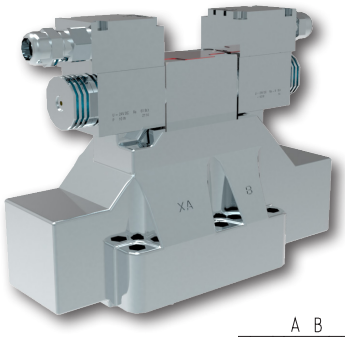
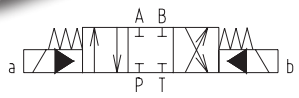
Explosion-proof, 4/2 and 4/3 Directional Control Valve, Pilot Operated

RNEXH4-25

Size 25 (D08) • Q_{max} 600 l/min (160 GPM) • p_{max} 320 bar (4600 PSI) / 420 bar (6100 PSI)





Technical Features

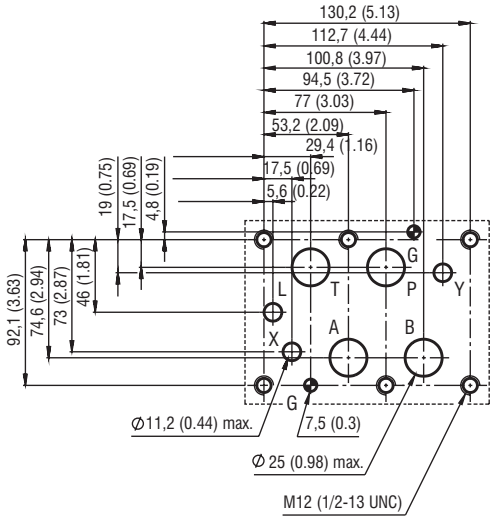
- Directional control valve, internally or externally pilot operated with mounting interface acc. to ISO 4401, DIN 24340 (CETOP 08)
- Driven by an ISO 4401-03 (CETOP 03) solenoid operated directional valve
- High pressure version of main stage 420 bar (6090 PSI) available
- High transmitted hydraulic power, optimized design to minimize the pressure drop
- Flexibly changed from internal pilot or drain to external by inserting or removing threaded plugs in the main control valve body
- Wide range of interchangeable spools and valve controls available
- Soft-shift, spool speed, main stroke limiter control options
- In the standard version, the valve housing is zinc-coated for 520 h protection acc. to ISO 9227

ATEX/IECEx Classification

The valves equipped with explosion-proof solenoids are available with following certifications and protection modes:

	EPS14ATEX1744 X	IECEx EPS14.0064 X
AC	Ⓔx I M2 Ex mb I Mb	Ex mb I Mb
	Ⓔx II 2G Ex mb IIB T4, T5, T6 Gb	Ex mb IIB T4, T5, T6 Gb
	Ⓔx II 2D Ex mb IIIC T135°C, T100°C, T85°C Db	Ex mb IIIC T135°C, T100°C, T85°C Db
DC	Ⓔx I M2 Ex e mb I Mb	Ex e mb I Mb
	Ⓔx II 2G Ex e mb IIB T4, T5, T6 Gb	Ex e mb IIB T4, T5, T6 Gb
	Ⓔx II 2D Ex tb IIIC T135°C, T100°C, T85°C Db	Ex tb IIIC T135°C, T100°C, T85°C Db

ISO 4401-08-08-0-05



Ports P, A, B, T max. ∅25 mm (0.98 in)

