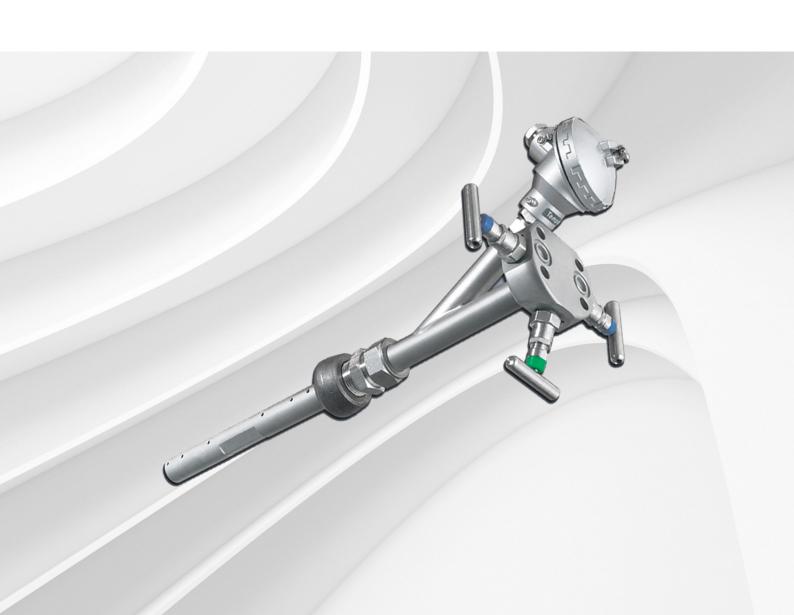


ABB MEASUREMENT & ANALYTICS | DATA SHEET

FPD350 Torbar

Averaging pitot tubes



Measurement made easy

Economical flow metering solutions for gases, liquids and steam

Unique profile shape

Offers high flow turndown

No drift in co-efficient

• Ensures long term stability

One-piece outer tube

- For pipes up to 5000 mm (197 in.) diameter
- Ensures optimum strength

Low permanent pressure loss

- Means low energy consumption & cost
- Reduced carbon footprint

Suitable for wide range of pipe sizes

- For circular, square or rectangular section ducts of
- 10 to 8000 mm (0.4 to 315 in.) diameter

Dual averaging

For improved accuracy with asymmetric flow profiles

Hot-tap versions available

Allows insertion into pressurized pipes

Torbar

The Torbar is a multiport self-averaging flow meter with a design based on the classical pitot tube concept of fluid flow measurement and with thousands having been installed into a large variety of industries world wide.

The Torbar produces an averaged differential pressure (DP) signal proportional to the square of the flow rate.

The DP output is normally piped to a Differential Pressure transmitter in order to generate an electrical signal proportional to the flow rate. For certain applications, the DP transmitter can be mounted directly on to the Torbar via an integral valve manifold.

Each Torbar is designed to span the process pipe diameter and comprises four basic components:

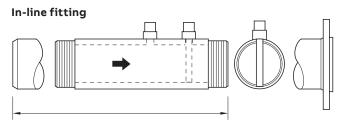
- Outer impact tube ONE PIECE CONSTRUCTION 1
- Internal averaging tube 2
- · Low pressure chamber
- · Head with HP and LP impulse connections

The outer impact tube has a number of pressure sensing holes facing upstream which are positioned at equal annular points in accordance with a log-linear distribution. The 'total pressures' developed at each upstream hole by sum of the impact of the flowing medium and the static pressure are firstly averaged within the outer impact tube and then to a second order (and more accurately) averaged within the internal averaging tube. This pressure is represented at the head as the high pressure component of the DP output. The low pressure component is generated from a single sensing hole located on the downstream side of the outer impact tube, measuring static pressure. For bi-directional flow measurement, the Torbar can be supplied with the same number of downstream ports as upstream.

The Torbar is an improvement on the round sensor design due to the unique profiled flats which are positioned around the downstream hole in order to define the separation point at which the flow lines separate as the fluid passes around the outer impact tube. This feature creates a stable pressure area at the downstream pressure sensing hole thereby maintaining a more constant flow coefficient at high velocities enabling a very wide range of flow measurement (turndown).

- $^{\mathtt{1}}$ due to manufacturing constraints, units longer than 5 m (16.4 ft) will be of 2-piece construction.
- ² due to manufacturing constraints, not available for models FPD350.T1/T3 or for any units coded to include integral temperature elements.

Permanently installed types



In-line fitting dimensions

Basic model FPD350.T1.	End fittings	Fits pipe sizes mm (in.)
W1	Butt weld	
T1	Threaded	13 to 50 (0.5 to 2)
F1	Flanged	

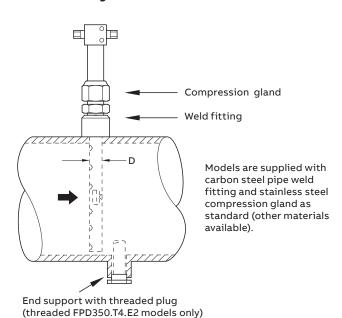
All models are supplied with a pipe section in the same material as Torbar probe

Pipe size	'A'	'A'
NB	mm (in.)	mm (in.) flanged
½ in.	200 (8)	400 (16)
³¼ in.	200 (8)	400 (16)
1 in.	225 (8.8)	425 (16.8)
1¼ in.	250 (10)	450 (18)
1½ in.	300 (12)	500 (20)
2 in.	400 (16)	600 (24)

Model FPD350.T1.	Maximum pressure / temperature
W1	50 bar / 450 °C (725 psi / 840 °F)
T1	50 bar / 200 °C (725 psi / 392 °F)
F1	As flange rating to Class 900 ANSI

Torbar

Threaded fitting



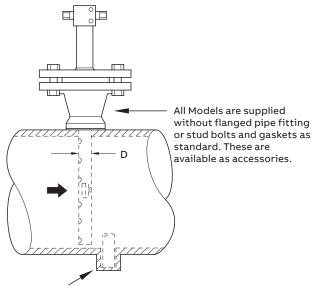
Threaded FPD350.T3 and FPD350.T4 models

Threaded model FPD350.	Fluid	D mm (in.)	Fits pipe sizes mm (in.)
T3.E1	All	13 (0.5)	50 to 150 (2 to 6)
T4.E1	Gas / vapour	25 (1)	100 to 1800 (4 to 72)
T4.E1*	Liquid	25 (1)	100 to 600 (4 to 24)
T4.E2 **	All	25 (1)	100 to 3500 (4 to 140)

- * For liquid flow applications where there is a possibility of process pulsations or intermittent excessive flow velocity, the end-support model should always be selected for pipe sizes over 250 mm (10 in.) internal diameter.
- ** With end support

Maximum pressure / temperature		
Threaded models 50 Bar @ 400 °C		
FPD350.T3.E1 and FPD350.T4	(725 psi @ 752 ºF)	

Flanged fitting - standard



Weld Cup End Support (Flanged FPD350.T4.E2 models only)

Flanged FPD350.T3 and FPD350.T4 models

Flanged model FPD350.	Fluid	D mm (in.)	Fits pipe sizes mm (in.)
T3.E1	All	13 (0.5)	50 to 150 (2 to 6)
T4.E1	Gas / vapour	25 (1)	100 to 1800 (4 to 72)
T4.E1*	Liquid	25 (1)	100 to 600 (4 to 24)
T4.E2 **	All	25 (1)	100 to 3500 (4 to 140)

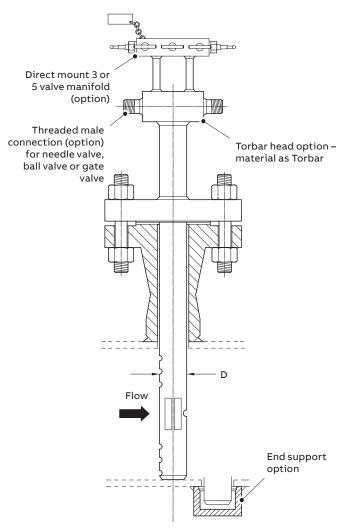
- * For liquid flow applications where there is a possibility of process pulsations or intermittent excessive flow velocity, the end-support model should always be selected for pipe sizes over 250 mm (10 in.) internal diameter.
- ** With end support

Standard flange size		
Flanged model FPD350.T3	1 in. (DN 25)	
Flanged model FPD350.T4	1½ in. (DN 40)	
Other sizes availal	ble	

Maximum pressure / temperature

All models as flange rating to class 1500 ANSI. For higher pressures / temperature consult factory.

Flanged fitting – extra strength





Basic model FPD350	Fluid	D mm (in.)	Fits pipe sizes mm (in.)
T5.E1	Gas / vapour	60 (2.36)	250 to 1800 (10 to 72)
T5.E1*	Liquid	60 (2.36)	250 to 800 (10 to 32)
T5.E2**	Gas / vapour	60 (2.36)	400 to 8000 (16 to 320)
T5.E2 **	Liquid	60 (2.36)	400 to 5000 (16 to 200)

- * For liquid flow applications where there is a possibility of process pulsations or intermittent excessive flow velocity, the end-support model should always be selected for pipe sizes over 600 mm (24 in.) internal diameter.
- ** With end support



Standard flange size		
Model FPD350.T5	3 in. (DN 80)	
Other sizes available		
Maximum pressure / temperature		
All models as flange rating to class 2500 ANSI.		

... Torbar

Options

Probe material	Code
316 Stainless Steel	SS
304L Stainless Steel	S4
Alloy 400	M4
Alloy C276	U7

Probe material	Code
6MO	M1
Duplex	D1
Super Duplex	D2, D3
Other	Z9 (specify)

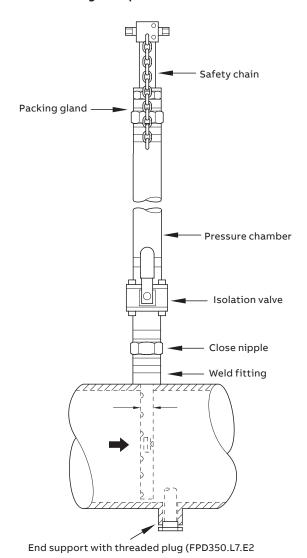
Male without valves	Female without valves	Flanged without valves
With needle valves	With ball vales	With gate valves
Direct mount head	Direct mount separate manifold	Direct mount integral manifold

DP output connections / valves

Withdrawable types (Hot Tap)

Models FPD350.L7/H7/H8 with end supports must not be installed via hot-tap methods into a pressurized pipe because of the requirement to fit an end support. However, once installed, they can be inserted and withdrawn under pressure.

Threaded fitting - low pressure



Models FPD350.L6 and FPD350.L7

Basic model FPD350.	Fluid	D mm (in.)	Fits pipe sizes mm (in.)
L6	All	13 (0.5)	50 to 150 (2 to 6)
L7.E1	Gas / vapour	25 (1)	100 to 1800 (4 to 72)
L7.E1 *	Liquid	25 (1)	100 to 600 (4 to 24)
L7.E2 **	All	25 (1)	100 to 3000 (4 to 120)

- * For liquid flow applications where there is a possibility of process pulsations or intermittent excessive flow velocity, the end-support model should always be selected for pipe sizes over 250 mm (10 in.) internal diameter.
- ** With end support

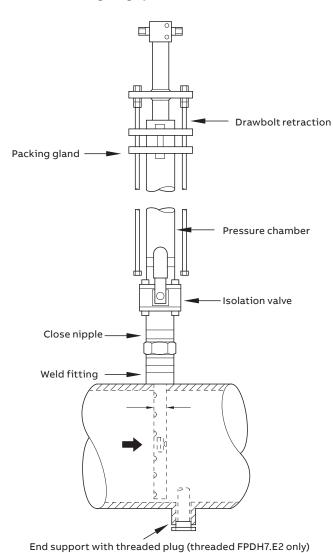
Supplied with weld fittings, isolation valve and pressure chamber with safety chain as standard. Gland packing material is supplied as non-asbestos graphite ribbon as standard. PTFE is available. Please specify at time of order. For isolation valve details refer to page 10.

Maximum pressure / temperature		
With standard ball valve:	10 bar and 200 °C (145 psi and 392 °F)	
With standard gate valve:	10 bar and 400 °C (145 psi and 752 °F) (Temperature is at valve)	



... Torbar

Threaded fitting - high pressure



FPD350.H7 threaded models

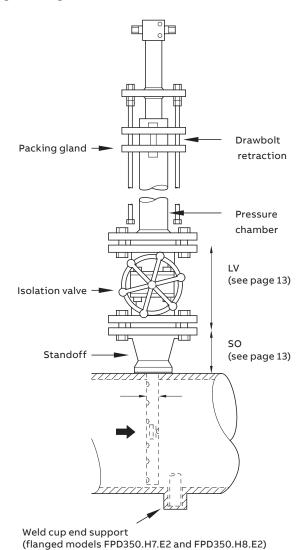
Threaded model FPD350.	Fluid	D mm (in.)	Fits pipe sizes mm (in.)
H6	All	13 (0.5)	50 to 150 (2 to 6)
H7.E1	Gas / vapour	25 (1)	100 to 1800 (4 to 72)
H7.E1 *	Liquid	25 (1)	100 to 600 (4 to 24)
H7.E2 **	All	25 (1)	100 to 3000 (4 to 120)

- * For liquid flow applications where there is a possibility of process pulsations or intermittent excessive flow velocity, the end-support model should always be selected for pipe sizes over 250 mm (10 in.) internal diameter.
- ** With end support

Supplied with weld fittings, isolation valve, pressure chamber and draw bolt retraction (illustrated) as standard. Gland packing material is supplied as non-asbestos graphite ribbon as standard. PTFE is available (specify at time of order). Geared retraction — Optional. For isolation valve details refer to page 10.

Maximum pressure / temperature		
With standard ball valve:	40 bar and 200 °C (580 psi and 392 °F)	
With standard gate valve:	40 bar and 400°C (580 psi and 752°F) (Temperature is at valve)	

Flanged fitting



Flanged models FPD350.H6, FPD350.H7 and FPD350.H8

Flanged model	Fluid	D mm	Fits pipe	Standard
FPD350		(in.)	sizes mm (in.)	
H6.E1	All	13 (0.5)	50 to 150 (2 to 6)	1½ in. (DN40)
H7.E1	Gas / vapour	25 (1)	100 to 1800 (4 to 72)	
H7.E1 *	Liquid	25 (1)	100 to 600 (4 to 24)	
H7.E2 **	All	25 (1)	300 to 3000 (12 to 120)	
H8.E1	Gas / vapour	60 (2.36)	300 to 1800 (12 to 70)	3 in. (DN80)
H8.E1 *	Liquid	60 (2.36)	300 to 800 (12 to 32)	
H8.E2 **	All	60 (2.36)	600 to 3000 (24 to 120)	

Other sizes available

- * For liquid flow applications where there is a possibility of process pulsations or intermittent excessive flow velocity, the end-support model should always be selected for pipe sizes over 250 mm (10 in.) (Model FPD350.H7.E2) 600 mm (24 in.) (Model FPD350.H8.E2) internal diameter.
- ** With end support

Supplied with isolation valve and pressure chamber, and draw bolt retraction assembly and without flanged pipe fitting or stud bolts and gasket (Available as accessories). Gland packing material is supplied as non-asbestos graphite ribbon as standard. PTFE is available. Please specify at time of order. Geared retraction – Optional. For isolation valve details refer to page 10.

Maximum pressure / temperature		
With standard ball valve	100 bar and 200 °C (1450 psi and 392 °F)	
With standard gate valve	100 bar and 400 °C (1450 psi and 752 °F)	

(Temperature is at valve)

(Pressure is 35 bar [500 psi] for FPD350.H8.E1 and FPD350.H8.E2)

... Torbar

Process isolation valves

Valve type	Torbar model FPD350.	Valve size	Code (* is material – see below)	Maximum temperature at valve
Threaded ball	L6	³/₄ in.	B*5	200 °C (392 °F)
	H6 (threaded) L7.E1 L7.E2 H7 (threaded)	1¼ in.	B*7	
Threaded gate	H6 L7.E1 L7.E2 H7 (threaded)	1¼ in.	G*7	400°C (752°F)
Flanged ball	H6 (flanged)	40 mm (1½ in.)	B*8	200 °C (392 °F)
	H7.E1 (flanged)			
	H7.E2 (flanged)	50 mm (2 in.)	B*6	
	H8.E1 H8.E2	80 mm (3 in.)	B*9	
Flanged gate	H6 (flanged)	40 mm (1½ in.)	G*8	400 °C (752 °F)
	H7.E1 (flanged)			
	H7.E2 (flanged)	50 mm (2 in.)	G*6	
	H8.E1 H8.E2	80 mm (3 in.)	G*9	

Code * defines valve material

316SS – (S) carbon steel – (C) Alloy 400 – (M) for other material specify

(Example: GC7 is $1\frac{1}{4}$ in. gate valve in carbon steel).

