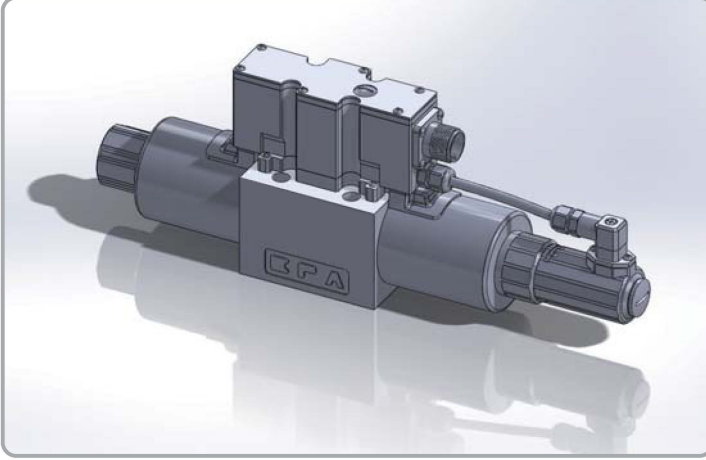


6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves



6 ve 10 oransal yön valfi, direk çalıştırılmalı, pozisyon geri beslemeli, entegreli elektronik kartlı (OBE)

6 and 10 proportional directional valves, direct operated, with electrical position feedback, with integrated electronics (OBE)

Tip DPGEE 10...24 VDC Elektronik Kartı Üzerinde (OBE)
Type DPGEE 10...24 VDC with integrated electronics (OBE)

İçeriğine genel bakış

İçindekiler
Özellikleri
Sipariş detayları
Sembol
Fonksiyon, bölüm
Teknik bilgileri
Elektronik kontrolü
Elektrik bağlantısı, fiş bağlantısı
Entegreli elektronik tipi DPGEE (OBE)
Karakteristik eğrileri
Valf ebatları

Overview of contents

Contents
Features
Ordering details
Symbols
Function, section
Technical data
Control electronics
Electrical connections, plug-in connectors
Integrated electronics (OBE) for type DPGEE
Characteristic curves
Installation dimensions

Özellikler

- DPGEE tipi entegre edilmiş elektronik kartlı (OBE), pozisyon geri beslemeli, oransal yön valfi
- Kapalı döngü kontrolü ile akış yönü ve hızını kontrol eder
- Oransal valf hareketini dışli bağlantılı, sökülebilir bobinle yapmaktadır.
- Pleyt montajı, bağlantı şekli ISO 4401'e göre katalog sayfasına bakınız.
- Yön Kontrol spoolu yay merkezli
- Elektronik kontrol
 - DPGEE
- Entegre edilmiş elektronik karta (OBE) voltaj ve akım girişi (A1 ve B1)

Features

- Direct operated proportional directional valve with electrical position feedback and integrated electronics (OBE) for type DPGEE
- Closed loop control of the direction and size of a flow
- Operation is by proportional solenoids with a central thread and removable coil
- For subplate mounting:
Porting pattern to ISO 4401
Subplates to catalogue sheets (separate order)
- Spring centred control spool
- Control electronics
 - DPGEE:
- integrated electronics (OBE) with voltage input or current input (A1 resp. B1)

6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Sipariş detayları / Ordering details

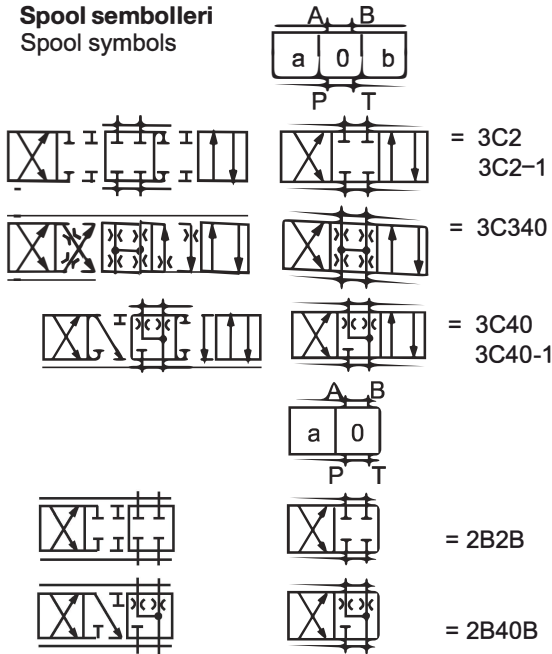
| DPGEE | | | 24 VDC | | | N | *

Entegreli elektronik kart içinde
 With integrated electronics (OBE)

Nominal ölçü Nominal size 6 = 6

Nominal ölçü Nominal size 10 = 10

Spool sembolleri
 Spool symbols



3C2-1 ve 3C40-1 spool sembolü içinde
 With spool symbols 3C2-1 and 3C40-1:

P → A: $q_{V \max}$ B → T: $q_{V/2}$
 P → B: $q_{V/2}$ A → T: $q_{V \max}$

Not: Note:

3C40 ve 2B40B spool tiplerinde
enerjisizken A ve T, B ve T arasında
nominal geçiş değerinin %3'ü kadar
bir kesit vardır.

For spools 3C40 and 2B40B 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.

Üretim yılı

Manufacturing year

12: 2012

13: 2013

NBR oring

NBR seals

N =

DPGEE A1 ve B1 elektronik girişi
 Electronic interfaces A1 or B1 for DPGEE

A1 = ± 10V komut girişi

A1 = Command value input ± 10 VDC

B1 = 4 - 20mA komut girişi

B1 = Command value input 4 to 20 mA

DPGEE elektrik girişi DIN tipi DF31

Electrical connections for DPGEE: with DIN type DF31

DF31 fiş bağlantısı, siparişi için

kataloğa bakınız

DF31=plug-in connector – separate order

24 VDC = **Güç kaynağı voltajı** Power supply voltage 24 VDC

Δp= 10 bar basınç değişiminde nominal akış

Nominal flow at a valve pressure differential Δp = 10 bar

Nominal ölçü

Nominal size 6

8 l/min

16 l/min

32 l/min

Nominal ölçü

Nominal size 10

25 l/min

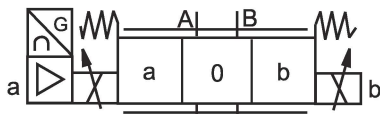
50 l/min

75 l/min

Semboller / Symbols

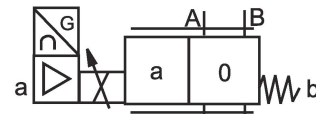
Tip

Types DPGEE-3C2 ; DPGEE-3C40



Tip

Types DPGEE-2B2 ; DPGEE-2B40B



6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Teknik bilgiler / Technical data