Technical Data

Valve type			RNEX*4-25	RNEX*4H-25
Valve size			25 (D08)	
Max. flow		l/min (GPM)	600 (160)	
Max. operating pressure at port P, A, B		bar (PSI)	320 (4640)	420 (6090)
- at port T (external drain)		bar (PSI)	210 (3050)	350 (5080)
- at port T (internal drain)		bar (PSI)	210 (3050)	
Minimum pilot pressure		bar (PSI)	12 (174)	
Maximum pilot pressure		bar (PSI)	210 (3050)*	350 (5080)*
Fluid temperature range (NBR)		°C (°F)	-30 ... +80 (-22 ... +176)	
Fluid temperature range (FPM)		°C (°F)	-20 ... +80 (-4 ... +176)	
Ambient temperature range		°C (°F)	-30 ... +50 (-22 ... +122)	
Supply voltage tolerance		%	AC: ±10	DC: ±10
Max. switching frequency		1/h	10 000	
Enclosure type acc.to EN 60529			IP 65	
Switching time at ν=32 mm²/s (156 SUS)	ON	ms	AC: 45 ... 60**	DC: 55 ... 75**
	OFF	ms	AC: 60 ... 90**	DC: 60 ... 90**
Mass	RNEXH4-252	kg (lbs)	15.9 (35.1)	
	RNEXH4-253	kg (lbs)	17.4 (38.4)	
		Data Sheet	Type	
General information		GI_0060	Products and operating conditions	
Mounting interface		SMT_0019	Size 25	
Spare parts		SP_8010		

*For higher system pressure use option „Z"
**The values indicated refer to a solenoid valve working with a pilot pressure of 100 bar (mineral oil, temperature = 50 °C, viscosity = 36 mm²/s, P - A and B - T connected).

Installation Note:

- It is necessary to ensure minimum pilot pressure, therefore either external piloting or option C3 (check valve in P port) must be used for spools which have connection between P and T ports (H11, C11, R52, X52, J27).
- Attention: spools J17, J27 may assume an undefined position without energy supply.
- Other special versions are available. Consult our technical department.

Ordering Code

RNEXH [ ] **-25** [ ] [ ] / [ ] [ ] [ ] / [ ] / [ ] [ ] [ ] [ ] [ ] - [ ]

Explosion proof 4/2 and 4/3 directional control valve, internally and externally pilot operated

Design series
standard 320 bar **4**
high pressure 420 bar **4H**
(not available for C11 spools)

Valve size
ISO 4401-08-08-0-05 (CETOP 08)

Number of valve positions
two positions **2**
three positions **3**

Spool symbols
see the table „Spool Symbols"

Control options
without additional features **No designation**
main spool stroke limiter **C**
main spool shifting speed control **D**
shifting speed control, with orifice (0.8 mm) in port P of solenoid pilot valve **PF**

Piloting
internal **No designation**
internal with installed pressure reducing valve, fixed 30 bar setting **Z**
external **E**

Drain
No designation external
I internal

Check valve incorporated in P-line
No designation none
C3 with back pressure check valve

DC voltage
connection box + cable gland
01200 12 V DC / 0.75 A
02400 24 V DC / 0.39 A
04800 48 V DC / 0.19 A
11000 110 V DC / 0.094 A
AC voltage 50/60 Hz
fix installed cable
11050 110 V AC / 0.112 A
23050 230 V AC / 0.052 A

Temperature class - solenoid nominal power
A4 class T4 - 10 W
A6 class T6 (T5) - 10 W

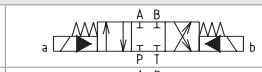
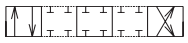
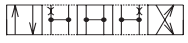
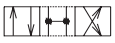
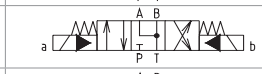
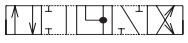
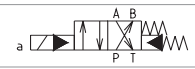
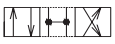
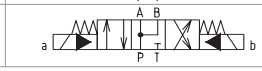
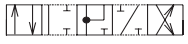
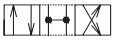
Cable length
No designation (only for DC) without cable
3 (AC and DC version) 3000 mm
8 (AC and DC version for request) 8000 mm

Manual override on pilot valve
No designation standard
N7 detent assembly
N9 without manual override

Seals
No designation NBR

Surface treatment
B zinc-coated (ZnNi), ISO 9227 (520 h)

Spool Symbols

Three positions with centering spring			Two positions with return spring		
Z11			R51		
H11			R52		
Y11			X51		
C11			X52		
P11			Two positions with mechanical detent on pilot valve		
			J17		
			J27		