When valve is supplied by purchaser, whole code is: BZ9

Accessories

Description	Models FPD350.	Illustration
For vertical process pipe	T3 T4 T5 L6 L7 H6 H7 H8	
	T1	
Head for direct mounting of valve manifold or transmitter	T3 T4 T5 L6 L7 H6 H7	O O 41.2 O O 41.2
Direct mounting head fitted with 3- or 5-valve manifold**	T3 T4 T5 L6 L7 H6 H7	
Head with integral 3- or 5-valve manifold for fitting of transmitter by others.	T3 T4 T5 L6 L7 H6 H7	32 mm Thick
PT100 temperature element fitted through Torbar neck. For Hazardous Area Installations specify certification required. Maximum pressure 70 bar.	T4 T5 L7 H7 H7	

^{*} Default option is PNH – Horizontal Pipe

^{**} Heads with an integral (welded) manifold are recommended rather than those with a direct-mounted (bolted) manifold – direct-mounted manifolds do not enable isolation of the transmitter when dismantling

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... Torbar

Accessories

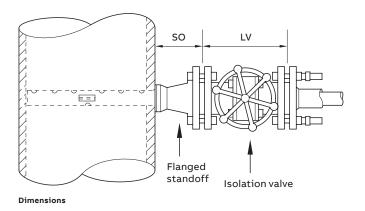
Description	Models FPD350.	Illustration
Flanged Pipe Fittings (Stand-Off). Material is specified by 'Pipe Fitting Material' in Model Number. Type, Size and Rating is specified with Model Number	Flanged versions of: T3 T4 T5 H6 H7 H8	SO SO
Stud Bolts, Nuts and Gasket	Flanged versions of: T3 T4 T5 H6 H7 H8	Standard Materials: Stud, Bolts and Nuts: A193-B7/A 194-2H Gasket: Asbestos-free Glass/Aramid Fibre/Nitrile Gasket Material: 316 Stainless Steel Spiral Wound
Thin duct wall Mounting Plate. Recommended for large ducts with wall thickness of less than 2 mm Max. temp 200 °C (392 °F)	Threaded versions of: T3 T4 L6 L7 H6 H7	Optional: 100 x 100 x 2 mm (4 x 4 x 0.08 in.) thick
Gear Retraction Assembly (Material: 316 Stainless Steel)	H6 H7 H8	
Bi-Directional Probe	T4 T5 L7 H7 H8	

Dimensional information

Flanged standoff dimensions overall length SO mm (in.)				
ANSI Class -		Size	!	
ANSI Class —	1 in.	1½ in.	2 in.	3 in.
150	83 (3.3)	95 (3.7)	102 (4)	118 (4.6)
300	89 (3.5)	100 (4)	108 (4.3)	127 (5)
600	95 (3.7)	109 (4.3)	117 (4.6)	137 (5.4)
900	106 (4.2)	122 (4.8)	146 (5.7)	156 (6.1)
1500	106 (4.2)	122 (4.8)	146 (5.7)	171 (6.7)
2500	122 (4.8)	150 (6)	171 (6.7)	222 (8.7)

DIN Class —		Size		
	DN25	DN40	DN50	DN80
PN10	67 (2.6)	78 (3)	86 (3.4)	98 (3.9)
PN16	67 (2.6)	78 (3)	86 (3.4)	98 (3.9)
PN25	67 (2.6)	78 (3)	86 (3.4)	98 (3.9)
PN40	67 (2.6)	78 (3)	86 (3.4)	106 (4.2)
PN64	89 (3.5)	101 (4)	108 (4.3)	127 (5)
PN100	89 (3.5)	103 (4)	111 (4.4)	131 (5.2)
PN160	100 (4)	116 (4.6)	140 (5.5)	150 (6)
PN260	100 (4)	116 (4.6)	140 (5.5)	165 (6.5)

Flanged isolation valve Overall length LV mm (in.)						
		ANSI Class				
Size	150	300	600	1500		
1 in.	127 (5)	165 (6.5)	216 (8.5)	254 (10)		
1⅓ in.	165 (6.5)	191 (7.5)	241 (9.5)	305 (12)		
2 in.	178 (7)	216 (8.5)	292 (11.2)	368 (14.5)		
3 in.	203 (8)	283 (11.1)	355 (14)	381 (15)		



Note. Actual values of LV, SO must be supplied to ABB if the stand-off or process isolation valves are to be supplied by the customer.

... Torbar

... Torbar dimensional information

FPD350.L6	Inserted Retracted	ID + 236 (9.3) Inserted + ID + Wall + 211 (8.3)		
FPD350.L7.E1	Inserted Retracted	ID + 346 (13.6) Inserted + ID + Wall + 208 (8.2)		
FPD350.L7.E2	Inserted Retracted	ID + Wall + 371 (14.6) Inserted + ID + Wall + 233 (9.2)	Inserted	
FPD350.H6.E1 (threaded) FPD350.H7.E1 (threaded)	Inserted Retracted	ID + 493 (19.4) Inserted + ID + 355 (14)		Retracted
FPD350.H7.E2 (threaded)	Inserted Retracted	ID + Wall + 518 (20.4) Inserted + ID + Wall + 380 (15)		
FPD350.H6.E1 (flanged) FPD350.H7.E1 (flanged)	Inserted Retracted	ID + Wall + 2(SO + LV) + 340 (13.4) Inserted + ID + Wall + SO + LV		
FPD350.H7.E2 (flanged)	Inserted Retracted	ID + 2 (Wall + SO + LV) + 380 (15) Inserted + ID + 2 x Wall + SO + LV + 40 (1.6)		
FPD350.H8.E1	Inserted Retracted	ID + Wall + 2 (SO + LV) + 355 (14) Inserted + ID + Wall + SO + LV		
FPD350.H8.E2	Inserted Retracted	ID + 2 (Wall + SO + LV) + 419 (16.5) Inserted + ID + 2 x Wall + SO + LV + 60 (2.4)		

For geared retraction units (accessory TP4) add 100 mm (4 in.) to above dimensions

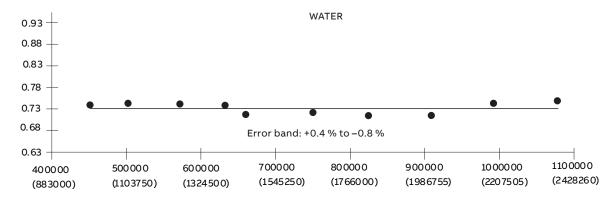
Inserted and retracted lengths mm (in.) (approximate values for information only – do not use for construction)

Lengths maybe affected if flanged end support fitted

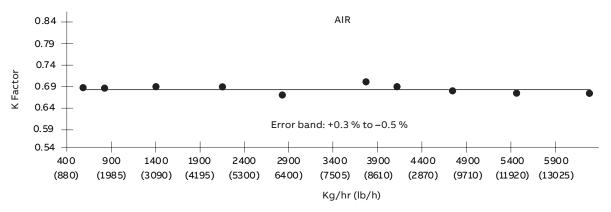
Withdrawable types (Hot-Taps)

Independent test reports

A range of Torbar models and sizes have been tested at Independent Flow Laboratories to determine the accuracy and repeatability of measurement. Those tests were conducted in both Air and Water.



Model FPD350.T4 (401) - size: 16 in. - serial no. Test 597



Model FPD350.T4 (401) - size: 12 in. - serial no. 20153

Full details of the test results above and of those shown in the table below are available on request.

Test fluid	Model FPD350.	Size mm (in.)	Serial number	Error band
Water	T1.F1	50 (2)	Test 197	+0.2 to -0.43 %
Water	T3.E1	100 (4)	Test 297	+1 to -1 %
Air	T4.E1 (threaded)	150 (6)	Test 397	+0.1 to -0.5 %
Air	T4.E2 (threaded)	450 (18)	20186	+0.6 to -0.5 %
Water	T4.E1 (flanged)	600 (24)	Test 697	+0.3 to -0.4 %

... Torbar

Differential pressure calculations and resonance frequency check

	Torbar coefficient	K	
	Model n	umber FPD350.	
Pipe size (internal diameter) mm (in.)	T3 L6 H6	T4 L7 H7	T5 H8
50 (2)	0.6483		
75 (3)	0.7027		
100 (4)	0.7497	0.6174	
150 (6)	0.7671	0.6505	
200 (8)		0.6647	
250 (10)		0.6794	0.6876
300 (12)		0.6941	0.7024
350 (14)		0.7160	0.7303
400 (16)		0.7380	0.7564
450 (18)		0.7402	0.7699
600 (24)		0.7468	0.7815
900 (36)		0.7473	0.7847
1200 (48)		0.7475	0.7849
1500 (60)		0.7476	0.7850
1800 (72)	and above	0.7476	0.7850

For sizes not shown above, determine K by extrapolation.

If using classical flow equations from ISO5167, multiply K by 0.9091.

Copies of derivation of equations available on request.

For models FPD350.T1 (all sizes) K = 1
Torbar coefficients

Flow to DP

Liquids (volumetric)

$$DP = \left[\frac{Q_A x \sqrt{D}}{K x A x 4.6285}\right]^2 mbar$$

Gases (volumetric)

$$DP = \frac{S \times Pf}{(Tf + 273) \times Z} \times \left(\frac{Q_A \times 4.0323}{K \times A} \right)^2$$

$$DP = \left[\frac{Sx(Tf + 273)}{Pf}\right] \left[\frac{Q_B}{KxAx66.839}\right]^2 x Z mbar$$

Liquids / gases / steam (mass)

$$DP = \left[\frac{Qc}{KxAx\sqrt{D}x4.6285}\right]^2 mbar$$

DP to flow

Liquids (volumetric)

Flow (Q) =
$$\sqrt{DP}x\left[\frac{KxAx4.6285}{\sqrt{D}}\right]$$
 m³/h

Gases (volumetric) – actual conditions

Flow (Q) =
$$\sqrt{DP}x \left[\frac{KxAx\sqrt{(Tf+273)}}{\sqrt{S}x4.0323x\sqrt{Pf}} \right] x \sqrt{Z} Am^3/h$$

Gases (volumetric) - normal conditions

Flow (Q) =
$$\sqrt{DP}x \left[\frac{KxAx66.839x\sqrt{Pf}}{\sqrt{Sx}\sqrt{(Tf+273)}x\sqrt{Z}} \right] Nm^3/h$$

Liquids / gases / steam (mass)

Flow (Q) = $\sqrt{DP}x(KxAx\sqrt{D}x4.6285)kghr$

Symbols and units

DP

$Q_{_{A}}$	=	Flow (m ³ /h)
Q_{B}^{\cap}	=	Flow (Nm ³ /h) at 0 °C, 1 atm (1.01325 bar)
Q_c	=	Flow (kg/h)
S	=	Specific gravity (Air = 1)
D	=	Density at actual conditions (kg/m³)
		Base Density of water at
		4 °C = 999.972 kg/m ³
		Density of water at
		15.555 °C = 999.012 kg/m ³
		Base Density of Air at 0 °C
		1 atm (1.01325 bar) = 1.293 kg/m³
Α	=	Pipe internal cross-section area (cm²)
Tf	=	Actual temperature (°C)
Pf	=	Actual pressure (bar Absolute)
K	=	Torbar coefficient (see table)
Z	=	Compressibility factor (usually = 1)

Differential Pressure (mbar)

Statement of accuracy

The calculated differential pressure will lie within an uncertainty band of ± 1 % with 95% confidence if the Torbar is installed strictly in accordance with the published Installation Instructions. For applications which do not conform to those instructions, it is recommended that an on site calibration is performed in order to achieve the optimum accuracy.

Resonance frequency check

This check is not necessary for liquid flows because the maximum allowable DP is reached before resonance occurs (see table opposite), or for Models FPD350.T1. For Gas and Vapor flows a Resonance Frequency Check MUST be made. Equations have been derived for the various Torbar models to determine low and high critical velocities (VL and VH) which define the narrow resonance band of velocities which should be outside the continuous operating flow range of the Torbar.

The following table lists the equations to calculate the values of VL and VH. If the calculation shows VL to VH to be within the continuous operating flow range, then an alternative, suitable model of Torbar should be selected to give acceptable values of VL and VH.

Always check that the maximum flow DP is less than the 'Maximum Allowable DP' as shown in the table on page 18.

Torbar model	Critical v	elocities	Unsupported length L (m)
FPD350.	VL (m/s) V	′H (m/s)	
T3.E1 threaded	0.472 ÷ L ²	0.728 ÷ L ²	ID + Wall + 0.05
T3.E1 flanged	0.472 ÷ L ²	0.728 ÷ L ²	ID + Wall + SO
L6.E1 threaded	0.472 ÷ L ²	0.728 ÷ L ²	ID + Wall + 0.02
T4.E1 threaded	1.843 ÷ L ²	2.840 ÷ L ²	ID + Wall + 0.08 (3)
T4.E2 threaded	8.08 ÷ L ²	12.44 ÷ L²	ID + 2 x Wall + 0.115
T4.E1 flanged	1.843 ÷ L²	2.840 ÷ L ²	ID + Wall + SO
T4.E2 flanged	8.08 ÷ L ²	12.44 ÷ L²	ID + 2 x Wall + SO + 0.05
L7.E1	1.843 ÷ L²	2.840 ÷ L ²	ID + Wall + 0.05
L7.E2	8.08 ÷ L ²	12.44 ÷ L²	ID + 2 x Wall + 0.10
H6.E1 threaded	0.472 ÷ L ²	0.728 ÷ L ²	ID + Wall + 0.05
H7.E1 threaded	1.843 ÷ L²	2.840 ÷ L ²	ID + Wall + 0.05
H7.E2 threaded	8.08 ÷ L ²	12.44 ÷ L ²	ID + 2 x Wall + 0.10
H6.E1 flanged	0.472 ÷ L ²	0.728 ÷ L ²	ID + Wall + SO + LV + 0.05
H7.E1 flanged	1.843 ÷ L²	2.840 ÷ L ²	ID + Wall + SO + LV + 0.05
H7.E2 flanged	8.08 ÷ L²	12.44 ÷ L²	ID + 2 x Wall + SO + LV + 0.10
T5.E1	10.88 ÷ L²	16.766 ÷ L ²	ID + Wall + SO
T5.E2	47.65 ÷ L²	73.43 ÷ L²	ID + 2 x Wall + SO + 0.08
H8.E1	10.88 ÷ L²	16.766 ÷ L²	ID + Wall + SO + LV + 0.05
H8.E2	47.65 ÷ L²	73.43 ÷ L²	ID + 2 x Wall + SO + LV + 0.13

L = unsupported length (m)

ID = pipe internal diameter (m)

Wall = pipe wall thickness (m)

SO = overall length of flanged pipe fitting (m) - see page 10

LV = Overall length of isolation valve (m) – see page 10

The above equations are derived from Torbar resonance frequency data and calculations.

Critical velocity calculation

Torbar

Maximum allowable DP

Depending on the model and size of Torbar there is a maximum figure of Differential Pressure above which the Torbar should NOT be used due to the imposition of excessive mechanical stresses. Check the table below to ensure that the application is suitable. If the calculated DP exceeds the maximum shown below, then select an other appropriate model to suit the application. For bi-directional configurations (accessory code TP5), use 50 % of the figures in this table.

For liquid flow applications where there is a possibility of process pulsations or intermittent excessive flow velocity, then the end-support models should always be selected for pipe sizes over 250 mm (10 in.) diameter (T4, L7 and H7 series) and 600 mm (24 in.) (T5 and H8 series).

Pipe siz			Torbar b	ase model number FPD3	50. *	
(interna	ıl dia.)	T3, L6 and H6	T4, L7 and H7 (without end support)	T4, L7 and H7 (with end support)	T5 and H8 (without end support)	T5 and H8 (with end support)
in.	mm		Maximur	n allowable DP in mbar (i	n.wg)	
2	50	6250 (2509)				
3	75	2790 (1120)				
4	100	1565 (628)	5100 (2047)			
6	150	695 (279)	2285 (917)			
8	200		1285 (516)			
10	250		820 (329)	3250 (1305)	3400 (365)	
12	300		570 (229)	2250 (903)	2350 (943)	
14	350		415 (167)	1680 (674)	1725 (693)	
16	400		320 (128)	1285 (516)	1335 (536)	
18	450		250 (100)	1015 (407)	1055 (424)	4225 (1696)
24	600		140 (56)	570 (229)	590 (237)	2375 (953)
36	900		50 (20)	250 (100)	265 (106)	1055 (424)
48	1200		30 (12)	140 (56)	145 (58)	590 (237)
60	1500		20 (8)	90 (36)	90 (36)	380 (153)
72	1800		10 (4)	60 (24)	65 (26)	265 (106)

^{*} For models FPD350.T1 (all sizes), maximum DP value is 2500 mbar. (84 in.wg)

Above 1800 mm (72 in.) - consult factory

For sizes not shown above determine maximum allowable DP by extrapolation

The above figures are theoretically derived and include a x 10 safety factor over and above basic standards and specification.

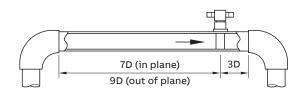
Installation and location

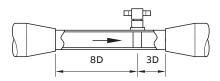
Recommended upstream and downstream distances

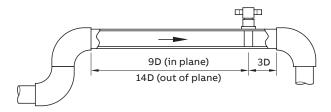
Correct location of the Torbar in the piping system is important in order to optimize performance. Flow that is disturbed by upstream configurations such as elbows, T's and valves may have an adverse effect on accuracy unless the Torbar is located at recommended positions shown in the table opposite. The diagrams illustrate the distances in multiples of pipe bore 'D' between the Torbar and the upstream and downstream disturbances.

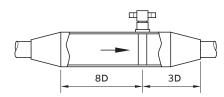
If the Torbar is fitted within distances less than those shown, then absolute accuracy may be downgraded BUT repeatability of measurement will still be excellent due to inherent averaging characteristics.

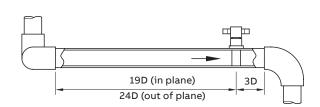
Where it is not possible to provide the specified distances and maximum accuracy is required, the use of a flow straightening spool piece allows for shorter distance

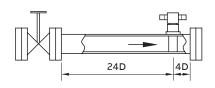








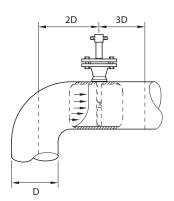




Installation pipe lengths

Elbow installation

The Torbar can be installed 2 diameters downstream of a 90° elbow at the exit of the elbow to give an accuracy of ± 3 % to ± 5 %.



Elbow installation

Torbar

Orientation in pipe

The Torbar must be installed at right angles to the pipe run and across a pipe diameter within the tolerances shown in the diagrams opposite.

To avoid 'noisy' signal outputs, do not locate the Torbar in a pulsating flow. A vibrating pipe can also distort the output signal and affect the structural limits of the Torbar. This limitation particularly applies to the integrally mounted transmitter option DM3V and to the TRIBAR configuration.

For vertical pipe applications, the 'head' of the Torbar is repositioned to ensure that DP connections are at the same vertical level. This is option VS. It is necessary to specify this option when ordering the Torbar.

It is essential that in all steam installations the entire Torbar head and fitting assembly are well lagged to prevent the formation of condensate in the Torbar head. The Torbar will not function correctly with condensate in the head. Filling tees or condensate pots should be fitted as appropriate.

Before installation or removal of a Torbar it is imperative that careful reference is made to the appropriate installation instructions that are supplied with each Torbar shipment. The installation instructions are also available separately on request.

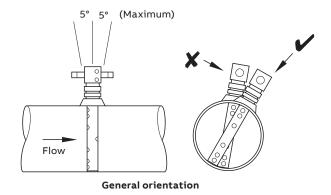
Warning. Refer to instruction manual before installing any Torbar flowmeter.

