

**ISOMAG** 

*The friendly magmeter*

## **DATA SHEET**



**MS 2500**

**CE**

**ISOIL**   
INDUSTRIA



## INDICE

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## CARATTERISTICHE TECNICHE

<b>CARATTERISTICHE GENERALI</b>	
<b>Diametri nominali</b>	<input type="checkbox"/> N 25 ÷ 2000
<b>Conducibilità minima del fluido</b>	<input type="checkbox"/> 5 µS/cm
<b>Umidità</b>	<input type="checkbox"/> 0÷100% (IP 67)
<b>Precisione</b>	<input type="checkbox"/> Consultare data sheet convertitore
<b>Certificazione CE</b>	<input type="checkbox"/> Sì
<b>Certificazione PED</b>	<input type="checkbox"/> Sì

<b>CONFIGURAZIONI STANDARD</b>	
<b>Materiale Corpo</b>	<input type="checkbox"/> Acciaio al carbonio verniciato
<b>Pressione nominale</b>	<input type="checkbox"/> 1600 kPa ( 4000 kPa fino a DN 50 )
<b>Attacchi al processo</b>	<input type="checkbox"/> Flange: UNI, ANSI, DIN, JIS
<b>Versione – classe di protezione</b>	<input type="checkbox"/> Compatta IP67 (IP68 a richiesta)
<b>Materiale flange</b>	<input type="checkbox"/> Acciaio al carbonio
<b>Materiale rivestimento</b>	<input type="checkbox"/> Polipropilene (max. PN 16) <input type="checkbox"/> Ebanite <input type="checkbox"/> PTFE (max PN 40) <input type="checkbox"/> Rilsan (max. PN 16)
<b>Materiale guarnizioni (SOLO per rivestimento in polipropilene )</b>	<input type="checkbox"/> FPM
<b>Temperatura liquido</b>	<input type="checkbox"/> 0°C ÷ 70°C con rivestimento in Rilsan <input type="checkbox"/> 0°C ÷ 60°C con rivestimento in PP <input type="checkbox"/> -5°C ÷ 80°C con rivestimento in ebanite <input type="checkbox"/> -20°C ÷ 100°C rivestimento in PTFE versione compatta
<b>Resistenza al vuoto</b>	<input type="checkbox"/> 20 Kpa (assoluti) a 100 °C (60/80°C per PP/Ebanite)
<b>Materiale elettrodi</b>	<input type="checkbox"/> Acciaio inox AISI 316 <input type="checkbox"/> Hastelloy <input type="checkbox"/> Platino-Rhodio <input type="checkbox"/> Titanio <input type="checkbox"/> Tantalio

<b>CONFIGURAZIONI OPZIONALI (PER MAGGIORI DETTAGLI CONSULTARE 'COME ORDINARE' ULTIMA PAGINA)</b>	
<b>Materiale Corpo</b>	<input type="checkbox"/> Acciaio inox AISI 304 o 316
<b>Materiale guarnizioni (SOLO per rivestimento in polipropilene )</b>	<input type="checkbox"/> EPDM
<b>Pressione nominale</b>	<input type="checkbox"/> Pressioni di esercizio maggiori sono disponibili su richiesta
<b>Attacchi al processo</b>	<input type="checkbox"/> Altri a richiesta
<b>Materiale flange</b>	<input type="checkbox"/> Acciaio inox AISI 304- AISI316
<b>Temperatura liquido</b>	<input type="checkbox"/> -20°C ÷ 180°C con rivestimento in PTFE in versione separata* * Contattare il costruttore per temperature > 130 °C * I sensori con temperature di esercizio maggiori di 110°C, sono classificati in accordo alla direttiva PED (dettagli specifici in tabella alla pagina seguente)
<b>Materiale rivestimento</b>	<input type="checkbox"/> Su richiesta
<b>Materiale elettrodi</b>	<input type="checkbox"/> Su richiesta
<b>Elettrodo di terra</b>	<input type="checkbox"/> Su richiesta
<b>Versione – classe di protezione</b>	<input type="checkbox"/> Versione separata (max 20m) – IP 68 <input type="checkbox"/> Versione separata (max 500 m), con preamplificatore – IP 67 <input type="checkbox"/> Versione separata (max 500 m), con preamplificatore – IP 68
<b>Certificazioni</b>	<input type="checkbox"/> MI-001 (consultare tabella sotto) <input type="checkbox"/> MI-004 (consultare tabella sotto)

## NOTE PER SENSORI SOTTOPOSTI ALLA DIRETTIVA PED

Di seguito le tabelle esplicative riguardanti i prodotti sottoposti alla direttiva PED 97/23/CE per MS2500

Le tabelle, distinte per temperatura di esercizio dell'acqua (TAB A T<110°C TAB B T>=110 °C), indicano quali categorie PED siano applicabili ai nostri prodotti e quali siano fornibili attualmente.

Nel caso di applicabilità viene indicata, in corrispondenza del diametro sensore e della pressione nominale, in quale categoria PED il prodotto ricade.

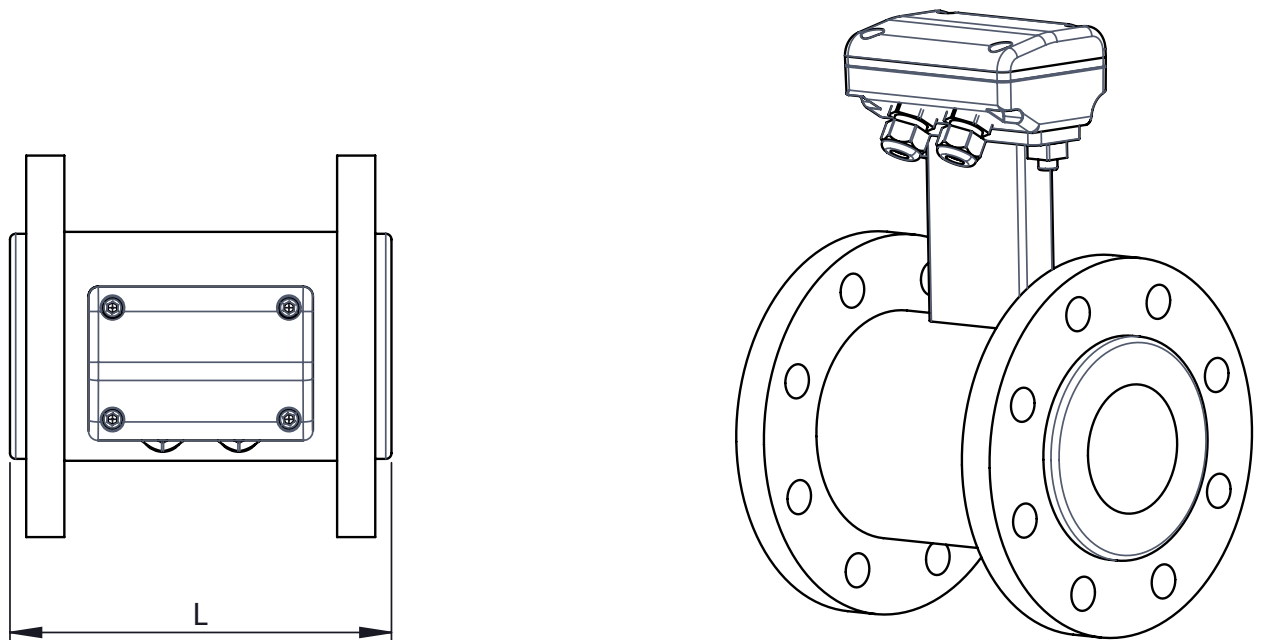
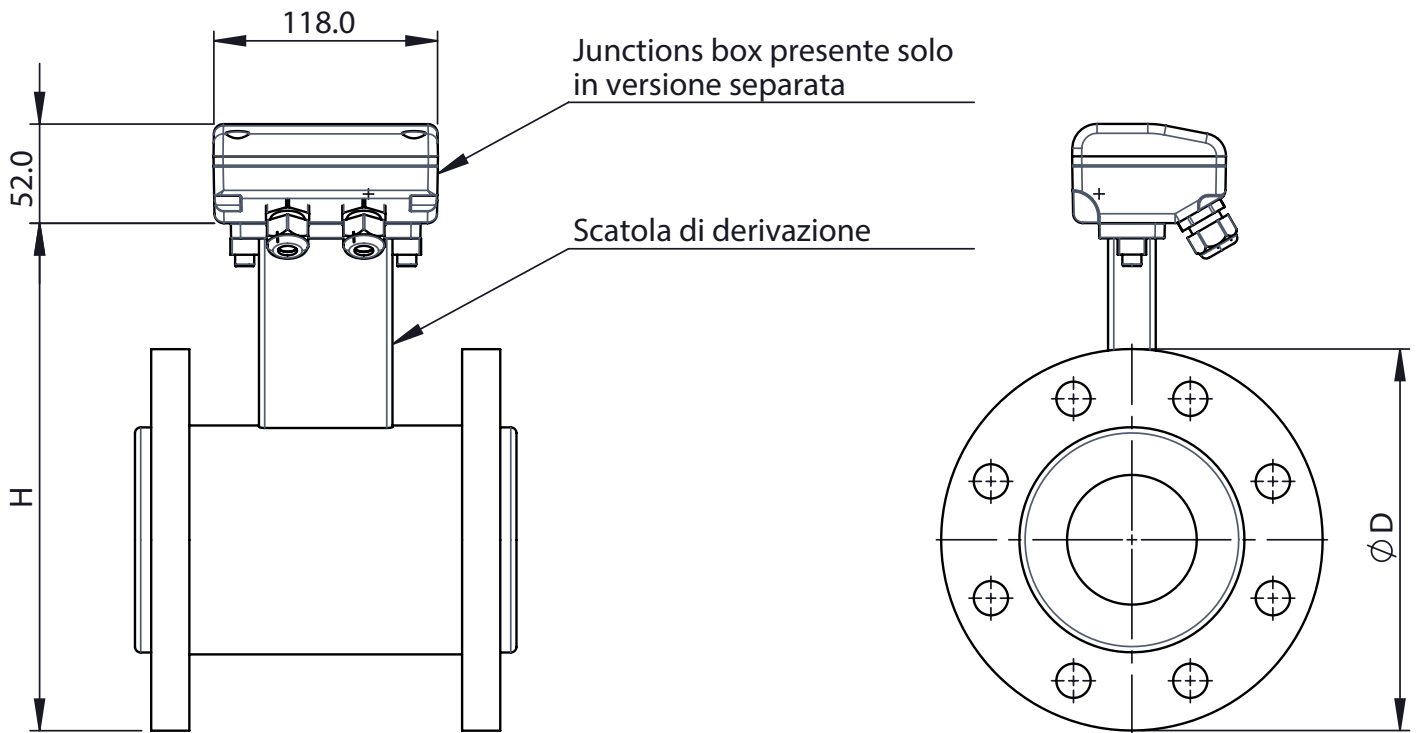
TAB. A APPLICABILITÀ DIRETTIVA PED CON T. ACQUA < 110°C PER TUTTI I RIVESTIMENTI PP- EBANITE-PTFE				
DN	PRESSIONE NOMINALE (PN)			
	10	16	25	40
25	USARE PN 40			E
32	USARE PN 40			E
40	USARE PN 40			E
50		E		E
65		E		E
80	USARE PN 16	E	USARE PN 40	E
100		E		E
125		E		E
150		E		E
200	E	E	E	E
250	I	I	I	I
300	I	I	I	I
350	I	I	I	I
400	I	I	I	I
450	I	I	I	I
500	I	I	I	I
600	I	I	I	I
700	I	I	I	I
800	I	I	I	I
900	I	I	I	I
1000	I	I	I	I
1200	I	I	I	I
1300	I	I	I	I
1400	I	I	I	I
1500	I	I	I	I
1600	I	I	I	I
1700	I	I	I	I
1800	I	I	I	I
2000	I	I	I	I
2400	I	I	I	I

