

Sensori di livello carburante resistivi

Resistive fuel level sensors



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Note
Notes



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Sensori di livello carburante resistivi

Fuel level sensors

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Certificazioni e brevetti

Certifications and patents

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Certificazione per la produzione di prodotti per uso nautico N. DIP030908MI
European Certification for marine products N. DIP030908MI



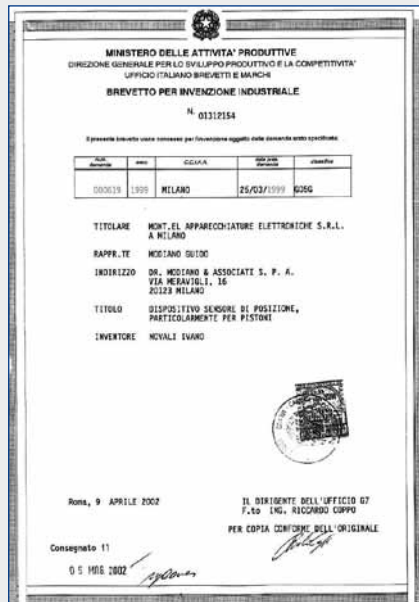
Certificazione di gestione della qualità aziendale VDE
Certification of Quality Management according VDE



Certificazione per lo sviluppo di prodotti per ambienti potenzialmente esplosivi (ATEX)
Certification for the development of products for potentially explosive atmospheres (ATEX)



Brevetto per un dispositivo digitale sensore di posizione
Patent for a digital output position sensor



Brevetto per un indicatore analogico di livello di carburante
Patent for an analog output fuel gauge



Brevetto per un sistema innovativo di comunicazione wireless nel settore condizionamento
Patent for an innovative system for wireless communication in air conditioning sector



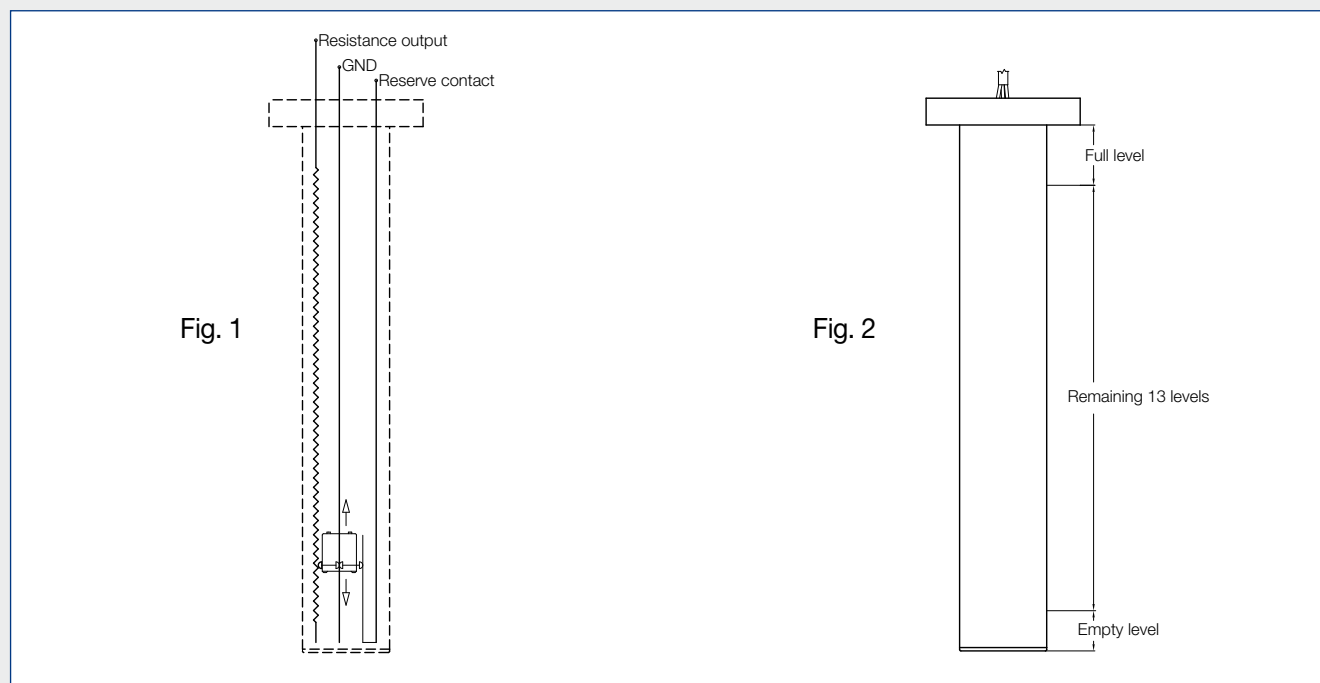
Certificazione internazionale per la produzione di prodotti per uso alimentare
International Certification for the production of food products



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Principio di funzionamento

Operating principles



6

Il funzionamento di questi sensori è basato sul principio del potenziometro, ottenuto con un contatto strisciante ancorato all'interno di un galleggiante in nylon espanso.

Il sensore fornisce in uscita un valore di resistenza variabile in funzione del livello del carburante quando il contatto scorre su un opportuno circuito stampato in FR4 dorato (si veda al riguardo lo schema esplicativo - Fig.1).

Dimensionando in modo opportuno il numero (di solito 15) e la lunghezza dei settori del circuito stampato, è possibile ottenere una linearizzazione della misura che consente di adattare la sonda a qualunque serbatoio e tipologia di strumento, sia analogico che digitale. Il sensore fornisce in uscita anche un contatto normalmente aperto che si chiude verso massa quando il livello del carburante raggiunge il livello di riserva desiderato. A causa delle geometrie interne del sensore (ingombri delle flange e dimensioni del galleggiante), esistono due "zone buie": una nei pressi della flangia e una vicina al tappo. Queste zone, che corrispondono al livello di "pieno" e a quello di "vuoto", vengono indicate nella tabella delle lunghezze all'interno delle schede tecniche, facendo riferimento al pelo libero del carburante.

In tutto il resto della corsa del galleggiante sono distribuiti i restanti 13 livelli (Fig.2). La presenza di una camera di calma consente di attenuare fortemente le oscillazioni altrimenti subite dal galleggiante durante la marcia del veicolo. Il sensore è quindi un indicatore particolarmente preciso e stabile in qualunque condizione di funzionamento.

La componentistica elettronica è posizionata nella flangia ed è completamente sigillata per assicurarne la necessaria protezione. Così configurato, l'indicatore di livello resistivo può essere utilizzato in qualsiasi serbatoio contenente liquidi non conduttivi (benzina, benzina verde, gasolio, ecc.) ed essere montato nel serbatoio con un'inclinazione massima di 15° rispetto all'asse verticale.

Functioning of these sensors is based on the principle of a potentiometer, obtained with a sliding contact anchored inside a foam nylon float. Sensor provide a resistance value dependent on the fuel level when contact slides on an appropriate FR4 gold-plated printed circuit board (see diagram - Fig.1).

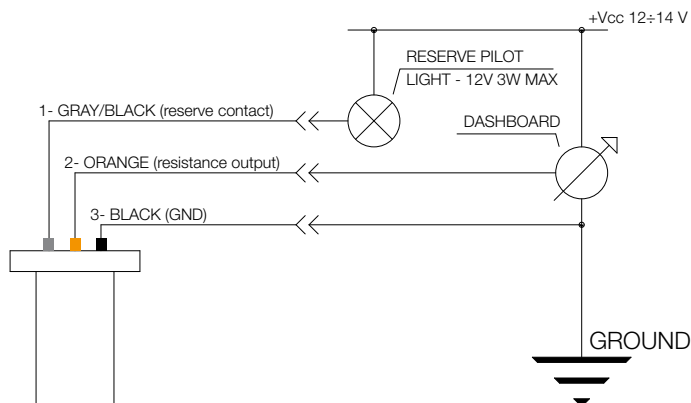
With the correct number (usually 15) and length of sectors on the printed circuit board, is possible to linearize the measurement to adapt the sensor to any type of tank or instrument, both analog or digital. Furthermore is available a normally-open output contact that closes when the fuel reach the reserve level. Due to the internal geometry of the sensor (flange dimensions and size of float), there are two "dark zones": one near the flange and one near the bottom cap. These zones, that correspond to the "full" and "empty" levels, are listed in the tables of lengths in the datasheets, referring to the fuel level. Across the rest of the ride of float, the remaining 13 levels are distributed (Fig.2). Presence of a plenum chamber reduces considerably oscillations, which would affect the float when the vehicle is moving. The sensor is thus an indicator exceptionally accurate and stable in all conditions of functioning.

Electronic components are placed on the flange and sealed in order to ensure the correct protection. So configured, the resistive level sensor can be used in any tank containing non-conductive liquids (high-octane petrol, unleaded petrol, diesel, etc.) and could be mounted in the tank with a maximum inclination of 15° from the vertical axis.