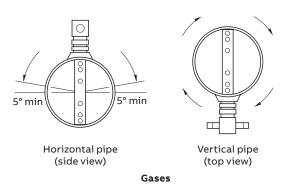
FPD585 StackFlowMaster – stack gas flow metering system

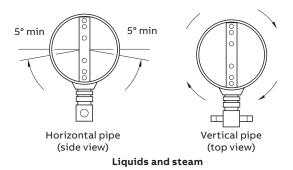
Introduction

The FPD585 StackFlowMaster series is a flow measurement system with integral purge to be used with the Torbar for the measurement of gas flow rates in chimneys and stacks where the dust concentration is higher than 20 mg/m³ or where any moisture content may be a problem. The purge duration and frequency is programmable to keep the Torbar sensing holes clean of contaminants.

The FPD585 StackFlowMaster is available with or without a DP transmitter and can be supplied with temperature and pressure compensation of the flow reading and separate stack pressure and temperature outputs when required. Other options and accessories are available.







Ordering information

FPD350 series 100 inline Torbar averaging pitot tube

	FPD350. XX	ХX	XXX	XX	ХX	ХX	ХX	XX	XX X	х	x xxx	(X)	(XXX	XXX	ХX	ХX	XXX	ХX	XXX
Product design																			
Inline Torbar	T1																		
Measurement design		14/1																	
Welded ends with integral end support Threaded ends with integral end support		W1 T1																	
Flanged ends with integral end support		F1																	
Line nominal bore		' -																	
			015																
DN 15 (½ in.)			015																
DN 20 (¾ in.) DN 25 (1 in.)			020 025																
DN 32 (1 ¹ / ₄ in.)			025																
DN 40 (1½ in.)			040																
DN 50 (2 in.)			050																
Others			999																
Probe material																			
316 / 316L stainless steel				S6															
304 / 304L stainless steel				S4															
321 stainless steel				S2															
304H stainless steel				H4															
310 stainless steel				S 3															
321H stainless steel				S1															
904L stainless steel				S 9															
Alloy C276 (UNS N010276)				U7															
Alloy 400 (UNS N04400)				Μ4															
Alloy 625 (UNS N06625)				N2															
22 % Cr duplex (UNS S31803)				D1															
25 % Cr super duplex (UNS S32750)				D2															
25 % Cr super duplex (UNS \$32760)				D3															
6 % Mo SS (UNS S31254)				M1															
Alloy 600 (UNS N06600)				U3															
Alloy 836 (UNS N08800)				U4 U5															
Alloy 825 (UNS N08825) Others				Z9															
Pipe fitting material																			
316 / 316L stainless steel					S 6														
304 / 304L stainless steel					S4														
321 stainless steel					S2														
304H stainless steel					H4														
310 stainless steel					S 3														
321H stainless steel					S1														
904L stainless steel					S 9														
Alloy C276 (UNS N010276)					U7														
Alloy 400 (UNS N04400)					Μ4														
Alloy 625 (UNS N06625)					N2														
22 % Cr duplex (UNS \$31803)					D1														
25 % Cr super duplex (UNS \$32750)					D2														
25 % Cr super duplex (UNS \$32760)					D3														
6 % Mo SS (UNS S31254)					M1														
Alloy 600 (UNS N06600) Alloy 800 (UNS N08800)					U3 U4														
Alloy 825 (UNS N08825)					U4 U5														
Others					Z9														
Standoffs, etc																			
·						VO													
None – In line design						Y0													
	Conti	nue	d on r	next	pag	ge													

\dots Ordering information | FPD350 series 100 inline Torbar averaging pitot tube

	FPD350. XX XX XXX XX XX XX	κxx	ХX	ХX	ХX	ХX	XXX	хх	XXX	XXX	ХX	ХX	XXX	ХX	XXX
	See page 21	1													
Process connection type	1	_													
Weld prepared ends		P1													
Threaded BSPT		T1													
Threaded NPT		T2													
Raised face DN 15 (½ in.)		R1													
Raised face DN 20 (¾ in.)		R2													
Raised face DN 25 (1 in.)		R3													
Raised face DN 32 (1¼ in.)		R6													
Raised face DN 40 (1½ in.)		R4													
Raised face DN 50 (2 in.)		R5													
Flat face DN 15 (½ in.)		F1													
Flat face DN 20 (¾ in.)		F2 F3													
Flat face DN 25 (1 in.) Flat face DN 32 (11/4 in.)		F6													
Flat face DN 40 (1½ in.)		F4													
Flat face DN 50 (2 in.)		F5													
RTJ DN 25 (1 in.)		J1													
RTJ DN 40 (1½ in.)		J2													
RTJ DN 50 (2 in.)		J3													
Others		Z9													
Process connection rating															
Not flanged			ΥO												
ASME Class 150			A1												
ASME Class 300			A3												
ASME Class 600			Α6												
ASME Class 900			Α7												
DIN PN 6			D0												
DIN PN 10			D1												
DIN PN 16			D2												
DIN PN 25			D3												
DIN PN 40			D4												
DIN PN 63			D5												
DIN PN 100			D6												
DIN PN 160 (not fully rated) Others			D7 Z9												
			25												
Tapping type															
Flanged DP connections (no valves)				F1											
Welded DP connections (no valves)				W1											
Threaded DP connections (no valves)				T1											
Direct mounting head				D1											
3-Valve integral (welded) manifold DM3V 5-Valve integral (welded) manifold DM5V				D2 D3											
3-Valve direct-mounted (bolted) manifold 3VDM				D3											
5-Valve direct-mounted (bolted) manifold 5VDM				D5											
Ball valves				V1											
Needle valves				V2											
Gate valves				٧3											
Globe valves				٧4											
Double block and bleed valves				۷5											
Tapping size															
Not applicable					то										
¼ in. NPT male					Т1										
¼ in. NPT female					Т2										
¼ in. BSP male					Т3										
¼ in. BSP female					T4										
½ in. NPT male					T5										
½ in. NPT female					T6										
½ in. BSP male					T7										
½ in. BSP female					T8										
½ in. flanged (specification as mounting flange) ¾ in. flanged (specification as mounting flange)					F1 F2										
½ in. socket weld					S1										
Others					Z9										
Tapping / Valve material						1									
						٧o									
As probe 316 stainless steel						Y0 S6									
Carbon steel						C3									
Alloy C276 (UNS N010276)						U7									
Alloy 400 (UNS N04400)						M4									
22 % Cr Duplex (UNS S31803)						D1									
25 % Cr Super Duplex (UNS \$32750)						D2									
Others						Z9									
	Continu	וופל ה	מ מנ	16v+	nar		1								
	Continu	ueu 0	ZI I I I	iext	hαί	Je									

\dots Ordering information | FPD350 series 100 inline Torbar averaging pitot tube

F	PD350. XX XX XXX XX XX XX	(X XX XX XX XX XX	qxxx	XX X	XX XX	XXX	XXXX	XX
	See page 21	See page 22						
Pipe orientation and shape			_					
Horizontal, circular pipe / duct			PNH					
Vertical, circular pipe / duct			PNV					
Process isolation valve				1				
No isolation valve				Y0				
Bolt type and material								
ASTM A193 B7 / ASTM A194 2H				В	GC			
ASTM A193 B8M / ASTM A194 8MA				В	GS			
Others				В	Z9			
Gasket material								
Asbestos-free 1.6 mm					GT	1		
Spiral wound – stainless steel windings with carbon steel outer; 4	4.5 mm				GT	2		
Soft Iron					GP	3		
Others					GZ	9		
Surface treatment						_		
Oxygen cleaning						P1		
Others						Z9		
Certification								
Material certificates acc. EN 10204 3.1							C2	
Material certificates acc. EN 10204 3.2							C3	
Material certificates acc. NACE, latest revision							CN	
Dye penetrant inspection							C9	
Radiography (available on flanged units only)							C8	
Positive material identification							CA	
100 % dimensional check							C6	
Others							CZ	
Testing								
Impact testing @ -46 °C							CH	
Impact testing @ –196 °C							CH	
Hardness survey							CH CH	
HIC testing Magnetic particle inspection							CF	
Magnetic particle inspection Ultrasonic inspection							CF	
Heat treatment trace							CH	
Pressure test							CH	
Others							CH	-
Documentation language (default = English)								
German								M1
Italian								M2
Spanish								M3
French								M4
Chinese								M
Others								MZ
Added requirements								
Material source limitations apply								

...Ordering information | FPD350 series 300 Torbar averaging pitot tube

	o. xx xx	XXX	XX	XX	хх	XX	XX	XX	XX	XX	XXX	(XX	XXX	XXX	XXX	XX	^ ^	XX	XX	(XX	XX	XX
Product design																						
Permanently installed Torbar – 13 mm (⅓ in.) OD probe	Т3																					
Measurement design																						
Unsupported version	E1																					
Supported version	E2																					
Line nominal bore		_																				
DN 50 (2 in.)		050																				
DN 80 (3 in.)		080																				
DN 100 (4 in.)		100																				
DN 125 (5 in.)		125																				
DN 150 (6 in.)		150																				
Others		999																				
Probe material																						
316 / 316L stainless steel 304 / 304L stainless steel			S6 S4	1 1																		
321 stainless steel			54 S2																			
304H stainless steel			H4																			
310 stainless steel			S 3																			
321H stainless steel			S1																			
904L stainless steel			S 9																			
Alloy C276 (UNS N010276)			U7																			
Alloy 400 (UNS N04400)			Μ4	1 1																		
Alloy 625 (UNS N06625)			N2																			
22 % Cr duplex (UNS \$31803)			D1 D2																			
25 % Cr super duplex (UNS S32750) 25 % Cr super duplex (UNS S32760)			D2	1 1																		
6 % Mo SS (UNS S31254)			M1																			
Alloy 600 (UNS N06600)			U3																			
Alloy 800 (UNS N08800)			U4	1 1																		
Alloy 825 (UNS N08825)			U5																			
Others			Z 9																			
Pipe fitting material																						
Carbon steel				C3																		
316 / 316L stainless steel				S6																		
304 / 304L stainless steel				S4																		
321 stainless steel Low temperature carbon steel (A350 LF2 C1/A333 Gr 6)				S2 C4																		
1-¼ Cr-½ Mo low alloy F11 (UNS K11597)				F4																		
25 % Cr super duplex (UNS S32750)				D2																		
25 % Cr super duplex (UNS S32760)				D3																		
316H stainless Steel				Н6																		
304H stainless steel				H4																		
310 stainless steel				S 3																		
321H stainless steel				S1 S9																		
904L stainless steel 22 % Cr Duplex (UNS S31803)				D1																		
6 % Mo SS (UNS S31254)				M1																		
Alloy 400 (UNS N04400)				M4																		
Alloy 600 (UNS N06600)				U3																		
Alloy 625 (UNS N06625)				N2																		
Alloy 800 (UNS N08800)				U4																		
Alloy 825 (UNS N08825)				U5																		
Alloy C276 (UNS N010276)				U7																		
Others				Z9																		
Standoffs, etc					т.																	
Threaded connection without end support Threaded connection with threaded end support					T1 T2																	
Flanged standoff without end support					F1																	
Flanged standoff with weld cup end support					F2																	
Customer supplied (versions without flanged end supports	5)				F7																	
					-			1	1	1	1		1	1	1			1				

...Ordering information | FPD350 series 300 Torbar averaging pitot tube $\,$

	FPD350. XX XX XXX XX XX XX	xxx	хх	ХX	ХX	ХΧ	XXX	хx	XXX	XXX	XXX	XXX	хx	хx	xxx	ХX	xxx
	See page 24	-			-3.												
Process connection type	Jee page 11	_															
Threaded BSPT		T1															
Threaded NPT		T2															
Raised face DN 25 (1 in.)		R3															
Raised face DN 40 (1½ in.)		R4															
Flat face DN 25 (1 in.)		F3															
Flat face DN 40 (1½ in.)		F4															
RTJ DN 25 (1 in.)		J1															
RTJ DN 40 (1½ in.)		J2															
Others		Z9															
Process connection rating																	
Not flanged			Y0														
ASME Class 150			A1														
ASME Class 300			A3														
ASME Class 600 ASME Class 900			A6 A7														
ASME Class 1500			A1														
ASME Class 1500 ASME Class 2500			A9														
DIN PN 6			D0														
DIN PN 10			D1														
DIN PN 16			D2														
DIN PN 25			D3														
DIN PN 40			D4														
DIN PN 63			D5														
DIN PN 100			D6														
DIN PN 160			D7														
DIN PN 250 Others			D8 Z9														
Tapping type			23														
Flanged DP connections (no valves) Welded DP connections (no valves)				F1 W1													
Threaded DP connections (no valves)				T1													
Direct mounting head				D1													
3-Valve integral (welded) manifold DM3V				D2													
5-Valve integral (welded) manifold DM5V				D3													
3-Valve direct-mounted (bolted) manifold 3VDM				D4	1 1												
5-Valve direct-mounted (bolted) manifold 5VDM				D5													
Ball valves				V1													
Needle valves				V2													
Gate valves Globe valves				V3 V4	1 1												
Double block and bleed valves				V4 V5													
Tapping size				••													
Not applicable					то												
1/4 in. NPT male					T1												
¼ in. NPT female					T2												
¼ in. BSP male					T3												
¼ in. BSP female					T4												
½ in. NPT male					T5												
½ in. NPT female					T6												
½ in. BSP male					T7												
½ in. BSP female					T8												
½ in. flanged (specification as mounting flange)					F1												
3/4 in. flanged (specification as mounting flange) 1/2 in. socket weld					F2 S1												
Others					Z9												
Tapping / Valve material																	
As probe						Y0											
316 stainless steel						S6											
Carbon steel						C3											
Alloy C276 (UNS N010276)						U7											
Alloy 400 (UNS N04400)						Μ4											
22 % Cr Duplex (UNS S31803)						D1											
25 % Cr Super Duplex (UNS S32750)						D2											
Others						Z9											
	Continu	ued o	n n	ext	pag	je											

...Ordering information | FPD350 series 300 Torbar averaging pitot tube $\,$

See page 24 See p	PNH PNV RNH RNV					
orizontal, circular pipe / duct ertical, circular pipe / duct orizontal, rectangular pipe / duct ertical, rectangular pipe / duct ertical, rectangular pipe / duct ocess isolation valve o isolation valve	PNV RNH					
ertical, circular pipe / duct prizontal, rectangular pipe / duct ertical, rectangular pipe / duct prizontal, rectangular pipe / duct prizontal, rectangular pipe / duct prizontal pipe / duct prizonta	PNV RNH					
orizontal, rectangular pipe / duct ertical, rectangular pipe / duct ocess isolation valve o isolation valve						
ocess isolation valve o isolation valve	RNV					
o isolation valve						
	YO					
pping sets	10					
vosets	TN2					
thers	TNZ					
olt type and material						
STM A193 B7 / ASTM A194 2H		3GC				
STM A193 B8M / ASTM A194 8MA		BGS				
thers		3Z9				
asket material						
bestos-free 1.6 mm		GT1				
oiral wound – stainless steel windings with carbon steel outer; 4.5 mm		GT2				
oft iron		GP3				
thers		GZ9				
tting accessories						
uct mounting plate (in carbon steel or stainless steel to match pipe fitting material)			DF1			
poling fins			CF1			
equency collar			FC1			
r eliminator package – pair of stainless steel air eliminators, no valves or fittings (supplied I	•		AV1			
r eliminator package – pair of stainless steel air eliminators with valves and fittings (supplie			AV2			
r eliminator package – pair of DZR air eliminators for seawater applications (supplied loose)			AV3			
r eliminator package – pair of DZR air eliminators with valves and fittings for seawater appl	ications (supplied loos	2)	AV4			
uir of condensate pots in carbon steel – ½ in. BSPTF tappings (supplied loose) uir of condensate pots in carbon steel – ½ in. NPT tappings (supplied loose)			CP1 CP2			
ir of condensate pots in carbon steel – ½ in. butt weld Schedule 160 tappings (supplied loo	nse)		CP3			
ir of condensate pots in stainless steel – ½ in. BSPTF tappings (supplied loose)	,30)		CP4			
ir of condensate pots in stainless steel – ½ in. NPT tappings (supplied loose)			CP5			
ir of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied lo	oose)		CP6			
ırface treatment						
kygen cleaning			P1	1		
thers			ZS			
ertification				_		
aterial certificates acc. EN 10204 3.1				C2		
aterial certificates acc. EN 10204 3.2				C3		
aterial certificates acc. NACE, latest revision				CN		
ve penetrant inspection				C9		
diography (available on flanged units only)				C8		
ositive material identification				CA		
00 % dimensional check				C6		
thers				CZ		
sting						
pact testing @ -46 °C					CH1	
pact testing @ –196 °C					CH2	
ardness survey					СНЗ	
C testing					CH4	
agnetic particle inspection					CH5	
trasonic inspection					CH6	
eat treatment trace					CH7	
essure test thers					CH8 CHZ	
					CHZ	
ocumentation language (default = English)						
erman						M1
alian						M2
panish						M3
ench ninese						M4 M6
nnese thers						M6 MZ
						2
dded requirements aterial source limitations apply						M

