

**Filler breathers**

**HB 50 / HB 70 / HB 110 / HB 120 series**

**Air filters**

**AF 105 / AF 106 series**

**Level gauges**

**HL 91 / HB 02 series**



## RESERVOIR COMPONENTS

Apart from the main components such as pumps, motors, valves, cylinders, hoses and filters every complex plant with a hydraulic circuit has need for a reservoir containing fluid.

Reservoirs are often placed in uncomfortable positions especially on mobile machines where the reduction of obstructions is important.

Rationale suggests reservoirs be put in accessible positions and locations in order to periodically check the fluid through particular devices installed on them.

Reservoirs are normally built according to quantity of fluid circulating in some unit of time, often with bulkheads that allow heat-exchange along with speed reduction and partial pollutant settling.

Another important suggestion is the location of the fluid's outlet and inlet which need to be as far apart as possible.

As well as tank-mounted return line filters and suction line filters the other components that are usually directly connected to the reservoir are shown in this catalog as follows:

- Filler caps
- Filler caps with air breather
- Air breathers
- Visual level indicators

All these components are introduced with all their own characteristics and are essential to keep the fluid in optimal condition, which is most important to allow high and long-lasting performance of the entire plant.



# HB 50 FILLER CAP WITH AIR BREATHER

## TECHNICAL DATA

HB50 filler caps are used for air filtration and filling the reservoir.

The cap's cover is made of chromium plated steel while all the other components are zinc-plated steel.

For the air filtration 10 and 40  $\mu\text{m}$  built-in-media are available.

They can also feature a basket to pre-filter the incoming oil avoiding macroparticle contamination and a level dipstick available in three different heights.

The tank connection can be made through flanges with screws, welding flanges or directly with a 1/4" GAS male thread. Another option is the chainlet that keeps the cap connected with the flange beneath.

- Chromium-plated steel cover
- Level dipstick on board

### MATERIALS

|                           |                       |
|---------------------------|-----------------------|
| Cap                       | Chromium-plated steel |
| Basket                    | Zinc-plated steel     |
| Level dipstick            | Zinc-plated steel     |
| Fixing flange with screws | Zinc-plated steel     |
| Welding flange            | Steel                 |
| Chainlet                  | Zinc-plated steel     |
| Seals                     | Buna                  |
| Filtering media           | Polyurethane          |

### FLUID COMPATIBILITY

Conforming to ISO 2943 (Norm ISO 6743/4)

|                  |                             |
|------------------|-----------------------------|
| Mineral Oils     | HH - HL - HM - HR - HV - HG |
| Water emulsions  | HFAE - HFAS                 |
| Glycol water     | HFC                         |
| Synthetic fluids | HS - HFDR - HFDU - HFDS     |

**Special versions compatible with the use of different fluids are available.**

### FLOW

|                             |                         |
|-----------------------------|-------------------------|
| 10 $\mu\text{m}$ air filter | 66.0 US gpm (250 l/min) |
| 40 $\mu\text{m}$ air filter | 75.3 US gpm (285 l/min) |

### WEIGHT

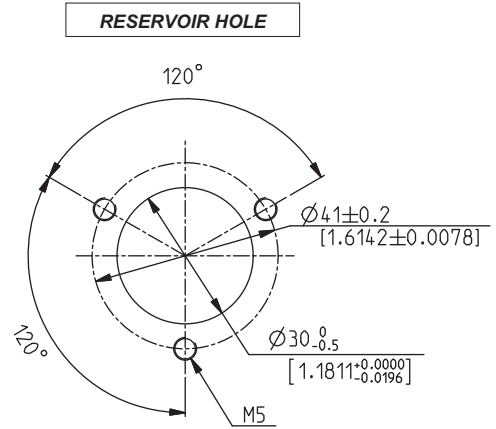
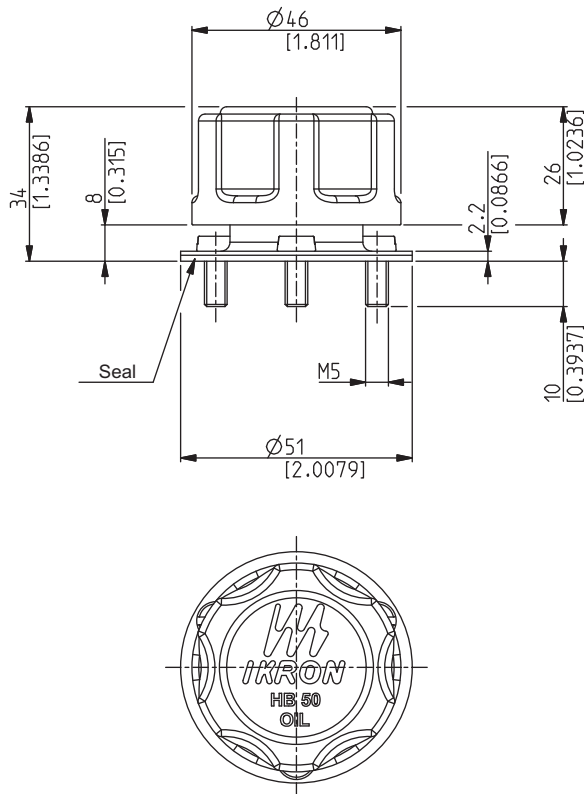
0.15 ÷ 0.20 lbs (0,07 ÷ 0,09 Kg)

### WORKING TEMPERATURE

-22 ÷ 195 °F (-30 ÷ 90 °C)

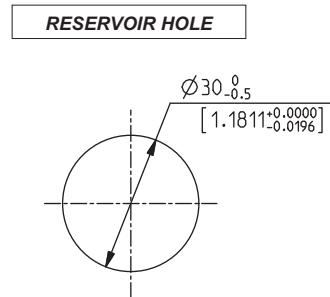
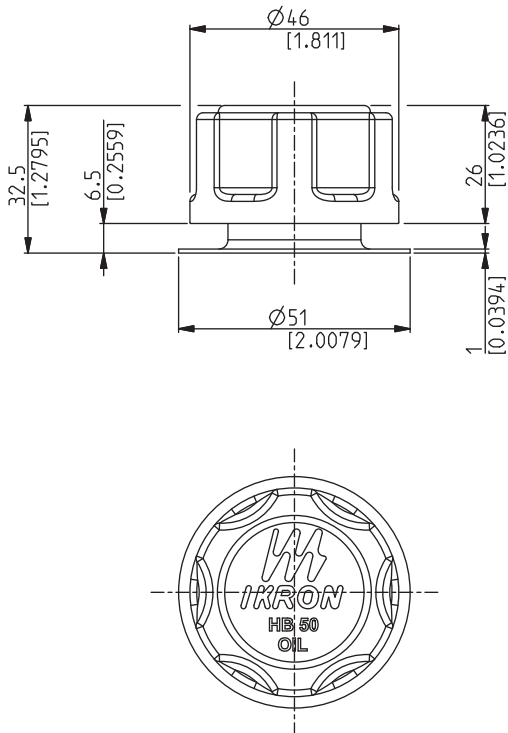
01/09.2011

**CAP DIMENSIONS - 05 FIXING WITH SCREWS**



ICAT\_024\_001\_HB50

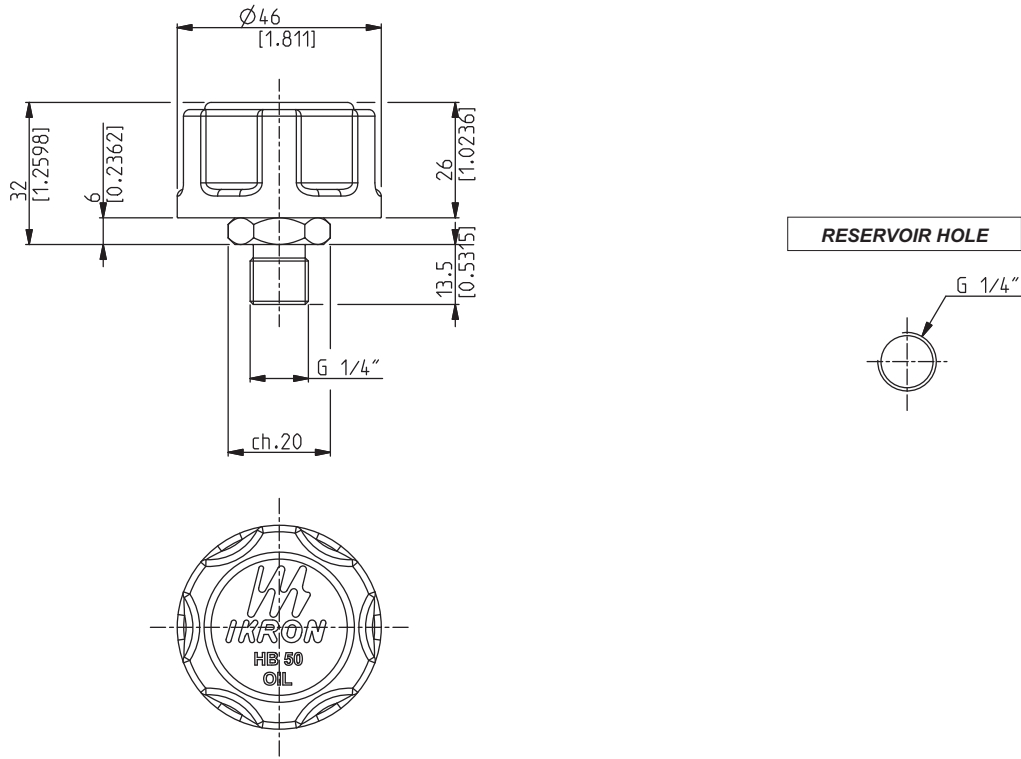
**CAP DIMENSIONS - 10 FIXING TO BE WELDED**



ICAT\_024\_002\_HB50

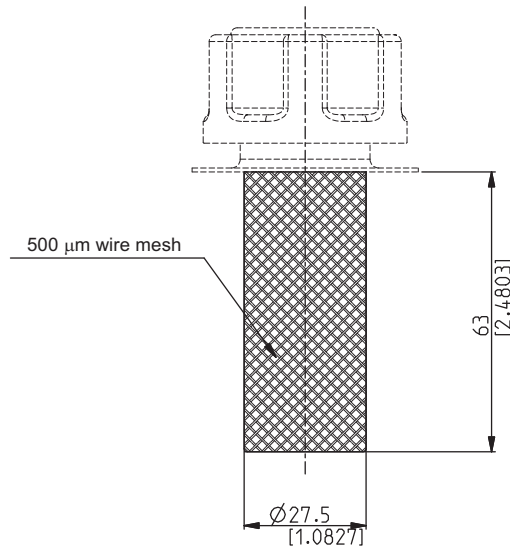
01/09.2011

**CAP DIMENSIONS - GB 1/4" GAS MALE THREAD FIXING**



ICAT\_024\_003\_HB50

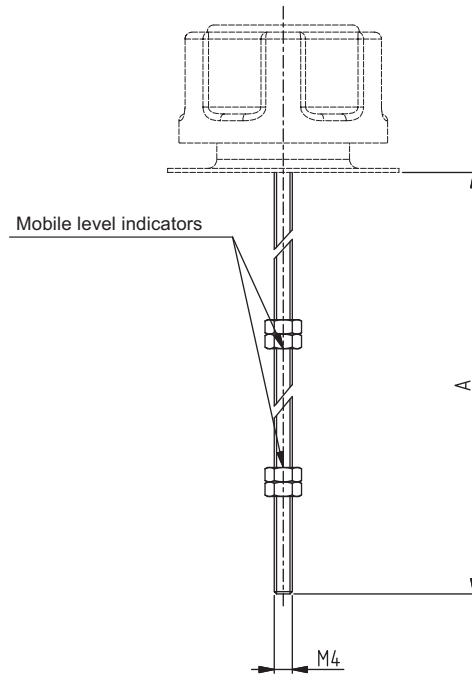
**BASKET DIMENSIONS - G OPTION**



01/09.2011

ICAT\_024\_004\_HB50

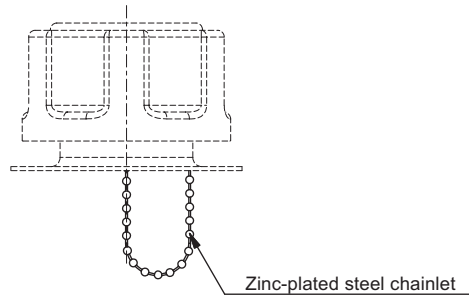
**LEVEL DIPSTICK DIMENSIONS - M / N / P OPTIONS**



| Code     | A   |         |
|----------|-----|---------|
|          | mm  | in      |
| <b>M</b> | 200 | 7.8740  |
| <b>N</b> | 400 | 15.7480 |
| <b>P</b> | 600 | 23.6220 |

ICAT\_024\_005\_HB50

**CHAINLET - OPTION 2**



01/09.2011

ICAT\_024\_006\_HB50

## ASSEMBLY INSTRUCTIONS

HB50 caps provide 3 different connections:

- **Connection through a plane flange with fixing screws**

Put the seal between the fixing flange and the reservoir and then tighten the two components up with the three M5 screws. Complete the mounting by including the basket and by screwing the cap until it is locked.