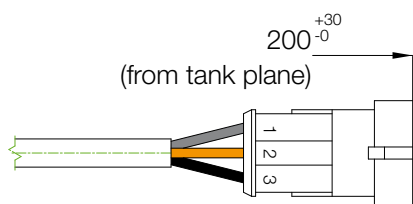
Parametri standard

Standard specs

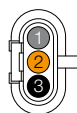
SCHEMA ELETTRICO / ELECTRIC DIAGRAM



CABLAGGIO / EXTERNAL CONNECTIONS



CONNECTOR:
AMP SUPERSEAL 282105-1
TERMINALS: AMP 282109-1
SEALING: AMP 281934-2



Pos.	Color	Section	Cover	Function
1	Gray/Black	0,75 mm ²	P.V.C.	Reserve Pilot
2	Orange	0,75 mm ²	P.V.C.	Sensor Output
3	Black	0,75 mm ²	P.V.C.	Ground

VALORI RESISTIVI ⁽¹⁾ / RESISTANCE VALUES ⁽¹⁾

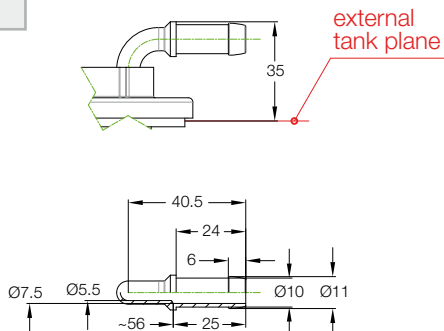
PIENO / FULL 5 ÷ 7 Ω
VUOTO / EMPTY 315 ÷ 330 Ω

⁽¹⁾ Vedere pag. 32 per altri valori disponibili / See pag. 32 for other existing values

CONNESSIONI CARBURANTE (per modelli B2, B4 e C2) / FUEL CONNECTIONS (for model B2, B4 and C2)

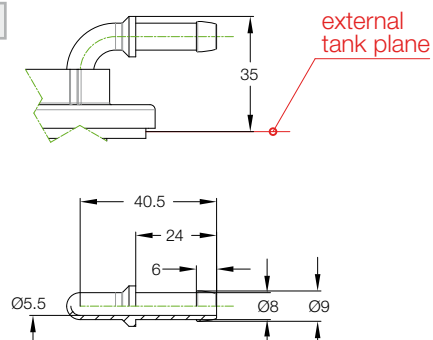
ASPIRAZIONE / SUCTION

P8



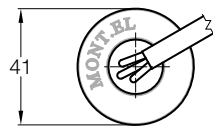
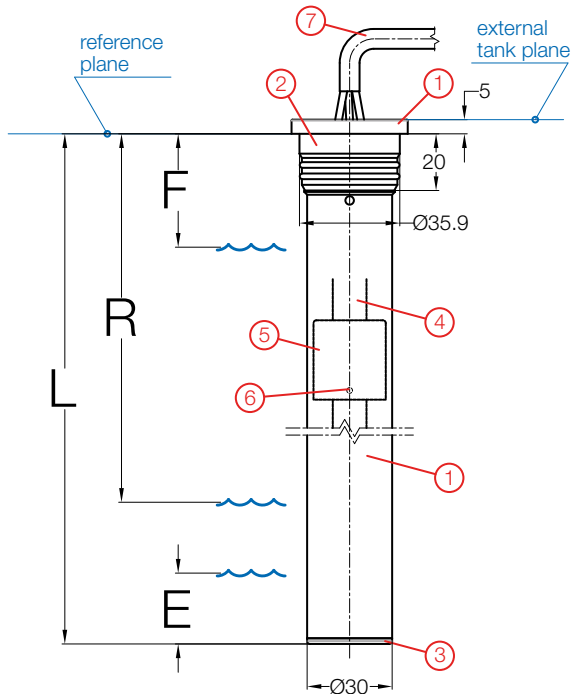
RITORNO / BACKFLOW

P6

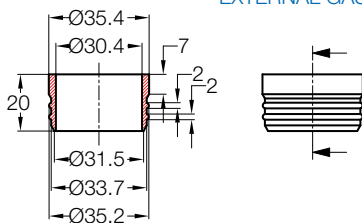


A1

Sensore con fissaggio a pressione Pressure fixation sensor



GUARNIZIONE ESTERNA EXTERNAL GASKET



Lunghezze disponibili Available lengths

L	R	F	E
Lunghezza sensore Sensor length	Livello riserva Reserve level	Zona buia al pieno "Full" dark zone	Zona buia al vuoto "Empty" dark zone
118,0	90,5	41,5	25,5
130,0	103,0	42,5	25,0
146,6	119,1	42,3	25,5
165,5	138,5	42,5	25,0
188,0	156,5	43,5	24,5

COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

Diesel fuel

Gasolio agricolo

Bio-diesel

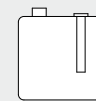


POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting



Descrizione Description

Materiale Material

1	Flangia + Corpo Flange + Body	PA66 caricato vetro PA66 glass forced
2	Guarnizione esterna External gasket	NBR70 NBR70
3	Tappo di chiusura Bottom cap	PA66 caricato vetro Glass forced
4	Circuito stampato Printed circuit board	FR4 dorato Gold plated FR4
5	Galleggiante Float	Nylon espanso Foamed nylon
6	Contatto strisciante Sliding contact	Bronzo fosforoso dorato Gold plated phosphorous bronze
7	Cablaggio (L=200 mm) Wiring harness (L=200 mm)	(vedi pagina 7) (please see at page 7)

COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

Diesel fuel

Gasolio agricolo

Bio-diesel



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting



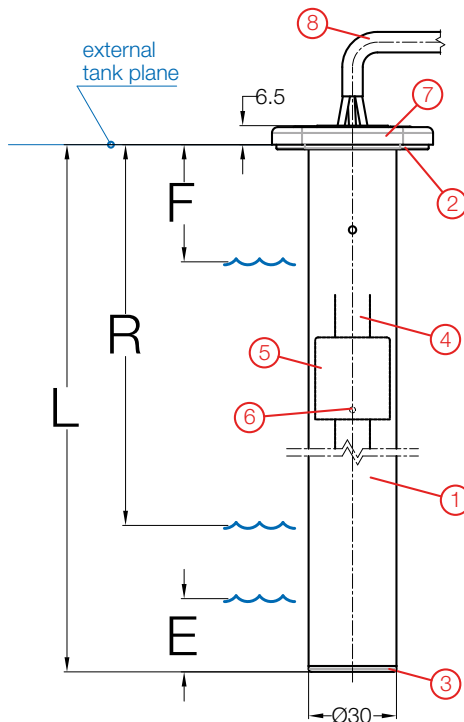
Descrizione Description

Materiale Material

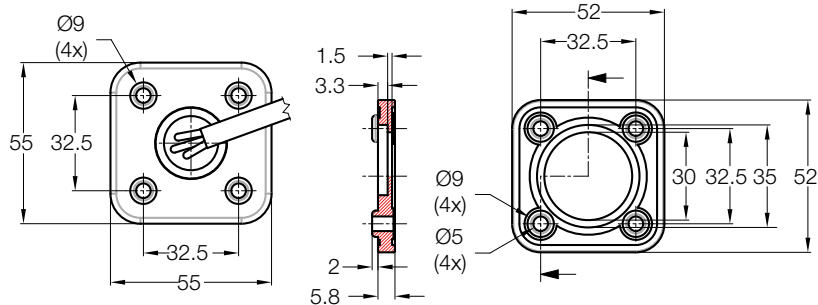
1	Flangia + Corpo Flange + Body	PA66 caricato vetro PA66 glass forced
2	Guarnizione esterna External gasket	NBR70 NBR70
3	Tappo di chiusura Bottom cap	PA66 caricato vetro Glass forced
4	Circuito stampato Printed circuit board	FR4 dorato Gold plated FR4
5	Galleggiante Float	Nylon espanso Foamed nylon
6	Contatto strisciante Sliding contact	Bronzo fosforoso dorato Gold plated phosphorous bronze
7	Controflangia metallica Metal top flange	Acciaio zincato Zinc plated steel
8	Cablaggio (L=200 mm) Wiring harness (L=200 mm)	(vedi pagina 7) (please see at page 7)

A2

Sensore con fissaggio a 4 viti
4 screws fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET

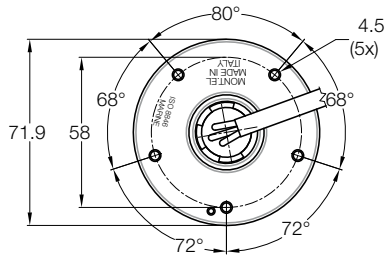
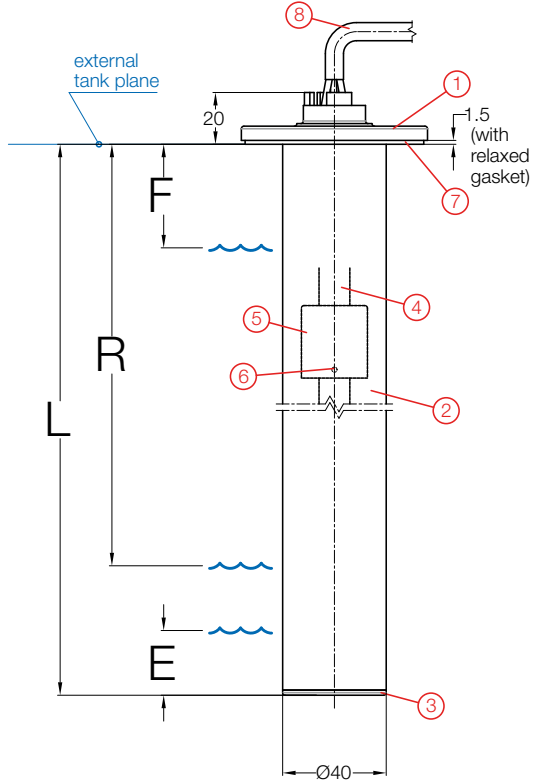


Lunghezze disponibili Available lengths

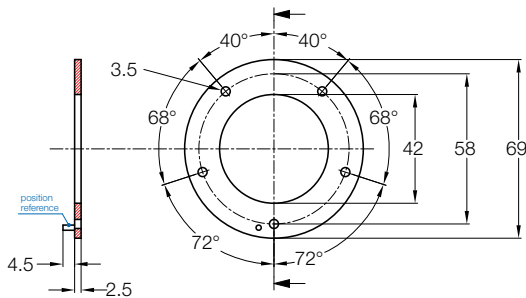
L	R	F	E
Lunghezza sensore Sensor length	Livello riserva Reserve level	Zona buia al pieno "Full" dark zone	Zona buia al vuoto "Empty" dark zone
106,1	78,6	44,3	27,5
121,1	86,1	45,6	25,0
139,6	101,6	44,6	27,0
168,5	129,0	43,8	24,5
200,7	154,8	44,3	26,0
218,5	190,5	48,3	25,0
252,1	224,0	102,0	25,2

A4

Sensore con fissaggio a 5 viti (Ø58 mm)
5 screws (Ø58 mm) fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

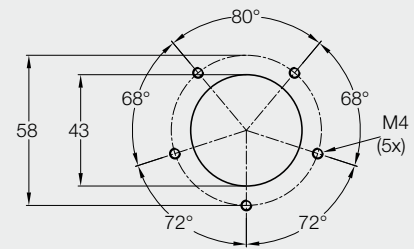
Diesel fuel

Gasolio agricolo

Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

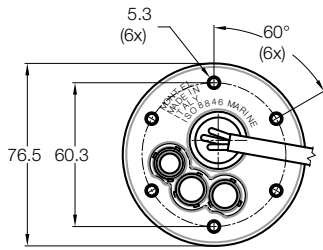
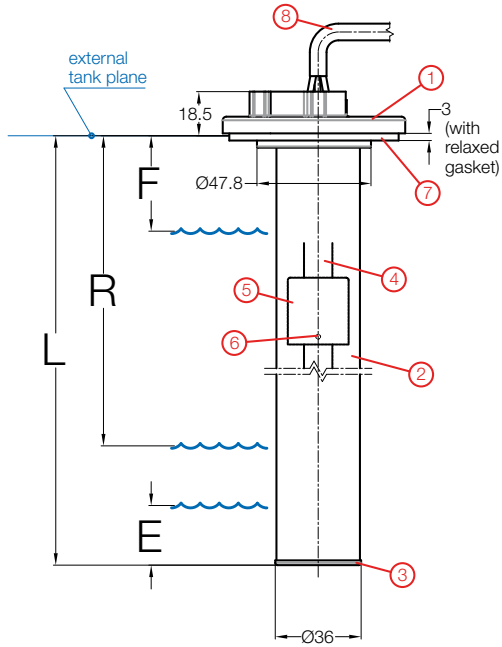


	Descrizione <i>Description</i>	Materiale <i>Material</i>
1	Flangia <i>Flange</i>	PA66 caricato vetro <i>PA66 glass forced</i>
2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna <i>External gasket</i>	NBR70 <i>NBR70</i>
8	Cablaggio (L=200 mm) <i>Wiring harness (L=200 mm)</i>	(vedi pagina 7) <i>(please see at page 7)</i>

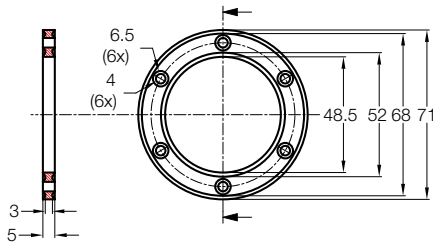
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
152,0	115,0	41,2	26,5
195,0	165,5	41,2	26,5
225,0	191,0	41,2	25,0
251,0	215,0	41,2	26,5
267,0	227,8	41,2	28,2
278,0	225,0	41,2	34,0
290,0	262,0	41,2	25,0
302,0	247,0	41,2	26,5
326,0	289,0	38,5	25,0
339,0	281,0	41,2	26,5
355,0	322,0	45,0	25,0
381,0	329,0	41,2	25,0
415,0	375,0	41,2	26,0
428,0	387,5	41,2	26,0
460,0	425,0	41,2	25,0
490,0	440,0	41,2	25,0
505,0	456,0	45,5	26,0
515,0	462,0	43,5	25,0
525,0	463,0	45,0	27,0
552,0	500,0	50,0	26,5
571,0	540,6	41,2	25,0
624,0	544,0	41,2	26,5
650,0	608,0	70,0	26,5
684,0	638,0	45,5	33,0

B1

Sensore con fissaggio a 6 viti (ø60,3 mm)
6 screws (ø60,3 mm) fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

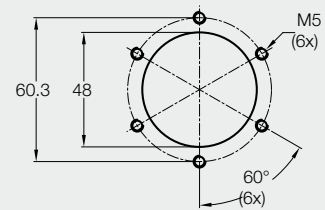
Gasolio

Diesel fuel

Gasolio agricolo

Bio-diesel

FISSAGGIO AL SERBATOIO
TANK COUPLING



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

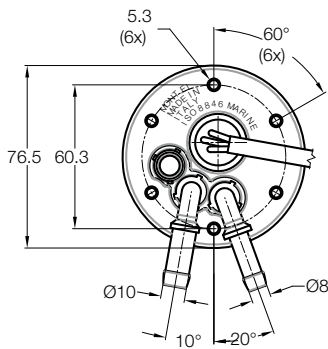
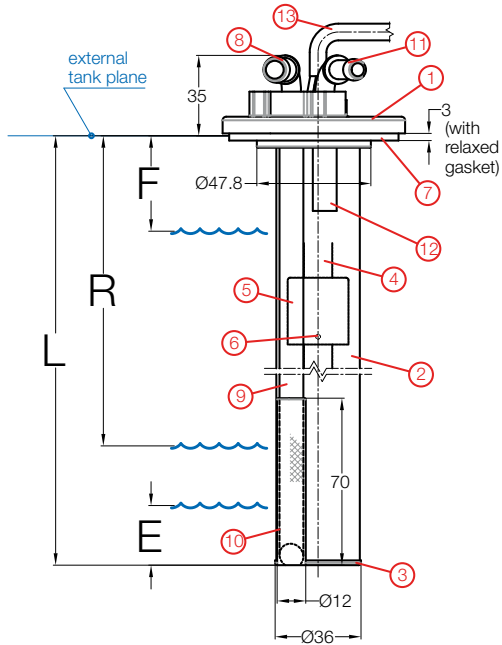


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2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna <i>External gasket</i>	NBR70 <i>NBR70</i>
8	Cablaggio (L=200 mm) <i>Wiring harness (L=200 mm)</i>	(vedi pagina 7) <i>(please see at page 7)</i>

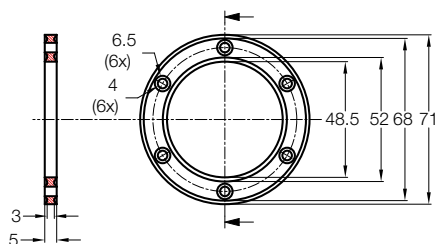
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
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490,0	440,0	41,2	25,0
505,0	456,0	45,5	26,0
515,0	462,0	43,5	25,0
525,0	463,0	45,0	27,0
552,0	500,0	50,0	26,5
571,0	540,6	41,2	25,0
624,0	544,0	41,2	26,5
650,0	608,0	70,0	26,5
684,0	638,0	45,5	33,0

B2

Sensore con fissaggio a 6 viti (ø60,3 mm)
con tubi carburante
6 screws (ø60,3 mm) fixation sensor with fuel lines