Ordering information | FPD350 series 400 Torbar averaging pitot tube

Product design	o. xx xx	XXX	XX	λX	λX	ı⊼X.	- × ×					- x x v											VVV
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Downson on the inctalled Taukan Of / ! \ OF	T4																						
Permanently installed Torbar – 25 mm (1 in.) OD probe	T4																						
Measurement Design																							
Unsupported version	E1																						
Supported version	E2																						
Line nominal bore																							
DN 100 (4 in.)		100																					
DN 125 (5 in.)		125																					
DN 150 (6 in.)		150																					
DN 200 (8 in.)		200																					
DN 250 (10 in.)		250																					
DN 300 (12 in.) DN 350 (14 in.)		300 350																					
DN 400 (16 in.)		400																					
DN 450 (18 in.)		450																					
DN 500 (20 in.)		500																					
DN 600 (24 in.)		600																					
DN 750 (30 in.)		750																					
DN 1000 (40 in.)		900																					
DN 1000 (40 in.) DN 1100 (44 in.)		001 101																					
DN 1200 (44 iii.) DN 1200 (48 in.)		201																					
DN 1300 (52 in.)		301																					
DN 1400 (56 in.)		401																					
DN 1500 (60 in.)		501																					
DN 1600 (64 in.)		601																					
DN 1700 (68 in.)		701																					
DN 1800 (72 in.) DN 1900 (76 in.)		801 901																					
DN 2000 (80 in.)		002																					
DN 2100 (84 in.)		102																					
DN 2200 (88 in.)		202																					
DN 2300 (92 in.)		302																					
DN 2400 (96 in.)		402																					
DN 2500 (98 in.) DN 2600 (102 in.)		502 602																					
DN 2700 (102 iii.) DN 2700 (106 in.)		702																					
DN 2800 (110 in.)		802																					
DN 2900 (114 in.)		902																					
DN 3000 (118 in.)		003																					
DN 3100 (122 in.)		103																					
DN 3200 (126 in.)		203																					
DN 3300 (130 in.) DN 3400 (134 in.)		303 403																					
DN 3500 (134 iii.)		503																					
Others		999																					
Probe material			1																				
316 / 316L stainless steel			S 6																				
304 / 304L stainless steel			S 4																				
321 stainless steel			S2																				
304H stainless steel			H4																				
310 stainless steel			S3 S1																				
321H stainless steel 904L stainless steel			S9																				
Alloy C276 (UNS N010276)			U7																				
Alloy 400 (UNS N04400)			Μ4																				
Alloy 625 (UNS N06625)			N2																				
22 % Cr duplex (UNS \$31803)			D1																				
25 % Cr super duplex (UNS S32750)			D2																				
25 % Cr super duplex (UNS \$32760)			D3																				
6 % Mo stainless steel (UNS S31254) Alloy 600 (UNS N06600)			M1 U3																				
Alloy 800 (UNS N08800)			U4																				
Alloy 825 (UNS N08825)			U5																				
Others			Z 9																				
Continue	ed on ne	xt pa	ge																				

...Ordering information | FPD350 series 400 Torbar averaging pitot tube $\,$

See page 27	FPD350, XX XX XXX		_		XX			XX	XXX	XXX	XXX	XXX	ххх	XXX	XX	XXX	χx	χх	XXX	χу	XXX
Pipe fitting material		_	^^	^^	`\^^	^^	^^	^^	^^^		^^^	^^^	^^^	^^^	^^	^^^	^^	^^	^^^	^^	744
Carbon steel																					
316 / 316.1 stainless steel	· · · · · ·	C 2																			
304 304 stainless steel 54 22 22 22 23 24 24 24 2																					
123 Istainless steel	•																				
Low temperature carbon steel (A350 LF2 CL/A333 Gr 6)	· ·																				
1-1-V.C.P.V. Mo low alloy F11 (UNS K11597) F4 25 % Cr super duplex (UNS 532750) D2 25 % Cr super duplex (UNS 532750) D3 3041 stainless steel																					
25 % Cr super duplex (UNS \$32750) 25 % Cr super duplex (UNS \$32760) 316H stainless steel 316H stainless steel 418 310 stainless steel 519 316H stainless steel 510 310 310 310 310 310 310 310 310 310 3																					
25 % Cr super duplex (Units 332760) D3		D2																			
304H stainless steel		D3																			
330 stainless steel	316H stainless steel	Н6	5																		
121H stainless steel	304H stainless steel	H4																			
994 stainless steel	310 stainless steel	S 3																			
22 % cf Duplex (UNS 531803)																					
63 M N SS (UNS S121254)																					
Alloy 400 (UNS N04400)																					
Alloy 600 (UNS N06600)																					
Alloy 625 (UNS NO6625)																					
Alloy 800 (UNS N08800)																					
Alloy 225 (UNS N08825)																					
Alloy C276 (UNS N010276)																					
Standoffs, etc																					
Standoffs, etc																					
Threaded connection without end support T1 Threaded connection with threaded end support F1 Flanged standoff without end support F1 Flanged standoff without end support F2 Flanged standoff sand current flanged end support F3 Flanged standoff sand internal flanged end support F3 Flanged standoff sand internal flanged end support F4 External flanged end support only (no standoffs supplied) F5 Internal flanged end support only (no standoffs supplied) F6 Customer supplied (versions without flanged end supports) F7 Customer supplied (versions with flanged end supports) F7 Customer supplied (versions with flanged end supports) F8 Process connection type T1 Threaded BSPT T2 Raised face DN 40 (1½ in.) R4 Raised face DN 50 (2 in.) R5 Raised face DN 80 (3 in.) R6 F1EI fat face DN 40 (1½ in.) R6 F1EI fat face DN 40 (1½ in.) F4 F1EI fat face DN 80 (3 in.) F5 F1EI fat face DN 80 (3 in.) F6 R7] DN 50 (2 in.) F1																					
Threaded connection with threaded end support	•																				
Flanged standoff without end support																					
Flanged standoff with weld cup end support																					
2 flanged standoffs and external flanged end support F3 2 flanged standoffs and internal flanged end support F4 External flanged end support only (no standoffs supplied) Internal flanged end support only (no standoffs supplied) Customer supplied (versions without flanged end supports) F7 Customer supplied (versions without flanged end supports) F8 Process connection type Threaded BSPT T1 Threaded BSPT T2 Raised face DN 40 (1½ in.) R4 Raised face DN 50 (2 in.) R5 Raised face DN 80 (3 in.) R6 F1at face DN 50 (2 in.) F5 F1at face DN 50 (2 in.) F6 RTJ DN 40 (1½ in.) R1 RTJ DN 50 (2 in.) R1 RTJ	= ::																				
2 flanged standoffs and internal flanged end support External flanged end support only (no standoffs supplied) Internal flanged end support only (no standoffs supplied) F5 Internal flanged end support only (no standoffs supplied) Customer supplied (versions without flanged end supports) F7 Customer supplied (versions with flanged end supports) F8 Process connection type Threaded BSPT T1 T1 Threaded BPT T2 Raised face DN 40 (1½ in.) R4 Raised face DN 50 (2 in.) R5 F8 F8 F8 F1																					
External flanged end support only (no standoffs supplied) F5																					
Internal flanged end support only (no standoff's supplied) Customer supplied (versions without flanged end supports) F7 Process connection type Threaded BSPT T1 T1 T2 Raised Face DN 40 (1½ in.) R4 Raised face DN 50 (2 in.) R5 R8ised face DN 80 (3 in.) R6 Flat face DN 40 (1½ in.) Flat face DN 40 (1½ in.) F15 Flat face DN 50 (2 in.) F5 Flat face DN 80 (3 in.) F6 RTJ DN 50 (2 in.) F10 x 10 x																					
Customer supplied (versions without flanged end supports) F7 Customer supplied (versions with flanged end supports) F8 Process connection type Threaded BSPT T1 Threaded NPT T2 Raised face DN 40 (1½ in.) R4 Raised face DN 50 (2 in.) R5 Raised face DN 80 (3 in.) R6 F18 F18 F18 F19																					
Customer supplied (versions with flanged end supports) F8 Process connection type Tit Threaded BSPT T1 Threaded NPT T2 Raised face DN 50 (1½ in.) R4 Raised face DN 50 (2 in.) R5 Raised face DN 80 (3 in.) R6 Flat face DN 80 (3 in.) F5 Flat face DN 80 (3 in.) F6 RTJ DN 80 (2 in.) S1 RTJ DN 80 (2 in.) S1 RTJ DN 80 (3 in.) F6 RTJ DN 80 (3 in.) S1																					
Process connection type Threaded BSPT T1 Threaded NPT T2 Raised face DN 40 (1½ in.) R4 Raised face DN 80 (3 in.) R5 Raised face DN 80 (3 in.) R6 Flat face DN 40 (1½ in.) F4 Flat face DN 50 (2 in.) F5 Flat face DN 50 (2 in.) F5 Flat face DN 80 (3 in.) F6 RTJ DN 80 (3 in.) F6 RTJ DN 80 (3 in.) J3 RTJ DN 80 (3 in.) J4 Others Z9 Process connection rating Not flanged Y0 ASME Class 150 A1 ASME Class 300 A3 ASME Class 300 A6 ASME Class 300 A6 ASME Class 300 A7 ASME Class 500 A6 ASME Class 500 A7 ASME Class 500 A9 DIN PN 6 DIN PN 16 DIN PN 160 DI																					
Threaded BSPT T1 Threaded NPT Raised face DN 40 (1½ in.) Raised face DN 50 (2 in.) Raised face DN 50 (2 in.) Raised face DN 80 (3 in.) Refeat face D			F8																		
Threaded NPT Raised face DN 40 (1½ in.) Raised face DN 50 (2 in.) Raised face DN 80 (3 in.) Raised face DN 80 (8 in.) Rais																					
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Raised face DN 80 (3 in.) R6 Flat face DN 40 (1½ in.) F1 Flat face DN 50 (2 in.) F5 Flat face DN 50 (2 in.) F6 RTJ DN 40 (1½ in.) RTJ DN 50 (2 in.) RTJ DN 50 (2 in.) RTJ DN 80 (3 in.) RTJ DN 80 (3 in.) RTJ DN 80 (3 in.) Others Z9 Process connection rating Not flanged ASME Class 150 A1 ASME Class 300 A3 ASME Class 600 A6 ASME Class 600 A7 ASME Class 900 A7 ASME Class 900 A7 ASME Class 2500 A9 DIN PN 6 DIN PN 10 DIN PN 10 DIN PN 16 DIN PN 16 DIN PN 16 DIN PN 40 DIN PN 40 DIN PN 40 DIN PN 63 DIN PN 40 DIN PN 160 DIN PN 150 DIN PN 160 DIN PN 160 DIN PN 150 DIN PN 160 DIN PN 160 DIN PN 150																					
Flat face DN 40 (1½ in.) Flat face DN 50 (2 in.) Flat face DN 80 (3 in.) F6 RTJ DN 40 (1½ in.) J2 RTJ DN 50 (2 in.) RTJ DN 80 (3 in.) J3 RTJ DN 80 (3 in.) J4 Others Z9 Process connection rating Not flanged Y0 ASME Class 150 A1 ASME Class 300 A3 ASME Class 300 A6 ASME Class 600 A6 ASME Class 500 A7 ASME Class 500 A7 ASME Class 1500 A8 ASME Class 5500 DIN PN 6 DO DIN PN 6 DO DIN PN 10 DIN PN 10 DIN PN 10 DIN PN 10 DIN PN 25 DIN PN 40 DIN PN 40 DIN PN 40 DIN PN 40 DIN PN 63 DIN PN 100 DIN PN																					
Flat face DN 50 (2 in.) F1st face DN 80 (3 in.) F2st Flat fa																					
Flat face DN 80 (3 in.) F10 N 40 (1½ in.) RTJ DN 50 (2 in.) RTJ DN 80 (3 in.) Others Z9 Process connection rating Not flanged ASME Class 150 A1 ASME Class 300 A3 ASME Class 600 A6 ASME Class 900 A7 ASME Class 900 A7 ASME Class 1500 A8 ASME Class 2500 DIN PN 6 DO DIN PN 16 DIN PN 10 DIN PN 16 DIN PN 16 DIN PN 25 DIN PN 40 DIN PN 60 DIN PN 160 DIN PN 100 DIN PN 1																					
RTJ DN 40 (1½ in.) RTJ DN 50 (2 in.) RTJ DN 80 (3 in.) Others Z9 Process connection rating Not flanged Y0 ASME Class 150 A1 ASME Class 300 A3 ASME Class 600 A6 ASME Class 900 A7 ASME Class 1500 A8 ASME Class 2500 A9 DIN PN 6 DIN PN 6 DIN PN 16 DIN PN 40 DIN PN 40 DIN PN 40 DIN PN 100 DIN PN 100																					
RTJ DN 50 (2 in.) RTJ DN 80 (3 in.) Others Z9 Process connection rating Not flanged Y0 ASME Class 150 A1 ASME Class 300 A3 ASME Class 600 A6 ASME Class 900 A7 ASME Class 1500 A8 ASME Class 1500 A9 DIN PN 6 DIO DIN PN 6 DID DIN PN 10 DIN PN 16 DID DIN PN 16 DID DIN PN 40 DIN PN 40 DIN PN 40 DIN PN 40 DIN PN 63 DIN PN 100 DIN PN																					
RTJ DN 80 (3 in.) Others Z9 Process connection rating Not flanged ASME Class 150 A1 ASME Class 300 A6 ASME Class 600 A6 ASME Class 900 A7 ASME Class 1500 A8 ASME Class 2500 B1 DIN PN 6 D0 DIN PN 10 DIN PN 16 D2 DIN PN 25 DIN PN 40 DIN PN 40 DIN PN 63 DIN PN 100 DIN PN 150																					
Not flanged																					
Process connection rating Y0 ASME Class 150 A1 ASME Class 300 A3 ASME Class 600 A6 ASME Class 900 A7 ASME Class 1500 A8 ASME Class 2500 A9 DIN PN 6 D0 DIN PN 10 D1 DIN PN 16 D2 DIN PN 25 D3 DIN PN 63 D5 DIN PN 100 D6 DIN PN 100 D6 DIN PN 160 D7 DIN PN 250 D8																					
Not flanged				Z9)																
ASME Class 150	_																				
ASME Class 300 A3 ASME Class 600 A6 ASME Class 900 A7 ASME Class 1500 A8 ASME Class 2500 A9 DIN PN 6 DIN PN 10 DIN PN 16 DIN PN 25 DIN PN 40 DIN PN 63 DIN PN 160 DIN PN 150 DIN	5																				
ASME Class 600 ASME Class 900 A7 ASME Class 1500 A8 ASME Class 2500 A9 DIN PN 6 DO DIN PN 10 DIN PN 16 DO DIN PN 25 DIN PN 40 DIN PN 63 DIN PN 63 DIN PN 100 DIN PN 250 DIN PN 2																					
ASME Class 900 A8 ASME Class 1500 A8 ASME Class 2500 A9 DIN PN 6 D0 DIN PN 10 D1 DIN PN 16 D2 DIN PN 25 D3 DIN PN 40 DIN PN 63 D5 DIN PN 63 D5 DIN PN 100 D6 DIN PN 100 D7 DIN PN 160 D8																					
ASME Class 1500 A8 ASME Class 2500 A9 DIN PN 6 D0 DIN PN 10 D1 DIN PN 16 D2 DIN PN 25 D3 DIN PN 40 DIN PN 63 D5 DIN PN 63 D5 DIN PN 100 D6 DIN PN 160 D7 DIN PN 250 D8																					
ASME Class 2500 DIN PN 6 DO DIN PN 10 DIN PN 16 DO DIN PN 25 DIN PN 63 DIN PN 63 DIN PN 100 DIN PN 100 DIN PN 160 DIN PN 250 DIN PN 250 DIN PN 250																					
DIN PN 6 DO DIN PN 10 DIN PN 16 DD DIN PN 25 DIN PN 40 DIN PN 63 DIN PN 100 DIN PN 100 DIN PN 160 DIN PN 250 D																					
DIN PN 10 DIN PN 16 DIN PN 16 DIN PN 25 DIN PN 40 DIN PN 63 DIN PN 100 DIN PN 100 DIN PN 160 DIN PN 250 DIN PN																					
DIN PN 16																					
DIN PN 25 DIN PN 40 DIN PN 63 DIN PN 100 DIN PN 160 DIN PN 250 DIN																					
DIN PN 40 DIN PN 63 DIN PN 100 DIN PN 160 DIN PN 250 DIN PN 250 DIN PN 40 DI																					
DIN PN 63 D5 DIN PN 100 D6 DIN PN 160 D7 DIN PN 250 D8																					
DIN PN 100																					
DIN PN 160 D7 D1 D1N PN 250 D8																					
DIN PN 250																					
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Continued on next page	Continue	ed on r	next	ра	ge																

...Ordering information | FPD350 series 400 Torbar averaging pitot tube $\,$

FPD350.XX XX X	(ХХ ХХ	XX XX XX XX		ХX	ХX	XXX	XXX	XXX	XXX	XXX	XXX	XX	XXX	ХX	хх	XXX	хх	XX
See pa	ige 27	See page 28	1															
Tapping type			_															
Flanged DP connections (no valves)			F1															
Welded DP connections (no valves)			W1															
Threaded DP connections (no valves)			T1															
Direct mounting head			D1															
3-Valve integral (welded) manifold DM3V 5-Valve integral (welded) manifold DM5V			D2 D3															
3-Valve direct-mounted (bolted) manifold 3VDM			D3															
5-Valve direct-mounted (bolted) manifold 5VDM			D5															
Ball valves			V1															
Needle valves			V2															
Gate valves			V3															
Globe valves Double block and bleed valves			V4 V5															
Tapping size			٧3	1														
				то														
Not applicable ¼ in. NPT male				T1														
1/4 in. NPT female				T2														
¼ in. BSP male				Т3														
¼ in. BSP female				T4														
½ in. NPT male				T5														
½ in. NPT female				Т6														
½ in. BSP male				T7														
½ in. BSP female				T8														
½ in. flanged (specification as mounting flange) ¾ in. flanged (specification as mounting flange)				F1 F2														
½ in. socket weld				S1														
Others				Z9														
Tapping / Valve material																		
As probe					Y0													
316 stainless steel					S 6													
Carbon steel					C 3													
Alloy C276 (UNS N010276)					U7													
Alloy 400 (UNS N04400)					Μ4													
22 % Cr Duplex (UNS S31803)					D1													
25 % Cr Super Duplex (UNS S32750) Others					D2 Z9													
Pipe orientation and shape					23													
Horizontal, circular pipe / duct						PNH												
Vertical, circular pipe / duct						PNV												
Horizontal, rectangular pipe / duct						RNH												
Vertical, rectangular pipe / duct						RNV												
Process isolation valve							1											
No isolation valve							Y0											
1½ in. flanged ball valve – carbon steel							BC8											
2 in. flanged ball valve – carbon steel							BC6											
3 in. flanged ball valve – carbon steel							BC9											
1½ in. flanged ball valve – stainless steel							BS8											
2 in. flanged ball valve – stainless steel							BS6											
3 in. flanged ball valve – stainless steel							BS9											
1½ in. flanged ball valve – Alloy 400 2 in. flanged ball valve – Alloy 400							BM8 BM6											
3 in. flanged ball valve – Alloy 400							BM9											
1½ in. flanged ball valve – Alloy 276							BH8											
2 in. flanged ball valve – Alloy 276							вн6											
3 in. flanged ball valve – Alloy 276							вн9											
1½ in. flanged ball valve – aluminium-bronze							BA8											
2 in. flanged ball valve – aluminium-bronze							BA6											
3 in. flanged ball valve – aluminium-bronze							BA9											
1½ in. flanged gate valve – carbon steel							GC8											
2 in. flanged gate valve – carbon steel							GC6											
3 in. flanged gate valve – carbon steel							GC9 GS8											
1½ in. flanged gate valve – stainless steel 2 in. flanged gate valve – stainless steel							GS8											
3 in. flanged gate valve – stainless steel							GS9											
Customer supplied							VF9											
Others							VZ9											
Design options																		
Partial Insertion probe								TP2										
Bidirectional								TP5										
Special neck length								TP6										
Bayonet end fitting								TP7										
			Cor	itinu	ued	on ne	ext p	age										