Genel / General

Nominal ölçü / Nominal size		6	10	
Montaj / Installation		İsteğe bağlı, tercihen yatay / optional, preferably horizontal		
Depolama sıcaklığı aralığı / Storage temperature range		°C	20 to +80	
Ortam sıcaklığı aralığı / Ambient temperature range		DPGEE °C	-20 to +50	
Ağırlık / Weight	DPGEE	kg	2.2	6.5
Hidrolik (HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$, ve p=100 bar ölçüsünde)				
Hydraulic (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ and p=100 bar)				
Maksimum çalışma basıncı Ports A, B, P		bar	315	
Max. operating pressure	Port T	bar	210	
Nominal akış / Nominal flow $q_{V\text{ nom}}$ at $\Delta p = 10\text{ bar}$		l/min	8, 16, 32	25, 50, 75
Maksimum izin verilen akış / Max. permissible flow		l/min	80	180
Basınçlı akışkan / Pressure fluid		Mineral yağ isteğe bağlı / mineral oil (HL, HLP) to R46 diğer akışkanlar / other pressure fluids on request!		
Basınçlı akışkanın sıcaklık aralığı		°C	-20 to +80 (preferably +40 to +50)	
Pressure fluid temperature range				
Viskozite aralığı / Viscosity range		mm ² /s	20 to 380 (preferably 30 to 46)	
Basınçlı akışkanın izin verilen kirlilik oranı sınıfı ISO 4406 (c)			Sınıf 20/18/15 class 20/18/15 ¹⁾	
Max. permissible degree of pressure fluid contamination cleanliness class to ISO 4406 (c)				
Gecikme / Hysteresis		%	≤ 0.1	
Ters hata / Reversal error		%	≤ 0.05	
Cevaplama hassasiyeti / Response sensitivity		%	≤ 0.05	
Sıfır noktasında yer değiştirme		%/10K	0.15	
Zero point displacement with changes to the				
Basınç akışkan sıcaklığı ve çalışma sıcaklığı		%/100 bar	0.1	
Pressure fluid temperature and operating temperature				
Elektrik / Electrical				
Nominal ölçü / Nominal size		NS	6	10
Voltaj tipi / Voltage type			DC	
Komut giriş sinyali	Voltaj girişi / Voltage input „A1“	V	±10	
Command value signal				
with type DPGEE	Akım girişi / Current input „B1“	mA	4 bis 20	
Solenoid bobin	Soğuk iken	Ω	2.7	3.7
direnci	Cold value at 20 °C			
Solenoid coil	Maksimum sıcaklıkta	Ω	4.05	5.55
resistance	Max. warm value			
Görev / Duty		%	100	
Maksimum bobin sıcaklığı / Max. coil temperature ³⁾		°C	150	

Elektrik bağlantısı DPGEE / Electrical connections DPGEE Fiş bağlantılı DIN tip DF31 / plug-in connector DIN type DF31 ⁴⁾

Elektronik Kontrol / Control electronics

Voltaj Kaynağı	Nominal voltaj / Nominal voltage	VDC	24
Supply voltage	Düşük limit değeri / Lower limiting value	V	19.4
DPGEE	Yüksek limit değeri / Upper limiting value	V	35
Amplifikator akım tüketimi / Amplifier power consumption	Mak. / max	A	<2
	Maksimum akım darbesi / Max. impulse current	A	3

6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

DPGEE tipi entegre elektronik (nominal ölçüleri mm)

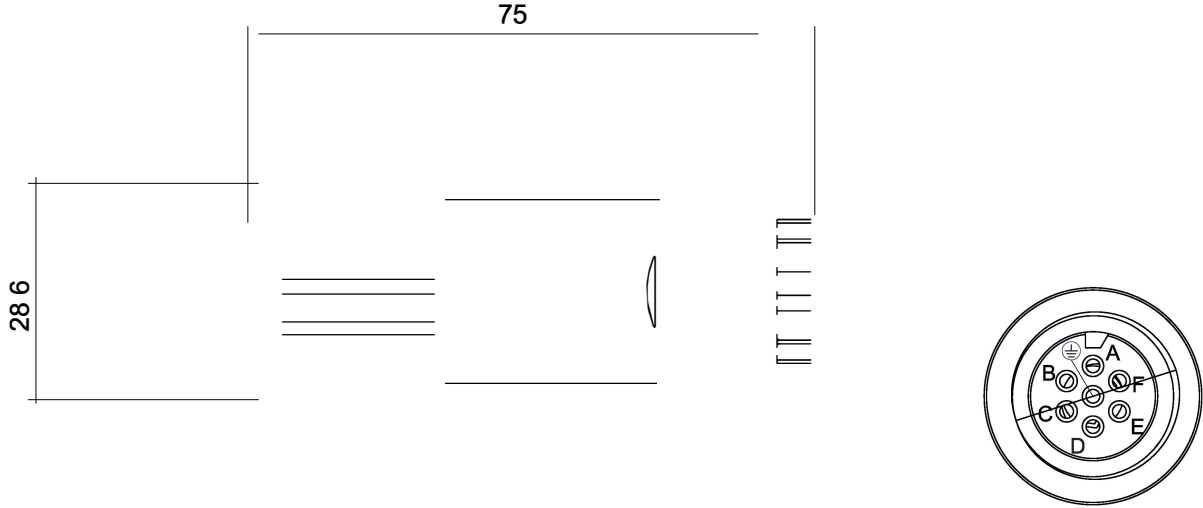
Integrated electronics (OBE) for type DPGEE (nominal dimensions in mm)

DPGEE tipi

For type DPGEE (with integrated electronics (OBE))

Pin tahsisı için, blok devre şemasına bakınız. For pin allocation, see block circuit diagram

Fiş bağlantı DIN tip DF31, ayrı sipariş edilir. Plug-in connector to DIN type DF31 separate order



Fiş komponent tahsis

Component plug allocation

Voltaj kaynağı

Supply voltage

Referans potansiyel gerçek değer

Reference potential actual value

Diferansiyel amplifikatör girişi

Differential amplifier input

Measurement output (actual value)

Bağlantı

Contact

A1 sinyali için

Interface A1 signal

B1 sinyali için

Interface B1 signal

A

24 VDC ($u(t) = 19.4$ to 35 V); $I_{max} = 2$ A

B

0 V

C

ref. contact F; $R_a > 50$ k Ω

ref. contact F; $R_a < 10$ Ω

D

± 10 V command value; $R_a > 50$ k Ω

4 to 20 mA command value; $R_a > 100$ Ω

E

reference potential command 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

Komut değeri

Command 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 from P to A and B to T.

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 from P to B and A to T.

For a valve with 1 solenoid on side a (e.g. spool variants 2B2B and 2B40B) a positive command value 0 to +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 and B to T, 0 to -10 V resp. 4 to 12 mA results in flow from P to B and A to T.

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 A and B to T

Connection cable: Recommended: – up to 25 m cable length type LiYCY 7 x 0.75 mm²
– up to 50 m cable length type LiYCY 7 x 1.0 mm²