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

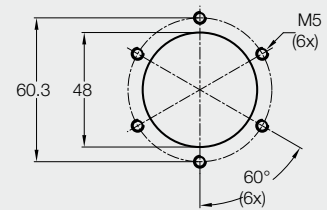
Diesel fuel

Gasolio agricolo

Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

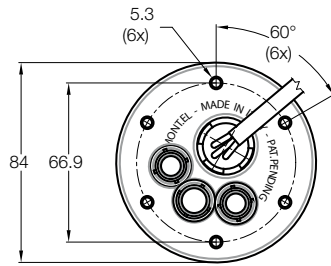
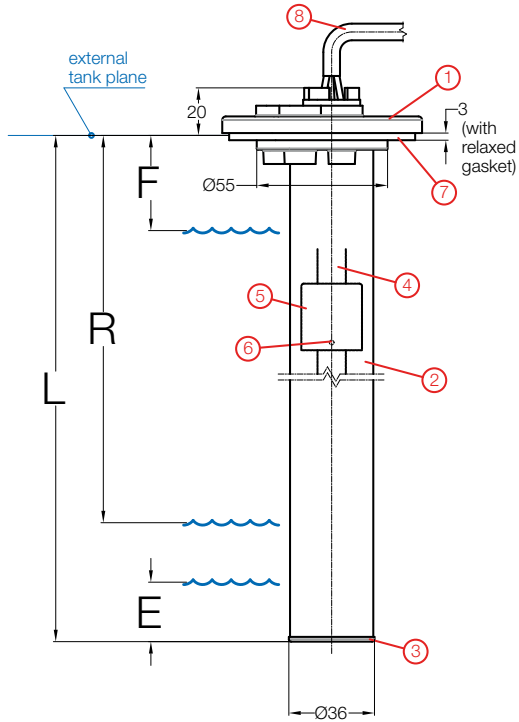


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4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna <i>External gasket</i>	NBR70 <i>NBR70</i>
8	Raccordo di aspirazione carburante <i>Suction fuel connection</i>	Acciaio <i>Steel</i>
9	Tubo di aspirazione carburante <i>Suction fuel tube</i>	PA11 (ø10x8) <i>PA11 (ø10x8)</i>
10	Filtro <i>Filter</i>	Acciaio (Maglia R2x1x0.35x0.2; ~500 micron) <i>Steel (Filtering stitch R2x1x0.35x0.2; ~500 micron)</i>
11	Raccordo di ritorno carburante <i>Backflow fuel connection</i>	Acciaio <i>Steel</i>
12	Tubo di ritorno carburante <i>Backflow fuel tube</i>	PA11 (ø10x8) <i>PA11 (ø10x8)</i>
13	Cablaggio (L=200 mm) <i>Wiring harness (L=200 mm)</i>	(vedi pagina 7) <i>(please see at page 7)</i>

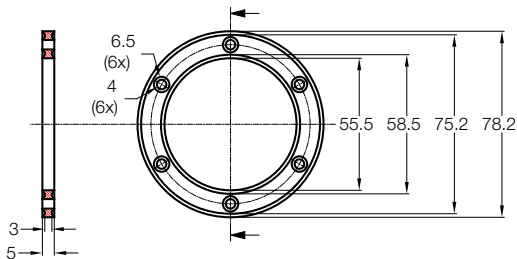
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
152,0	115,0	41,2	26,5
195,0	165,5	41,2	26,5
225,0	191,0	41,2	25,0
251,0	215,0	41,2	26,5
267,0	227,8	41,2	28,2
278,0	225,0	41,2	34,0
290,0	262,0	41,2	25,0
302,0	247,0	41,2	26,5
326,0	289,0	38,5	25,0
339,0	281,0	41,2	26,5
355,0	322,0	45,0	25,0
381,0	329,0	41,2	25,0
415,0	375,0	41,2	26,0
428,0	387,5	41,2	26,0
460,0	425,0	41,2	25,0
490,0	440,0	41,2	25,0
505,0	456,0	45,5	26,0
515,0	462,0	43,5	25,0
525,0	463,0	45,0	27,0
552,0	500,0	50,0	26,5
571,0	540,6	41,2	25,0
624,0	544,0	41,2	26,5
650,0	608,0	70,0	26,5
684,0	638,0	45,5	33,0

B3

Sensore con fissaggio a 6 viti (ø66,9 mm)
6 screws (ø66,9 mm) fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

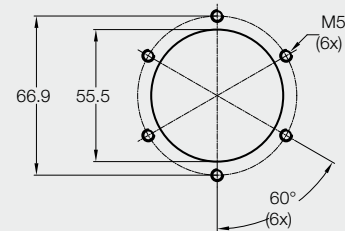
Diesel fuel

Gasolio agricolo

Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

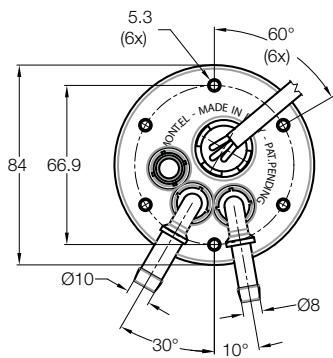
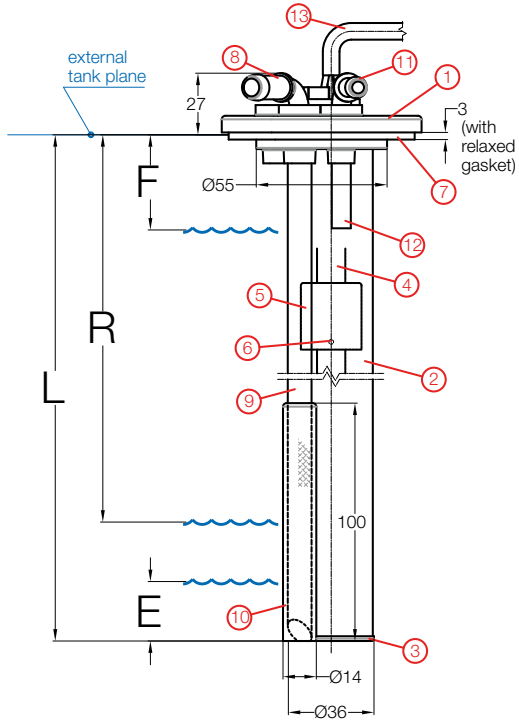


	Descrizione <i>Description</i>	Materiale <i>Material</i>
1	Flangia <i>Flange</i>	PA66 caricato vetro <i>PA66 glass forced</i>
2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna <i>External gasket</i>	NBR70 <i>NBR70</i>
8	Cablaggio (L=200 mm) <i>Wiring harness (L=200 mm)</i>	(vedi pagina 7) <i>(please see at page 7)</i>

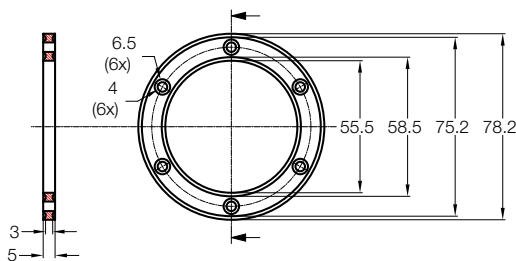
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
152,0	115,0	41,2	26,5
195,0	165,5	41,2	26,5
225,0	191,0	41,2	25,0
251,0	215,0	41,2	26,5
267,0	227,8	41,2	28,2
278,0	225,0	41,2	34,0
290,0	262,0	41,2	25,0
302,0	247,0	41,2	26,5
326,0	289,0	38,5	25,0
339,0	281,0	41,2	26,5
355,0	322,0	45,0	25,0
381,0	329,0	41,2	25,0
415,0	375,0	41,2	26,0
428,0	387,5	41,2	26,0
460,0	425,0	41,2	25,0
490,0	440,0	41,2	25,0
505,0	456,0	45,5	26,0
515,0	462,0	43,5	25,0
525,0	463,0	45,0	27,0
552,0	500,0	50,0	26,5
571,0	540,6	41,2	25,0
624,0	544,0	41,2	26,5
650,0	608,0	70,0	26,5
684,0	638,0	45,5	33,0

B4

Sensore con fissaggio a 6 viti (Ø66,9 mm)
con tubi carburante
6 screws (Ø66,9 mm) fixation sensor with fuel lines



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

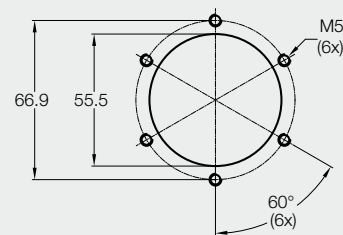
Diesel fuel

Gasolio agricolo

Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

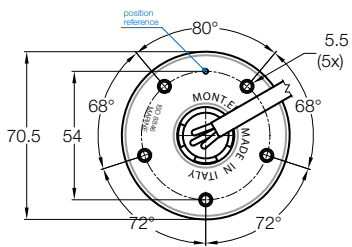
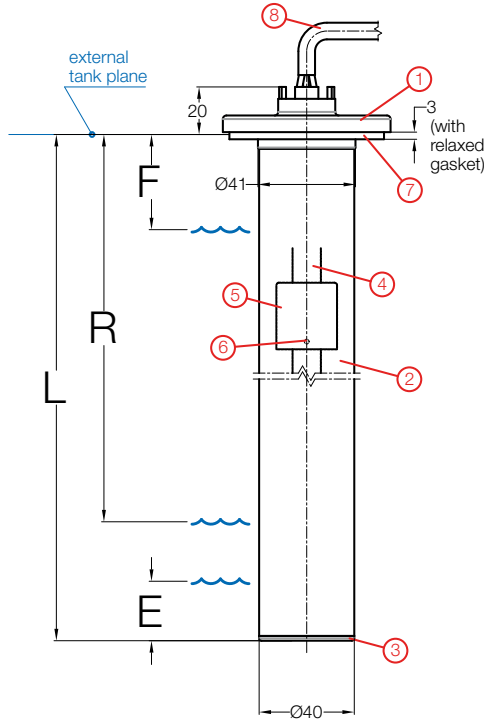