...Ordering information | FPD350 series 400 Torbar averaging pitot tube

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Wosets The Strict of the Strict of S	, , , , , , , , ,							
bithers of the property of the		TNI2						
SSTM A133 BB/ ASTM A194 BHA								
SSTM A193 BBM ASTM A194 8MA	olt type and material							
STM A13 88 M A STM A194 8MA	STM A193 B7 / ASTM A194 2H	BGC						
scheston-free L.6 mm of TI prital wound - stainless steel windings with carbon steel outer, 4.5 mm of T2 of the ton of th	STM A193 B8M / ASTM A194 8MA							
piprial yound – stainless steel windings with carbon steel outer; 4.5 mm	asket material							
oft Fron theres GP3 GP3 wheres GP3 suppressure limited to maximum of 70 bar (1015 psi) resperature element – operating pressure limited to maximum of 70 bar (1015 psi) resperature element – operating pressure limited to maximum of 70 bar (1015 psi) resperature element – operating pressure limited to maximum of 70 bar (1015 psi) resperature element – operating pressure limited to maximum element elem	sbestos-free 1.6 mm	G.	Г1					
sthers maperature element - operating pressure limited to maximum of 70 bar (1015 psi) megral PT100 sensor, neck mounted - aluminium IP65 head without transmitter tegral PT100 sensor, neck mounted - aluminium IP65 head with transmitter T1 tegral PT100 sensor, neck mounted - aluminium IP65 head with transmitter T2 tegral PT100 sensor, neck mounted - aluminium IP65 head with transmitter T3 tegral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T4 tegral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T5 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T6 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T6 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T6 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T6 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted - aluminium IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted in IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck mounted in IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck individual the IP65 head with transmitter T7 tex is integral type K thermocouple sensor, neck individual the IP65 head with transmitter								
remperature element - operating pressure limited to maximum of 70 bar (1015 psi) tegral PT100 sensor, neck mounted - aluminium P65 head without transmitter T1 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head without transmitter T2 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T3 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T4 tegral type K thermocouple sensor, neck mounted - aluminium P65 head with transmitter T5 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with transmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with utransmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with utransmitter T6 Ex ia integral PT100 sensor, neck mounted - aluminium P65 head with utransmitter T6 Ex ia integral PT100 sensor, neck mounted aluminium P65 head with utransmitter T6 Ex ia integral PT10 sensor, neck mounted aluminium P65 head with utransmitter T6 Ex integral PT10 sensor, neck mounted aluminium P65 head with utransmitter T6 Ex integral PT10 sensor, neck mounted aluminium P65 head with utransmitter T6 Ex integral PT10 sensor, neck mounted								
ritegral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 12 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter 17 Ex is integral PT100 sensor, neck mounted 18 Ex is in		G.	29					
but t nounting plate (in carbon steel or stainless steel to match pipe fitting material) CFI CFI	tegral PT100 sensor, neck mounted – aluminium IP65 head without transmitter tegral PT100 sensor, neck mounted – aluminium IP65 head with transmitter Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head without transmitter Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter tegral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter		T: T: T4	2 3 4 5				
Autor trounting plate (in carbon steel or stainless steel to match pipe fitting material) CFI CFI								
Cooling fins CF1 Frequency collar FC1 FC1 FC2	_			DF1				
P1 P2 P3 P4 P4 P4 P4 P4 P4 P4	requency collar r eliminator package – pair of stainless steel air eliminators, no valves or fittings (supplied loose) r eliminator package – pair of stainless steel air eliminators with valves and fittings (supplied loose) r eliminator package – pair of DZR air eliminators for seawater applications (supplied loose) r eliminator package – pair of DZR air eliminators with valves and fittings for seawater applications (suppliair of condensate pots in carbon steel – ½ in. BSPTF tappings (supplied loose) air of condensate pots in carbon steel – ½ in. NPT tappings (supplied loose) air of condensate pots in carbon steel – ½ in. BSPTF tappings (supplied loose) air of condensate pots in stainless steel – ½ in. BSPTF tappings (supplied loose) air of condensate pots in stainless steel – ½ in. NPT tappings (supplied loose) air of condensate pots in stainless steel – ½ in. NPT tappings (supplied loose) air of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied loose)	olied loose)		CF1 FC1 AV1 AV2 AV3 AV4 CP1 CP2 CP3 CP4 CP5				
Striff (Lation Lation La					D.1			
Adaterial certificates acc. EN 10204 3.1	thers							
Material certificates acc. EN 10204 3.2 C3 Aaterial certificates acc. NACE, latest revision CN Dybe penetrant inspection C9 Material certificates acc. NACE, latest revision C9 Dybe penetrant inspection C8 Vositive material identification CA 00 % dimensional check C6 bythers C7 cesting C7 mpact testing @ -46 °C CH2 mpact testing g -196 °C CH2 dardness survey CH3 HIC testing CH4 Aganetic particle inspection CH5 Ultrasonic inspection CH6 deat treatment trace CH7 cressure test CH8 Obcumentation language (default = English) CH2 serman M3 teinch M4 crench M4 chench M5 chench M6 chench M6 chench M7								
Impact testing @ -46 °C CH1 Impact testing @ -196 °C CH2 Idardness survey CH3 IdC testing CH4 Magnetic particle inspection CH5 Ultrasonic inspection CH6 Heat treatment trace CH7 Pressure test CH8 Obtainers CH2 Occumentation language (default = English) M1 Italian M2 Spanish M3 French M4 Chinese M6 Others M7	aterial certificates acc. EN 10204 3.2 aterial certificates acc. NACE, latest revision ye penetrant inspection adiography (available on flanged units only) ositive material identification 10 % dimensional check thers					C3 CN C9 C8 CA C6		
Impact testing @ -196 °C CH2 Hardness survey CH3 HIC testing CH4 Aganetic particle inspection CH5 Ultrasonic inspection CH5 Ultrasonic inspection CH6 Heat treatment trace CH7 Pressure test CH8 Obtainers CH2 Obtainers M1 Italian M2 Epanish M3 Itench M4 Chinese M6 Others M7	-							
Serman M1 Italian M2 Spanish M3 Grench M4 Chinese M6 Others MZ	npact testing @ -196 °C ardness survey IC testing agnetic particle inspection trasonic inspection eat treatment trace ressure test						CH2 CH3 CH4 CH5 CH6 CH7 CH8	
talian M2 Spanish M3 Grench M4 Chinese M6 Others MZ	ocumentation language (default = English)							
panish M3 French M4 Chinese M6 Others M7								M1
M4 Chinese M6 Others M7								
Chinese M6 Others MZ								
Others MZ								
dd da water water								
added requirements								

Ordering information | FPD350 series 500 Torbar averaging pitot tube $\,$

		FPD350. XX	ХX	XXX	XX	XX	X	(XX	(X	(X X	X	ХX	хх	XXX	XXX	XXX	XXX	XXX	XXX	XX	XXX	XX	XX	XXX	XX	XX
Product design																										
Permanently installed Torb (2 in.) OD probe	ar – 60 m	m T5																								
Measurement design																										
Unsupported version			E1																							
Supported version			E2																							
Line nominal bore																										
	250	DN 4100 (162 in.)		104																						
	300 350	DN 4200 (166 in.) DN 4300 (170 in.)		204 304																						
	400	DN 4400 (174 in.)		404																						
DN 450 (18 in.)	450	DN 4500 (177 in.)		504																						
	500	DN 4600 (181 in.)		604																						
	600 750	DN 4700 (185 in.) DN 4800 (189 in.)		704 804																						
	900	DN 4900 (193 in.)		904																						
	001	DN 5000 (197 in.)		005																						
·	101	DN 5100 (200 in.)		105																						
·	201	DN 5200 (204 in.)		305																						
	301 401	DN 5300 (208 in.) DN 5400 (212 in.)		305 405																						
	501	DN 5500 (216 in.)		505																						
	601	DN 5600 (220 in.)		605																						
·	701	DN 5700 (224 in.)		705																						
· · ·	801	DN 5800 (228 in.)		805																						
· ·	901 002	DN 5900 (232 in.) DN 6000 (236 in)		905 006																						
	102	DN 6100 (240 in.)		106																						
	202	DN 6200 (244 in.)		206																						
` '	302	DN 6300 (248 in.)		306																						
	402	DN 6400 (252 in.)		406																						
` '	502 602	DN 6500 (256 in.) DN 6600 (260 in.)		506 606																						
· · ·	702	DN 6700 (264 in.)		706																						
	802	DN 6800 (268 in.)		806																						
· ·	902	DN 6900 (272 in.)		906																						
	003 103	DN 7000 (276 in.) DN 7100 (280 in.)		007 107																						
	203	DN 7200 (284 in.)		207																						
·	303	DN 7300 (288 in.)		307																						
	403	DN 7400 (292 in.)		407																						
	503	DN 7500 (296 in.)		507																						
	603 703	DN 7600 (300 in.) DN 7700 (304 in.)		607 707																						
· · ·	803	DN 7800 (308 in.)		807																						
DN 3900 (154 in.)	903	DN 7900 (312 in.)		907																						
DN 4000 (158 in.)	004	DN 8000 (315 in.)		800																						
Ducha matarial		Others		999																						
Probe material																										
316 / 316L stainless steel 304 / 304L stainless steel					S6 S4																					
321 stainless steel					S2																					
304H stainless steel					Н4																					
310 stainless steel					S 3																					
321H stainless steel 904L stainless steel					S1 S9																					
Alloy C276 (UNS N010276)					U7																					
Alloy 400 (UNS N04400)					M4																					
Alloy 625 (UNS N06625)					N2																					
22 % Cr duplex (UNS S3180					D1																					
25 % Cr super duplex (UNS					D2 D3																					
25 % Cr super duplex (UNS 6 % Mo stainless steel (UNS					D3 М1																					
Alloy 600 (UNS N06600)		,			U3																					
Alloy 800 (UNS N08800)					U4																					
Alloy 825 (UNS N08825)					U5																					
Others					Z9																					

...Ordering information | FPD350 series 500 Torbar averaging pitot tube $\,$

FPD350. XX XX XX XX X	_	^^		^^	^^	^^	^^	^^^			 ^^^	~~~	^^	^^^					
See page 31																			
Pipe fitting material																			
Carbon steel	C3																		
316 / 316L stainless steel	S6																		
304 / 304L stainless steel	S4																		
321 stainless steel	S2																		
Low temperature carbon steel (A350 LF2 C1/A333 Gr 6)	C4 F4																		
1-¼ Cr-½ Mo low alloy F11 (UNS K11597) 25 % Cr super duplex (UNS S32750)	D2																		
25 % Cr super duplex (ONS 532760)	D3																		
316H stainless Steel	H6																		
304H stainless steel	H4																		
310 stainless steel	S 3																		
321H stainless steel	S1																		
904L stainless steel	S 9																		
22 % Cr Duplex (UNS S31803)	D1																		
5 % Mo SS (UNS S31254)	M1																		
Alloy 400 (UNS N04400)	M4																		
Alloy 600 (UNS N06600)	U3																		
Alloy 625 (UNS N06625)	N2																		
Alloy 800 (UNS N08800)	U4																		
Alloy 825 (UNS N08825)	U5																		
Alloy C276 (UNS N010276) Others	U7 Z9																		
	29																		
Standoffs, etc																			
Flanged standoff without end support		F1																	
Flanged standoff with weld cup end support		F2																	
2 flanged standoffs and external flanged end support		F3																	
2 flanged standoffs and internal flanged end support		F4																	
External flanged end support only (no standoffs supplied)		F5																	
nternal flanged end support only (no standoffs supplied)		F6																	
Customer supplied (versions without flanged end supports) Customer supplied (versions with flanged end supports)		F7 F8																	
		го																	
Process connection type																			
Raised face DN 80 (3 in.)		- 1	R6																
Raised Face DN 100 (4 in.)		- 1	R7																
Raised Face DN 150 (6 in.)			R8																
Flat face DN 80 (3 in.)			F6																
Flat Face DN 100 (4 in.)			F7																
Flat Face DN 150 (6 in.)			F8																
RTJ DN 80 (3 in.)]4]5																
RTJ DN 100 (4 in.) RTJ DN 150 (6 in.)			15 16																
Others			Z9																
Process connection rating																			
<u>-</u>																			
ASME Class 150				A1															
ASME Class 300				A3															
ASME Class 600 ASME Class 900				A6 A7															
ASME Class 1500				A8															
ASME Class 2500				A9															
DIN PN 6				D0															
DIN PN 10				D1															
DIN PN 16				D2															
DIN PN 25				D3															
DIN PN 40				D4															
DIN PN 63				D5															
DIN PN 100				D6															
DIN PN 160				D7															
DIN PN 250				D8															
Others				Z9															
Tapping type																			
Flanged DP connections (no valves)					F1				1										
Welded DP connections (no valves)					W1														
Threaded DP connections (no valves)					Т1														
Direct mounting head					D1														
3-Valve integral (welded) manifold DM3V					D2														
5-Valve integral (welded) manifold DM5V					D3														
3-Valve direct-mounted (bolted) manifold 3VDM					D4														
5-Valve direct-mounted (bolted) manifold 5VDM					D5														
Ball valves					V1														
Needle valves					V2														
					٧3	1	1		1	1					1	1	1	1	1
Gate valves																			
Gate valves Globe valves Double block and bleed valves					V4 V5														

...Ordering information | FPD350 series 500 Torbar averaging pitot tube

FPD350. XX XX XXX XX	XX XX XX XX XX	dxxxx	XX	XX	XX	XXX	XXX	XXX	XXX	XX	XXX	XX	ХX	XXX	XX	XX
See page 31	See page 32															
Tapping size																
Not applicable		TO														
½ in. NPT male		T1														
¼ in. NPT female		T2														
¼ in. BSP male		Т3														
¼ in. BSP female		T4														
½ in. NPT male		T5														
½ in. NPT female		Т6														
½ in. BSP male		T7														
½ in. BSP female		T8														
½ in. flanged (specification as mounting flange)		F1														
3/4 in. flanged (specification as mounting flange)		F2														
½ in. socket weld		S1														
Others		Z9														
Tapping / Valve material																
As probe		Υ	О													
316 stainless steel		S	6													
Carbon steel		С	3													
Alloy C276 (UNS N010276)		U	7													
Alloy 400 (UNS N04400)		М	4													
22 % Cr Duplex (UNS S31803)		D	1													
25 % Cr Super Duplex (UNS S32750)		D	2													
Others		Z	9													
Pipe orientation and shape																
Horizontal, circular pipe / duct			PN	Н												
Vertical, circular pipe / duct			PN	٧												
Horizontal, rectangular pipe / duct			RN	Н												
Vertical, rectangular pipe / duct			RN	V												
Process isolation valve																
No isolation valve				Υ	′0Y											
3 in. flanged ball valve – carbon steel				В	3C9											
3 in. flanged ball valve – stainless steel				В	3S9											
3 in. flanged ball valve – Alloy 400				В	М9											
3 in. flanged ball valve – Alloy 276				В	H9											
3 in. flanged ball valve – aluminium-bronze				_	3A9											
3 in. flanged gate valve – carbon steel					C9											
3 in. flanged gate valve – stainless steel					SS9											
Others				V	/Z9											
Design options																
Centre coupling						TP1										
Partial insertion probe						TP2										
Bidirectional						TP5										
Special neck length						TP6										
Bayonet end fitting						TP7										
	Co	ntinue	d on	nex	(t pa	age.										

