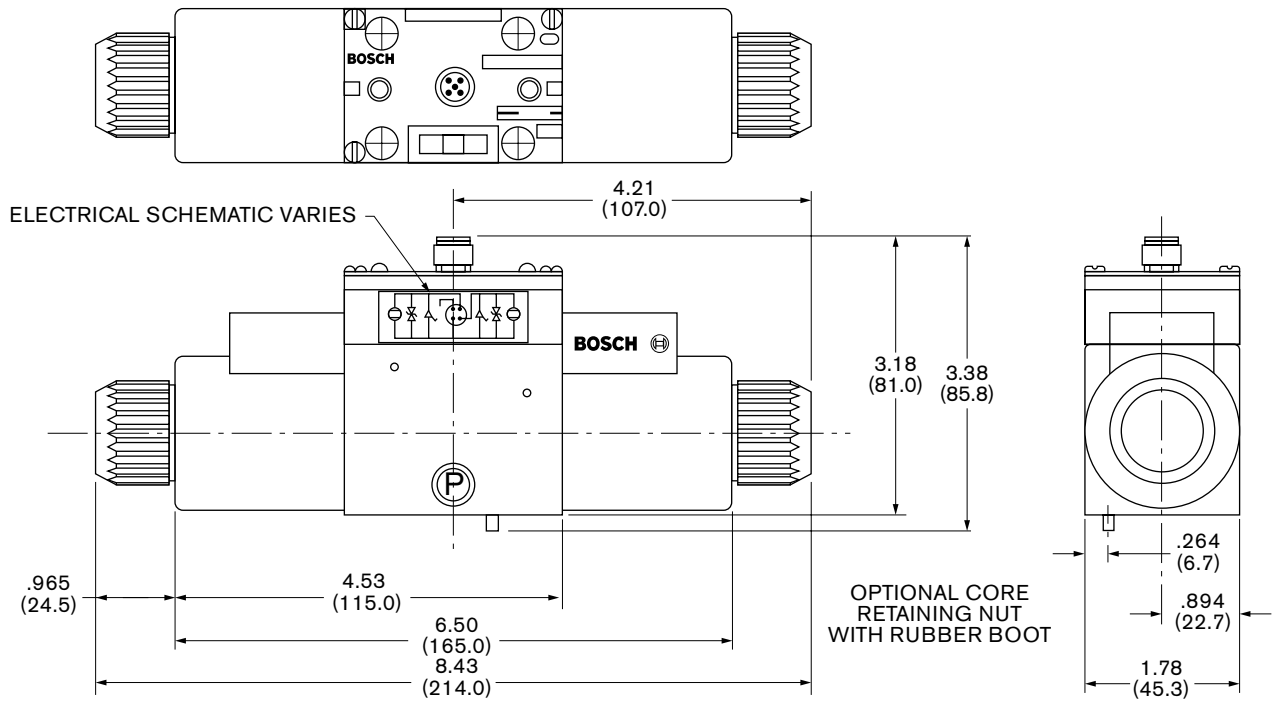
viscosity = 164 sus (35 cSt)

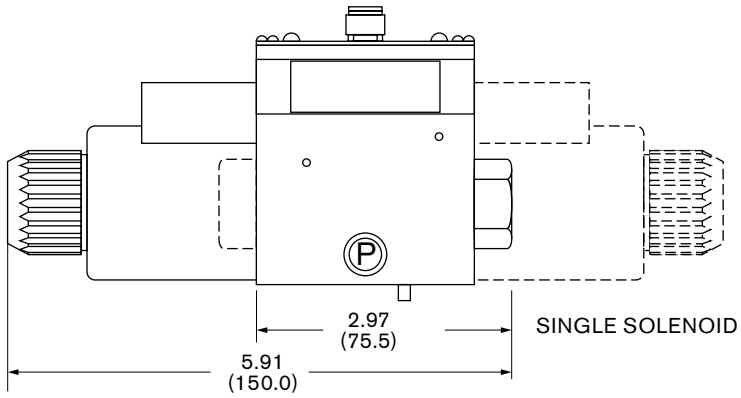
DC - SOLENOID SPOOL MALFUNCTION

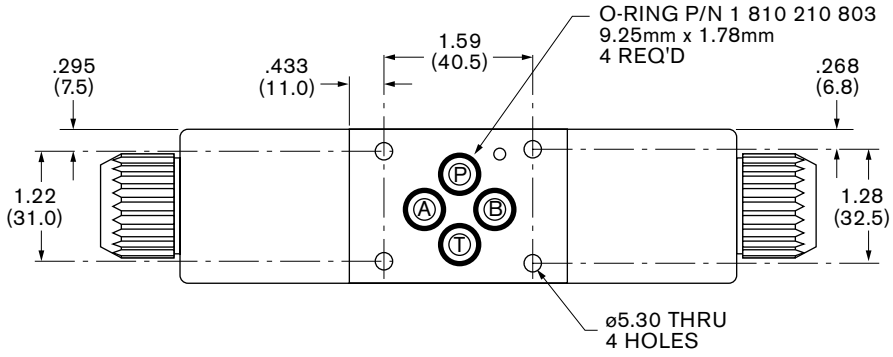




Engineering Data D03 (NG6)







INCH
(METRIC)

Directional Control Valve D05 (NG10)

Characteristics

General	
Design	Spool valve (five chamber system)
Mounting type	Subplate, D05 (NG10) ISO 4401
Mounting Position	as desired (Horizontal preferred)
Ambient temperature	-4 to 120°F (-20 to 50°C)
Seals	Viton
CSA Certified	File Number: LR 93267-7

Hydraulic	
Fluid	Premium quality petroleum and water glycol fluids. Refer to the following bulletins for recommendations: S106 - Petroleum Fluids S107 - Fire Resistant Fluids Consult factory for use of water in oil emulsions, high water content and synthentic fluids. Mineral-oil based hydraulic-fluids (DIN/ISO) others on request
Viscosity	60 1600 SUS (10 350 cSt)
Fluid temperature	-4 to 175°F (-20 to 80°C)
Filtration	Contamination class 19/16, according to ISO 4406 to be realized with filter ß25=75
Direction of flow	As shown on symbol
Operating pressure	Port P, A, B: 4600 PSI (315 bar) Port T: 2300 PSI (160 bar)
Rated flow	See Δp/Q-curves for symmetrical flow
Maximum flow	Up to 34 GPM (130 L) spool dependent, see operating limits

Electric		
Duty factor	100%	
Solenoid identification	Meets ANSI B93.9 - 1969 (R 1988) Standards	
Enclosure type	* Conforms to IP 67 // CSA - C22.2 Certified	
Insulation class	C VDE ω 5	
Voltage and frequency	24 VDC	
Voltage tolerance	U_{NOM} ± 10%	
Power rating DC	42W	
Response time** DC	Switch-on: 65 to 100 ms	Switch-off: 30 to 80 ms
Switching frequency	max. 1800/h	
Power supply	Plug connector to 4 pin micro M12 male: spacing per IEC 947-5	
Recommended connector	5 pin female receptacle M12	

*Note IP 67
- Protected against low pressure water jets from all direction
- Dust tight

**Response time measured from the switching signal to opening of control edge

Performance Data D05 (NG10)

Performance Characteristics

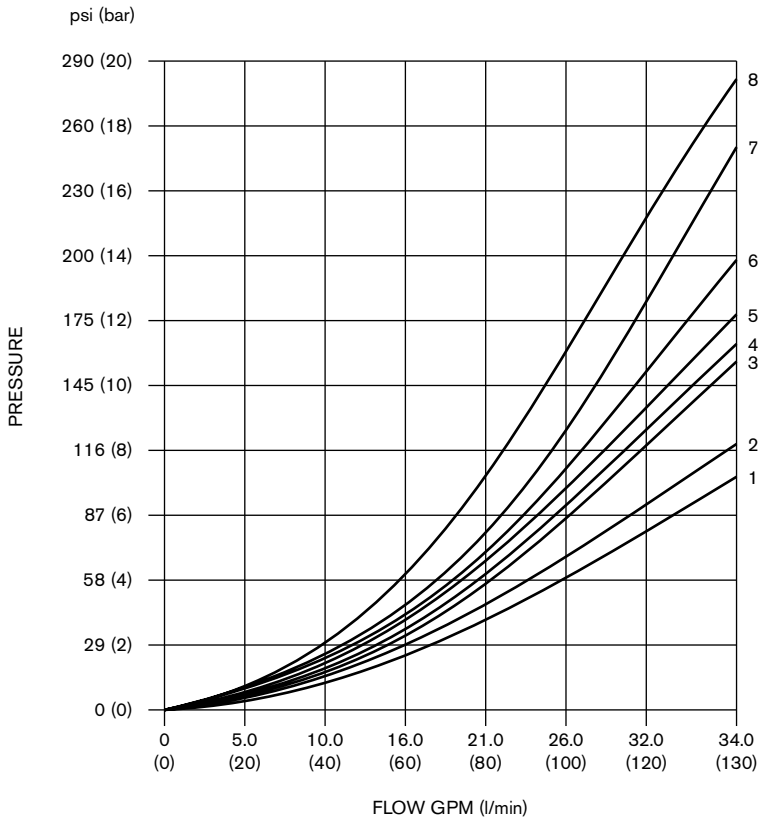
Valve Pressure vs. Flow Performance

Curve Reference Numbers					
Spool Number	Curve Numbers A B / P T	A B / P T	A B / P T		
Spool Number	PA	PB	AT	BT	PT
000	2	2	1	3	
001	3	3	3	3	
002	3	2	1	4	8
004	3	3	1	7	
005	2	2	3	4	
006	2	2	3	3	6
010	3	3	7	6	
011	5	3	3	4	
012	3	3	4	8	
014	3			4	8
016	3			3	
018	3	3	3	4	
020	3	3	7	6	
024		3	1	7	
026	3	3	1	3	
027	3			6	
031		3	3		
032	1	4			
033		2	1		
040	2	5	3		
041	2	4	1		
042	3	3	3	2	
045		3	3		
062	4	2		7	
068	3	3			
070	3			3	
074	2			3	
087	3	7	6		
088					
091	1	2	1	4	
095	1	1	1	6	8
923					
930					

