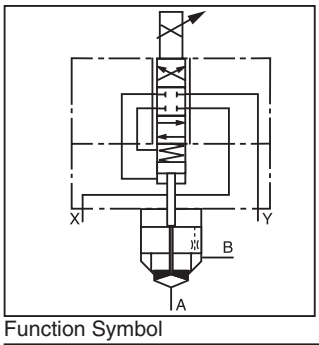
General Description

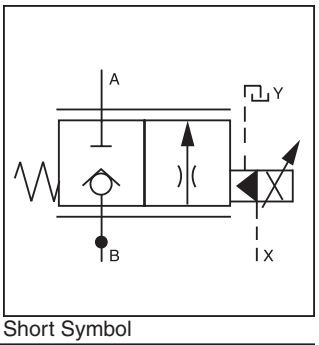
Series TDA 2/2 way proportional throttle valves are used to control large oil flows.

Features

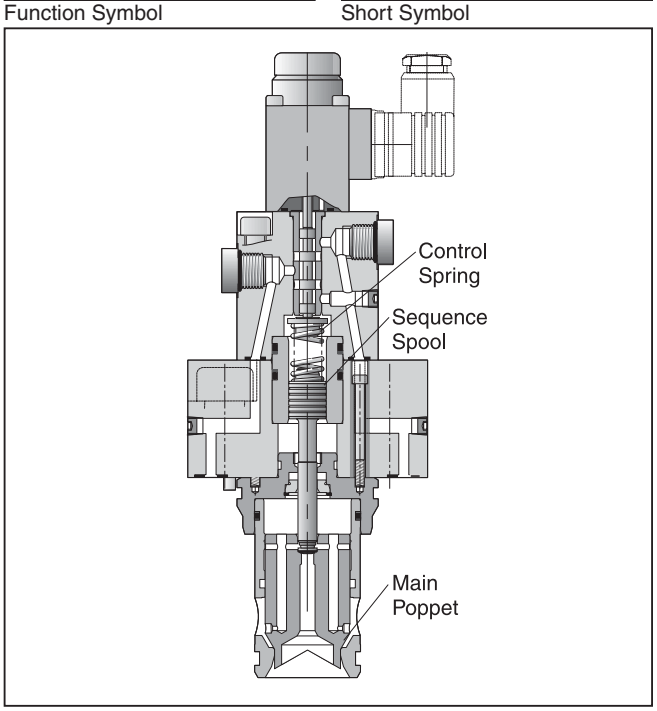
- Cavity and mounting pattern according to ISO 7368.
- Fail-safe function at power failure.
- Leak-free from port B to A.
- Pressure differential up to 350 Bar (5075 PSI) possible.
- 8 sizes NG16 up to NG100.



Function Symbol



Short Symbol



Function

The TDA valve has a 3-stage design consisting of the first solenoid operated pilot stage with a spool in sleeve design, the second pilot stage with the control spring and the sequence spool and as main stage the poppet in the sleeve. The proportional solenoid operates the pilot spool against the feedback of the control spring and controls the position of the sequence spool. The main poppet follows the position of the sequence spool and provides an open area for flow from B to A (optional A to B) in proportion to the solenoid current. The poppet is positioned independent of the differential pressure, which can become as high as the maximum working pressure.

In combination with the digital power amplifier PCD00A-400 the valve parameters can be saved, changed and duplicated.

Ordering Information

TDA	☐	E	W	0	9	☐	2	☐	☐	W	⌜⌝
Proportional Throttle Valve	Nominal Size	Slip-in Valve DIN ISO 7368	Design	Poppet Shape	Nominal Flow	Flow Direction	Piloting	Seals	Solenoid Voltage	Plug Socket without Plug	Design Series

NOTE: Not required when ordering.

Code	Description
016	NG16
025	NG25
032	NG32
040	NG40
050	NG50
063	NG63
080	NG80
100	NG100

Code	Description
A	A to B
B	B to A

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Description
L	6 VDC
X	16 VDC

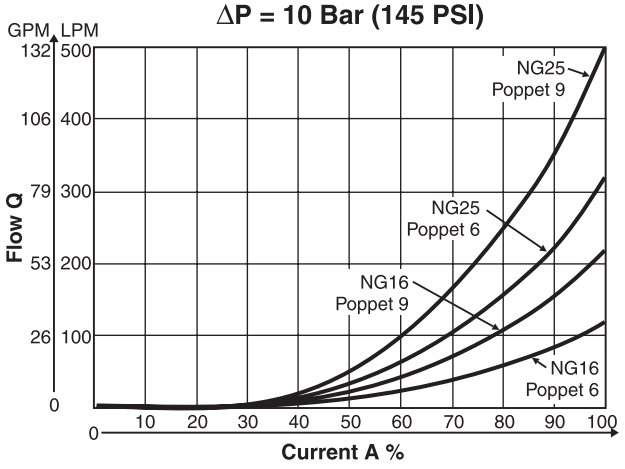
Weight:

TDA016	3.1 kg (6.8 lbs.)	TDA050	15.0 kg (33.1 lbs.)
TDA025	4.3 kg (9.5 (lbs.)	TDA063	33.0 kg (72.8 lbs.)
TDA032	5.8 kg (12.8 lbs.)	TDA080	63.0 kg (138.9 lbs.)
TDA040	9.2 kg (20.3 lbs.)	TDA100	87.0 kg (191.8 lbs.)

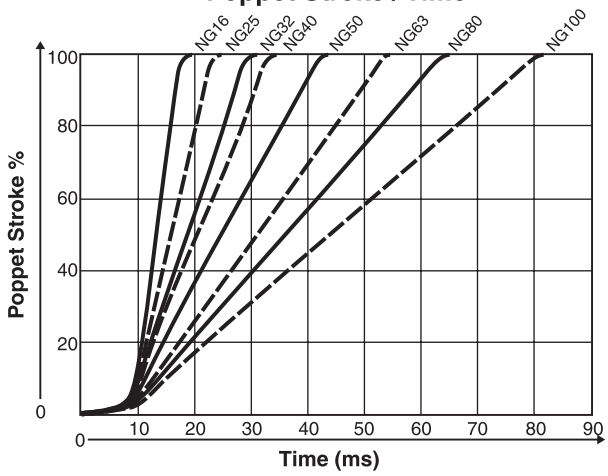
General								
Size	**NG16**	**NG25**	**NG32**	**NG40**	**NG50**	**NG63**	**NG80**	**NG100**
Interface	Slip-in cartridge according to ISO 7368							
Mounting Position	Unrestricted							
Ambient Temperature	-20°C to +80°C (-4°F to +176°F)							
Hydraulic	**NG16**	**NG25**	**NG32**	**NG40**	**NG50**	**NG63**	**NG80**	**NG100**
Maximum Operating Pressure	Ports A, B and X: 350 Bar (5075 PSI), Port Y 10: Bar (145 PSI) maximum							
Nominal Flow LPM **Δp = 10 Bar (145 PSI) GPM**	220 (58)	500 (132)	950 (251)	1400 (370)	2300 (609)	4000 (1058)	6000 (1587)	9500 (2513)
Flow Direction	See Ordering Information							
Fluid	Hydraulic oil according to DIN 51524 ... 525							
Viscosity, recommended	30 to 80 cSt (mm^2/s)							
Viscosity, permitted	20 to 380 cSt (mm^2/s)							
Fluid Temperature	0°C to +60°C (+32°F to +140°F)							
Filtration	ISO 4406 - (1999) ; 18/16/13							
Minimum Pilot Pressure	> 25% of system pressure							
Minimum Operating Pressure	Port A to B at 10 Bar (145 PSI), B to A at 15 Bar (208 PSI)							
Pilot Oil Supply	Depending on flow direction A or B using X or external X							
Pilot Oil Drain	External using Y, 10 Bar (145 PSI) maximum							
Pilot Oil at p = 100 Bar (1450 PSI)	Port X to Y < 1.5 LPM (0.4 GPM)							
Opening Point	At 30% of nominal current							
Manufacturing Tolerance	±5% of Qnom							
Static / Dynamic	**NG16**	**NG23**	**NG32**	**NG40**	**NG50**	**NG63**	**NG80**	**NG100**
Hysteresis	< 3%							
Repeatability	< 1%							
Response time **px = 50 Bar (725 PSI)**	20 ms	25 ms	30 ms	35 ms	45 ms	55 ms	65 ms	80 ms
Electrical (Proportional Solenoid)								
Duty Ratio	100% ED							
Protection Class	IP 65 in according with EN 60529 (plugged and mounted)							
Solenoid Code	**L**				**X**			
Size	**NG16-50**		**NG63-100**		**NG16-50**		**NG63-100**	
Solenoid Voltage **Nominal Current (100% ED)**	6 VDC 2.6 amps				16 VDC 1.05 amps			
Nominal Resistance	2.2 Ohm		2.5 Ohm		11.3 Ohm		14 Ohm	
Power Amplifier, recommended	PCD00A-400							
Solenoid Connection	Connector as per EN 175301-803							

The pilot pressure in X-line must be at least 25% (NG16-40) or 45% (NG50-100) of the pressure in the draining-off line of the cartridge to make sure that the main poppet closes safely without malfunction.

