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Accessories for hydraulic systems



Plugs

Breather caps

Level indicators

Column level indicators

TN.
Plugs
Technopolymer
up to 100 °C



page 1664

TN-EX
Plugs
Technopolymer
up to 100 °C





page 1665

MH.
Labels with marks and symbols
for oil plugs, aluminium
up to 100 °C




page 1665

TNR.
Plugs
Technopolymer
up to 100 °C



page 1666

TCR.
Oil fill plugs
Technopolymer
up to 100 °C




page 1667

TCD.
Oil fill plugs
Technopolymer
up to 100 °C




page 1668

TCD+a
Oil fill plugs
with flat dipstick,
technopolymer
up to 100 °C



page 1669

TSD.
Oil drain plugs
Technopolymer
up to 100 °C



page 1670

TSR.
Oil drain plugs
Technopolymer
up to 100 °C



page 1671

GN 741
Threaded plugs
Aluminium, resistant up
to 100 °C



page 1672

GN 742
Threaded plugs
Aluminium, resistant up
to 180 °C



page 1674

TMB.
Magnetic plugs
Aluminium
up to 180 °C




page 1676

TPC
Oil fill plugs
for push-fit,
technopolymer
up to 100 °C



page 1677

TPC+a
Oil fill plugs
with flat dipstick for
push-fit, technopolymer
up to 100 °C




page 1677

T.440
Plugs
Technopolymer
up to 100 °C



page 1678

T.440+a
Plugs
with flat dipstick,
technopolymer
up to 100 °C



page 1678

T.470
Plugs
Technopolymer
up to 100 °C



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TCE.
Plugs
with hexagon socket,
technopolymer
up to 100 °C



page 1679

GN 749
Threaded plugs
Steel, zinc plated




page 1680

DIN 908
Threaded plugs
Steel, zinc plated



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DIN 7603
Gaskets
Metal, for threaded
plugs DIN 908



page 1682

GN 7490
Welding sockets
with and without collar



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DIN 906
Threaded plugs
Steel



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DIN 906-NI
Threaded plugs
Stainless Steel






page 1684


GN 252
Blanking plugs



page 1685

GN 252.5
**Stainless Steel-
Blanking plugs**






page 1685

GN 441
Threaded plugs
Resistant up to 100 °C,
Aluminium



page 1686

GN 442
Threaded plugs
Resistant up to 200 °C,
Aluminium



page 1687

GN 880
Oil drain valves
Brass, 100 °C




page 1688

GN 880.1
Connector pieces
for oil drain valves
GN 880 / with or without
drain hose




page 1690

GN 881
Breather valves
Brass, 100 °C



page 1692

GN 882
Breather filters
Brass, 100 °C



page 1693

GN 883
Breather valves
Brass, 100 °C



page 1694

GN 884
Breather filters
Brass, 100 °C



page 1696

SFN.
Breather caps
Technopolymer
up to 100 °C



page 1698

SFC.
Breather cap
with sealing closure,
technopolymer
up to 80 °C



page 1700

SFP.
Breather caps
with splash guard,
technopolymer
up to 100 °C



page 1702

SFP+a
Breather caps
with splash guard and
flat dipstick,
technopolymer
up to 100 °C



page 1704

SFP-EX
Breather caps
with splash guard,
technopolymer
up to 80 °C





page 1706

SFP+a-EX
Breather caps
with splash guard and
flat dipstick,
technopolymer
up to 80 °C





page 1707

TVD.
**Breather caps with
vacuum breaker valve**
Technopolymer
up to 50 °C



page 1708

SFN-PF+F
Breather cap
push-fit,
technopolymer
up to 100 °C



page 1710

SFV
Valve breather caps
Technopolymer
up to 100 °C



page 1711

SFW.
Pressurised breather caps
with double valve, technopolymer
up to 100 °C




page 1712

SFW-VP
Pressurised breather caps
with double valve and vandal-proof device, technopolymer
up to 100 °C




page 1714

SMN. SMW.
Pressurised breather caps
with double valve and threaded connector, steel
up to 100 °C



page 1716

SMN-BA SMW-BA
Pressurised breather caps
with double valve and bayonet assembly, steel
up to 100 °C



page 1718

FRF+C
Flange
for threaded cap, technopolymer
up to 90 °C



page 1720

FRB+C
Flange
for bayonet cap, technopolymer
up to 90 °C



page 1721

PLRF+C
Side mount
for threaded cap, technopolymer
up to 90 °C



page 1722

PLRB+C
Side mount
for bayonet cap, technopolymer
up to 90 °C



page 1723

HGFT.
Oil level indicators
Technopolymer
up to 100 °C



page 1724

HGFT-EX
Oil level indicators
Technopolymer
up to 80 °C



page 1725

GN 743
Oil level sight glasses
Aluminum / natural glass, resistant up to 100 °C



page 1726

GN 743.1
Oil level sight glasses
Aluminum / natural glass, resistant up to 180 °C



page 1727

GN 743.2
Oil level sight glasses
Brass / natural glass, resistant up to 100 °C



page 1728

GN 743.3
Oil level sight glasses
Brass / natural glass, resistant up to 180 °C



page 1729

GN 743.4
Stainless Steel-Oil level sight glasses
Natural glass, resistant up to 100 °C



page 1730

GN 743.5
Stainless Steel-Oil level sight glasses
Natural glass, resistant up to 180 °C



page 1731

GN 743.6
ATEX-Sight glasses
Aluminium / Natural glass, resistant up to 150 °C



page 1732

GN 743.7
Oil level sight glasses
Brass / natural glass, resistant up to 100 °C



page 1733

GN 743.8
Oil level sight glasses
Brass / natural glass, resistant up to 180 °C



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HGFT-PR
Oil level indicators
with prismatic window, technopolymer
up to 100 °C



page 1735

HGFT-HT-PR
Oil level indicators
with prismatic window, high temperatures, technopolymer
up to 140 °C



page 1735

GN 7403-AL
Breather strainers
Aluminum
100 °C



page 1736

GN 7403-NI
Breather strainers
Stainless Steel
100 °C




page 1736

GN 7405
Stainless Steel-Strainer fittings
100 °C



page 1737

GN 7403.1
Stainless Steel-Strainers
100 °C




page 1738

GN 744
Oil level sight glasses
Aluminum / crystal-clear plastic




page 1739

HFTX.
Oil level indicators
Technopolymer
up to 100 °C




page 1740

HFTX-PR
Oil level indicators
with prismatic window, technopolymer
up to 100 °C




page 1741

HFTR-PR
Oil level indicators
with prismatic window, technopolymer
up to 100 °C




page 1741

HRT.
Oil level indicators
push-fit, technopolymer
up to 100 °C




page 1742

HRT-T
Oil level indicators
push-fit with temperature reading, technopolymer
up to 100 °C



page 1742

HE.
Oil level indicators
push-fit, polycarbonate
up to 100 °C




page 1743

GH.
Nuts
Brass



page 1743

GN 537
Oil level sight glasses
Aluminium / Perspex / without thread



page 1744

HCFE.
Oil circulation sights
Technopolymer
up to 100 °C




page 1745

HCFE-C
Oil circulation sights
Technopolymer
up to 100 °C




page 1745

HCFE-EX
Oil circulation sights
Technopolymer
up to 80 °C



page 1746

HVF.
Visual flow indicators
Technopolymer ends



page 1747

HCZ.
Column level indicators
with or without protection frame, technopolymer




page 1752

HCZ-VT
Column level indicators
SUPER-technopolymer assembly screws, with or without protection frame



