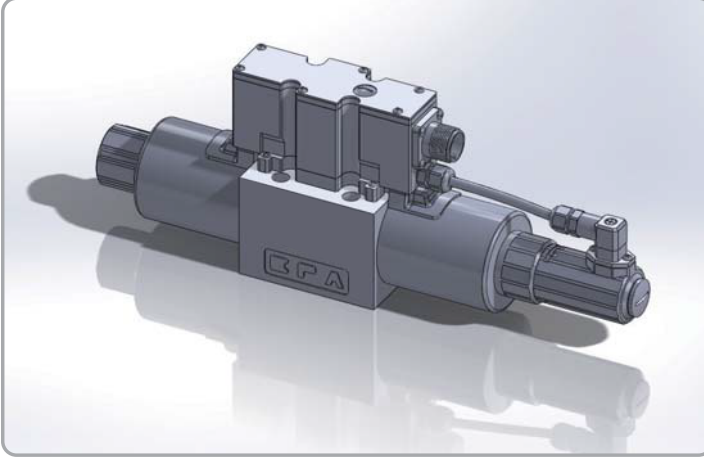


6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves



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

İçeriğine genel bakış

Overview of contents

İçindekiler

Contents

Özellikleri

Features

Sipariş detayları

Ordering details

Sembol

Symbols

Fonksiyon, bölüm

Function, section

Teknik bilgileri

Technical data

Elektronik kontrolü

Control electronics

Elektrik bağlantısı, fiş bağlantısı

Electrical connections, plug-in connectors

Entegreli elektronik tipi DPGE (OBE)

Integrated electronics (OBE) for type DPGE

Karakteristik eğrileri

Characteristic curves

Valf ebatları

Installation dimensions

Özellikler

Features

- DPGE tipi entegre edilmiş elektronik kartlı (OBE), pozisyon geri beslemeli, oransal yön valfi

- Direct operated proportional directional valve with electrical position feedback and integrated electronics (OBE) for type DPGE

- Kapalı döngü kontrolü ile akış yönü ve hızını kontrol eder

- Closed loop control of the direction and size of a flow

- Oransal valf hareketini dişli bağlantılı, sökülebilir bobinle yapmaktadır.

- Operation is by proportional solenoids with a central thread and removable coil

- Pleyt montajı, bağlantı şekli ISO 4401'e göre katalog sayfasına bakınız.

- For subplate mounting:
Porting pattern to ISO 4401
Subplates to catalogue sheets (separate order)

- Yön Kontrol spoolu yay merkezli

- Spring centred control spool

- Elektronik kontrol

- Control electronics

• DPGE

• DPGE:

- Entegre edilmiş elektronik karta (OBE) voltaj ve akım girişi (A1 ve B1)

- 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

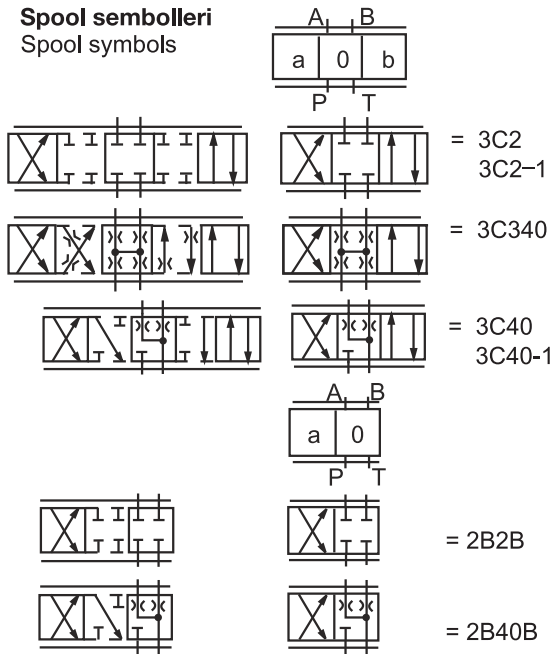
DPGEE				24 VDC			N	*
-------	--	--	--	--------	--	--	---	---

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:

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

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

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

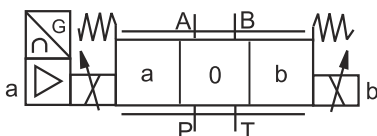
50 l/min

75 l/min

Semboller Symbols

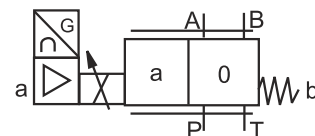
Tip

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 $p=100 \text{ bar}$ ölçüsünde) Hydraulic (measured with HLP46, $\vartheta_{oil} = 40 \text{ °C} \pm 5 \text{ °C}$ and $p=100 \text{ bar}$)

Maksimum çalışma basıncı Ports A, B, P Max. operating pressure	bar	315
Port T	bar	210
Nominal akış / Nominal flow $q_{V, nom}$ at $\Delta p = 10 \text{ bar}$	l/min	8, 16, 32
Maksimum izin verilen akış / Max. permissible flow	l/min	80
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 Pressure fluid temperature range	°C	-20 to +80 (preferably +40 to +50)
Viskozite aralığı / Viscosity range	mm ² /s	20 to 380 (preferably 30 to 46)
Basınçlı akışkanın izin verilen kirlilik oranı sınıfı ISO 4406 (c) Max. permissible degree of pressure fluid contamination cleanliness class to ISO 4406 (c)	Sınıf 20/18/15 class 20/18/15 ¹⁾	
Gecikme / Hysteresis	%	≤ 0.1
Ters hata / Reversal error	%	≤ 0.05
Cevaplama hassasiyeti / Response sensitivity	%	≤ 0.05
Sıfır noktasında yer değiştirme Zero point displacement with changes to the	%/10K	0.15
Basınç akışkan sıcaklığı ve çalışma sıcaklığı Pressure fluid temperature and operating temperature	%/100 bar	0.1

Elektrik / Electrical

Nominal ölçü / Nominal size	NS	6	10
Voltaj tipi / Voltage type	DC		
Komut girişi sinyali Command value signal	Voltaj girişi / Voltage input „A1“ V	±10	
with type DPGEE	Akım girişi / Current input „B1“ mA	4 bis 20	
Solenoid bobin direnci Solenoid coil resistance	Soğuk iken Cold value at 20 °C	Ω	2.7
	Maksimum sıcaklıkta Max. warm value	Ω	4.05
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 Supply voltage DPGEE	Nominal voltaj / Nominal voltage	VDC	24
	Düşük limit değeri / Lower limiting value	V	19.4
	Yüksek limit değeri / Upper limiting value	V	35
Amplifikatör 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