- **Connection through a plane flange to be welded**

Put the fixing flange on the tank making sure it is axially lined up with the dedicated hole, then weld the circumference of the flange. Complete the mounting by including the basket and by screwing the cap until it is locked.

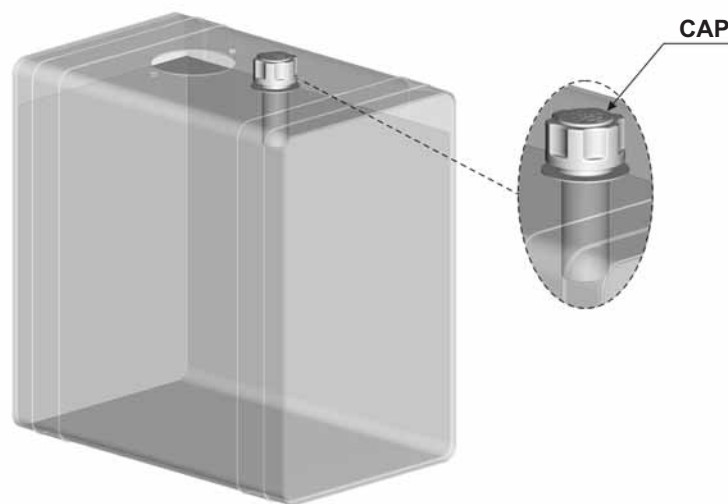
- **Connection through the 1/4" GAS male thread.**

Put a sufficient quantity of Teflon on the male thread of the cap and then tighten until it is locked.

Before connecting make sure there are no burrs in the HB50 cap mounting seat.

## FILTER ELEMENT REPLACEMENT

In order to guarantee an efficient air exchange in the tank it is necessary to periodically replace the cap containing the filtering element by following the machine's instruction manual.



01/09.2011

## HOW TO ORDER AN HB 50 FILLER CAP

|              |          |          |          |           |
|--------------|----------|----------|----------|-----------|
| <b>1</b>     | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b>  |
| <b>HB 50</b> | -        | <b>A</b> | -        | <b>05</b> |
|              |          |          |          | -         |
|              |          |          | <b>G</b> | -         |
|              |          |          |          | <b>1</b>  |

| <b>1</b> | <b>Cap</b> | <b>CODE</b>  |
|----------|------------|--------------|
|          | Filler cap | <b>HB 50</b> |

| <b>2</b> | <b>Air breather</b>                        | <b>CODE</b> |
|----------|--|-------------|
|          | Without                                    | <b>0</b>    |
|          | With air breather and 10 [ $\mu$ m] filter | <b>A</b>    |
|          | With air breather and 40 [ $\mu$ m] filter | <b>B</b>    |

| <b>3</b> | <b>Fixing</b>        | <b>CODE</b> |
|----------|----------------------|-------------|
|          | Flange with screws   | <b>05</b>   |
|          | Flange to be welded  | <b>10</b>   |
|          | 1/4" GAS male thread | <b>GB</b>   |

| <b>4</b> | <b>Cap options</b>   | <b>CODE</b> |
|----------|--|-------------|
|          | Without  | <b>E</b>    |
|          | Basket   | <b>G</b>    |
|          | Level dipstick 7.8740 in (200 mm) long   | <b>M</b>    |
|          | Level dipstick 15.7480 in (400 mm) long  | <b>N</b>    |
|          | Level dipstick 23.6220 in (600 mm) long  | <b>P</b>    |
|          | <b>Custom level dipsticks with different heights are available on request.</b> |             |

| <b>5</b> | <b>Options</b>    | <b>CODE</b> |
|----------|-------------------|-------------|
|          | Without           | <b>1</b>    |
|          | Internal chainlet | <b>2</b>    |

- Standard  
 On request



# HB 70 FILLER CAP WITH AIR BREATHER

## TECHNICAL DATA

HB 70 filler caps are used for air filtration and filling the reservoir.

The cap's cover is made of chromium plated steel while all the other components are zinc-plated steel.

For the air filtration 10 and 40  $\mu\text{m}$  built-in-media are available, in addition to a pressurization device option useful to ease the pump's suction and to avoid the creation of foam in the tank.

They can also feature:

- basket, to pre-filter the incoming oil avoiding macro-particle contamination,
- Level dipstick available in three different heights,
- Antisplash device to safeguard the filtering element.

The tank connection can be made through flanges with screws, welding flanges or directly with a 3/4" GAS male thread.

There are also two other options: the security element and a steel chainlet that keeps the cap connected with the flange beneath.

- Chromium-plated steel cap
- Pressurization valve
- Antisplash device

### MATERIALS

|                              |                       |
|------------------------------|-----------------------|
| Cap                          | Chromium-plated steel |
| Basket                       | Zinc-plated steel     |
| Level dipstick               | Zinc-plated steel     |
| Antisplash                   | Nylon                 |
| Fixing flange with screws    | Zinc-plated steel     |
| Welding flange               | Steel                 |
| Fixing extension             | Zinc-plated steel     |
| Chainlet                     | Zinc-plated steel     |
| Security element arrangement | Zinc-plated steel     |
| Seals                        | Buna                  |
| Filtering media              | Polyurethane          |

### FLOW

|                             |                          |
|-----------------------------|--------------------------|
| 10 $\mu\text{m}$ air filter | 118.9 US gpm (450 l/min) |
| 40 $\mu\text{m}$ air filter | 126.8 US gpm (480 l/min) |

### WEIGHT

0,51 ÷ 1,43 lbs (0,23 ÷ 0,65 Kg)

### WORKING TEMPERATURE

-22 ÷ 195 °F (-30 ÷ 90 °C)

### FLUID COMPATIBILITY

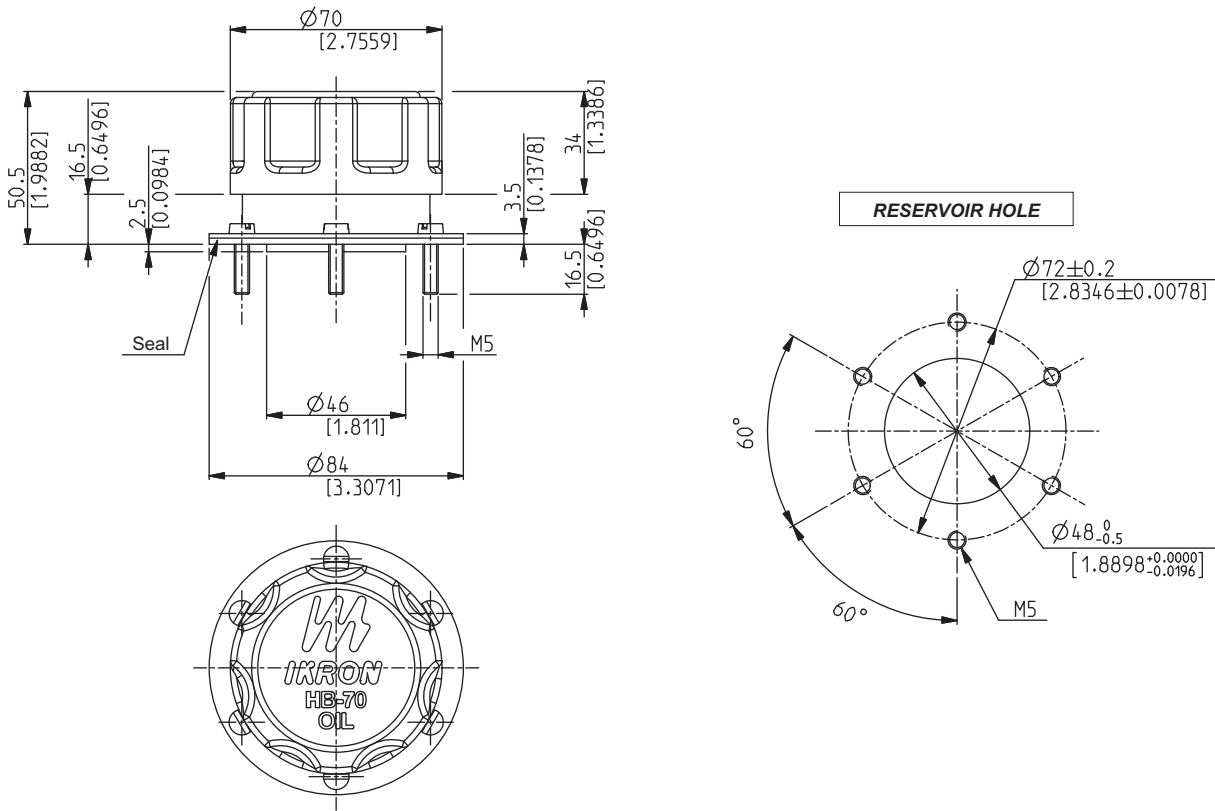
According to ISO 2943 (Norm ISO 6743/4)

|                  |                             |
|------------------|-----------------------------|
| Mineral oils     | HH - HL - HM - HR - HV - HG |
| Water emulsions  | HFAE - HFAS                 |
| Glycol water     | HFC                         |
| Synthetic fluids | HS - HFDR - HFDU - HFDS     |

**Special versions compatible with the use of different fluids are available.**

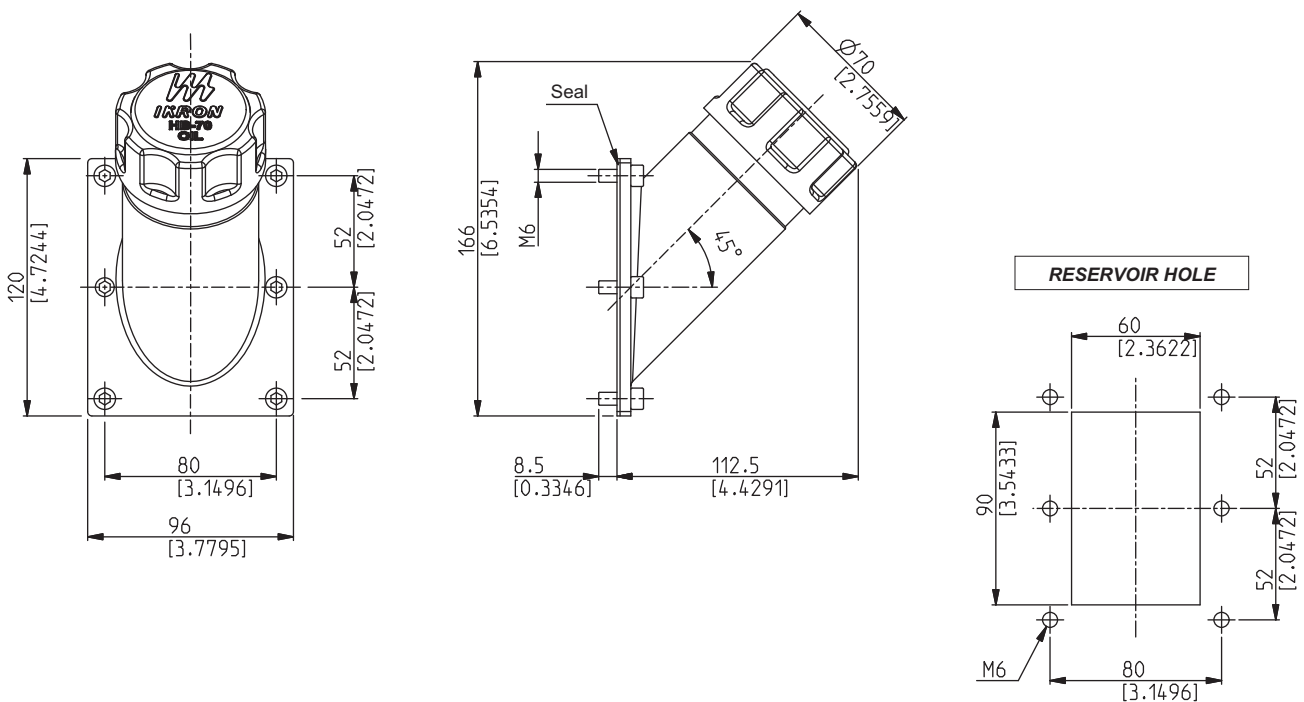
01/09.2011

**CAP DIMENSIONS - 05 FIXING WITH SCREWS**



ICAT\_024\_007\_HB70

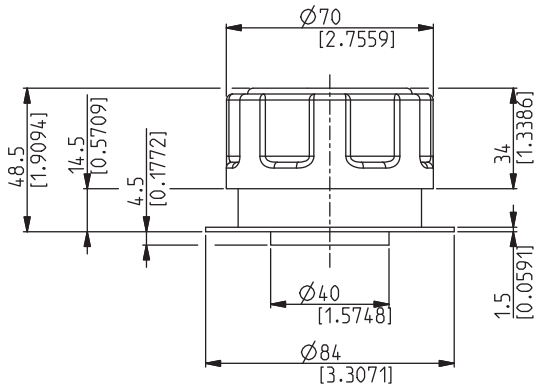
**CAP DIMENSIONS - 08 FIXING WITH SCREWS**



