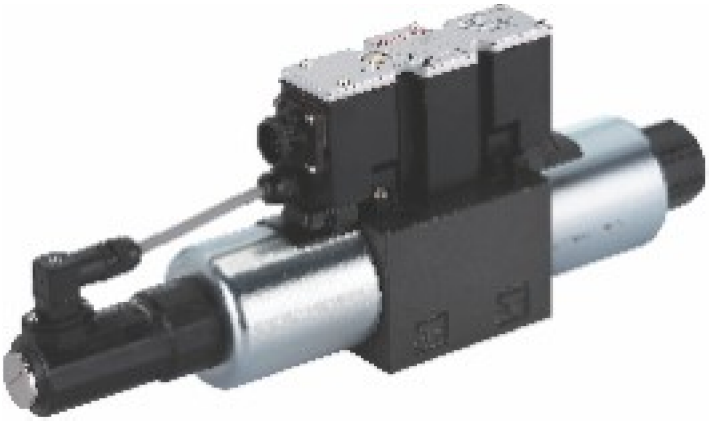
Extra Quick Response Type valves direct operated 4/3-way proportional directional with electrical position feedback with integrated electronics (OBE)

Type DPGEE 6/10 (D03/D05)



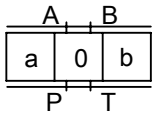
Ordering details

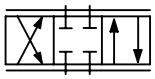
DPGEE				D24			N

With integrated electronics (OBE)

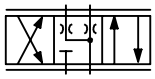
Nominal size 6 (D03) = 6
Nominal size 10 (D05) = 10

Spool symbols





= 3C2



= 3C40

N = NBR seals

Electronic interfaces A1 or B1
For DPGEE
A1 = Command value input ±10 V
B1 = Command value input 4 to 20 mA

Electrical connections
For DPGEE:
No code = without DIN type DF31
DF31= plug-in connector – separate order

D24= Power supply voltage 24 VDC

Nominal flow at a valve pressure differential Δp = 10 bar [145 psi]

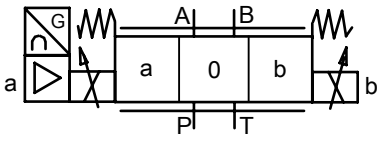
Nominal size 6 / D03
16= 16 l/min [4.2 gpm]
32= 32 l/min [8.4 gpm]

Nominal size 10 / D05
50= 50 l/min [13.2 gpm]
75= 75 l/min [19.8 gpm]

Note:
For spools 3C40 there is, in the neutral position, a connection between A to T and B to T with approx. 3 % of the relevant nominal cross-section.