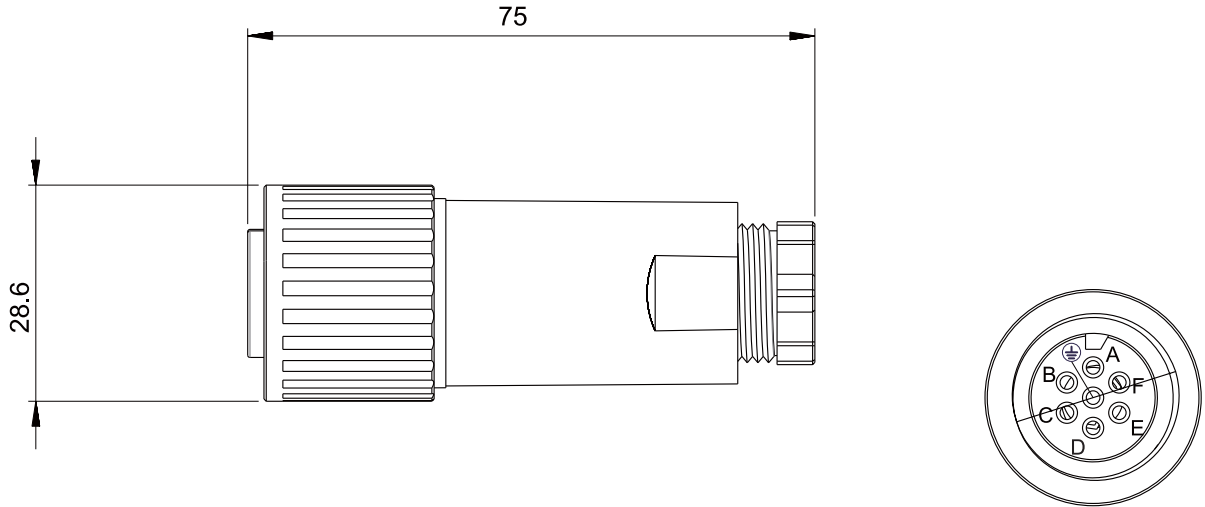
DPGEE tipi entegre elektronik (nominal ölçüleri mm)

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

DPGEE tipi For type DPGEE (with integrated electronics (OBE))

Pin tahsisi 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 tahsisi Component plug allocation	Bağlantı Contact	A1 sinyali için Interface A1 signal	B1 sinyali için Interface B1 signal
Voltaj kaynağı Supply voltage	A	24 VDC ($u(t) = 19.4$ to 35 V); $I_{max} = 2$ A	
	B	0 V	
Referans potansiyel gerçek değer Reference potential actual value	C	ref. contact F; $R_e > 50$ k Ω	ref. contact F; $R_e < 10$ Ω
	D	± 10 V command value; $R_e > 50$ k Ω	4 to 20 mA command value; $R_e > 100$ Ω
Diferansiyel amplifikatör giriş Differential amplifier input	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
Measurement output (actual value)	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

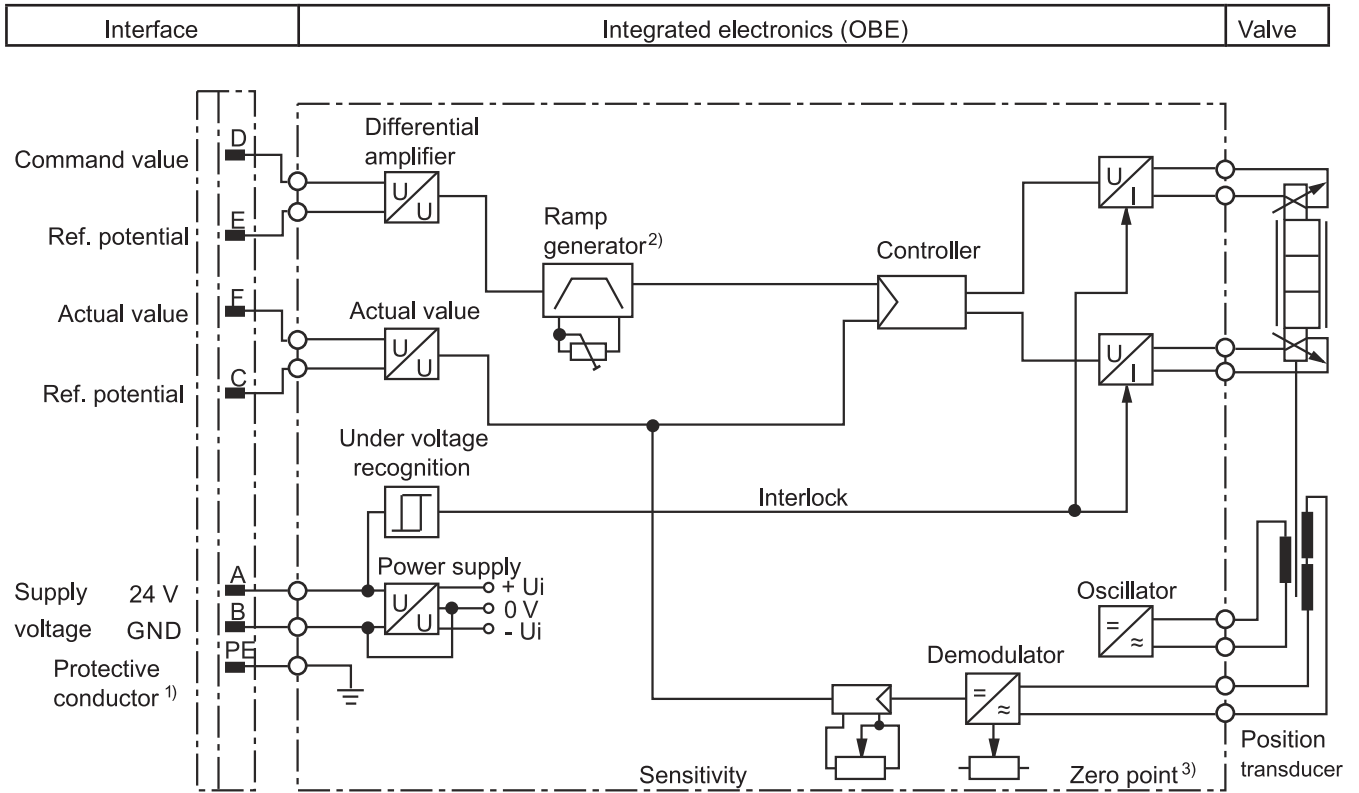
For outside diameter see plug-in connector sketch

Only connect screen to PE on the supply line.