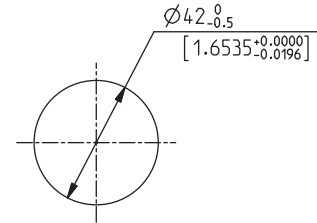
ICAT\_024\_009\_HB70

01/09.2011

**CAP DIMENSIONS - 10 FIXING TO BE WELDED**

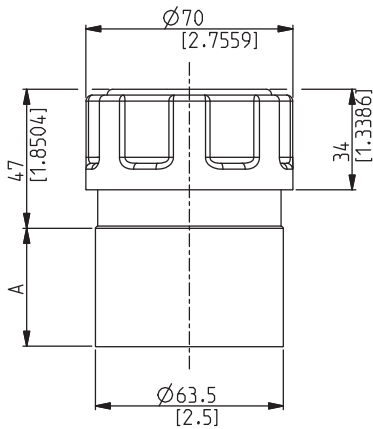


RESERVOIR HOLE

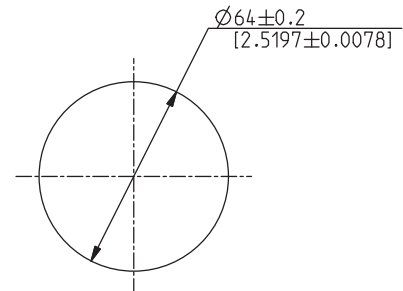


ICAT\_024\_008\_HB70

**CAP DIMENSIONS - 15 / 20 / 25 / 30 FIXINGS TO BE WELDED**



RESERVOIR HOLE

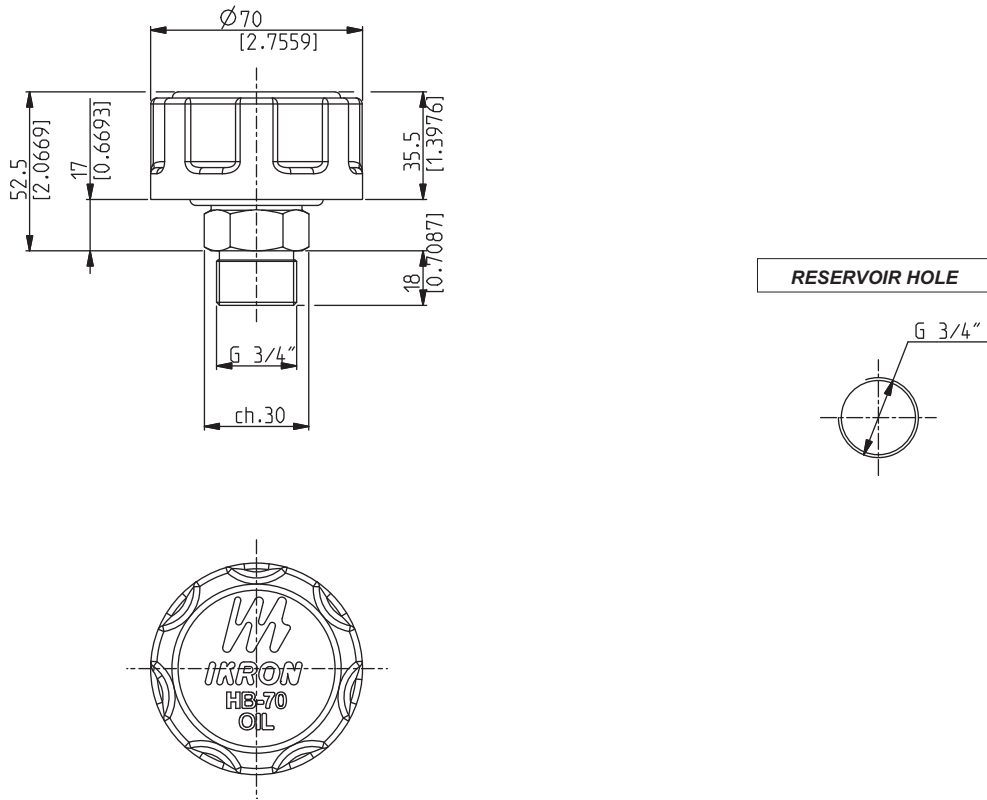


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ICAT\_024\_010\_HB70

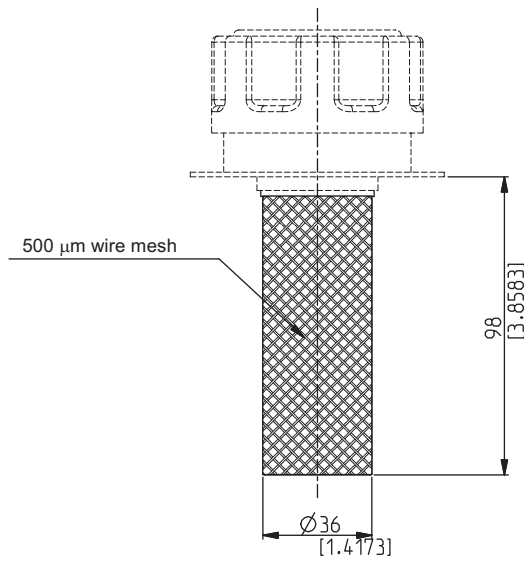
| Code      | A   |        |
|-----------|-----|--------|
|           | mm  | in     |
| <b>15</b> | 40  | 1.5748 |
| <b>20</b> | 65  | 2.5590 |
| <b>25</b> | 80  | 3.1496 |
| <b>30</b> | 135 | 5.3150 |

**CAP DIMENSIONS - GE FIXING WITH 3/4" GAS MALE THREAD**



ICAT\_024\_011\_HB70

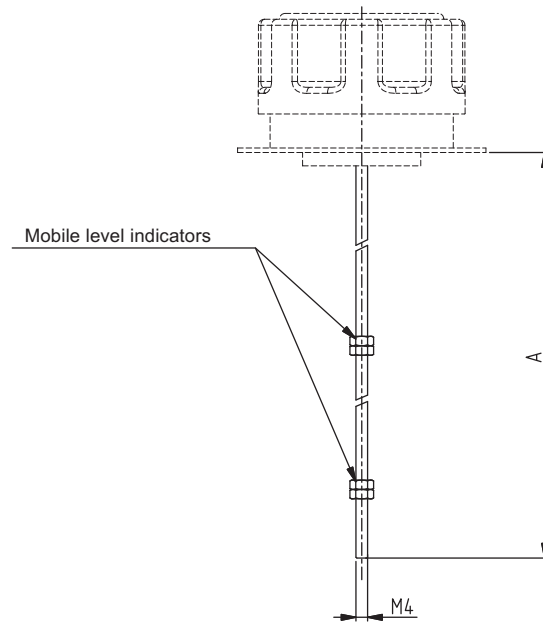
**BASKET DIMENSIONS - G OPTION**



ICAT\_024\_012\_HB70

01/09.2011

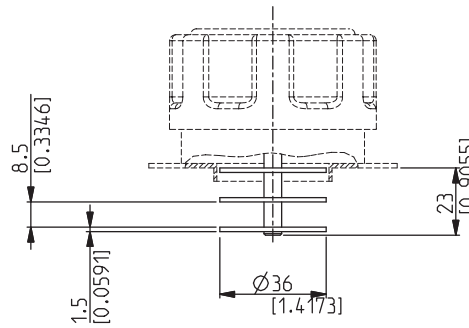
**LEVEL DIPSTICK DIMENSIONS - M / N / P OPTIONS**



| Code     | A   |         |
|----------|-----|---------|
|          | mm  | in      |
| <b>M</b> | 200 | 7.8740  |
| <b>N</b> | 400 | 15.7480 |
| <b>P</b> | 600 | 23.6220 |

ICAT\_024\_013\_HB70

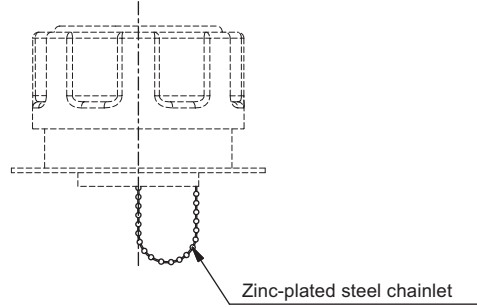
**ANTISPLASH DEVICE - S OPTION**



01/09.2011

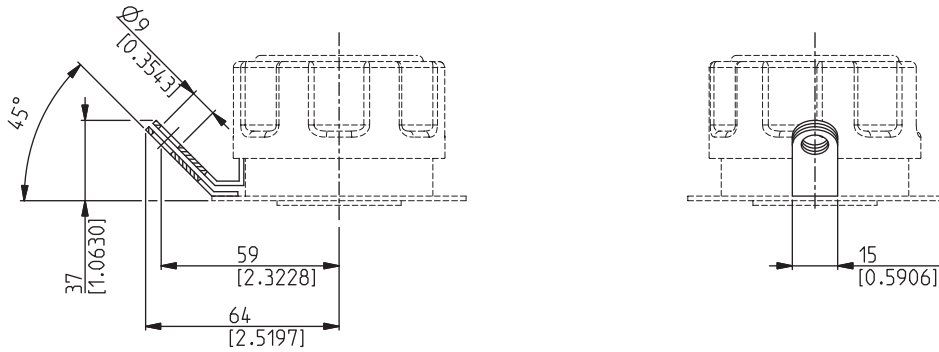
ICAT\_024\_014\_HB70

**CHAINLET - OPTION 2**



ICAT\_024\_015\_HB70

**SECURITY ELEMENT ARRANGEMENT - OPTION 3**



ICAT\_024\_016\_HB70

01/09.2011

## ASSEMBLY INSTRUCTIONS

HB 70 caps provide 5 different connections:

- **Connection through a plane flange with fixing screws**

Put the seal between the fixing flange and the reservoir and then tighten the two components up with the six M5 screws equipped. Complete the mounting by including the basket and by screwing the cap until it is locked.

- **Connection through a 45° flange with fixing screws**

First line the fixing flange up with the seal and then lock the two components to the tank using the six M5 screws. Complete the mounting by including the basket and by screwing the cap until it is locked.

- **Connection through a plane flange to be welded**

Put the fixing flange on the tank making sure it is axially lined up with the dedicated hole, then weld the circumference of the flange. Complete the mounting by including the basket and by screwing the cap until it is locked.

- **Connection through an extension to be welded**

Insert the extension in the dedicated seat of the tank and weld the entire circumference. Complete the mounting by including the basket and by screwing the cap until it is locked.

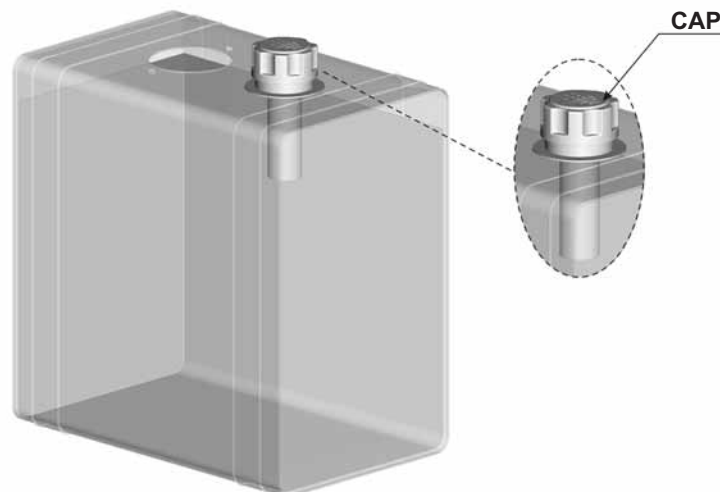
- **Connection through a 3/4" GAS male thread.**

Put a sufficient quantity of Teflon on the male thread of the cap and then start tightening until it is locked.