...Ordering information | FPD350 series 500 Torbar averaging pitot tube $\,$

FPD350. XX XX XX XX XX XX XX XX									
apping sets									
wo sets	TN2								
thers	TNZ								
olt type and material		J							
STM A193 B7 / ASTM A194 2H		BGC							
STM A193 B8M / ASTM A194 8MA		BGS							
others		BZ9							
asket material									
sbestos-free 1.6 mm			GT1						
piral wound – stainless steel windings with carbon steel outer; 4.5 mm			GT2						
oft iron thers			GP3 GZ9						
			GZ9						
emperature element – operating pressure limited to maximum of 70 bar (1015 psi)									
ntegral PT100 sensor, neck mounted – aluminium IP65 head without transmitter				T1 T2					
ntegral PT100 sensor, neck mounted – aluminium IP65 head with transmitter Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head without transmitter				T3					
Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter				T4					
ntegral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter				T5					
Ex ia integral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter				Т6					
tting accessories									
ooling fins					CF1				
requency collar					FC1				
otted ports					SH1				
ir eliminator package – pair of stainless steel air eliminators, no valves or fittings (supplied loose)					AV1				
ir eliminator package – pair of stainless steel air eliminators with valves and fittings (supplied loose) ir eliminator package – pair of DZR air eliminators for seawater applications (supplied loose)					AV2 AV3				
ir eliminator package – pair of DZR air eliminators for seawater applications (supplied loose) ir eliminator package – pair of DZR air eliminators with valves and fittings for seawater applications (su	nnlied	loose	e)		AV4				
air of condensate pots in carbon steel – ½ in. BSPTF tappings (supplied loose)	ppnea	1005	<i>د</i> ر		CP1				
air of condensate pots in carbon steel – ½ in. NPT tappings (supplied loose)					CP2				
air of condensate pots in carbon steel – ½ in. butt weld Schedule 160 tappings (supplied loose)					CP3				
Pair of condensate pots in stainless steel – ½ in. BSPTF tappings (supplied loose)					CP4				
Pair of condensate pots in stainless steel – ½ in. NPT tappings (supplied loose) Pair of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied loose)					CP5 CP6				
surface treatment					CFO				
						D1			
Dxygen cleaning Others						P1 Z9			
Certification									
Naterial certificates acc. EN 10204 3.1							C2		
laterial certificates acc. EN 10204 3.1							C3		
laterial certificates acc. NACE, latest revision							CN		
ye penetrant inspection							C9		
adiography (available on flanged units only)							C8		
ositive material identification							CA		
00 % dimensional check Others							C6 CZ		
esting							CZ		
-									
npact testing @ –46 °C npact testing @ –196 °C								H1 H2	
ardness survey								H3	
IC testing								H4	
lagnetic particle inspection								H5	
Itrasonic inspection								Н6	
eat treatment trace								H7	
ressure test								H8	
th arc							C	HZ	
ocumentation language (default = English)									M1
ocumentation language (default = English) erman									M2 M3
ocumentation language (default = English) erman alian									M3 M4
ocumentation language (default = English) erman alian panish									
ocumentation language (default = English) erman alian panish rench									46
ocumentation language (default = English) erman alian panish rench hinese								N	
ocumentation language (default = English) derman dalian panish rench dhinese others								N	М6

Ordering information | FPD350 series L6 retractable Torbar averaging pitot tube

30. ^^	AA.	XXX	XX	XX	XX	XX	XX	XX	(X)	(X)	XX	X X	CXX	XXX	XXX	XXX	XXX	XX	ХX	XXX	XX	XX
_																						
e L6																						
	E1																					
		050																				
		999																				
			S 6																			
			S 4																			
			D1																			
			D2																			
			D3																			
				С3																		
				S 4																		
				S2																		
				S1																		
				S 9																		
				D1																		
					_																	
							1	1	1	1	1									1	1	1
					Т1																	
		E1	pe L6	S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5	De L6 E1	Se L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S9 D1 M1 U3 U4 U5 Z9 D1 M1 M4 U3 N2 U4 U5 U7	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S9 D1 M1 W4 U5 Z9 D1 M1 M4 U3 U3 U4 U5 U5 U7	050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 H4 S3 S1 S9 U7	050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C4 F4 D2 D3 H6 H4 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C4 F4 D2 D3 M1 U3 U4 U5 Z9 C4 C4 C4 C4 C4 C5 C4 C5 C7 C7 C7 C7 C7 C7 C7 C7 C7 C7	050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 M1 U3 U4 U5 Z9 D1 D2 D3 M1 U3 U4 U5 Z9 D1 D2 D3 M1 U3 U4 U5 Z9 D1 D2 D3 M1 U5 Z9 D1 D2 D3 M1 U5 Z9 D1 D2 D3 M1 U5 Z9 D1 D2 D3 M1 U5 Z9 D1 D2 D3 M1 U5 Z9 D1 D2 D3 M1 U5 Z9 D1 D2 D3 M1 U5 Z9 D1 D2 D3 D3 M1 U5 Z9 D1 D2 D3 D3 M1 U5 Z9 D1 D2 D3 D3 M1 U5 Z9 D1 D2 D3 D3 D4 D4 D5 D7 D7 D8 D8 D9 D1 D2 D3 D3 D4 D4 D5 D7 D7 D7 D8 D8 D8 D8 D8 D8 D8 D8 D8 D8	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S1 S9 D1 M1 M4 N2 D1 M1 M4 N3 N2 U4 U5 U5 U7	050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 M2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 M1 H4 S3 S1 S9 U7 M4 M2 D1 D2 D3 M1 U3 U4 U5 Z9 D3 M1 U3 U4 U5 Z9 D3 M4 M4 M8 S2 C4 F4 D2 D3 M1 U3 U4 U5 Z9 D3 M1 M2 D1 D2 D3 M1 M2 D1 D2 D3 M1 M2 D1 M4 M5 Z9 D1 D2 D3 M1 M2 D1 D2 D3 M1 M4 M5 Z9 D1 D2 D3 M1 M4 M5 Z9 D3 M1 M4 M5 Z9 D3 M1 M4 M4 M5 Z9 D3 M1 M4 M4 M5 Z9 D3 M1 M4 M4 M5 Z9 D3 M1 M4 M4 M5 Z9 D3 M1 M1 M4 M4 M5 M5 M6 M6 M7 M8 M8 M8 M8 M8 M8 M8 M8 M8 M8	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S9 D1 M1 M4 M4 U3 N2 U4 U5 U5 U7	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S1 S9 D1 M1 M4 V3 S2 V4 V5 V7	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S9 D1 M4 N2 D2 D3 H6 H4 S3 S1 S9 D1 M1 M4 U3 N2 U4 U5 S9 D1 M1 M4 U3 N2 U4 U5 U5 U7	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S1 S9 D1 M1 M4 M4 U3 S3 S1 S1 S9 D1 M1 M4 U3 U3 U4 U5 U5 U7	050 080 100 125 150 999 S6 S4 S2 H4 S2 H4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S9 D1 M1 M4 U3 U3 U4 U5 U5 U7	050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S1 S9 D1 M1 M4 S3 S1 S9 D1 M1 M4 U3 N2 U4 U5 U7	050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D2 D3 H6 H4 S3 S1 S9 D1 M1 M4 U3 N2 U4 U5 U5 U7	De L6 E1 050 080 100 125 150 999 S6 S4 S2 H4 S3 S1 S9 U7 M4 N2 D1 D2 D3 M1 U3 U4 U5 Z9 C3 S6 S4 S2 C4 F4 D2 D3 H6 H4 S3 S1 S1 S9 D1 H4 D2 D3 H6 H4 D3 D3 H6 H4 D3 D3 H6 H4 D3 D3 H6 H4 D3 D3 D1 M1 M4 U3 N2 U4 U5 U5 U7	C3 C3 C4 C4 C4 C4 C4 C4 C4 C4 C5

$... Ordering\ information\ |\ FPD350\ series\ L6\ retractable\ Torbar\ averaging\ pitot\ tube$

	FPD350. XX XX XXX XX XX	XXXXX	XX	xx	XX	XXX	XXX	XXX	XXX	XXX	XXX	XX	ХХ	XXX	XX	X
	See page 35															
rocess connection type																
hreaded BSPT		T1														
hreaded NPT		T2														
Others		Z9														
Process connection rating																
lot flanged		Y	0													
apping type																
Velded DP connections (no valves)			W	1												
hreaded DP connections (no valves)			T:	1												
rirect mounting head			D:	1												
-Valve integral (welded) manifold DM3V			D	2												
-Valve integral (welded) manifold DM5V			D:													
-Valve direct-mounted (bolted) manifold 3VDM			D٠													
-Valve direct-mounted (bolted) manifold 5VDM			D:													
all valves			V:													
leedle valves sate valves			V:													
ilobe valves			V.	-												
ouble block and bleed valves			V!													
apping size																
· · · -				то												
Iot applicable 4 in. NPT male				T1												
in. NPT female				T2												
4 in. BSP male				T3												
in. BSP female				T4												
in. NPT male				T5												
in. NPT female				Т6												
in. BSP male				T7												
in. BSP female				Т8												
½ in. socket weld Others				S1												
<u> </u>				Z9												
apping / Valve material																
s probe 16 stainless steel					Y0 S6											
arbon steel					C3											
lloy C276 (UNS N010276)					U7											
lloy 400 (UNS N04400)					M4											
2 % Cr Duplex (UNS S31803)					D1											
5 % Cr Super Duplex (UNS S32750)					D2	:										
thers					Z 9											
ipe orientation and shape						_										
orizontal, circular pipe / duct						PNH										
ertical, circular pipe / duct						PNV										
lorizontal, rectangular pipe / duct						RNH										
ertical, rectangular pipe / duct						RNV										
rocess isolation valve																
4 in. threaded ball valve – A216 carbon steel body v	vith 316 stainless steel trim						BC5									
4 in. threaded ball valve – stainless steel							BS5									
Customer supplied							VF9									
others							VZ9									
esign options																
pecial neck length								TP6								
acking gland material																
TFE (replaces the standard graphite material)									PG1							
apping sets										-						
wo sets										TN2						
WO sets																1

$... Ordering\ information\ |\ FPD350\ series\ L6\ retractable\ Torbar\ averaging\ pitot\ tube$

		xx xx xx xxx xxx xxx xxx xxx xxx		**/**/	`\^^
	See page 35	See page 36			
Fitting accessories					
Duct mounting plate (in carbon steel or stainless	, ,	DI	-		
Air eliminator package – pair of stainless steel ai					
Air eliminator package – pair of stainless steel ai	5 .	• •			
Air eliminator package – pair of DZR air eliminat		The state of the s	-		
Air eliminator package – pair of DZR air eliminato	5				
Pair of condensate pots in carbon steel – ½ in. B Pair of condensate pots in carbon steel – ½ in. N		CI CI			
Pair of condensate pots in carbon steel – ½ in. N					
Pair of condensate pots in stainless steel – ½ in.		CI CI	-		
Pair of condensate pots in stainless steel $-\frac{1}{2}$ in.		-	5		
Pair of condensate pots in stainless steel – ½ in.		-	-		
Surface treatment					
Oxygen cleaning Others			P1 Z9		
Certification					
Material certificates acc. EN 10204 3.1			(22	
Material certificates acc. EN 10204 3.2			(23	
Material certificates acc. NACE, latest revision			(CN	
Dye penetrant inspection			(29	
Radiography (available on flanged units only)			(8	
Positive material identification			(CA	
100 % dimensional check				26	
Others			(CZ	
Testing					
Impact testing @ -46 °C				CH1	
Impact testing @ –196 °C				CH	
Hardness survey				CH	
HIC testing				CH4	
Magnetic particle inspection				CHS	
Ultrasonic inspection				CH	1 1
Heat treatment trace Pressure test				CH7	
Others				CHZ	
Documentation language (default = English)				CITZ	
German					М1
Italian					M2
Spanish					M3
French					M4
Chinese					М6
Others					ΜZ
Added requirements					
Material source limitations apply					

Ordering information | FPD350 series L7 retractable Torbar averaging pitot tube

	FPD350. XX	χу	ď	XX	χу	χy	(XX	χу	χу	(X)	(X)	χУ	X)	XXX	XXX	XXX	XXX	XXX	χу	XXX	XΥ	χу	XXX	(Y	ххх
Product design	. 1 5330. XX	1,,,	^		^^	^	`\^^		^^	\^/	`\^	` ^			^^^		^^^	^^^	^^		^^	^^	^^/	`	^^^
	L7																								
Low pressure retractable Torbar – 25 mm (1 in.) OD probe	L/																								
Measurement design		_																							
Unsupported version		E1																							
Supported version		E2																							
Line nominal bore																									
DN 100 (4 in.)				100																					
DN 125 (5 in.)				125																					
DN 150 (6 in.)				150																					
DN 200 (8 in.)				200																					
DN 250 (10 in.)				250																					
DN 300 (12 in.) DN 350 (14 in.)				300 350																					
DN 400 (16 in.)				100																					
DN 450 (18 in.)				150																					
DN 500 (20 in.)				500																					
DN 600 (24 in.)				500																					
DN 750 (30 in.)				750																					
DN 900 (36 in.)				900																					
DN 1000 (40 in.)			C	001																					
DN 1100 (44 in.)			1	101																					
DN 1200 (48 in.)			2	201																					
DN 1300 (52 in.)				301																					
DN 1400 (56 in.)				101																					
DN 1500 (60 in.)				501																					
DN 1600 (64 in.)				501																					
DN 1700 (68 in.)				701																					
DN 1800 (72 in.)				301																					
DN 1900 (76 in.)				001																					
DN 2000 (80 in.) DN 2100 (84 in.)				102																					
DN 2200 (88 in.)				202																					
DN 2300 (92 in.)				302																					
DN 2400 (96 in.)				102																					
DN 2500 (98 in.)				502																					
DN 2600 (102 in.)			6	502																					
DN 2700 (106 in.)			7	702																					
DN 2800 (110 in.)			8	302																					
DN 2900 (114 in.)			ç	902																					
DN 3000 (118 in.)				003																					
Others			ç	999																					
Probe material																									
316 / 316L stainless steel					S6 S4																				
304 / 304L stainless steel 321 stainless steel																									
304H stainless steel					52 H4																				
310 stainless steel					S3																				
321H stainless steel					S1																				
904L stainless steel					S9																				
Alloy C276 (UNS N010276)					U7																				
Alloy 400 (UNS N04400)					Μ4																				
Alloy 625 (UNS N06625)					N2																				
22 % Cr duplex (UNS S31803)					D1																				
25 % Cr super duplex (UNS S32750)					D2																				
25 % Cr super duplex (UNS S32760)					D3																				
6 % Mo SS (UNS S31254)					M1																				
Alloy 600 (UNS N06600)					U3																				
Alloy 800 (UNS N08800)					U4																				
AHAV V JE JUNE NIJOOTE)					U5	-1		1	1			- [1						
Alloy 825 (UNS N08825) Others					Z 9																				

$... Ordering\ information\ |\ FPD350\ series\ L7\ retractable\ Torbar\ averaging\ pitot\ tube$

FP	D350. XX XX XXX XX	ΚXX	ХX					XX		XXX	XXX	XXX	XXX	XX	XXX	ХX	хх	XXX	ХX	XX
	See page 38																			
Pipe fitting material		_																		
Carbon steel		С3																		
316 / 316L stainless steel		S6																		
304 / 304L stainless steel		S4																		
321 stainless steel		S2																		
Low temperature carbon steel (A350 LF2 C1/A333 C	6r 6)	C4																		
1-¼ Cr-½ Mo low alloy F11 (UNS K11597)		F4 D2																		
25 % Cr super duplex (UNS \$32750) 25 % Cr super duplex (UNS \$32760)		D2																		
316H stainless Steel		H6																		
304H stainless steel		H4																		
310 stainless steel		S 3																		
321H stainless steel		S1																		
904L stainless steel		S 9																		
22 % Cr duplex (UNS S31803)		D1																		
6 % Mo SS (UNS S31254)		M1																		
Alloy 400 (UNS N04400)		M4 U3																		
Alloy 600 (UNS N06600) Alloy 625 (UNS N06625)		N2																		
Alloy 800 (UNS N08800)		U4																		
Alloy 825 (UNS N08825)		U5																		
Alloy C276 (UNS N010276)		U7																		
Others		Z 9																		
Standoffs, etc																				
Threaded connection without end support			T1																	
Threaded connection with threaded end support			T2																	
Process connection type								١.												
Threaded BSPT				T1																
Threaded NPT				T2																
Others				Z9																
Process connection rating																				
Not flanged					Y0															
					10															
Tapping type																				
Welded DP connections (no valves)						W1														
Threaded DP connections (no valves)						T1														
Direct mounting head 3-Valve integral (welded) manifold DM3V						D1 D2														
5-Valve integral (welded) manifold DM5V						D3														
3-Valve direct-mounted (bolted) manifold 3VDM						D4														
5-Valve direct-mounted (bolted) manifold 5VDM						D5														
Ball valves						٧1														
Needle valves						V2														
Gate valves						٧3														
Globe valves						V4														
Double block and bleed valves						V5														
Tapping size																				
Not applicable							T0													
¼ in. NPT male							T1													
¼ in. NPT female							T2													
¼ in. BSP male ¼ in. BSP female							T3													
½ in. NPT male							T4 T5													
½ in. NPT fmale							T6													
½ in. BSP male							T7													
½ in. BSP female							T8													
½ in. socket weld							S1													
Others							Z 9													
Tapping / Valve material								_												
As probe								Y0												
316 stainless steel								S 6												
Carbon steel								C3												
Alloy C276 (UNS N010276)								U7												
Alloy 400 (UNS N04400)								M4												
22 % Cr duplex (UNS S31803)								D1												
25 % Cr super duplex (UNS S32750)								D2												
Others								Z9												
Pipe orientation and shape																				
Horizontal, circular pipe / duct									PNH											
Vertical, circular pipe / duct									PNV											
Horizontal, rectangular pipe / duct									RNH											
Vertical, rectangular pipe / duct									RNV											
			Cor	ntir	nuec	d on	ne	xt pa	age											
											1	1	1	1	1	1	1	1		1

 $... Ordering\ information\ |\ FPD350\ series\ L7\ retractable\ Torbar\ averaging\ pitot\ tube$