TAB. B APPLICABILITÀ DIRETTIVA PED CON T. ACQUA >= 110°C SOLO PER RIVESTIMENTI IN PTFE				
DN	PRESSIONE NOMINALE (PN)			
	10	16	25	40
25	USARE PN 40			E
32	USARE PN 40			E
40	USARE PN 40			II
50		I		II
65		I		II
80	USARE PN 16	I	USARE PN 40	II
100		I		II
125		I		II
150		I		II
200	I	I	II	II
250	I	II	II	II
300	I	II	III	III
350	I	III	III	III
400	II	III	III	III
450	II	III	III	III
500	II	III	III	III

LEGENDA	
E	ESCLUSI DALLA DIRETTIVA
I	PED CAT. I
II	PED CAT. II
III	PED CAT. III

Per i prodotti appartenenti a categoria I è valida la dichiarazione di conformità disponibile nella pagina seguente, per i prodotti appartenenti a categoria II e III è fornita una dichiarazione di conformità specifica per ogni misuratore prodotto.

**DIMENSIONI D'INGOMBRO**



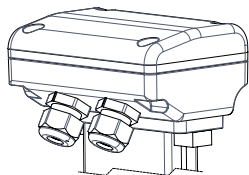
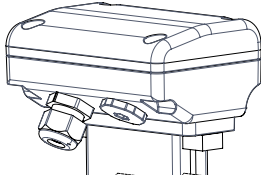
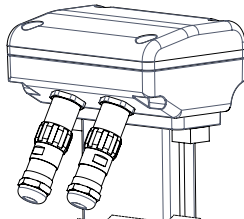
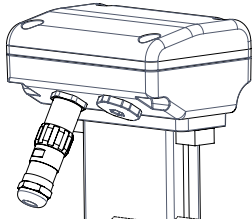
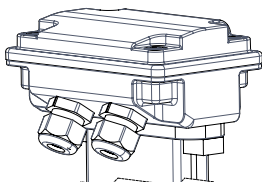
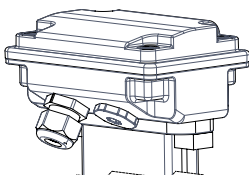
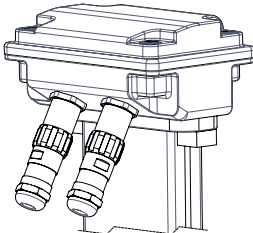
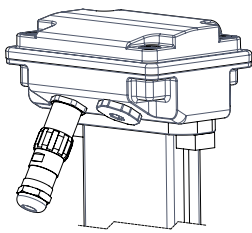
## MS 2500 PN 10/64 - ANSI 150/300 DIMENSIONI D'INGOMBRO