Before connecting make sure there are no burrs in the HB70 cap mounting seat.

## FILTER ELEMENT REPLACEMENT

In order to guarantee an efficient air exchange in the tank it is necessary to periodically replace the cap containing the filtering element by following the machine's instruction manual.



01/09.2011

## HOW TO ORDER AN HB 70 FILLER CAP

|              |          |          |          |           |
|--------------|----------|----------|----------|-----------|
| <b>1</b>     | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b>  |
| <b>HB 70</b> | -        | <b>A</b> | -        | <b>05</b> |
|              |          |          | -        | <b>G</b>  |
|              |          |          |          | -         |
|              |          |          |          | <b>1</b>  |

| <b>1</b> | <b>Cap</b> | <b>CODE</b>  |
|----------|------------|--------------|
|          | Filler cap | <b>HB 70</b> |

| <b>2</b> | <b>Air breather</b>                                  | <b>CODE</b> |
|----------|--|-------------|
|          | Without  | <b>0</b>    |
|          | With air breather and 10 [µm] filter                 | <b>A</b>    |
|          | With air breather and 40 [µm] filter                 | <b>B</b>    |
|          | With 0,4 bar pressurized breather and 10 [µm] filter | <b>C</b>    |
|          | With 0,4 bar pressurized breather and 40 [µm] filter | <b>D</b>    |

| <b>3</b> | <b>Fixing</b>                                  | <b>CODE</b> |
|----------|--|-------------|
|          | Flange with screws                             | <b>05</b>   |
|          | 45° flange with screws                         | <b>08</b>   |
|          | Welding flange                                 | <b>10</b>   |
|          | Extension to be welded 1.5748 in (40 mm) long  | <b>15</b>   |
|          | Extension to be welded 2.5590 in (65 mm) long  | <b>20</b>   |
|          | Extension to be welded 3.1496 in (80 mm) long  | <b>25</b>   |
|          | Extension to be welded 5.3150 in (135 mm) long | <b>30</b>   |
|          | 3/4" GAS male thread                           | <b>GE</b>   |

| <b>4</b> | <b>Cap options</b>                      | <b>CODE</b> |
|----------|---|-------------|
|          | Without                                 | <b>E</b>    |
|          | Basket                                  | <b>G</b>    |
|          | Level dipstick 7.8740 in (200 mm) long  | <b>M</b>    |
|          | Level dipstick 15.7480 in (400 mm) long | <b>N</b>    |
|          | Level dipstick 23.6220 in (600 mm) long | <b>P</b>    |
|          | Antisplash                              | <b>S</b>    |

**Custom level dipsticks with different heights are available on request.**

| <b>5</b> | <b>Options</b>               | <b>CODE</b> |
|----------|------------------------------|-------------|
|          | Without                      | <b>1</b>    |
|          | Internal chainlet            | <b>2</b>    |
|          | Security element arrangement | <b>3</b>    |

Standard

Request



# HB 110 FILLER CAP WITH AIR BREATHER

## TECHNICAL DATA

HB 110 filler caps are used for air filtration and filling the reservoir.

These caps can filter air up to 369.8 US gpm (1400 l/min) and can have an antislash device, with small axial encumbrance and a reinforced fiberglass nylon-made housing.

Versions with level dipsticks, clogging indicators and outer antipollution devices are available.

- Small encumbrance
- Corrosion-proof
- Antislash device
- Antipollution device
- Level dipstick

### MATERIALS

|                 |                             |
|-----------------|-----------------------------|
| Cap             | Reinforced nylon            |
| Tank            | Reinforced nylon            |
| Basket          | Nylon                       |
| Seal            | Buna                        |
| Filtering media | Inorganic micro-fibre glass |
|                 | Cellulose                   |

### FLUIDS COMPATIBILITY

According to ISO 2943 (Norm ISO 6743/4)

|                  |                             |
|------------------|-----------------------------|
| Mineral oils     | HH - HL - HM - HR - HV - HG |
| Water emulsions  | HFAE - HFAS                 |
| Glycol water     | HFC                         |
| Synthetic fluids | HS - HFDR - HFDU - HFDS     |

Special versions compatible with the use of different fluids are available.

### FLOW

|                          |                           |
|--------------------------|---------------------------|
| 3 µm absolute air filter | 224.5 US gpm (850 l/min)  |
| 5 µm air filter          | 290.6 US gpm (1100 l/min) |
| 10 µm air filter         | 369.8 US gpm (1400 l/min) |

### WEIGHT

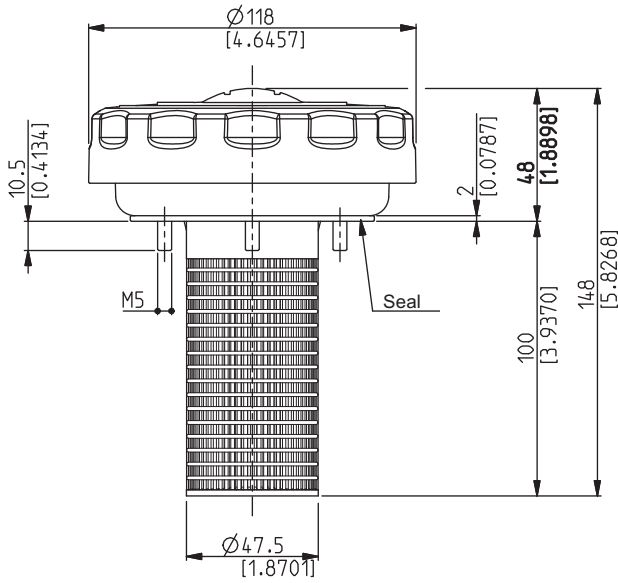
0.44 lbs (0,2 Kg)

### WORKING TEMPERATURE

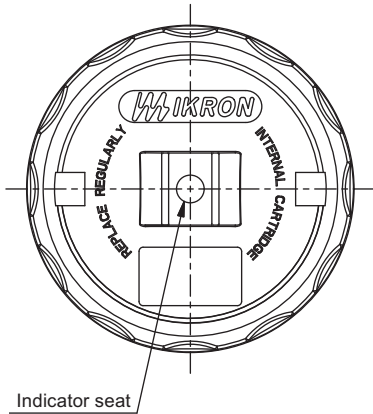
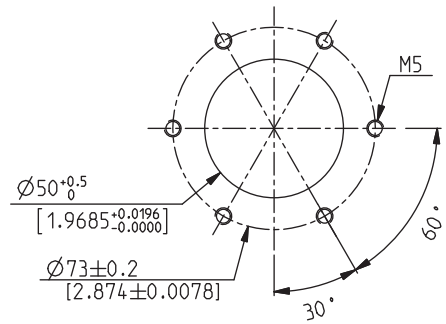
-22 ÷ 195 °F (-30 ÷ 90 °C)

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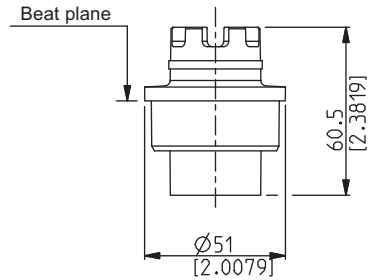
**DIMENSIONS**



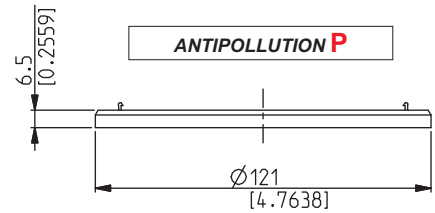
**RESERVOIR HOLE**



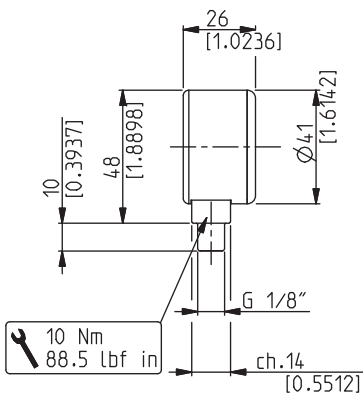
**ANTISPLASH A**



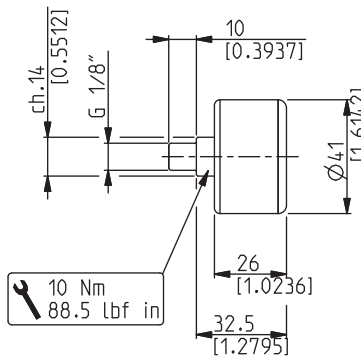
**ANTIPOLLUTION P**



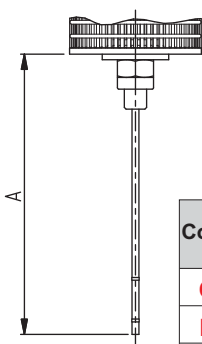
**MANOMETER M**



**MANOMETER N**



**LEVEL DIPSTICKS Q/R/S**



| Code     | A   |         |
|----------|-----|---------|
|          | mm  | in      |
| <b>Q</b> | 100 | 3.9370  |
| <b>R</b> | 200 | 7.8740  |
| <b>S</b> | 400 | 15.7480 |

ICAT\_024\_017\_HB110

01/09.2011

## ASSEMBLY INSTRUCTIONS

HB 110 caps are contained in their own packaging.

When mounting please proceed as follows:

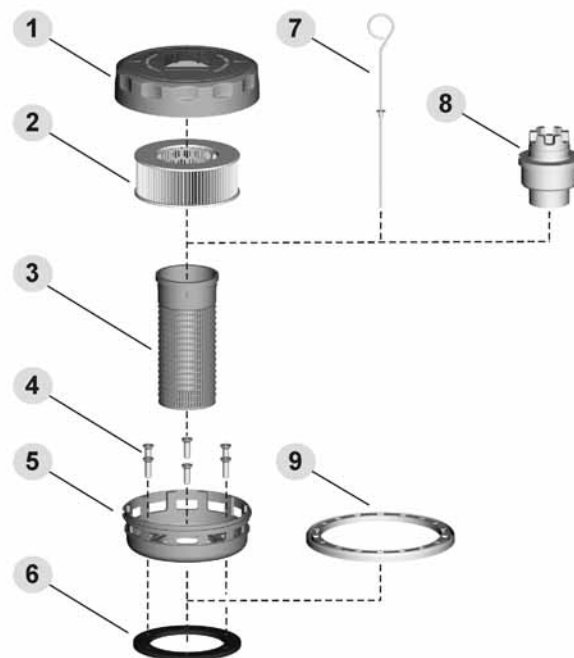
- Open the package and make sure all the components are there,
- Make sure there are no burrs in the cap seat,
- Unscrew the cover (1),
- Take off the filtering element (2) placed in the cap's tank (5),
- Put the tank (5) inside of the antipollution device (9) making sure it is locked on the lower border of the tank through the dedicated inserts,
- Put the basket (3) in the cap's tank (5) making sure it is locked through the dedicated inserts,
- Place the seal (6) in the tank positioning the fixing holes in the correct way,
- Position the tank (5) with its basket (3) on the seal (6) positioning the fixing holes in the correct way,
- Lock the cap's tank (5) to the reservoir using the 6 screws (4) provided,
- Fill the reservoir to the desired point,
- Thoroughly clean the tank (5) from oil,
- Insert the level dipstick (7) inside of the basket (3),
- Insert the antispash device (8) inside of the basket (3) until reaching the beat of the  $\varnothing 51\text{mm}$  (see page 16),
- Insert the element (2) inside of the tank centering it on the basket's neck (3),
- If there is an indicator screw it in the dedicated seat of the cover (1) using fluid Teflon.

## FILTER ELEMENT REPLACEMENT

In order to guarantee an efficient air exchange in the tank it is necessary to periodically replace the cap containing the filtering element by following the machine's instructions manual or when the indicator indicates that the pressure is more than 0,2 bar.