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

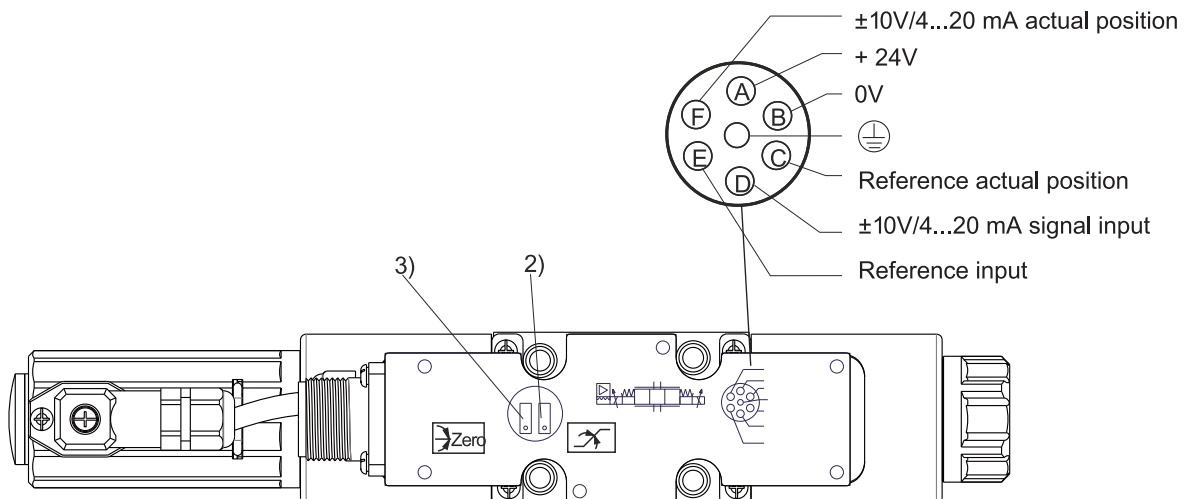
Integrated electronics (OBE) for type DPGEE

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



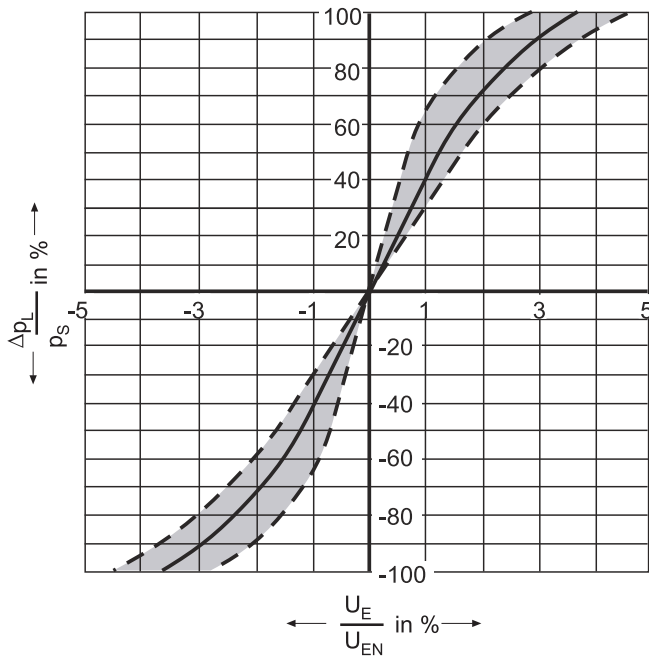
6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