page 1754

HCX.
Column level indicators
Technopolymer



page 1756


HCX-SST
Column level indicators
 stainless steel assembly screws, technopolymer




 **INOX**
 STAINLESS STEEL

page 1758


HCX-VT
Column level indicators
 SUPER-technopolymer assembly screws




 **SUPER**
 TECHNO-POLYMER

page 1760

HCX-BW-SST
Column level indicators
 for hot water, technopolymer



 **INOX**
 STAINLESS STEEL


page 1762


HCX-AR
Column level indicators
 for use with fluids containing alcohol, technopolymer



page 1763


HCX-PT
Column level indicators
 Zinc steel screws, nuts and washers



 **INOX**
 STAINLESS STEEL

page 1764

HCX-PT-SST
Column level indicators
 Stainless steel screws, AISI 304 stainless steel nuts and washers




page 1764

HCX-PT-VT
Column level indicators
 SUPER-technopolymer screws, AISI 304 stainless steel nuts and washers




page 1764

HCX-P
Column level indicators
 technopolymer, with zinc alloy protection frame




page 1766

FM Kit
Fast Mounting Kit
 Steel and rubber




page 1768

HCX-LT
Column level indicator
 with float for indirect level reading, technopolymer




page 1769


HCK.
Column level indicators
 with or without transparent protection, technopolymer



page 1770

HCK-GL
Column level indicators
 with transparent protection for glycol-based solutions, technopolymer



 **INOX**
 STAINLESS STEEL


page 1772

SLCK
Kit for the electric control of a fluid level
 for HCK, and HCK-GL column level indicators



page 1774

HCL.
Column level indicators
 with U shaped protection, technopolymer



page 1776

HCX-ST
Column level indicators
 with MAX temperature electrical sensor, technopolymer



page 1778

HCX-STL
Column level indicators
 with temperature electrical probe, technopolymer




page 1780

HCX-E
Column level indicators
 with MIN level electrical sensor, technopolymer




page 1782

HCX-E-ST
Column level indicators
 with MIN level and MAX temperature electrical sensors, technopolymer




page 1784

HCX-E-STL
Column level indicators
 with MIN level electrical sensor and temperature electrical probe, technopolymer




page 1786

HCV-ST
Column level indicators
 with MAX temperature electrical sensor



page 1788

HCV-STL
Column level indicators
 with temperature electrical probe




page 1790

HCV-E
Column level indicators
 with MIN level electrical sensor, connector with side output, technopolymer



page 1792

HCV-E-ST
Column level indicators
 with MIN level and MAX temperature electrical sensors



page 1794

HCV-E-STL
Column level indicators
 with MIN level electrical sensor and temperature electrical probe




page 1796

HCY-E
Column level indicators
 with MIN level electrical sensor, technopolymer




page 1798

HCY-E-ST
Column level indicators
 with MIN level and MAX temperature electrical sensors, technopolymer




page 1800

HFL-E
Rapid levels with float
 Technopolymer



page 1802

HFLT-E
Rapid levels with float
 Technopolymer



page 1804

Plugs

Technopolymer

MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

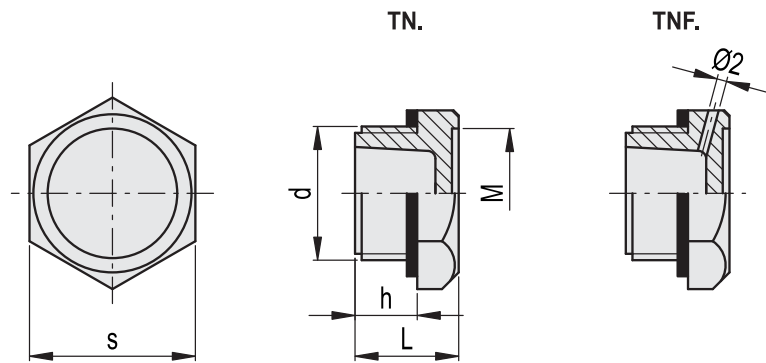
PACKING RING
NBR synthetic rubber.

STANDARD EXECUTIONS
- **TN.**: without side hole.
- **TNF.**: with side breather hole.

MAXIMUM CONTINUOUS WORKING TEMPERATURE
100°C.

TECHNICAL DATA
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

ACCESSORIES ON REQUEST
TN. plugs are suitable for mounting aluminium plates with graphic symbols type MH. (see page 1665).



TN.		TNF.		d	h	s	L	M	Tightening torque [Nm]	⚖️
58284	TN.10x1.5	58334	TNF.10x1.5	M10x1.5	9	19	16	15	4÷5	4
58285	TN.12x1.5	58335	TNF.12x1.5	M12x1.5	9	19	16	15	6÷8	4
58286	TN.14x1.5	58336	TNF.14x1.5	M14x1.5	9	19	16	15	6÷8	5
58287	TN.16x1.5	58337	TNF.16x1.5	M16x1.5	9	22	16	17	8÷10	7
58288	TN.18x1.5	58338	TNF.18x1.5	M18x1.5	11	26	18	20.5	8÷10	8
58289	TN.20x1.5	58339	TNF.20x1.5	M20x1.5	11	26	18	20.5	8÷10	8
58290	TN.22x1.5	58340	TNF.22x1.5	M22x1.5	12	32	20	25	10÷12	12
58291	TN.25x1.5	58343	TNF.25x1.5	M25x1.5	12	32	20	25	10÷12	12
58292	TN.26x1.5	58344	TNF.26x1.5	M26x1.5	12	32	20	25	10÷12	14
58293	TN.35x1.5	58345	TNF.35x1.5	M35x1.5	13	38	22	31	15÷18	15
58401	TN.40x1.5	58451	TNF.40x1.5	M40x1.5	14	46	24	38	15÷18	20
58294	TN.1/8	58346	TNF.1/8	G 1/8	9	19	16	15	4÷6	4
58295	TN.1/4	58347	TNF.1/4	G 1/4	9	19	16	15	4÷6	4
58296	TN.3/8	58348	TNF.3/8	G 3/8	9	22	16	17	8÷10	5
58297	TN.1/2	58349	TNF.1/2	G 1/2	11	26	18	20.5	8÷10	8
58298	TN.3/4	58350	TNF.3/4	G 3/4	12	32	20	25	10÷12	14
58299	TN.1	58353	TNF.1	G 1	13	38	22	31	12÷15	18
58411	TN.1¼	58461	TNF.1¼	G 1¼	14	46	24	38	15÷18	20
58413	TN.1½	58463	TNF.1½	G 1½	15	55	26	46	15÷18	24

Plugs

Technopolymer

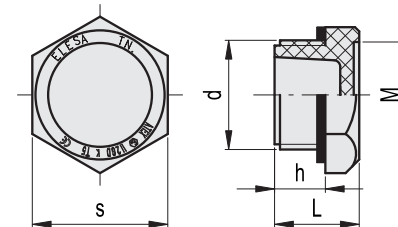
MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING
NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE
100°C

ATEX DIRECTIVE COMPLIANCE
The plugs of the TN-EX series comply with Health and Safety Requirements intended in 94/9/EC ATEX European Directive (explosive atmospheres) for equipments in Group II, category 2GD. Plugs have "k" protection degree and can therefore be mounted in equipments protected by means of "immersion in liquid", without lowering protection degree.
II 2 G D k T5, marked on the TN-EX plugs, represents the identification according to ATEX directive.
II: group of substances for which the product is suitable
2: identification of the category
G: identification of the type of explosive atmosphere (Gases or vapours)
D: identification of the type of explosive atmosphere (Dust)
k: protection degree by means of immersion in liquid
T5: temperature class
Ambient and/or fluid temperature: -30 ÷ +100°C
The declaration of conformity to European Directives of this product is available and it is part of the product itself.

