



QDE3*

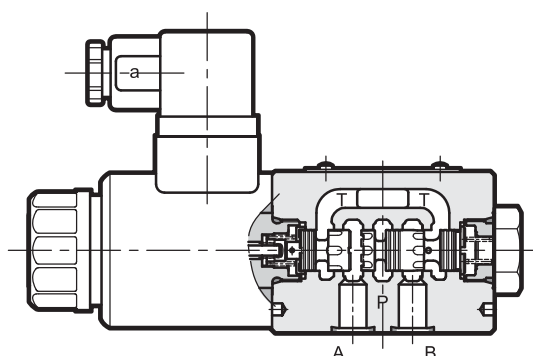
DIRECT OPERATED FLOW CONTROL VALVE WITH PROPORTIONAL CONTROL AND COMPENSATION SERIES 10

**SUBPLATE MOUNTING
ISO 6263-03 (CETOP 03)**

p max 250 bar

Q max 40 l/min

OPERATING PRINCIPLE



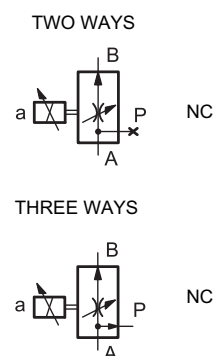
- The QDE3 is a compensated flow control valve with pressure compensation and proportional electric control, with mounting surface according to ISO 6263-03 (CETOP RP121H), supplied with 2 or 3 ways designs, depending on the use of port P.
- This valve is used for the regulation of the flow in branches of a hydraulic circuit or for the speed control of hydraulic cylinders.
- The flow can modulated continuously in proportion to the current supplied by the solenoid
- The valve can be controlled directly from a current controlled power supply or with an integrated electronic, which allow to fully exploit the performance of the valve.
- Available in 4 flow adjustment fields, up to 40 l/min.

PERFORMANCES

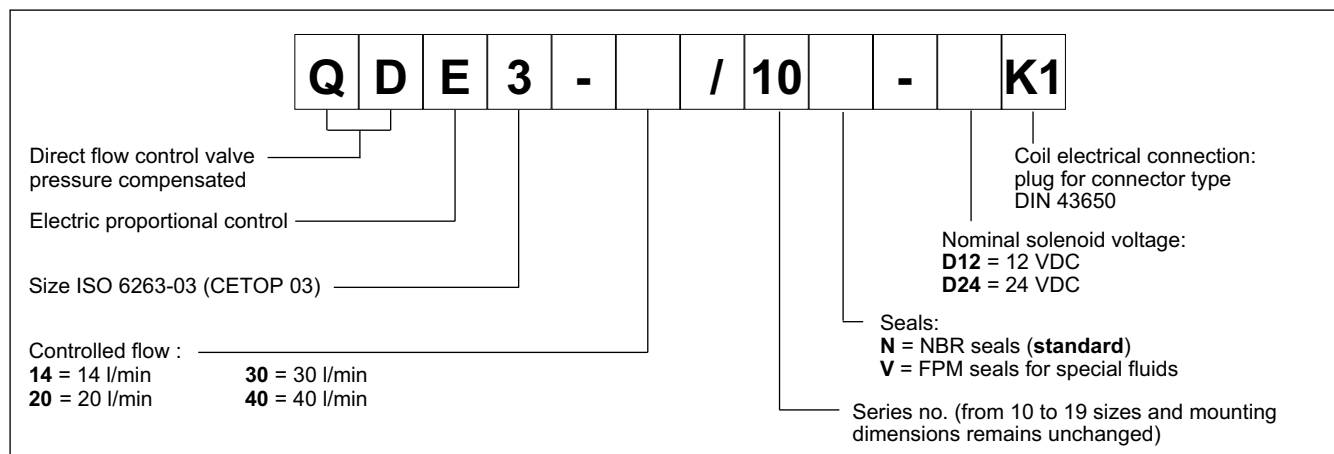
(Obtained with mineral oil of viscosity 36 cSt at 50°C and electronic control card)

