

RA 29 016/10.02

Replaces 00.00

**3/3-way proportional directional valves
direct operated, with electrical position
feedback as pilot valves for the SYDFE
closed loop control system.**

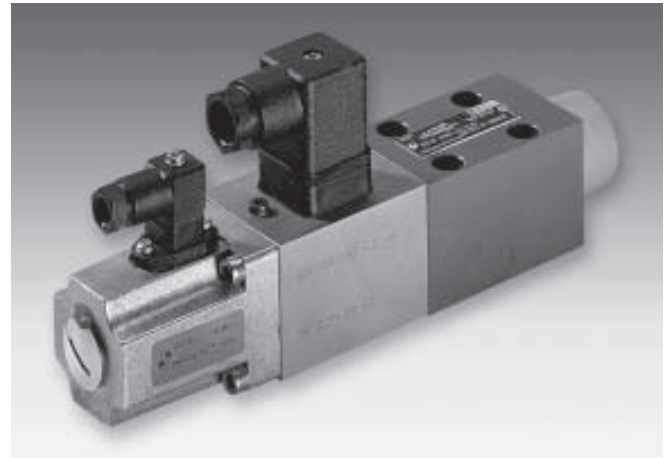
Model VT-DFP

Series 2X

Maximum operating pressure 315 bar

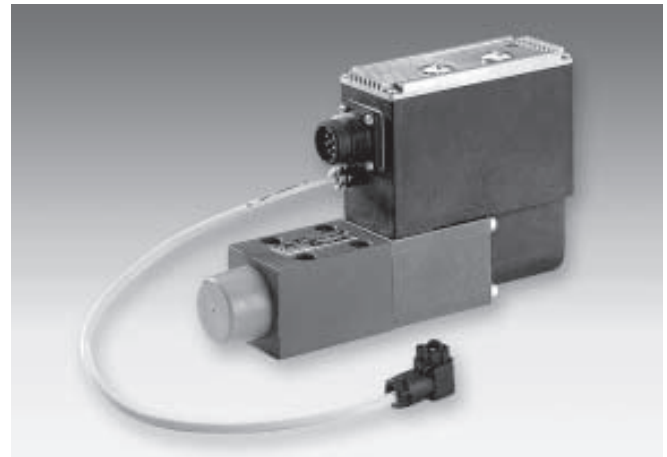
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Type VT-DFP-.-2X/... with plug-in connectors (separate order)



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Type VT-DFPE-.-2X/...

Features

- Pilot valve for the SYDFE, pressure and flow, closed loop control system.
- For the closed loop control of the swivel angle of an A10VSO...DFE variable displacement pump.
- Actuation via a proportional solenoid with electrical feedback
- Control electronics:
 - VT-DFP → external analog amplifier VT 5041-2X (in conjunction with the SYDFE1 closed loop control system to RA 30 024)
 - VT-DFPE → integrated, analog (in conjunction with the SYDFEE closed loop control system to RA 30 030)
 - VT-DFPC → integrated, digital with CAN-Bus interface (in conjunction with the SYDFEC closed loop control system to RA 30 027)



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Ordering details

VT-DFP - -2X/G24/K0/ / V *

For external control electronics = **No code**
 With integrated analogue control electronics = **E**
 With integrated digital control electronics = **C**

Spool variants

Standard = **A**
 2-groove spool = **B**
 4-groove spool = **C**

Series 20 to 29 = **2X**
 (20 to 29: unchanged installation and connection dimensions)

24 V DC = **G24**

Component plug (without plug-in connector) = **K0** ¹⁾

Mounting orientation:

VT-DFP...

Mounting orientation, position transducer / solenoid

Radial to the pump axis = **0**

90° towards the connection plate with an **anti-clockwise** rotation pump = **1**

90° towards the connection plate with a **clockwise** rotation pump = **2**

VT-DFPE... and VT-DFPC...

Mounting orientation of the control electronics / solenoid

Radial to the pump axis = **0**

90° towards the connection plate with an **anti-clockwise** rotation pump = **1**

90° towards the connection plate with a **clockwise** rotation pump = **2**

¹⁾ The component plug is determined by the control electronics (see technical data and electrical connections)!

Plug-in connectors – separate order, see pages 4, 5 and 6.