Proceed as follows:

- Unscrew the cover (1),
- Take off the clogged element (2) inside of the cap's tank (5),
- Clean the cap's tank with care (5),
- Insert the new element (2) inside of the tank centering it on the basket's neck (3),
- Screw the cover (1) on the cap's tank (5) and tighten for 1/4 turn after the element makes in contact with it.



| Pos. | Description          |
|------|----------------------|
| 1    | Cover                |
| 2    | Filtering element    |
| 3    | Basket               |
| 4    | Fixing screws        |
| 5    | Cap's tank           |
| 6    | Seal                 |
| 7    | Level dipstick       |
| 8    | Antispash device     |
| 9    | Antipollution device |

01/09.2011

## HOW TO ORDER AN HB 110 CAP

|               |          |              |          |           |          |          |
|---------------|----------|--------------|----------|-----------|----------|----------|
| <b>1</b>      | <b>2</b> | <b>3</b>     | <b>4</b> | <b>5</b>  | <b>6</b> | <b>7</b> |
| <b>HB 110</b> | <b>-</b> | <b>SP010</b> | <b>-</b> | <b>XN</b> | <b>-</b> | <b>G</b> |

| 1 | Cap | CODE   |
|---|-----|--------|
|   | Cap | HB 110 |

| 2 | Degree of filtration     | CODE  |
|---|--------------------------|-------|
|   | Micro-fibre glass 3 [µm] | FG003 |
|   | Cellulose 5 [µm]         | SP005 |
|   | Cellulose 10 [µm]        | SP010 |

| 3 | Indicators arranged   | CODE |
|---|-----------------------|------|
|   | Without               | XN   |
|   | Arranged on the cover | XD   |

| 4 | Indicators       | CODE |
|---|------------------|------|
|   | Without          | G    |
|   | Rear manometer   | M    |
|   | Radial manometer | N    |

| 5 | Antisplash             | CODE |
|---|------------------------|------|
|   | Without                | O    |
|   | With Antisplash device | A    |

| 6 | Antipollution             | CODE |
|---|---------------------------|------|
|   | Without                   | S    |
|   | With Antipollution device | P    |

| 7 | Level dipstick                          | CODE |
|---|---|------|
|   | Without                                 | Z    |
|   | Level dipstick 3.9370 in (100 mm) long  | Q    |
|   | Level dipstick 7.8740 in (200 mm) long  | R    |
|   | Level dipstick 15.7480 in (400 mm) long | S    |

Standard  
 On request

## HOW TO ORDER AN HEK 110 ELEMENT

|                |              |
|----------------|--------------|
| <b>1</b>       | <b>2</b>     |
| <b>HEK 110</b> | <b>-</b>     |
|                | <b>SP010</b> |

| 1 | Element | CODE    |
|---|---------|---------|
|   | Element | HEK 110 |

| 2 | Degree of filtration     | CODE  |
|---|--------------------------|-------|
|   | Micro-fibre glass 3 [µm] | FG003 |
|   | Cellulose 5 [µm]         | SP005 |
|   | Cellulose 10 [µm]        | SP010 |

Standard  
 On request

# HB 120 FILLER CAP WITH AIR BREATHER

## TECHNICAL DATA

HB 120 filler caps are used for air filtration and filling the reservoir.

These caps can filter air up to 475.5 US gpm (1800 l/m) and can have an antisplash device, with small axial encumbrance and a reinforced fiberglass nylon-made housing.

Versions with level dipsticks, clogging indicators and outer antipollution devices are available.

- Corrosion-proof
- Antisplash device
- Antipollution device
- Level dipsticks

### MATERIALS

|                 |                             |
|-----------------|-----------------------------|
| Cap             | Reinforced nylon            |
| Tank            | Reinforced nylon            |
| Basket          | Nylon                       |
| Seal            | Buna                        |
| Filtering media | Inorganic micro-fibre glass |
|                 | Cellulose                   |

### FLUIDS COMPATIBILITY

In accordance with ISO 2943 (Norm ISO 6743/4)

|                  |                             |
|------------------|-----------------------------|
| Mineral oils     | HH - HL - HM - HR - HV - HG |
| Water emulsions  | HFAE - HFAS                 |
| Glycol water     | HFC                         |
| Synthetic fluids | HS - HFDR - HFDU - HFDS     |

Special versions compatible with the use of different fluids are available.

### FLOW

|                          |                           |
|--------------------------|---------------------------|
| 3 µm absolute air filter | 290.6 US gpm (1100 l/min) |
| 5 µm air filter          | 369.8 US gpm (1400 l/min) |
| 10 µm air filter         | 475.5 US gpm (1800 l/min) |

### WEIGHT

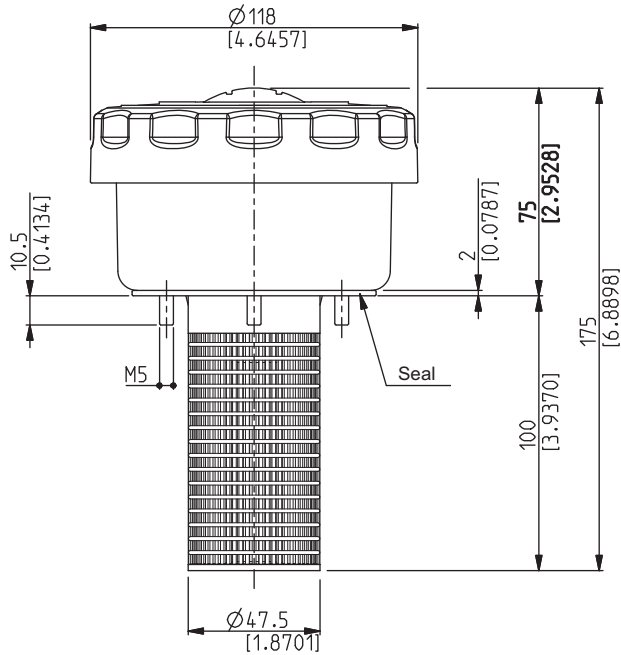
0.55 lbs (0,25 Kg)

### WORKING TEMPERATURE

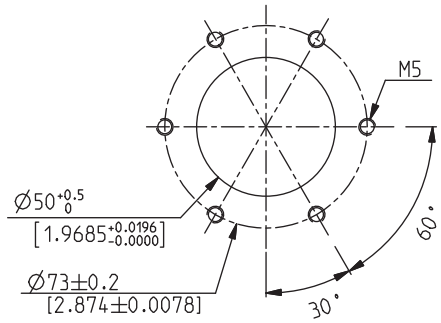
-22 ÷ 195 °F (-30 ÷ 90 °C)

01/09.2011

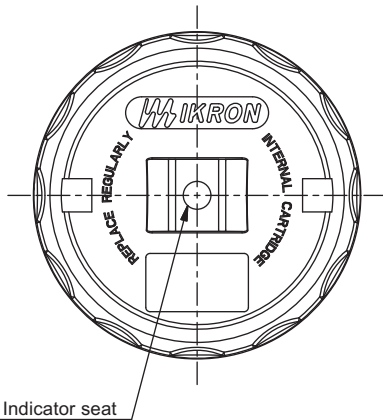
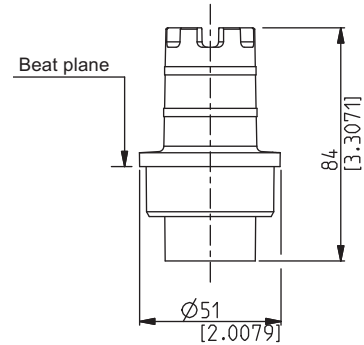
**DIMENSIONS**



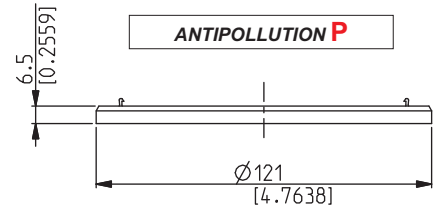
**RESERVOIR HOLE**



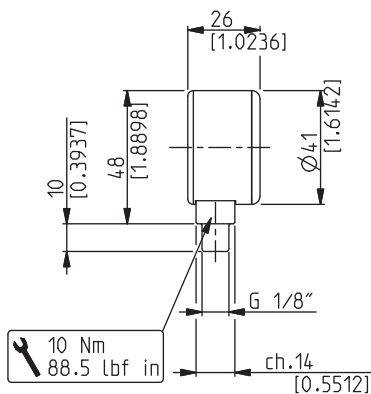
**ANTISPLASH A**



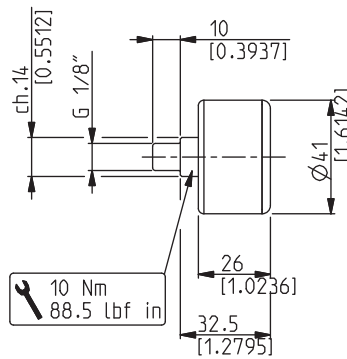
**ANTIPOLLUTION P**



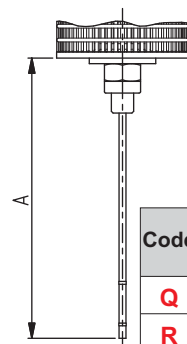
**MANOMETER M**



**MANOMETER N**



**LEVEL DIPSTICKS Q/R/S**



| Code     | A   |         |
|----------|-----|---------|
|          | mm  | in      |
| <b>Q</b> | 100 | 3.9370  |
| <b>R</b> | 200 | 7.8740  |
| <b>S</b> | 400 | 15.7480 |

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## ASSEMBLY INSTRUCTIONS

HB 120 caps are contained in their own packaging.

When mounting please proceed as follows:

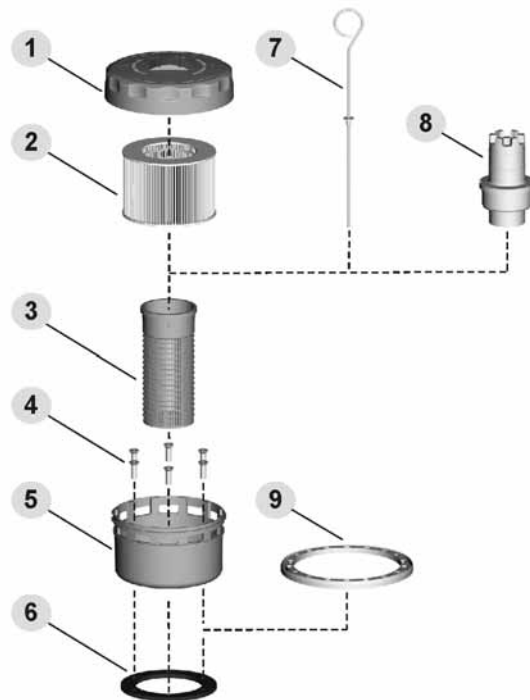
- Open the package and make sure all the components are there,
- Make sure there are no burrs in the cap seat,
- Unscrew the cover (1),
- Take off the filtering element (2) placed in the cap's tank (5),
- Put the tank (5) inside of the antipollution device (9) making sure it is locked on the lower border of the tank through the dedicated inserts,
- Put the basket (3) in the cap's tank (5) making sure it is locked through the dedicated inserts,
- Place the seal (6) in the tank positioning the fixing holes in the correct way,
- Position the tank (5) with its basket (3) on the seal (6) positioning the fixing holes in the correct way,
- Lock the cap's tank (5) to the reservoir using the 6 screws (4) provided,
- Fill the reservoir to the desired point,
- Thoroughly clean the tank (5) from oil,
- Insert the level dipstick (7) inside of the basket (3),
- Insert the antispash device (8) inside of the basket (3) until reaching the beat of the  $\varnothing 51\text{mm}$  (see page 16),
- Insert the element (2) inside of the tank centering it on the basket's neck (3),
- If there is an indicator screw it in the dedicated seat of the cover (1) using fluid Teflon.

## FILTER ELEMENT REPLACEMENT

In order to guarantee an efficient air exchange in the tank it is necessary to periodically replace the cap containing the filtering element by following the machine's instructions manual or when the indicator indicates that the pressure is more than 0,2 bar.