TECHNICAL DATA
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.



Code	Description	d	h	s	L	M	Tightening torque [Nm]	⚖️
58296-EX	TN.3/8-EX	G 3/8	9	22	16	17	8÷10	5
58297-EX	TN.1/2-EX	G 1/2	11	26	18	20.5	8÷10	8
58298-EX	TN.3/4-EX	G 3/4	12	32	20	25	10÷12	14

Labels with marks and symbols

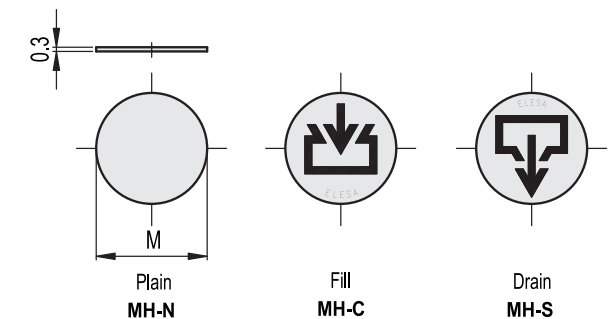
for oil plugs, aluminium

MATERIAL
Matte anodised aluminium.
Self-adhesive back for sticking to the plain surface of the plug head.

STANDARDIZED GRAPHIC SYMBOLS
- **MH-N**: plain surface, without symbols.
- **MH-C**: with graphic symbol "fill" according to DIN regulations.
- **MH-S**: with graphic symbol "drain" according to DIN regulations.

MAXIMUM CONTINUOUS WORKING TEMPERATURE
100°C.

APPLICATIONS
The plates with graphic symbols for oil plugs are suitable for the application on plugs type TN. (see page 1664), TNR. (see page 1666), TN-EX (see page 1665), TCR. (see page 1667), TCD. (see page 1668), TSD. (see page 1670) and TSR. (see page 1671).



MH-N		MH-C		MH-S		
Code	Description	Code	Description	Code	Description	M*Ø
39501	MH.19-N	39521	MH.19-C	39541	MH.19-S	15
39503	MH.22-N	39523	MH.22-C	39543	MH.22-S	17
39505	MH.26-N	39525	MH.26-C	39545	MH.26-S	20.5
39507	MH.32-N	39527	MH.32-C	39547	MH.32-S	25
39509	MH.38-N	39529	MH.38-C	39549	MH.38-S	31

M * = diameter of the seat of the correspondent plug.

Plugs

Technopolymer

MATERIAL

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING

NBR synthetic rubber O-Ring.
The positioning of the O-Ring in its housing guarantees a high tightening torque.

STANDARD EXECUTIONS

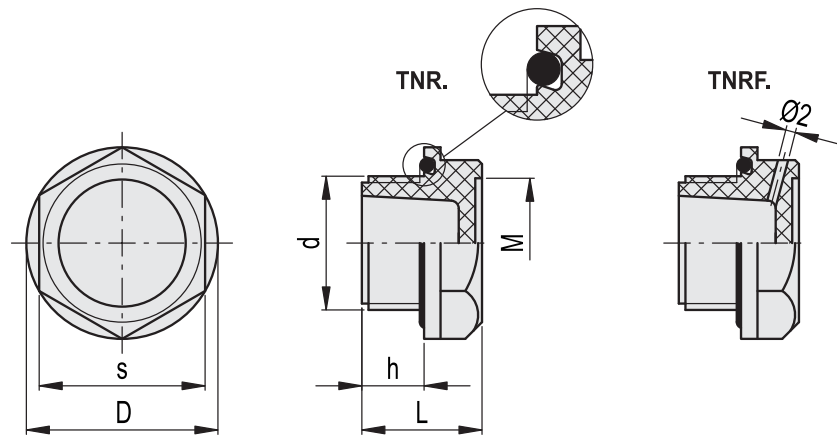
- **TNR.**: without side hole.
- **TNRF.**: with side breather hole.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

ACCESSORIES ON REQUEST

TNR. plugs are suitable for mounting aluminium plates with graphic symbols type MH. (see page 1665).



TNR.		TNRF.		d	h	s	D	L	M	Tightening torque [Nm]	⚖
158295	TNR.1/4	158495	TNRF.1/4	G 1/4	9	19	22	17	15	4÷6	4
158296	TNR.3/8	158496	TNRF.3/8	G 3/8	9	22	25.5	18	17	8÷10	6
158297	TNR.1/2	158497	TNRF.1/2	G 1/2	11	27	32	20	20.5	8÷10	8
158298	TNR.3/4	158498	TNRF.3/4	G 3/4	12	32	37	22	25	10÷12	14
158299	TNR.1	158499	TNRF.1	G 1	13	38	44	23	31	12÷15	18
158411	TNR.1 ¼	158611	TNRF.1 ¼	G 1 ¼	14	46	53.5	26	38	15÷18	32
158413	TNR.1 ½	158613	TNRF.1 ½	G 1 ½	15	55	63.5	28	46	15÷18	51

Oil fill plugs

Technopolymer

MATERIAL

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING

NBR synthetic rubber O-Ring.
The positioning of the O-Ring in its housing guarantees a high tightening torque.

STANDARD EXECUTIONS

- **TCR.**: without side hole.
- **TCRF.**: with side breather hole.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

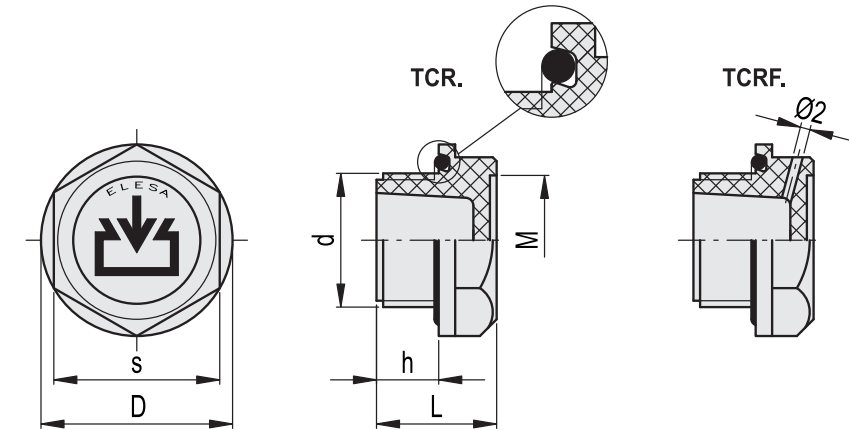
100°C.

GRAPHIC SYMBOL "FILL"

According to DIN regulations.

ACCESSORIES ON REQUEST

TCR. oil fill plugs are suitable for mounting aluminium plates with graphic symbols type MH. (see page 1665).



TCR.		TCRF.		d	h	s	D	L	M	Tightening torque [Nm]	⚖
158695	TCR.1/4	158795	TCRF.1/4	G 1/4	9	19	22	17	15	4÷6	4
158696	TCR.3/8	158796	TCRF.3/8	G 3/8	9	22	25.5	18	17	8÷10	6
158697	TCR.1/2	158797	TCRF.1/2	G 1/2	11	27	32	20	20.5	8÷10	8
158698	TCR.3/4	158798	TCRF.3/4	G 3/4	12	32	37	22	25	10÷12	14
158699	TCR.1	158799	TCRF.1	G 1	13	38	44	23	31	12÷15	18
158711	TCR.1 ¼	158811	TCRF.1 ¼	G 1 ¼	14	46	53.5	26	38	15÷18	32
158713	TCR.1 ½	158813	TCRF.1 ½	G 1 ½	15	55	63.5	28	46	15÷18	51

Oil fill plugs

Technopolymer

MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING
NBR synthetic rubber.