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

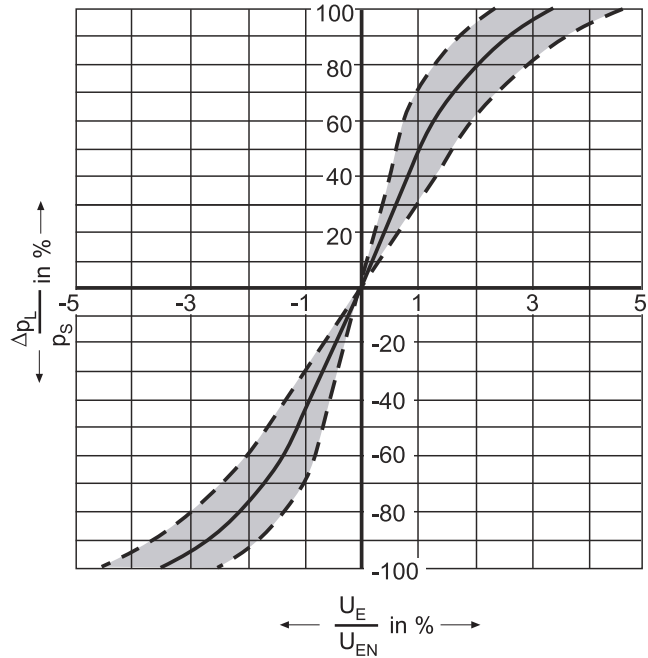
NS 6 and 10

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

Nominal size 6

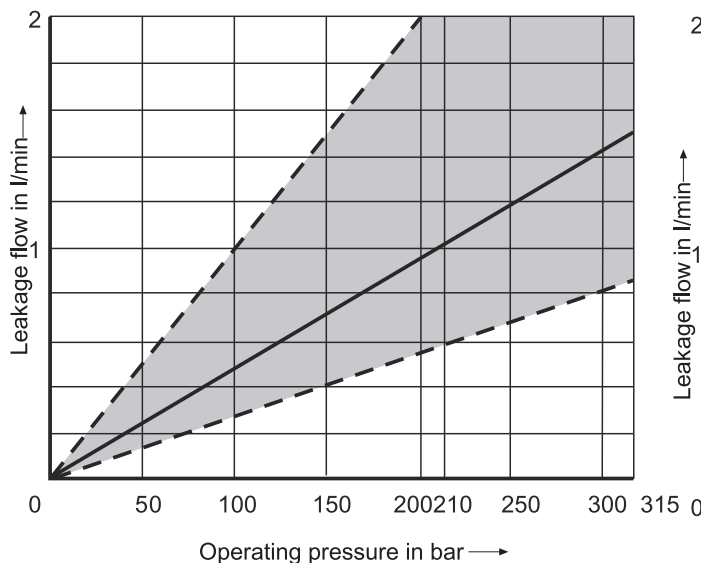


Nominal size 10

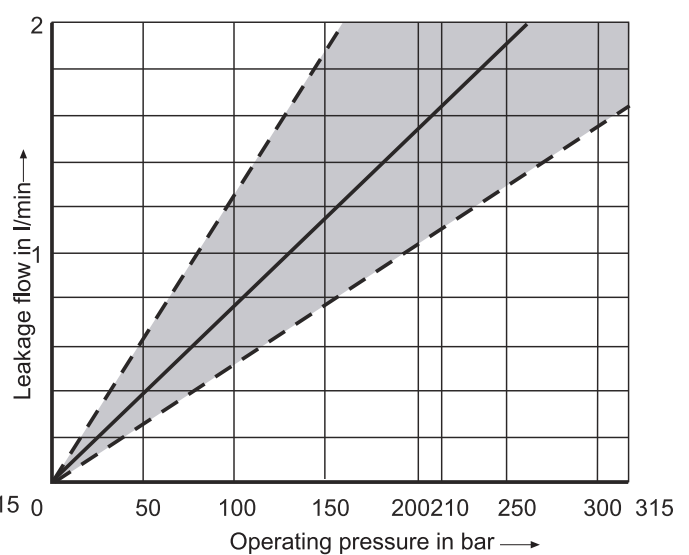


Leakage flow with the spool in the central position

Type DPGEE 6 V32



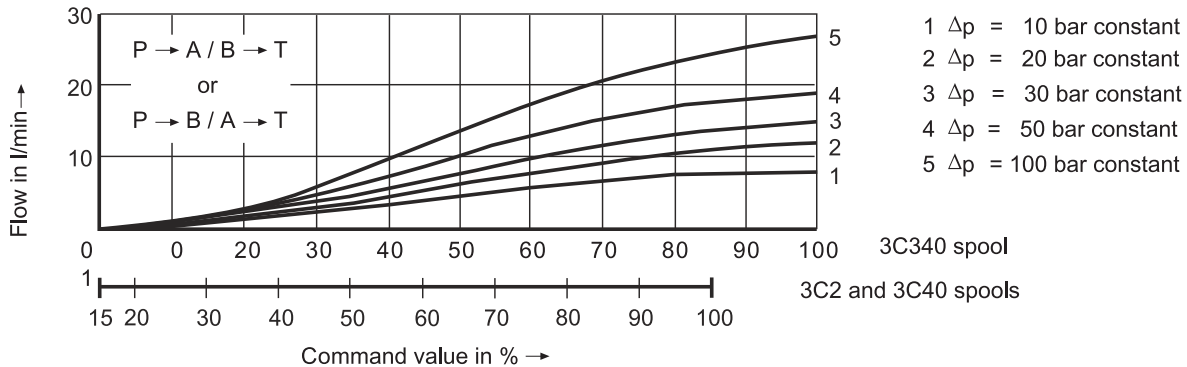
Type DPGEE 10 V75



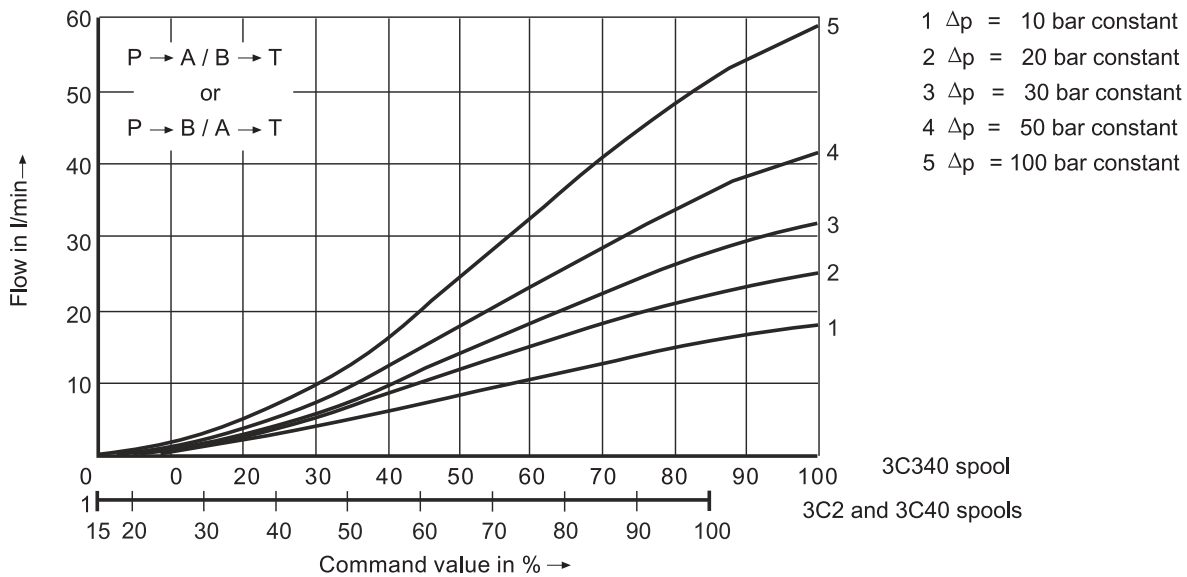
6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

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 6

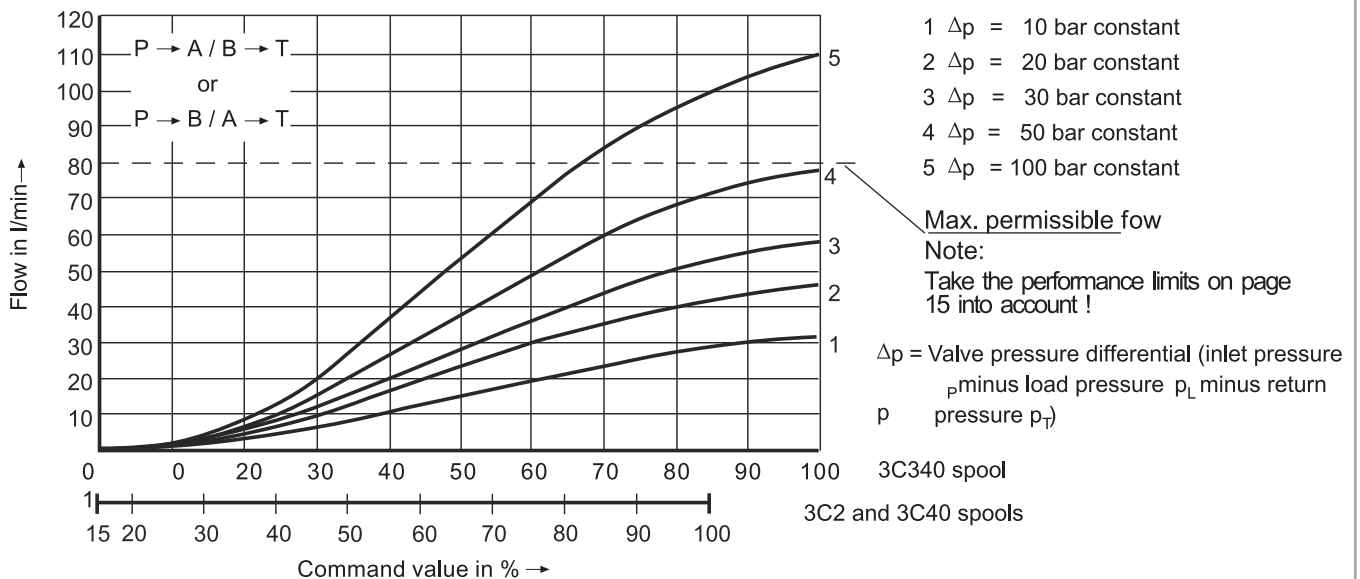
8 l/min nominal flow at a 10 bar valve pressure differential



