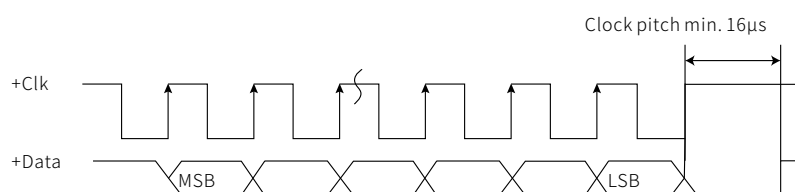




T3F - SSI

T-Series III Data Sheet



- + Updated new generation: stronger performance
- + Standard SSI signal can directly replace the encoder.
- + Stroke length up to 20 m



THE NEW GENERATION



High precision



Double anti-interference



High performance chip



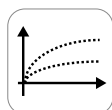
Reverse polarity protection



Shock/vibration resistant

TECHNICAL PARAMETER

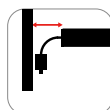
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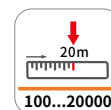
Linear/Curve measurement



Compact for transport and storage



Confined space installation

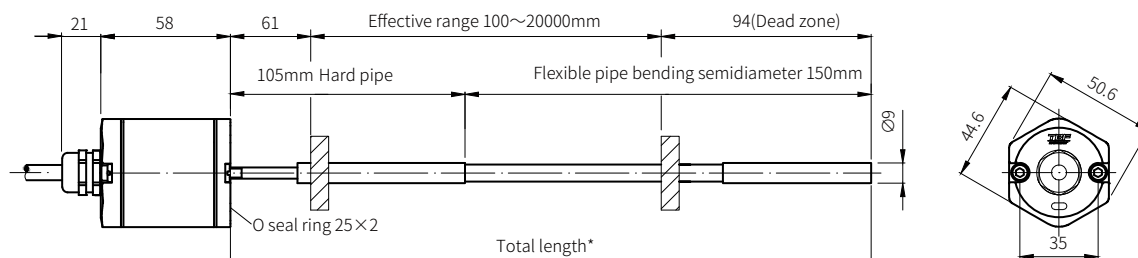


Wider stroke length range

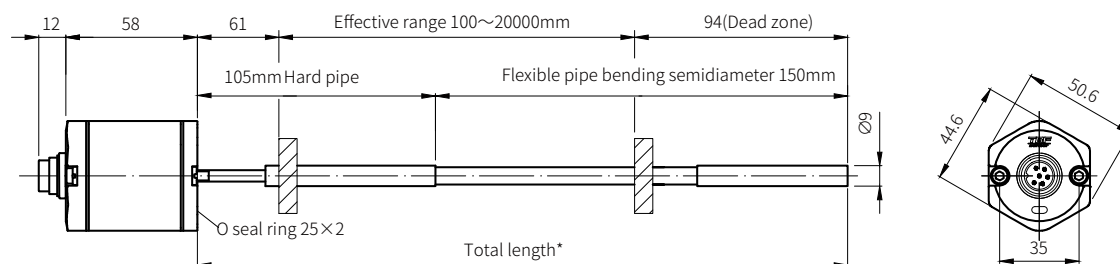
Input	Measured data	Position or Velocity							
	Position measurement range	100mm...20000mm							
	Velocity measurement range	0.01...10m/s							
Output	Interface	SSI synchronous serial interface							
	Data format	Binary or gray code, parity check and alarm bit optional							
	Data length	8...32 bit							
	Data speed	70kBd...1MBd depending on cable length:							
		Cable length(m)	< 3	< 50	< 100	< 200	≤ 400		
		Baud rate(kBd)	1000	< 400	< 300	< 200	< 100		
	Update frequency	Stroke length (mm)	< 300	< 750	< 1000	< 2000	< 5600	< 10000	< 20000
		Update frequency (kHz)	3.7	3.0	2.3	1.2	0.5	0.24	0.12
Resolution	Position resolution	0.1/0.5/1/2/5/10/20/50/100μm							
	Velocity resolution	0.001mm/s							
	None-Linearity	< ±0.02%F.S. (min. ±100μm)							
	Repeatability	< ±0.001%F.S. (min. ±2.5μm)							
	Temperature coefficient	< 15ppm/°C							
Mounting	Mounting position	Any							
	Pressure resistance outer tube	Thread metric M18×1.5, 3/4"-16UNF-3A etc.							
Design/ Material	Electronics housing	Aluminum alloy/Zinc alloy							
	Magnet	Stainless soft pipe (Teflon skin), min. bending semidiameter 150mm, shipping semidiameter 500mm							
Electrical connection	Wiring connection	Straight out cable, M16 connector (7 pin)							
	Operating voltage	24VDC(-15/+20%)							
	Polarity protection	Up to -36VDC							
	Overvoltage protection	Up to +36VDC							
	Power consumption	< 90mA (varies with range size)							
	Dielectric strength	500 VDC (DC ground to machine ground)							
Operating conditions	Loop velocity	Any							
	Operating temperature	-40...85°C (105°C customizable)							
	Humidity	90 % relative humidity, no condensation							
	Ingress protection	IP67 installed into pressure pipe (top IP68)							
	Shock	100 g/11 ms, IEC standard 60068-2-27							
	Vibration	5 g/10...2000 Hz, IEC standard 60068-2-6 (resonant frequencies exclusive)							
	EMC	Flexible sensor installed into pressure pipe Electromagnetic emission according to EN 61000-6-4 Electromagnetic immunity according to EN 61000-6-2							
ITEM	CATEGORY	PARAMETER							