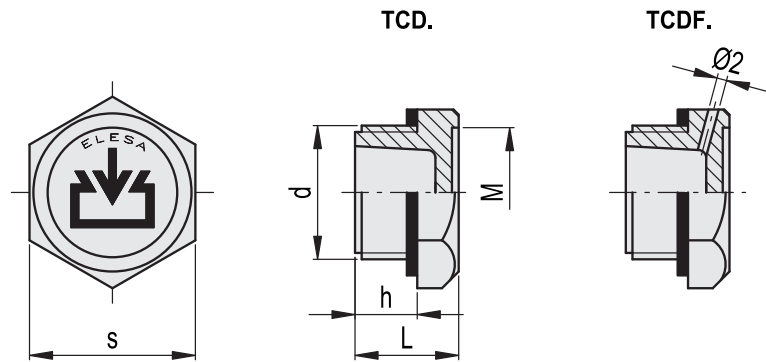
STANDARD EXECUTIONS
- **TCD.**: without side hole.
- **TCDF.**: with side breather hole.

MAXIMUM CONTINUOUS WORKING TEMPERATURE
100°C.

GRAPHIC SYMBOL "FILL"
According to DIN regulations.

TECHNICAL DATA
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

ACCESSORIES
TCD. oil fill plugs are suitable for mounting aluminium plates with graphic symbols type MH. (see page 1665).



TCD.		TCDF.		d	h	s	L	M	Tightening torque [Nm]	⚖️
58551	TCD.10x1.5	58651	TCDF.10x1.5	M10x1.5	9	19	16	15	4÷5	4
58553	TCD.12x1.5	58653	TCDF.12x1.5	M12x1.5	9	19	16	15	6÷8	4
58555	TCD.14x1.5	58655	TCDF.14x1.5	M14x1.5	9	19	16	15	6÷8	5
58557	TCD.16x1.5	58657	TCDF.16x1.5	M16x1.5	9	22	16	17	8÷10	7
58559	TCD.18x1.5	58659	TCDF.18x1.5	M18x1.5	11	26	18	20.5	8÷10	8
58561	TCD.20x1.5	58661	TCDF.20x1.5	M20x1.5	11	26	18	20.5	8÷10	8
58563	TCD.22x1.5	58663	TCDF.22x1.5	M22x1.5	12	32	20	25	10÷12	12
58565	TCD.25x1.5	58665	TCDF.25x1.5	M25x1.5	12	32	20	25	10÷12	12
58569	TCD.26x1.5	58681	TCDF.26x1.5	M26x1.5	12	32	20	25	10÷12	14
58567	TCD.35x1.5	58667	TCDF.35x1.5	M35x1.5	13	38	22	31	15÷18	15
58571	TCD.40x1.5	58683	TCDF.40x1.5	M40x1.5	14	46	24	38	15÷18	20
58591	TCD.1/8	58669	TCDF.1/8	G 1/8	9	19	16	15	4÷6	4
58601	TCD.1/4	58671	TCDF.1/4	G 1/4	9	19	16	15	4÷6	4
58611	TCD.3/8	58673	TCDF.3/8	G 3/8	9	22	16	17	8÷10	5
58621	TCD.1/2	58675	TCDF.1/2	G 1/2	11	26	18	20.5	8÷10	8
58631	TCD.3/4	58677	TCDF.3/4	G 3/4	12	32	20	25	10÷12	14
58641	TCD.1	58679	TCDF.1	G 1	13	38	22	31	12÷15	18
58643	TCD.1¼	58685	TCDF.1¼	G1¼	14	46	24	38	15÷18	20
58645	TCD.1½	58687	TCDF.1½	G1½	15	55	26	46	15÷18	24

Oil fill plugs

with flat dipstick, technopolymer

MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING
NBR synthetic rubber.

FLAT DIPSTICK
Flat section phosphatised steel.
On request and for sufficient quantities dipstick can be supplied in different lengths and/or complete with MAX-MIN level lines.

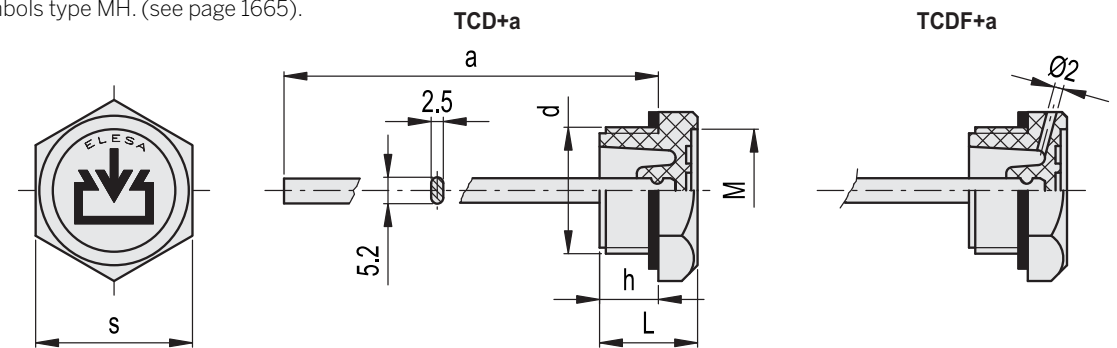
STANDARD EXECUTIONS
- **TCD+a**: without side hole.
- **TCDF+a**: with side breather hole.

MAXIMUM CONTINUOUS WORKING TEMPERATURE
100°C.

GRAPHIC SYMBOL "FILL"
According to DIN regulations.

TECHNICAL DATA
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

ACCESSORIES
TCD+a oil fill plugs are suitable for mounting aluminium plates with graphic symbols type MH. (see page 1665).



TCD+a		TCDF+a		d	h	s	L	M	a	Tightening torque [Nm]	⚖️
59501	TCD.10x1.5+a	M10x1.5	9	19	16	15	120	4÷5	21		
59503	TCD.12x1.5+a	M12x1.5	9	19	16	15	120	6÷8	21		
59505	TCD.14x1.5+a	M14x1.5	9	19	16	15	120	6÷8	22		
59507	TCD.16x1.5+a	M16x1.5	9	22	16	17	120	8÷10	22		
59509	TCD.18x1.5+a	M18x1.5	11	26	18	20.5	195	8÷10	36		
59511	TCD.20x1.5+a	M20x1.5	11	26	18	20.5	195	8÷10	37		
59513	TCD.22x1.5+a	M22x1.5	12	32	20	25	195	10÷12	40		
59515	TCD.25x1.5+a	M25x1.5	12	32	20	25	195	10÷12	40		
59517	TCD.26x1.5+a	M26x1.5	12	32	20	25	195	10÷12	42		
59519	TCD.35x1.5+a	M35x1.5	13	38	22	31	195	15÷18	44		
59523	TCD.40x1.5+a	M40x1.5	14	46	24	38	195	15÷18	49		
59531	TCD.1/8+a	G 1/8	9	19	16	15	120	4÷6	22		
59533	TCD.1/4+a	G 1/4	9	19	16	15	120	4÷6	22		
59535	TCD.3/8+a	G 3/8	9	22	16	17	120	8÷10	22		
59537	TCD.1/2+a	G 1/2	11	26	18	20.5	195	8÷10	37		
59539	TCD.3/4+a	G 3/4	12	32	20	25	195	10÷12	40		
59541	TCD.1+a	G 1	13	38	22	31	195	12÷15	44		
59543	TCD.1¼+a	G1¼	14	46	24	38	195	15÷18	49		
59545	TCD.1½+a	G1½	15	55	26	46	195	15÷18	53		