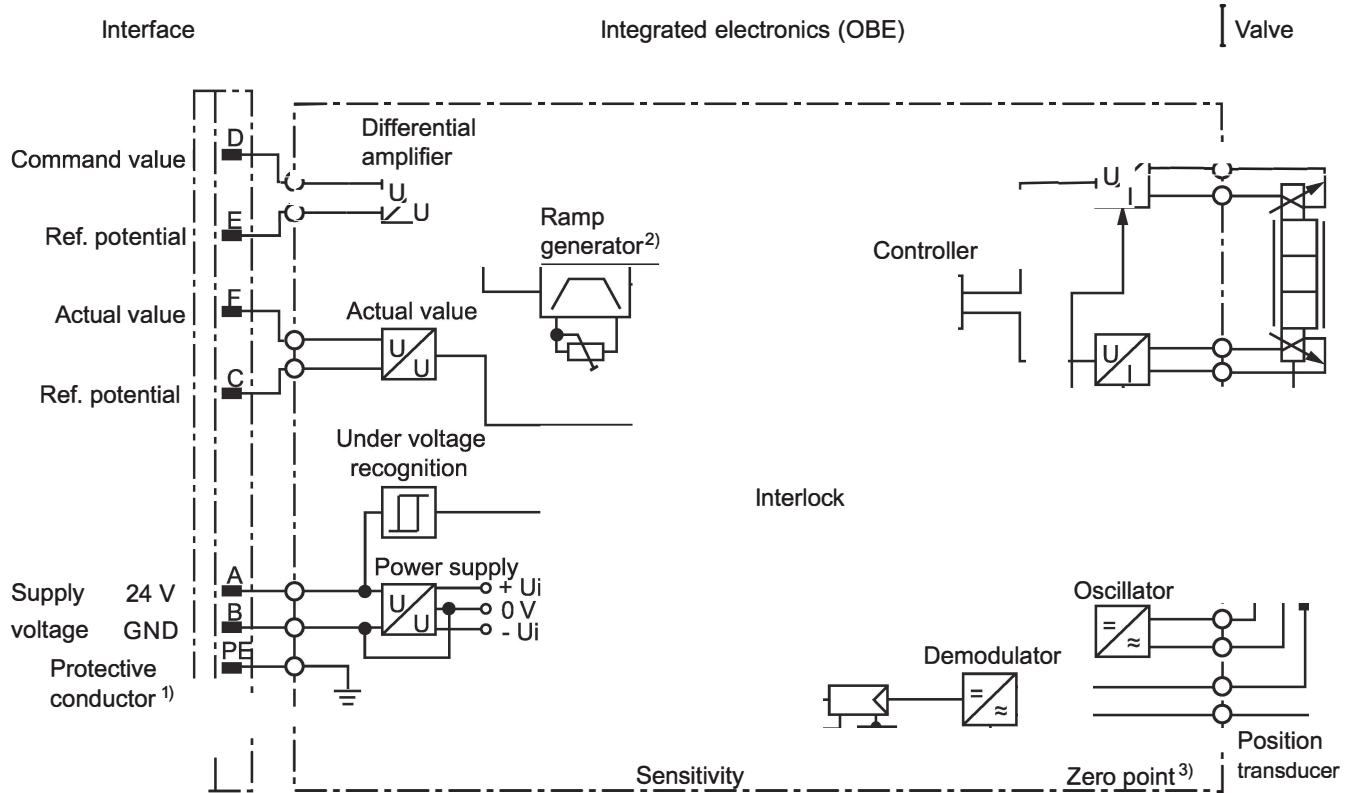
For outside diameter see plug-in connector sketch

Only connect screen to PE on the supply line.

6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Integrated electronics (OBE) for type DPGEE

Block circuit diagram / connection allocation

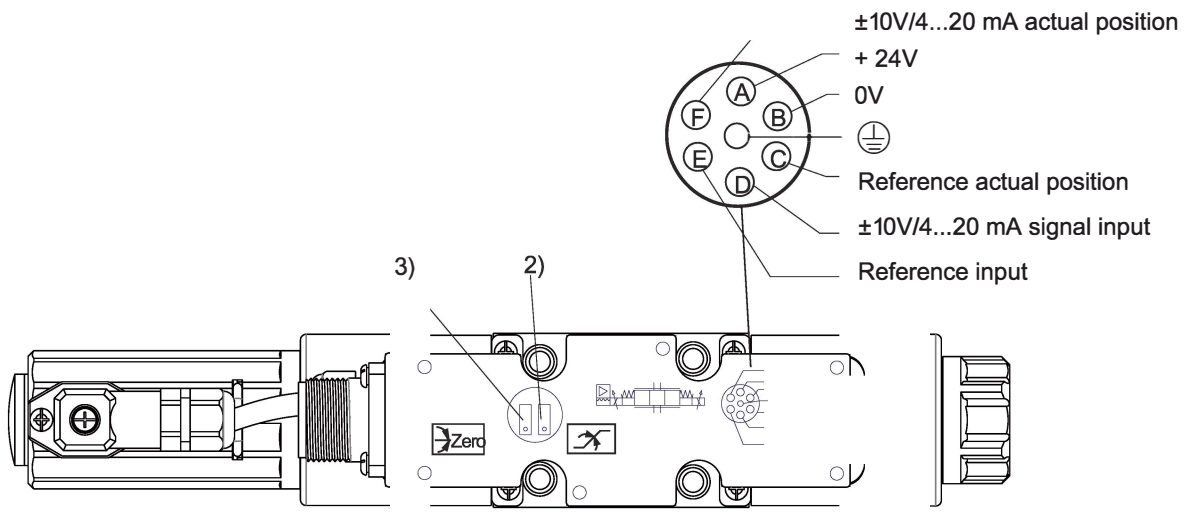


Note: Electrical signals processed by control electronics (e.g. actual value) must not be used for switching off safety relevant machine functions!

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



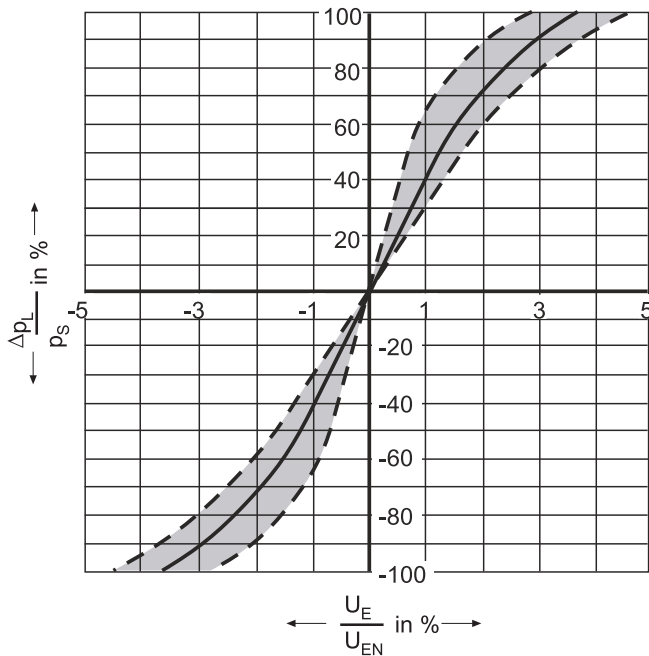
6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Characteristic curves for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