Maximum operating pressure	bar	250			
Controlled flow (Q _B)	l/min	14	20	30	40
Minimum suggested input flow (Q _A)	l/min	40	50	40	50
Spring setting in pressure compensator	bar	4	8	4	8
Minimum pressure drop A → B	bar	10	22	10	22
Step response	see paragraph 7				
Hysteresis (with PWM 200 Hz)	% of Q _{max}	< 6 %			
Repeatability	% of Q _{max}	< ± 1,5 %			
Electrical characteristics	see paragraph 6				
Fluid temperature range	°C	-10 / +50			
Fluid temperature range	°C	-20 / +80			
Fluid viscosity range	cSt	10 ÷ 400			
Fluid contamination degree	according to ISO 4406:1999 class 18/16/13				
Recommended viscosity	cSt	25			
Mass	kg	1,6			

HYDRAULIC SYMBOL

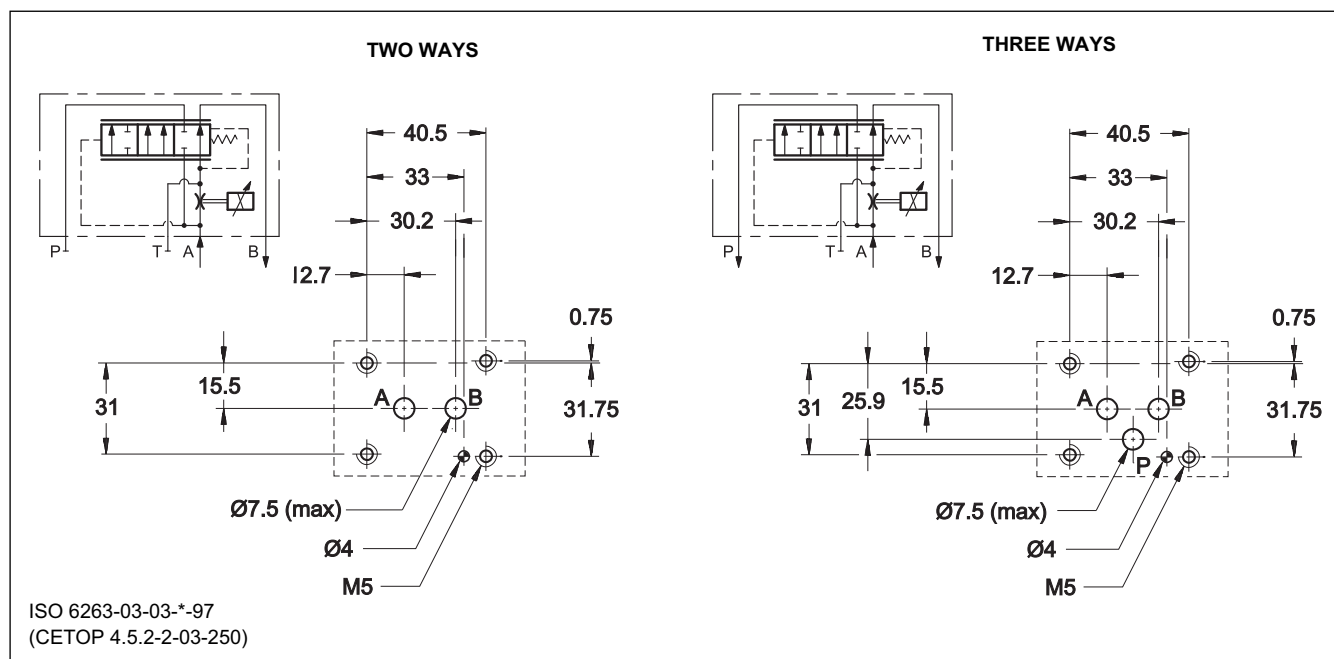


1 - IDENTIFICATION CODE



2 - CONFIGURATIONS AND MOUNTING INTERFACE

The function of two or three ways is obtained realizing the mounting interface according to ISO 6263-03 (CETOP 03), using the port P for three way configuration only. The port T will never be used. To use the valve in two ways is also possible to interpose a subplate with plug (code 0113388 and 0530384) be ordered separately.