DC-Solenoids

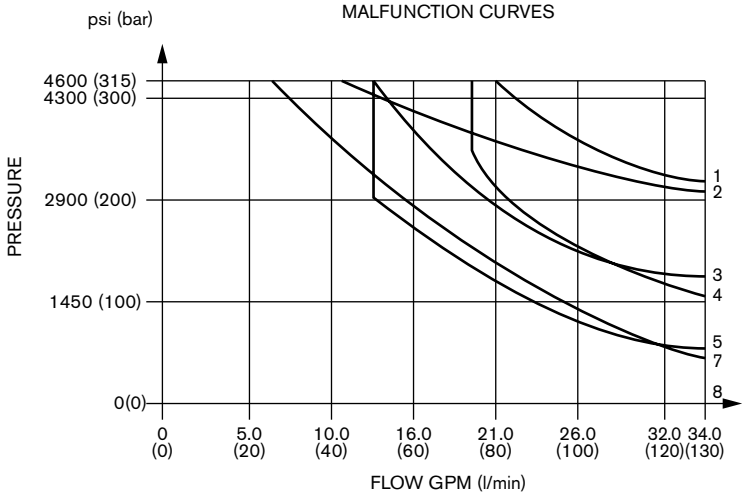
Curve Reference Numbers			
Spool Number	Curve Numbers	Spool Number	Curve Numbers
000	3	032	7
001	1	033	3
002	5	040	1
004	1	041	1
005	8	042	1
006	3	045	1
010	8	062	1
011	4	068	7
012	8	070	1
014	5	074	3
016	1	087	1
018	3	088	1
020	8	091	3
024	1	095	7
026	1	923	7
027	2	933	1
031	1		

PRESSURE vs. FLOW CURVES



Viscosity = 164 SUS (35 Centistokes)

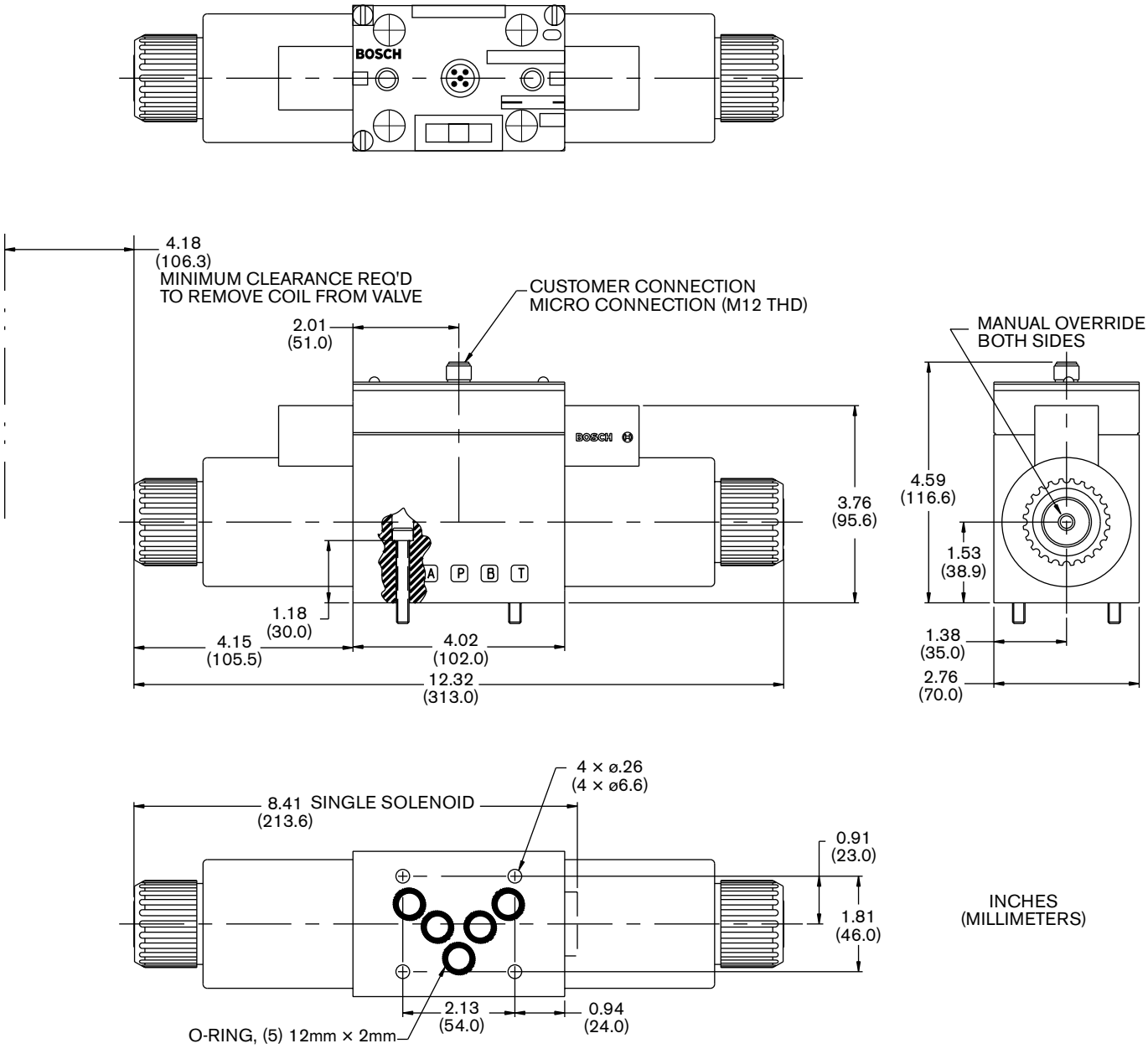
DC SOLENOID SPOOL MALFUNCTION



Operating Limits

The curves refer to applications with symmetrical flow.
In the case of asymmetrical flow (e.g. one port not used) reduced values may result.

Engineering Data D05 (NG10)



NOTE: MOUNTING SURFACE SHOULD COMPLY WITH NFPA T3.51 R1 - 1984 & ANSI B93.7M SPECIFICATIONS

Directional Control Valve D07 (NG16)

Characteristics

General	
Design	Spool valve
Mounting type	Subplate, D07 (NG16) ISO 4401
Mounting Position	as desired (Horizontal only for detented valves)
Ambient temperature	-4 to 120°F (-20 to 50°C)
Seals	Viton
CSA Certified	File Number: LR 93267-6

Weights	
Hydraulic	17.6 lbs (8 kg)
Electrical 1 Solenoid	19.8 lbs (9 kg)
Electrical 2 Solenoid	20.9 lbs (9.5 kg)
Response time adjustment	2.4 lbs (1.1 kg)

Hydraulic		
Fluid	Petroleum hydraulic fluids and most fire resistant fluids	
Viscosity	60 2300 SUS (10 500 cSt)	
Fluid temperature	-4 to 175°F (-20 to 80°C)	
Filtration	Contamination class 19/16, according to ISO 4406 to be realized with filter ß25=75	
Direction of flow	As shown on symbol	
Operating pressure	Port P, A, B, T: 5075 PSI (350 bar) max. Port T: 4060 PSI (280 bar) max. w/flame proof solenoids	
Pilot pressure	Pilot port X or P 114 PSI (8 bar) min. 3625 PSI (250 bar) max.	
	Drain port Y or T 3045 PSI (210 bar) max. for solenoid operation 3625 PSI (250 bar) max. for hydraulic piloted 1450 PSI (100 bar) max. for flame proof solenoid	
Maximum flow	80 GPM (300 L/min) spool dependent, see operating limits	
Control volume	0.37 in³ (6 cm³) for 3 position valves 0.61 in³ (10 cm³) for 2 position valves	
Total response time	Switch-on Pilot = 700PSI Switch-off Pressure (50 bar) Switch-on Pilot = 2900 PSI Switch-off Pressure (200 bar)	= DC 55 75ms 50 70ms 50 70ms 40 60ms

Electric	
Duty factor	100%
Solenoid identification	Meets ANSI B93.9 - 1969 (R 1988) Standards
Enclosure type	* Conforms to IP 67 // CSA - C22.2 Certified
Insulation class	C VDE ω 5
Voltage and frequency	24 VDC
Voltage tolerance	U_{NOM} ± 10%
Power rating DC	33W
Response time** DC	Switch-on: 65 to 100 ms Switch-off: 30 to 80 ms
Switching frequency	max. 1800/h
Power supply	Plug connector to 4 pin micro M12 male: spacing per IEC 947-5
Recommended connector	5 pin female receptacle M12

*Note IP 67
- Protected against low pressure water jets from all direction
- Dust tight

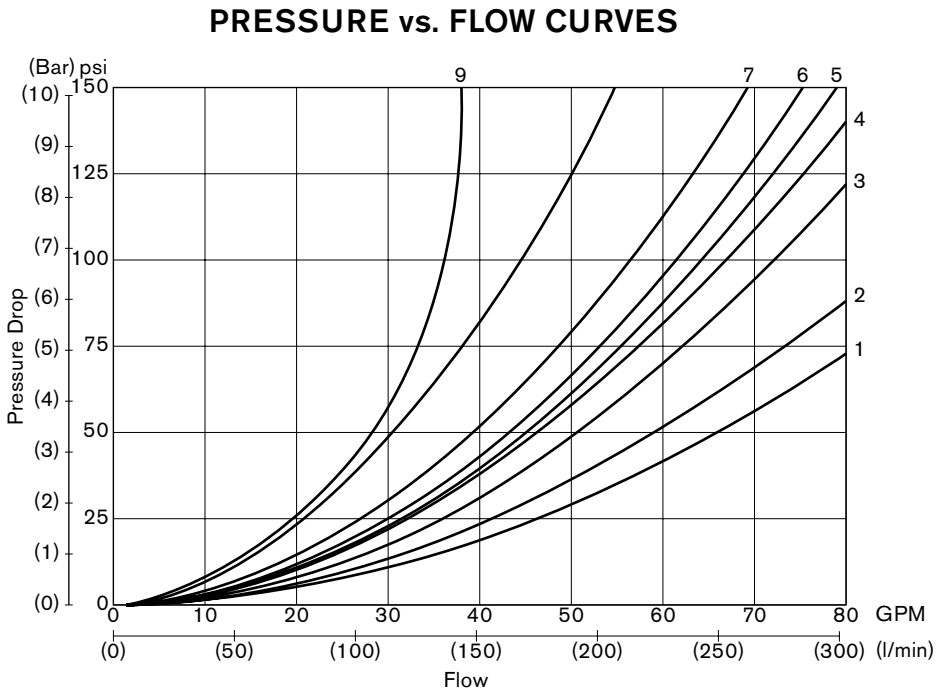
**Response time measured from the switching signal to opening of control edge