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

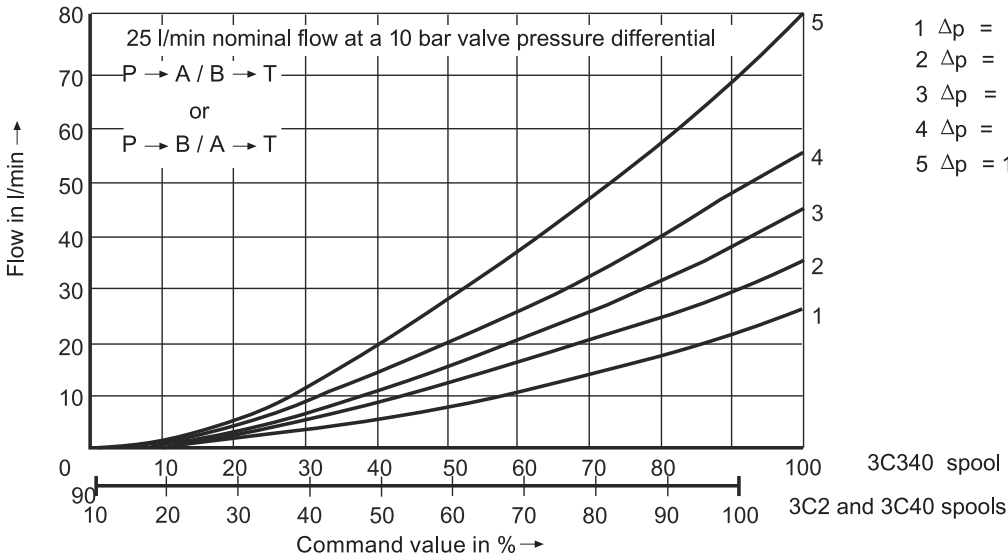


32 l/min nominal flow at a 10 bar valve pressure differential

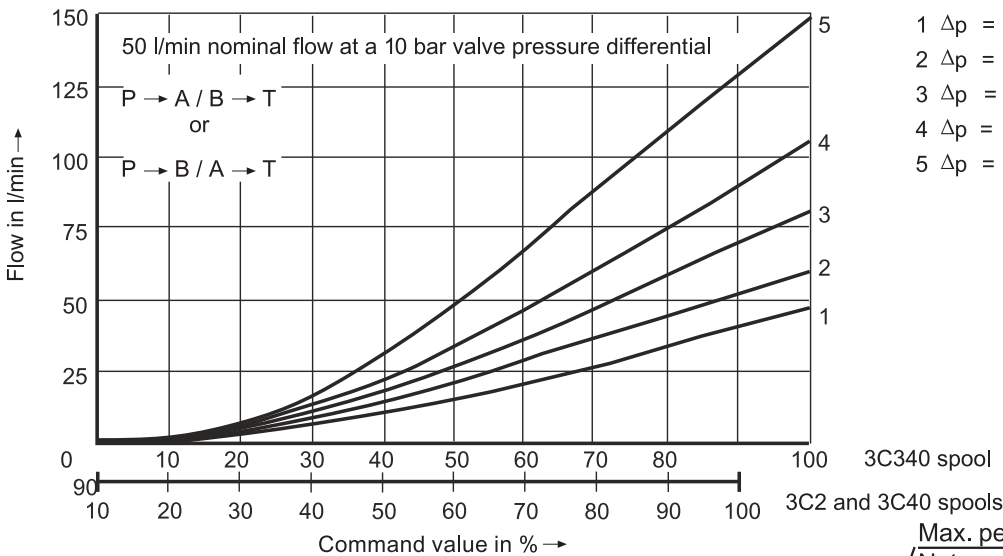


6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

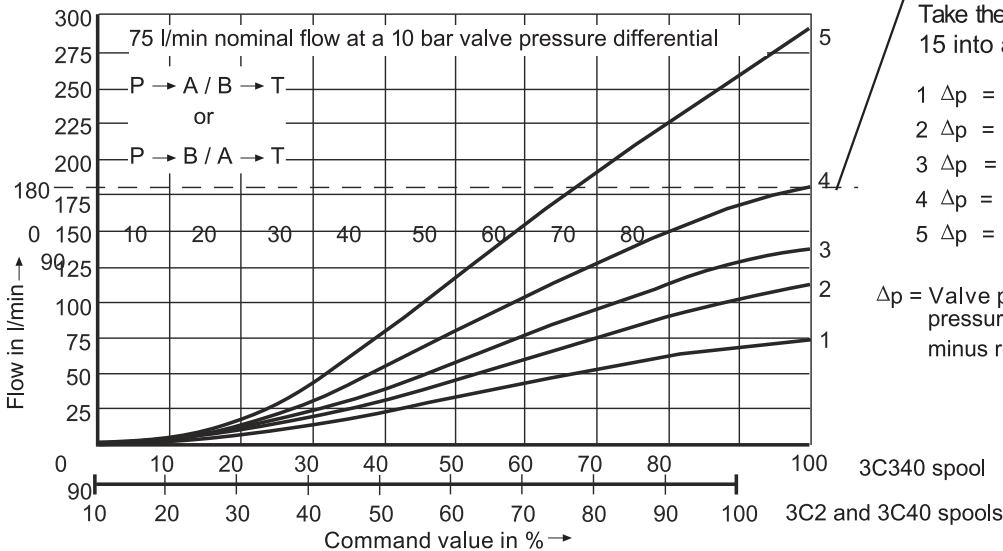
Characteristic curves for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40 \text{ °C} \pm 5 \text{ °C}$ and $p = 100 \text{ bar}$) NS 10



- 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 $\Delta p = 100 \text{ bar constant}$

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

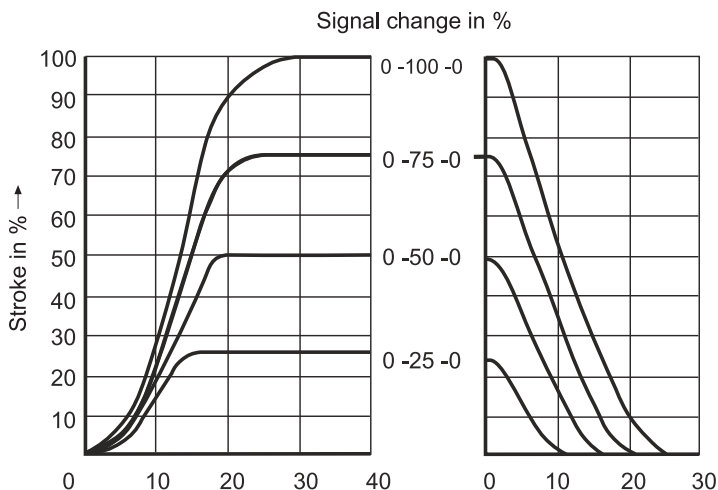
6 ve 10 Oransal Yön Valfi / 6 and 10 Proportional Directional Valves

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”