T3F-____-RP____-____ Straight out cable

T3F-____-RT____-____



T3F-____-D716-____ Aviation plug



*Total length < 7600mm, error 0/+8mm; > 7600mm, error +15mm /-5mm;

Total length error has no impact on effective range.

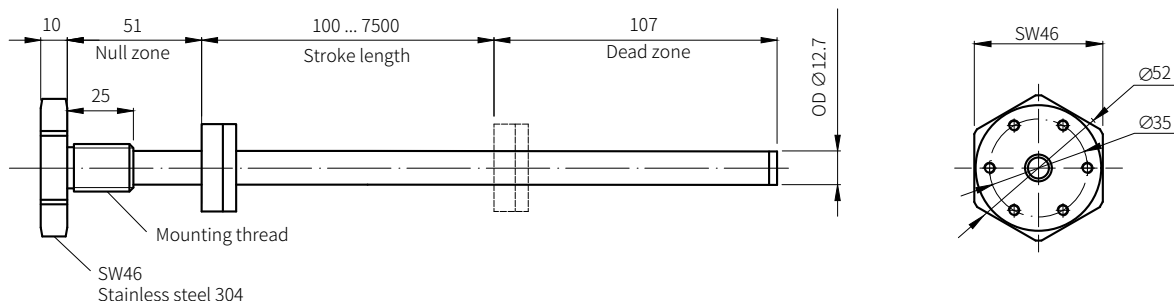
DRAWING

TECHNOLOGY PERCEIVES THE FUTURE

Pressure pipe

Continuous pressure tolerance of the pressure pipe is 35MPa (70MPa peak).

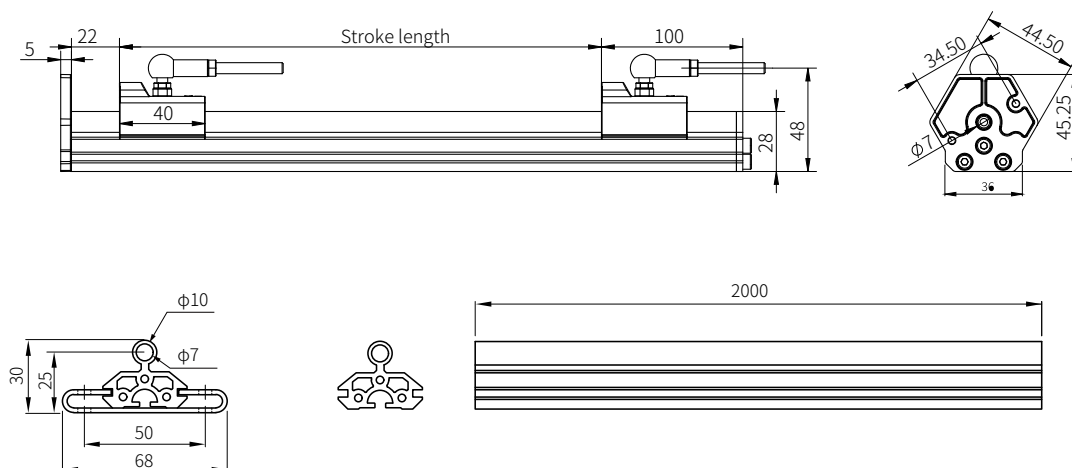
T3F flexible sensor is installed into pressure pipe, straight out cable IP68, aviation plug IP67.