Performance Data D07 (NG16)

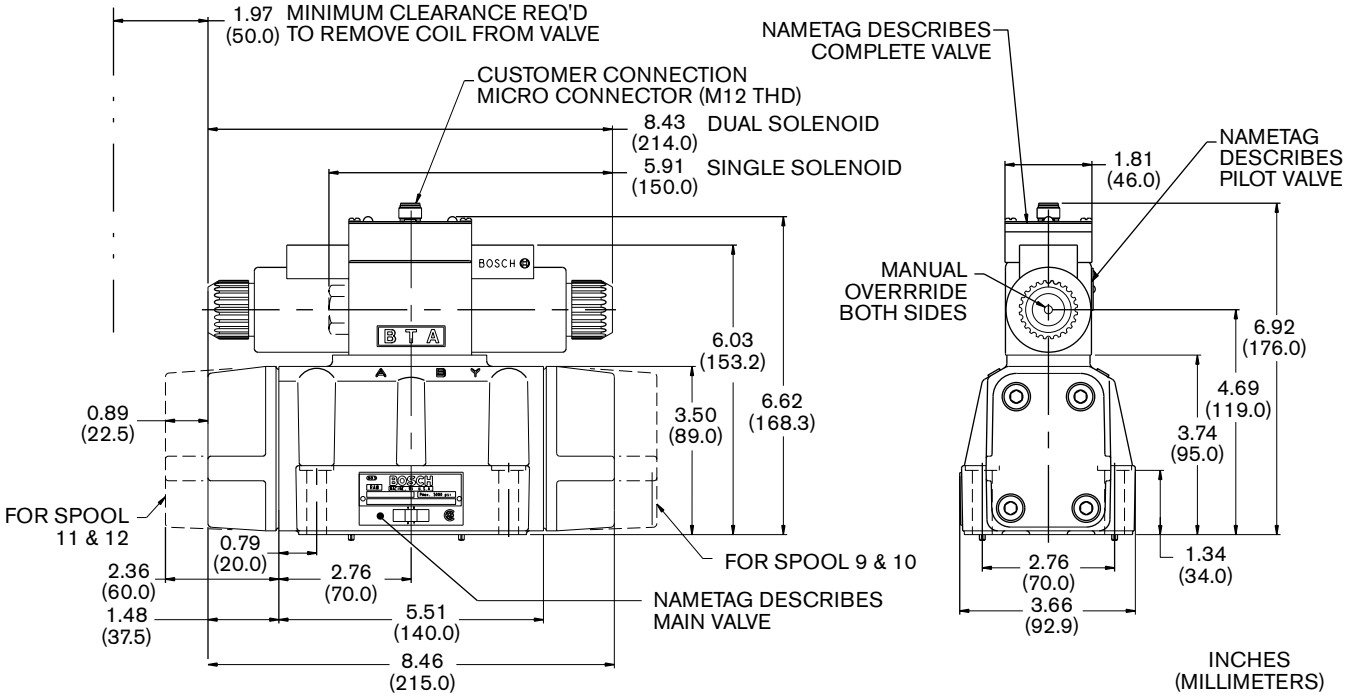
Performance Characteristics
Valve Pressure vs. Flow Performance

Curve Reference Numbers					
Spool Number	Curve Numbers (A B / P T)				
Spool Number	PA	PB	AT	BT	PT
000	3	3	4	5	
001	1	1	2	7	
002	4	6	6	8	9
004	3	3	4	4	
010	3	3	3	4	
018	3	3	4	5	
020	3	3	3	4	
042	3	3	3	2	
045		3	3		

Viscosity = 142 SUS (30.2 cSt)



Engineering Data D07 (NG16)



Directional Control Valve D08 (NG25/55) 3000 PSI

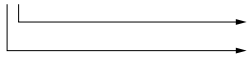
Characteristics

General	
Design	Spool valve (eight chamber system)
Mounting type	Subplate, D08 (NG25) ISO 4401
Mounting Position	as desired (Horizontal only for detented valves)
Ambient temperature	-13 to 120°F (-25 to 50°C)
Seals	Viton
CSA Certified	File Number: LR 93267-6

Hydraulic	
Fluid	Premium quality petroleum and water glycol fluids. Refer to the following bulletins for recommendations: S106 - Petroleum Fluids S107 - Fire Resistant Fluids Consult factory for use of water in oil emulsions, high water content and synthentic fluids. Mineral-oil based hydraulic-fluids (DIN/ISO) others on request
Viscosity	60 2300 SUS (10 500 cSt)
Fluid temperature	-13 to 175°F (-25 to 80°C)
Filtration	Contamination class 19/16, according to ISO 4406 to be realized with filter ß25=75
Direction of flow	As shown on symbol
Operating pressure	Port P, A, B: 3000 PSI (210 bar) Port T: 1500 PSI (100 bar)
Rated flow	See Δp/Q-curves for symmetrical flow
Maximum flow	Up to 75 GPM (284 L) spool dependent, see operating limits

Electric		
Duty factor		100%
Solenoid identification		**Meets ANSI B93.9 - 1969 (R 1988) Standards P > A when solenoid "a" is energized.**
Enclosure type		* Conforms to IP 67 // CSA - C22.2 Certified
Insulation class		C VDE 10 ω 5
Voltage and frequency		24 VDC
Voltage tolerance		U_{NOM} ± 10%
Power rating	DC	33W
Response time**	DC	Switch-on: 65 to 100 ms Switch-off: 30 to 80 ms
Switching frequency		max. 18,000/h
Power supply		Plug connector to 4 pin micro M12 male: spacing per IEC 947-5
Recommended connector		5 pin female receptacle M12