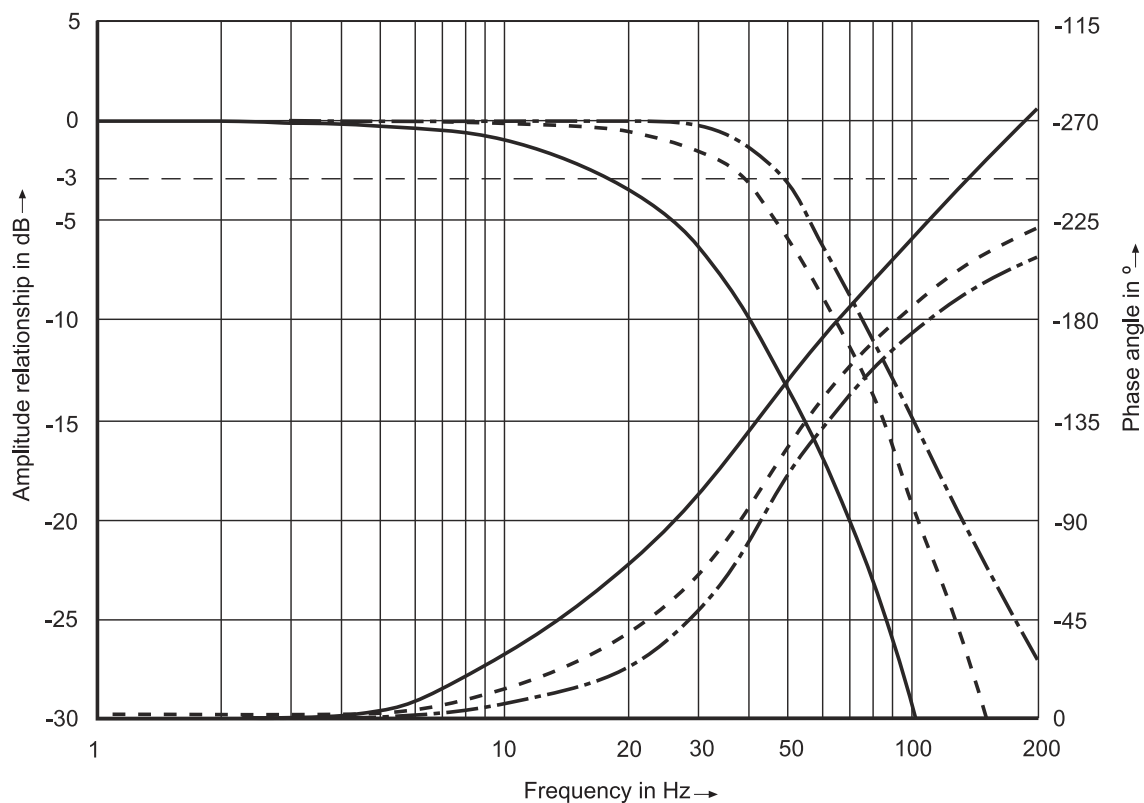


Frequency response characteristic curves for type DPGEE (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$, $p_s = 10\text{ bar}$)

NS 6

4/3 valve version

Spool symbol „VÅg



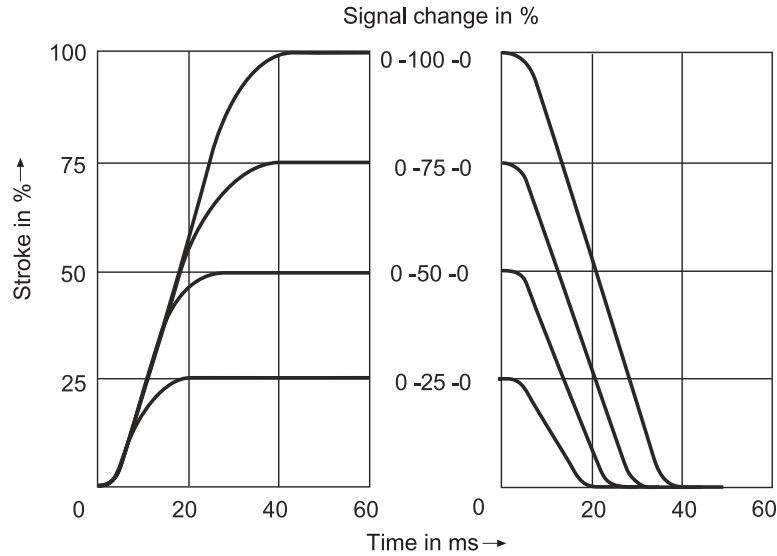
- Signal ± 10 %
- - - Signal ± 25 %
- Signal ± 100 %

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, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ and $p_s = 10\text{ bar}$)