²⁾ Connection via component socket M12

Further details in clear text
 - ... = E.g. SO variants

V = **FKM seals**
 Suitable for mineral oils (HL, HLP) to DIN 51 524 and phosphate ester (HFD-R)

Input-pressure-actual value
No code = For VT-DFP

Only for VT-DFPE... and VT-DFPC...

C = Current input 4 – 20 mA
V = Voltage input 0 – 10 V
D = Voltage input 0 – 5 V
E = Voltage input 1 – 10 V
F = Voltage input 0.5 – 5 V ²⁾

Options
No code = For VT-DFP

For VT-DFPE...

0 = Standard electronics with leakage oil compensation
1 = Standard electronics without leakage oil compensation

For VT-DFPC...

0 = Standard

Additional functions
No code = For VT-DFP

For VT-DFPE...

A = Without power limitation
B = With power limitation

For VT-DFPC...

A = Standard

Technical data (for applications outside these parameters, please consult us)**General**

Component version		VT-DFP	VT-DFPE	VT-DFPC
Storage temperature range	°F (°C)	−4 ... +158 (− 20 ... + 70)	32 ... 158 (0 ... 70)	32 ... 158 (0 ... 70)
Ambient temperature range	°F (°C)	−4 ... +140 (− 20 ... + 60)	32 ... 140 (0 ... 60)	32 ... 122 (0 ... 50)
Weight	lbs (kg)	4.32 (1.96)	4.96 (2.25)	4.96 (2.25)

Hydraulic

Pressure fluid	Mineral oil (HL, HLP) to DIN 51 524; Phosphate ester (HFD-R) Other pressure fluids on request		
Pressure fluid temperature range	°F (°C)	−4 ... +158 (− 20 ... + 70)	
Viscosity range	SUS (mm ² /s)	97 ... 1766 (20 ... 380)	
Degree of contamination	Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 7.		
Operating pressure	Ports A, P	PSI (bar)	4568 (315)
	Port T	PSI (bar)	1450 (100)

Electrical

Solenoid coil resistance	Ω	2.1 ... 3.2	–	–
Coil resistance (at 68°F [20 °C])	Between connections 1 and 2	Ω	Approx. 113	–
	Between connections 3 and 4	Ω	Approx. 101	–
Control	VT 5041-2X		integrated analog	integrated digital

Note:

For details regarding the environmental simulation test covering EMC (electro-magnetic compatibility), climate and mechanical loading (declaration regarding environmental compatibility) see:

VT-DFP: RE 30 024-U,

VT-DFPE: RE 30 030-U and

VT-DFPC: RE 30 027-U (in preparation).

For further information regarding the control system see:

– Type SYDFE1 to RA 30 024 in conjunction with VT-DFP

– Type SYDFEE to RA 30 030 in conjunction with VT-DFPE

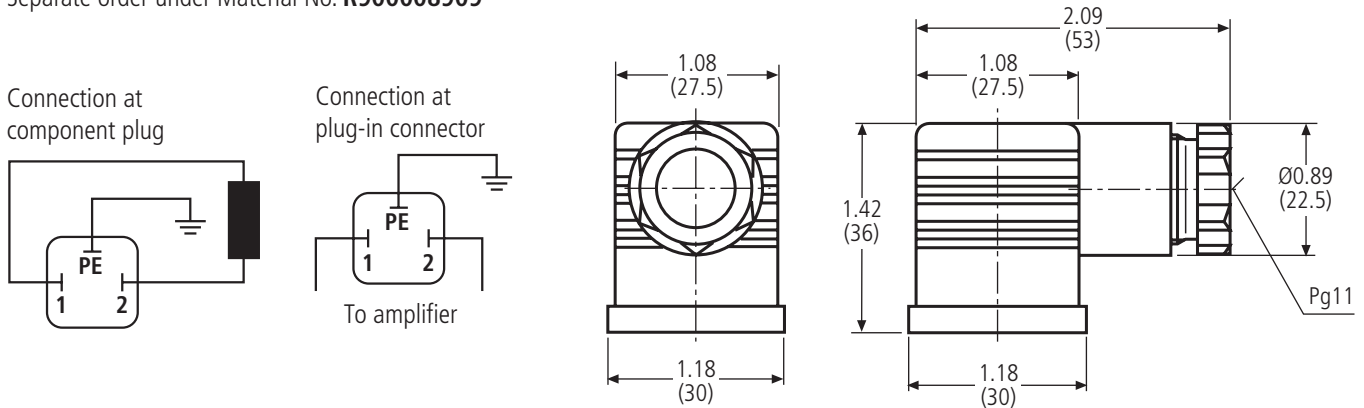
– Type SYDFEC to RA 30 027 in conjunction with VT-DFPC
(in preparation)