*Note IP 67



Protected against water immersed under defined conditions

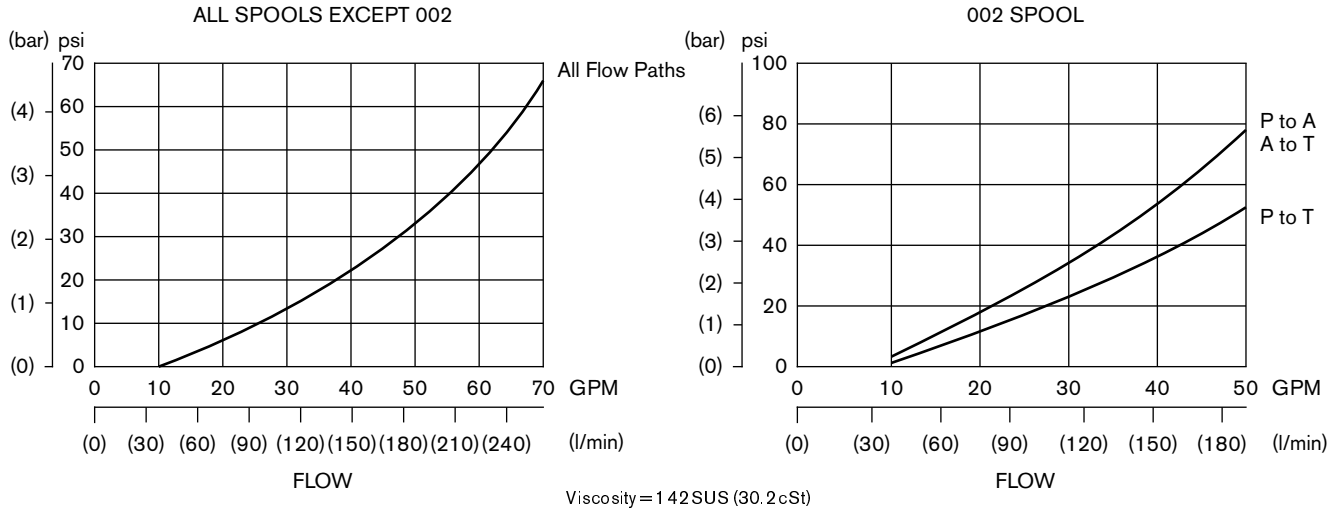
Dust tight

**Response time measured from the switching signal to opening of control edge

Performance Data D08 (NG25/55) 3000 PSI

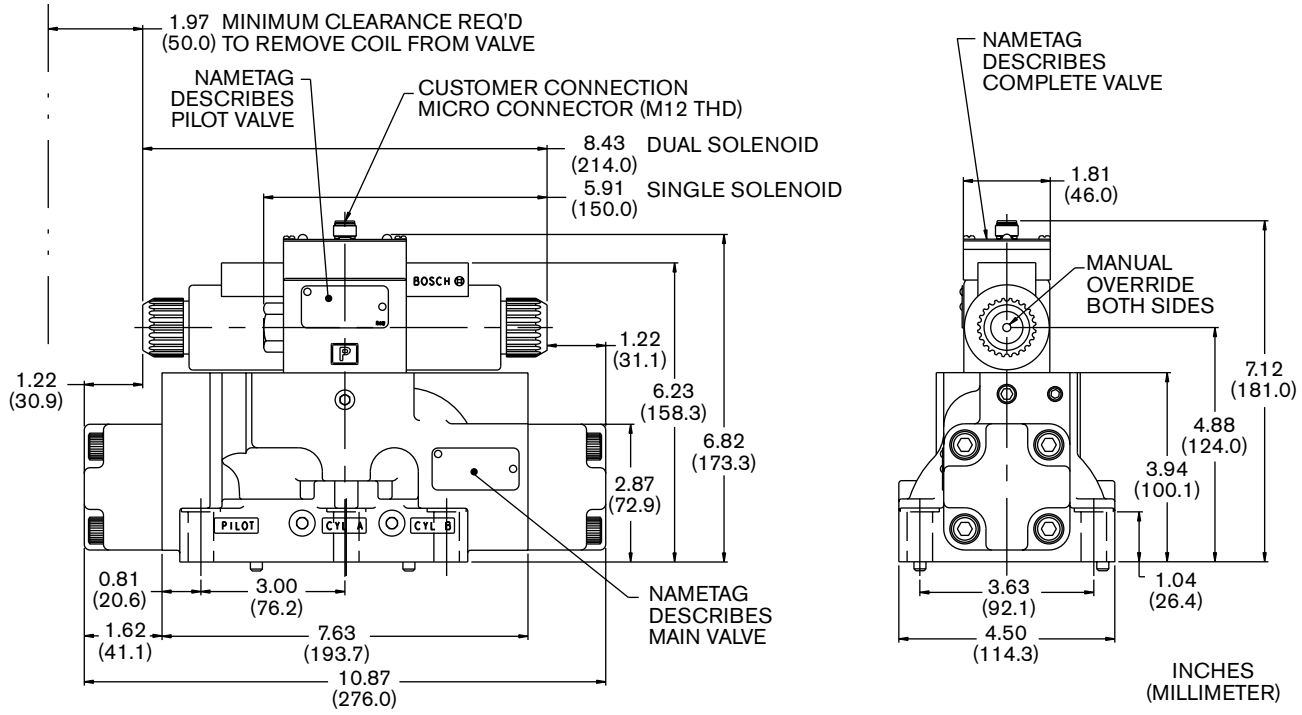
Performance Characteristics

PRESSURE vs. FLOW CURVE



Viscosity = 142 SUS (30.2 cSt)

Engineering Data D08 (NG25/55) 3000 PSI



Directional Control Valve D08 (NG25/51) 5075 PSI

Characteristics

General	
Design	Spool valve
Mounting type	Subplate, D08 (NG25) ISO 4401
Mounting Position	as desired (Horizontal only for detented valves)
Ambient temperature	-4 to 120°F (-20 to 50°C)
Seals	Viton
CSA Certified	File Number: LR 93267-6

Weights	
Hydraulic	35.3 lbs (16 kg)
Electrical 1 Solenoid	37.5 lbs (17 kg)
Electrical 2 Solenoid	38.5 lbs (17.5 kg)
Response time adjustment	2.4 lbs (1.1 kg)

Hydraulic		
Fluid	Petroleum hydraulic fluids and most fire resistant fluids	
Viscosity	60 2300 SUS (10 500 cSt)	
Fluid temperature	-4 to 175°F (-20 to 80°C)	
Filtration	Contamination class 19/16, according to ISO 4406 to be realized with filter ß25=75	
Direction of flow	As shown on symbol	
Operating pressure	Port P, A, B, T: 5075 PSI (350 bar) max. Port T: 4060 PSI (280 bar) max. w/flame proof solenoids	
Pilot pressure	Pilot port X or P 114 PSI (8 bar) min. 3625 PSI (250 bar) max.	
	Drain port Y or T 3045 PSI (210 bar) max. for solenoid operation 3625 PSI (250 bar) max. for hydraulic piloted 1450 PSI (100 bar) max. for flame proof solenoid	
Maximum flow	185 GPM (700 L/min) spool dependent, see operating limits	
Control volume	0.92 in³ (15 cm³) for 3 position valves 1.34 in³ (22 cm³) for 2 position valves	
Total response time	Switch-on Pilot = 700PSI Switch-off Pressure (50 bar) Switch-on Pilot = 2900 PSI Switch-off Pressure (200 bar)	= DC
		55 75ms 50 70ms 50 70ms 40 60ms

Electric	
Duty factor	100%
Solenoid identification	Meets ANSI B93.9 - 1969 (R 1988) Standards
Enclosure type	* Conforms to IP 67 // CSA - C22.2 Certified
Insulation class	C VDE ω 5
Voltage and frequency	24 VDC
Voltage tolerance	U_{NOM} ± 10%
Power rating DC	33W
Response time** DC	Switch-on: 65 to 100 ms Switch-off: 30 to 80 ms
Switching frequency	max. 1800/h
Power supply	Plug connector to 4 pin micro M12 male: spacing per IEC 947-5
Recommended connector	5 pin female receptacle M12

*Note IP 67

- Protected against low pressure water jets from all direction
- Dust tight

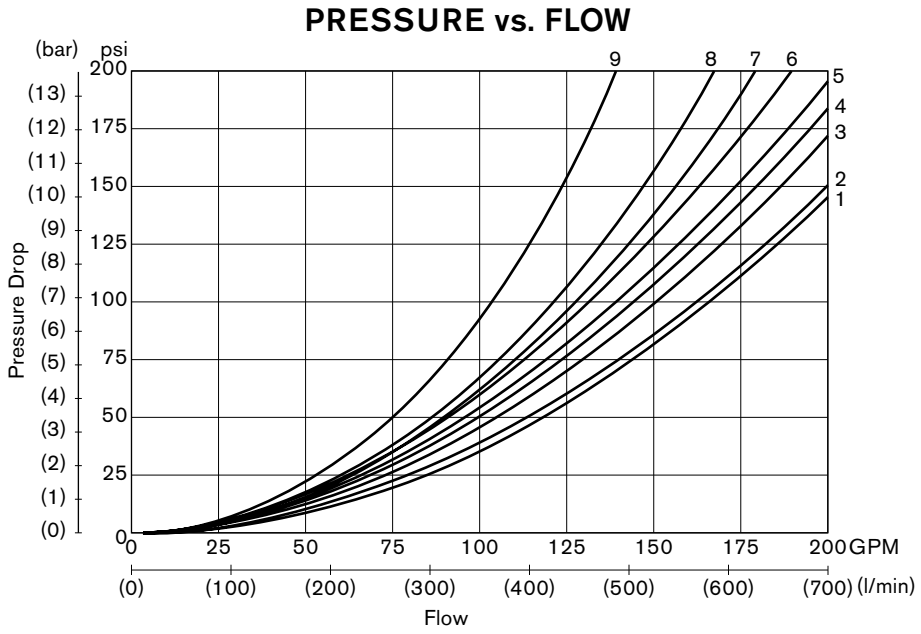
**Response time measured from the switching signal to opening of control edge

Performance Data D08 (NG25/51) 5075 PSI

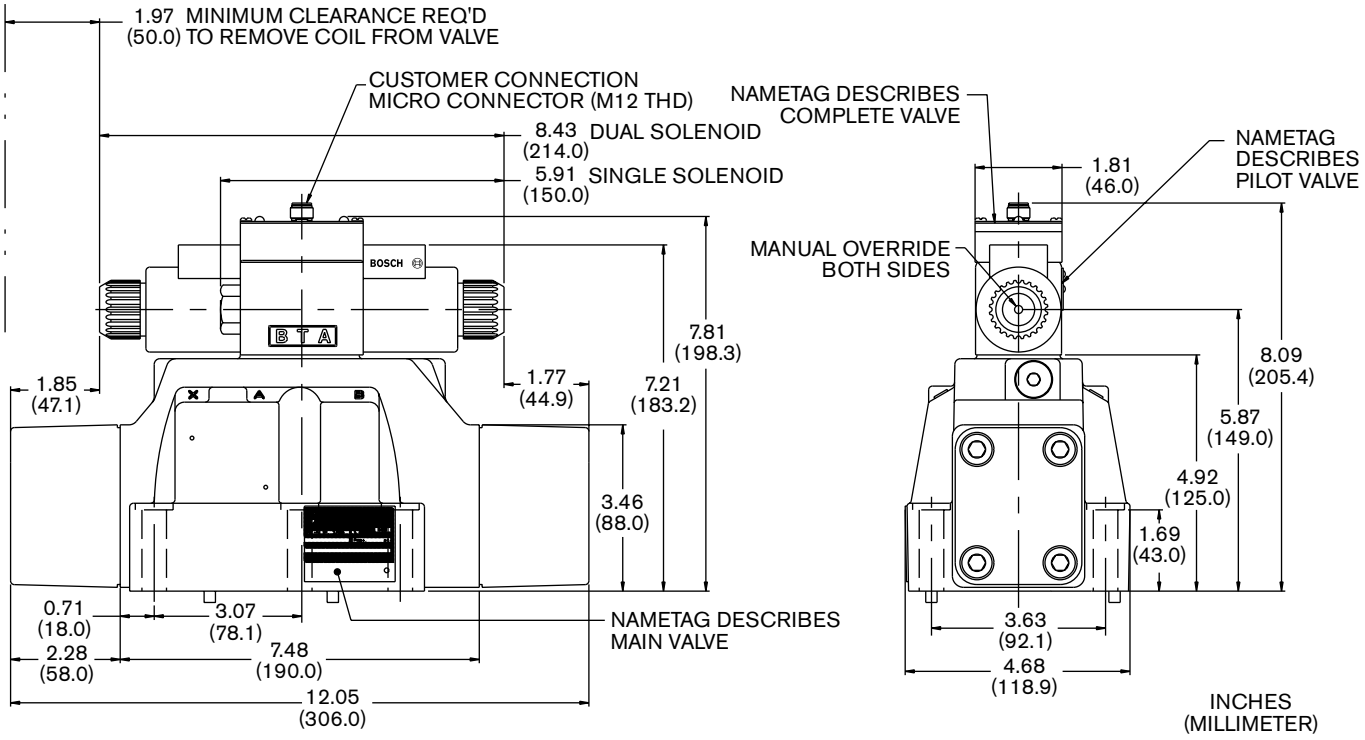
Performance Characteristics
Valve Pressure vs. Flow Performance

Curve Reference Numbers					
Spool Number	Curve Numbers (A B / P T)				
Spool Number	PA	PB	AT	BT	PT
000	7	7	5	7	
001	2	2	1	5	
002	6	5	4	7	9
004	5	5	5	7	
010	7	7	1	3	
018	4	4	7	8	
020	7	7	1	3	

Viscosity = 142 SUS (30.2 cSt)



Engineering Data D08 (NG25/51) 5075 PSI



Directional Control Valve D10 (NG32)