DIMENSIONI mm (pollici)			PN						
			PN 10	PN 16	PN 25	PN 40	PN 64	ANSI 150	ANSI 300
DN	25 (1")	L	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)
		H	185 (7.28)	185 (7.28)	185 (7.28)	185 (7.28)	198 (7.80)	181 (7.13)	190 (7.48)
		D	115 (4.53)	115 (4.53)	115 (4.53)	115 (4.53)	140 (5.51)	108 (4.25)	124 (4.88)
	32 (1"1/4)	L	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)
		H	203 (8)	203 (8)	203 (8)	203 (8)	209 (8.23)	192 (7.56)	199 (7.83)
		D	140 (5.51)	140 (5.51)	140 (5.51)	140 (5.51)	155 (6.10)	118 (4.65)	133 (5.24)
	40 (1"1/2)	L	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)
		H	213 (8.39)	213 (8.39)	213 (8.39)	213 (8.39)	220 (8.66)	207 (8.15)	221 (8.7)
		D	150 (5.90)	150 (5.90)	150 (5.90)	150 (5.90)	170 (6.69)	127 (5)	156 (6.14)
	50 (2")	L	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)
		H	228 (8.98)	228 (8.98)	228 (8.98)	228 (8.98)	233 (9.17)	222 (8.74)	228 (8.98)
		D	165 (6.50)	165 (6.50)	165 (6.50)	165 (6.50)	180 (7.09)	152 (5.98)	165 (6.5)
	65 (2"1/2)	L	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)
		H	248 (9.76)	248 (9.76)	248 (9.76)	248 (9.76)	257 (10.12)	245 (9.65)	251 (9.88)
		D	185 (7.28)	185 (7.28)	185 (7.28)	185 (7.28)	205 (8.07)	178 (7.01)	191 (7.52)
	80 (3")	L	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)
		H	263 (10.35)	263 (10.35)	263 (10.35)	263 (10.35)	267 (10.51)	259 (10.2)	268 (10.55)
		D	200 (7.87)	200 (7.87)	200 (7.87)	200 (7.87)	215 (8.46)	191 (7.52)	210 (8.27)
	100 (4")	L	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)
		H	283 (11.14)	283 (11.14)	294 (11.57)	294 (11.57)	297 (11.69)	288 (11.34)	300 (11.81)
		D	220 (8.66)	220 (8.66)	235 (9.25)	235 (9.25)	250 (9.84)	229 (9.02)	254 (10)
	125 (5")	L	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)	250 (9.84)
		H	313 (12.32)	313 (12.32)	325 (12.80)	325 (12.80)	330 (13)	315 (12.4)	328 (12.91)
		D	250 (9.84)	250 (9.84)	270 (10.63)	270 (10.63)	295 (11.61)	254 (10)	279 (10.98)
	150 (6")	L	300 (11.81)	300 (11.81)	300 (11.81)	300 (11.81)	300 (11.81)	300 (11.81)	300 (11.81)
		H	344 (13.54)	344 (13.54)	355 (13.98)	355 (13.98)	377 (14.84)	341 (13.43)	360 (14.17)
		D	285 (11.22)	285 (11.22)	300 (11.81)	300 (11.81)	345 (13.58)	279 (10.98)	318 (12.52)
	200 (8")	L	350 (13.78)	350 (13.78)	350 (13.78)	350 (13.78)	350 (13.78)	350 (13.78)	350 (13.78)
		H	399 (15.71)	399 (15.71)	415 (16.34)	425 (16.73)	435 (17.13)	401 (15.79)	420 (16.54)
		D	340 (13.39)	340 (13.39)	360 (14.17)	375 (14.76)	415 (16.34)	343 (13.5)	381 (15)
250 (10)	L	450 (17.72)	450 (17.72)	450 (17.72)	450 (17.72)	450 (17.72)	450 (17.72)	450 (17.72)	
	H	454 (17.87)	460 (18.11)	475 (18.7)	493 (19.41)	491 (19.33)	461 (18.15)	480 (18.9)	
	D	395 (15.55)	405 (15.94)	425 (16.73)	450 (17.72)	470 (18.5)	406 (15.98)	445 (17.52)	
300 (12")	L	500 (19.69)	500 (19.69)	500 (19.69)	500 (19.69)	500 (19.69)	500 (19.69)	500 (19.69)	
	H	504 (19.84)	515 (20.28)	535 (21.06)	558 (21.97)	545 (21.46)	527 (20.75)	546 (21.5)	
	D	445 (17.52)	460 (18.11)	485 (19.09)	515 (20.28)	530 (20.87)	483 (19.02)	521 (20.51)	
350 (14")	L	550 (21.65)	550 (21.65)	550 (21.65)	550 (21.65)	550 (21.65)	550 (21.65)	550 (21.65)	
	H	564 (22.2)	575 (22.64)	598 (23.54)	619 (24.37)	603 (23.74)	582 (22.91)	607 (23.9)	
	D	505 (19.88)	520 (20.47)	555 (21.85)	580 (22.83)	600 (23.62)	533 (20.98)	584 (22.99)	
400 (16")	L	600 (23.62)	600 (23.62)	600 (23.62)	600 (23.62)	600 (23.62)	600 (23.62)	600 (23.62)	
	H	620 (24.41)	630 (24.8)	659 (25.94)	695 (27.36)	670 (26.38)	639 (25.16)	664 (26.14)	
	D	565 (22.24)	580 (22.83)	62 (2.44)	660 (25.98)	670 (26.38)	597 (23.5)	648 (25.51)	
450 (18")	L	600 (23.62)	600 (23.62)	600 (23.62)	600 (23.62)		600 (23.62)	600 (23.62)	
	H	670 (26.38)	690 (27.17)	709 (27.91)	720 (28.35)		688 (27.09)	726 (28.58)	
	D	615 (24.21)	640 (25.2)	670 (26.38)	685 (26.97)		635 (25)	711 (27.99)	
500 (20")	L	600 (23.62)	600 (23.62)	600 (23.62)	600 (23.62)		600 (23.62)	600 (23.62)	
	H	725 (28.54)	758 (29.84)	769 (30.28)	784 (30.87)		751 (29.57)	770 (30.31)	
	D	670 (26.38)	715 (28.15)	730 (28.74)	755 (29.72)		699 (27.52)	775 (30.51)	



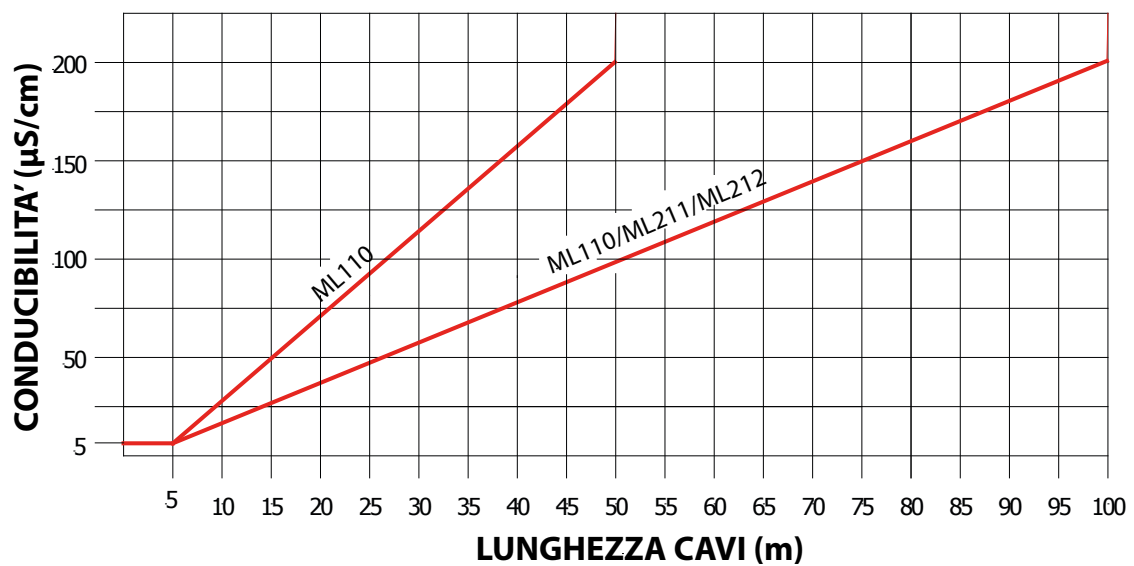
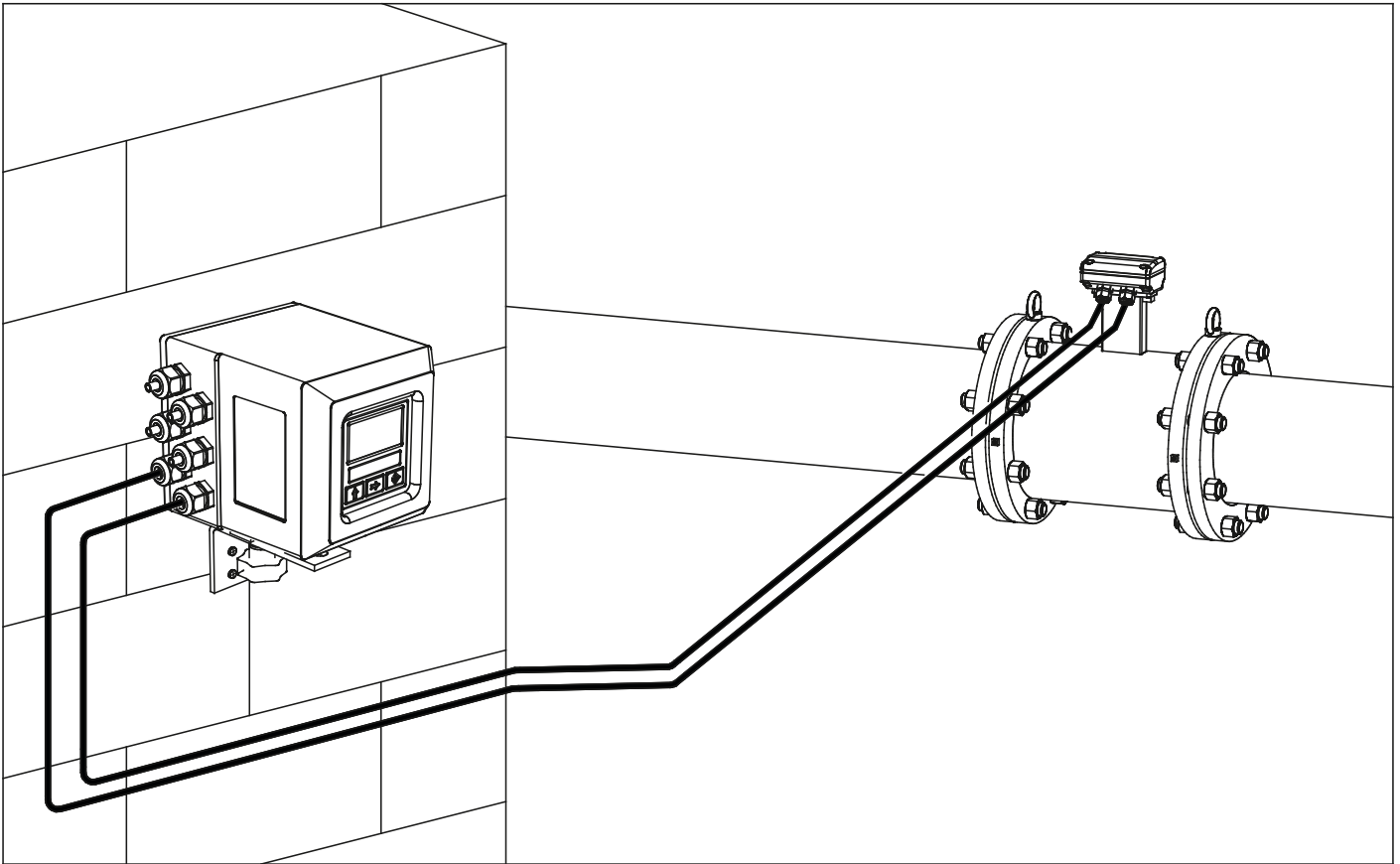
## MS 2500 PN 10/64 - ANSI 150/300 DIMENSIONI D'INGOMBRO