Electrical connection, dimensions in inches (millimeters): Type VT-DFP... (for external analog control electronics)

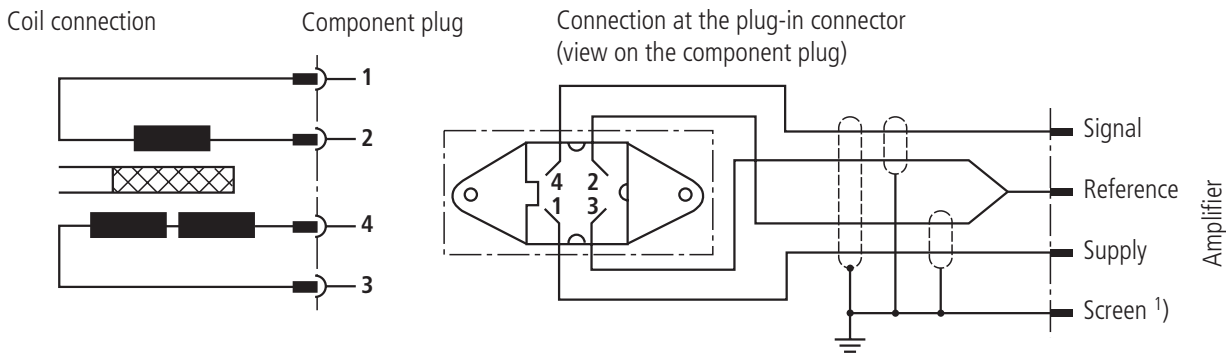
Solenoid

Plug-in connector to DIN 43 650-AF2/Pg 11

Separate order under Material No. **R900008909**

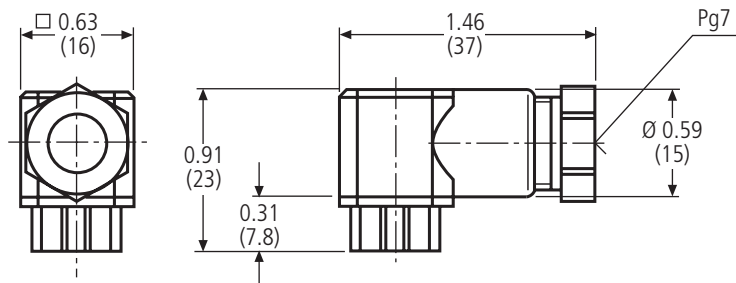


Inductive position transducer



Plug-in connector 4-pin Pg7-G4W1F

Separate order under Material No. **R900023126**



¹⁾ Guidelines regarding the screen as well as cable type can be obtained from the engineering guidelines for the entire system SYDFE1-2X/... (see RA 30 024-01-B)!

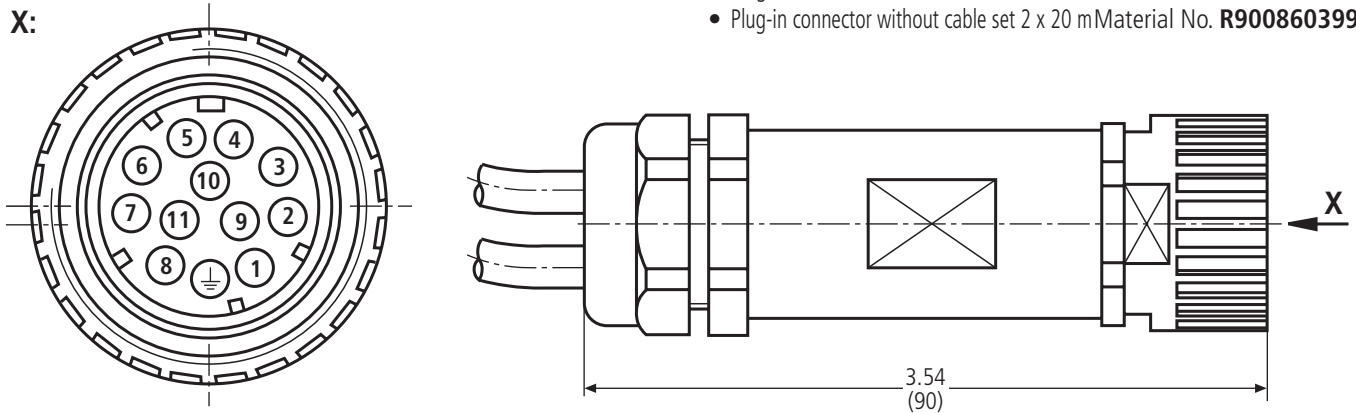
Electrical connection: Type VT-DFPE... (with integrated control electronics)