Characteristics

General	
Design	Spool valve
Mounting type	Subplate, D10 (NG32) ISO 4401
Mounting Position	as desired (Horizontal only for detented valves)
Ambient temperature	-4 to 120°F (-20 to 50°C)
Seals	Viton
CSA Certified	File Number: LR 93267-6

Weights	
Hydraulic	83.2 lbs (37.8 kg)
Electrical 1 Solenoid	98 lbs (44.5 kg)
Electrical 2 Solenoid	99 lbs (44.9 kg)
Response time adjustment	4.4 lbs (2 kg)

Hydraulic			
Fluid	Petroleum hydraulic fluids and most fire resistant fluids		
Viscosity	60 2300 SUS (10 500 cSt)		
Fluid temperature	-4 to 175°F (-20 to 80°C)		
Filtration	Contamination class 19/16, according to ISO 4406 to be realized with filter ß25=75		
Direction of flow	As shown on symbol		
Operating pressure	Port P, A, B, T: 3000 PSI (210 bar) max. Port T: 1500 PSI (100 bar) max. w/flame proof solenoids		
Pilot pressure	75 PSI (5.2 bar) min. 3000 PSI (210 bar) max.		
Maximum flow	175 GPM (660 L/min) spool dependent, see operating limits		
Control volume	3.04 in^3 (50 cm^3) for 3 position valves		
Total response time	Switch-on Pilot = 700PSI Switch-off Pressure (50 bar) Switch-on Pilot = 2900 PSI Switch-off Pressure (200 bar)	= DC	55 75ms 50 70ms 50 70ms 40 60ms

Electric	
Duty factor	100%
Solenoid identification	Meets ANSI B93.9 - 1969 (R 1988) Standards
Enclosure type	* Conforms to IP 67 // CSA - C22.2 Certified
Insulation class	C VDE ω 5
Voltage and frequency	24 VDC
Voltage tolerance	U_{NOM} ± 10%
Power rating DC	33W
Response time** DC	Switch-on: 65 to 100 ms Switch-off: 30 to 80 ms
Switching frequency	max. 1800/h
Power supply	Plug connector to 4 pin micro M12 male: spacing per IEC 947-5
Recommended connector	5 pin female receptacle M12

*Note IP 67

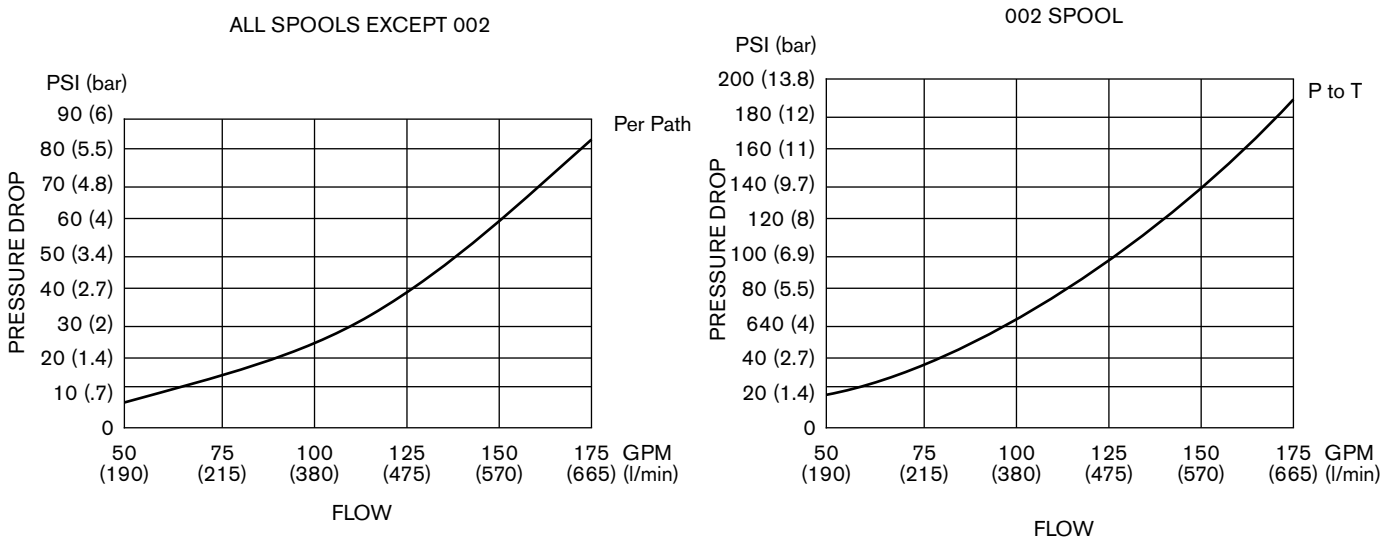
→ Protected against low pressure water jets from all direction

→ Dust tight

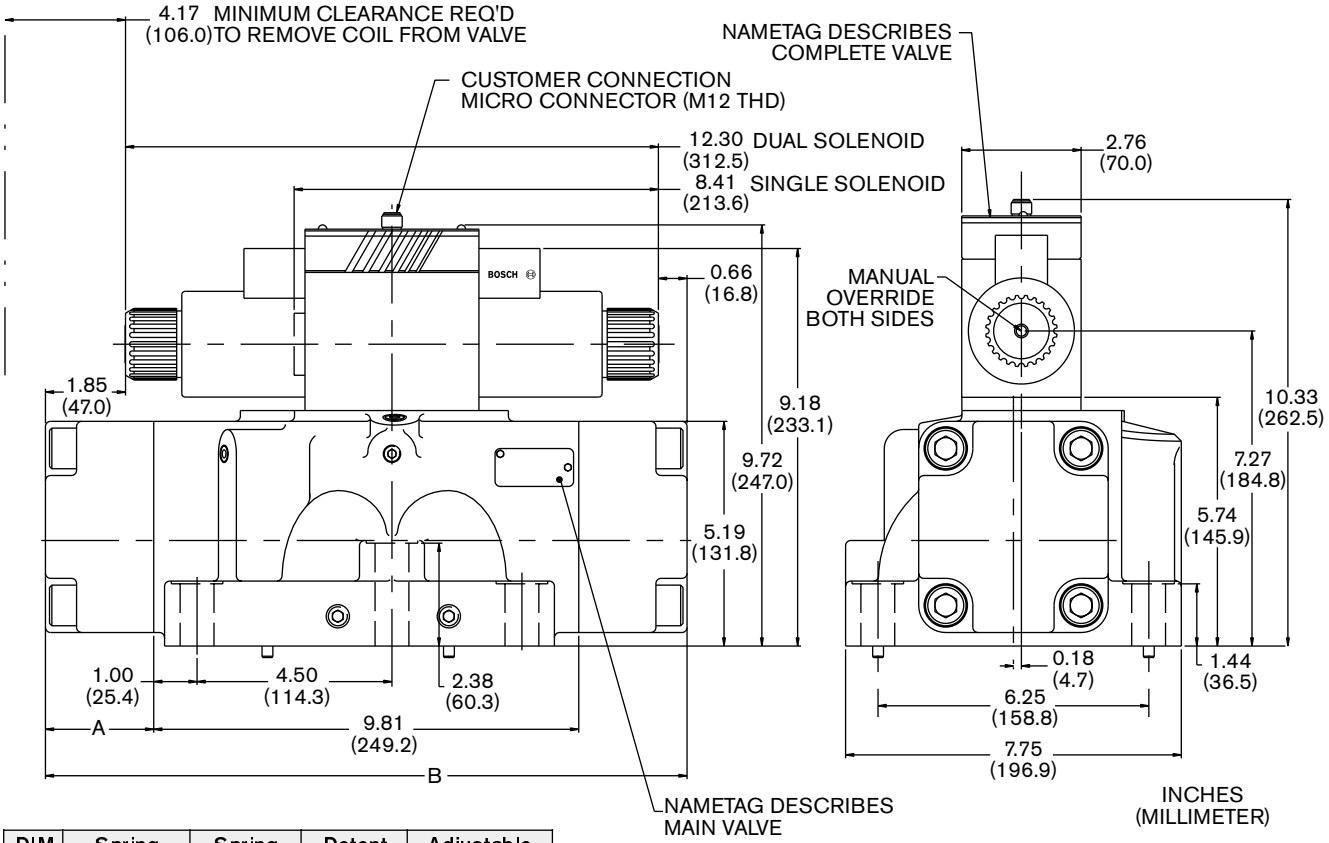
**Response time measured from the switching signal to opening of control edge