TCDF+a		d	h	s	L	M	a	Tightening torque [Nm]	⚖️
59557	TCDF.16x1.5+a	M16x1.5	9	22	16	17	120	8÷10	15
59559	TCDF.18x1.5+a	M18x1.5	11	26	18	20.5	195	8÷10	30
59561	TCDF.20x1.5+a	M20x1.5	11	26	18	20.5	195	8÷10	30
59563	TCDF.22x1.5+a	M22x1.5	12	32	20	25	195	10÷12	35
59565	TCDF.25x1.5+a	M25x1.5	12	32	20	25	195	10÷12	35
59567	TCDF.26x1.5+a	M26x1.5	12	32	20	25	195	10÷12	35
59569	TCDF.35x1.5+a	M35x1.5	13	38	22	31	195	15÷18	40
59573	TCDF.40x1.5+a	M40x1.5	14	46	24	38	195	15÷18	49
59585	TCDF.3/8+a	G 3/8	9	22	16	17	120	8÷10	20
59587	TCDF.1/2+a	G 1/2	11	26	18	20.5	195	8÷10	30
59589	TCDF.3/4+a	G 3/4	12	32	20	25	195	10÷12	35
59591	TCDF.1+a	G 1	13	38	22	31	195	12÷15	45
59595	TCDF.1¼+a	G1¼	14	46	24	38	195	15÷18	49
59597	TCDF.1½+a	G1½	15	55	26	46	195	15÷18	53

Oil drain plugs

Technopolymer

MATERIAL

Glass-fibre reinforced polyamide based (PA) technopolymer, red colour similar to RAL 3000, matte finish.

FLAT PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

GRAPHIC SYMBOL "DRAIN"

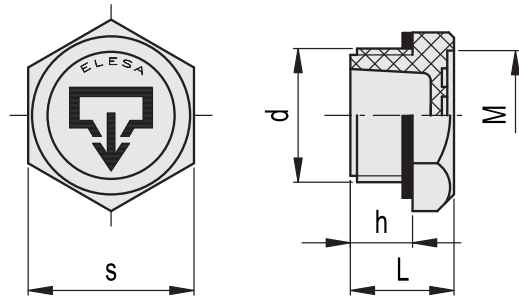
According to DIN regulations.

TECHNICAL DATA

The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

ACCESSORIES ON REQUEST

TSD. oil fill plugs are suitable for mounting aluminium plates with graphic symbols type MH. (see page 1665).



Code	Description	d	h	s	L	M	Tightening torque [Nm]	⚖️
59942	TSD.10x1.5	M10x1.5	9	19	16	15	4÷5	4
59944	TSD.12x1.5	M12x1.5	9	19	16	15	6÷8	4
59946	TSD.14x1.5	M14x1.5	9	19	16	15	6÷8	5
59948	TSD.16x1.5	M16x1.5	9	22	16	17	8÷10	7
59950	TSD.18x1.5	M18x1.5	11	26	18	20.5	8÷10	8
59952	TSD.20x1.5	M20x1.5	11	26	18	20.5	8÷10	8
59954	TSD.22x1.5	M22x1.5	12	32	20	25	10÷12	12
59956	TSD.25x1.5	M25x1.5	12	32	20	25	10÷12	12
59958	TSD.26x1.5	M26x1.5	12	32	20	25	10÷12	14
59960	TSD.35x1.5	M35x1.5	13	38	22	31	15÷18	15
59964	TSD.40x1.5	M40x1.5	14	46	24	38	15÷18	20
59972	TSD.1/8	G 1/8	9	19	16	15	4÷6	4
59974	TSD.1/4	G 1/4	9	19	16	15	4÷6	4
59976	TSD.3/8	G 3/8	9	22	16	17	8÷10	5
59978	TSD.1/2	G 1/2	11	26	18	20.5	8÷10	8
59980	TSD.3/4	G 3/4	12	32	20	25	10÷12	14
59982	TSD.1	G 1	13	38	22	31	15÷18	18
59986	TSD.1¼	G1¼	14	46	24	38	15÷18	20
59988	TSD.1½	G1½	15	55	26	46	15÷18	24

Oil drain plugs

Technopolymer

MATERIAL

Glass-fibre reinforced polyamide based (PA) technopolymer, red colour similar to RAL 3000, matte finish.

PACKING RING

NBR synthetic rubber O-Ring.

The positioning of the O-Ring in its housing guarantees a high tightening torque.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

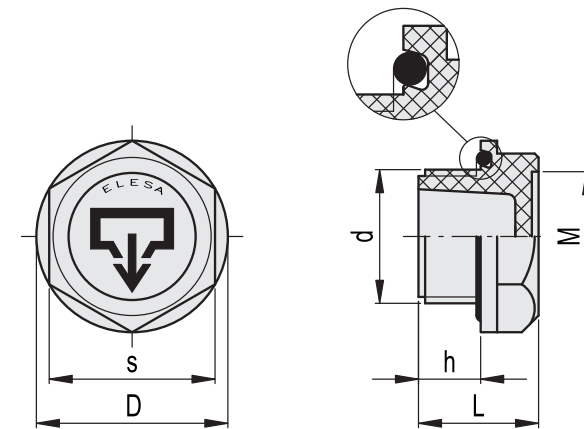
100°C.

GRAPHIC SYMBOL "DRAIN"

According to DIN regulations.

ACCESSORIES ON REQUEST

TSR. oil fill plugs are suitable for mounting aluminium plates with graphic symbols type MH. (see page 1665).



Code	Description	d	h	s	D	L	M	Tightening torque [Nm]	⚖️
158895	TSR.1/4	G 1/4	9	19	22	17	15	4÷6	4
158896	TSR.3/8	G 3/8	9	22	25.5	18	17	8÷10	6
158897	TSR.1/2	G 1/2	11	27	32	20	20.5	8÷10	8
158898	TSR.3/4	G 3/4	12	32	37	22	25	10÷12	14
158899	TSR.1	G 1	13	38	44	23	31	12÷15	18
158911	TSR.1¼	G1¼	14	46	53.5	26	38	15÷18	32
158913	TSR.1½	G1½	15	55	63.5	28	46	15÷18	51

Threaded plugs

Aluminium, up to 100 °C

SPECIFICATION

Types

- Type **OS**: neutral, blank
- Type **OSS**: neutral, black anodized
- Type **ES**: with DIN re-fill symbol, blank
- Type **ESS**: with DIN re-fill symbol, black anodized
- Type **AS**: with DIN drain symbol, blank
- Type **ASS**: with DIN drain symbol, black anodized

Identification no.

- No. **1**: without vent drilling
- No. **2**: with vent drilling

Aluminium

- Type OS, ES and AS: fine turned, blank
- Type OSS, ESS and ASS: fine turned, black anodized
- Symbol laser engraved

Temperature resistant up to **100 °C**

Sealing ring rubbers NBR (Perbunan)



INFORMATION

Threaded plugs GN 741 are fitted with outside diameter d_1 to suit screw holes with BSP threads to DIN 3852.