Central connection

Plug-in connector to E DIN 43 563-B (12-pin), separate order:

- Plug-in connector without cable (kit) Material No. **R900884671**
- Plug-in connector without cable set 2 x 5 m Material No. **R900032356**
- Plug-in connector without cable set 2 x 20 m Material No. **R900860399**

X:



Component, cable plug or cable set allocation

For type VT-DFPE...
 $\begin{matrix} C \\ V \\ D \\ E \end{matrix} / .V$

For type VT-DFPE...**F**/.V

Pin	Allocation	Code
1	+V _B	1
2	0 V \triangleq L0	2
PE	Earth	Green/yellow
3	Fault	White
4	M0	Yellow
5	a _{com.}	Green
6	a _{act.}	Violet
7	p _{com.}	Pink
8	p _{act.}	Red
9 ¹⁾	Switch T _D or power limitation	Brown
10	Pressure-actual value H	Black
11	Pressure-actual value L	Blue
n.c.		Grey

Supply line
3 x 1.0 mm²

Signal line
10 x 0.14 mm²;
Screened
(The screen must be connected on one side to the control!)

Pin	Allocation	Code
1	+V _B	1
2	0 V \triangleq L0	2
PE	Earth	Green/yellow
3	Fault	White
4	M0	Yellow
5	α _{com.}	Green
6	α _{act.}	Violet
7	p _{com.}	Pink
8	p _{act.}	Red
9 ¹⁾	Switch T _D or power limitation	Brown
10	Reserved	Black
11	Reserved	Blue
n.c.		Grey

Supply line
3 x 1.0 mm²

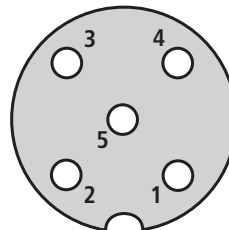
Signal line
10 x 0.14 mm²;
Screened
(The screen must be connected on one side to the control!)

- 1) – Variant **without** power limitation (A): Switch **input** "Switch T_D"
 – Variant **with** power limitation (B): Switch **output** "power limitation active"

Pressure transducer connection HM 16 (component plug M12x1)

Pin	Allocation
1	+V _B
3	Reference
4	Signal

View on the component plug



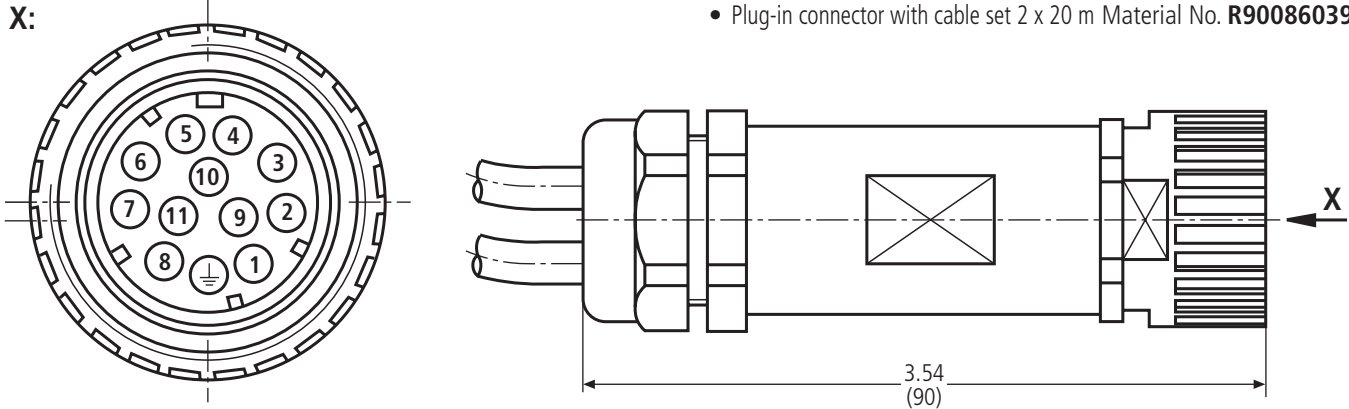
Matching plug for the actual pressure value input for version F: plug-in connector type M12x1 (screened version)