Performance Data D10 (NG32) 3000 PSI

PRESSURE vs. FLOW CURVES



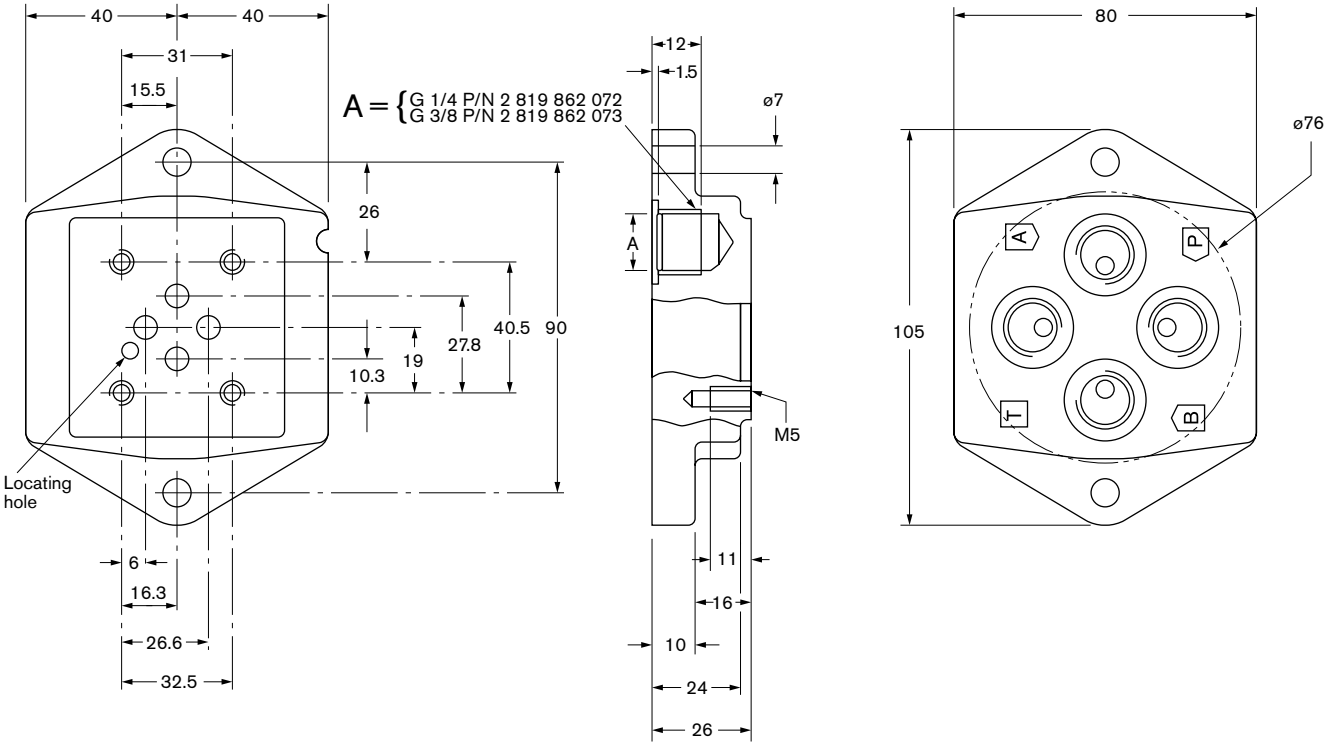
Engineering Data D10 (NG32) 3000 PSI



DIM	Spring Centered	Spring Return	Detent	Adjustable Stroke
A	3.50 (88.9)	4.63 (117.6)	5.66 (143.8)	4.53 (115.1)
B	14.81 (376.2)	15.94 (404.9)	16.97 (431.0)	16.87 (428.5)

D03 (NG6) Subplates

D03 (NG6) Subplates, Bottom Ported
G 1/4 ISO 228 Part Number 2 819 862 072
G 3/8 ISO 228 Part Number 2 819 862 073



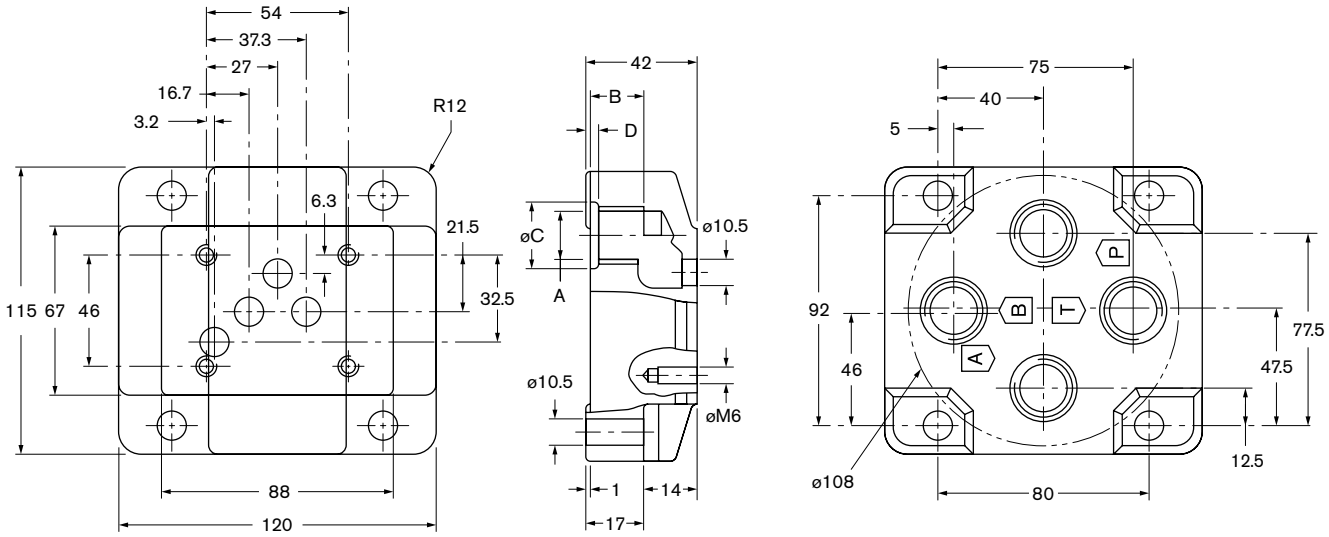
Bolt Tightening Specifications:

Bolt Size	Torque Range (ft./lbs)	Newton Meters
M5	4.5 6.0	6.1 8.1
M6	8.2 10.4	11.1 14.1
M8	20.7 26.6	28.1 36.1
M10	36.9 44.3	50.0 60.1
M12	66.4 88.5	90.0 120.0
M16	177.0 213.9	240.0 290.0
M20	332.0 413.1	450.2 560.2

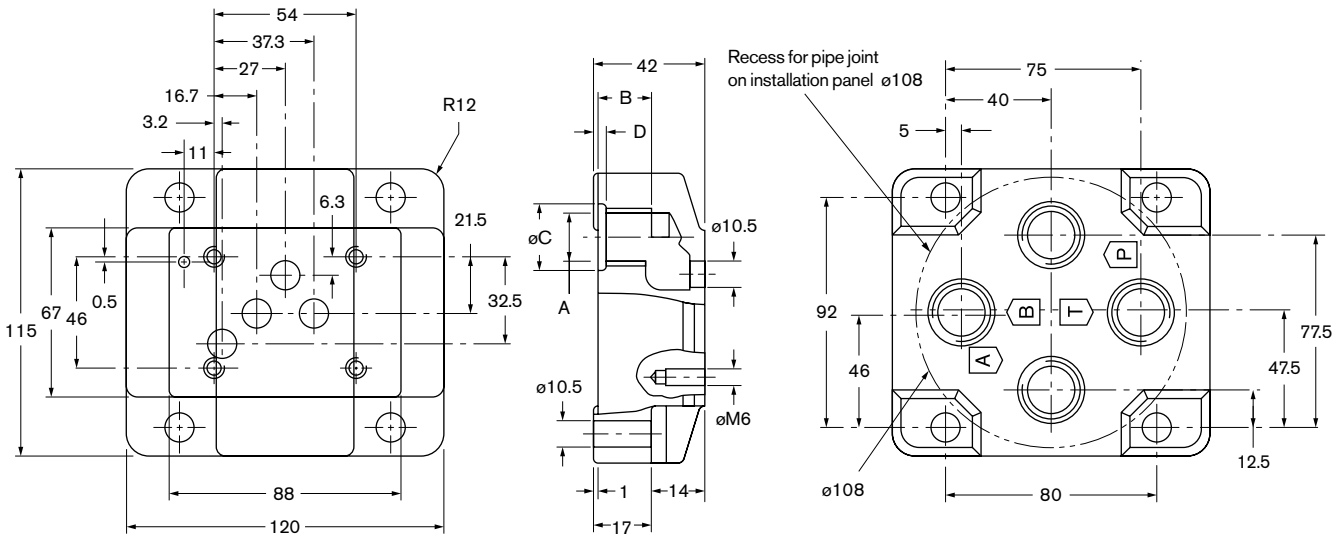
Grade 12.9 Black Oxide

D05 (NG10) Subplates

D05 (NG10) Subplate, Bottom Ported
G 1/2 ISO 228 Part Number 1 815 503 352



D05 (NG10) Subplate, Bottom Ported
G 3/4 ISO 228 Part Number 1 815 503 351

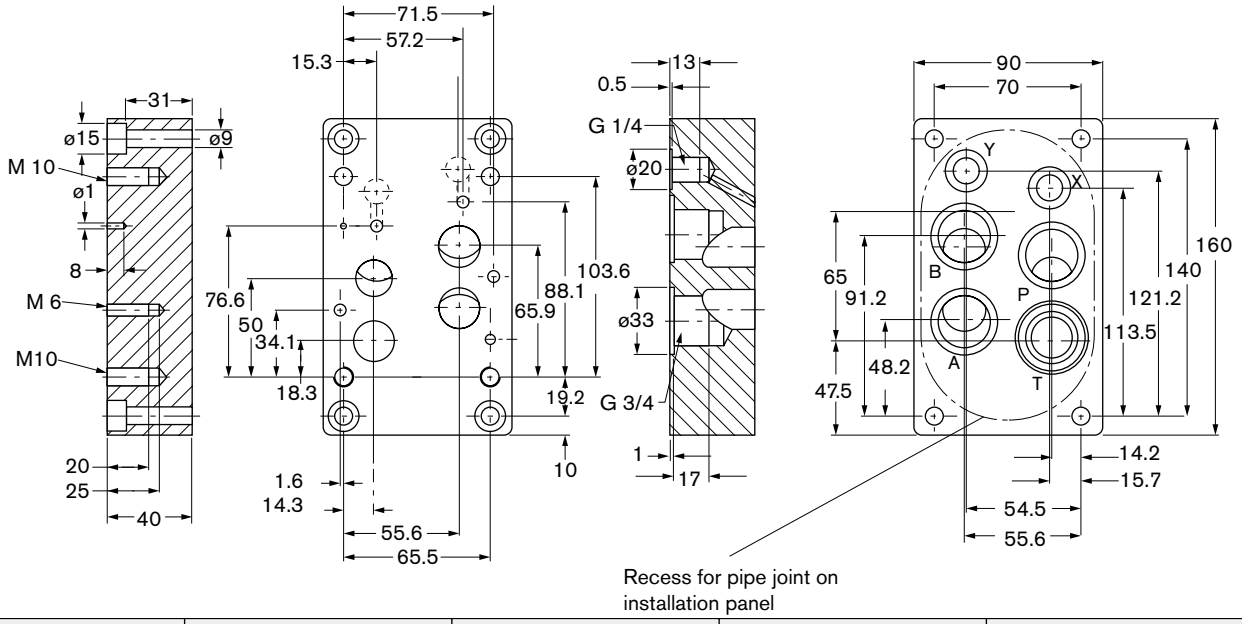


P, T, A, B	A	B	øC	D	Pmax	(kg)	Part Number
G 1/2	G 1/2	14	30	2	315 bar	3	1 815 503 352
G 3/4	G 3/4	16	33	2	315 bar	3	1 815 503 351
4 × ⬚ M 6 × 40 DIN 912-12.9							2 910 400 209