	Descrizione <i>Description</i>	Materiale <i>Material</i>
1	Flangia <i>Flange</i>	PA66 caricato vetro <i>PA66 glass forced</i>
2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna <i>External gasket</i>	NBR70 <i>NBR70</i>
8	Raccordo di aspirazione carburante <i>Suction fuel connection</i>	Acciaio <i>Steel</i>
9	Tubo di aspirazione carburante <i>Suction fuel tube</i>	PA11 (ø10x8) <i>PA11 (ø10x8)</i>
10	Filtro <i>Filter</i>	Acciaio (Maglia R2x1x0.35x0.2; ~500 micron) <i>Steel (Filtering stitch R2x1x0.35x0.2; ~500 micron)</i>
11	Raccordo di ritorno carburante <i>Backflow fuel connection</i>	Acciaio <i>Steel</i>
12	Tubo di ritorno carburante <i>Backflow fuel tube</i>	PA12 (ø8x6) <i>PA12 (ø8x6)</i>
13	Cablaggio (L=200 mm) <i>Wiring harness (L=200 mm)</i>	(vedi pagina 7) <i>(please see at page 7)</i>

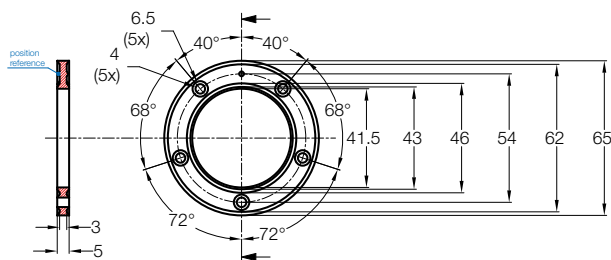
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
152,0	115,0	41,2	26,5
195,0	165,5	41,2	26,5
225,0	191,0	41,2	25,0
251,0	215,0	41,2	26,5
267,0	227,8	41,2	28,2
278,0	225,0	41,2	34,0
290,0	262,0	41,2	25,0
302,0	247,0	41,2	26,5
326,0	289,0	38,5	25,0
339,0	281,0	41,2	26,5
355,0	322,0	45,0	25,0
381,0	329,0	41,2	25,0
415,0	375,0	41,2	26,0
428,0	387,5	41,2	26,0
460,0	425,0	41,2	25,0
490,0	440,0	41,2	25,0
505,0	456,0	45,5	26,0
515,0	462,0	43,5	25,0
525,0	463,0	45,0	27,0
552,0	500,0	50,0	26,5
571,0	540,6	41,2	25,0
624,0	544,0	41,2	26,5
650,0	608,0	70,0	26,5
684,0	638,0	45,5	33,0

B5

Sensore con fissaggio a 5 viti (Ø54 mm)
5 screws (Ø54 mm) fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

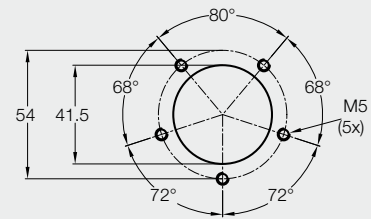
Diesel fuel

Gasolio agricolo

Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

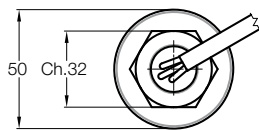
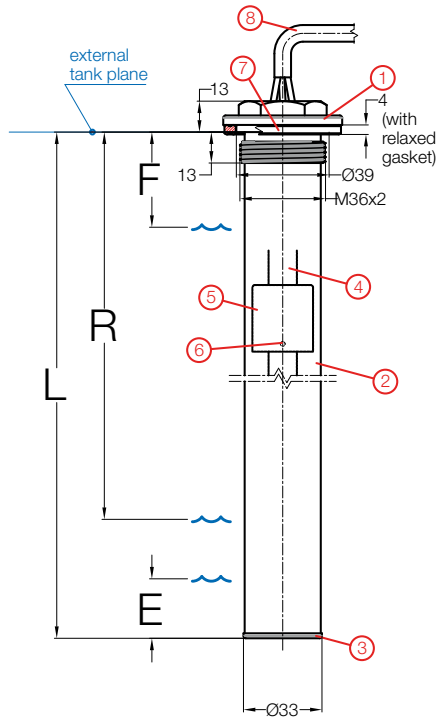


	Descrizione <i>Description</i>	Materiale <i>Material</i>
1	Flangia <i>Flange</i>	PA66 caricato vetro <i>PA66 glass forced</i>
2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna <i>External gasket</i>	NBR70 <i>NBR70</i>
8	Cablaggio (L=200 mm) <i>Wiring harness (L=200 mm)</i>	(vedi pagina 7) <i>(please see at page 7)</i>

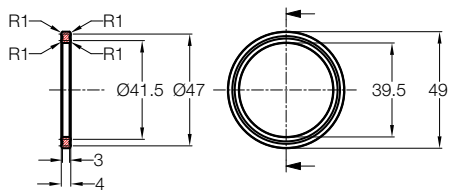
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
160,0	123,0	49,2	26,5
203,0	173,5	49,2	26,5
233,0	199,0	49,2	25,0
259,0	223,0	49,2	26,5
275,0	235,8	49,2	28,2
286,0	233,0	49,2	34,0
298,0	270,0	49,2	25,0
310,0	255,0	49,2	26,5
334,0	297,0	46,5	25,0
347,0	289,0	49,2	26,5
363,0	330,0	53,0	25,0
389,0	337,0	49,2	25,0
423,0	383,0	49,2	26,0
436,0	395,5	49,2	26,0
468,0	433,0	49,2	25,0
498,0	448,0	49,2	25,0
513,0	464,0	53,5	26,0
523,0	470,0	51,5	25,0
533,0	471,0	53,0	27,0
560,0	508,0	58,0	26,5
579,0	548,6	49,2	25,0
632,0	552,0	49,2	26,5
658,0	616,0	78,0	26,5
692,0	646,0	53,5	33,0

B8

Sensore con fissaggio a filetto (M36x2)
Thread (M36x2) fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

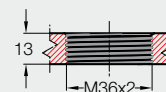
Diesel fuel

Gasolio agricolo

Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

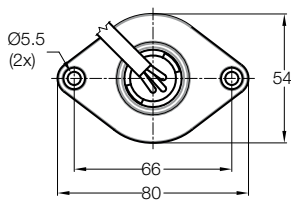
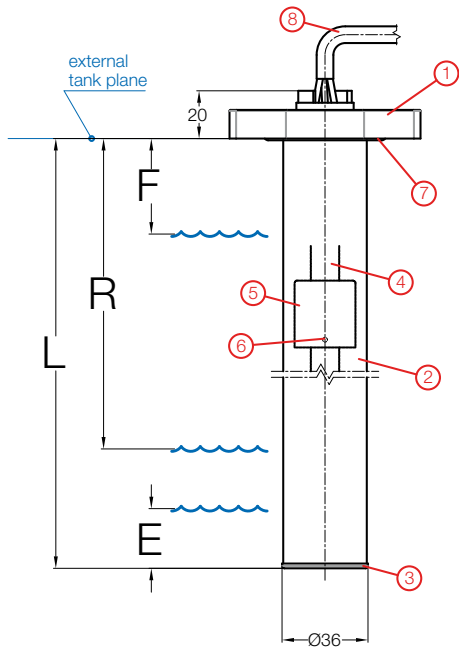


	Descrizione <i>Description</i>	Materiale <i>Material</i>
1	Flangia <i>Flange</i>	PA66 caricato vetro <i>PA66 glass forced</i>
2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna <i>External gasket</i>	NBR70 <i>NBR70</i>
8	Cablaggio (L=200 mm) <i>Wiring harness (L=200 mm)</i>	(vedi pagina 7) <i>(please see at page 7)</i>

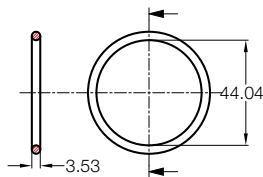
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
160,0	123,0	49,2	26,5
203,0	173,5	49,2	26,5
233,0	199,0	49,2	25,0
259,0	223,0	49,2	26,5
275,0	235,8	49,2	28,2
286,0	233,0	49,2	34,0
298,0	270,0	49,2	25,0
310,0	255,0	49,2	26,5
334,0	297,0	46,5	25,0
347,0	289,0	49,2	26,5
363,0	330,0	53,0	25,0
389,0	337,0	49,2	25,0
423,0	383,0	49,2	26,0
436,0	395,5	49,2	26,0
468,0	433,0	49,2	25,0
498,0	448,0	49,2	25,0

