

Proportional flow control valve Spool type Solenoid Operated, Direct-Acting **P3SRE 6 A01**

DESCRIPTION

Proportional flow control valves of the P3SRE 6 series are direct-acting spool valves for oil hydraulic systems that serve to adjust the level of flow.

The valve is operated by an oil-immersed proportional solenoid. The solenoid pushes the valve's control orifice to the desired opening position. The pressure compensator ensures a constant pressure drop at the control orifice.

The controlled flow rate is proportional to the electric input signal at the solenoid coil.

CHARACTERISTICS

- Direct-acting proportional pressure compensated flow control valve with solenoid actuation
- High flow capacity thanks to optimised cast housing
- Several flow ranges available
- Coil rotatable by 360°, allows flexible installation
- Easy to exchange thanks to standardised hole pattern in accordance with ISO 6263-03 (comparable to ISO 4401-03)
- Electronic remote control for example by means of EHCD (see brochure 2.429.2)



Nominal size 6
up to 50 l/min
up to 210 bar

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MODEL CODE

P3SRE 6 32 A01 24 PG V

Designation

2- or 3-way proportional pressure compensated flow control valve, direct-acting

Nominal size (NG)

6

Nominal flow rate

7.5 = 7.5 l/min

15 = 15 l/min

32 = 32 l/min

Type

A01 = specified by manufacturer

Rated voltage of the solenoid coil

12 = 12 V DC

24 = 24 V DC

Electrical connection

Number of poles

Connection

Protection class

DC:

PG = design A acc. to DIN EN 175301-803

3-pole

radial

IP65

PN = DEUTSCH plug connector DT04-2P

2-pole

axial

IP67 / IP69

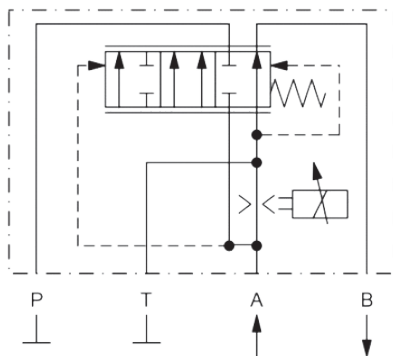
Sealing material

V = FKM (standard)

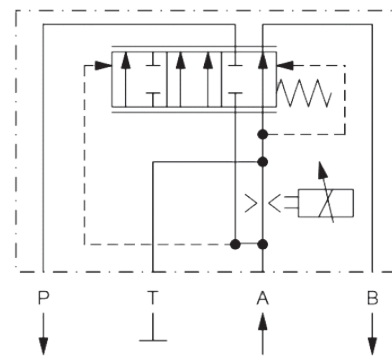
N = NBR (optional)

SPOOL TYPES / SYMBOLS

2-way spool valve basic symbol

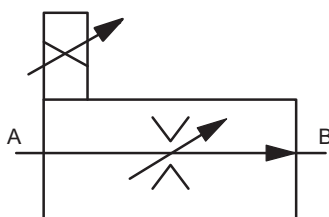


3-way spool valve basic basic symbol



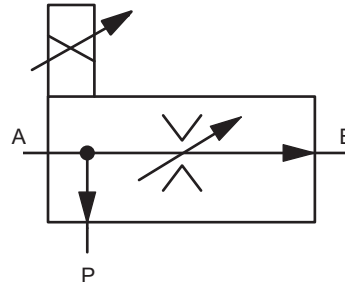
USE OF THE CLOSED-LOOP FLOW CONTROL

2-way spool valve



From the inlet flow rate at A, the reduced outlet flow rate at B is realised. A pressure increase occurs at A.

3-way spool valve



The inlet flow rate at A is split up into a controlled flow rate at B and a bypass flow rate (the remaining amount of flow) at P.

Notice: The designations A, B and P are hole pattern designations.

A = inlet

B = outlet (2-way flow control valve) or priority connection (3-way flow control valve)

P = bypass (3-way flow control valve only)

FUNCTION

The proportional valves of series P3SRE 6 A01 are direct-acting spool valves. The flow rate is adjusted constantly (proportionally) in accordance with the electrical input signal at the solenoid coil and is kept constant regardless of the pressure ratios at the inlet and outlet.