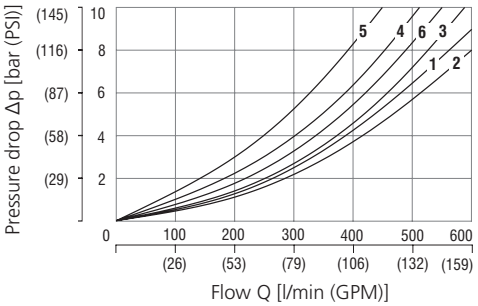
Characteristics measured at ν = 32 mm²/s (156 SUS)

Operating limits

Operating limits for maximum hydraulic power at rated temperature and supplied with voltage equal to 90 % of the nominal value

Maximum flow rates in l/min (GPM)	at pressure	
	210 bar (3050 PSI)	320 bar (4640 PSI)
Spool type C11	500 (133)	450 (119)
All other spools	600 (159)	500 (133)

Pressure drop related to flow rate



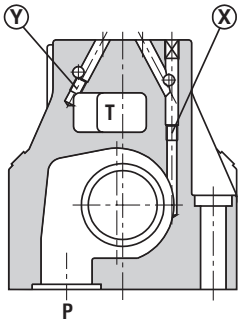
	Spool position	P-A	P-B	A-T	B-T	P-T
Z11, J17, J27	Energized	1	1	2	3	
H11	De-energized					6*
	Energized	5	5	1	2	
Y11	De-energized			4**	4***	
	Energized	1	1	1	2	
C11	De-energized					6
	Energized	6	6	3	4	
R51, R52, X51, X52	De-energized		1	2		
	Energized	1	1	2	3	
P11	De-energized	4**	4***			
	Energized	2	2	2	3	

* A-B blocked ** B blocked *** A blocked

Pilot and Drain

The RNEXH valves are available with pilot and drain, both internal and external.

X: plug M6x8 for external pilot
Y: plug M6x8 for external drain



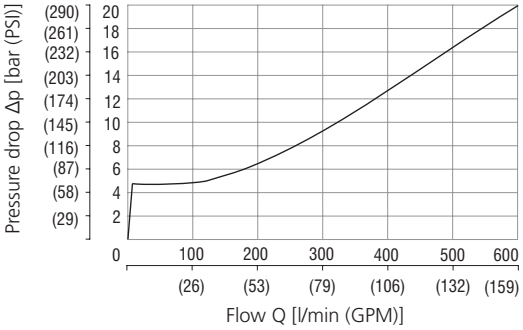
Type of valve		Plug assembly	
		X	Y
RNEXH4-25**/*	internal pilot and external drain	NO	YES
RNEXH4-25**/*I	internal pilot and internal drain	NO	NO
RNEXH4-25**/*E	external pilot and external drain	YES	YES
RNEXH4-25**/*EI	external pilot and internal drain	YES	NO

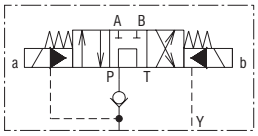
Check Valve Incorporated in Line P

Check valve incorporated in line P: C3

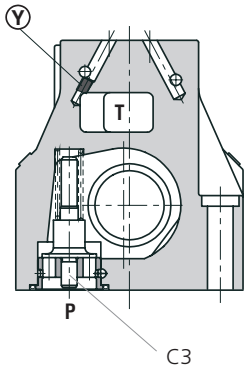
Valves RNEXH are available with a back pressure valve incorporated in line P (Type „C3“). This is necessary to obtain the piloting pressure when the control valve (in the rest position) has the line P connected to the port T (spools H11, C11, R52, X52, J27).
The cracking pressure is 5 bar with a minimum flow rate of 15 l/min.

Back pressure valve incorporated on line P (type C3)





pilot always internal
Y: plug M6x8 for external drain



The curve refers to the pressure drop (body part only) with back pressure valve energized to which the pressure drop of the reference spool must be added.

In the C3 version the piloting is always internal.
The back pressure valve can't be used as a check valve because it doesn't guarantee sealing.