B9

Sensore con fissaggio a 2 viti
2 screws fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

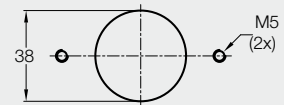
Diesel fuel

Gasolio agricolo

Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING

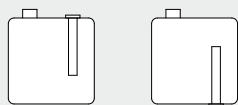


POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Montaggio consentito dall'alto
e dal fondo

Bottom and top
mounting allowed

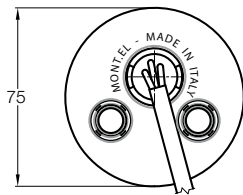
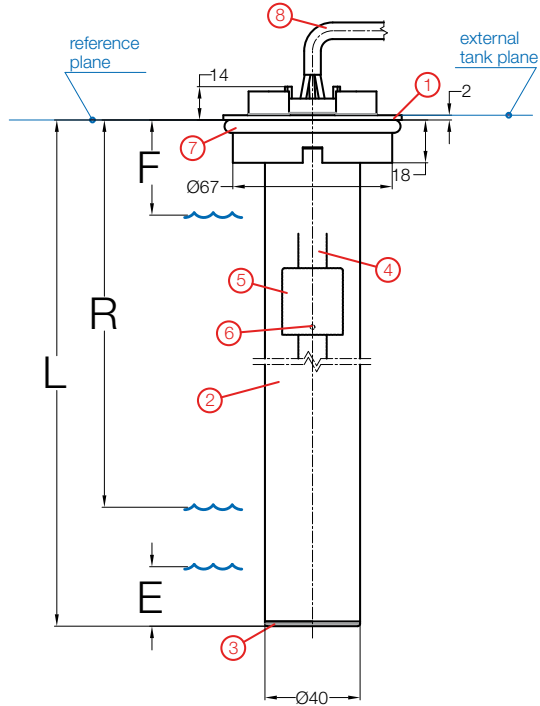


	Descrizione <i>Description</i>	Materiale <i>Material</i>
1	Flangia <i>Flange</i>	PA66 caricato vetro <i>PA66 glass forced</i>
2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>
7	Guarnizione esterna (O-ring 44,04x3,53) <i>External gasket</i> (O-ring 44,04x3,53)	NBR70 <i>NBR70</i>
8	Cablaggio (L=200 mm) <i>Wiring harness</i> (L=200 mm)	(vedi pagina 7) <i>(please see at page 7)</i>

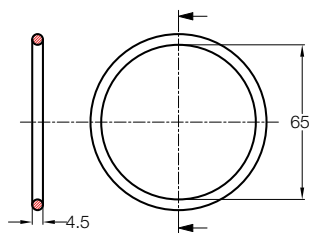
Lunghezze disponibili <i>Available lengths</i>			
L Lunghezza sensore <i>Sensor length</i>	R Livello riserva <i>Reserve level</i>	F Zona buia al pieno <i>"Full" dark zone</i>	E Zona buia al vuoto <i>"Empty" dark zone</i>
152,0	115,0	41,2	26,5
195,0	165,5	41,2	26,5
225,0	191,0	41,2	25,0
251,0	215,0	41,2	26,5
267,0	227,8	41,2	28,2
278,0	225,0	41,2	34,0
290,0	262,0	41,2	25,0
302,0	247,0	41,2	26,5
326,0	289,0	38,5	25,0
339,0	281,0	41,2	26,5
355,0	322,0	45,0	25,0
381,0	329,0	41,2	25,0
415,0	375,0	41,2	26,0
428,0	387,5	41,2	26,0
460,0	425,0	41,2	25,0
490,0	440,0	41,2	25,0
505,0	456,0	45,5	26,0
515,0	462,0	43,5	25,0
525,0	463,0	45,0	27,0
552,0	500,0	50,0	26,5
571,0	540,6	41,2	25,0
624,0	544,0	41,2	26,5
650,0	608,0	70,0	26,5
684,0	638,0	45,5	33,0

C1

Sensore con fissaggio a piastra metallica Metal plate fixation sensor



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

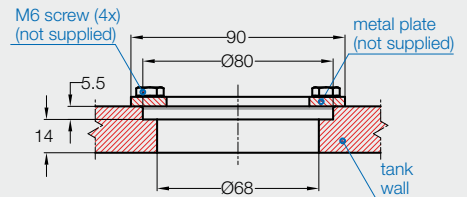
Diesel fuel

Gasolio agricolo

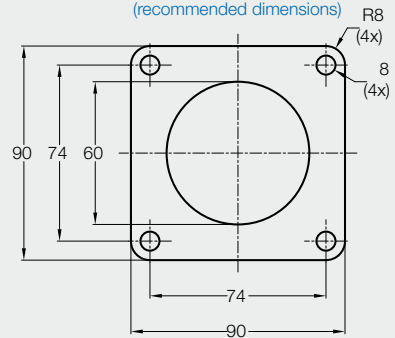
Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



PIASTRA METALLICA
(dimensioni consigliate)
METAL PLATE
(recommended dimensions)



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting

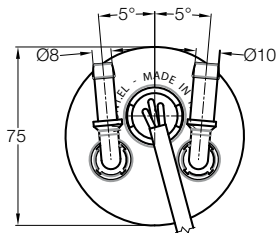
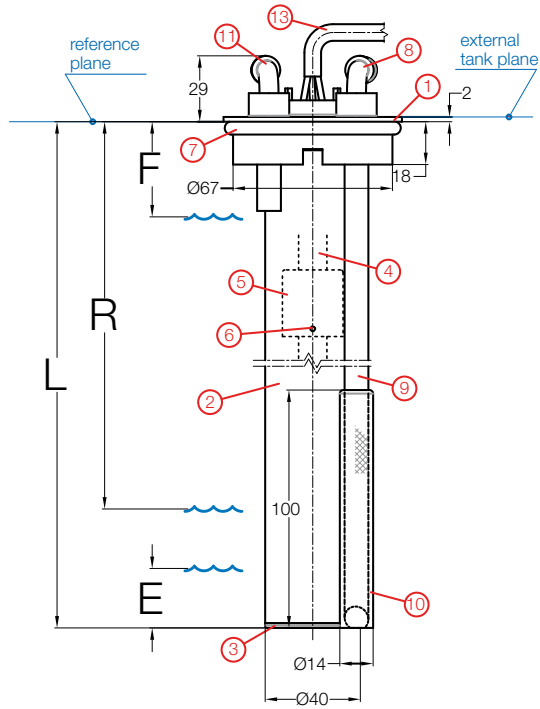


Descrizione	Description	Materiale	Material
1	Flangia <i>Flange</i>	PA66 caricato vetro <i>PA66 glass forced</i>	
2	Corpo <i>Body</i>	Alluminio <i>Aluminium</i>	
3	Tappo di chiusura <i>Bottom cap</i>	PA66 caricato vetro <i>PA66 glass forced</i>	
4	Circuito stampato <i>Printed circuit board</i>	FR4 dorato <i>Gold plated FR4</i>	
5	Galleggiante <i>Float</i>	Nylon espanso <i>Foamed nylon</i>	
6	Contatto strisciante <i>Sliding contact</i>	Bronzo fosforoso dorato <i>Gold plated phosphorous bronze</i>	
7	Guarnizione esterna (O-ring 65,00x4,50) <i>External gasket</i> (O-ring 65,00x4,50)	NBR70 <i>NBR70</i>	
8	Cablaggio (L=200 mm) <i>Wiring harness</i> (L=200 mm)	(vedi pagina 7) <i>(please see at page 7)</i>	

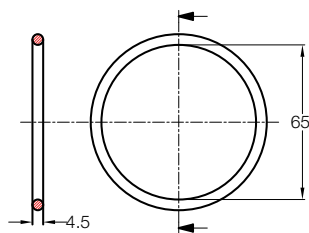
Lunghezze disponibili				Available lengths			
L	R	F	E	L	R	F	E
Lunghezza sensore	Livello riserva	Zona buia al pieno	Zona buia al vuoto	Sensor length	Reserve level	"Full" dark zone	"Empty" dark zone
166,0	129,0	55,2	26,5				
209,0	179,5	55,2	26,5				
239,0	205,0	55,2	25,0				
265,0	229,0	55,2	26,5				
281,0	241,8	55,2	28,2				
292,0	239,0	55,2	34,0				
304,0	276,0	55,2	25,0				
316,0	261,0	55,2	26,5				
340,0	303,0	52,5	25,0				
353,0	295,0	55,2	26,5				
369,0	336,0	59,0	25,0				
395,0	343,0	55,2	25,0				
429,0	389,0	55,2	26,0				
442,0	401,5	55,2	26,0				
474,0	439,0	55,2	25,0				
504,0	454,0	55,2	25,0				
519,0	470,0	59,5	26,0				
529,0	476,0	57,5	25,0				
539,0	477,0	59,0	27,0				
566,0	514,0	64,0	26,5				
585,0	554,6	55,2	25,0				
638,0	558,0	55,2	26,5				
664,0	622,0	84,0	26,5				
698,0	652,0	59,5	33,0				