Electrical connection: Type VT-DFPC... (with integrated control electronics)

Central connection

Plug-in connector to E DIN 43 563-B (12-pin), separate order:

- Plug-in connector without cable (kit) Material No. **R900884671**
- Plug-in connector with cable set 2 x 5 m Material No. **R900032356**
- Plug-in connector with cable set 2 x 20 m Material No. **R900860399**



Component, cable plug or cable set allocation

For type VT-DFPC.. /V

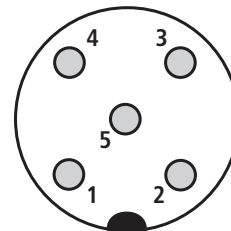
Pin	Allocation	Code	
1	+ V_B	1	Supply line 3 x 1.0 mm ²
2	0 V \triangleq L0	2	
PE	Earth	Green/yellow	
3	Fault	White	Signal line 10 x 0.14 mm ² ; Screened (The screen must be connected on one side to the control!)
4	M0	Yellow	
5	Reserved	Green	
6	U_{OUT1}	Violet	
7	Reserved	Pink	
8	U_{OUT2}	Red	
9	Reserved	Brown	
10 ¹⁾	Pressure-actual value H	Black	
11 ¹⁾	Pressure-actual value L	Blue	
n.c.		Grey	

¹⁾ Connection of the HM 16 pressure transducer or an external connection via the central connection

Connection CAN-BUS, screened (component plug M12x1)

Pin	Allocation
4	CAN-High
5	CAN-Low

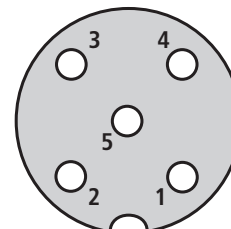
View on the component plug side



Pressure transducer connection HM 16 (component plug M12x1)