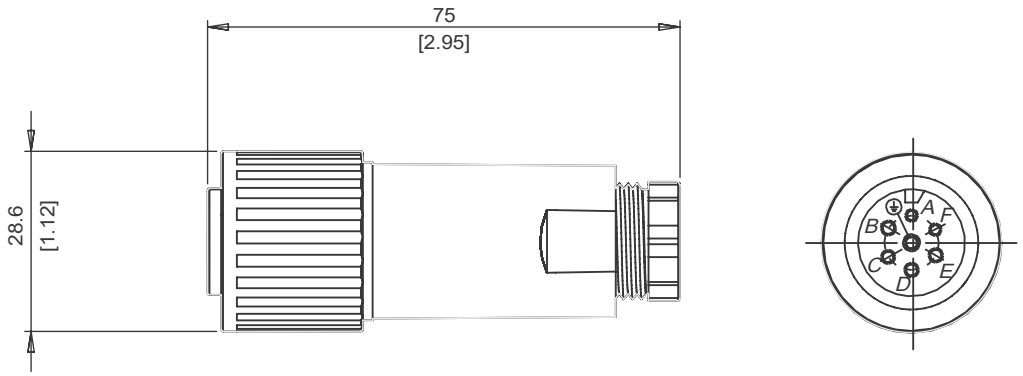
Symbols

Proportional directional valves with integrated electronics
Type DPGEE-3C2, 3C40



Technical data

General				
Nominal size			6 (D03)	10 (D05)
Installation			optional, preferably horizontal	
Storage temperature range		°C [°F]	–20 [-4], +80 [176]	
Ambient temperature range		°C [°F]	–20 [-4], +50 [122]	
Weight		kg [lbs]	2.4	6.5
Hydraulic (measured with HLP46, ϑ_{oil} = 40 °C ± 5 °C and p=100 bar)				
Max. operating pressure	Ports A, B, P	bar [psi]	315 [4568]	
	Port T	bar [psi]	210 [3045]	
Nominal flow $q_{V\,nom}$ at Δp = 10 bar		l/min [gpm]	16 [4.22], 32 [8.45]	50 [13.20], 75 [19.81]
Max. permissible flow		l/min [gpm]	80 [21.13]	180 [47.55]
Pressure fluid			mineral oil (HL, HLP) to DIN 51524	
Pressure fluid temperature range		°C [°F]	-20 [-4] to +80 [176] (preferably +40 [104] to +50 [122])	
Viscosity range		mm^2/s [SUS]	20 [100] to 380 [1700] (preferably 30 [141] to 46 [212])	
Max. permissible degree of pressure fluid contamination cleanlisness class to ISO 4406 ©			class 20/18/15	
Hysteresis		%	≤ 0.1	
Reversal span		%	≤ 0.05	
Response sensitivity		%	≤ 0.05	
Zero point displacement with changes to the pressure fluid temperature and operating temperature		%/10K	0.15	
		%/100 bar	0.1	
Electical				
Nominal size			6 (D03)	10 (D05)
Voltage type			DC	
Command value signal	Voltage input „A1“	V	±10	
	Current input „B1“	mA	4 to 20	
Solenoid coil resistance	Cold value at 20 °C	Ω	2.7	3.7
	Max. warm value	Ω	4.05	5.55
Duty		%	100	
Max. coil temperature		°C [°F]	150 [302]	
Electrical connection			plug-in connector DIN type DF31	
Control electronics				
Supply voltage	Nominal voltage	VDC	24	
	Lower limiting value	V	19.4	
	Upper limiting value	V	35	
Amplifier current consumption	I_{max}	A	<2	
	Max. impulse current	A	3	



Component plug allocation	Contact	Interface A1 signal	Interface B1 signal
Supply voltage	A	24 VDC (u(t) = 19.4 to 35 V); I_{max} = 2 A	
	B	0 V	
Reference potential actual value	C	Ref. contact F; R_e > 50 kΩ	Ref. contact F; R_e< 10 Ω
Differential amplifier input	D	±10 V command value; R_e>50 kΩ	4 to 20 mA command value; R_e>100 Ω
	E	reference potentional command value	
Measurement output (actual value)	F	±10 V actual value (limiting load 5 mA)	4 to 20 mA actual value, load resistance max. 300 Ω
	PE	connected with cooling body and valve housing	

Com. value: A positive command value 0 to +10 V (or 12 to 20 mA) at D and the reference potential at E results in a flow
Com. value: from P to A and B to T.
Com. value: A negative command value 0 to –10 V (or 12 to 4 mA) at D and the reference potential at E results in a flow
Com. value: from P to B and A to T.
Com. value: For a valve with 1 solenoid on side a (e.g. spool variants 2B2B and 2B40B) a positive command value 0 to
Com. value: +10 V or 4 to 20 mA) at D and the reference potential at E results in a flow from P to B and A to T.

Actual value: Actual value 0 to +10 V resp. 12 to 20 mA at F and the reference potential at C results in flow from P to A
Actual value: and B to T, 0 to –10 V resp. 12 to 4 mA results in flow from P to B and A to T.
Actual value: For a valve with 1 solenoid results 4 to 20 mA at F and the reference potential at C results in flow from P to
Actual value: B and A to T.

Connection cable: Recommendation: – up to 25 m cable length type LiYCY 7 x 0.75 mm^2
Connection cable: Recommendation: – up to 50 m calbe length type LiYCY 7 x 1.0 mm^2
Connection cable: Recommendation: For outside diameter see plug-in connector sketch
Connection cable: Recommendation: Only connect screen to PE on the supply line.

DETAIL FOR P/N:

DF31

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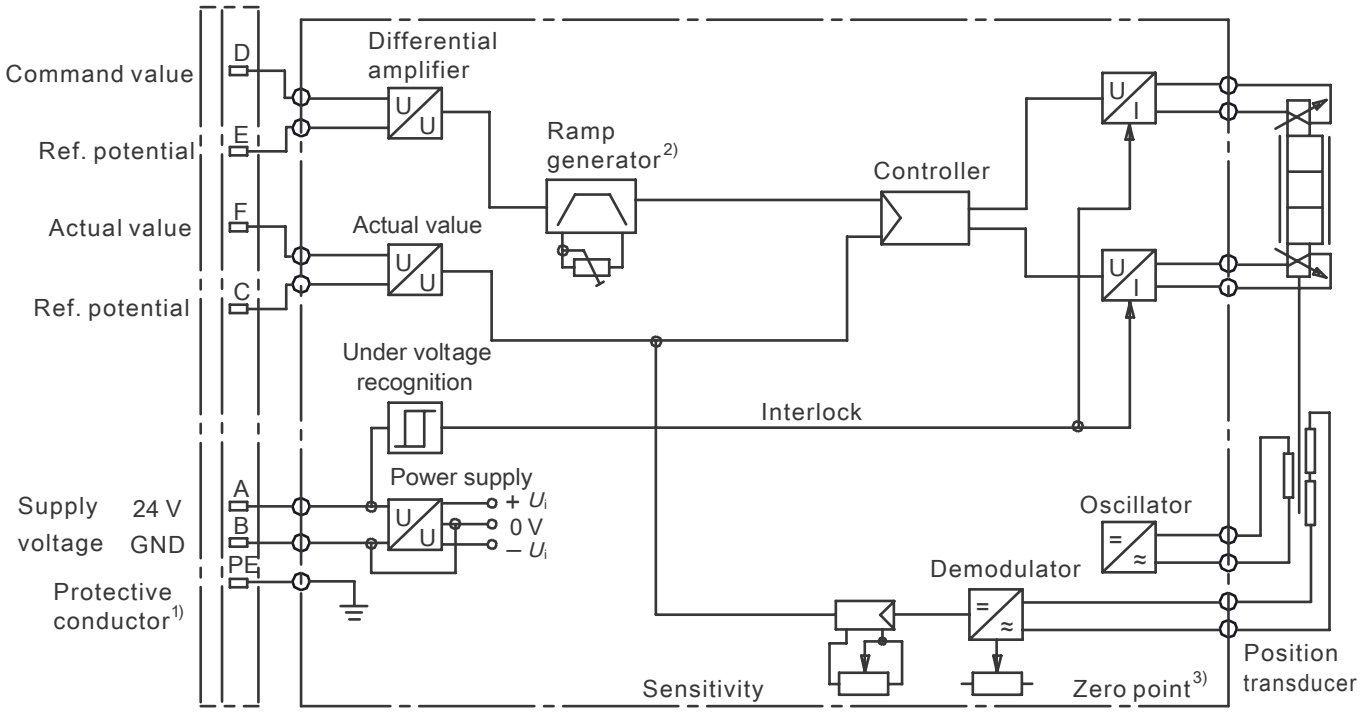
SCALE: NTS | UNITS: mm [in]

Integrated electronics (OBE) for type DPGEE

Block circuit diagram / connection allocation

Interface	Integrated electronics (OBE)	Valve

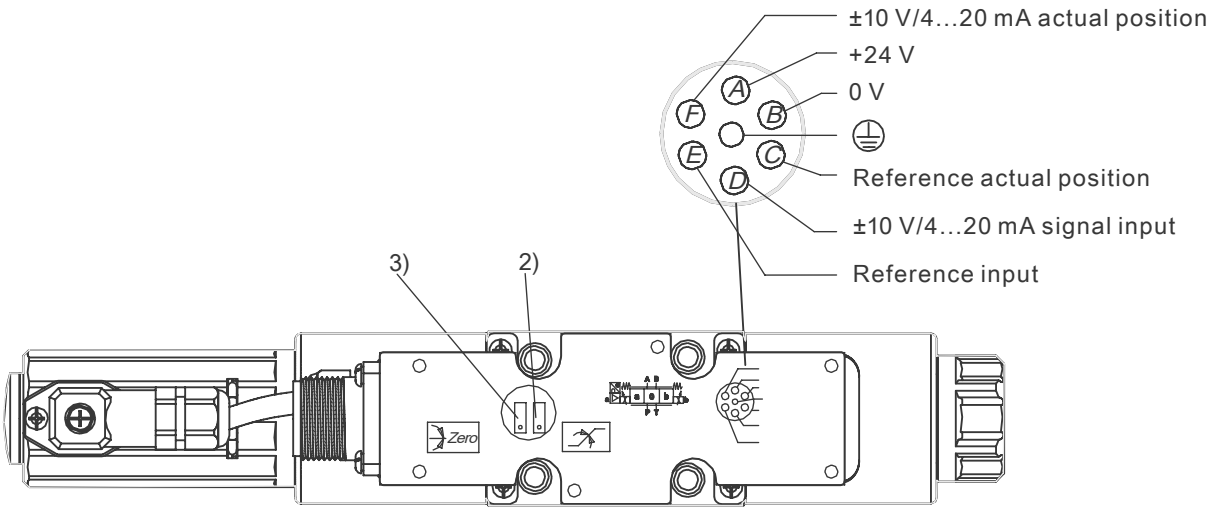


Note: Electrical signals processed by control electronics (e.g. actual value) must not be used for switching off safety relevant machine functions!

1) The protective conductor (PE) is connected to the cooling body and the valve housing!