The valve is made up of a valve housing (1) with corresponding valve spool (control orifice) (8) and pressure compensator spool (2). It is also equipped with a return spring (3) for the valve spool and the control spring of the pressure compensator spool (9). The control spring determines the constant control pressure difference across the orifice.

The valve is also equipped with a pole tube (4) and a proportional solenoid coil (5). The solenoid generates a force in accordance with the input signal. This force actuates the valve spool against the return spring via the guide rod (6). This releases the cross-section of the control orifice, which determines the level of flow depending on the control pressure difference. Electronic modules are available for the electronic remote control of the solenoid (see brochure 2.429.2).

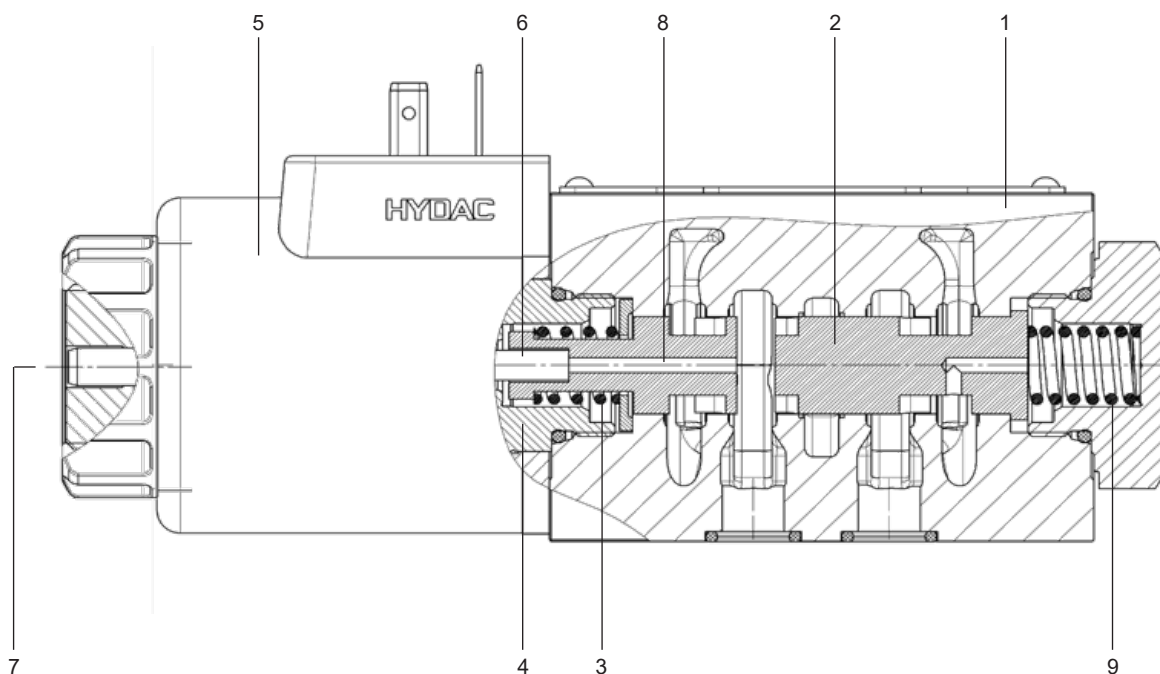
The manual override (7) enables valve operation without energising the solenoid.

Notice:

Vent the system and valve before initial start-up.

If the required control pressure difference is not achieved because the inlet pressure at A is too low, the valve will function as a throttle valve.