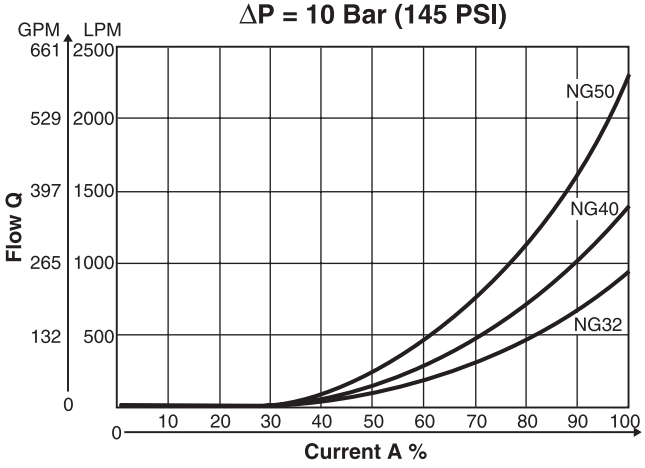
NG16 and NG25 Solenoid Current
ΔP = 10 Bar (145 PSI)



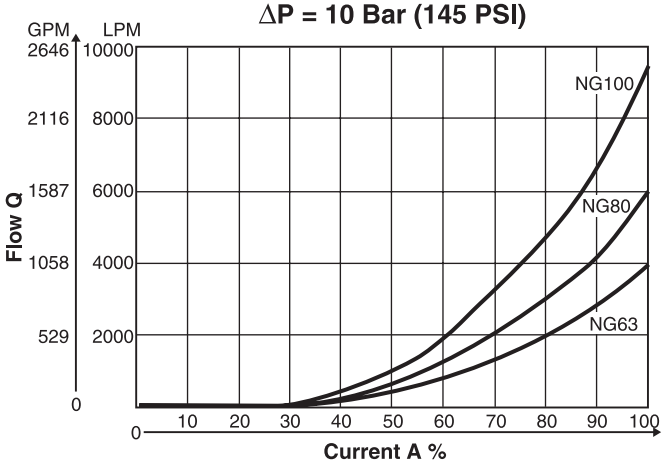
Poppet Stroke / Time



NG32, NG40 and NG50 Solenoid Current
ΔP = 10 Bar (145 PSI)



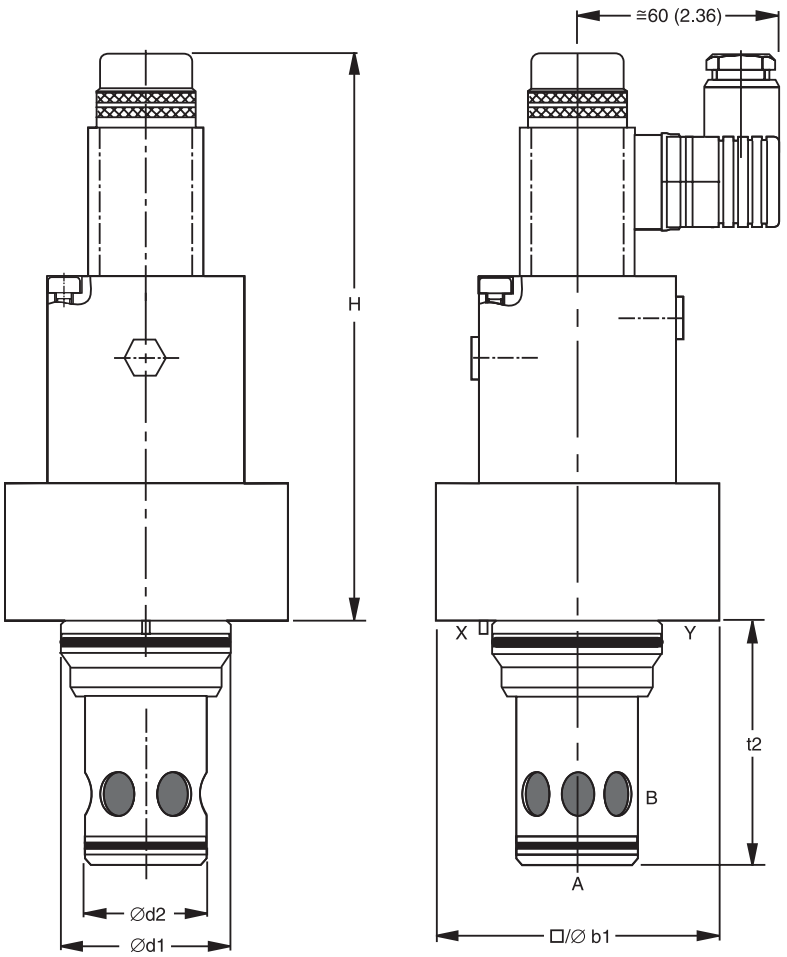
NG63, NG80 and NG100 Solenoid Current
ΔP = 10 Bar (145 PSI)