Proceed as follows:

- Unscrew the cover (1),
- Take off the clogged element (2) inside of the cap's tank (5),
- Clean the cap's tank with care (5),
- Insert the new element (2) inside of the tank centering it on the basket's neck (3),
- Screw the cover (1) on the cap's tank (5) and tighten for 1/4 turn after the element makes in contact with it.



| Pos. | Description          |
|------|----------------------|
| 1    | Cover                |
| 2    | Filtering element    |
| 3    | Basket               |
| 4    | Fixing screws        |
| 5    | Cap's tank           |
| 6    | Seal                 |
| 7    | Level dipstick       |
| 8    | Antispash device     |
| 9    | Antipollution device |

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## HOW TO ORDER AN HB 120 CAP

|               |          |              |          |           |          |          |
|---------------|----------|--------------|----------|-----------|----------|----------|
| <b>1</b>      | <b>2</b> | <b>3</b>     | <b>4</b> | <b>5</b>  | <b>6</b> | <b>7</b> |
| <b>HB 120</b> | <b>-</b> | <b>SP010</b> | <b>-</b> | <b>XN</b> | <b>-</b> | <b>G</b> |

| <b>1</b> | <b>Cap</b> | <b>CODE</b>   |
|----------|------------|---------------|
|          | Cap        | <b>HB 120</b> |

| <b>2</b> | <b>Degree of filtration</b> | <b>CODE</b>  |
|----------|-----------------------------|--------------|
|          | Micro-fibre glass 3 [µm]    | <b>FG003</b> |
|          | Cellulose 5 [µm]            | <b>SP005</b> |
|          | Cellulose 10 [µm]           | <b>SP010</b> |

| <b>3</b> | <b>Indicators arranged</b> | <b>CODE</b> |
|----------|----------------------------|-------------|
|          | Without                    | <b>XN</b>   |
|          | Arranged on the cover      | <b>XD</b>   |

| <b>4</b> | <b>Indicators</b> | <b>CODE</b> |
|----------|-------------------|-------------|
|          | Without           | <b>G</b>    |
|          | Rear manometer    | <b>M</b>    |
|          | Radial manometer  | <b>N</b>    |

| <b>5</b> | <b>Antisplash</b>      | <b>CODE</b> |
|----------|------------------------|-------------|
|          | Without                | <b>O</b>    |
|          | With Antisplash device | <b>A</b>    |

| <b>6</b> | <b>Antipollution</b>      | <b>CODE</b> |
|----------|---------------------------|-------------|
|          | Without                   | <b>S</b>    |
|          | With Antipollution device | <b>P</b>    |

| <b>7</b> | <b>Level dipstick</b>                   | <b>CODE</b> |
|----------|---|-------------|
|          | Without                                 | <b>Z</b>    |
|          | Level dipstick 3.9370 in (100 mm) long  | <b>Q</b>    |
|          | Level dipstick 7.8740 in (200 mm) long  | <b>R</b>    |
|          | Level dipstick 15.7480 in (400 mm) long | <b>S</b>    |

Standard  
 On request

## HOW TO ORDER AN HEK 120 ELEMENT

|                |              |
|----------------|--------------|
| <b>1</b>       | <b>2</b>     |
| <b>HEK 120</b> | <b>-</b>     |
|                | <b>SP010</b> |

| <b>1</b> | <b>Element</b> | <b>CODE</b>    |
|----------|----------------|----------------|
|          | Element        | <b>HEK 120</b> |

| <b>2</b> | <b>Degree of filtration</b> | <b>CODE</b>  |
|----------|-----------------------------|--------------|
|          | Micro-fibre glass 3 [µm]    | <b>FG003</b> |
|          | Cellulose 5 [µm]            | <b>SP005</b> |
|          | Cellulose 10 [µm]           | <b>SP010</b> |

Standard  
 On request



# AF 105 AIR BREATHER

## TECHNICAL DATA

AF 105 air breathers are used for air filtration that is entering the tank from the outside to control the fluid contamination level.

Connection to the tank is made of zinc-plated steel while the protective cloche is made of painted steel with high resistance to weather conditions.

- Fast connection to the tank
- Filtering element easy to replace

### MATERIALS

|                 |                   |
|-----------------|-------------------|
| Cloche          | Painted steel     |
| Tank connection | Zinc-plated steel |
| End cap         | Zinc-plated steel |
| Seals           | Buna              |
| Filtering media | Cellulose         |

### FLOW

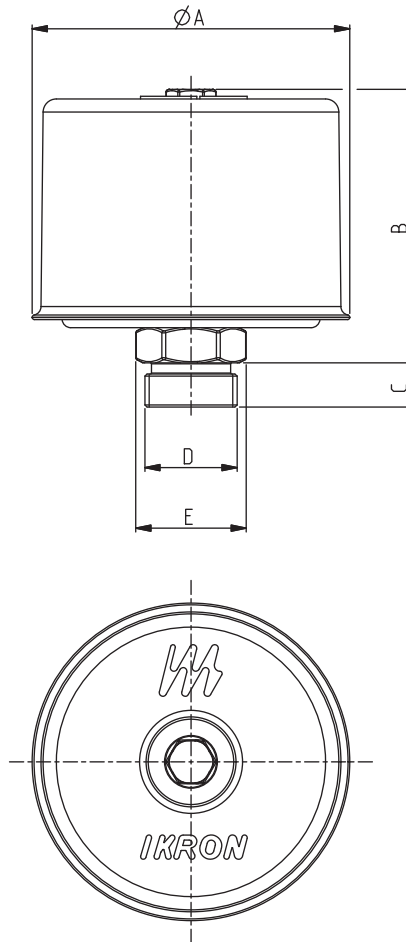
|              |                           |
|--------------|---------------------------|
| Maximum flow | 264.2 US gpm (1000 l/min) |
|--------------|---------------------------|

### WORKING TEMPERATURE

|                            |
|----------------------------|
| -22 ÷ 195 °F (-30 ÷ 90 °C) |
|----------------------------|

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### DIMENSIONS



ICAT\_024\_019\_AF105

| Filter type | Weight         | Ø A             | B              | C              | D          |         |          | E                 | Replacement element |
|-------------|----------------|-----------------|----------------|----------------|------------|---------|----------|-------------------|---------------------|
|             | Kg(lbs)        | mm(in)          | mm(in)         | mm(in)         | GAS (BSPP) | NPT     | Metric   | mm(in)            |                     |
| AF 105-10   | 0,11<br>(0.24) |                 |                |                | G 1/4      | 1/4 NPT | M 12x1,5 | ch.14<br>(0.5512) | HEK 105-10          |
|             | 0,13<br>(0.29) | 52<br>(2.0472)  | 45<br>(1.7717) | 9<br>(0.3543)  | G 3/8      | 3/8 NPT | M 18x1,5 | ch.19<br>(0.7480) |                     |
|             | 0,17<br>(0.37) |                 |                |                | G 1/2      | 1/2 NPT | M 22x1,5 | ch.24<br>(0.9449) |                     |
| AF 105-20   | 0,27<br>(0.59) | 72<br>(2.8346)  | 62<br>(2.4409) | 10<br>(0.3937) | G 1/2      | 1/2 NPT | M 22x1,5 | ch.22<br>(0.8661) | HEK 105-20          |
|             | 0,30<br>(0.66) |                 |                |                | G 3/4      | 3/4 NPT | M 27x2   | ch.34<br>(1.3386) |                     |
| AF 105-30   | 0,45<br>(0.99) | 108<br>(4.2520) | 78<br>(3.0709) | 15<br>(0.5906) | G 1        | 1 NPT   | M 33 x2  | ch.34<br>(1.3386) | HEK 105-30          |

### FLOWS

| Filter    | Degree of filtration |             |              |
|-----------|----------------------|-------------|--------------|
|           | SP005                | SP010       | SP040        |
|           | Flow                 |             |              |
|           | US gpm (l/min)       |             |              |
| AF 105-10 | 26.4 (100)           | 42.3 (160)  | 52.8 (200)   |
| AF 105-20 | 92.5 (350)           | 105.7 (400) | 132.1 (500)  |
| AF 105-30 | 184.9 (700)          | 224.5 (850) | 264.1 (1000) |

01/09.2011

## ASSEMBLY INSTRUCTIONS

AF 105 air breathers get connected to the tank by screwing them into a dedicated seat. Make sure there are no burrs. Put a sufficient quantity of Teflon on the male thread of the cap and then tighten until it is locked.

Tightening torques are as follows:

G 1/4 = 133 lbf in (15 Nm)

G 3/8 = 133 lbf in (15 Nm)

G 1/2 = 177 lbf in (20 Nm)

G 3/4 = 266 lbf in (30 Nm)

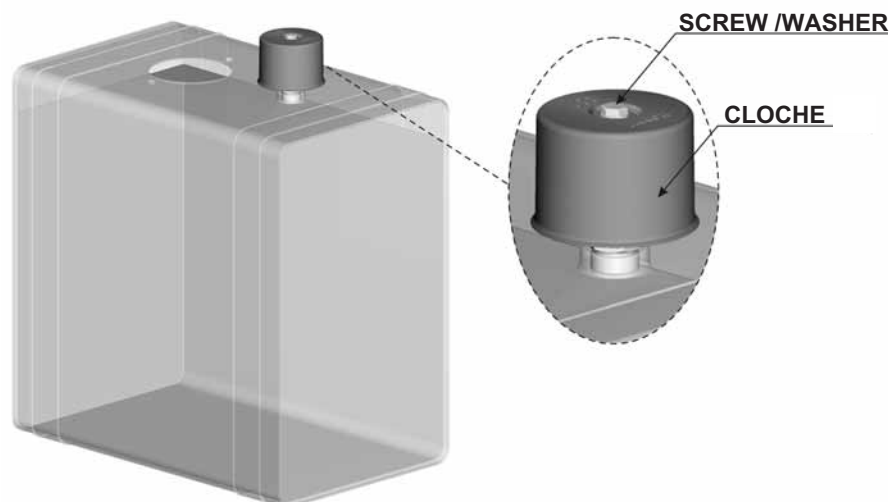
G 1 = 442 lbf in (50 Nm)

## FILTER ELEMENT REPLACEMENT

In order to guarantee an efficient air exchange in the tank it is necessary to periodically replace the cap containing the filtering element by following the machine's instructions manual.

Proceed as follows:

- Unscrew the upper screw;
- Take off the screw and the washer;
- Take off the cloche;
- Take off the clogged element;
- Insert the new element;
- Mount the cloche;
- Put the washer and the screw in the dedicated seat and then tighten to a torque of 44 lbf in (5 Nm).



01/09.2011

## HOW TO ORDER AN AF 105 BREATHER

|               |          |              |
|---------------|----------|--------------|
| <b>1</b>      | <b>2</b> | <b>3</b>     |
| <b>AF 105</b> | -        | <b>20</b>    |
|               | -        | <b>GD</b>    |
|               |          | -            |
|               |          | <b>SP010</b> |

| 1 | Filter type          | CODE             |
|---|----------------------|------------------|
|   | See table on page 24 | <b>AF 105-..</b> |

| 2 | Thread connection | CODE |
|---|-------------------|------|
|---|-------------------|------|

### GAS thread (BSPP)

|       |           |
|-------|-----------|
| G 1/4 | <b>GB</b> |
| G 3/8 | <b>GC</b> |
| G 1/2 | <b>GD</b> |
| G 3/4 | <b>GE</b> |
| G 1   | <b>GF</b> |

### NPT thread

|         |           |
|---------|-----------|
| 1/4 NPT | <b>NB</b> |
| 3/8 NPT | <b>NC</b> |
| 1/2 NPT | <b>ND</b> |
| 3/4 NPT | <b>NE</b> |
| 1 NPT   | <b>NF</b> |

### Metric thread

|          |           |
|----------|-----------|
| M 12x1,5 | <b>TB</b> |
| M 18x1,5 | <b>TE</b> |
| M 22x1,5 | <b>TG</b> |
| M 27x1,5 | <b>TM</b> |
| M 33x1,5 | <b>TP</b> |

| 3 | Degree of filtration | CODE         |
|---|----------------------|--------------|
|   | 5 [µm] Cellulose     | <b>SP005</b> |
|   | 10 [µm] Cellulose    | <b>SP010</b> |
|   | 40 [µm] Cellulose    | <b>SP040</b> |

Standard  
 On request

## HOW TO ORDER AN HEK 105 ELEMENT

|                |              |
|----------------|--------------|
| <b>1</b>       | <b>2</b>     |
| <b>HEK 105</b> | -            |
|                | <b>SP010</b> |

| 1 | Element              | CODE              |
|---|----------------------|-------------------|
|   | See table on page 24 | <b>HEK 105-..</b> |

| 2 | Degree of filtration | CODE         |
|---|----------------------|--------------|
|   | Cellulose 5 [µm]     | <b>SP005</b> |
|   | Cellulose 10 [µm]    | <b>SP010</b> |
|   | Cellulose 40 [µm]    | <b>SP040</b> |

Standard  
 On request

# AF 106 AIR FILTER

## TECHNICAL DATA

AF 106 air filters are strongly recommended for hydraulic systems with high air exchange and for very polluted environments.

In addition to cellulose elements 3µm microfiber elements are available with high retention efficiency that are highly effective against fluid contamination.

The air breathers are connected to the tank through flanges with screws or with welding tang.