Pin	Allocation
1	+ U_B
3	Reference
4	Signal

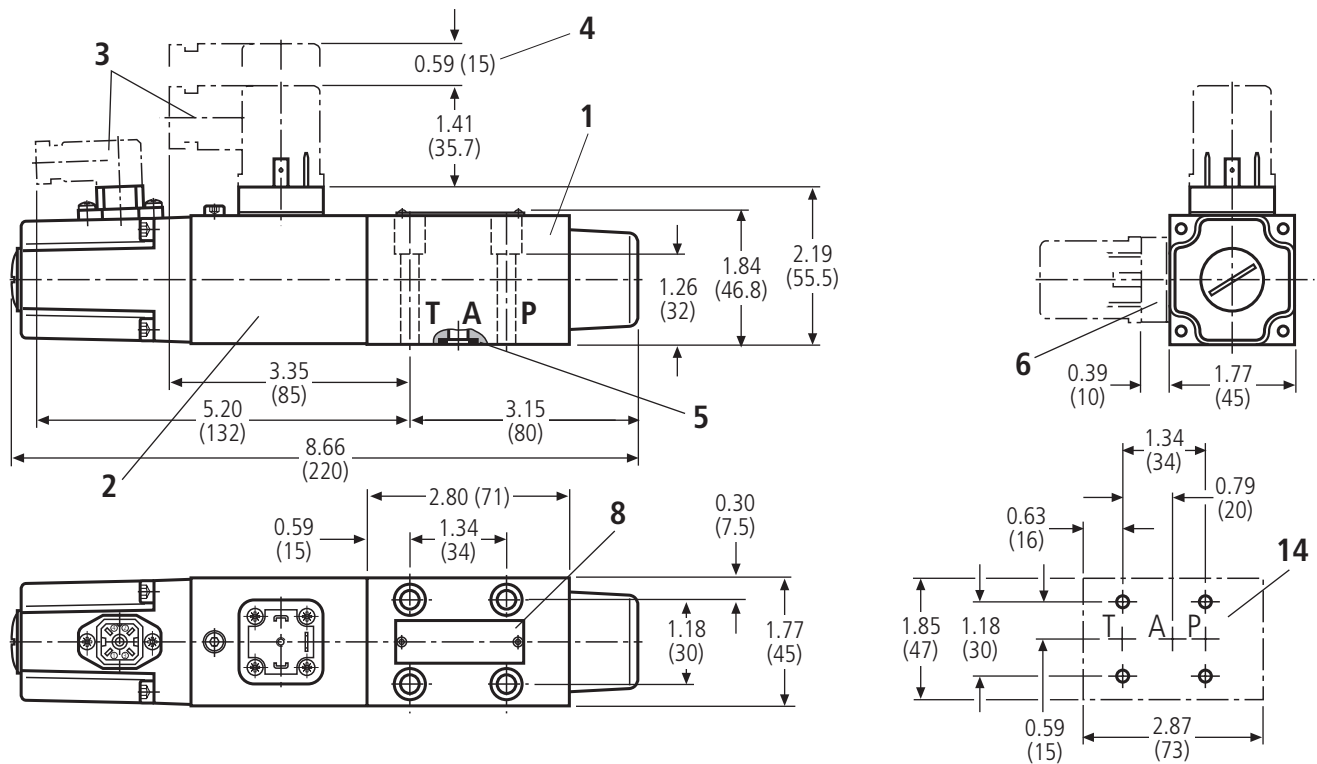
View on the component socket side



Matching plug for the actual pressure value input for version F: plug-in connector type M12x1 (screened version)

Unit dimensions: dimensions in inches (millimeters)

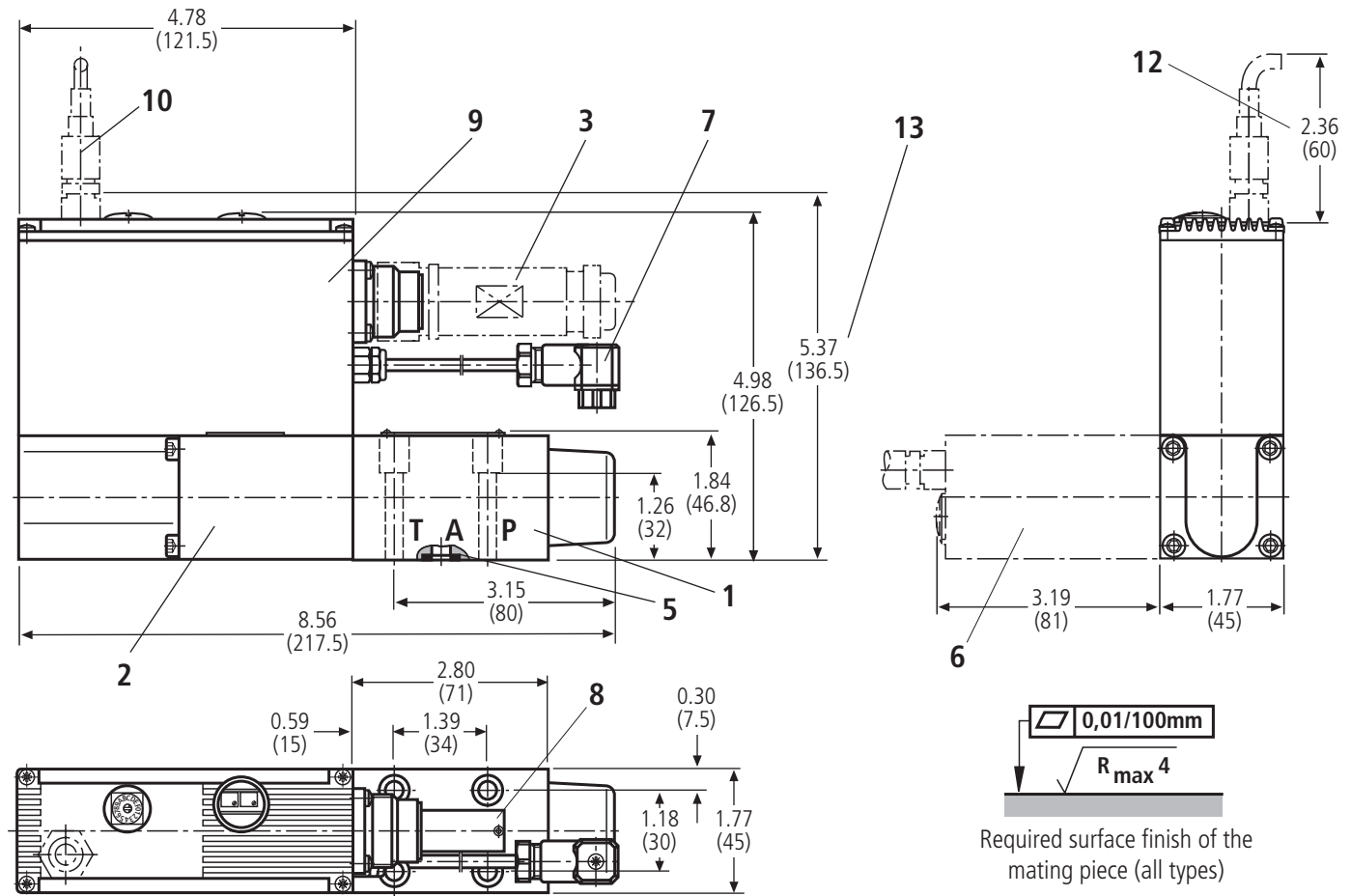
Type VT-DFP--2X/...