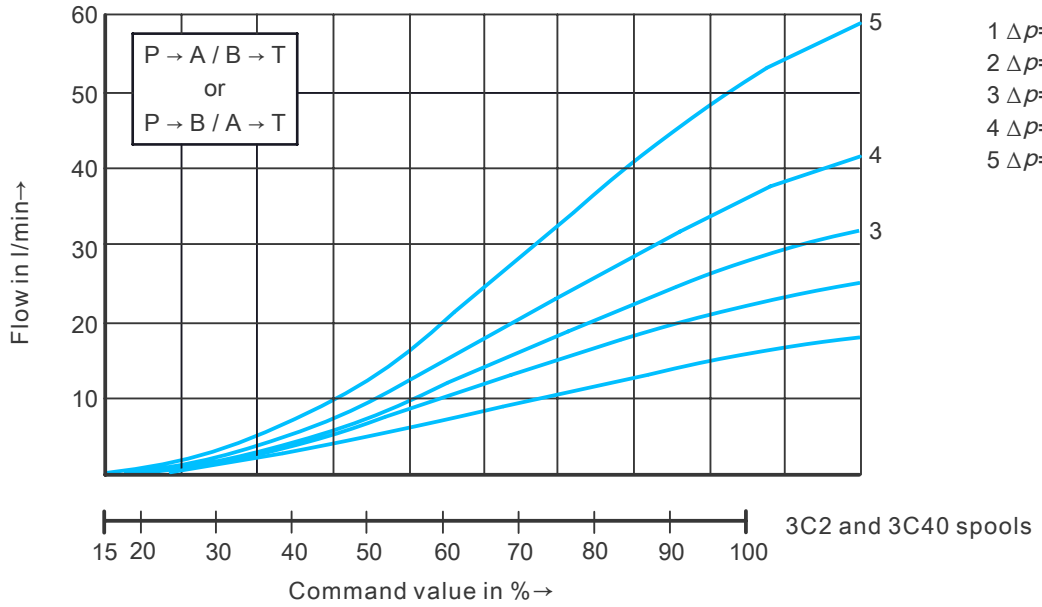
2) The ramp is externally adjustable from 0 to 2.5 s; the same applies for T_{up} and T_{down}

3) Zero point is externally adjustable



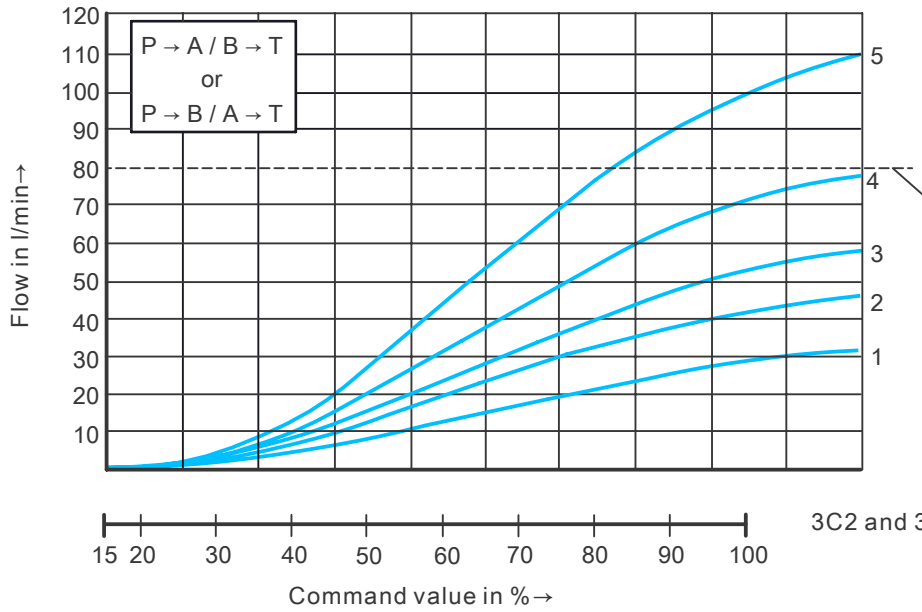
NS 6 / D03

16 l/min [4.2 gpm] nominal flow at a 10 bar [145] valve pressure differential



1 Δp= 010 bar [145 PSI] constant
2 Δp= 020 bar [290 PSI] constant
3 Δp= 030 bar [435 PSI] constant
4 Δp= 050 bar [725 PSI] constant
5 Δp= 100 bar [1450 PSI] constant

32 l/min [8.4 gpm] nominal flow at a 10 bar [145] valve pressure differential



1 Δp= 010 bar [145 PSI] constant
2 Δp= 020 bar [290 PSI] constant
3 Δp= 030 bar [435 PSI] constant
4 Δp= 050 bar [725 PSI] constant
5 Δp= 100 bar [1450 PSI] constant