- Absolute filtration
- High retention efficiency
- Maximum flow 792.5 US gpm (3000 l/min)

### MATERIALS

|                    |                             |
|--------------------|-----------------------------|
| Flange with screws | Zinc-plated steel           |
| Welding tang       | Steel - Zinc-plated steel   |
| Seals              | Buna                        |
| Filtering media    | Inorganic micro-fibre glass |
|                    | Cellulose                   |

### FLUIDS COMPATIBILITY

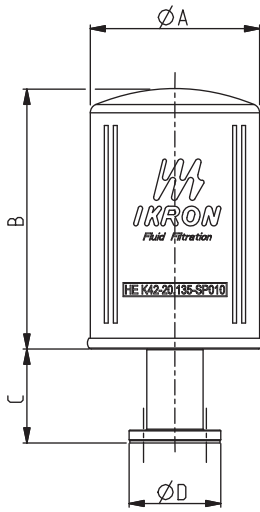
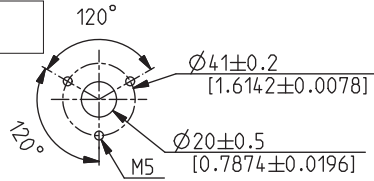
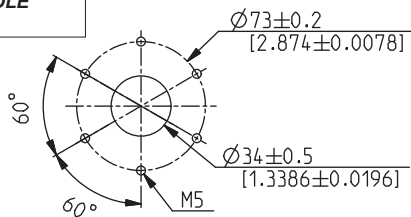
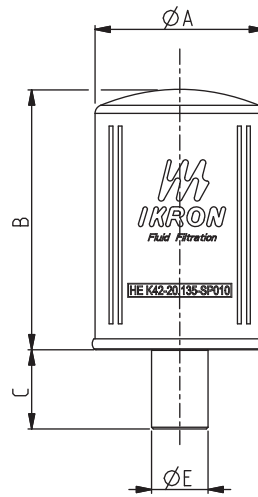
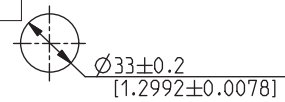
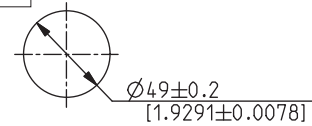
According to ISO 2943 (Norm ISO 6743/4)

|                  |                             |
|------------------|-----------------------------|
| Mineral oils     | HH - HL - HM - HR - HV - HG |
| Water emulsions  | HFAE - HFAS                 |
| Glycol water     | HFC                         |
| Synthetic fluids | HS - HFDR - HFDU - HFDS     |

### WORKING TEMPERATURE

-22 ÷ 195 °F (-30 ÷ 90 °C)

01/09.2011

**AIR FILTER DIMENSIONS - V FIXING**

**RESERVOIR HOLE**  
**AF 106-20**

**RESERVOIR HOLE**  
**AF 106-30**

**AIR FILTER DIMENSIONS - S FIXING**

**RESERVOIR HOLE**  
**AF 106-20**

**RESERVOIR HOLE**  
**AF 106-30**


[CAT\_024\_020\_AF106

| Filter type          | Weight         | Ø A             | B               | C              | Ø D                  | Ø E            | Replacement element  |
|----------------------|----------------|-----------------|-----------------|----------------|----------------------|----------------|----------------------|
|                      | Kg (lbs)       |                 |                 |                |                      |                |                      |
| <b>AF 106-20.135</b> | 0,85<br>(1.87) | 96<br>(3.7795)  | 148<br>(5.8268) | 54<br>(2.1260) | 52<br>(2.0472)       | 32<br>(1.2598) | <b>HEK 42-20.135</b> |
| <b>AF 106-20.180</b> | 1,10<br>(2.42) |                 | 210<br>(8.2677) |                |                      |                | <b>HEK 42-20.180</b> |
| <b>AF 106-30.155</b> | 1,80<br>(3.97) | 126<br>(4.9606) | 180<br>(7.0866) |                | <b>HEK 42-30.155</b> |                |                      |
| <b>AF 106-30.210</b> | 2,10<br>(4.63) |                 | 228<br>(8.9764) |                | <b>HEK 42-30.210</b> |                |                      |

**FLOWS**

| Filter type          | Degree of filtration   |              |              |              |
|----------------------|------------------------|--------------|--------------|--------------|
|                      | FG003                  | FG006        | FG010        | SP010        |
|                      | Flow<br>US gpm (l/min) |              |              |              |
| <b>AF 106-20.135</b> | 264.1 (1000)           | 317.0 (1200) | 369.8 (1400) | 396.2 (1500) |
| <b>AF 106-20.180</b> | 317.0 (1200)           | 383.0 (1450) | 449.1 (1700) | 475.5 (1800) |
| <b>AF 106-30.155</b> | 475.5 (1800)           | 581.2 (2200) | 660.4 (2500) | 713.3 (2700) |
| <b>AF 106-30.210</b> | 528.3 (2000)           | 634.0 (2400) | 739.7 (2800) | 792.5 (3000) |

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## ASSEMBLY INSTRUCTIONS

AF 106 air filters provide 2 connections:

- **Connection through a plane flange with fixing screws**

Put the seal between the fixing flange and the reservoir and then tighten the two components with the screws equipped.

Complete the mounting by screwing the spin-on element to the male thread on the flange.

Once you make contact with the o-ring tighten the spin-on element 1/4 turn (AF106-20) or 1/8 turn (AF106-30).

- **Connection through a welding tang**

Insert the tang in the dedicated seat of the tank and look for the perfect uprightness, then start welding for the whole tang's circumference.

Complete the mounting by screwing the spin-on element to the male thread on the flange.

Once you reach contact with the o-ring tighten the spin-on element for 1/4 turn (AF106-20) or 1/8 turn (AF106-30).

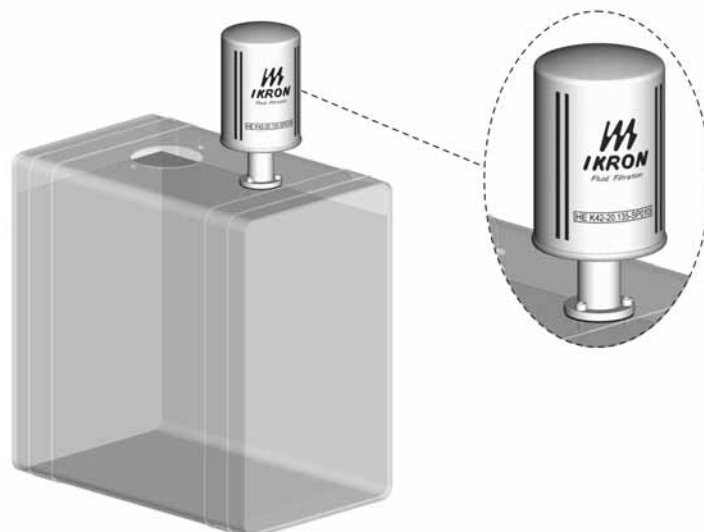
Before making any connections please make sure there are no burrs in the AF 106 mounting seats.

## FILTER ELEMENT REPLACEMENT

In order to guarantee an efficient air exchange in the tank it is necessary to periodically replace the spin-on element containing the filtering element by following the machine's instructions manual.

Proceed as follows:

- Unscrew the clogged element;
- Screw the new element until it makes contact with the o-ring;
- Tighten 1/4 turn (AF 106-20) or 1/8 turn (AF 106-30).



01/09.2011

## HOW TO ORDER AN AF 106 FILTER

|               |               |              |
|---------------|---------------|--------------|
| <b>1</b>      | <b>2</b>      | <b>3</b>     |
| <b>AF 106</b> | <b>20.135</b> | <b>SP010</b> |

| 1 | Filter type          | CODE             |
|---|----------------------|------------------|
|   | See table on page 28 | <b>AF 106-..</b> |

| 2 | Degree of filtration                   | CODE         |
|---|--|--------------|
|   | Micro-fibre glass 3 [ $\mu\text{m}$ ]  | <b>FG003</b> |
|   | Micro-fibre glass 6 [ $\mu\text{m}$ ]  | <b>FG006</b> |
|   | Micro-fibre glass 10 [ $\mu\text{m}$ ] | <b>FG010</b> |
|   | Cellulose 10 [ $\mu\text{m}$ ]         | <b>SP010</b> |

| 3 | Fixing             | CODE     |
|---|--------------------|----------|
|   | Flange with screws | <b>V</b> |
|   | Welding tang       | <b>S</b> |

- Standard  
 On request

## HOW TO ORDER AN HEK 42 ELEMENT

|                      |              |
|----------------------|--------------|
| <b>1</b>             | <b>2</b>     |
| <b>HEK 42-20.135</b> | <b>SP010</b> |

| 1 | Element              | CODE             |
|---|----------------------|------------------|
|   | See table on page 28 | <b>HEK 42-..</b> |

| 2 | Filtration degree                      | CODE         |
|---|--|--------------|
|   | Micro-fibre glass 3 [ $\mu\text{m}$ ]  | <b>FG003</b> |
|   | Micro-fibre glass 6 [ $\mu\text{m}$ ]  | <b>FG006</b> |
|   | Micro-fibre glass 10 [ $\mu\text{m}$ ] | <b>FG010</b> |
|   | Cellulose 10 [ $\mu\text{m}$ ]         | <b>SP010</b> |

- Standard  
 On request



## HL 91 LEVEL INDICATORS

### TECHNICAL DATA

HL 91 level indicators are directly connected to the reservoir to check the level and temperature of the hydraulic fluid. There are 3 different dimensions available with difference between centers of 3 in (76 mm), 5 in (127 mm) and 10 in (254 mm) and are equipped with M10 or M12 fixing screws.

Versions with a thermometer are also available.

The external protection is made of anodized aluminum to provide strong impact resistance, while the central body is made of see-thru polyamide.

- Anodized aluminum external protection
- High resistance against impacts
- Applicability to pressurized tanks up to 14.5 psi (1 bar)

#### MATERIALS

|                     |                    |
|---------------------|--------------------|
| External protection | Anodized aluminum  |
| Terminals           | Reinforced nylon   |
| Central body        | See-thru polyamide |
| Reading tag         | Polyamide          |
| Fixing screws       | Zinc-plated steel  |
| Nuts                | Zinc-plated steel  |
| Seals               | Buna - Viton       |

#### FLUIDS COMPATIBILITY

In accordance with ISO 2943 (Norm ISO 6743/4)

|                  |                             |
|------------------|-----------------------------|
| Mineral oils     | HH - HL - HM - HR - HV - HG |
| Water emulsions  | HFAE - HFAS                 |
| Synthetic fluids | HS - HFDR - HFDU - HFDS     |

#### PRESSURE

Maximum working pressure 14.5 psi (1 bar)

#### WORKING TEMPERATURE

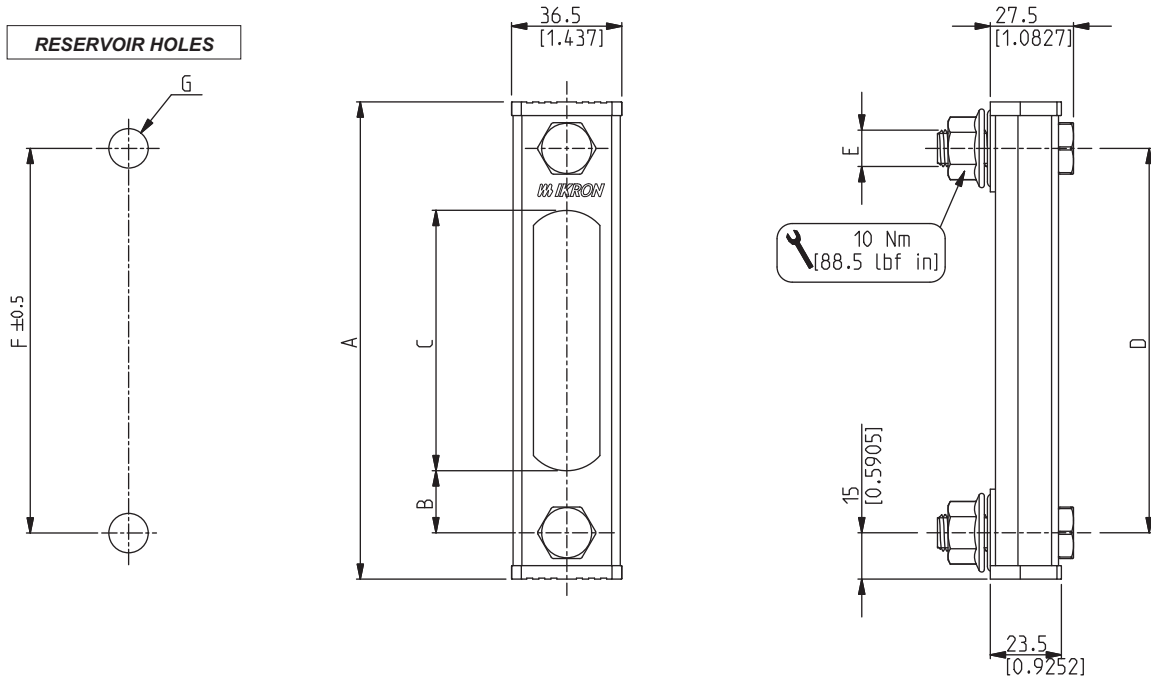
-22 ÷ 195 °F (-30 ÷ 90 °C)