SECTION VIEW



TECHNICAL DATA¹

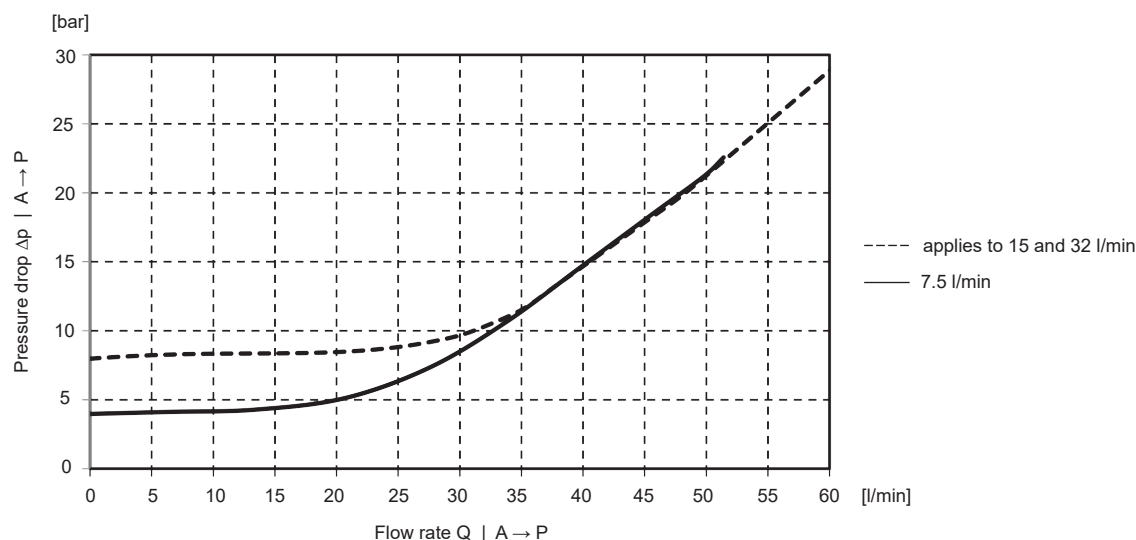
General specifications			
MTTF _d	150 - 1200 years, assessment according to DIN EN ISO 13849-1:2016, Table C.1, Confirmation of ISO 13849-2:2013; Tables C.1 and C.2		
Ambient temperature	-20 °C up to +60 °C		
Installation pos.	User-definable		
Weight	1.5 kg		
Material	Valve housing:	Cast iron	
	Coil housing:	Steel	
	Type label:	Aluminium	
Surface coating	Valve housing:	Phosphate-plated	
	Coil housing:	ZnNi coating	
Hydraulic specifications			
Operating pressure	Port P, A, B, T = 210 bar		
Flow rate (Q _{max})	7.5 l/min	15 l/min	32 l/min
Min. differential pressure (A→B)	12 bar	20 bar	32 bar
Operating fluid	Hydraulic oil to DIN 51524 Part 1, 2 and 3		
Temperature range of operating fluid	-20 °C up to +80 °C		
Viscosity range	15 up to max. 400 mm ² /s		
Permitted contamination level of operating fluid	ISO 4406 class 18/16/13 or better		
Hysteresis in relation to Q _{max}	9 %		
Repeatability in relation to Q _{max}	2 %		
Sealing material	FKM (standard), NBR		
Electrical characteristics			
Step response time (at pressure difference 50 bar) The step response time is heavily dependent on the pressure difference and the specific control flow rate.	200 ms: 0 to 95 % of Q _{max} 190 ms: 100 to 5 % of Q _{max}		
Type of voltage	DC voltage		
Nominal voltage	12 V	24 V	
Voltage tolerance	±10 %		
Pilot current	0 - 2,250 mA 2.7 Ω	0 - 1,600 mA 5.0 Ω	
Dither frequency	80 up to 150 Hz (100 recommended)		
Duty cycle	100 %		
Protection class according to DIN EN 60529	With electrical connection "G" IP65 ² With "N" IP67/69 ² can be achieved		

¹ See "Conditions and Instructions for Valves" in brochure 53.000.

² If installed correctly.

TYPICAL PERFORMANCE CURVES

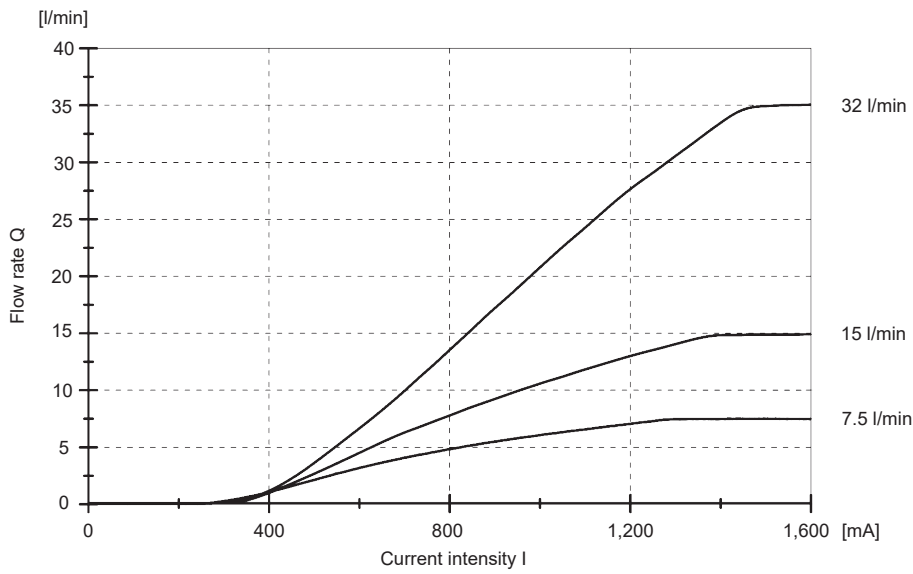
Δp/Q performance curve A → P | Q_B = 0 l/min measured at ν = 43 mm²/s and T_{oil} = 42 °C