Reference Catalog # 1 987 760 611

D07 (NG16) Subplates

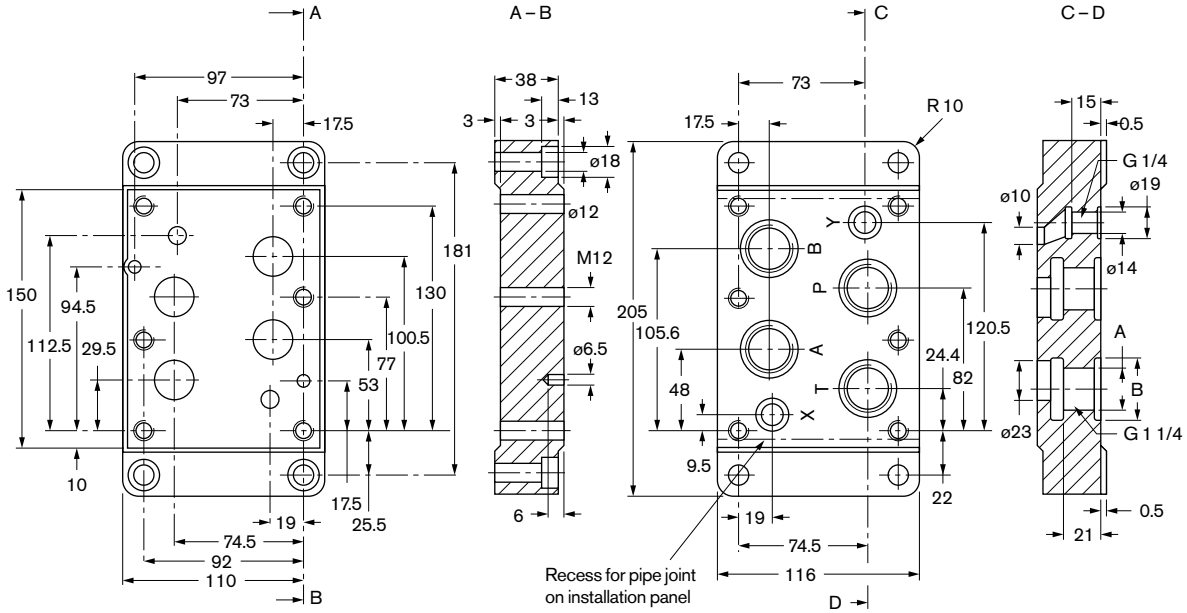
D07 (NG16) Subplate, Bottom Ported
G 3/4 ISO 228 Part Number 1 815 503 449



P, T, A, B	X,Y	Pmax	(kg)	Part Number
G 3/4	G 1/4	350 bar	3.5	1 815 503 449
2 ×	M 6 x 45 DIN 912-12.9	SHCS black oxide		2 910 400 211
4 ×	M 10 x 50 DIN 912-12.9	SHCS black oxide		2 910 400 301

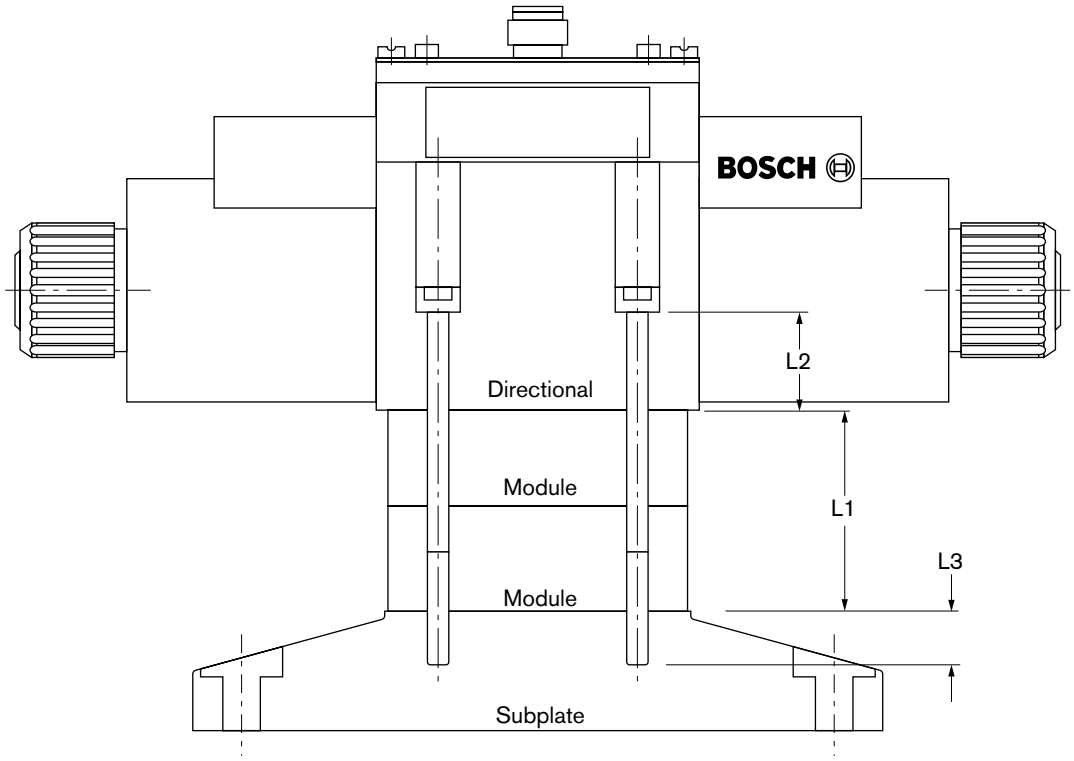
D08 (NG25) Subplates

D08 (NG25) Subplate, Bottom Ported
ISO 228 Part Number listed below



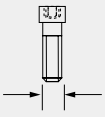
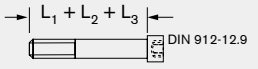
P, T, A, B	X,Y	øB	Pmax	(kg)	Part Number
G 3/4	G 1/4	33	250 bar	5.1	1 815 503 146
G 1	G 1/4	40		5.1	1 815 503 147
G 11/4	G 1/4		350 bar	6.0	1 815 503 366
6 × M 12 × 60 DIN 912-12.9					2 910 400 354

Dimensions



Bolt Length

To determine bolt length add L1 to L2 + L3. Minimum strength for mounting bolts DIN 912 Grade 10.9. Minimum recommended thread engagement in cast iron subplate should be 1.5 x bolt diameter.

NG	Qty.		$L_2 + L_3$ mm	L_1 mm	$L = L_1 + L_2 + L_3$ mm	 DIN 912-12.9
NG 6	4	M5	30	Valve only	40	9 539 232 003
				40	70	9 539 232 000 kit
				80	110	9 539 232 001 kit
				120	150	9 539 232 002 kit
NG10	4	M6	40	Valve only	30	9 539 232 010
				40	80	9 539 232 004 kit
				50	90	9 539 232 005 kit
				80	120	9 323 231 211 kit
				90	130	9 539 232 006 kit
				100	140	9 539 232 007 kit
				120	160	9 534 230 138 4 required
				130	160	9 534 230 095 4 required
				140	180	9 539 232 008 kit
				150	190	9 539 232 009 kit
NG16	4	M10	50	60	110	2 910 400 314 4 required
	2	M6	45		105	N/A
	4	M10	50	120	170	N/A
	2	M6	45		165	9 534 230 146 2 required
	4	M10	50	180	230	N/A
	2	M6	45		225	N/A
NG25	6	M12	55	70	125	N/A
				80	135	N/A
				140	195	N/A
				150	205	N/A
				160	215	N/A

Seal Kits

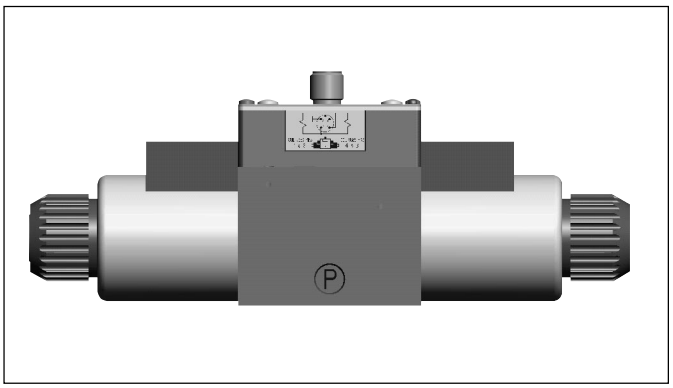
NG (D0)	Seal Kit Number	Note
6 (3)	9 810 231 529	*
10 (5)	9 810 232 520	*
16 (7)	9 810 234 100	
25/55 (8)	9 810 235 600	Low psi 3000
25/51 (8)	9 810 235 601	High psi 4600
32 (10)	9 810 234 535	

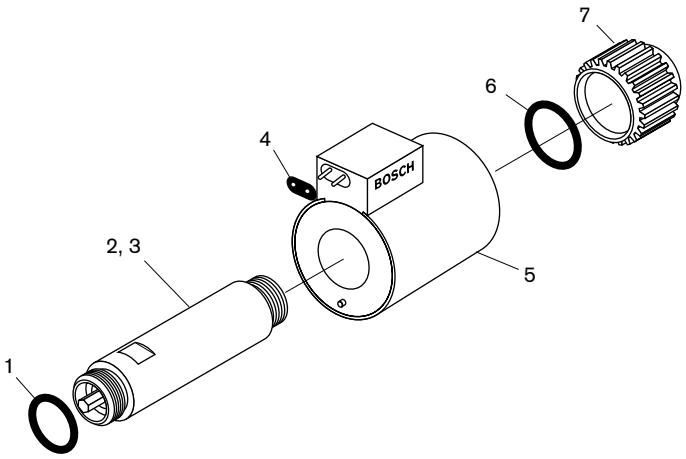
* Additional spare parts information enclosed.