The back pressure valve can be also delivered separately and it can be easily mounted in line P of the main control valve.
Specify the code to order the back pressure valve separately from the spare part data sheet No. 8010.

For detail information on the pilot valve RPEX3-06 refer to data sheet No. 4054.

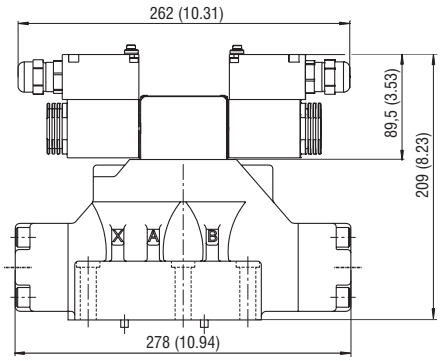
Actuation in millimeters (inches)

Solenoid control: RNEXH

The valve is supplied with an RPEX3-06 pilot solenoid valve.

The minimum piloting pressure can be as low as 5 bar at low flow rates, but with higher flow rates a pressure of 12 bar is needed.

If the valve operates with higher pressures it is necessary to use the version with external pilot and reduced pressure.
Otherwise, the valve with internal pilot and a pressure reducing valve with a 30 bar fixed setting can be ordered.



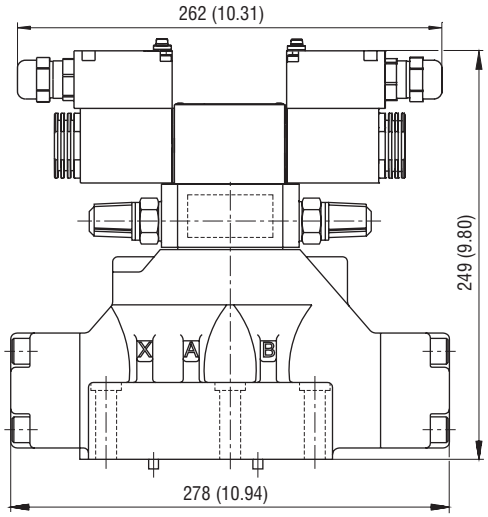
Control Options - Special Features

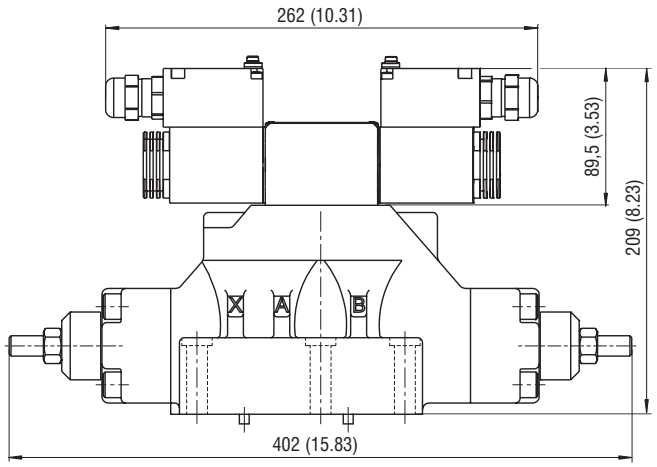
Control of the main spool shifting speed: D
By placing a flow control valve between
the pilot solenoid valve and the hydropiloted valve, the pilot flow rate can be controlled and therefore the shifting speed adjusted.
Add the letter **D** to the identification code to request this device.

Pilot pressure reducing valve - 30 bar fixed setting: Z
Internal piloting with mounted pressure reducing valve with 30 bar fixed setting. The option **Z** may be used together with option **D**.

Control of the main spool stroke: C
Using special side plugs, it is possible to introduce stroke control the piloted valve so as to vary the maximum spool opening clearance. This solution allows the control of the flow rate from the pump to the actuator and from the actuator to the outlet, resulting in double adjustable control of the actuator.
Add the letter C to the identification code to request this device.