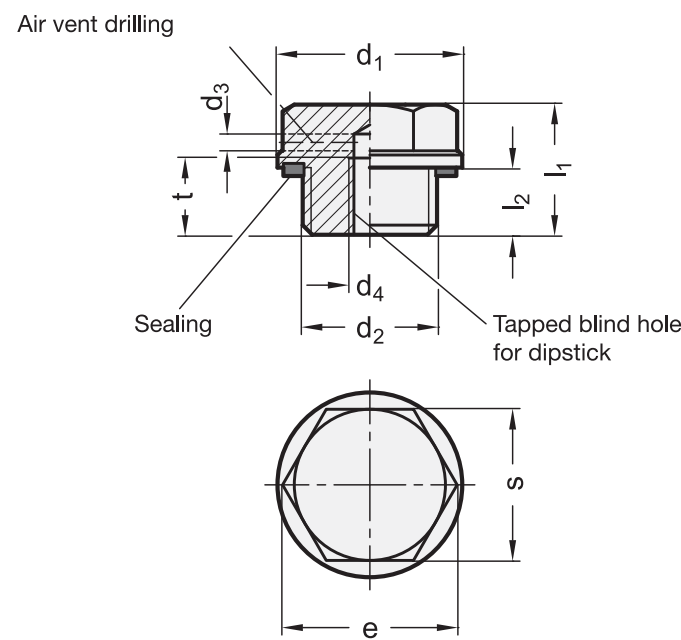
The sealing ring is bedded into a undercut groove which prevents it from dropping out and at the same time stops it from being extruded when tightening the cap.

ON REQUEST

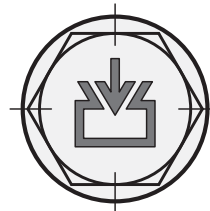
- with dipstick

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Plastic characteristics (see page A2)



Re-fill symbol



Drain symbol



* Complete with type index of the Threaded plugs

OS OSS ES ESS AS ASS

GN 741

Description	d1	d2	d3	d4	l1	l2	s	e ≈	t min.	⚙
GN 741-19-M14x1,5-*1	19	M 14 x 1,5	2	M 5	15,5	8	15	17,3	8	7
GN 741-19-M14x1,5-*2	19	M 14 x 1,5	2	M 5	15,5	8	15	17,3	8	7
GN 741-22-M16x1,5-*1	22	M 16 x 1,5	2	M 5	15,5	8	18	20,8	8	10
GN 741-22-M16x1,5-*2	22	M 16 x 1,5	2	M 5	15,5	8	18	20,8	8	10
GN 741-26-M20x1,5-*1	26	M 20 x 1,5	2	M 5	16	8,5	21	24,3	8	16
GN 741-26-M20x1,5-*2	26	M 20 x 1,5	2	M 5	16	8,5	21	24,3	8	15
GN 741-32-M26x1,5-*1	32	M 26 x 1,5	2	M 5	17	9	27	31,2	8	26
GN 741-32-M26x1,5-*2	32	M 26 x 1,5	2	M 5	17	9	27	31,2	8	25
GN 741-32-M27x1,5-*1	32	M 27 x 1,5	2	M 5	17	9	27	31,2	8	27
GN 741-32-M27x1,5-*2	32	M 27 x 1,5	2	M 5	17	9	27	31,2	8	27
GN 741-40-M33x1,5-*1	40	M 33 x 1,5	2	M 5	19,5	11	32	37	8	47
GN 741-40-M33x1,5-*2	40	M 33 x 1,5	2	M 5	19,5	11	32	37	8	47
GN 741-50-M40x1,5-*1	50	M 40 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 741-50-M40x1,5-*2	50	M 40 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 741-50-M42x1,5-*1	50	M 42 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 741-50-M42x1,5-*2	50	M 42 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 741-50-M42x2-*1	50	M 42 x 2	2	M 5	21	12	41	47,3	8	2
GN 741-50-M42x2-*2	50	M 42 x 2	2	M 5	21	12	41	47,3	8	2
GN 741-19-G1/4-*1	19	G 1/4	2	M 5	15,5	8	15	17,3	8	7
GN 741-19-G1/4-*2	19	G 1/4	2	M 5	15,5	8	15	17,3	8	8
GN 741-22-G3/8-*1	22	G 3/8	2	M 5	15,5	8	18	20,8	8	10
GN 741-22-G3/8-*2	22	G 3/8	2	M 5	15,5	8	18	20,8	8	10
GN 741-26-G1/2-*1	26	G 1/2	2	M 5	16	8,5	21	24,3	8	15
GN 741-26-G1/2-*2	26	G 1/2	2	M 5	16	8,5	21	24,3	8	17
GN 741-32-G3/4-*1	32	G 3/4	2	M 5	17	9	27	31,2	8	27
GN 741-32-G3/4-*2	32	G 3/4	2	M 5	17	9	27	31,2	8	38
GN 741-40-G1-*1	40	G 1	2	M 5	19,5	11	32	37	8	47
GN 741-40-G1-*2	40	G 1	2	M 5	19,5	11	32	37	8	47
GN 741-50-G11/4-*1	50	G 1 1/4	2	M 5	21	12	41	47,3	8	80
GN 741-50-G11/4-*2	50	G 1 1/4	2	M 5	21	12	41	47,3	8	80
GN 741-60-G11/2-*1	60	G 1 1/2	2	M 5	22	13	50	57,7	8	119
GN 741-60-G11/2-*2	60	G 1 1/2	2	M 5	22	13	50	57,7	8	119

Weight OS

Threaded plugs

Aluminium, up to 180 °C

SPECIFICATION

Types

- Type **OS**: neutral, blank
- Type **OSS**: neutral, black anodized
- Type **ES**: with DIN re-fill symbol, blank
- Type **ESS**: with DIN re-fill symbol, black anodized
- Type **AS**: with DIN drain symbol, blank
- Type **ASS**: with DIN drain symbol, black anodized

Identification no.

- No. **1**: without vent drilling
- No. **2**: with vent drilling

Aluminium

- Type OS, ES and AS: fine turned, blank
- Type OSS, ESS and ASS: fine turned, black anodized
- Symbols laser engraved

temperature resistant up to **180 °C**

Sealing ring rubber FPM (Viton®)

Identification by not black finish of seal



INFORMATION

Threaded plugs GN 742 are fitted with outside diameter d1 to suit screw holes with BSP threads to DIN 3852.

The sealing ring is bedded into a undercut groove which prevents it from dropping out and at the same time stops it from being extruded when tightening the cap.

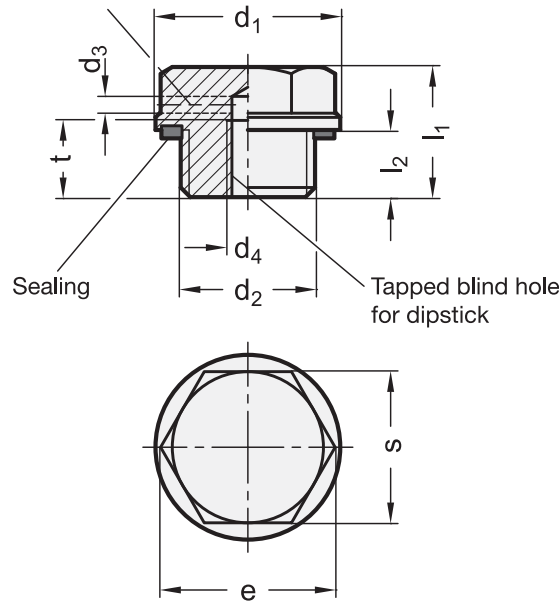
ON REQUEST

- with dipstick

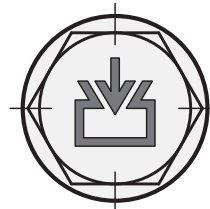
TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Plastic characteristics (see page A2)