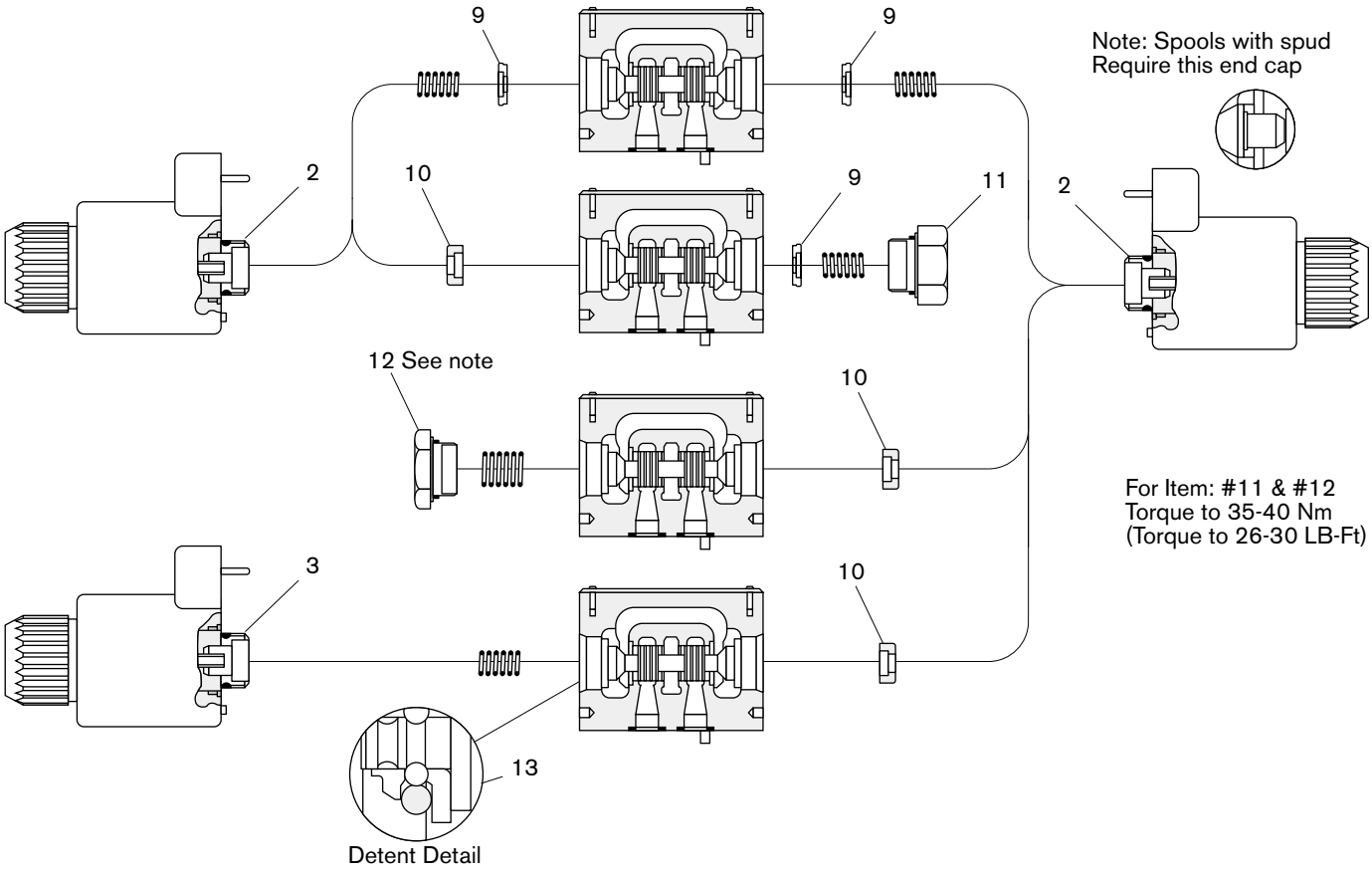
More in depth technical data can be found in the Standard Directional Control Catalog 9 535 233 717

Repair Parts D03 (NG6)

Item No.	Description	Part Number
1	O-ring, 16.5 x 1.8	In kit: 9 810 231 529
2	DC guide tube, Series E	1 839 991 166
3	DC guide tube, Type 20 assy's Series E	1 839 991 167
4	Seal Ring	In kit: 9 810 231 529
5	DC coil (24/00)	9 536 230 096
6	O-ring, 22 x 2	In kit: 9 810 231 529
7	Retaining nut	1 833 343 009
8	O-ring, -021	In kit: 9 810 231 529
9	Washer	9 533 230 286
10	Spacer	9 533 230 287
11	End cap	9 533 230 288
12	End cap (For spool with spud on end)	9 535 230 307
13	Detent assembly	9 810 231 538
	Seal Kit	9 810 231 529

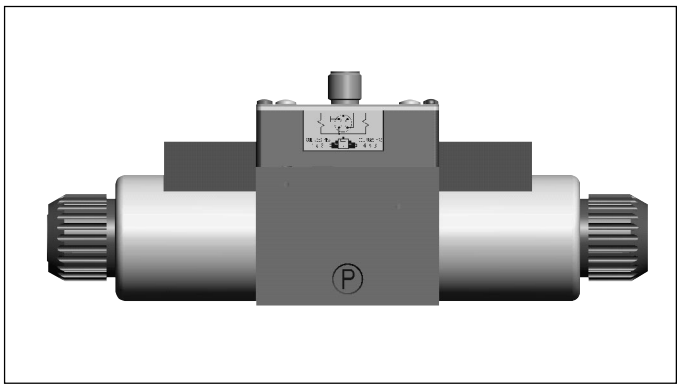


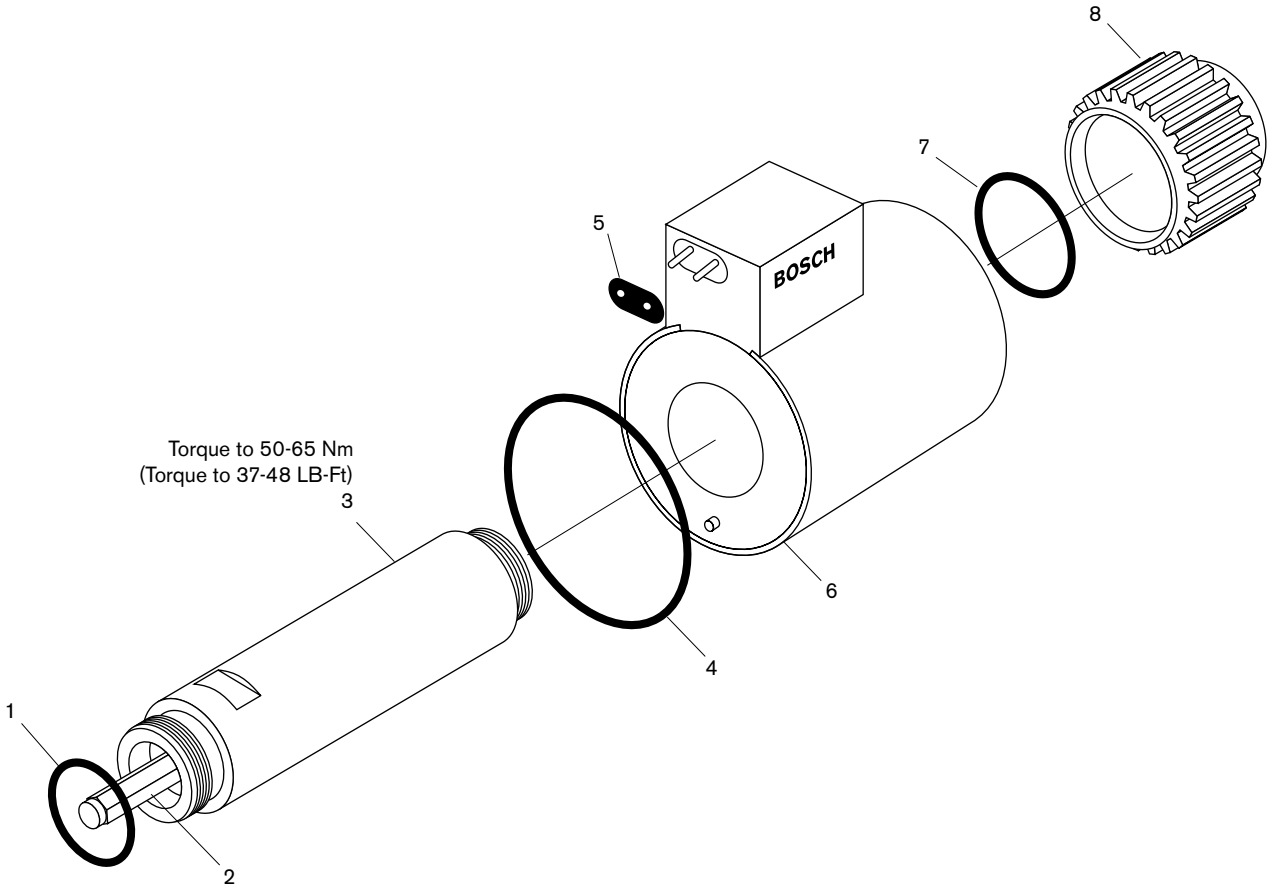




Repair Parts D05 (NG10)

Item No.	Description	Part Number
1	O-ring, 24 x 2.5	In kit: 9 810 232 520
2	Push pin	1 833 003 007
	Push pin (For type 20 assy's, install on port B side)	1 833 003 010
3	Guide tube	1 839 991 142
4	O-ring, 53 x 2	In kit: 9 810 232 520
5	Seal ring	In kit: 9 810 232 520
6	DC coil (24/00)	9 536 230 106
7	O-ring, 30 x 2	In kit: 9 810 232 520
8	Retaining nut	1 833 343 001
	Seal kit	9 810 232 520





All O-rings are included in kit: 9 810 232 520

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