3 - HYDRAULIC FLUIDS

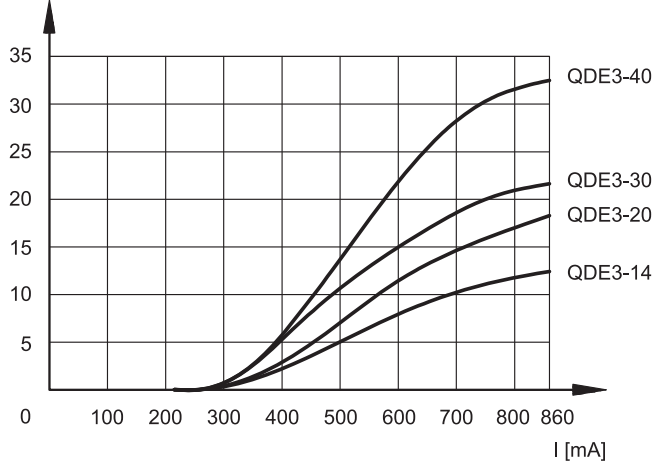
Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

4 - CHARACTERISTIC CURVES (obtained with viscosity of 36 cSt a 50°C)

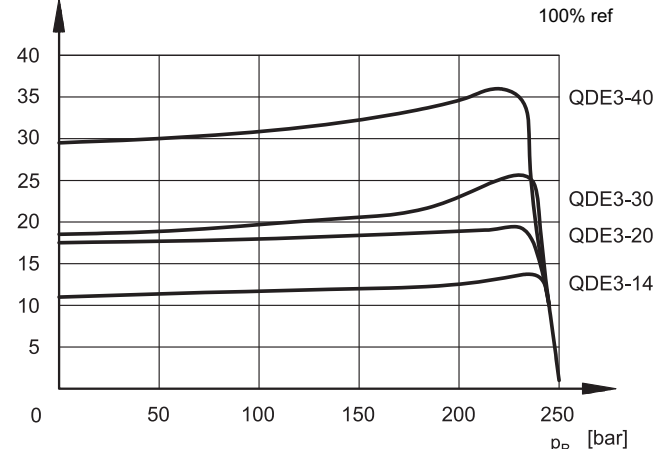
4.1 Two ways

Q [l/min] **FLOW CONTROL $Q = f(\text{command})$**



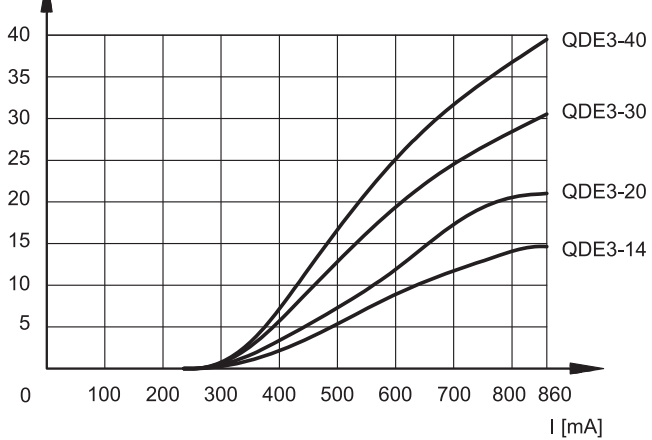
Typical flow rate characteristics A → B for controlled flow rate: 14 - 20 - 30 - 40 l/min in function of the current supplied to the solenoid (D24 version, maximum current 860 mA)