ORDER CODE

HD	M	
		Stroke length
		0100...7500mm (5mm increments)
		Thread
	M	Metric M18x1.5
	V	Metric M20x1.5
	S	3/4"-16UNF-3A
	W	Metric M24x1
		If not selected, thread M18x1.5 by default.

Aluminum profile



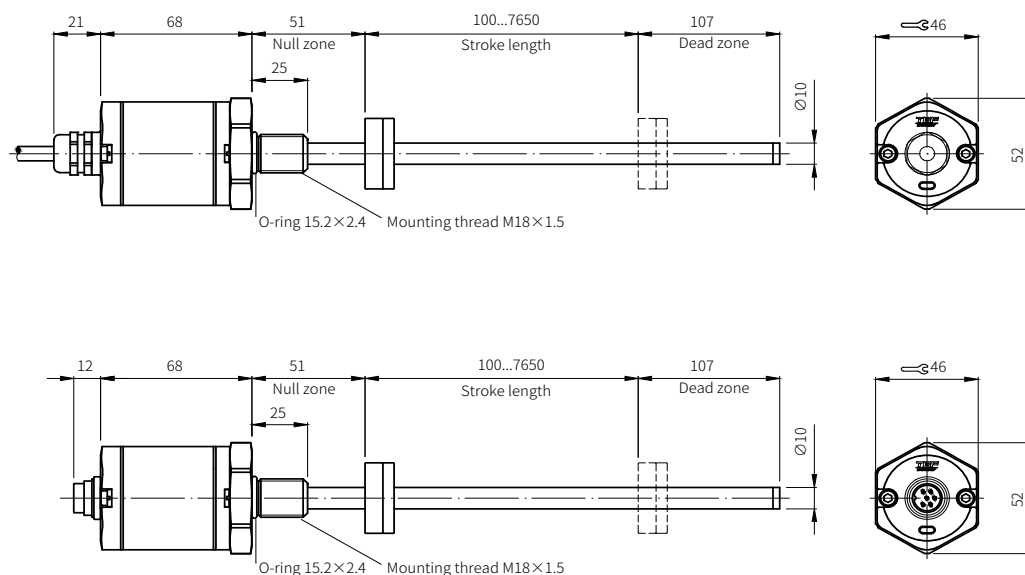
ORDER CODE

H3P	M	
		Stroke length
		0025...5600mm (5mm increments)
		Magnet
	S	Magnet slider joint at top
	V	Magnet slider joint at front
	F	Suspension magnet
	U	U- magnet