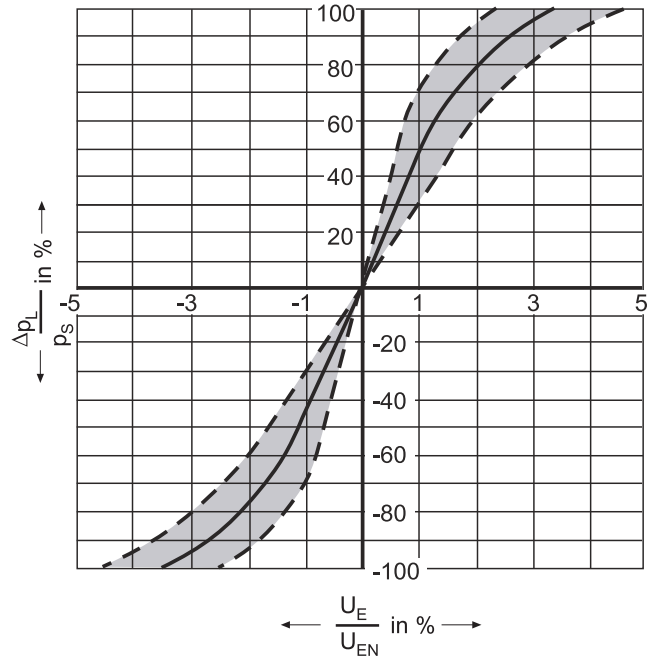
NS 6 and 10

Pressure-signal-characteristic curves (V spool), $p_s = 100\text{ bar}$

Nominal size 6

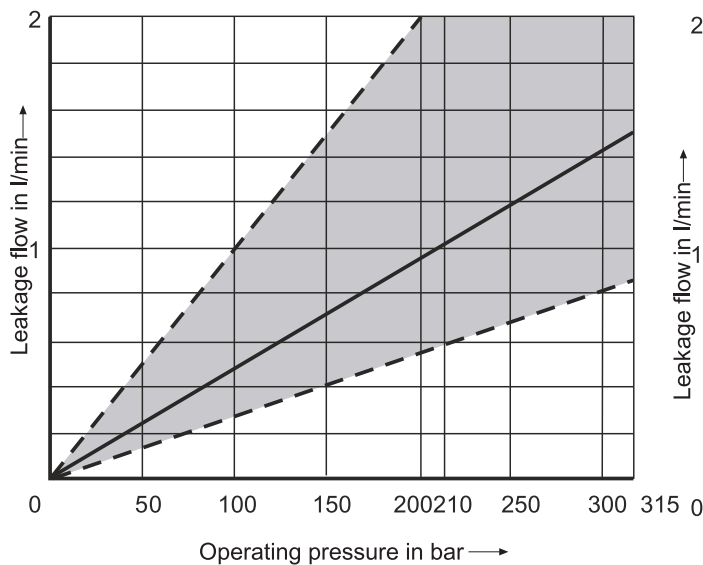


Nominal size 10

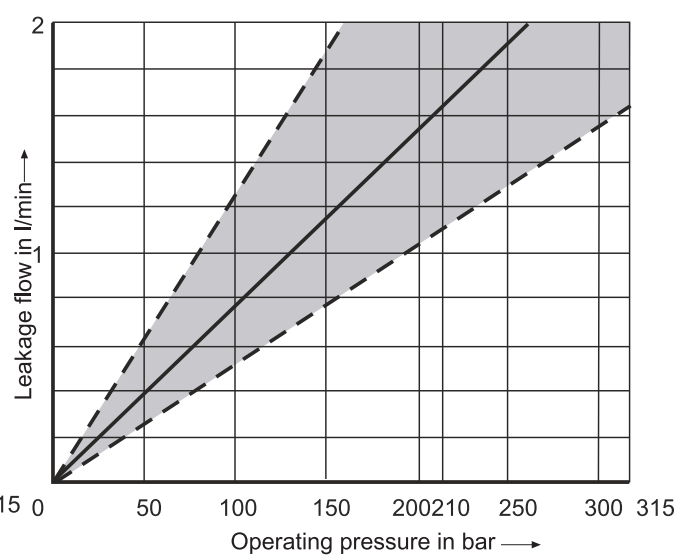


Leakage flow with the spool in the central position

Type DPGEE 6 V32



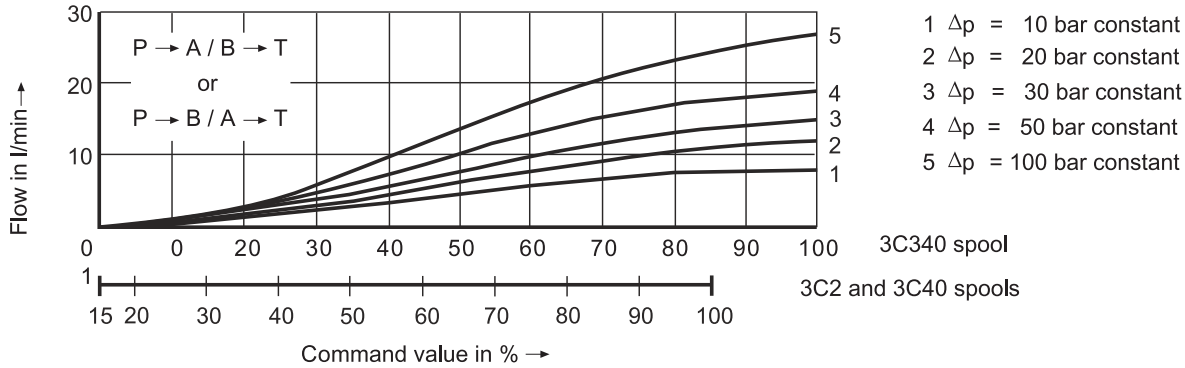
Type DPGEE 10 V75



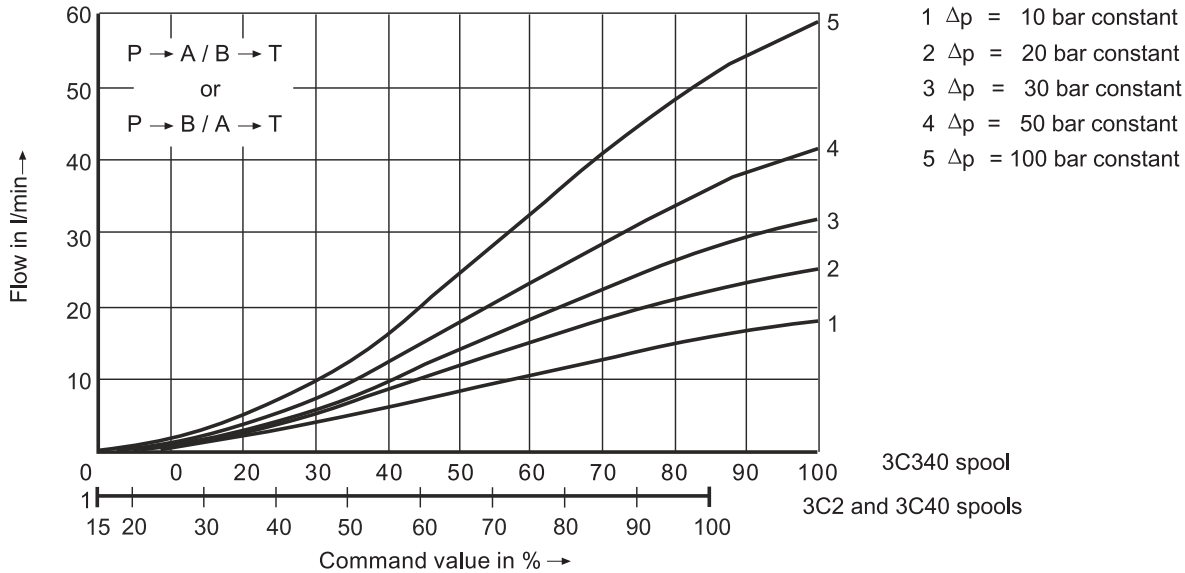
6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Characterisitic curves for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ and $p = 100\text{ bar}$) NS 6