Q [l/min] **FLOW CONTROL $Q = f(p_B)$**



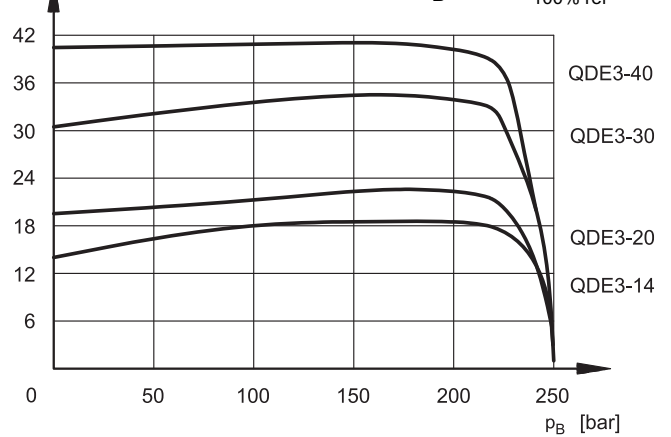
4.2 Three ways

Q [l/min] **FLOW CONTROL $Q = f(\text{command})$**

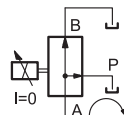
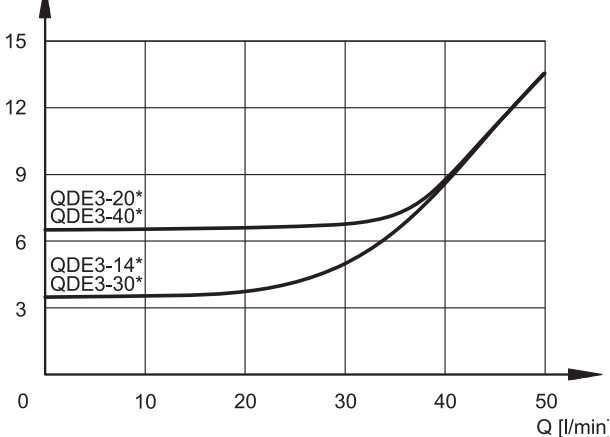


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Q [l/min] **FLOW CONTROL $Q = f(p_B)$**



Δp [bar] **PRESSURE DROPS Δp A → P ($Q_B = 0$)**



Pressure drops with flow A → P.
Obtained with $Q_B = 0$ (no current)

5 - PRESSURE COMPENSATION

The valves are equipped with two restrictors. The first is an opening which can be adjusted by the proportional solenoid; the second, controlled by the pressure upstream and downstream of the first restrictor ensures constant pressure drop across the adjustable restrictor. In these conditions, the set flow rate value is maintained almost constant for a wide pressure variation between the valve inlet and outlet chambers.

6 - ELECTRICAL CHARACTERISTIC

Proportional solenoid

The proportional solenoid comprises two parts: tube and coil.

The tube, screwed to the valve body, contains the armature which is designed to maintain friction to a minimum thereby reducing hysteresis.

The coil is mounted on the tube secured by means of a lock nut and can be rotated through 360° depending on installation clearances.

NOMINAL VOLTAGE	VCC	12	24
RESISTANCE (at 20°C)	Ω	3,66	17,6
MAXIMUM CURRENT	A	1,88	0,86
DUTY CYCLE	100%		
ELECTROMAGNETIC COMPATIBILITY (EMC)	According to 2004/108/CE		
CLASS OF PROTECTION: Atmospheric agents (UNI EN 60529)	IP 65		

7 - STEP RESPONSE

(obtained with mineral oil with viscosity of 36 cSt at 50°C and electronic control cards)

Step response is the time taken for the valve to reach 90% of the set flow value following a step change of reference signal.

The table illustrates typical response times with $\Delta p = 8$ bar.

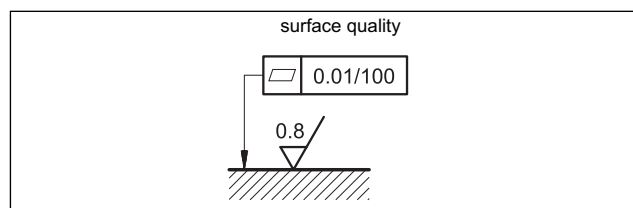
REFERENCE SIGNAL STEP	0 → 100%	100 → 0%
Step response [ms]	50	40