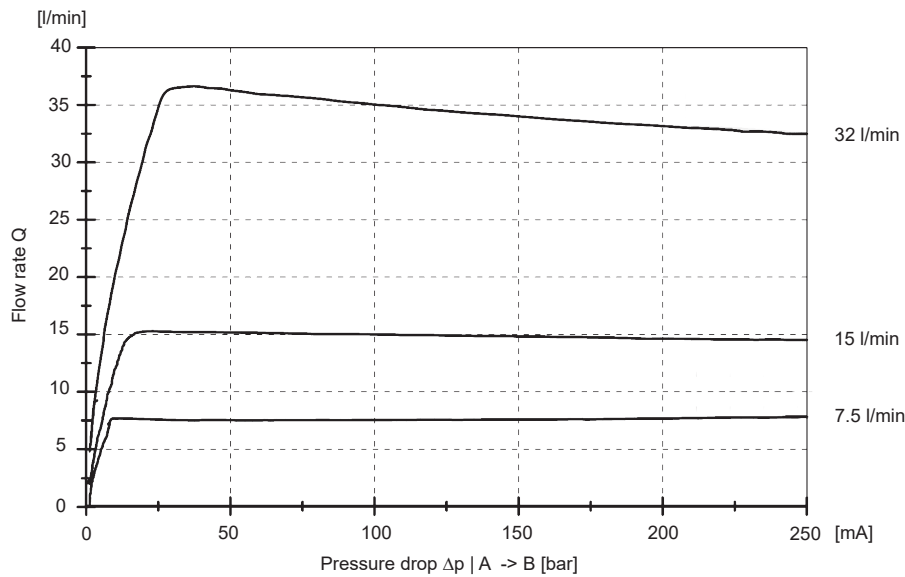
TYPICAL PERFORMANCE CURVES

Curves measured at $v = 43 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 42 \text{ }^\circ\text{C}$

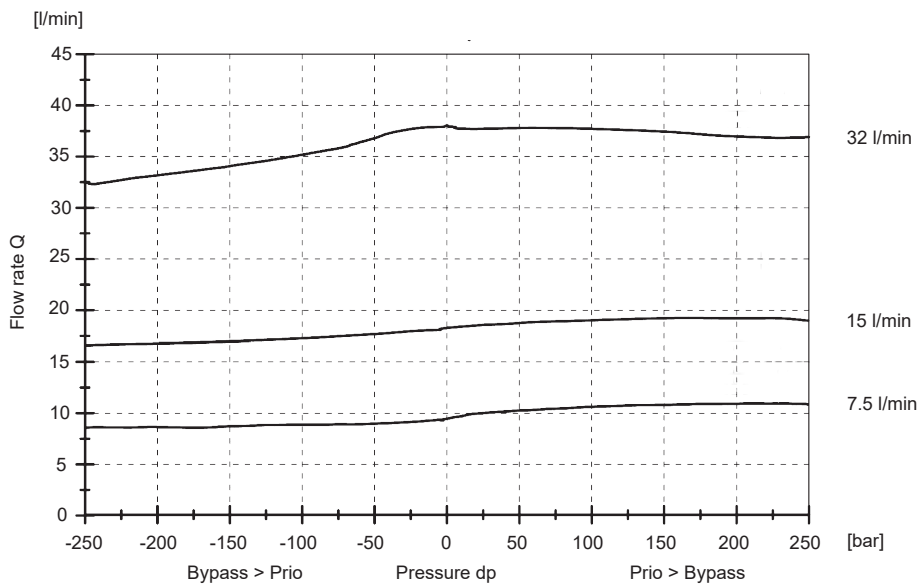
2-way valve with flow A → B | Inlet pressure 100 bar