DIMENSIONI mm (pollici)		PN							
		PN 10	PN 16	PN 25	PN 40	PN 64	ANSI 150	ANSI 300	
DN	600 (24")	L	<b>600 (23.62)</b>	<b>600 (23.62)</b>	<b>600 (23.62)</b>	<b>600 (23.62)</b>		<b>600 (23.62)</b>	<b>600 (23.62)</b>
		H	830 (32.68)	879 (34.61)	880 (34.65)	911 (35.87)		866 (34.09)	916 (36.06)
		D	<b>780 (30.71)</b>	<b>840 (33.07)</b>	<b>845 (33.27)</b>	<b>890 (35.04)</b>		<b>813 (32.01)</b>	<b>914 (35.98)</b>
	650 (26")	L						650 (25.59)	650 (25.59)
		H						<b>921 (36.26)</b>	<b>1002 (39.45)</b>
		D						870 (34.25)	972 (38.27)
	700 (28")	L	<b>700 (27.56)</b>	<b>700 (27.56)</b>	<b>700 (27.56)</b>	<b>700 (27.56)</b>		700 (27.56)	
		H	895 (35.24)	949 (37.36)	989 (38.94)	1016 (40)		1016 (40)	
		D	<b>800 (31.5)</b>	<b>910 (35.83)</b>	<b>960 (37.8)</b>	<b>995 (39.17)</b>		<b>927,1 (36,5)</b>	
	750 (30")	L						750 (29.53)	750 (29.53)
		H						<b>1032 (40.63)</b>	<b>1121 (44.13)</b>
		D						984 (38.74)	1092 (42.99)
	800 (32")	L	<b>800 (31.5)</b>	<b>800 (31.5)</b>	<b>800 (31.5)</b>	<b>800 (31.5)</b>		<b>800 (31.5)</b>	
		H	1058 (41.65)	1060 (41.73)	1106 (43.54)	1149 (45.24)		1149 (45.24)	
		D	<b>1015 (39.96)</b>	<b>1025 (40.35)</b>	<b>1085 (42.72)</b>	<b>1114 (43.86)</b>		<b>1060,5 (47,15)</b>	
	850 (34")	L						850 (33.46)	850 (33.46)
		H						<b>1149 (45.24)</b>	<b>1230 (48.43)</b>
		D						1111 (43.74)	1207 (47.52)
	900 (36")	L	<b>900 (35.43)</b>	<b>900 (35.43)</b>	<b>900 (35.43)</b>	<b>900 (35.43)</b>		<b>900 (35.43)</b>	<b>900 (35.43)</b>
		H	1158 (45.59)	1160 (45.67)	1206 (47.48)	1259 (49.57)		1206 (47.48)	1292 (50.87)
		D	<b>1115 (43.9)</b>	<b>1125 (44.29)</b>	<b>1185 (46.65)</b>	<b>1250 (49.21)</b>		<b>1168 (45.98)</b>	<b>1270 (50)</b>
	1000 (40")	L	1000 (39.37)	1000 (39.37)	1000 (39.37)	1000 (39.37)		1000 (39.37)	1000 (39.37)
		H	<b>1269 (49.96)</b>	<b>1284 (50.55)</b>	<b>1329 (52.32)</b>	<b>1369 (53.9)</b>		<b>1381 (54.37)</b>	<b>1467 (57.76)</b>
		D	1230 (48.43)	1255 (49.41)	1320 (51.97)	1360 (53.54)		1346 (52.99)	1448 (57.01)
1050 (42")	L						<b>1050 (41.3)</b>		
	H						1355.0 (54.00)		
	D						1346.2 (53.00)		
1100 (44")	L						<b>1100 (43.3)</b>		
	H						1428 (56.25)		
	D						1403.4 (55.25)		
1200 (48")	L						<b>1200 (47.24)</b>		
	H						1530 (60.50)		
	D						1511.3 (59.50)		
1800 (72")	L						<b>1800 (72.00)</b>		
	H						1381 (54.37)		
	D						2197 (86.50)		

	1	2	3	4
<b>A</b> ALLUMINIO VERNICIATO				
<b>B</b> AISI 304				

OPZIONE A LISTINO	COMBINAZIONE JUNCTIONS BOX (finitura superficiale)
<b>A</b>	Senza junctions box, convertitore collegato direttamente alla scatola di derivazione del sensore
<b>B</b>	A-1 A-2 solo per collegamento a ML110
<b>G</b>	A-4
<b>F</b>	A-3
<b>N</b>	A-2 con preamplificatore
<b>Q</b>	A-4 con preamplificatore
<b>U</b>	B-1 (finitura sabbata) B-2 solo per collegamento a ML110 (finitura sabbata)
<b>S</b>	B-4 (finitura sabbata)
<b>T</b>	B-3 (finitura sabbata)
<b>P</b>	B-2 con preamplificatore (finitura sabbata)
<b>R</b>	B-4 con preamplificatore (finitura sabbata)
<b>K</b>	B-1 (finitura lucidata) B-2 solo per collegamento a ML110 (finitura lucidata)
<b>Y</b>	B-4 (finitura lucidata)
<b>W</b>	B-3 (finitura lucidata)
<b>V</b>	B-2 con preamplificatore (finitura lucidata)
<b>J</b>	B-4 con preamplificatore (finitura lucidata)

## SPECIFICHE PER VERSIONE SEPARATA

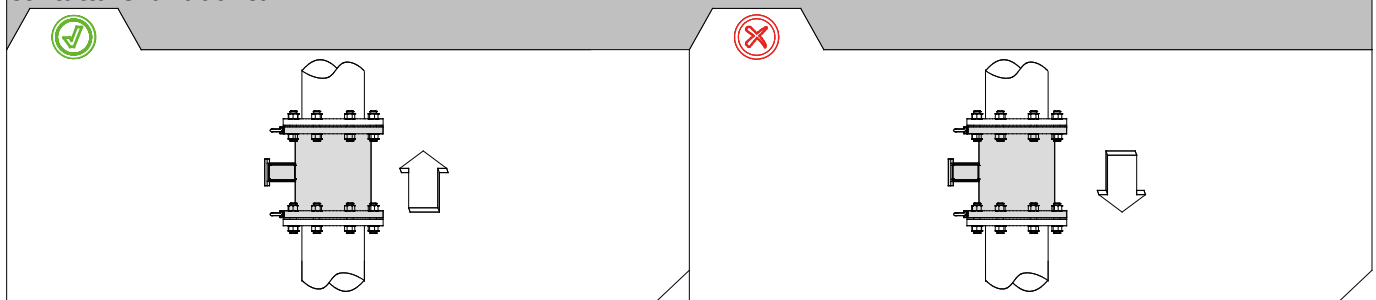


Note:

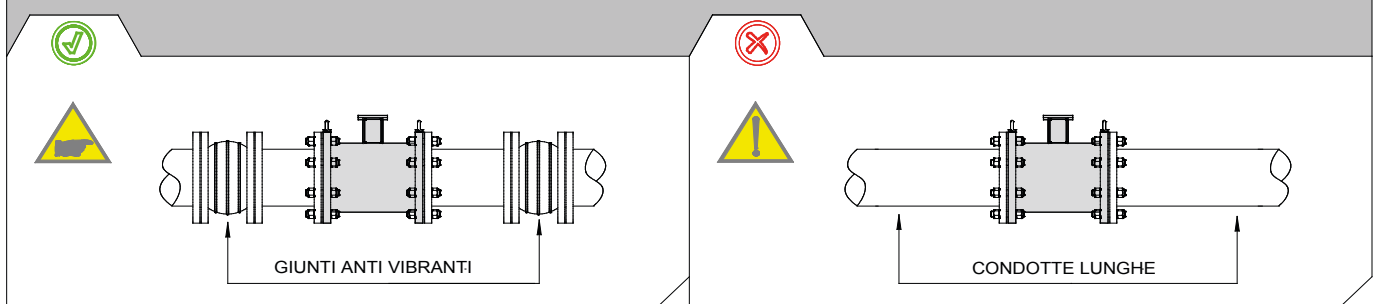
- Si raccomanda di eseguire le connessioni dei cavi lontano da, o proteggerle da disturbi elettromagnetici
- Per assicurare il corretto funzionamento di riconoscimento "tubo vuoto", la conducibilità minima del liquido è 20  $\mu\text{S}/\text{cm}$