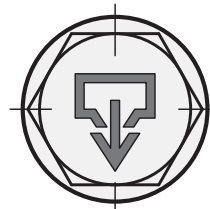
Air vent drilling



Re-fill symbol



Drain symbol



*Complete with type index of the Threaded plugs

OS OSS ES ESS AS ASS

GN 742

Description	d1	d2	d3	d4	l1	l2	s	e ≈	t min.	⚖
GN 742-19-M14x1,5-*1	19	M 14 x 1,5	2	M 5	15,5	8	15	17,3	8	7
GN 742-19-M14x1,5-*2	19	M 14 x 1,5	2	M 5	15,5	8	15	17,3	8	7
GN 742-22-M16x1,5-*1	22	M 16 x 1,5	2	M 5	15,5	8	18	20,8	8	10
GN 742-22-M16x1,5-*2	22	M 16 x 1,5	2	M 5	15,5	8	18	20,8	8	10
GN 742-26-M20x1,5-*1	26	M 20 x 1,5	2	M 5	16	8,5	21	24,3	8	15
GN 742-26-M20x1,5-*2	26	M 20 x 1,5	2	M 5	16	8,5	21	24,3	8	15
GN 742-32-M26x1,5-*1	32	M 26 x 1,5	2	M 5	17	9	27	31,2	8	27
GN 742-32-M26x1,5-*2	32	M 26 x 1,5	2	M 5	17	9	27	31,2	8	27
GN 742-32-M27x1,5-*1	32	M 27 x 1,5	2	M 5	17	9	27	31,2	8	27
GN 742-32-M27x1,5-*2	32	M 27 x 1,5	2	M 5	17	9	27	31,2	8	27
GN 742-40-M33x1,5-*1	40	M 33 x 1,5	2	M 5	19,5	11	32	37	8	50
GN 742-40-M33x1,5-*2	40	M 33 x 1,5	2	M 5	19,5	11	32	37	8	50
GN 742-50-M40x1,5-*1	50	M 40 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 742-50-M40x1,5-*2	50	M 40 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 742-50-M42x1,5-*1	50	M 42 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 742-50-M42x1,5-*2	50	M 42 x 1,5	2	M 5	21	12	41	47,3	8	2
GN 742-50-M42x2-*1	50	M 42 x 2	2	M 5	21	12	41	47,3	8	2
GN 742-50-M42x2-*2	50	M 42 x 2	2	M 5	21	12	41	47,3	8	2
GN 742-19-G1/4-*1	19	G 1/4	2	M 5	15,5	8	15	17,3	8	7
GN 742-19-G1/4-*2	19	G 1/4	2	M 5	15,5	8	15	17,3	8	7
GN 742-22-G3/8-*1	22	G 3/8	2	M 5	15,5	8	18	20,8	8	10
GN 742-22-G3/8-*2	22	G 3/8	2	M 5	15,5	8	18	20,8	8	10
GN 742-26-G1/2-*1	26	G 1/2	2	M 5	16	8,5	21	24,3	8	18
GN 742-26-G1/2-*2	26	G 1/2	2	M 5	16	8,5	21	24,3	8	18
GN 742-32-G3/4-*1	32	G 3/4	2	M 5	17	9	27	31,2	8	26
GN 742-32-G3/4-*2	32	G 3/4	2	M 5	17	9	27	31,2	8	26
GN 742-40-G1-*1	40	G 1	2	M 5	19,5	11	32	37	8	47
GN 742-40-G1-*2	40	G 1	2	M 5	19,5	11	32	37	8	47
GN 742-50-G1 1/4-*1	50	G 1 1/4	2	M 5	21	12	41	47,3	8	80
GN 742-50-G1 1/4-*2	50	G 1 1/4	2	M 5	21	12	41	47,3	8	80
GN 742-60-G1 1/2-*1	60	G 1 1/2	2	M 5	22	13	50	57,7	8	120
GN 742-60-G1 1/2-*2	60	G 1 1/2	2	M 5	22	13	50	57,7	8	120

Weight OS

Magnetic plugs

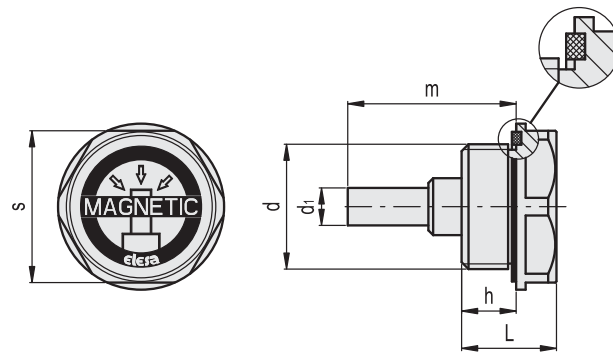
Aluminium

MATERIAL
Black anodised aluminium.
Marked "MAGNETIC" and graphic symbol, laser engraved.

PERMANENT MAGNETIC ELEMENT
(AlNiCo) Aluminium-nickel-cobalt with a high attractive power, to keep metal particles in oil.

STANDARD EXECUTIONS
- **TMB**: NBR synthetic rubber flat packing ring. Max working temperature 100°C.
- **TMB-HT**: FKM synthetic rubber flat packing ring. Max working temperature 180°C.

TECHNICAL DATA
The positioning of the packing ring in its housing guarantees a high tightening torque, therefore the plug can be used even in pressurised reservoirs.



TMB		TMB-HT		d	h	s	L	d1	m	Δ
Code	Description	Code	Description							
59701	TMB.M14x1,5	59751	TMB-HT.M14x1,5	M14x1,5	9	19	16,5	6	30	14
59703	TMB.M16x1,5	59753	TMB-HT.M16x1,5	M16x1,5	9	22	16,5	8	31	22
59705	TMB.M20x1,5	59755	TMB-HT.M20x1,5	M20x1,5	11	24	18,5	8	34	28
59707	TMB.M26x1,5	59757	TMB-HT.M26x1,5	M26x1,5	11,5	32	20	8	35,5	45
59709	TMB.M27x1,5	59759	TMB-HT.M27x1,5	M27x1,5	11,5	32	20	8	35,5	46
59711	TMB.M33x1,5	59761	TMB-HT.M33x1,5	M33x1,5	11,5	38	20	8	35,5	65
59713	TMB.M40x1,5	59763	TMB-HT.M40x1,5	M40x1,5	13	46	24	8	37	107
59715	TMB.M42x1,5	59765	TMB-HT.M42x1,5	M42x1,5	13	46	24	8	37	110
59717	TMB.M42x2	59767	TMB-HT.M42x2	M42x2	13	46	24	8	37	113
59721	TMB.1/4	59771	TMB-HT.1/4	G 1/4	9	19	16,5	6	30	14
59723	TMB.3/8	59773	TMB-HT.3/8	G 3/8	9	22	16,5	8	31	22
59725	TMB.1/2	59775	TMB-HT.1/2	G 1/2	11	24	18,5	8	34	28
59727	TMB.3/4	59777	TMB-HT.3/4	G 3/4	11,5	32	20	8	35,5	45
59729	TMB.1	59779	TMB-HT.1	G 1	11,5	38	20,5	8	35,5	65
59731	TMB.1.1/4	59781	TMB-HT.1.1/4	G 1 1/4	13	46	24	8	37	107
59733	TMB.1.1/2	59783	TMB-HT.1.1/2	G 1 1/2	13	50	24	8	37	131

Oil fill plugs

for push-fit, technopolymer

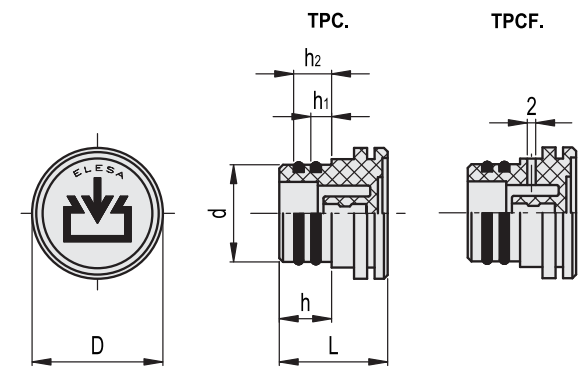
MATERIAL
High-resilience polypropylene based (PP) technopolymer, black colour, matte finish.