8 - INSTALLATION

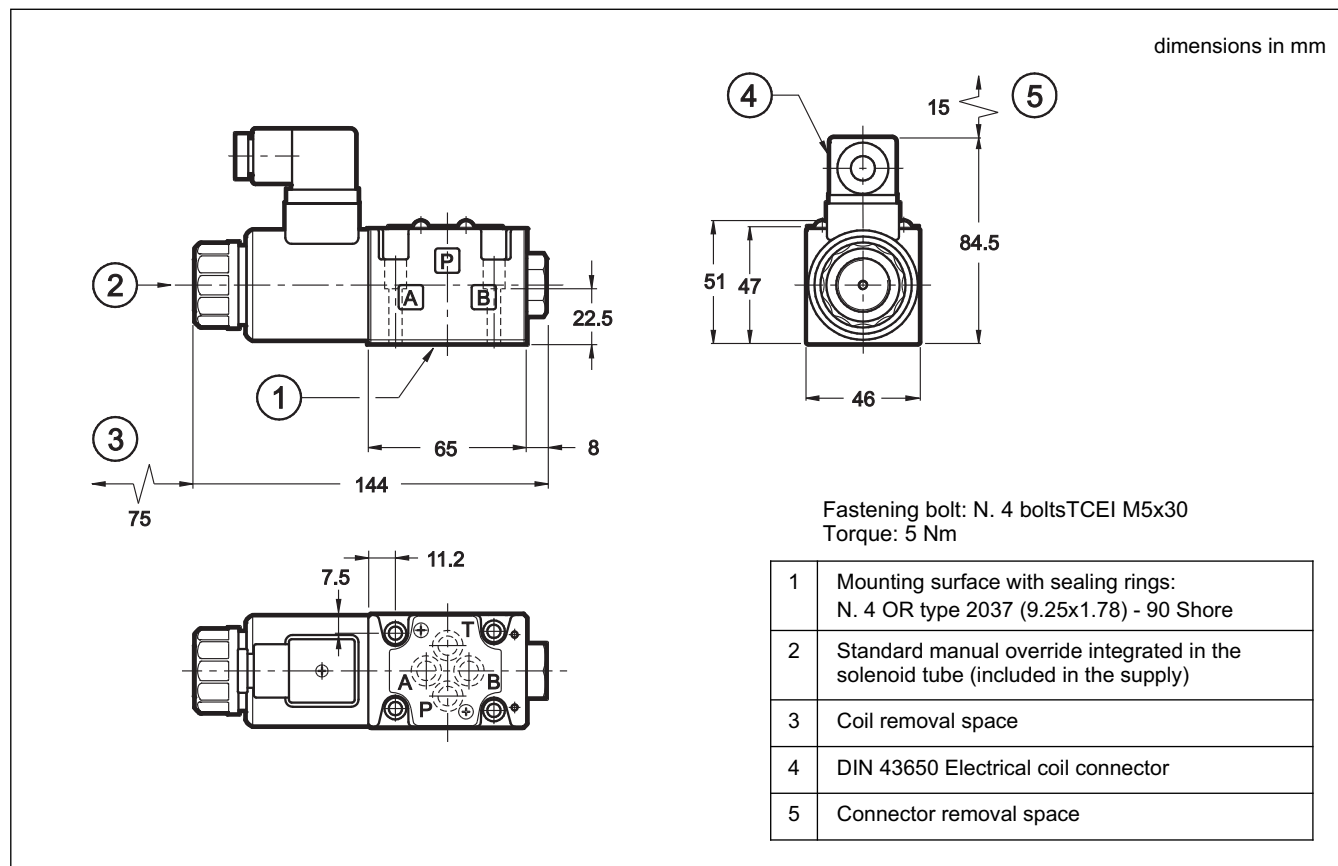
QDE3* valves can be installed in any position without impairing correct operation.

Ensure that there is no air in the hydraulic circuit.

Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols. If minimum values are not observed fluid can easily leak between the valve and support surface.



9 - OVERALL AND MOUNTING DIMENSIONS



10 - ELECTRONIC CONTROL UNITS

EDC-112	24V DC solenoids	plug version	see cat. 89 120
EDC-142	12V DC solenoids		
EDM-M112	24V DC solenoids	rail mounting DIN EN 50022	see cat. 89 250
EDM-M142	12V DC solenoids		
UEIK-11	24V DC solenoids	Eurocard format	see cat. 89 300

11 - SUBPLATES (see catalogue 51 000)

Type PMMD-AI3G rear ports 3/8" BSP
Type PMMD-AL3G side ports 3/8" BSP



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SERIES 10



**DUPLOMATIC
OLEODINAMICA**

DUPLOMATIC OLEODINAMICA S.p.A.

20015 PARABIAGO (MI) • Via M. Re Depaolini 24

Tel. +39 0331.895.111

Fax +39 0331.895.339

www.duplomatic.com • e-mail: sales.exp@duplomatic.com