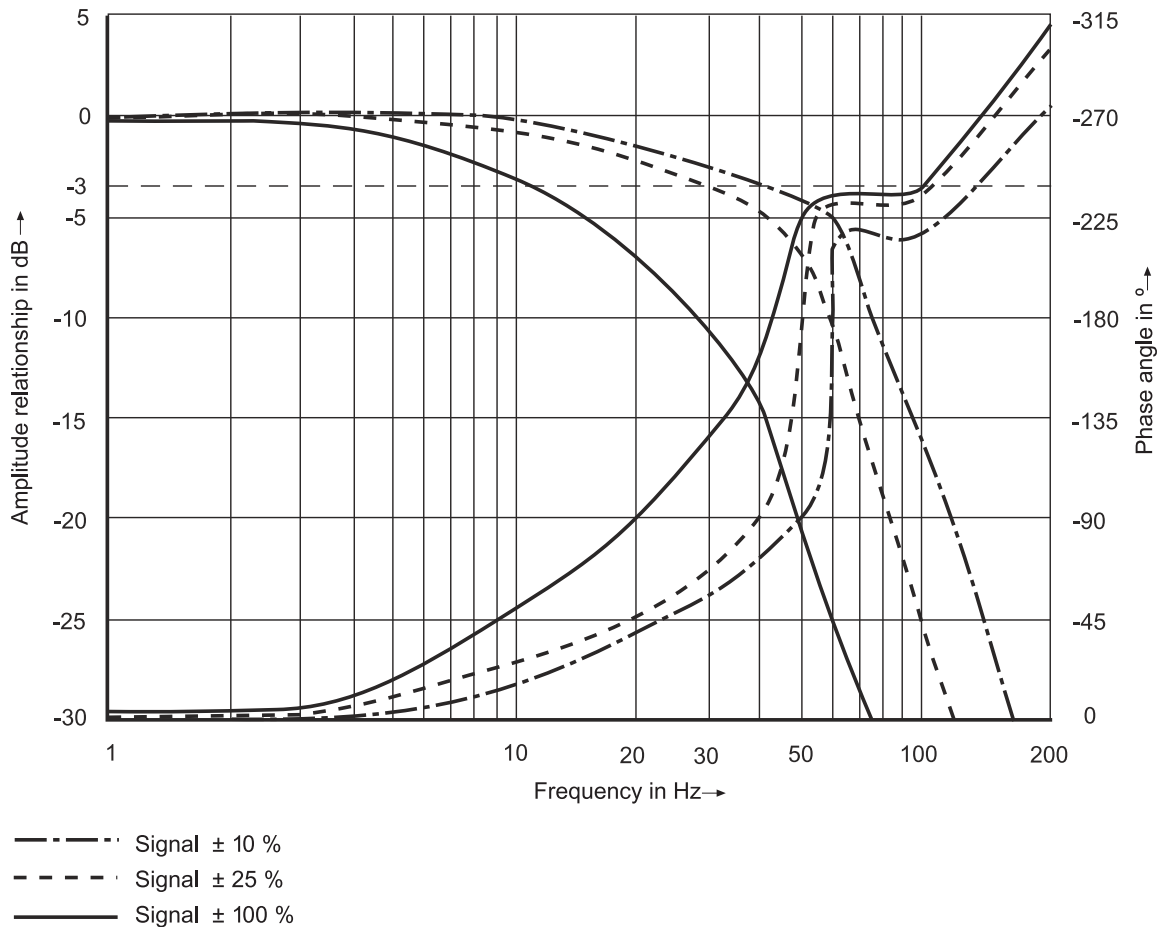
NS 10

4/3 valve version
Spool symbol „E”



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

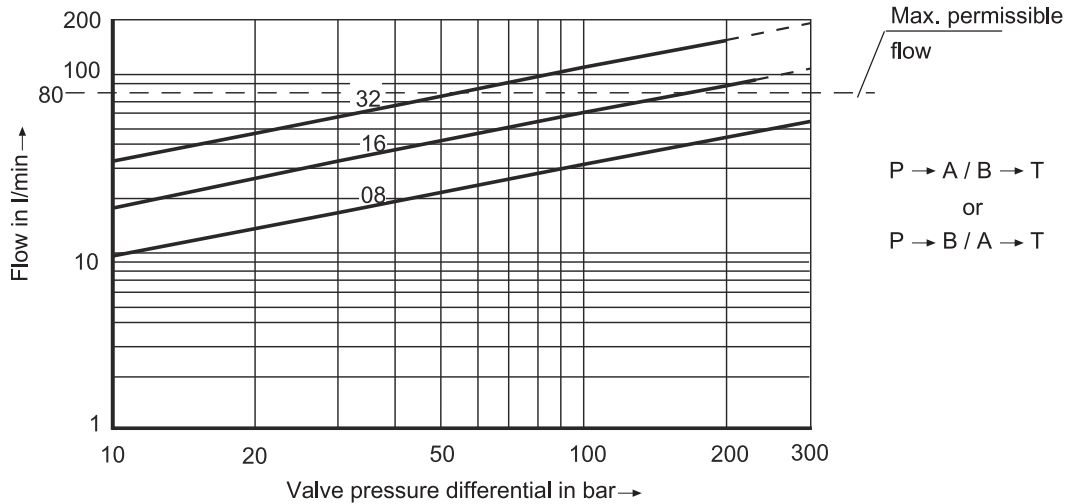
4/3 valve version
Spool symbol „V”



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

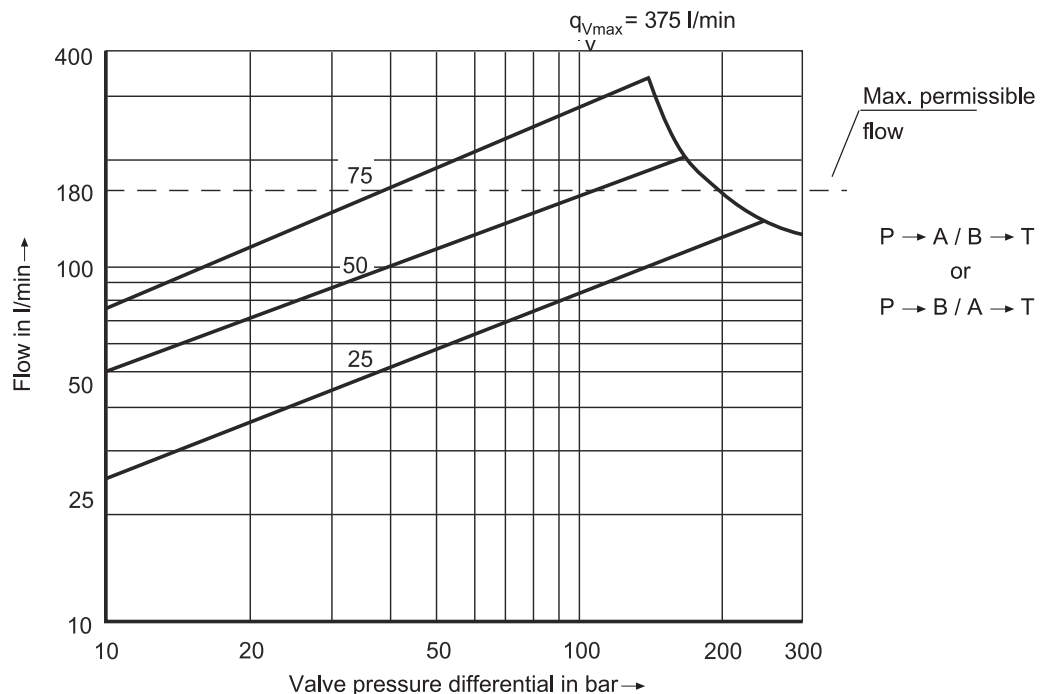
Load function with maximum valve opening
 Nominal flows 8, 16 and 32 l/min
 Spool symbol „V”



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”