Max. permissible fow

Δp = Valve pressure differential (inlet pressure p_P minus load pressure p_L and minus return pressure p_T)

DETAIL FOR P/N:

DPGEE-6-3C*--D24-*1-N**

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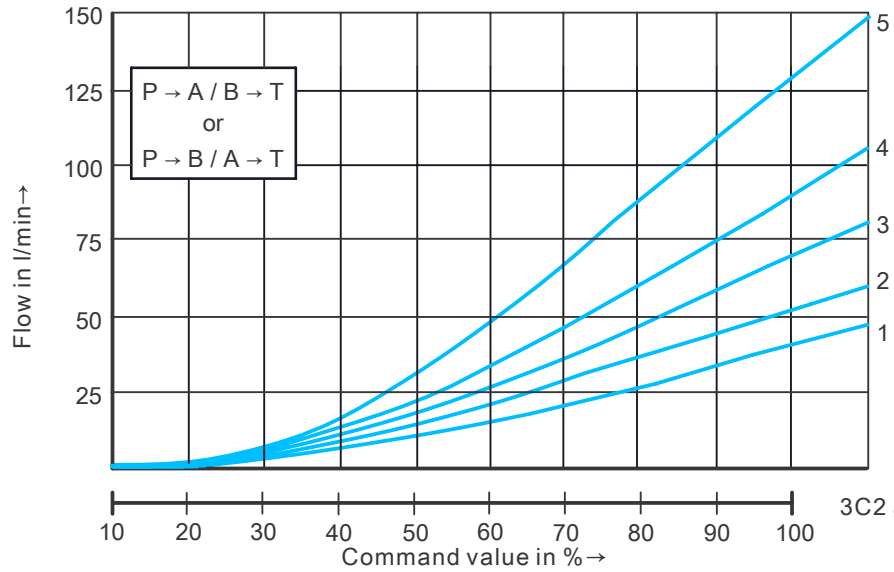
SCALE: NTS

NS 10 / D05

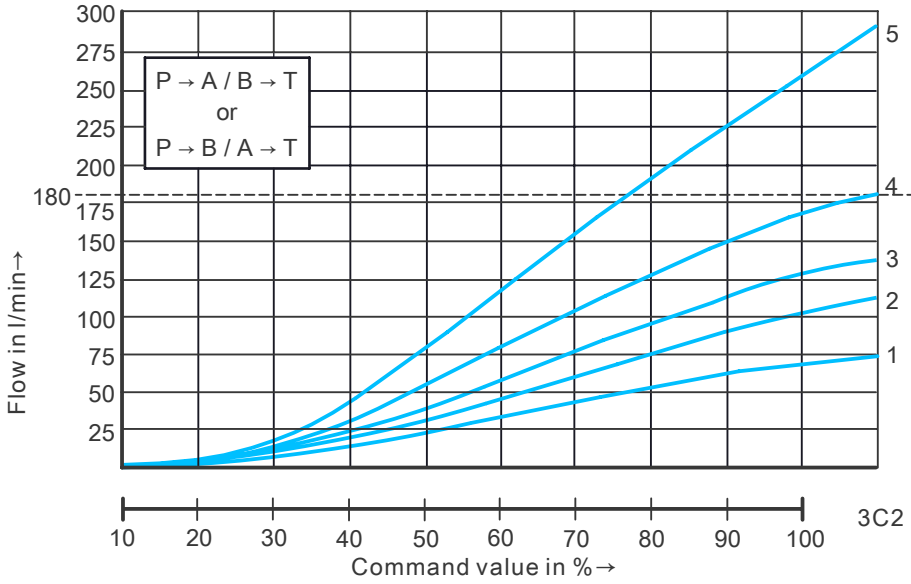
50 l/min [13.2 gpm] nominal flow at a 10 bar [145] valve pressure differential



1 Δ*p*= 010 bar [145 PSI] constant
2 Δ*p*= 020 bar [290 PSI] constant
3 Δ*p*= 030 bar [435 PSI] constant
4 Δ*p*= 050 bar [725 PSI] constant
5 Δ*p*= 100 bar [1450 PSI] constant

3C2 and 3C40 spools

75 l/min [19.8 gpm] nominal flow at a 10 bar [145] valve pressure differential



Max. permissible fow

1 Δ*p*= 010 bar [145 PSI] constant
2 Δ*p*= 020 bar [290 PSI] constant
3 Δ*p*= 030 bar [435 PSI] constant
4 Δ*p*= 050 bar [725 PSI] constant
5 Δ*p*= 100 bar [1450 PSI] constant

Δ*p*= Valve pressure differential (inlet pressure p_P minus load pressure p_L and minus return pressure p_T)