See page 38 See page 39	XXX XX		\\\\\		^^	^,^	^^^	^^
rocess isolation valve								
1/4 in. threaded ball valve – A216 carbon steel with 316 stainless steel trim BC7 1/4 in. threaded ball valve – stainless steel BS7								
ustomer supplied VF9								
thers VZ9								
esign options								
	TP2							
artial insertion probe idirectional	TP5							
pecial neck length	TP6							
acking gland material								
	PO	~,						
TFE (replaces the standard graphite material)	P	31						
apping sets								
wo sets		TN						
thers		TNZ	<u>-</u>					
emperature element – operating pressure limited to maximum of 70 bar (1015 psi)								
stegral PT100 sensor, neck mounted – aluminium IP65 head without transmitter			T1					
stegral PT100 sensor, neck mounted – aluminium IP65 head with transmitter			T2					
Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head without transmitter			T3 T4					
Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter Itegral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter			T5					
Ex ia integral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter			T6					
itting accessories				_				
uct mounting plate (in carbon steel or stainless steel to match pipe fitting material)				DF1				
ir eliminator package – pair of stainless steel air eliminators, no valves or fittings (supplied loose)				AV1				
ir eliminator package – pair of stainless steel air eliminators with valves and fittings (supplied loose)				AV2				
ir eliminator package – pair of DZR air eliminators for seawater applications (supplied loose)				AV3				
ir eliminator package – pair of DZR air eliminators with valves and fittings for seawater applications (supplie	d loose)			AV4				
air of condensate pots in carbon steel − ½ in. BSPTF tappings (supplied loose)				CP1				
air of condensate pots in carbon steel – ½ in. NPT tappings (supplied loose)				CP2				
air of condensate pots in carbon steel – ½ in. butt weld Schedule 160 tappings (supplied loose)				CP3	1 1			
air of condensate pots in stainless steel – ½ in. BSPTF tappings (supplied loose)				CP4 CP5				
air of condensate pots in stainless steel – $\frac{1}{2}$ in. NPT tappings (supplied loose) air of condensate pots in stainless steel – $\frac{1}{2}$ in. butt weld Schedule 160 tappings (supplied loose)				CP6	1 1			
urface treatment				U . U				
xygen cleaning					P1			
thers					Z9			
thers					Z9			
thers ertification						C2		
thers ertification laterial certificates acc. EN 10204 3.1						C2 C3		
thers ertification						C2 C3 CN		
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2						С3		
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.2						C3 CN		
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision ye penetrant inspection adiography (available on flanged units only) ositive material identification						C3 CN C9 C8 CA		
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. EN 10204 3.1 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest revi						C3 CN C9 C8 CA C6		
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision ye penetrant inspection adiography (available on flanged units only) ositive material identification 00 % dimensional check thers						C3 CN C9 C8 CA		
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. EN 10204 3.1 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest revi						C3 CN C9 C8 CA C6		
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial						C3 CN C9 C8 CA C6 CZ	CH1	
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision ye penetrant inspection adiography (available on flanged units only) ositive material identification 00 % dimensional check thers esting npact testing @ -46 °C npact testing @ -196 °C						C3 CN C9 C8 CA C6 CZ	CH1 CH2	
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. EN 10204 3.1 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3	
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision ye penetrant inspection adiography (available on flanged units only) obsitive material identification 00 % dimensional check thers esting npact testing @ -46 °C npact testing @ -196 °C ardness survey IC testing						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4	
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest revision ladiography (available on flanged units only) lositive material identification loo % dimensional check thers esting Inpact testing @ -46 °C Inpact testing @ -196 °C ardness survey IC testing lagnetic particle inspection						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5	
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest revision ladiography (available on flanged units only) sositive material identification 00 % dimensional check thers esting npact testing @ -46 °C npact testing @ -196 °C ardness survey IC testing lagnetic particle inspection ltrasonic inspection						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5	
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest revision ladiography (available on flanged units only) lositive material identification loo % dimensional check thers esting Inpact testing @ -46 °C Inpact testing @ -196 °C ardness survey IC testing lagnetic particle inspection						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5	
thers ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.1 laterial certificates ac						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6	
ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. EN 10204 3.2 l						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6 CH7	
ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest revision ladiography (available on flanged units only) lositive material identification loo % dimensional check lithers lesting lapact testing @ -46 °C lapact testing @ -196 °C lardness survey lC testing lagnetic particle inspection ltrasonic inspection leat treatment trace lessure test lthers locumentation language (default = English)						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6 CH7	
ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. Extending acc. Exte						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6 CH7	M1
ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest revision ladiography (available on flanged units only) lositive material identification loo % dimensional check lithers lesting lapact testing @ -46 °C lapact testing @ -196 °C lardness survey lC testing lagnetic particle inspection ltrasonic inspection leat treatment trace lessure test lthers locumentation language (default = English)						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6 CH7	
ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision ye penetrant inspection adiography (available on flanged units only) obsitive material identification 00 % dimensional check thers esting npact testing @ -46 °C npact testing @ -196 °C ardness survey IC testing lagnetic particle inspection ltrasonic inspection eat treatment trace ressure test thers ocumentation language (default = English) erman alian						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6 CH7	M1 M2 M3
ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision laterial certificates acc. NACE, latest re						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6 CH7	M1 M2 M3 M4
ertification laterial certificates acc. EN 10204 3.1 laterial certificates acc. EN 10204 3.2 laterial certificates acc. NACE, latest revision ye penetrant inspection adiography (available on flanged units only) ositive material identification 00 % dimensional check thers esting npact testing @ -46 °C npact testing @ -196 °C ardness survey IC testing lagnetic particle inspection ltrasonic inspection eat treatment trace ressure test thers ocumentation language (default = English) erman alian panish rench						C3 CN C9 C8 CA C6 CZ	CH1 CH2 CH3 CH4 CH5 CH6 CH7	M1 M2 M3

Ordering information | FPD350 series H6 retractable Torbar averaging pitot tube

	PD350. XX X	XXX	XX	XX	XX	ХX	XX	XX	XX	XX	XXX	XX	ХX	XXX	XX	XX							
Product design																							
High pressure retractable Torbar – 13 mm (½ in.) OD probe	Н6																						
Measurement design																							
Unsupported version	E	1																					
Line nominal bore																							
DN 50 (2 in.)		050)																				
DN 80 (3 in.)		080)																				
DN 100 (4 in.)		100																					
DN 125 (5 in.)		125																					
DN 150 (6 in.)		150 999																					
Others		995	2																				
Probe material																							
316 / 316L stainless steel			S6																				
304 / 304L stainless steel 321 stainless steel			S4 S2																				
304H stainless steel			H4																				
310 stainless steel			S3																				
321H stainless steel			S1																				
904L stainless steel			S 9)																			
Alloy C276 (UNS N010276)			U7	7																			
Alloy 400 (UNS N04400)			M4																				
Alloy 625 (UNS N06625)			N2																				
22 % Cr duplex (UNS \$31803)			D1																				
25 % Cr super duplex (UNS \$32750) 25 % Cr super duplex (UNS \$32760)			D2																				
6 % Mo SS (UNS S31254)			M1																				
Alloy 600 (UNS N06600)			U3																				
Alloy 800 (UNS N08800)			U4																				
Alloy 825 (UNS N08825)			U5	5																			
Others			Z 9)																			
Pipe fitting material																							
Carbon steel				C 3																			
316 / 316L stainless steel				S 6																			
304 / 304L stainless steel				S4																			
321 stainless steel				S2																			
Low temperature carbon steel (A350 LF2 C1	/A333 Gr 6)			C4																			
1-¼ Cr-½ Mo low alloy F11 (UNS K11597) 25 % Cr super duplex (UNS S32750)				F4 D2																			
25 % Cr super duplex (UNS \$32760)				D2																			
316H stainless Steel				H6																			
304H stainless steel				H4																			
310 stainless steel				S 3																			
321H stainless steel				S1																			
904L stainless steel				S 9																			
22 % Cr Duplex (UNS \$31803)				D1																			
6 % Mo SS (UNS S31254)				M1																			
Alloy 400 (UNS N04400) Alloy 600 (UNS N06600)				M4 U3																			
Alloy 625 (UNS N06625)				N2																			
Alloy 800 (UNS N08800)				U4																			
Alloy 825 (UNS N08825)				U5																			
Alloy C276 (UNS N010276)				U7																			
Others				Z 9																			
Standoffs, etc					-																		
Threaded connection without end support					Т1																		
Flanged Standoff without end support					F1																		

$... Ordering\ information\ |\ FPD350\ series\ H6\ retractable\ Torbar\ averaging\ pitot\ tube$

FPD350.XX	xx xxx xx xx xx x	XX	XX	XX	XX	XXX	**		**	XXX	^^	XX						
	See page 41																	
Process connection type																		
Threaded BSPT	Т	1																
Threaded NPT	Т																	
Raised face DN 40 (1½ in.)	R																	
Raised face DN 50 (2 in.)	R																	
Flat face DN 40 (1½ in.)	F																	
Flat face DN 50 (2 in.)	F																	
RTJ 1½ in.	J.																	
RTJ 2 in.	J																	
Others	Z																	
		9																
Process connection rating																		
lot flanged		Y0																
ASME Class 150		A1																
ASME Class 300		А3																
ASME Class 600		A6																
Others		Z9																
apping type																		
Flanged DP connections (no valves)			F1															
Velded DP connections (no valves)			W1															
Threaded DP connections (no valves)			T1															
Direct mounting head			D1															
3-Valve integral (welded) manifold DM3V			D2															
-Valve integral (welded) manifold DM5V			D3															
-Valve direct-mounted (bolted) manifold 3VDM			D4															
5-Valve direct-mounted (bolted) manifold 5VDM			D5															
Ball valves			V1															
Needle valves			V2															
Gate valves			V2															
Globe valves																		
			V4															
Double block and bleed valves			V5															
apping size																		
Not applicable				TO														
¼ in. NPT male				Τ1														
⁄₄ in. NPT female				T2														
/4 in. BSP male				Т3														
/4 in. BSP female				T4														
∕₂ in. NPT male				T5														
∕₂ in. NPT female				Т6														
∕₂ in. BSP male				T7														
∕₂ in. BSP female				T8														
∕₂ in. flanged (specification as mounting flange)				F1														
4 in. flanged (specification as mounting flange)				F2														
∕₂ in. socket weld				S1														
Others				Z 9														
apping / Valve material					J													
As probe					Y0													
316 stainless steel					56													
Carbon steel					C3													
Alloy C276 (UNS N010276)					U7													
Alloy 400 (UNS N04400)					M4													
22 % Cr Duplex (UNS S31803)					D1													
					D2													
25 % Cr Super Duplex (UNS S32750) Others					Z9													
Pipe orientation and shape																		
						D												
Horizontal, circular pipe / duct						PNH												
/ertical, circular pipe / duct						PNV												
Horizontal, rectangular pipe / duct						RNH												
/ertical, rectangular pipe / duct						RNV	1		1		1			1	1			1

$... Ordering\ information\ |\ FPD350\ series\ H6\ retractable\ Torbar\ averaging\ pitot\ tube$

FPD350. XX	XXX	XXX	XXX	XXX	XXX	XXX	XX	XX	XX	XXXX
See page 41 See page 42										
Process isolation valve										
1¼ in. threaded ball valve – A216 carbon steel with 316 stainless steel trim BC7	.									
1½ in. flanged ball valve – A216 carbon steel with 316 stainless steel trim BC8	:									
2 in. flanged ball valve – A216 carbon steel with 316 stainless steel trim BC6	5									
11/4 in. threaded ball valve – stainless steel BS7	.									
1½ in. flanged ball valve – stainless steel BS8	:									
2 in. flanged ball valve – stainless steel BS6	i									
1½ in. flanged ball valve – Alloy 400	3									
2 in. flanged ball valve – Alloy 400 BM6	5									
1½ in. flanged ball valve – Alloy 276 BH8	3									
2 in. flanged ball valve – Alloy 276 BH6										
1½ in. flanged ball valve – aluminium-bronze BA8										
2 in. flanged ball valve – aluminium-bronze BA6										
1½ in. flanged gate valve – A216 carbon steel with 316 stainless steel trim GC8										
2 in. flanged gate valve – A216 carbon steel with 316 stainless steel trim GC6										
1½ in. flanged gate valve – stainless steel GS8										
2 in. flanged gate valve – stainless steel GS6 Customer supplied VF9										
Customer supplied VF9 Others VZ9										
Design options V29										
Gear retract	TP4									
Special neck length	TP6									
Packing gland material	110									
PTFE (replaces the standard graphite material)	,	PG1								
Tapping sets										
Two sets			TN2							
Others			TNZ							
Bolt type and material										
ASTM A193 B7 / ASTM A194 2H				BGC						
ASTM A193 B8M / ASTM A194 8MA				BGS						
Others				BZ9						
Gasket material					,					
Asbestos-free 1.6 mm										
Spiral wound – stainless steel windings with carbon steel outer; 4.5					GT1					
mm					GT2 GP3					
Soft Iron					GZ9					
Others					G23					
Fitting accessories										
Frequency collar						FC1				
Air eliminator package – pair of stainless steel air eliminators, no valves or fittings (supplied loose)						AV1				
Air eliminator package – pair of stainless steel air eliminators with valves and fittings (supplied loose)						AV2				
Air eliminator package – pair of DZR air eliminators for seawater applications (supplied loose)						AV3				
Air eliminator package – pair of DZR air eliminators with valves and fittings for seawater applications (s	supplie	ed lo	ose)			AV4				
Pair of condensate pots in carbon steel – ½ in. BSPTF tappings (supplied loose)						CP1				
Pair of condensate pots in carbon steel – ½ in. NPT tappings (supplied loose)						CP2				
Pair of condensate pots in carbon steel – ½ in. butt weld Schedule 160 tappings (supplied loose)						CP3				
Pair of condensate pots in stainless steel – ½ in. BSPTF tappings (supplied loose)						CP4				
						CP5				
Pair of condensate pots in stainless steel – ½ in. NPT tappings (supplied loose)						CP6				
Pair of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied loose)										
Pair of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied loose) Surface treatment							D1			
Pair of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied loose)							P1 Z9			

$... Ordering\ information\ |\ FPD350\ series\ H6\ retractable\ Torbar\ averaging\ pitot\ tube$

FPD350	D. XX XX XXX XX XX XX	XXX XX XX XX XX XXX	xxx xxx xxx xxx xxx xxx xxx xx xx xx	XXX XX
	See page 41	See page 42	See page 43	
Certification		·		
Material certificates acc. EN 10204 3.1			C2	
Material certificates acc. EN 10204 3.2			C3	
Material certificates acc. NACE, latest revision			CN	
Dye penetrant inspection			C9	
Radiography (available on flanged units only)			C8	
Positive material identification			CA	
100 % dimensional check			C6	
Others			CZ	
Testing				
mpact testing @ -46 °C				CH1
Impact testing @ -196 °C				CH2
Hardness survey				CH3
HIC testing				CH4
Magnetic particle inspection				CH5
Ultrasonic inspection				CH6
Heat treatment trace				CH7
Pressure test				CH8
Others				CHZ
Documentation language (default = English)				
German				M1
Italian				M2
Spanish				М3
French				M4
Chinese				M6
Others				MZ
Added requirements				
Material source limitations apply				

Ordering information | FPD350 series H7 retractable Torbar averaging pitot tube

	FPD350. XX	XX	XXX	XX	ХX	ХX	XX	XX	XX	XX	XX	XXX	XX	(XX)	(XXX	XXX	XXX	XXX	XX	XXX	(X)	(XX	XXX	XX	(XX
Product design																									
High pressure retractable Torbar –	H7																								
25 mm (1 in.) OD probe																									
Measurement design																									
Unsupported version		E1																							
Supported version		E2																							
Line nominal bore																									
DN 100 (4 in.)			100																						
DN 125 (5 in.)			125																						
DN 150 (6 in.)			150																						
DN 200 (8 in.) DN 250 (10 in.)			200 250																						
DN 300 (12 in.)			300																						
DN 350 (12 iii.)			350																						
DN 400 (16 in.)			400																						
DN 450 (18 in.)			450																						
DN 500 (20 in.)			500																						
DN 600 (24 in.)			600																						
DN 750 (30 in.)			750																						
DN 900 (36 in.)			900																						
DN 1000 (40 in.)			001																						
DN 1100 (44 in.)			101																						
DN 1200 (48 in.)			201																						
DN 1300 (52 in.) DN 1400 (56 in.)			301 401																						
DN 1500 (50 in.)			501																						
DN 1600 (64 in.)			601																						
DN 1700 (68 in.)			701																						
DN 1800 (72 in.)			801																						
DN 1900 (76 in.)			901																						
DN 2000 (80 in.)			002																						
DN 2100 (84 in.)			102																						
DN 2200 (88 in.)			202																						
DN 2300 (92 in.)			302																						
DN 2400 (96 in.) DN 2500 (98 in.)			402 502																						
DN 2600 (102 in.)			602																						
DN 2700 (106 in.)			702																						
DN 2800 (110 in.)			802																						
DN 2900 (114 in.)			902																						
DN 3000 (118 in.)			003																						
Others			999																						
Probe material				·																					
316 / 316L stainless steel				S6																					
304 / 304L stainless steel				S4																					
321 stainless steel				S2																					
304H stainless steel				H4																					
310 stainless steel				S 3																					
321H stainless steel				S1																					
904L stainless steel				S9																					
Alloy C276 (UNS N010276) Alloy 400 (UNS N04400)				U7 M4																					
Alloy 625 (UNS N06625)				N2																					
22 % Cr duplex (UNS S31803)				D1																					
25 % Cr super duplex (UNS \$32750)				D2																					
25 % Cr super duplex (UNS \$32760)				D3																					
6 % Mo SS (UNS S31254)				M1																					
Alloy 600 (UNS N06600)				U3																					
Alloy 800 (UNS N08800)				U4																					
Alloy 825 (UNS N08825)				U5																					
				Z9								1	1		1	1	1	1	1				1	1	1

$... Ordering\ information\ |\ FPD350\ series\ H7\ retractable\ Torbar\ averaging\ pitot\ tube$

FPD350. XX XX XXX X	хх		хx	ХX	XX	_	XXX	_		xxx	XXX	xxx	хх	XXX	ХX	ХX	xxx	хх	XXX
See page 45																			
Pipe fitting material																			
Carbon steel	C 3																		
316 / 316L stainless steel	S6																		
304 / 304L stainless steel	S4																		
321 stainless steel	S2																		
Low temperature carbon steel (A350 LF2 C1/A333 Gr 6)	C4																		
1-1/4 Cr-1/2 Mo low alloy F11 (UNS K11597)	F4																		
25 % Cr super duplex (UNS S32750)	D2																		
25 % Cr super duplex (UNS \$32760)	D3																		
316H stainless Steel	Н6																		
304H stainless steel	H4																		
310 stainless steel	S 3																		
321H stainless steel	S1																		
904L stainless steel	S 9																		
22 % Cr duplex (UNS S31803)	D1																		
6 % Mo SS (UNS S31254)	M1																		
Alloy 400 (UNS N04400)	M4																		
Alloy 600 (UNS N06600)	U3																		
Alloy 625 (UNS N06625)	N2																		
Alloy 800 (UNS N08800)	U4																		
Alloy 825 (UNS N08825)	U5																		
Alloy C276 (UNS N010276)	U7																		
Others	Z 9																		
Standoffs, etc		'																	
Threaded connection without end support		Т1																	
Threaded connection with threaded end support		T2																	
Flanged standoff without end support		F1																	
Flanged standoff with weld cup end support		F2																	
2 flanged standoffs and external flanged end support		F3																	
		F4																	
2 flanged standoffs and internal flanged end support		F5																	
External flanged end support only (no standoffs supplied)		F6																	
Internal flanged end support only (no standoffs supplied)	-1																		
Customer supplied (versions without flanged end support	S)	F7																	
Customer supplied (versions with flanged end supports)		F8																	
Process connection type																			
Threaded BSPT			Τ1																
Threaded NPT			T2																
Raised face DN 40 (1½ in.)			R4																
Raised face DN 50 (2 in.)			R5																
Raised face DN 80 (3 in.)			R6																
Flat face DN 40 (1½ in.)			F4																
Flat face DN 50 (2 in.)			F5																
Flat face DN 80 (3 in.)			F6																
RTJ DN 40 (1½ in.)			J2																
RTJ DN 50 (2 in.)			J3																
RTJ DN 80 (3 in.)			J4																
Others			Z 9																
Process connection rating				1															
_				Y0															
Not flanged ASME Class 150																			
ASME Class 300				A1 A3															
ASME Class 600				A6															
Others				Z9															
Tapping type																			
Flanged DP connections (no valves)					F1														
Welded DP connections (no valves)					W1														
Threaded DP connections (no valves)					T1														
Direct mounting head					D1														
3-Valve integral (welded) manifold DM3V					D2														
5-Valve integral (welded) manifold DM5V					D3														
3-Valve direct-mounted (bolted) manifold 3VDM					D4														
5-Valve direct-mounted (bolted) manifold 5VDM					D5														
Ball valves					V1														
Needle valves					V2														
Gate valves					V3														
Globe valves					V4														
Double block and bleed valves					V-7														
		_																	
Con	tinue	d or	n ne	ext p	oage.		1												