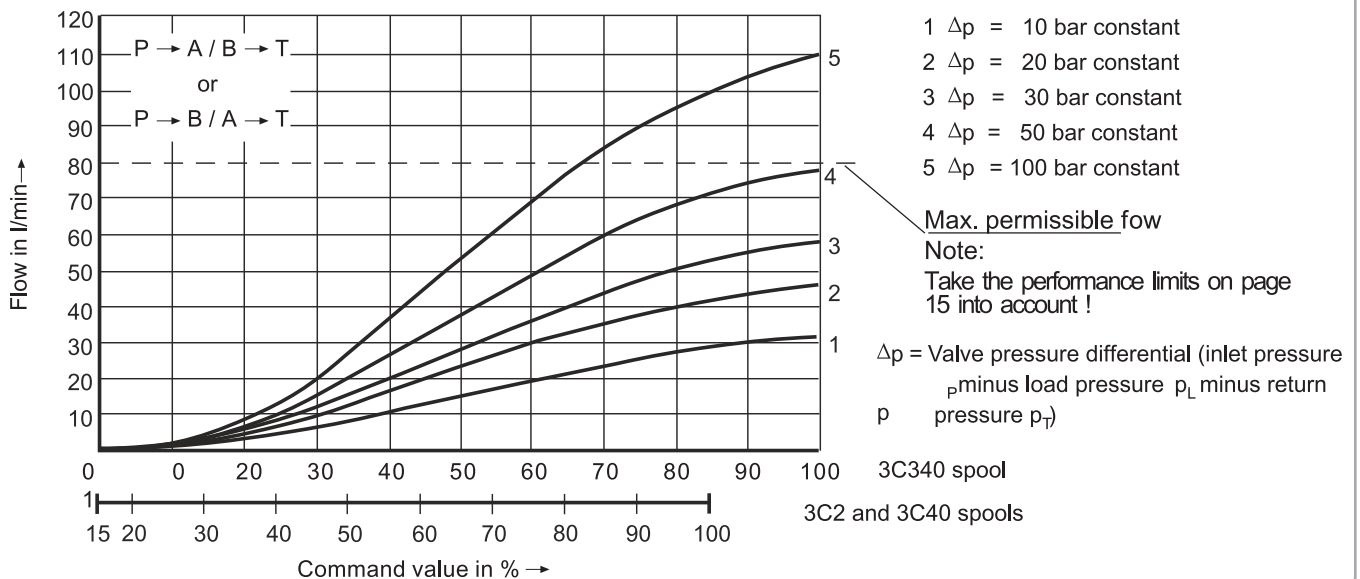
8 l/min nominal flow at a 10 bar valve pressure differential



16 l/min nominal flow at a 10 bar valve pressure differential

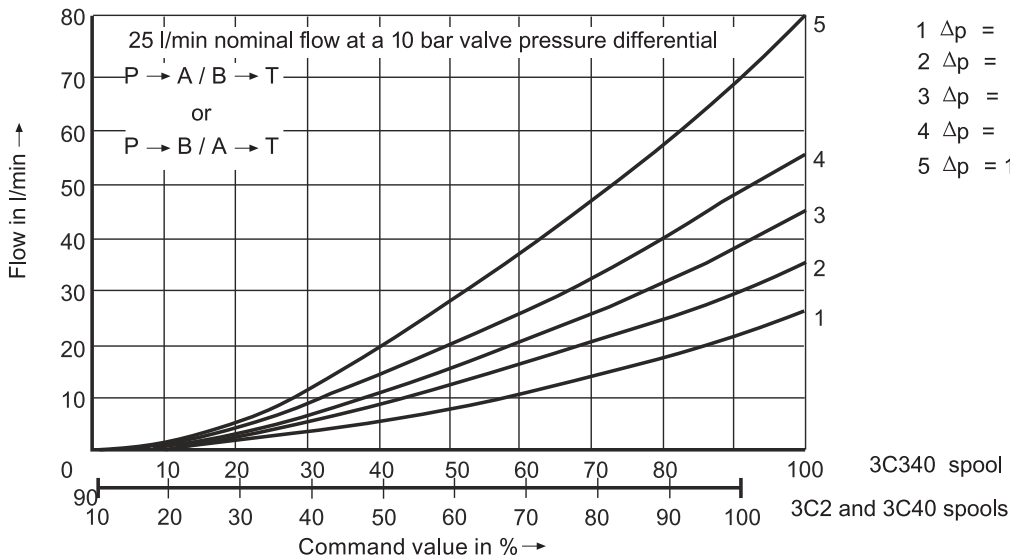


32 l/min nominal flow at a 10 bar valve pressure differential

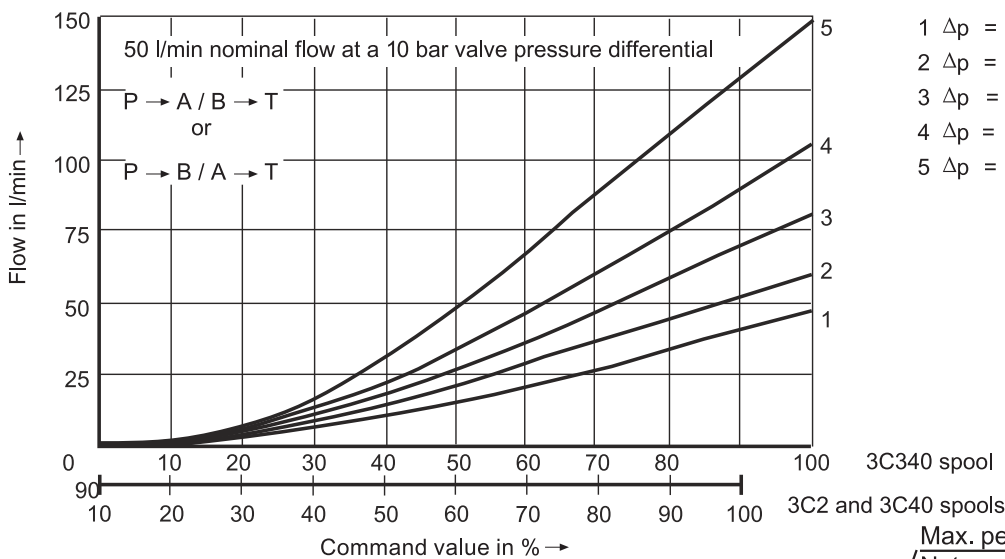


6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

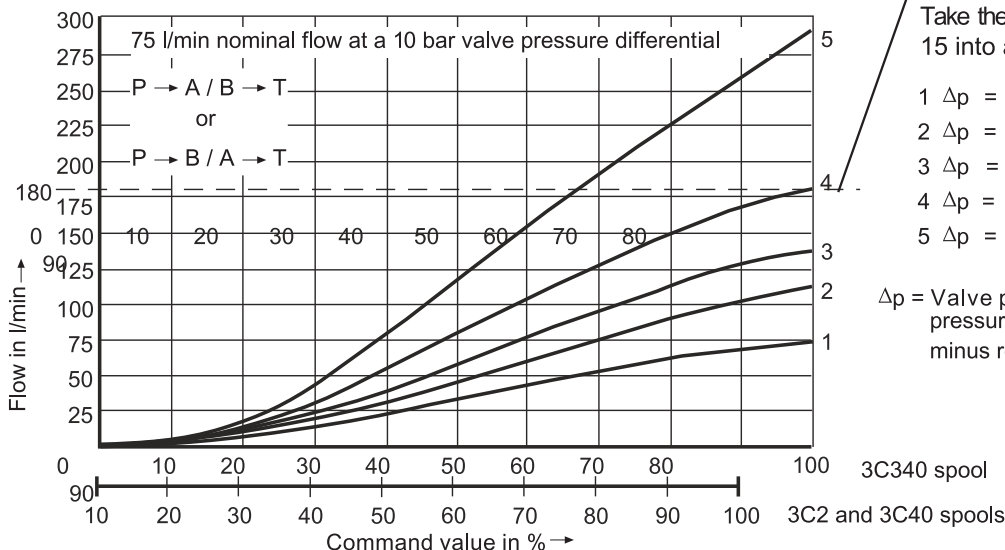
Characteristic curves for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40 \text{ }^{\circ}\text{C} \pm 5 \text{ }^{\circ}\text{C}$ and $p = 100 \text{ bar}$) NS 10



- 1 $\Delta p = 10 \text{ bar constant}$
- 2 $\Delta p = 20 \text{ bar constant}$
- 3 $\Delta p = 30 \text{ bar constant}$
- 4 $\Delta p = 50 \text{ bar constant}$
- 5 $\Delta p = 100 \text{ bar constant}$



- 1 $\Delta p = 10 \text{ bar constant}$
- 2 $\Delta p = 20 \text{ bar constant}$
- 3 $\Delta p = 30 \text{ bar constant}$
- 4 $\Delta p = 50 \text{ bar constant}$
- 5 $\Delta p = 100 \text{ bar constant}$



Max. permissible flow

Note:

Take the performance limits on page 15 into account!