3C2 and 3C40 spools

DETAIL FOR P/N:

DPGEE-10-3C*--D24-*1-N**

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SCALE: 1:1 | UNITS: INCH [mm]

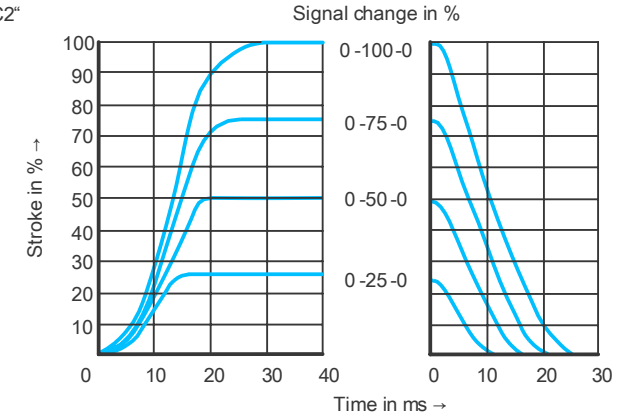
Transient function with a stepped form of electrical input signal for type DPGEE

(measured with HLP46, ϑ_{oil} = 40 °C ± 5 °Cand p_s=10bar)

NS 6/ D03

4/3 valve version

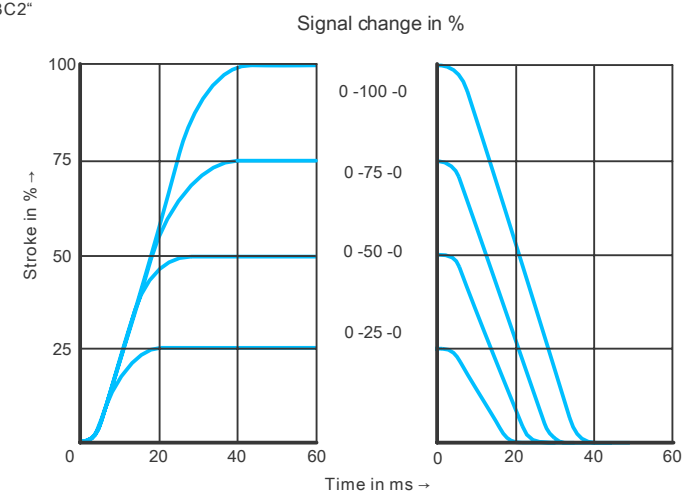
Spool symbol “3C2“



NS 10 / D05

4/3 valve version

Spool symbol “3C2“



DETAIL FOR P/N:

DPGEE-6-3C*--D24-*1-N**

DPGEE-10-3C*--D24-*1-N**

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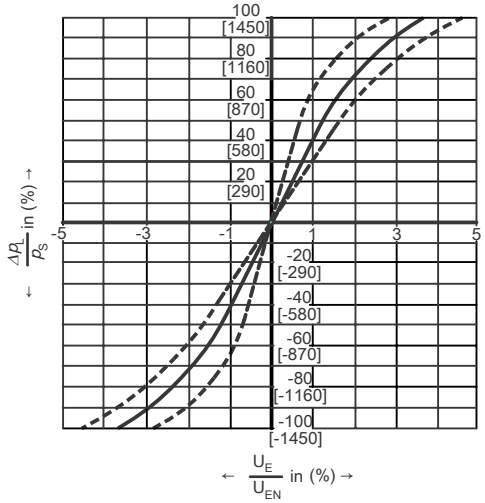
UNITS: INCH [mm]

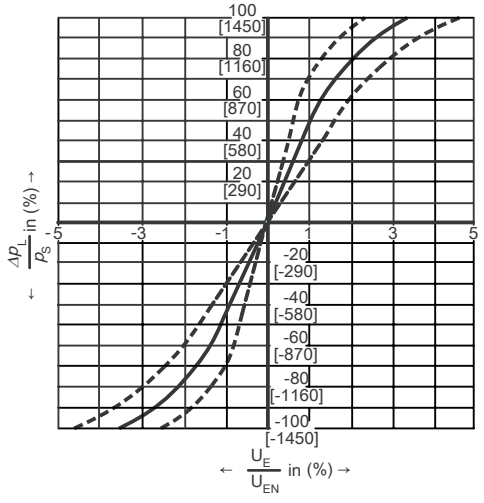
Characteristic curves for type DPGEE (measured with HLP46, ϑ_{oil} = 40 °C ± 5 °C) NS 6 (D03) and 10 (D05)

Pressure-signal-characteristic curves (3C2 spool), p_s = 100 bar [1450 PSI]

Nominal size 6 (D03)