## CONSIGLI PER L'INSTALLAZIONE

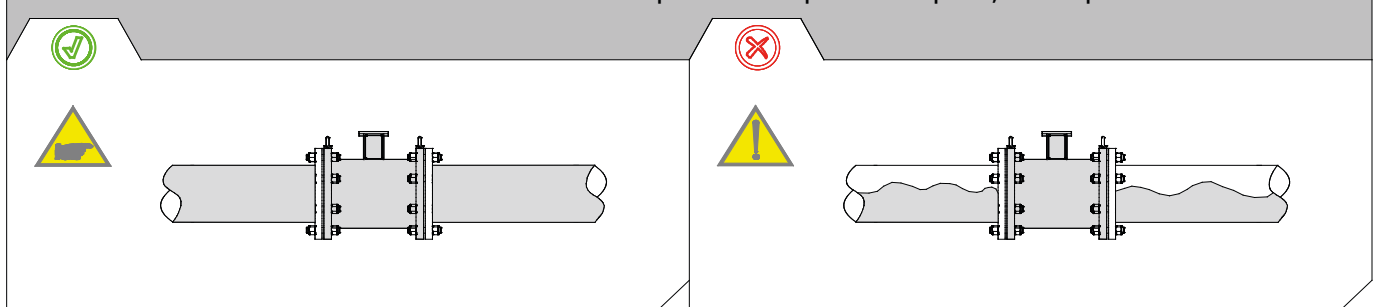
Per installazioni verticali è preferibile il flusso ascendente. Per installazioni verticali con moto discendente contattare la fabbrica



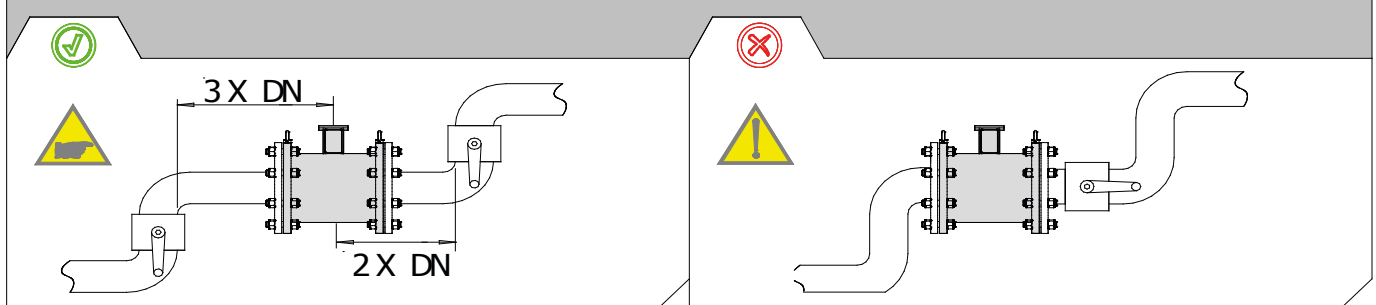
Per installazioni su lunghe tratte di condotte inserire dei giunti anti vibranti



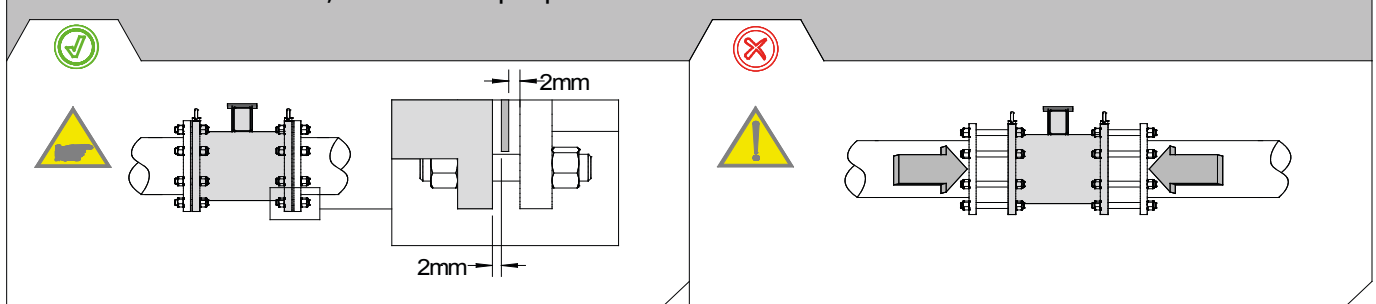
In fase di misurazione la tubazione deve essere completamente piena di liquido, o completamente vuota



Installare il sensore lontano da curve e accessori idraulici



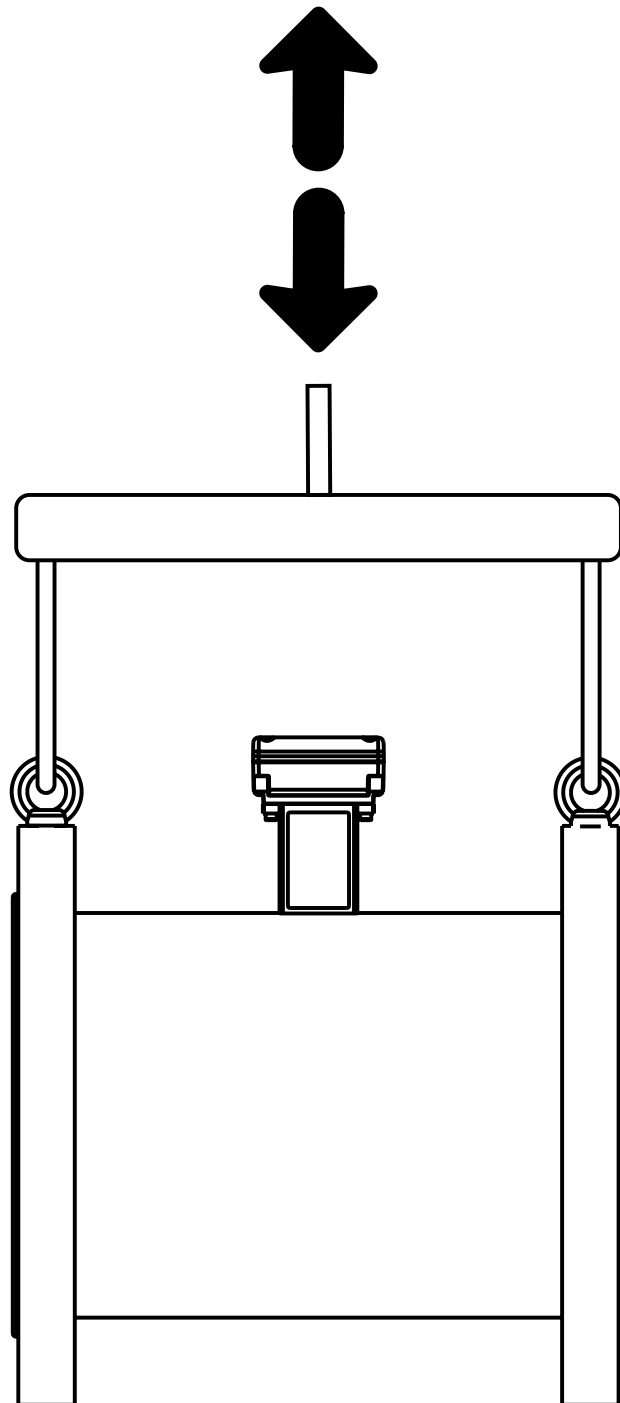
Prima di serrare i raccordi, avvicinare il più possibile l'attacco della condotta all'attacco del sensore



## METODO DI SOLLEVAMENTO

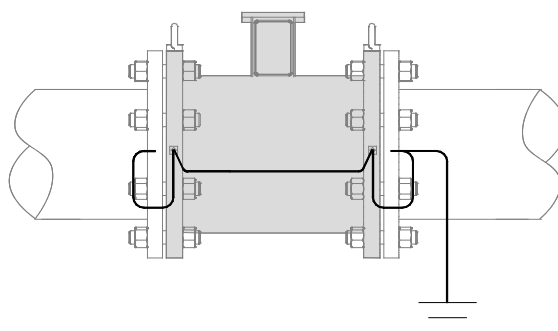
Per facilitare le operazioni di installazione i sensori con peso superiore a circa 20Kg sono dotati di appositi golfari. Sollevare il sensore secondo il metodo sopra illustrato.