- 1 $\Delta p = 10 \text{ bar constant}$
- 2 $\Delta p = 20 \text{ bar constant}$
- 3 $\Delta p = 30 \text{ bar constant}$
- 4 $\Delta p = 50 \text{ bar constant}$
- 5 $\Delta p = 100 \text{ bar constant}$

$\Delta p = \text{Valve pressure differential (inlet pressure } p_p \text{ minus load pressure } p_L \text{ minus return pressure } p_r)$

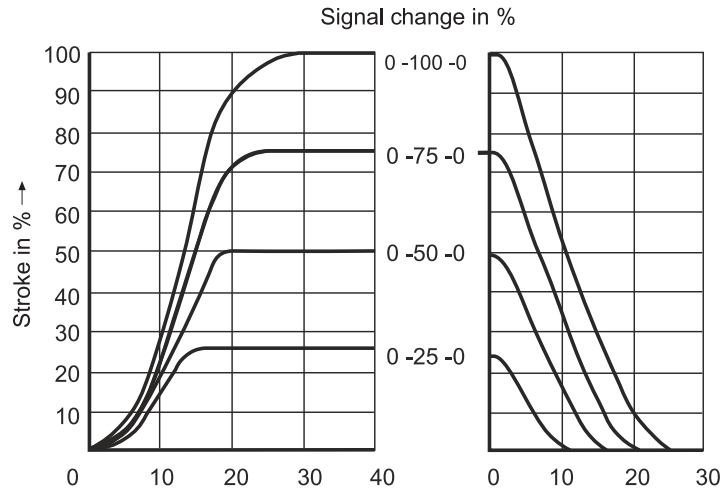
6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Transient function with a stepped form of electrical input signal for type DPGEE
(measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ and $p_s = 10\text{ bar}$) Time in ms →

NS 6

4/3 valve version

Spool symbol „E”

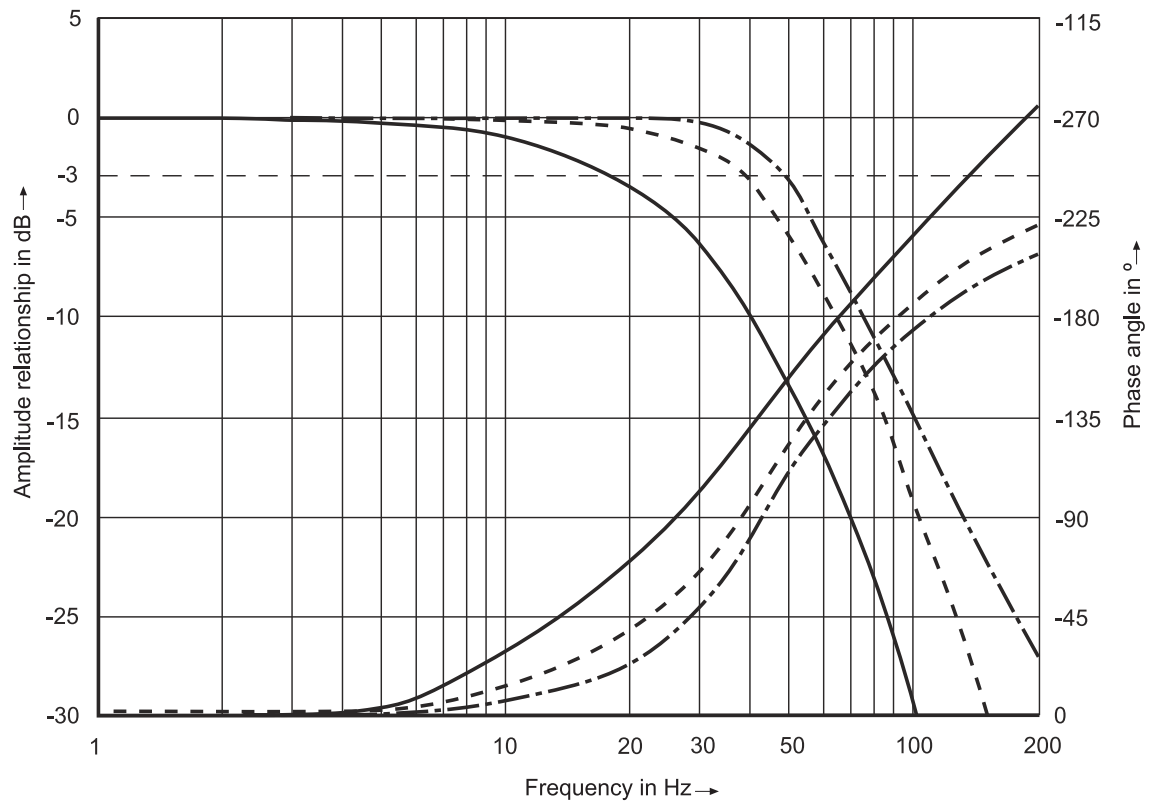


Frequency response characteristic curves for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$, $p_s = 10\text{ bar}$)

NS 6

4/3 valve version

Spool symbol „VÅg



- · — · — Signal $\pm 10\%$
- - - - - Signal $\pm 25\%$
- Signal $\pm 100\%$

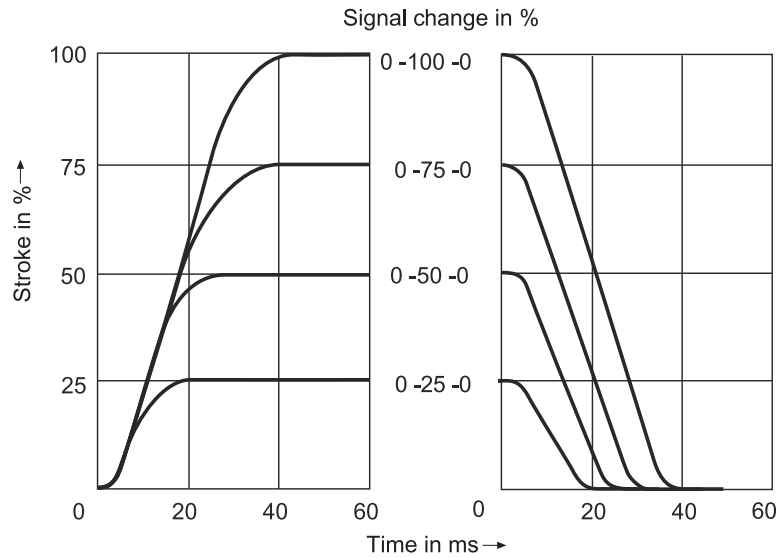
6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Transient function with a stepped form of electrical input signal for type DPGEE
(measured with HLP46, $\vartheta_{oil} = 40 \text{ }^{\circ}\text{C} \pm 5 \text{ }^{\circ}\text{C}$ and $p_s = 10 \text{ bar}$)

NS 10

4/3 valve version

Spool symbol „E”