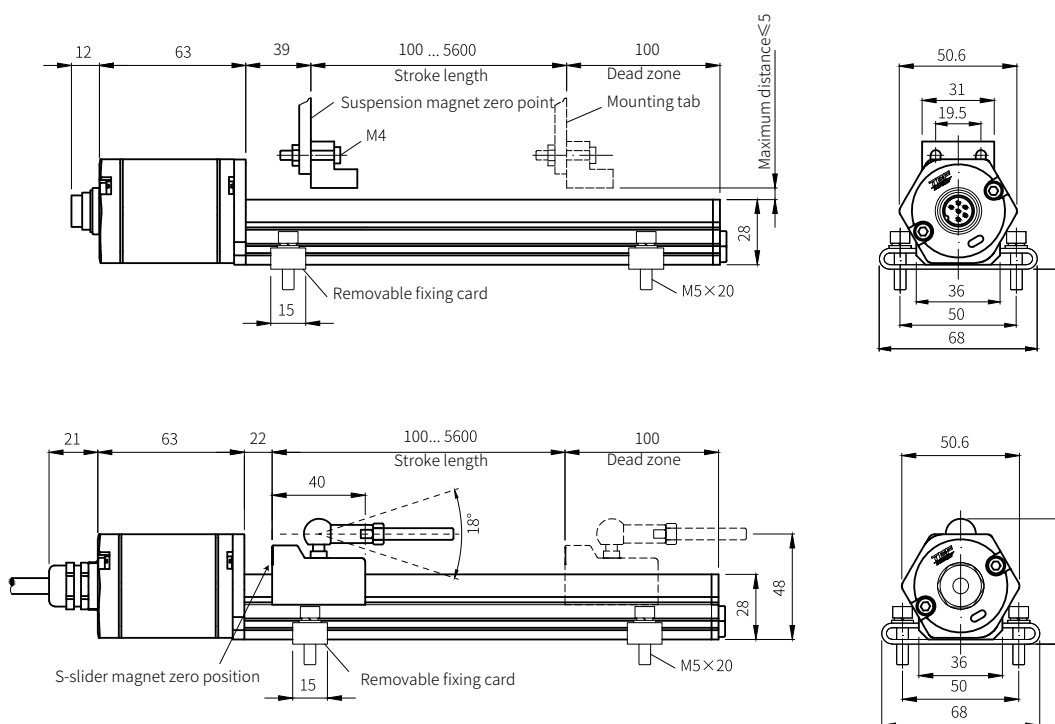
Combination example drawings

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Flexible sensor installed into pressure pipe



Flexible sensor installed into aluminum profile



MOUNTING DRAWING

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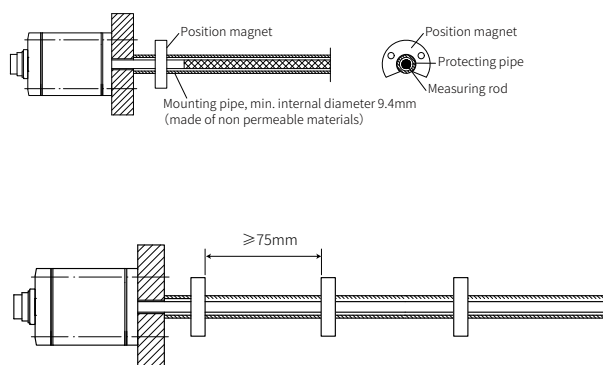
T3FH type of installation diagram

Electronics housing for T3F flexible sensor employs two M4x60 non permeable screws for installation.

When arc measurement is adopted, the flexible pipe can be bended into required shape with min. bending semidiameter 150mm.

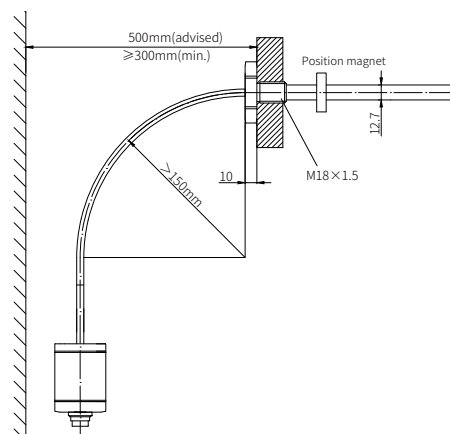
With long range sensor, pipes made of non permeable materials can be used as support. In addition, pressure pipe with flange can also be ordered to support and protect the sensor.

Linear measurement



Spacing between multiple magnets shall be $\geq 75\text{ mm}$

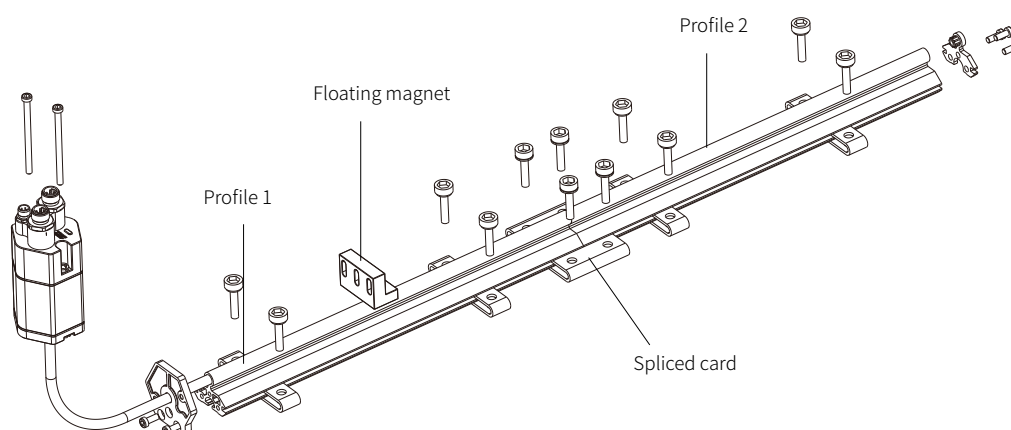
Pressure pipe



T3FP type of installation diagram

T series external guide rail sensors are fixed with removable fixing cards. The distance between the cards should be with in 500mm.