C2

Sensore con fissaggio a piastra metallica
con tubi carburante
Metal plate fixation sensor with fuel lines



GUARNIZIONE ESTERNA
EXTERNAL GASKET



COMPATIBILE
CON CARBURANTI

FUEL
COMPATIBILITY

Benzina senza piombo

Unleaded petrol

Gasolio

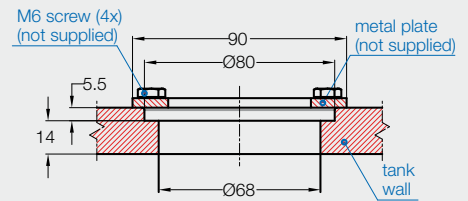
Diesel fuel

Gasolio agricolo

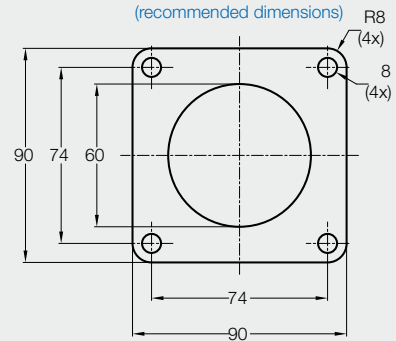
Bio-diesel



FISSAGGIO AL SERBATOIO
TANK COUPLING



PIASTRA METALLICA
(dimensioni consigliate)
METAL PLATE
(recommended dimensions)



POSIZIONAMENTO
NEL SERBATOIO

TANK
POSITIONING

Solo per montaggio dall'alto

Only for top mounting



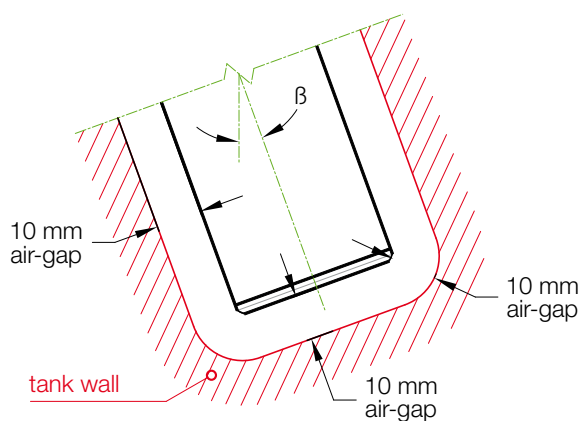
	Descrizione Description	Materiale Material
1	Flangia Flange	PA66 caricato vetro PA66 glass forced
2	Corpo Body	Alluminio Aluminium
3	Tappo di chiusura Bottom cap	PA66 caricato vetro PA66 glass forced
4	Circuito stampato Printed circuit board	FR4 dorato Gold plated FR4
5	Galleggiante Float	Nylon espanso Foamed nylon
6	Contatto strisciante Sliding contact	Bronzo fosforoso dorato Gold plated phosphorous bronze
7	Guarnizione esterna (O-ring 65,00x4,50) External gasket (O-ring 65,00x4,50)	NBR70 NBR70
8	Raccordo di aspirazione carburante Suction fuel connection	Acciaio Steel
9	Tubo di aspirazione carburante Suction fuel tube	PA11 (ø10x8) PA11 (ø10x8)
10	Filtro Filter	Acciaio (Maglia R2x1x0.35x0.2; ~500 micron) Steel (Filtering stitch R2x1x0.35x0.2; ~500 micron)
11	Raccordo di ritorno carburante Backflow fuel connection	Acciaio Steel
12	Tubo di ritorno carburante Backflow fuel tube	PA11 (ø10x8) PA11 (ø10x8)
13	Cablaggio (L=200 mm) Wiring harness (L=200 mm)	(vedi pagina 7) (please see at page 7)

Lunghezze disponibili Available lengths			
L Lunghezza sensore Sensor length	R Livello riserva Reserve level	F Zona buia al pieno "Full" dark zone	E Zona buia al vuoto "Empty" dark zone
166,0	129,0	55,2	26,5
209,0	179,5	55,2	26,5
239,0	205,0	55,2	25,0
265,0	229,0	55,2	26,5
281,0	241,8	55,2	28,2
292,0	239,0	55,2	34,0
304,0	276,0	55,2	25,0
316,0	261,0	55,2	26,5
340,0	303,0	52,5	25,0
353,0	295,0	55,2	26,5
369,0	336,0	59,0	25,0
395,0	343,0	55,2	25,0
429,0	389,0	55,2	26,0
442,0	401,5	55,2	26,0
474,0	439,0	55,2	25,0
504,0	454,0	55,2	25,0
519,0	470,0	59,5	26,0
529,0	476,0	57,5	25,0
539,0	477,0	59,0	27,0
566,0	514,0	64,0	26,5
585,0	554,6	55,2	25,0
638,0	558,0	55,2	26,5
664,0	622,0	84,0	26,5
698,0	652,0	59,5	33,0

Requisiti di installazione

Installation requirements

PER UN CORRETTO FUNZIONAMENTO TO WELL FUNCTIONING



Spazio minimo 10 mm

Minimum air-gap 10 mm

Minima corrente necessaria 1 mA

Min current required ⁽¹⁾ 1 mA

VALORI MASSIMI DI UTILIZZO MAXIMUM RATINGS

Massima inclinazione (β) 15°

Maximum inclination (β) 15°

Temperatura di funzionamento 20°C ÷ +80°C

Working temperature -4°F ÷ +176°F

Temperatura di stoccaggio -25°C ÷ +85°C

Storage temperature -13°F ÷ +185°F

Massima corrente consentita ⁽¹⁾
 Pieno → 100 mA
 Vuoto → 40 mA

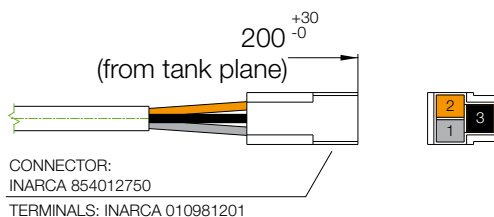
Max current allowed ⁽¹⁾
 Full → 100 mA
 Empty → 40 mA

(1) Variabile in base alla configurazione del sensore / Variable, based on sensor configuration

Opzioni disponibili Options available

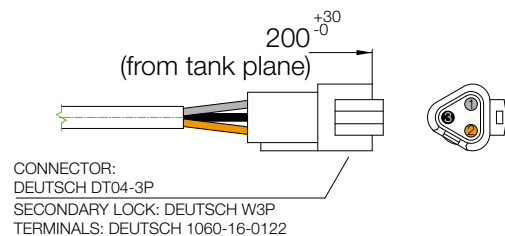
CABLAGGIO WIRING HARNESS

FF3M6.03



Pos.	Color	Section	Cover	Function
1	Gray/Black	0,75 mm ²	P.V.C.	Reserve Pilot
2	Orange	0,75 mm ²	P.V.C.	Sensor Output
3	Black	0,75 mm ²	P.V.C.	Ground

D3M.01

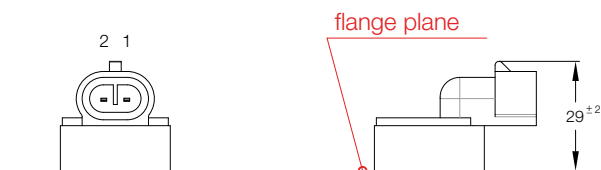


Pos.	Color	Section	Cover	Function
1	Gray/Black	0,75 mm ²	P.V.C.	Reserve Pilot
2	Orange	0,75 mm ²	P.V.C.	Sensor Output
3	Black	0,75 mm ²	P.V.C.	Ground

SS2M

Se il contatto della riserva non è utilizzato, è disponibile un connettore integrato a 2 vie per i modelli A4, B3, B4, B5 e B9 in versione nera e per i modelli C1 e C2 in versione bianca

If contact for reserve pilot is not required, this 2 ways integrated connector is available in black version for fuel sensor model A4, B3, B4, B5 and B9; for the model C1 and C2 is available a white version



CONNECTOR & TERMINALS: MONT.EL
This part can be fitted with
PACKARD 12052641 and AMP 282080-1

Pos.	Function
1	Ground
2	Sensor Output

Opzioni disponibili

Options available

VALORI RESISTIVI RESISTANCE VALUES

Valori resistivi ⁽¹⁾	Pieno	175 ÷ 185 Ω	Resistance values ⁽¹⁾	Full	175 ÷ 185 Ω
	Vuoto	10 ÷ 7 Ω		Empty	10 ÷ 7 Ω
Massima corrente consentita ⁽²⁾	Pieno →	65 mA	Max current allowed ⁽²⁾	Full →	65 mA
	Vuoto →	80 mA		Empty →	80 mA