- | | | |
|---|---|---|
| 1 Valve housing | 6 Solenoid rotated through 90° (version „2“) | 12 Space required for the plug connector (HM 16) |
| 2 Proportional solenoid with position transducer | 7 Rotary angle sensor connection VT-SWA-1-1X | 13 Dim. for versions VT-DFPE../F or VT-DFPC (connection for HM 16 or CAN-BUS) |
| 3 Plug-in connector, separate order, see pages 4, 5 and 6 | 8 Name plate | 14 Machined valve mounting surface |
| 4 Space required to remove the plug-in connector | 9 Integrated control electronics | 15 Space required for the CAN-connection (customer side plug connection) |
| 5 R-rings 9.8 x 1.5 x 1.78 (ports P, A, T) | 10 HM 16 pressure transducer connection (only with VT-DFPE../F or VT-DFPC...) | |
| | 11 CAN-BUS connection screened component plug M12, 5-pin | |

Unit dimensions: dimensions in inches (millimeters)

Type VT-DFPE...-2X/...



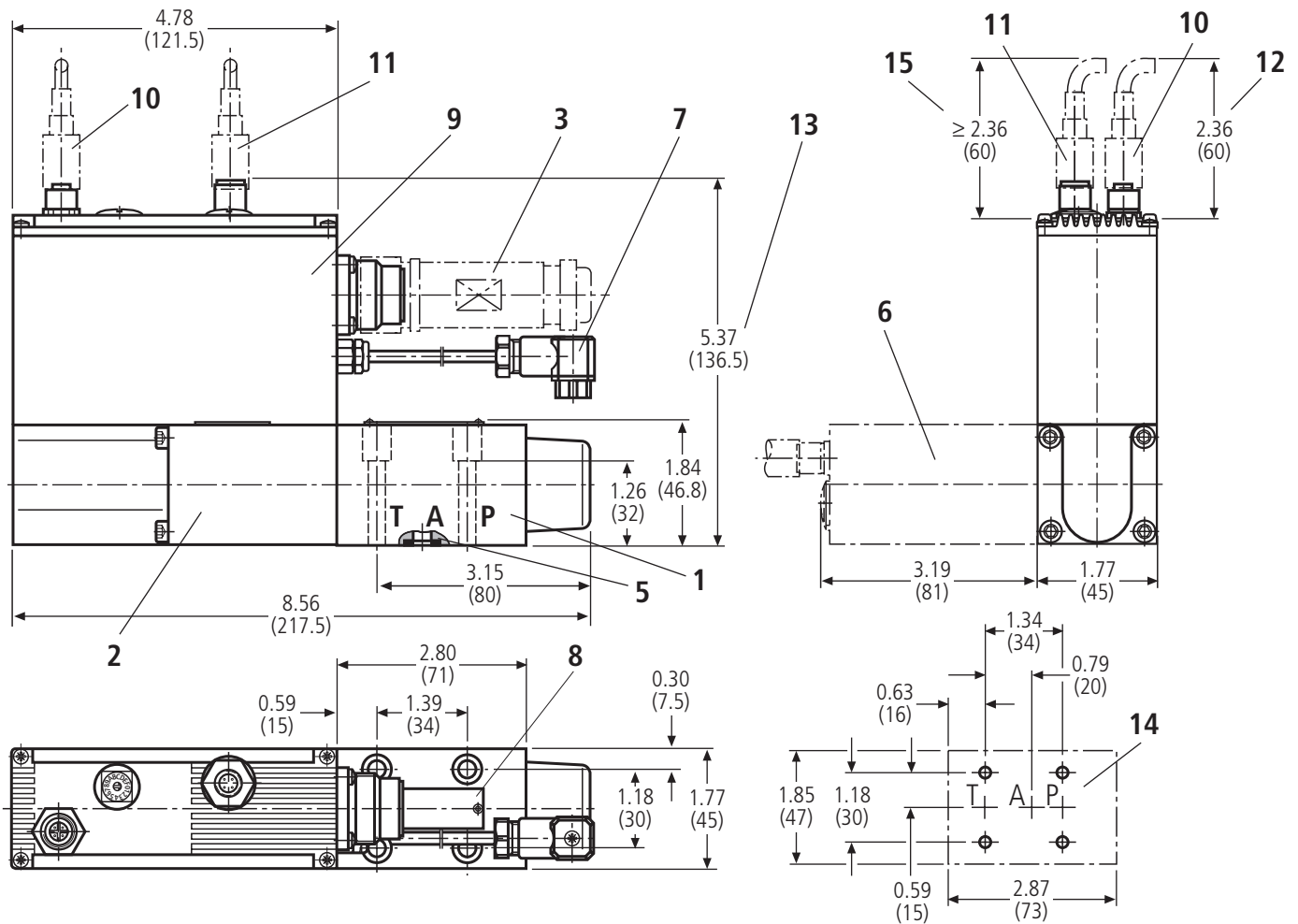
- | | | |
|---|--|--|
| 1 Valve housing | 6 Solenoid rotated through 90° (version „2“) | 12 Space required for the plug connector (HM 16) |
| 2 Proportional solenoid with position transducer | 7 Rotary angle sensor connection VT-SWA-1-1X | 13 Dim. for versions VT-DFPE/...F or VT-DFPC (connection for HM 16 or CAN-BUS) |
| 3 Plug-in connector, separate order, see pages 4, 5 and 6 | 8 Name plate | 14 Machined valve mounting surface |
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| 5 R-rings 9.8 x 1.5 x 1.78 (ports P, A, T) | 10 HM 16 pressure transducer connection (only with VT-DFPE/...F or VT-DFPC...) | |
| | 11 CAN-BUS connection screened component plug M12, 5-pin | |