**I golfari sono dimensionati per sostenere ESCLUSIVAMENTE il peso del misuratore**

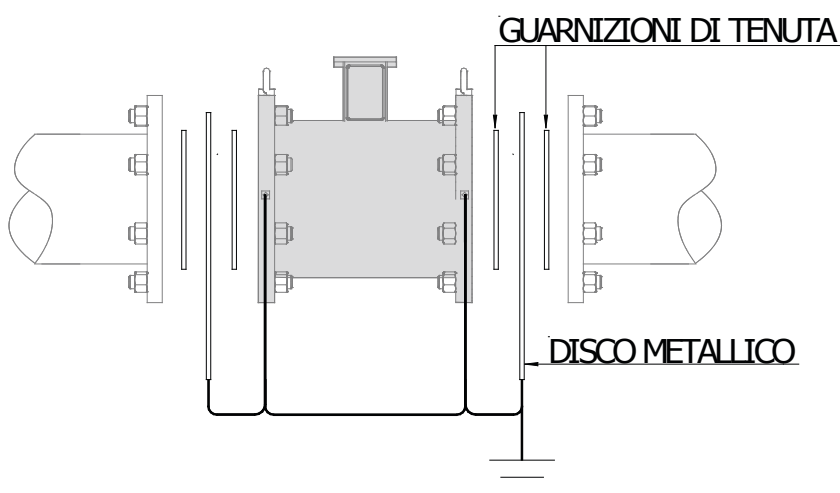


## MESSA A TERRA

## TUBAZIONE METALLICA



## TUBAZIONE ISOLANTE



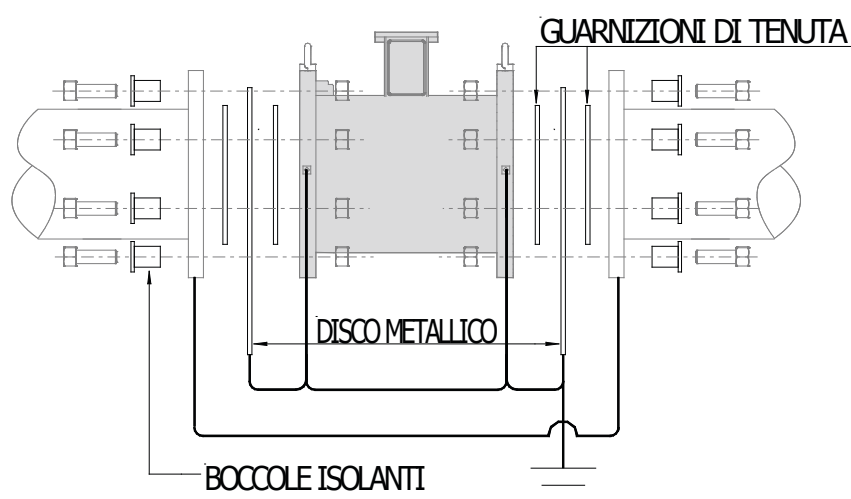
Se il sensore deve essere installato in una tubazione di materiale isolante è necessario:

inserire tra le flange del sensore e quelle della condotta due anelli per la messa terra del liquido

oppure:

utilizzare un sensore munito di elettrodo di messa a terra (3° elettrodo)

## TUBAZIONE CON PROTEZIONE CATODICA

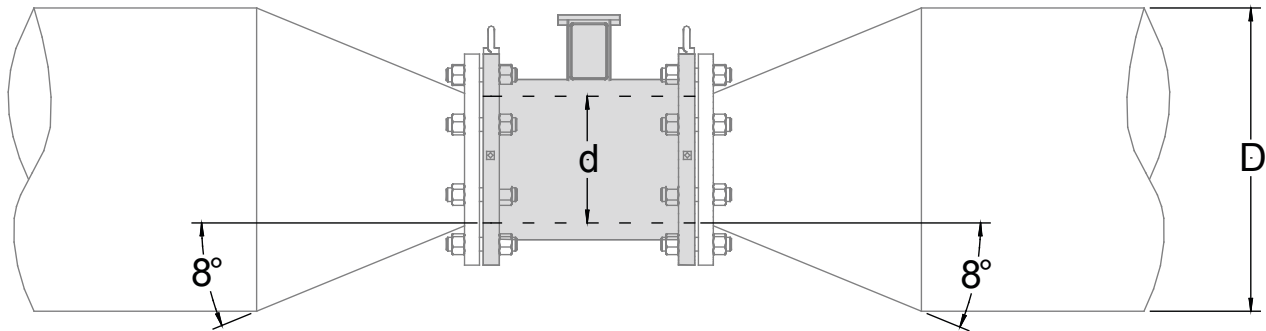


Se il sensore deve essere installato in una tubazione isolata da protezione catodica, in fase di montaggio è necessario:

isolare dadi e controdadi con apposite bussole isolanti

inserire i dischi metallici fra le flange del sensore e quelle della condotta; i dischi devono essere isolati da apposite guarnizioni isolanti

## CALCOLO PERDITA DI CARICO (ANGOLO CONI 8°)



$$\Delta p = \left[ 0.10 + 0.20 \left( \left( \frac{d}{D} \right)^{-2} - 1 \right) \left( \frac{d}{D} \right)^4 \right] \left( \rho \frac{u^2}{2} \right)$$

Dove:

$\Delta p$  = Perdita di carico in [Pa]

$\rho$  = densità del fluido [kg/m<sup>3</sup>] valore tipico  $\rho = 1000$  [kg/m<sup>3</sup>]

$d$  = diametro del sensore [m]

$D$  = diametro della condotta (maggiore del diametro del sensore) [m]

$u$  = velocità media del fluido all'interno del sensore [m/s]

Esempi di calcolo $\Delta p$ [mbar]								
$d/D$ \ $u$	1 [m/s]	2 [m/s]	3 [m/s]	4 [m/s]	5 [m/s]	6 [m/s]	7 [m/s]	8 [m/s]
0.5	1.1	4.3	9.6	17	26.6	38.3	52.1	68
0.6	0.9	3.6	8.2	14.6	22.7	32.7	44.6	58.2
0.7	0.8	3	6.8	12.2	19	27.4	37.2	48.6
0.8	0.6	2.5	5.7	10.1	15.7	22.7	30.9	40.3
0.9	0.5	2.1	4.8	8.6	13.4	19.3	26.3	34.3

Note:

- $\rho = 1000$  [kg/m<sup>3</sup>] densità dell'acqua di uso comune (valore approssimativo).
- Il parametro "d" indica il diametro interno del sensore espresso in metri.
- L'equazione sopra indicata da come risultato un valore in [Pa]. I risultati dell'equazione in tabella sono espressi in [mbar].

## MS2500: MI-001

I diametri dei sensori sotto riportati, accoppiati con ML210, ML110 e ML255 sono certificati in accordo con la direttiva europea 2004/22CE categoria MI-001 (OIML R49)

SENSOR SIZE	mm	25	32	40	50	65	80	100	125	150	200	250
	inch	1	1 ¼	1 ½	2	2 ½	3	4	5	6	8	10
Q1	m <sup>3</sup> /h	0.100	0.156	0.250	0.394	0.625	1.00	1.56	2.50	3.94	6.25	
Q2	m <sup>3</sup> /h	0.16	0.25	0.40	0.63	1.0	1.6	2.5	4.0	6.3	10	
<b>Q3</b>	<b>m<sup>3</sup>/h</b>	<b>16.0</b>	<b>25.0</b>	<b>40.0</b>	<b>63.0</b>	<b>100.0</b>	<b>160.0</b>	<b>250.0</b>	<b>400.0</b>	<b>630.0</b>	<b>1000</b>	<b>1600</b>
Q4	m <sup>3</sup> /h	20	31.3	50	78.8	125	200	312.5	500	787.5	1250	2000
<b>R</b>	<b>Q3/Q1</b>	<b>160 (ML210-ML110)</b>										
<b>R</b>	<b>Q3/Q1</b>	<b>da 100 fino a 400 (ML255)</b>										

### MI-001 RANGE AMMISSIBILI

- range ammissibile Q3:

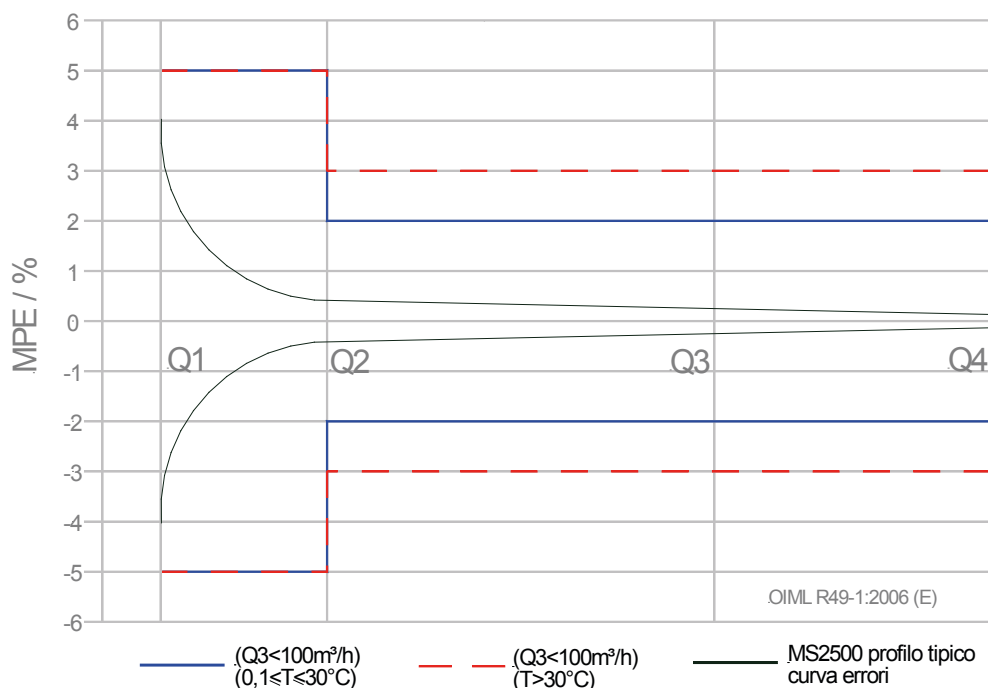
/m <sup>3</sup> h <sup>-1</sup>	/dm <sup>3</sup> s <sup>-1</sup>	/m <sup>3</sup> h <sup>-1</sup>	/dm <sup>3</sup> s <sup>-1</sup>	/m <sup>3</sup> h <sup>-1</sup>	/dm <sup>3</sup> s <sup>-1</sup>	/m <sup>3</sup> h <sup>-1</sup>	/dm <sup>3</sup> s <sup>-1</sup>	/m <sup>3</sup> h <sup>-1</sup>	/dm <sup>3</sup> s <sup>-1</sup>
1	0,278	1,6	0,444	2,5	0,694	4	1,111	6,3	1,750
10	2,778	16	4,444	25	6,944	40	11,11	63	17,50
100	27,78	160	44,44	250	69,44	400	111,1	630	175,0
1000	277,8	1600	444,4	2500	694,4	4000	1111	6300	1750

- range ammissibile R (=Q3/Q1)

10	12,5	16	20	25	31,5	40	50	63	80
100	125	160	200	250	315	400	500	630	800

- Q2/Q1=1,6
- Q4/Q3=1,25

### OIML R49 ACCURACY CLASS 2 (ERRORE MASSIMO AMMISSIBILE)





## MS2500: MI-004

I diametri dei sensori sotto riportati, accoppiati con ML210 e ML110 , sono certificati in accordo con la direttiva europea 2004/22CE categoria MI-004

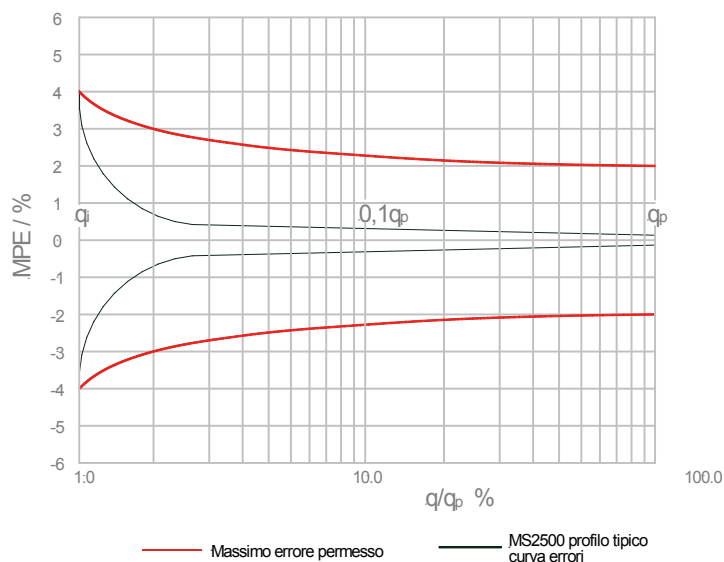
DN sensore	mm	25	32	40	50	65	80	100	125	150	200
	inch	1	1 ¼	1 ½	2	2 ½	3	4	5	6	8
$q_i$	m <sup>3</sup> /h	0.16	0.25	0.40	0.63	1.0	1.6	2.5	4.0	6.3	10
0,1 $q_p$	m <sup>3</sup> /h	1.6	2.5	4.0	6.3	10	16	25	40	63	100
$q_p$ (10m/s)	m <sup>3</sup> /h	16	25	40	63	100	160	250	400	630	1000
<b><math>q_p/q_i</math></b>		<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

DN sensore	mm	25	32	40	50	65	80	100	125	150	200
	inch	1	1 ¼	1 ½	2	2 ½	3	4	5	6	8
$q_i$	m <sup>3</sup> /h	0.20	0.32	0.50	0.80	1.26	2.0	3.2	5.0	8.0	12.6
0,1 $q_p$	m <sup>3</sup> /h	1.0	1.6	2.5	4.0	6.3	10	16	25	40	63
$q_p$ (5m/s)	m <sup>3</sup> /h	10	16	25	40	63	100	160	250	400	630
<b><math>q_p/q_i</math></b>		<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>100</b>

DN sensore	mm	25	32	40	50	65	80	100	125	150	200
	inch	1	1 ¼	1 ½	2	2 ½	3	4	5	6	8
$q_i$	m <sup>3</sup> /h	0.16	0.25	0.40	0.64	1.0	1.6	2.52	4.0	6.4	10
0,1 $q_p$	m <sup>3</sup> /h	0.40	0.63	1.0	1.6	2.5	4.0	6.3	10	16	25
$q_p$ (2,5m/s)	m <sup>3</sup> /h	4.0	6.3	10	16	25	40	63	100	160	250
<b><math>q_p/q_i</math></b>		<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>100</b>

DN sensore	mm	25	32	40	50	65	80	100	125	150	200
	inch	1	1 ¼	1 ½	2	2 ½	3	4	5	6	8
$q_i$	m <sup>3</sup> /h	0.16	0.25	0.40	0.63	1.0	1.6	2.5	4.0	6.3	10
0,1 $q_p$	m <sup>3</sup> /h	0.16	0.25	0.40	0.63	1.0	1.6	2.5	4.0	6.3	10
$q_p$ (1,0m/s)	m <sup>3</sup> /h	1.6	2.5	4.0	6.3	10	16	25	40	63	100
<b><math>q_p/q_i</math></b>		<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>

### MID 004-MPE CLASS 2 (ERRORE MASSIMO AMMISSIBILE)



## COME ORDINARE

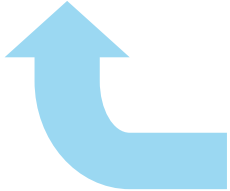
MS 2500	
Nominal Diameter / Lining / Liquid temperature / Measuring range	
P25	DN25 (1" ), P.P. lining, liquid maximum temperature 60 °C measuring range 0...0,72/0...18 m3/h
T25	DN25 (1" ), PTFE lining, liquid maximum temperature 110 °C measuring range 0...0,72/0...18 m3/h
HT25	DN25 (1" ), PFA lining, liquid maximum temperature 180 °C measuring range 0...0,72/0...18 m3/h
P32	DN32 (1 1/4"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...1,16/0...29 m3/h
T32	DN32 (1 1/4"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...1,16/0...29 m3/h
HT32	DN32 (1 1/4"), PFA lining, liquid maximum temperature 180 °C measuring range 0...1,16/0...29 m3/h
P40	DN40 (1 1/2"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...1,8/0...45 m3/h
T40	DN40 (1 1/2"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...1,8/0...45 m3/h
HT40	DN40 (1 1/2"), PFA lining, liquid maximum temperature 180 °C measuring range 0...1,8/0...45 m3/h
P50	DN50 (2"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...2,88/0...72 m3/h
T50	DN50 (2"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...2,88/0...72 m3/h
HT50	DN50 (2"), PFA lining, liquid maximum temperature 180 °C measuring range 0...2,88/0...72 m3/h
R50	DN50 (2"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...2,88/0...72 m3/h
P65	DN65 (2 1/2"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...4,8/0...120 m3/h
T65	DN65 (2 1/2"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...4,8/0...120 m3/h
HT65	DN65 (2 1/2"), PFA lining, liquid maximum temperature 180 °C measuring range 0...4,8/0...120 m3/h
R65	DN65 (2 1/2"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...4,8/0...120 m3/h
P80	DN80 (3"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...7,2/0...180 m3/h
T80	DN80 (3"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...7,2/0...180 m3/h
HT80	DN80 (3"), PFA lining, liquid maximum temperature 180 °C measuring range 0...7,2/0...180 m3/h
R80	DN80 (3"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...7,2/0...180 m3/h
P100	DN100 (4"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...11,2/0...280 m3/h
T100	DN100 (4"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...11,2/0...280 m3/h
HT100	DN100 (4"), PFA lining, liquid maximum temperature 180 °C measuring range 0...11,2/0...280 m3/h
R100	DN100 (4"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...11,2/0...280 m3/h
P125	DN125 (5"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...18/0...450 m3/h
T125	DN125 (5"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...18/0...450 m3/h
HT125	DN125 (5"), PFA lining, liquid maximum temperature 180 °C measuring range 0...18/0...450 m3/h
R125	DN125 (5"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...18/0...450 m3/h
P150	DN150 (6"), P.P. lining, liquid maximum temperature 60 °C measuring range 0...25,6/0...640 m3/h
T150	DN150 (6"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...25,6/0...640 m3/h
HT150	DN150 (6"), PFA lining, liquid maximum temperature 180 °C measuring range 0...25,6/0...640 m3/h
R150	DN150 (6"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...25,6/0...640 m3/h
E200	DN200 (8"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...45,2/0...1130 m3/h
T200	DN200 (8"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...45,2/0...1130 m3/h
HT200	DN200 (8"), PFA lining, liquid maximum temperature 180 °C measuring range 0...45,2/0...1130 m3/h
R200	DN200 (8"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...45,2/0...1130 m3/h
E250	DN250 (10"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...70,8/0...1770 m3/h
T250	DN250 (10"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...70,8/0...1770 m3/h
HT250	DN250 (10"), PFA lining, liquid maximum temperature 180 °C measuring range 0...70,8/0...1770 m3/h
R250	DN250 (10"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...70,8/0...1770 m3/h
E300	DN300 (12"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...100,8/0...2520 m3/h