Shifting speed control: PF
with an orifice (0.8 mm) in port P of the solenoid pilot valve
Add **PF** to the identification code to request this device

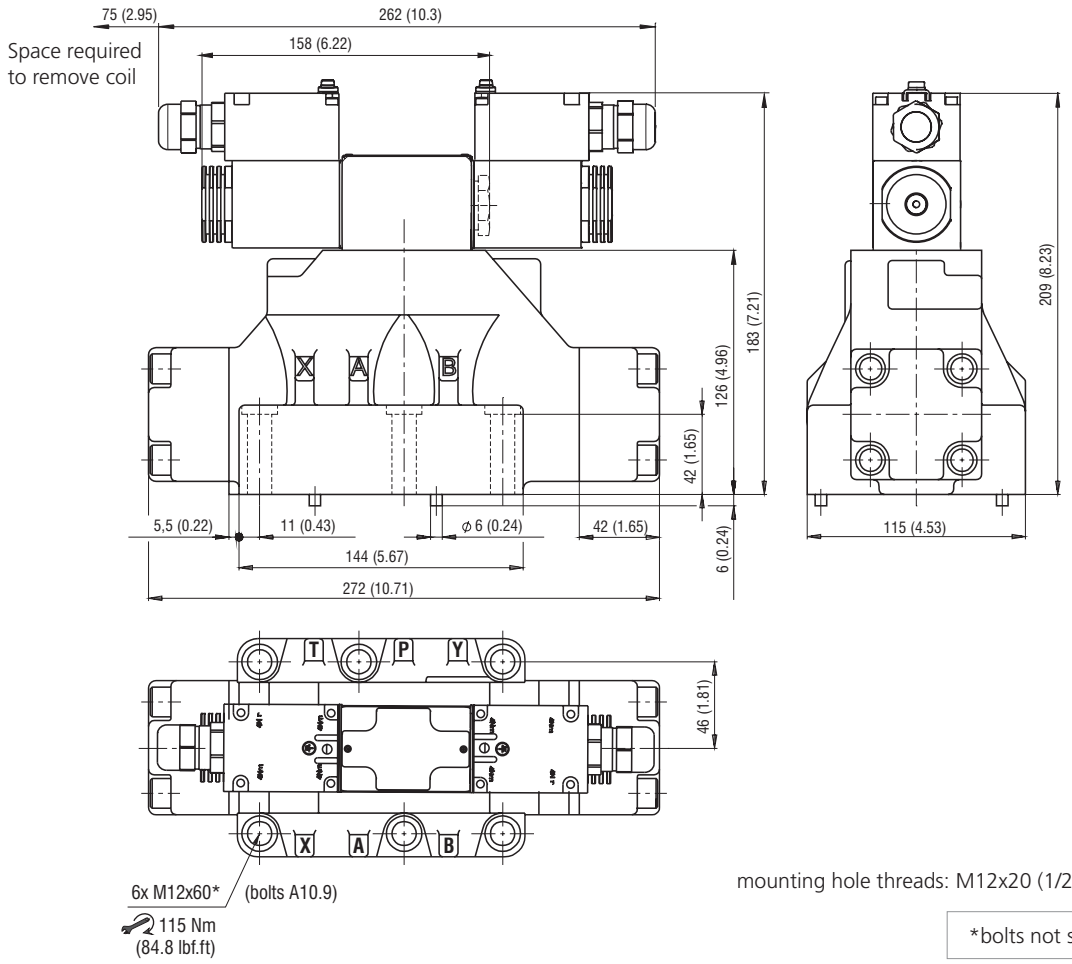




Solenoid operated distributor with pilot valve in the configuration 3H11
It is possible to deliver the solenoid operated distributor with the pilot valve in configuration 3H11 (all the ports at the outlet).
This configuration is used with external piloting in order to allow the unloading of the piloting line when the solenoid operated valve is in the rest position.
With this option, the piloting is necessarily external.

Dimensions in millimeters (inches)

RNEXH4-253



mounting hole threads: M12x20 (1/2-13 UNC)

*bolts not supplied