$... Ordering\ information\ |\ FPD350\ series\ H7\ retractable\ Torbar\ averaging\ pitot\ tube$

FPD350 Series H7 retractable forbar						XXX	XXX	XXX	XX	xxx	хх	ХX	XXX	XX	ХX
See page 45 See page 46	_														
Tapping size															
Not applicable	то														
¼ in. NPT male	T1														
¹ / ₄ in. NPT female	T2														
1/4 in. BSP male	T3														
¼ in. BSP female ½ in. NPT male	T4 T5														
½ in. NPT male	T6														
½ in. BSP male	T7														
½ in. BSP female	Т8														
½ in. flanged (specification as mounting flange)	F1														
3/4 in. flanged (specification as mounting flange)	F2														
½ in. socket weld	S1														
Others	Z9														
Tapping / Valve material															
As probe	Y														
316 stainless steel	Se														
Carbon steel	C3														
Alloy C276 (UNS N010276)	U7 M4														
Alloy 400 (UNS N04400) 22 % Cr duplex (UNS S31803)	Di														
25 % Cr super duplex (UNS S32750)	D2														
Others	ZS														
Pipe orientation and shape															
Horizontal, circular pipe / duct		PNF	4												
Vertical, circular pipe / duct		PN\													
Horizontal, rectangular pipe / duct		RNF													
Vertical, rectangular pipe / duct		RN\	/												
Process isolation valve															
1¼ in. threaded ball valve – A216 carbon steel with 316 stainless steel trim			вс7												
11/4 in. threaded ball valve – stainless steel			BS7												
1⅓ in. flanged ball valve – A216 carbon steel with 316 stainless steel trim			BC8												
1½ in. flanged ball valve – Alloy 276			BH8												
1½ in. flanged ball valve – Alloy 400			BM8												
1½ in. flanged ball valve – aluminium-bronze			BA8												
1½ in. flanged ball valve – stainless steel 1½ in. flanged gate valve – A216 carbon steel with 316 stainless steel trim			BS8 GC8												
1½ in. flanged gate valve – A210 carbon steel with 310 stallless steel till 1½ in. flanged gate valve – stainless steel			GS8												
2 in. flanged ball valve – A216 carbon steel with 316 stainless steel trim			BC6												
2 in. flanged ball valve – Alloy 276			вн6												
2 in. flanged ball valve – Alloy 400			вм6	5											
2 in. flanged ball valve – aluminium-bronze			BA6												
2 in. flanged ball valve – stainless steel			BS6												
2 in. flanged gate valve – A216 carbon steel with 316 stainless steel trim			GC6												
2 in. flanged gate valve – stainless steel			GS6												
3 in. flanged ball valve – A216 carbon steel with 316 stainless steel trim 3 in. flanged ball valve – Alloy 276			BC9 BH9												
3 in. flanged ball valve – Alloy 276			BM9												
3 in. flanged ball valve – aluminium-bronze			BA9												
3 in. flanged ball valve – stainless steel			BS9												
3 in. flanged gate valve – A216 carbon steel with 316 stainless steel trim			GC9												
3 in. flanged gate valve – stainless steel			GS9												
Customer supplied			VF9												
Others			VZ9												
Design options															
Partial insertion probe				TP2											
Gear retract				TP4											
Bidirectional Special peck length				TP5											
Special neck length Packing gland material				170											
Packing gland material PTFE (replaces the standard graphite material)					PG1										
					L.Q1										
Tapping sets						TNIC									
Two sets Others						TN2 TNZ									
Bolt type and material							_								
ASTM A193 B7 / ASTM A194 2H							BGC								
ASTM A193 B8M / ASTM A194 8MA							BGS								
Others							BZ9								
			Conti	inuec	l on n	ext p	age								
			Conti	inuec	on n	ext p	age								

$... Ordering\ information\ |\ FPD350\ series\ H7\ retractable\ Torbar\ averaging\ pitot\ tube$

See page 45 See page 46 See page 47					XX
Gasket material					
Asbestos-free 1.6 mm	GT1				
Spiral wound – stainless steel windings with carbon steel outer; 4.5 mm	GT2				
oft Iron	GP3				
Others	GZ9				
emperature element – operating pressure limited to maximum of 70 bar (1015 psi)					
ntegral PT100 sensor, neck mounted – aluminium IP65 head without transmitter		T1			
ntegral PT100 sensor, neck mounted – aluminium IP65 head with transmitter		T2			
Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head without transmitter		T3			
Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter ntegral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter		T4 T5			
Ex ia integral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter		T6			
itting accessories					
Duct mounting plate (in carbon steel or stainless steel to match pipe fitting material)					
lotted ports		DF1			
Air eliminator package – pair of stainless steel air eliminators, no valves or fittings (supplied loose)		SH1			
Air eliminator package – pair of stainless steel air eliminators with valves and fittings (supplied loose)		AV1 AV2			
hir eliminator package – pair of DZR air eliminators for seawater applications (supplied loose)		AV3			
Air eliminator package – pair of DZR air eliminators with valves and fittings for seawater applications (supplied		AV4			
oose) Pair of condensate pots in carbon steel – ½ in. BSPTF tappings (supplied loose)		CP1			
Pair of condensate pots in carbon steel – ½ in. NPT tappings (supplied loose)		CP2			
Pair of condensate pots in carbon steel – ½ in. butt weld Schedule 160 tappings (supplied loose)		CP3			
Pair of condensate pots in stainless steel – ½ in. BSPTF tappings (supplied loose)		CP4 CP5			
Pair of condensate pots in stainless steel – ½ in. NPT tappings (supplied loose)		CP6			
Pair of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied loose)					
Surface treatment					
Dxygen cleaning Others			P1 Z9		
Certification					
Material certificates acc. EN 10204 3.1				2	
Material certificates acc. EN 10204 3.2				:3	
Material certificates acc. NACE, latest revision				:N :9	
Dye penetrant inspection Radiography (available on flanged units only)				28	
Positive material identification				A	
.00 % dimensional check			C	6	
Others			C	Z	
esting					
mpact testing @ -46 °C				CH1	
mpact testing @ -196 °C				CH2	
Hardness survey				CH3	
HC testing				CH4 CH5	
Magnetic particle inspection Ultrasonic inspection				CH6	
Heat treatment trace				CH7	
Pressure test				CH8	
Others				CHZ	
ocumentation language (default = English)					
Serman					М1
talian					M2
Spanish					МЗ
French Chinese					M4 M6
Others					MZ
Added requirements					
man and an arrange					

Ordering information | FPD350 series H8 retractable Torbar averaging pitot tube

Ordering information FPD3	FPD350. XX							_					XXX	XXX	XXX	XXX	XX	XX	(X)	X XX	XXX	(X)	(XX)
Product design					 		 																
High pressure retractable Torbar –	H8																						
60 mm (2 in.) OD probe																							
Measurement design		_																					
Unsupported version		E1																					
Supported version		E2																					
Line nominal bore																							
DN 250 (10 in.)			250																				
DN 300 (12 in.)			300																				
DN 350 (14 in.)			350																				
DN 400 (16 in.)			400																				
DN 450 (18 in.)			450																				
DN 500 (20 in.)			500																				
DN 600 (24 in.)			600																				
DN 750 (30 in.)			750 900																				
DN 900 (36 in.) DN 1000 (40 in.)			001																				
DN 1100 (44 in.)			101																				
DN 1200 (48 in.)			201																				
DN 1300 (52 in.)			301																				
DN 1400 (56 in.)			401																				
DN 1500 (60 in.)			501																				
DN 1600 (64 in.)			601																				
DN 1700 (68 in.)			701																				
DN 1800 (72 in.)			801																				
DN 1900 (76 in.)			901																				
DN 2000 (80 in.)			002																				
DN 2200 (84 in.)			102 202																				
DN 2200 (88 in.) DN 2300 (92 in.)			302																				
DN 2400 (96 in.)			402																				
DN 2500 (98 in.)			502																				
DN 2600 (102 in.)			602																				
DN 2700 (106 in.)			702																				
DN 2800 (110 in.)			802																				
DN 2900 (114 in.)			902																				
DN 3000 (118 in.)			003																				
Others			999																				
Probe material																							
316 / 316L stainless steel				S6																			
304 / 304L stainless steel				S4																			
321 stainless steel				S2																			
304H stainless steel				H4																			
310 stainless steel				S3																			
321H stainless steel 904L stainless steel				S1 S9																			
Alloy C276 (UNS N010276)				U7																			
Alloy 400 (UNS N04400)				M4																			
Alloy 625 (UNS N06625)				N2																			
22 % Cr duplex (UNS S31803)				D1																			
25 % Cr super duplex (UNS S32750)				D2																			
25 % Cr super duplex (UNS \$32760)				D3																			
6 % Mo SS (UNS S31254)				М1																			
Alloy 600 (UNS N06600)				U3																			
Alloy 800 (UNS N08800)				U4																			
Alloy 825 (UNS N08825)				U5																			
Others				Z9																			
	Continued on	nex	t pa	ge																			

...Ordering information | FPD350 series H8 retractable Torbar averaging pitot tube

FPD350. XX XX XXX	xx x>	XX	XX	XX	XX	XX	XX	XXX	XX	XXX	XX	XX	XXX	XX	(XX						
See page 4	9																				
Pipe fitting material																					
Carbon steel	C3	3																			
316 / 316L stainless steel	S6	5																			
304 / 304L stainless steel	S4	L																			
321 stainless steel	S2	:																			
Low temperature carbon steel (A350 LF2 C1/A333 Gr 6)	C4																				
1-1/4 Cr-1/2 Mo low alloy F11 (UNS K11597)	F4																				
25 % Cr super duplex (UNS S32750)	D2																				
25 % Cr super duplex (UNS S32760)	D3																				
316H stainless Steel	He																				
304H stainless steel	H4																				
310 stainless steel 321H stainless steel	S3 S1																				
904L stainless steel	S9																				
22 % Cr duplex (UNS S31803)	D1																				
6 % Mo SS (UNS S31254)	M1																				
Alloy 400 (UNS N04400)	M																				
Alloy 600 (UNS N06600)	U3																				
Alloy 625 (UNS N06625)	N2																				
Alloy 800 (UNS N08800)	U4	ı																			
Alloy 825 (UNS N08825)	U5	5																			
Alloy C276 (UNS N010276)	U7	7																			
Others	Z9)																			
Standoffs, etc		_																			
Flanged standoff without end support		F1																			
Flanged standoff with weld cup end support		F2																			
2 flanged standoffs and external flanged end support		F3																			
2 flanged standoffs and internal flanged end support		F4																			
External flanged end support only (no standoffs supplied		F5																			
Internal flanged end support only (no standoffs supplied)		F6																			
Customer supplied (versions without flanged end suppor	ts)	F7 F8																			
Customer supplied (versions with flanged end supports)		го																			
Process connection type			Б.С																		
Raised face DN 80 (3 in.)			R6 J4																		
RTJ DN 80 (3 in.)			J4 F6																		
Flat face DN 80 (3 in.) ASME Class 150			A1																		
ASME Class 300			A3																		
Others			Z9																		
Process connection rating				J																	
ASME Class 150				Α1																	
ASME Class 300				А3																	
Others				Z 9																	
Tapping type					,																
Flanged DP connections (no valves)					F1																
Welded DP connections (no valves)					W1																
Threaded DP connections (no valves)					T1																
Direct mounting head					D1																
3-Valve integral (welded) manifold DM3V					D2																
5-Valve integral (welded) manifold DM5V					D3																
3-Valve direct-mounted (bolted) manifold 3VDM					D4																
5-Valve direct-mounted (bolted) manifold 5VDM					D5																
Ball valves					V1																
Needle valves					V2																
Gate valves					V3 V4																
					1//							1	1		1	1				1	1
Globe valves Double block and bleed valves					V-																

$... Ordering\ information\ |\ FPD350\ series\ H8\ retractable\ Torbar\ averaging\ pitot\ tube$

FPD350. XX XXX XXX XX XX XX XX XX XX XX XX XX	_			XXX	XXX								 		
See page 49 See page 50															
Tapping size															
Not applicable	TO														
¼ in. NPT male	T1														
¼ in. NPT female	T2														
¼ in. BSP male	Т3														
1/4 in. BSP female	T4														
½ in. NPT male	T5														
½ in. NPT female	T6														
½ in. BSP male	T7														
½ in. BSP female	T8														
½ in. flanged (specification as mounting flange)	F1														
3/4 in. flanged (specification as mounting flange)	F2														
½ in. socket weld	S1														
Others	Z9														
Tapping / Valve material															
As probe	,	YΟ													
316 stainless steel		S 6													
Carbon steel		C3													
Alloy C276 (UNS N010276)		U7													
Alloy 400 (UNS N014400)		о <i>т</i> М4													
22 % Cr duplex (UNS S31803)		Μ4 D1													
25 % Cr super duplex (UNS S32750)		D2													
Others		Z9													
Pipe orientation and shape															
Horizontal, circular pipe / duct			PNH												
Vertical, circular pipe / duct			PNV												
Horizontal, rectangular pipe / duct			RNH												
Vertical, rectangular pipe / duct			RNV												
Process isolation valve															
3 in. flanged ball valve – A216 carbon steel with 316 stainless steel trim				BC9											
3 in. flanged ball valve – stainless steel				BS9											
3 in. flanged gate valve – A216 carbon steel with 316 stainless steel trim				GC9											
3 in. flanged gate valve – stainless steel				GS9											
3 in. flanged ball valve – Alloy 400				BM9											
3 in. flanged ball valve – aluminium-bronze				BA9											
3 in. flanged ball valve – Alloy 276				BH9											
Customer supplied				VF9											
Others				VZ9											
Design options															
					TD 0										
Partial insertion probe					TP2										
Gear retract					TP4										
Bidirectional					TP5										
Special neck length					TP6										
Packing gland material						_									
PTFE (replaces the standard graphite material)						PG1									
Tapping sets							1								
Two sets							TN2								
Others							TNZ								
Bolt type and material								1							
								BCC							
ASTM A193 B7 / ASTM A194 2H								BGC							
ASTM A193 B8M / ASTM A194 8MA								BGS							
Others								BZ9							
Gasket material															
Asbestos-free 1.6 mm									GT1						
Spiral wound – stainless steel windings with carbon steel outer; 4.5 mm									GT2						
Soft Iron									GP3						
Others									GZ9						
									_	1		1		1	

$... Ordering\ information\ |\ FPD350\ series\ H8\ retractable\ Torbar\ averaging\ pitot\ tube$

FPD350. XX	싀^^	XXX	λX	AX.	۸۸X	XX
See page 49 See page 50 See page 51						
emperature element – operating pressure limited to maximum of 70 bar (1015 psi)						
ntegral PT100 sensor, neck mounted – aluminium IP65 head without transmitter	T1					
ntegral PT100 sensor, neck mounted – aluminium IP65 head with transmitter	T2					
Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head without transmitter	T3					
Ex ia integral PT100 sensor, neck mounted – aluminium IP65 head with transmitter	T4 T5					
itegral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter Ex ia integral type K thermocouple sensor, neck mounted – aluminium IP65 head with transmitter	T6					
itting accessories						
ir eliminator package – pair of stainless steel air eliminators, no valves or fittings (supplied loose)		AV1				
ir eliminator package – pair of stainless steel air eliminators with valves and fittings (supplied loose)		AV2				
ir eliminator package – pair of DZR air eliminators for seawater applications (supplied loose) ir eliminator package – pair of DZR air eliminators with valves and fittings for seawater applications (supplied loose)		AV3 AV4				
air of condensate pots in carbon steel – ½ in. BSPTF tappings (supplied loose)		CP1				
air of condensate pots in carbon steel – ½ in. NPT tappings (supplied loose)		CP2				
air of condensate pots in earbon steel – ½ in. butt weld Schedule 160 tappings (supplied loose)		CP3				
air of condensate pots in stainless steel – ½ in. BSPTF tappings (supplied loose)		CP4				
air of condensate pots in stainless steel – ½ in. NPT tappings (supplied loose)		CP5				
air of condensate pots in stainless steel – ½ in. butt weld Schedule 160 tappings (supplied loose)		CP6				
urface treatment			J			
xygen cleaning			P1			
thers			Z 9			
ertification						
laterial certificates acc. EN 10204 3.1				C2		
aterial certificates acc. EN 10204 3.2				C3		
aterial certificates acc. NACE, latest revision				CN		
ye penetrant inspection				C9		
adiography				C8		
ositive material identification				CA		
00 % dimensional check				C6		
thers				CZ		
esting						
npact testing @ -46 °C					CH1	
npact testing @ −196 °C					CH2	
ardness survey					CH3	
IC testing lagnetic particle inspection					CH4 CH5	
Itrasonic inspection					CH6	
eat treatment trace					CH7	
ressure test					CH8	
thers					CHZ	
ocumentation language (default = English)						
erman						М1
alian						М2
panish						М3
rench						M4
hinese						М6
thers						MZ
dded requirements						
laterial source limitations apply						١

Notes

Notes



ABB Limited

Measurement & Analytics

Salterbeck Trading Estate, Workington Cumbria, CA14 5DS UK

Tel: +44 (0)1946 830 611 Fax: +44 (0)1946 832 661

Mail: instrumentation@gb.abb.com

ABB Inc.

Measurement & Analytics

125 E. County Line Road Warminster, PA 18974 USA

Tel: +1 215 674 6000 Fax: +1 215 674 7183

abb.com/measurement

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