code  
T100

T300	DN300 (12"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...100,8/0...2520 m3/h
HT300	DN300 (12"), PFA lining, liquid maximum temperature 180 °C measuring range 0...100,8/0...2520 m3/h
R300	DN300 (12"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...100,8/0...2520 m3/h
E350	DN350 (14"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...138/0...3450 m3/h
T350	DN350 (14"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...138/0...3450 m3/h
R350	DN350 (14"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...138/0...3450 m3/h
E400	DN400 (16"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...180/0...4500 m3/h
T400	DN400 (16"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...180/0...4500 m3/h
R400	DN400 (16"), RILSAN lining, liquid maximum temperature 70 °C measuring range 0...180/0...4500 m3/h
E450	DN450 (18"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...228,8/0...5720 m3/h
T450	DN450 (18"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...228,8/0...5720 m3/h
E500	DN500 (20"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...284/0...7100 m3/h
T500	DN500 (20"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...284/0...7100 m3/h
E550	(22"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...348/0...8712m3/h
E600	DN600 (24"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...408/0...10200 m3/h
T600	DN600 (24"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...408/0...10200 m3/h
E650	(26"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...480/0...12000 m3/h
T650	(26"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...480/0...12000 m3/h
E700	DN700, Ebonite lining, liquid maximum temperature 80 °C measuring range 0...560/0...14000 m3/h
T700	DN700, PTFE lining, liquid maximum temperature 110 °C measuring range 0...560/0...14000 m3/h
E750	(30"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...640/0...16000 m3/h
T750	(30"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...640/0...16000 m3/h
E800	DN800, Ebonite lining, liquid maximum temperature 80 °C measuring range 0...720/0...18000 m3/h
T800	DN800, PTFE lining, liquid maximum temperature 110 °C measuring range 0...720/0...18000 m3/h
E850	(34"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...820/0...20500 m3/h
T850	(34"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...820/0...20500 m3/h
E900	DN900 (36"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...920/0...23000 m3/h
T900	DN900 (36"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...920/0...23000 m3/h
E1000	DN1000 (40"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...1140/0...28500 m3/h
T1000	DN1000 (40"), PTFE lining, liquid maximum temperature 110 °C measuring range 0...1140/0...28500 m3/h
E1050	DN1050 (42"), Ebonite lining, liquid maximum temperature 80 °C measuring range 0...1270/0...31752 m3/h
E1200	DN1200 Ebonite lining, liquid maximum temperature 80 °C PN 16 measuring range -1.600 - 40.000 m3/h
E1400	DN 1400 Ebonite lining, liquid maximum temperature 80 °C PN 16 measuring range - 2.200 - 55.000 m3/h
E1600	DN 1600 Ebonite lining, liquid maximum temperature 80 °C PN 16 measuring range - 2.880 - 72.000 m3/h
E1800	DN1800 Ebonite lining, liquid maximum temperature 80 °C PN 16 measuring range - 3.640 - 91.000 m3/h

Gasket material ( internal tightness - only PP lining)		
A	A	No O-Ring ( ONLY FOR PTFE/EBANITE LINING )
	B	O-Ring : FKM
	C	O-Ring : Epdm
	Z	O-Ring : da specificare
Flange type		
1	1	Flange EN1092 PN16 (standard with Polypropilene lining)
	2	Flange EN1092 PN10
	3	Flange EN1092 PN25
	4	Flange EN1092 PN40
	5	Flange EN1092 PN64
	6	Flange ANSI 150RF
	7	Flange ANSI 300RF
	8	Flange EN1092 PN6
	9	Flange JIS 10K
	0	Flange: to be specified
Body and Flanges material		
A	A	Body and flange in Carbon Steel painted
	B	Body and flange in Stainless Steel (AISI304)
	C	Body and flange in Stainless Steel (AISI316)
	Z	Body and flange material: other
Number and electrodes material		
2	2	n. 3 (2 measure + 1 for ground) electrodes in AISI316
	4	n. 3 (2 measure + 1 for ground) electrodes in Hastelloy C
	5	n. 3 (2 measure + 1 for ground) electrodes in Titanium
	6	n. 3 (2 measure + 1 for ground) electrodes in Tantalum; not available with Polypropilene/Rilsan
	7	n. 3 (2 measure + 1 for ground) electrodes in Platinum; not available with Polypropilene/Rilsan
	0	Electrode material: to be specified
Version / Classe di protezione sensore		
A	A	Compact version , IP67 protection rate
	B	Separate version, Painted Aluminum JB, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE CABLE LENGHT - ADD THE COST )
	G	Separate version, Painted Aluminum JB, N° 1 connectors IP 68 suitable for fast cable connections - (DEFINE THE CABLE LENGHT - ADD THE COST )
	F	Separate version, Painted Aluminum JB, N° 2 connectors IP 68 suitable for fast cable connections - (DEFINE THE CABLE LENGHT - ADD THE COST )
	N	Separate version, Painted Aluminum JB , PREAMPLIFIRE*, protection rate IP67 - (DEFINE THE CABLE LENGHT MAX 500 m-ADD THE COST )
	Q	Separate version, Painted Aluminum JB, PREAMPLIFIRE*, N° 1 connectors IP 68 suitable for fast cable connection - (DEFINE THE CABLE LENGHT MAX 500 m-ADD THE COST )
	U	Separate version, AISI 304 JB RAW, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE CABLE LENGHT - ADD THE COST )
	S	Separate version, AISI 304 JB RAW, with N° 1 connectors IP 68 suitable for fast cable connections - (DEFINE THE CABLE LENGHT - ADD THE COST )
	T	Separate version, AISI 304 JB RAW, N° 2 connectors IP 68 suitable for fast cable connections - (DEFINE THE CABLE LENGHT - ADD THE COST )
	P	Separate version, AISI 304 JB RAW, PREAMPLIFIRE*, protection rate IP67 - (DEFINE THE CABLE LENGHT MAX 500 m-ADD THE COST )
	R	Separate version, AISI 304 JB RAW, PREAMPLIFIRE* N° 1 connectors IP 68 suitable for fast cable connections to - (DEFINE THE CABLE LENGHT MAX 500 m-ADD THE COST )
	K	Separate version, AISI 304 JB POLISCHED, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE CABLE LENGHT - ADD THE COST )

Y	Separate version, AISI 304 JB POLISHED, with N° 1 connectors IP 68 suitable for fast cable connections - (DEFINE THE CABLE LENGHT - ADD THE COST )
W	Separate version, AISI 304 JB POLISHED, N° 2 connectors IP 68 suitable for fast cable connections - (DEFINE THE CABLE LENGHT - ADD THE COST )
V	Separate version, AISI 304 JB POLISHED, PREAMPLIFIRE*, protection rate IP67 - (DEFINE THE CABLE LENGHT MAX 500 m-ADD THE COST )
J	Separate version, AISI 304 JB POLISHED, PREAMPLIFIRE* N° 1 connectors IP 68 suitable for fast cable connections to - (DEFINE THE CABLE LENGHT MAX 500 m-ADD THE COST )



**MS2500-T100-A1A2A** (Esempio di codice completo per l'esecuzione dell'ordine)

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