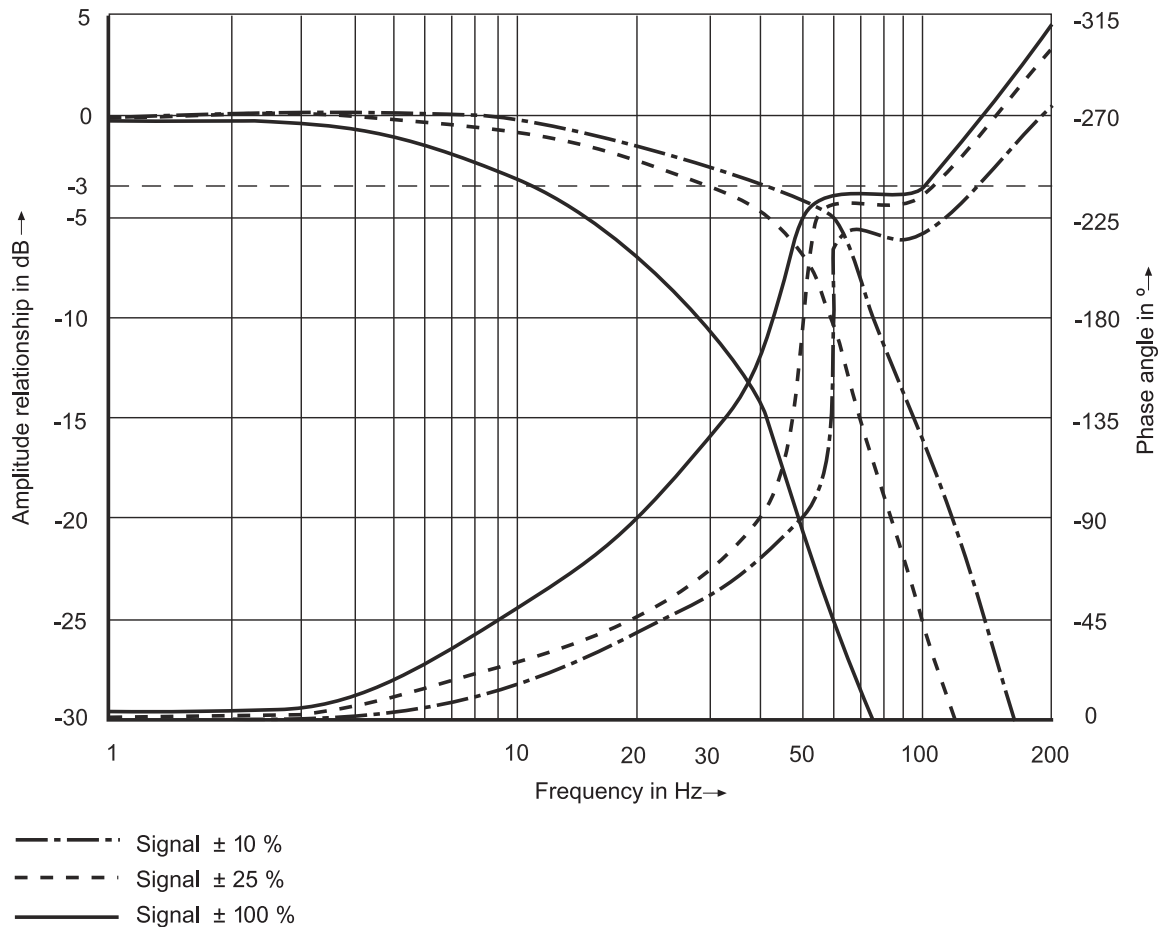


Frequency response characteristic curves for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40 \text{ }^{\circ}\text{C} \pm 5 \text{ }^{\circ}\text{C}$, $p_s = 10 \text{ bar}$)

NS 10

4/3 valve version

Spool symbol „V”



6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

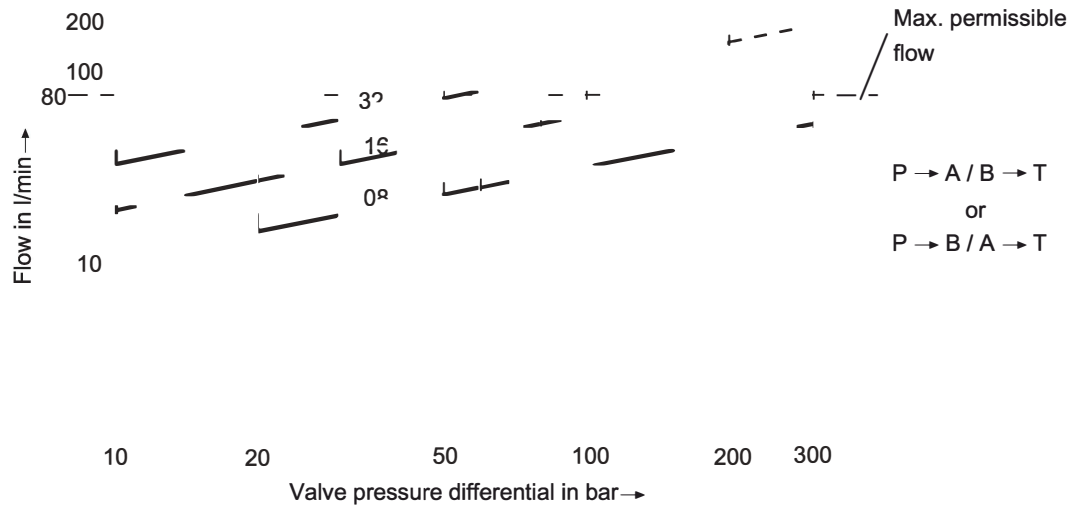
Flow for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and, $p_s = 10$ bar

NS 6

Load function with maximum valve opening

Nominal flows 8, 16 and 32 l/min

Spool symbol „V”



Take the maximum permissible flow of 80 l/min into account!

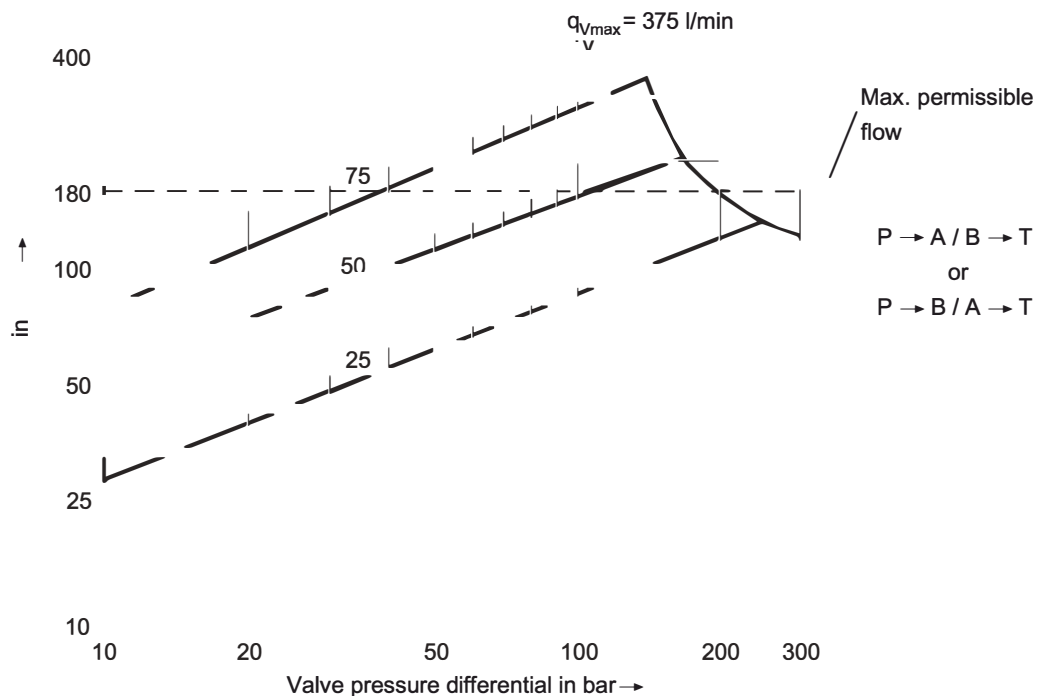
Flow for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and, $p_s = 10$ bar