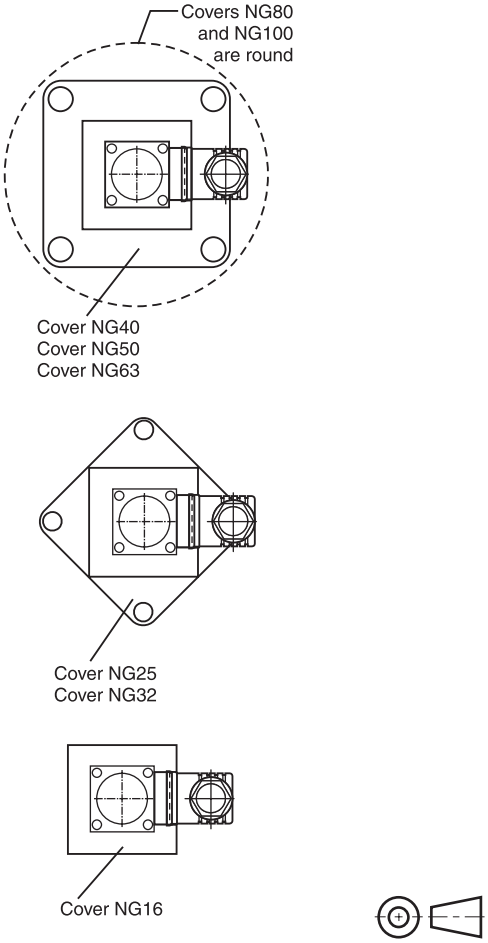
$$\Delta p_{actual} = \left(\frac{Q_{actual}}{Q_{nominal}}\right)_2 \bullet \Delta p_{nominal}$$

Inch equivalents for millimeter dimensions are shown in (**)

Valves



Valve Covers



Size	NG16	NG25	NG32	NG40	NG50	NG63	NG80	NG100
H	168.0 (6.61)	173.0 (6.81)	178.0 (7.01)	262.0 (10.31)	198.0 (7.80)	287.0 (11.30)	327.0 (12.87)	342.0 (13.46)
b1	65.0 (2.56)	85.0 (3.35)	102.0 (4.02)	125.0 (4.92)	140.0 (5.51)	180.0 (7.09)	Ø250.0 (9.84)	Ø300.0 (11.81)
$d1^{H7}$	32.0 (1.26)	45.0 (1.77)	60.0 (2.36)	75.0 (2.95)	90.0 (3.54)	120.0 (4.72)	145.0 (5.71)	180.0 (7.09)
$d2^{H7}$	25.0 (0.98)	34.0 (1.34)	45.0 (1.77)	55.0 (2.17)	68.0 (2.68)	90.0 (3.54)	110.0 (4.33)	135.0 (5.31)
$t2^{+0.1}$	56.0 (2.20)	72.0 (2.83)	85.0 (3.35)	105.0 (4.13)	122.0 (4.80)	155.0 (6.10)	205.0 (8.07)	245.0 (9.65)

NG	Bolt Kit -		Kit	
			Nitrile	Fluorocarbon
16	BK-M8x100-4pcs	33 Nm (24.3 lb.-ft.)	SK-TDA016EN-20	SK-TDA016EV-20
25	BK391 (BK77)	115 Nm (54.8 lb.-ft.)	SK-TDA025EN-20	SK-TDA025EV-20
32	BK415 (BK85)	281 Nm (207.2 lb.-ft.)	SK-TDA032EN-20	SK-TDA032EV-20
40	BK416 (BK86)	553 Nm (407.8 lb.-ft.)	SK-TDA040EN-20	SK-TDA040EV-20
50	BK417 (BK87)	553 Nm (407.8 lb.-ft.)	SK-TDA050EN-20	SK-TDA050EV-20
63	BK418 (BK88)	1910 Nm (1408.6 lb.-ft.)	SK-TDA063EN-20	SK-TDA063EV-20
80	BK419 (BK135)	935 Nm (689.6 lb.-ft.)	SK-TDA080EN-20	SK-TDA080EV-20
100	BK420 (BK90)	1910 Nm (1408.6 lb.-ft.)	SK-TDA100EN-20	SK-TDA100EV-20

TDA.indd, dd