#### THERMOMETER RANGE

|          |                          |
|----------|--------------------------|
| HL 91-10 | 32 ÷ 176 °F (0 ÷ 80 °C)  |
| HL 91-20 | 32 ÷ 212 °F (0 ÷ 100 °C) |
| HL 91-30 | 32 ÷ 212 °F (0 ÷ 100 °C) |

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### DIMENSIONS

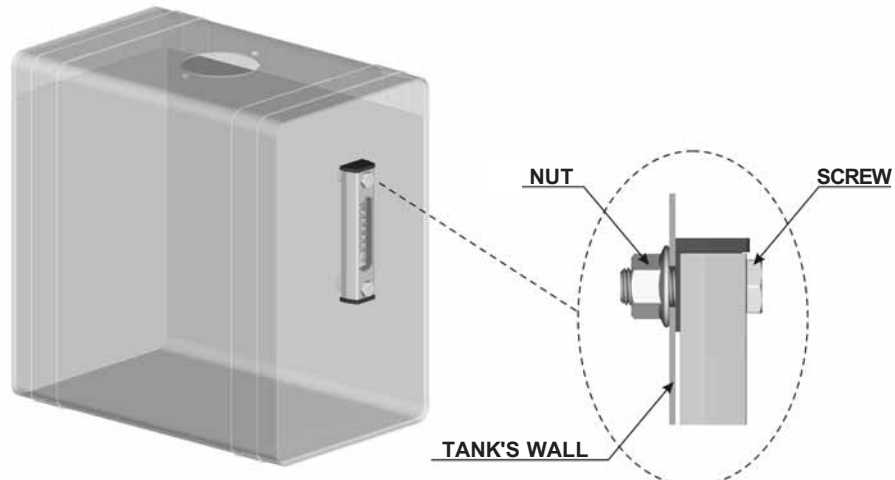


ICAT\_024\_021\_HL91

| Indicator type | Weight  | A         | B        | C        | D         | E   | F         | G           |
|----------------|---------|-----------|----------|----------|-----------|-----|-----------|-------------|
|                | Kg(lbs) |           |          |          |           |     |           |             |
| HL 91-10       | 0,15    | 106       | 17,5     | 41       | 76        | M10 | 76        | 11 (0.4330) |
|                | (0.33)  | (4.1732)  | (0.6890) | (1.6142) | (3.0000)  | M12 | (3.0000)  | 13 (0.5118) |
| HL 91-20       | 0,19    | 157       | 20,5     | 86       | 127       | M10 | 124       | 11 (0.4330) |
|                | (0.42)  | (6.1811)  | (0.8071) | (3.3858) | (5.0000)  | M12 | (5.0000)  | 13 (0.5118) |
| HL 91-30       | 0,23    | 284       | 20,5     | 213      | 254       | M10 | 254       | 11 (0.4330) |
|                | (0.51)  | (11.1811) | (0.8071) | (8.3858) | (10.0000) | M12 | (10.0000) | 13 (0.5118) |

### ASSEMBLY INSTRUCTIONS

The connection of the HL 91 level indicators is done through the built-in-screws. After they pass the tank's drilled wall they have to be mounted using the supplied nuts to a torque of 88.5 lbf in (10 Nm). Before connecting make sure there are no burrs in the screws mounting seats.



**NOTE**

To avoid accidental impacts that might break the level indicator and cause oil leaks, we suggest to arrange additional protection of the tank.

01/09.2011

## HOW TO ORDER AN HL 91 LEVEL INDICATOR

|          |          |          |          |
|----------|----------|----------|----------|
| <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> |
| HL 91    | -        | 10       | -        |
| -        | T1       | -        | T        |
| -        | -        | -        | B        |

| 1 | Indicator type           | CODE     |
|---|--------------------------|----------|
|   | 3 in (76 mm) wheelbase   | HL 91-10 |
|   | 5 in (127 mm) wheelbase  | HL 91-20 |
|   | 10 in (254 mm) wheelbase | HL 91-30 |

| 2 | Fixing screws | CODE |
|---|---------------|------|
|   | M 10          | T1   |
|   | M 12          | T2   |

| 3 | Thermometer      | CODE |
|---|------------------|------|
|   | Without          | N    |
|   | With thermometer | T    |

| 4 | Seals | CODE |
|---|-------|------|
|   | Buna  | B    |
|   | Viton | V    |

- Standard
- On request

01/09.2011

## HB 02 LEVEL INDICATOR

### TECHNICAL DATA

HB 02 level indicators are directly connected to the reservoir to check the level of the hydraulic fluid. The body is made of aluminum and provides a see-thru tag made of polyamide resin. They are available with GAS threads from G1/4" to G1"1/4 and are supplied with the necessary bonded seal washer.

- Aluminum body
- Maximum working pressure 145 psi (10 bar)
- High resistance to weather conditions

#### MATERIALS

|                 |                  |
|-----------------|------------------|
| Body            | Aluminum         |
| Tag             | Polyamide        |
| Contrast screen | Painted aluminum |

#### FLUIDS COMPATIBILITY

According to ISO 2943 (Norm ISO 6743/4)

|                  |                             |
|------------------|-----------------------------|
| Mineral oils     | HH - HL - HM - HR - HV - HG |
| Water emulsions  | HFAE - HFAS                 |
| Synthetic fluids | HS - HFDR - HFDU - HFDS     |

#### PRESSURE

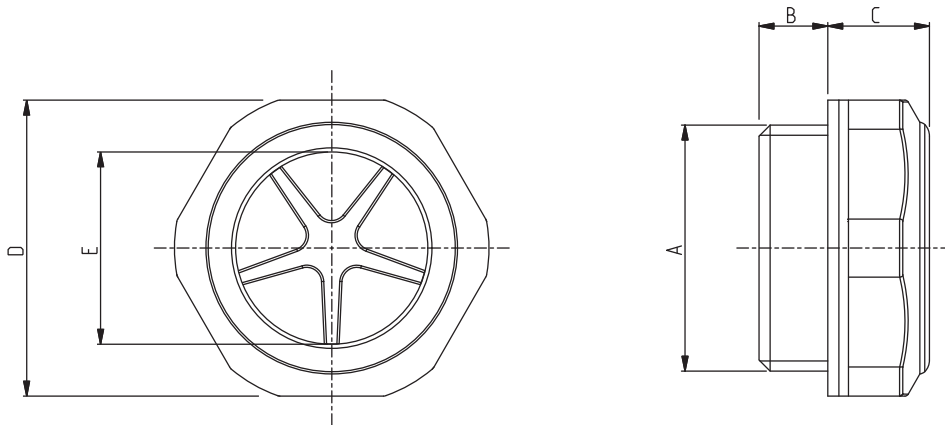
|                          |                  |
|--------------------------|------------------|
| Maximum working pressure | 145 psi (10 bar) |
|--------------------------|------------------|

#### WORKING TEMPERATURE

|                            |
|----------------------------|
| -22 ÷ 195 °F (-30 ÷ 90 °C) |
|----------------------------|

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## DIMENSIONS

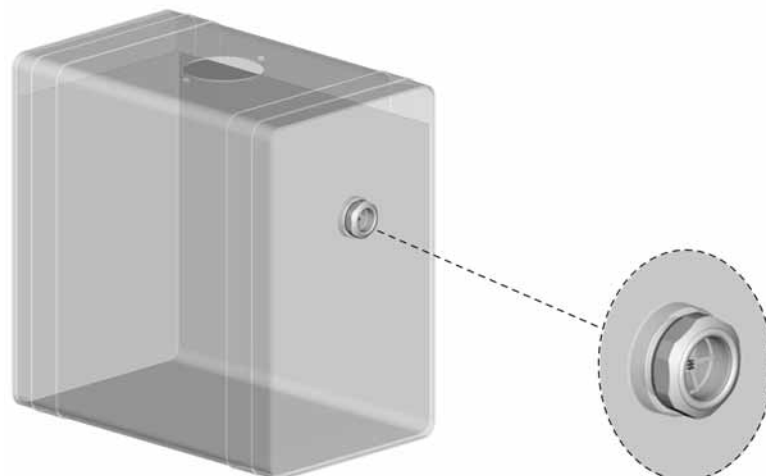


ICAT\_024\_022\_HB02

| Indicator type  | Weight           | A        | B                | C                | D              | E              | Tightening torque |
|-----------------|------------------|----------|------------------|------------------|----------------|----------------|-------------------|
|                 | Kg(lbs)          | GAS-BSPP | mm(in)           | mm(in)           | mm(in)         | mm(in)         | Nm(lbf in)        |
| <b>HB 02-GB</b> | 0,006<br>(0.013) | G 1/4    | 6<br>(0.2362)    | 11<br>(0.4331)   | 18<br>(0.7087) | 11<br>(0.4331) | 15<br>(133)       |
| <b>HB 02-GC</b> | 0,010<br>(0.022) | G 3/8    | 7,5<br>(0.2953)  | 11,5<br>(0.4528) | 22<br>(0.8661) | 13<br>(0.5118) | 15<br>(133)       |
| <b>HB 02-GD</b> | 0,013<br>(0.029) | G 1/2    | 7,5<br>(0.2953)  | 11,5<br>(0.4528) | 27<br>(1.0630) | 16<br>(0.6299) | 20<br>(177)       |
| <b>HB 02-GE</b> | 0,020<br>(0.044) | G 3/4    | 10,5<br>(0.4134) | 10,5<br>(0.4134) | 32<br>(1.2598) | 20<br>(0.7874) | 30<br>(265)       |
| <b>HB 02-GF</b> | 0,032<br>(0.070) | G 1      | 9,5<br>(0.3740)  | 12,5<br>(0.4921) | 40<br>(1.5748) | 26<br>(1.0236) | 50<br>(442)       |
| <b>HB 02-GG</b> | 0,054<br>(0.119) | G 1 1/4  | 10,5<br>(0.4134) | 15,5<br>(0.6102) | 50<br>(1.9685) | 34<br>(1.3386) | 60<br>(531)       |

## ASSEMBLY INSTRUCTIONS

HB 02 level indicators get connected to the tank by screwing them to a seat with an orthogonal surface. Before connecting make sure there are no burrs in the mounting threaded seats. Use the tightening torques suggested by the table above.



### NOTE

To avoid accidental impacts that might break the level indicator and cause oil leaks, we suggest to arrange additional protection of the tank.

01/09.2011

## HOW TO ORDER AN HB 02 LEVEL INDICATOR

**1**
**2**

|              |   |           |
|--------------|---|-----------|
| <b>HB 02</b> | - | <b>GF</b> |
|--------------|---|-----------|

| 1 | Level indicator type | CODE |
|---|----------------------|------|
|---|----------------------|------|

|  |                     |              |
|--|---------------------|--------------|
|  | See table on page 5 | <b>HB 02</b> |
|--|---------------------|--------------|

| 2 | Connection thread | CODE |
|---|-------------------|------|
|---|-------------------|------|

|  |       |           |
|--|-------|-----------|
|  | G 1/4 | <b>GB</b> |
|--|-------|-----------|

|  |       |           |
|--|-------|-----------|
|  | G 3/8 | <b>GC</b> |
|--|-------|-----------|

|  |       |           |
|--|-------|-----------|
|  | G 1/2 | <b>GD</b> |
|--|-------|-----------|

|  |       |           |
|--|-------|-----------|
|  | G 3/4 | <b>GE</b> |
|--|-------|-----------|

|  |     |           |
|--|-----|-----------|
|  | G 1 | <b>GF</b> |
|--|-----|-----------|

|  |         |           |
|--|---------|-----------|
|  | G 1 1/4 | <b>GG</b> |
|--|---------|-----------|

|  |          |
|--|----------|
|  | Standard |
|--|----------|

|  |            |
|--|------------|
|  | On request |
|--|------------|

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