When the sensors are used under extremely severe shock and vibration conditions, it is recommended to configure a removable fixing card every 250mm.



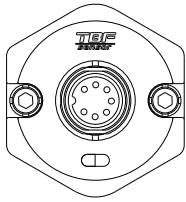
For spliced profiles:



Ensure the joints are flush.

Only compatible with floating magnets or U-shaped magnets.

7 pin M16 connector



D716



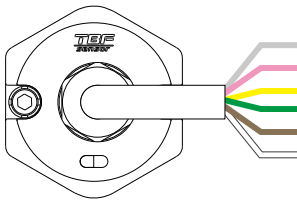
View on sensor

PIN

Function

1	Data-
2	Data+
3	Clock+
4	Clock-
5	+24 VDC(-15%/+20%)
6	0 VDC(GND)
7	NC

Straight out cable

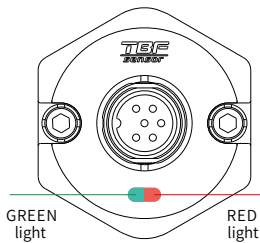


Color

Function

Gray	Data-
Pink	Data+
Yellow	Clock+
Green	Clock-
Brown	+24 VDC(-15%/+20%)
White	0 VDC(GND)

Enhanced monitoring and diagnostic functions



Green light

Red light

Function

ON	OFF	Normal work
ON	ON	Magnet is out of effective range, or magnet cannot be measured, nor magnet number is correct.
FLASH	ON	Enter programming status

ORDER CODE

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Basic structure

T3F - - - - M- - - S- - - -					
Pipe mounting	Stroke length	Connection type	Output	Magnet	
C Basic structure	00100...20000mm (< 1000: 50mm increments) > 1000: 250mm increments) Max. range 7500mm (pressure pipe installed)	RP/T__ Straight out __m high performance /high temperature cable (Fill in zero if less than 2 places) D716 7 pin M16 connector	(Output Code)	1	one magnet
				2	two magnets

Flexible sensor installed into pressure pipe

T3F - - - - M- - - S- - - -					
Pipe mounting	Stroke length	Connection type	Output	Magnet	
M Thread M18×1.5 with pressure pipe	00100...7500mm	Same as above	(Output Code)	1	one magnet
S 3/4"-16UNF-3A with pressure pipe				2	two magnets

Flexible sensor installed into aluminum profile

T3FP - - - - M- - - S- - - -					
Magnet	Stroke length	Connection type	Output	Magnet	
S Magnet slider joint at top	00100...5600mm (5mm increments)	Same as above	(Output Code)	1	one magnet
V Magnet slider joint at front				2	two magnets
F Suspension magnet					
U U- magnet					

SSI Output Code		S [1][2][3][4][5][6]			
[1] Function	[2] Options	[3] Mode	[4] Data length	[5] Format	[6] Resolution
1 Position	0 Standard	1 Forward, asynchronous mode	1 25 bit	B Binary	1 5μm
2 Relative position (2 magnets and 1 output)	1 Internal linearization	2 Reverse, asynchronous mode	2 24 bit	G Gray	2 10μm
3 Velocity		3 Forward, synchronous mode	3 26 bit		3 50μm
4 Position and temperature inside the sensor electronics housing		4 Reverse, synchronous mode	A 24 bit + alarm bit + parity check bit		4 100μm
					5 20μm
					6 2μm
					7 0.1μm
					8 1μm
					9 0.5μm

K=Anti-vibration program(Note: for special request, fill in last digit)

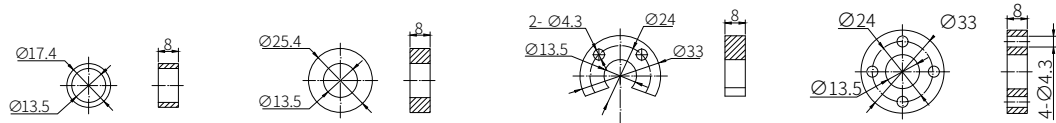
Model selection | Model: T3F-M-00600M-D716-S1011B1-1

Explanation: T series III generation, T3F flexible sensor, installed inside pressure pipe, mounting thread metric M18x1.5, stroke length 600mm, 7 pin M16 aviation plug, position measurement, standard, forward, asynchronous mode, 25 bit, Binary, resolution 5μm, single magnet.