2-way valve with flow A → B | $I_{\text{nom}} = 100 \%$

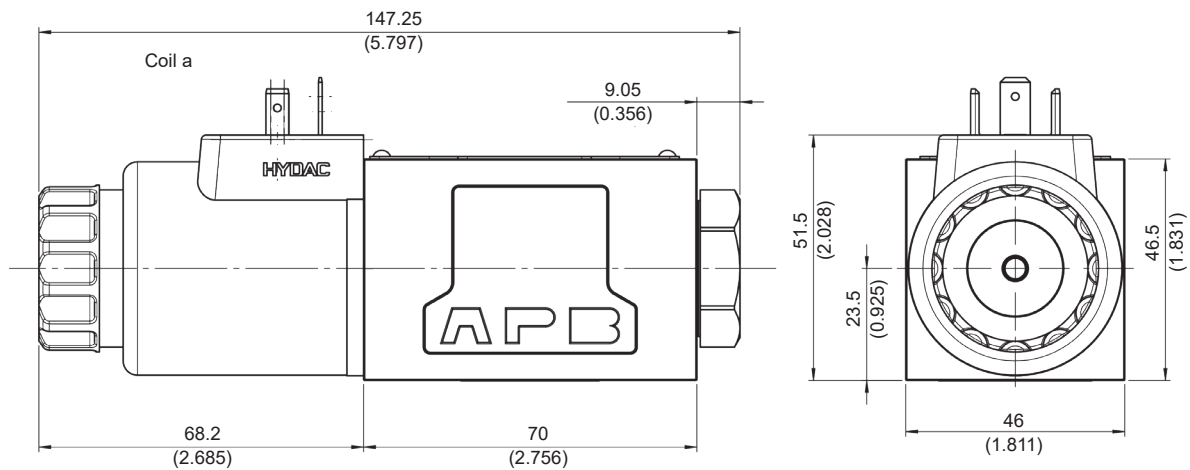
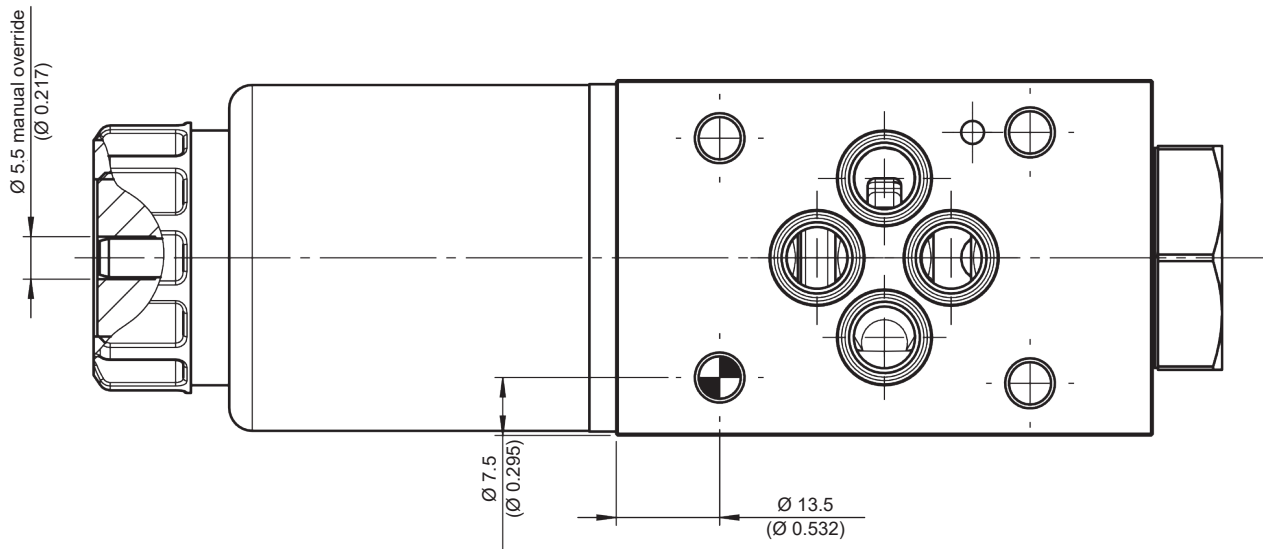
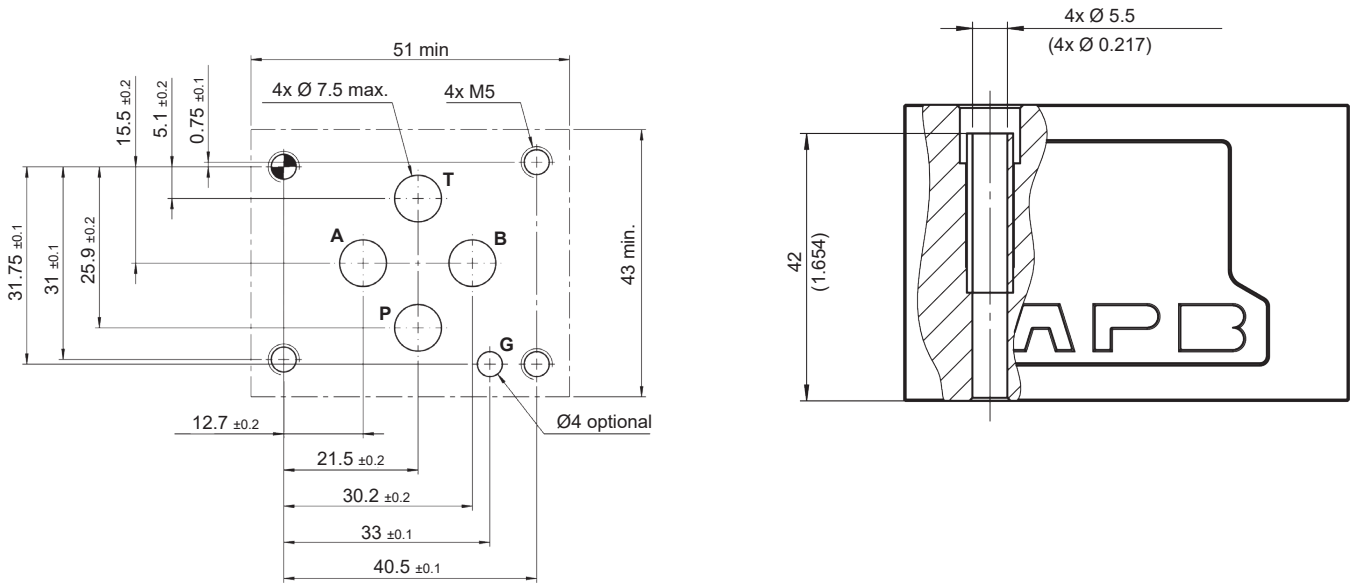