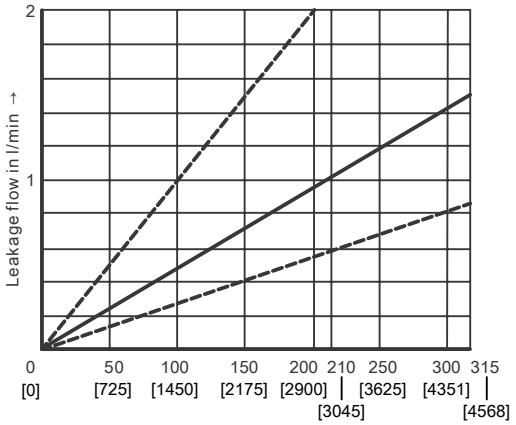


Nominal size 10 (D05)

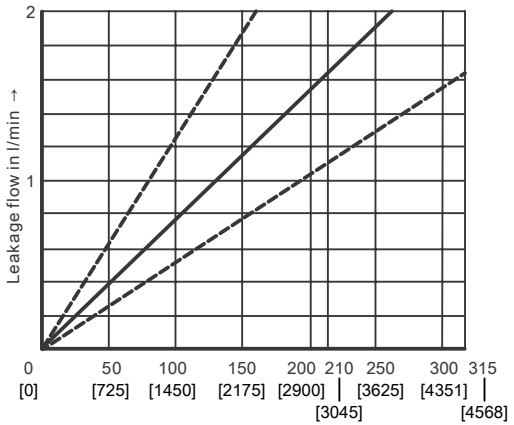


Leakage flow with the spool in the central position

Type DPGEE 6 V32 / 8.4 GPM



Type DPGEE 10 V75 / 19.8 GPM



DETAIL FOR P/N:

DPGEE-6-3C*--D24-*1-N**

DPGEE-10-3C*--D24-*1-N**

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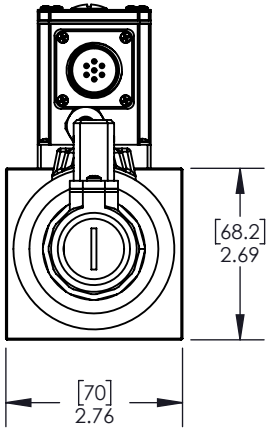
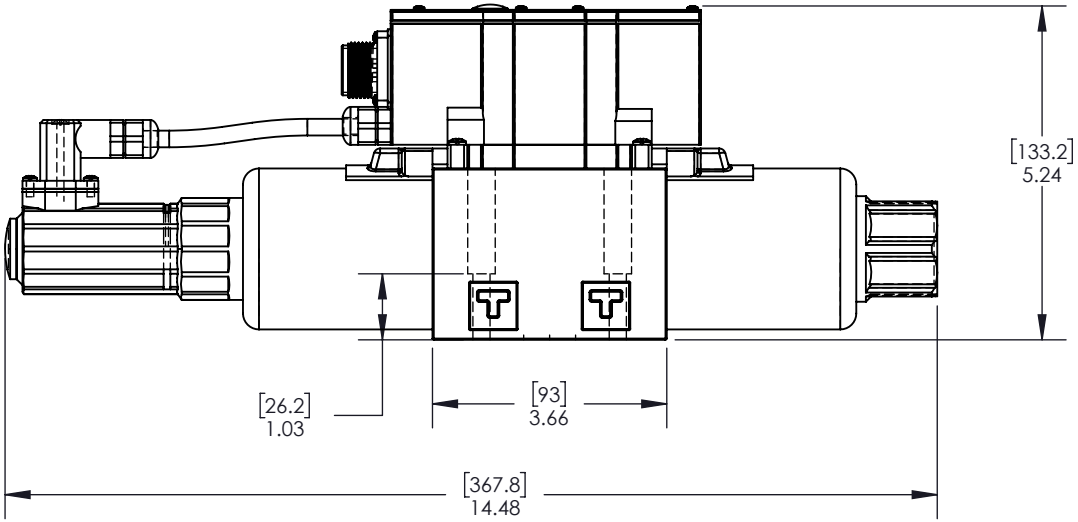
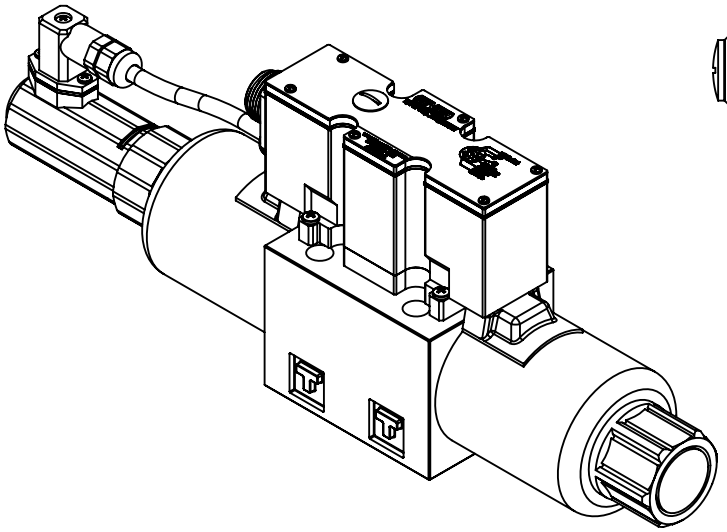
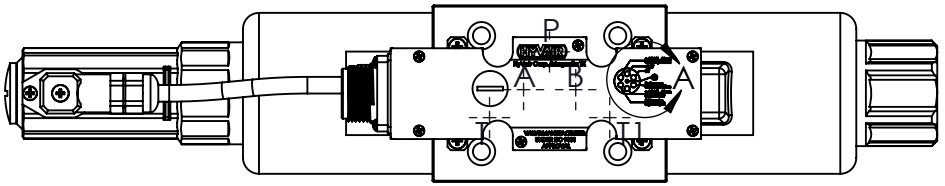
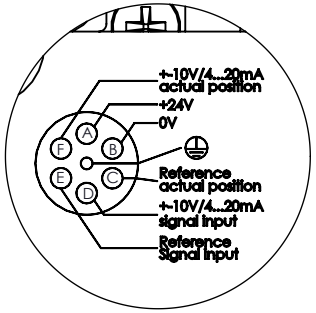
SCALE: 1:1.4 | UNITS: INCH [mm]