NS 6

Load function with maximum valve opening

Nominal flows 25, 50 and 75 l/min

Spool symbol „V”

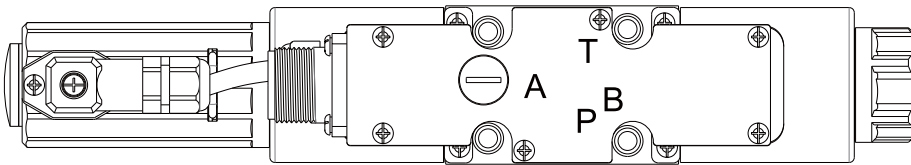
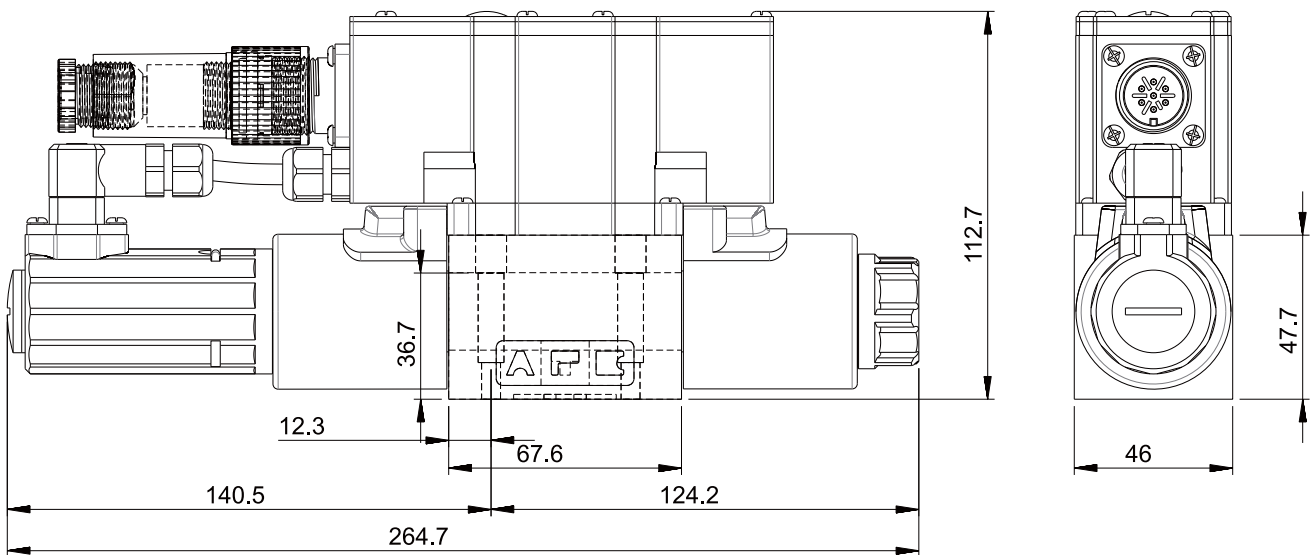


Take the maximum permissible flow of 180 l/min into account!

6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

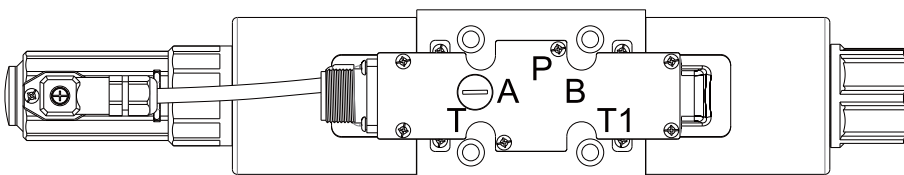
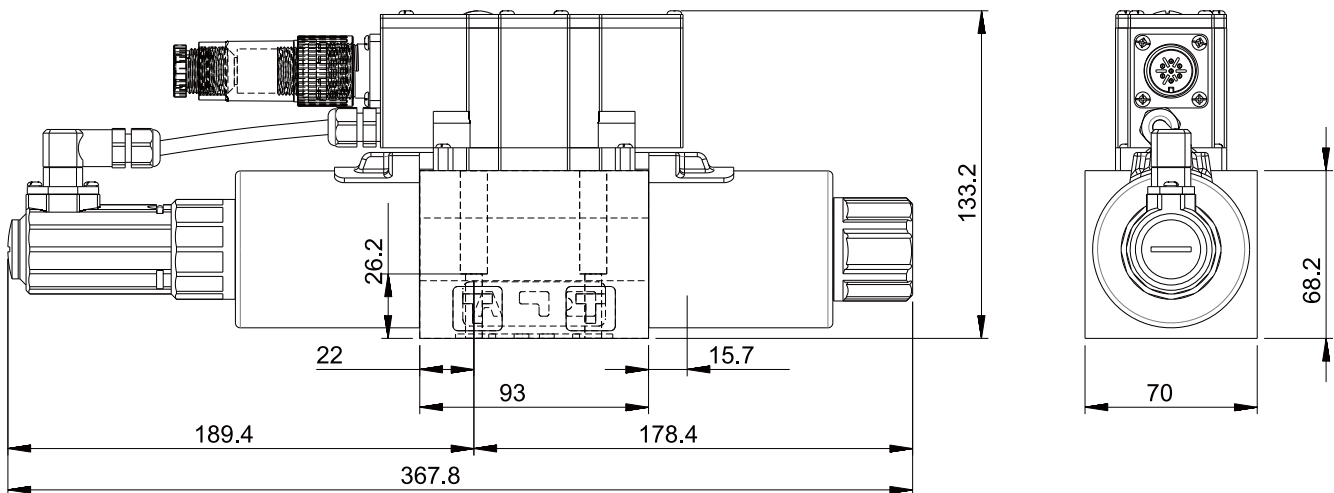
Unit dimensions: type DPGEE 6 (nominal dimensions in mm)

Nominal size 6



Unit dimensions: type DPGEE 10 (nominal dimensions in mm)

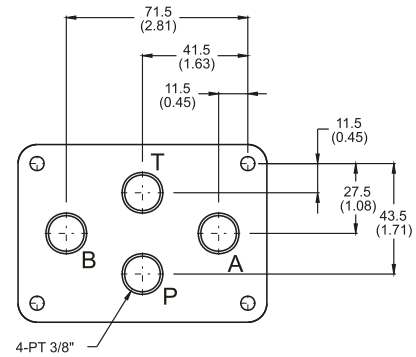
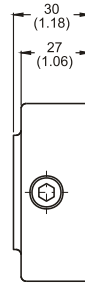
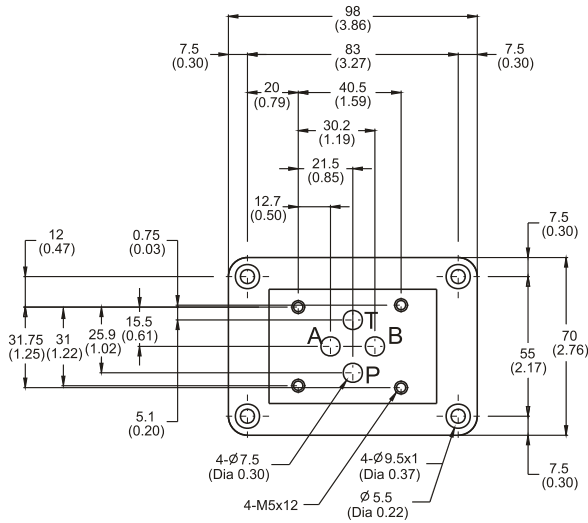
Nominal size 10



6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

Subplate mounting

Nominal size 6



Subplate mounting

Nominal size 10