3-way valve with flow A → B/P



DIMENSIONS

Interface in acc. with ISO 6263-03 (comparable to ISO 4401-03-02)



Fastening screws: (not included in scope of supply)
 DIN EN ISO 4762 – M5x50 – 10.9 | Tightening torque: 7 Nm
 Tightening torque tool in acc. with DIN EN ISO 6789 tool type II class A or B

ACCESSORIES

Spare parts, sealing kits

Designation	Material	Code	Part no.
Sealing kit (set of 4 pieces)	NBR	9.25 x 1.78 80 Sh NBR	3492432
Sealing kit (set of 4 pieces)	FKM	9.25 x 1.78 80 Sh FKM	3120269

Accessories

Designation	Code	Part no.
Fastening screws	Ch.-hd. scr.ISO4762-M 5x 50-10.9	4312231

Solenoid coils

Designation	Code	Part no.
Solenoid coils	Coil 12PG- 2.7 -50-2345 -S	4356846
	Coil 24PG- 5.2 -50-2345 -S	4356848
	Coil 12PN- 2.7 -50-2345 -S	4356849
	Coil 24PN- 5 -50-2345 -S	4356851

NOTE

The information in this brochure relates to the operating conditions and applications described. For applications and operating conditions not described, please contact the relevant technical departments.
Subject to technical modifications.
Documents are only valid if they have been obtained via the website and are up-to-date.

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