DETAIL A
SCALE 4 : 3

DETAIL FOR P/N:
DPGEE-10-*-*-*
(D05)

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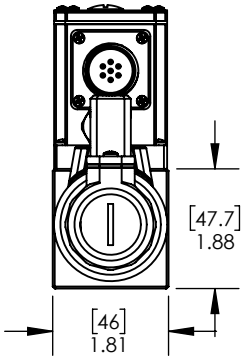
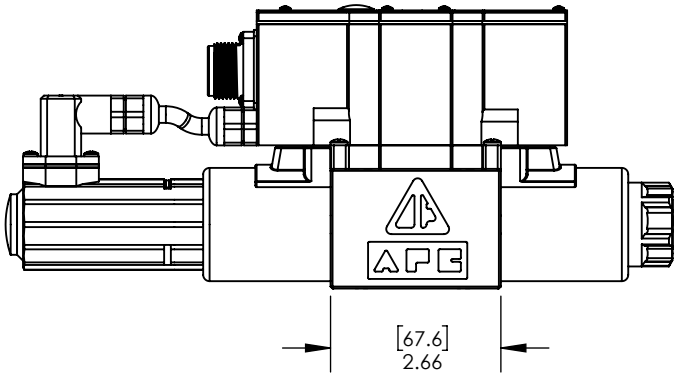
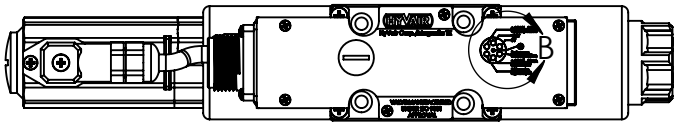
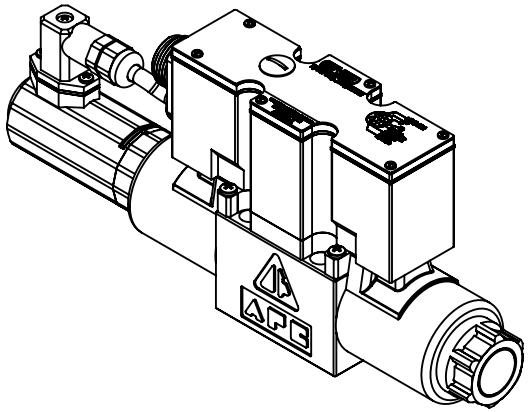
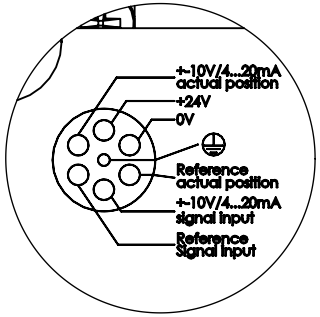
SCALE: 1:3 | UNITS: INCH [mm]











DETAIL B
SCALE 4 : 3

DETAIL FOR P/N:

DPGEE-6-*-*-B1
(D03)

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SCALE: 1:3 | UNITS: INCH [mm]