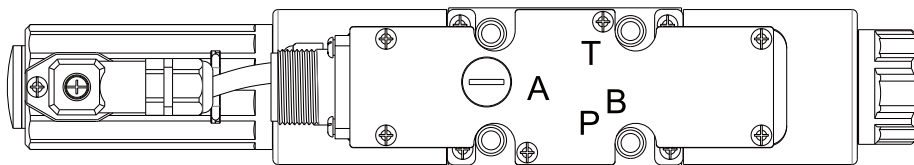
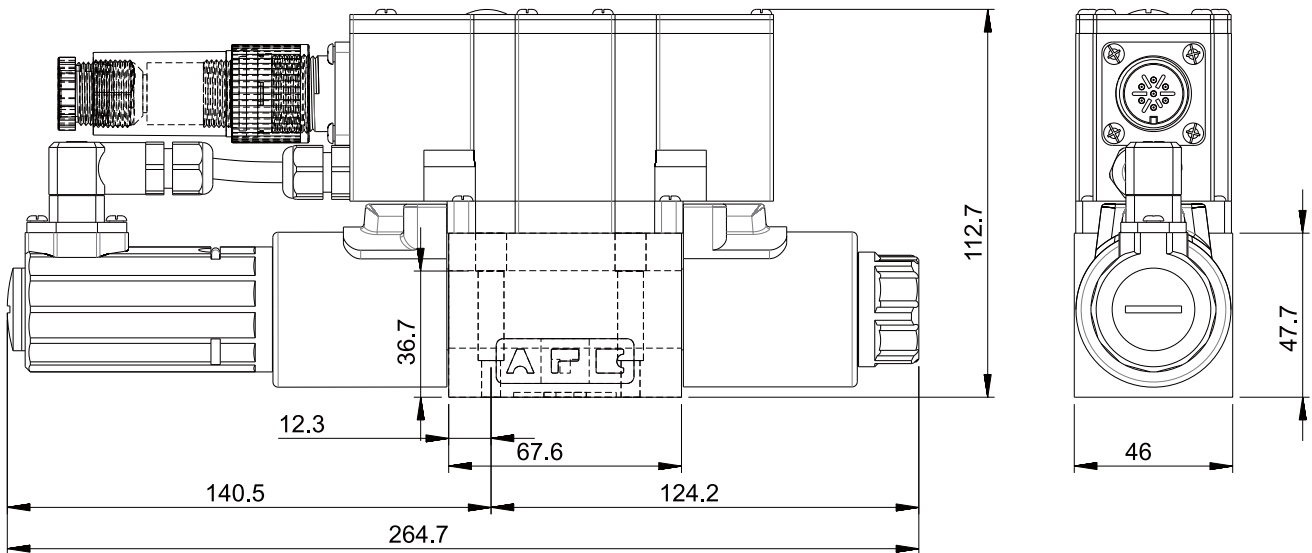


Take the maximum permissible flow of 180 l/min into account!

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

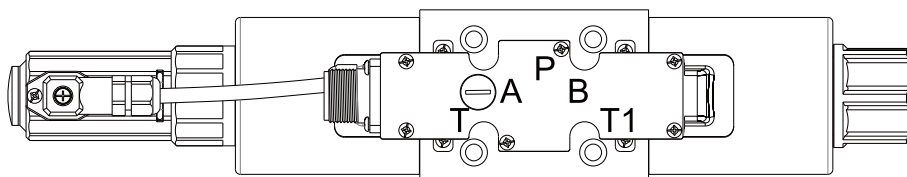
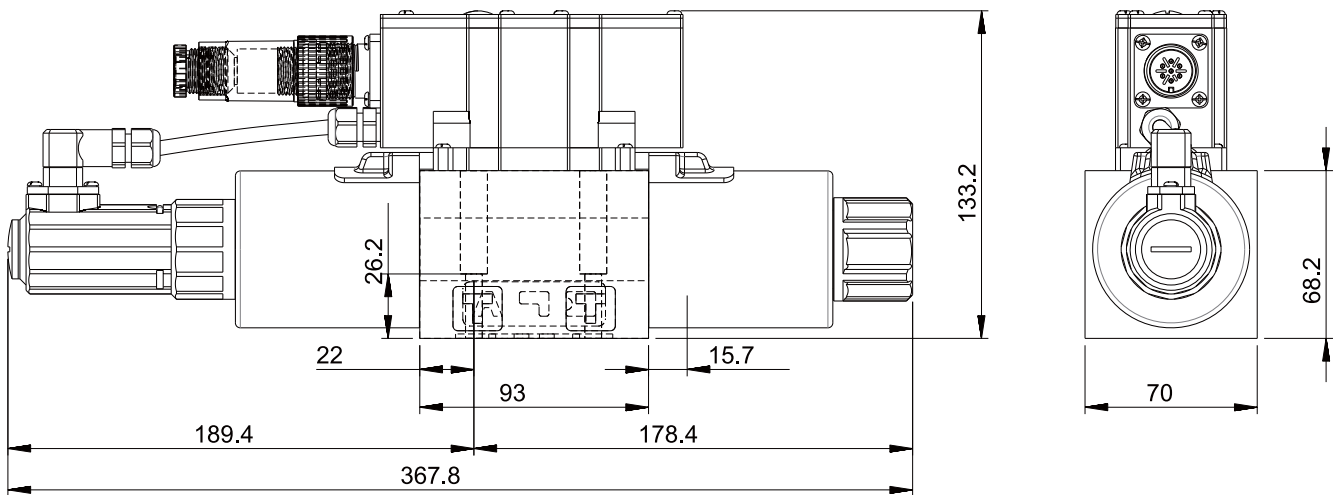
Unit dimensions: type DPGEE 6 (nominal dimensions in mm)

Nominal size 6



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

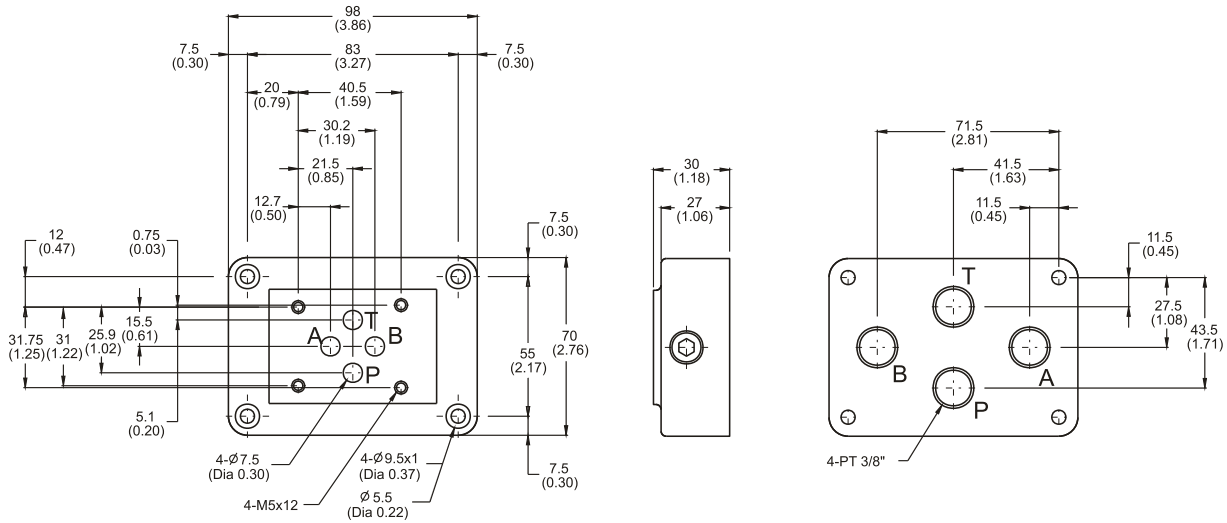
Nominal size 10



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

Subplate mounting

Nominal size 6



Subplate mounting

Nominal size 10