Valve fixing screws (all types)

4 off M6 x 40 DIN 912-10.9,
tightening torque $M_A = 6.6$ ft-lbs (9 Nm)
(separate order)

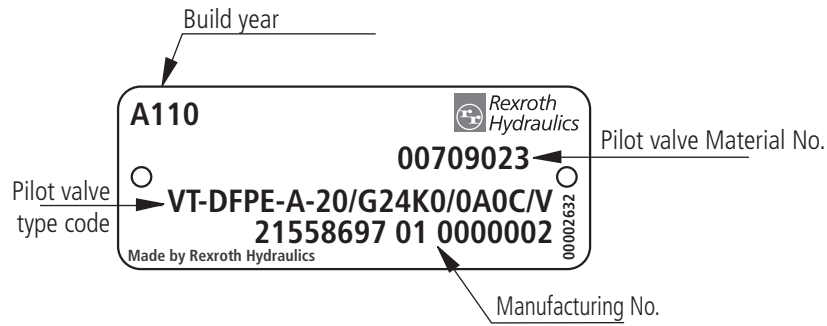
Unit dimensions: dimensions in inches (millimeters)

Type VT-DFPC...-2X/...



- | | | |
|---|--|--|
| 1 Valve housing | 6 Solenoid rotated through 90° (version „2“) | 12 Space required for the plug connector (HM 16) |
| 2 Proportional solenoid with position transducer | 7 Rotary angle sensor connection VT-SWA-1-1X | 13 Dim. for versions VT-DFPE/...F or VT-DFPC (connection for HM 16 or CAN-BUS) |
| 3 Plug-in connector, separate order, see pages 4, 5 and 6 | 8 Name plate | 14 Machined valve mounting surface |
| 4 Space required to remove the plug-in connector | 9 Integrated control electronics | 15 Space required for the CAN-connection (customer side plug connection) |
| 5 R-rings 9.8 x 1.5 x 1.78 (ports P, A, T) | 10 HM 16 pressure transducer connection (only with VT-DFPE/...F or VT-DFPC...) | |
| | 11 CAN-BUS connection screened component plug M12, 5-pin | |

Name plate example for a 3/3-way proportional directional valve



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