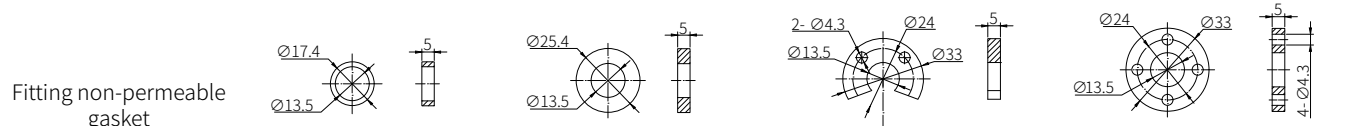
■ Please contact us for more customized products.

PARTS SELECTION

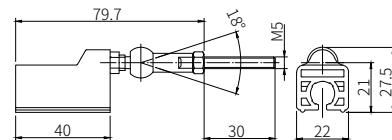
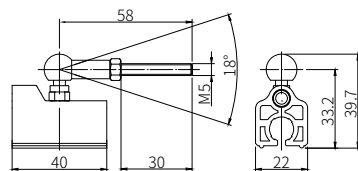
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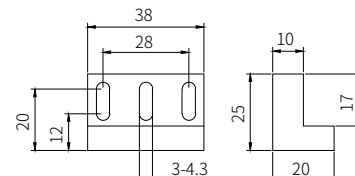
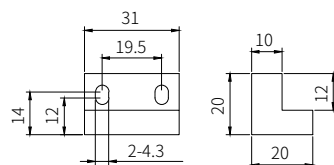
Name	Ring magnet	Ring magnet	U-magnet	Ring magnet
Operating temperature	-40...125°C			
Order code	12-1032	12-1019	12-1017	12-1001



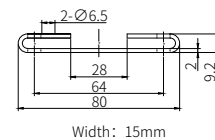
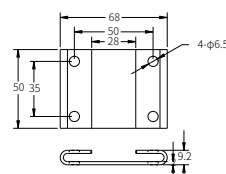
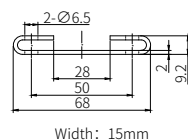
Name	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket	Non-permeable gasket
Operating temperature	-40...125°C			
Order code	12-1037	12-1021	12-1018	12-1008



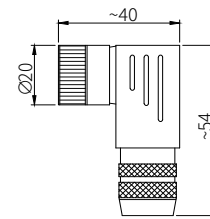
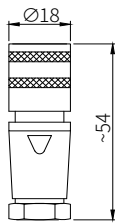
Name	Magnet slider S, joint at top	Magnet slider V, joint at front
Operating temperature	-40...105°C	
Order code	12-1114	12-1115



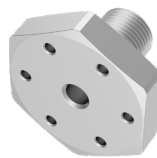
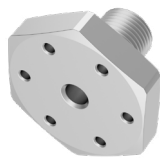
Name	Suspension magnet 31x20	Suspension magnet 38x25
Operating temperature	-40...105°C	
Order code	12-1010	12-1009



Name	Removable fixing card	Splicing Fixing Clip	Removable fixing card
Order code	11-1003	11-1058	11-1004



Name	7 pin M16 female connector	7 pin M16 female connector (90 degree angle)
End view drawing		
Material	Galvanized nickel	
Fitting diameter	6...8mm	
Connection	Welding	
Order code	18-4001	18-4002



Name	Threaded flange M18×1.5-6g	Threaded flange 3/4"-16UNF-3A	Pressure rod with threaded flange M18×1.5-6g	Pressure rod with threaded flange 3/4"-16UNF-3A
Material	Stainless steel 304/316L			
Order code	11-1075	11-1076	HD-XXXXM-M	HD-XXXXM-S



Name	Profile with flange length ≤ 5600mm	Profile length: 2000mm
Material	Aluminum alloy, Zinc alloy	Aluminum alloy
Order code	H3P-XXXXM-X	11-1077

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