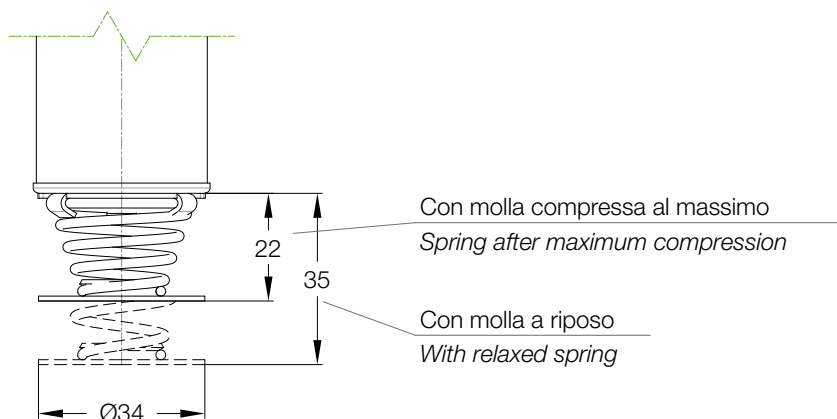
(1) Altri valori comunemente utilizzati sono disponibili su richiesta / Other values commonly used are available on demand

(2) Variabile in base alla configurazione del sensore / Variable, based on sensor configuration

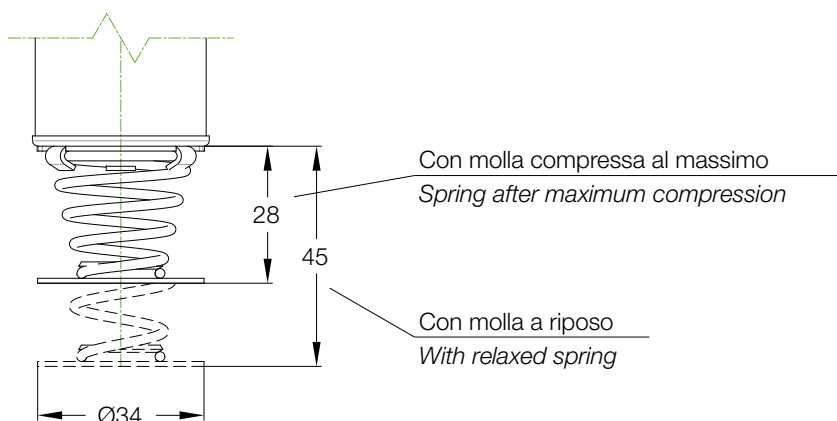
MOLLA INFERIORE BOTTOM SPRING

Disponibili per migliorare la resistenza meccanica del sensore, quando richiesto (serbatoi molto grossi)
Available to improve mechanical resistance of the sensor, when required (huge tank)

MLLS



MLLS2

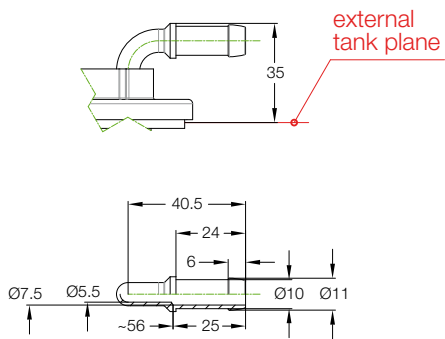


CONNESSIONI CARBURANTE FUEL CONNECTIONS

(Disponibili per i modelli B2, B4 e C2.) (I valori indicati sono riferiti alla flangia del modello)
 (Available for fuel sensor model B2, B4 and C2.) (Values showed are referred to flange of B2 model)

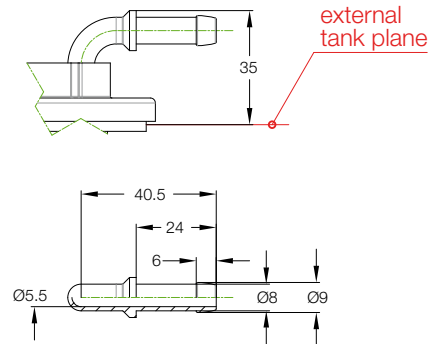
P8

Versione $\varnothing 10 - 90^\circ$ (Standard per aspirazione)
 $\varnothing 10 - 90^\circ$ version (Standard for suction line)



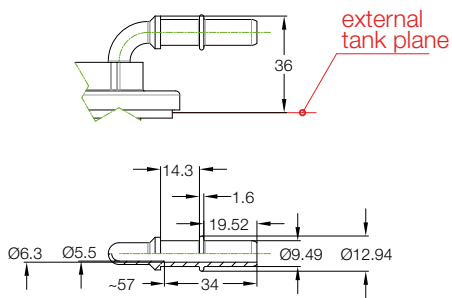
P6

Versione $\varnothing 8 - 90^\circ$ (Standard per ritorno)
 $\varnothing 8 - 90^\circ$ version (Standard for return line)



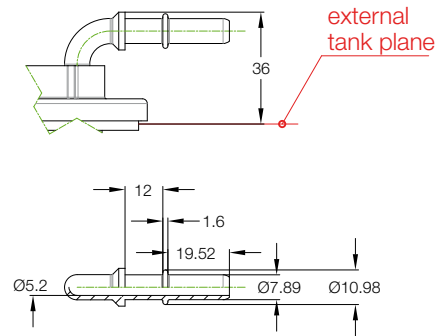
P20

Versione SAE J2044 - $\varnothing 9.5 - 90^\circ$
 SAE J2044 - $\varnothing 9.5 - 90^\circ$ version



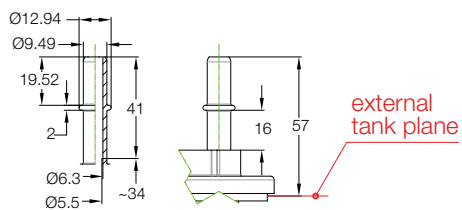
P22

Versione SAE J2044 - $\varnothing 8 - 90^\circ$
 SAE J2044 - $\varnothing 8 - 90^\circ$ version



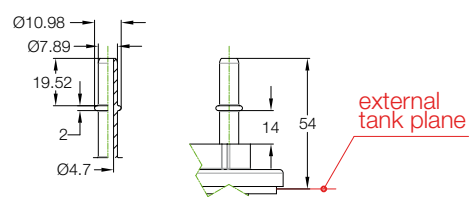
P16

Versione SAE J2044 - $\varnothing 9.5 -$ verticale
 SAE J2044 - $\varnothing 9.5 -$ vertical version



P17

Versione SAE J2044 - $\varnothing 8 -$ verticale
 SAE J2044 - $\varnothing 8 -$ vertical version



Note
Notes



MONT.EL

la forza del gruppo

the group's strengths

MONT.EL Group, gruppo specializzato nella progettazione e costruzione di cablaggi, apparecchiature elettroniche e sensori, è un network di aziende operanti nell'outsourcing evoluto e in grado di fornire un prodotto completo, progettato in co-engineering o eseguito su disegno del cliente, secondo criteri di alta qualità, efficienza, precisione e massima affidabilità.

Il network **MONT.EL Group** si avvale della professionalità, dell'esperienza e della competenza di sei aziende, quattro in Italia: MONT.EL (cablaggi), INTEA (progettazione e realizzazione di apparecchiature elettroniche di comando e di controllo), EUROSITCH (sensori di livello, pressione, temperatura e rotazione), AME (apparecchiature elettriche) e due in Romania: SIRE (cablaggi, assemblaggi elettromeccanici) e TECHTRON (apparecchiature elettroniche).

The **MONT.EL Group** specialises in the design and manufacture of wiring systems, and electric and electronic equipment and sensors. It is a fully integrated network of companies dealing with advanced outsourcing that can offer a complete product, which is co-engineered or made to customer drawing, and features superior quality, efficiency, accuracy and maximum reliability.

The **MONT.EL Group** relies on the professional skill, know-how and expertise of the six member companies. Four are based in Italy - MONT.EL (wiring systems), INTEA (design and development of electronic drive and control equipment), EUROSITCH (level, pressure, temperature and rotation sensors), and AME (electrical equipment) and two in Romania - SIRE (wiring systems and electro-mechanical assemblies) and TECHTRON (electronic equipment).



MONT.EL

apparecchiature elettroniche,
cablaggi

electric and electronic equipment



EUROSITCH

sensori di livello, pressione,
temperatura

*level, pressure,
temperature sensors*



**INTEA
ENGINEERING**

tecnologie elettroniche applicate
applied electronic technologies



AME

apparecchiature elettriche
electrical equipment



SIRE

cablaggi, assemblaggi
wirings, assembly



TECHTRON

apparecchiature elettroniche
electronic equipments



MONT.EL

Apparecchiature elettroelettroniche, cablaggi
Electric and electronic equipment and wiring harnesses

Via Mazzini, 31/B
25057 Sale Marasino
Tel. +39 030 986300 - Fax +39 030 9867069
e-mail: info@montel.it
www.montel.it