PACKING RINGS
Two NBR synthetic rubber O-rings.

STANDARD EXECUTIONS
- **TPC**: without side hole.
- **TPCF**: with side breather hole.

MAXIMUM CONTINUOUS WORKING TEMPERATURE
100°C.

GRAPHIC SYMBOL "FILL"
According to DIN regulations.



TPC.

Code	Description	d+0.2	h	D	L	h1	h2	Δ
59861	TPC.20	20	14	30	29	6.5	10.5	8
59881	TPC.26	26	14	35	29.5	6.5	10.5	15

TPCF.

Code	Description	d+0.2	h	D	L	h1	h2	Δ
59901	TPCF.20	20	14	30	29	6.5	10.5	8
59921	TPCF.26	26	14	35	29.5	6.5	10.5	15

Oil fill plugs

with flat dipstick for push-fit, technopolymer

MATERIAL
High-resilience polypropylene based (PP) technopolymer, black colour, matte finish.

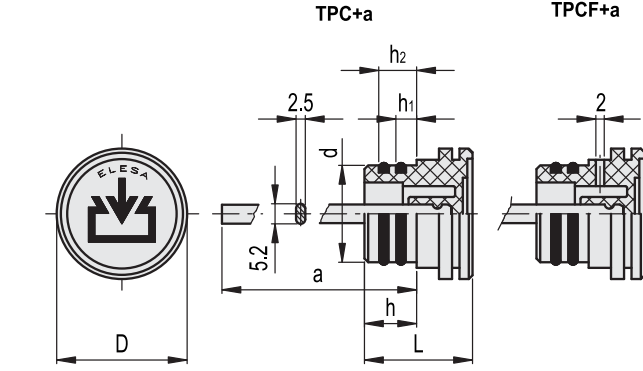
PACKING RINGS
Two NBR synthetic rubber O-rings.

FLAT DIPSTICK
Flat section phosphatised steel.
On request and for sufficient quantities dipstick can be supplied in different lengths and/or complete with MAX-MIN level lines.

STANDARD EXECUTIONS
- **TPC+a**: without side hole.
- **TPCF+a**: with side breather hole.

MAXIMUM CONTINUOUS WORKING TEMPERATURE
100°C.

GRAPHIC SYMBOL "FILL"
According to DIN regulations.



TPC+a

Code	Description	d+0.2	h	D	L	h1	h2	a	Δ
59865	TPC.20+a	20	14	30	29	6.5	10.5	188	27
59885	TPC.26+a	26	14	35	29.5	6.5	10.5	188	35

TPCF+a

Code	Description	d+0.2	h	D	L	h1	h2	a	Δ
59905	TPCF.20+a	20	14	30	29	6.5	10.5	188	27
59925	TPCF.26+a	26	14	35	29.5	6.5	10.5	188	35

T.440



Plugs

Technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

SPECIAL EXECUTIONS ON REQUEST

Words, marks and graphic symbols can be tampoprinted on the cap.

T.440+a



Plugs

with flat dipstick, technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING

NBR synthetic rubber.

FLAT DIPSTICK

Flat section phosphatised steel.

On request and for sufficient quantities dipstick can be supplied in different lengths and/or complete with MAX-MIN level lines.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

SPECIAL EXECUTIONS ON REQUEST

Words, marks and graphic symbols can be tampoprinted on the cap.

T.470



Plugs

Technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

SPECIAL EXECUTIONS ON REQUEST

Words, marks and graphic symbols can be tampoprinted on the cap.

TCE.



Plugs

with hexagon socket, technopolymer

MATERIAL

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

PACKING RING

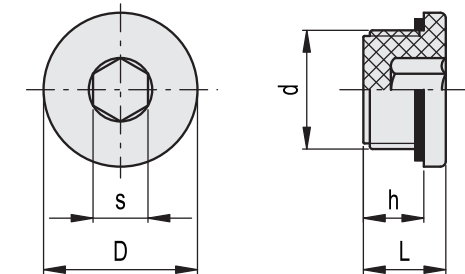
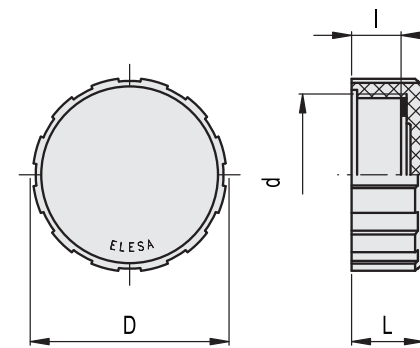
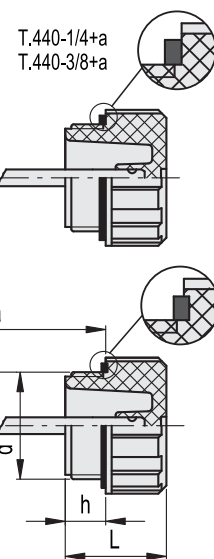
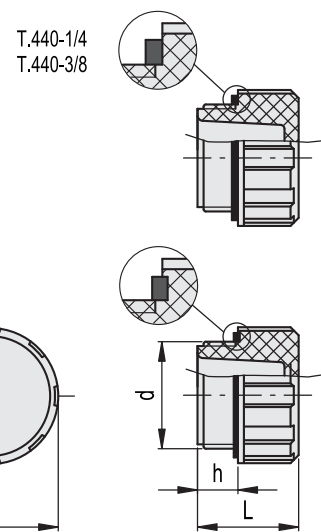
NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

TECHNICAL DATA

The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.



Code	Description	d	h	D	L	⚖️
157111	T.440-1/4	G 1/4	9	20.5	19	10
157121	T.440-3/8	G 3/8	9	25	21	12
157131	T.440-1/2	G 1/2	11	28.5	25	14
157141	T.440-3/4	G 3/4	12	34.5	27	22
157151	T.440-1	G 1	13	42.5	28.5	28
157161	T.440-1¼	G 1¼	13	52	32	52
157171	T.440-1½	G 1½	13	57.5	34	63

Code	Description	d	h	D	L	a	⚖️
157211	T.440-1/4+a	G 1/4	9	20.5	19	192	30
157221	T.440-3/8+a	G 3/8	9	25	21	192	32
157231	T.440-1/2+a	G 1/2	11	28.5	25	189	42
157241	T.440-3/4+a	G 3/4	12	34.5	27	188	50
157251	T.440-1+a	G 1	13	42.5	28.5	188	56
157261	T.440-1¼+a	G 1¼	13	52	32	185	72
157271	T.440-1½+a	G 1½	13	57.5	34	185	83

Code	Description	d	l	D	L	⚖️
58231	T.470-60x2	M60x2	18	70	26	55
58251	T.470-1	G 1	11	42	16	17
58281	T.470-2	G 2	18	70	26	58

Code	Description	d	h	s	D	L	Tightening torque [Nm]	⚖️
161033	TCE.1/4	G 1/4	9	6	20	12	3	4
161034	TCE.3/8	G 3/8	9	8	22	13	3÷5	5
161035	TCE.1/2	G 1/2	11	10	28	15	3÷4	8
161036	TCE.3/4	G 3/4	12	12	32	16.5	3÷5	14

Threaded plugs

Steel, zinc plated

SPECIFICATION

Types

- Type **A**: Sealing ring rubber NBR (Perbunan)
- Type **B**: Sealing ring rubber FPM (Viton®)

Steel

- Tensile strength class 5.8
- ultrasonically and tensile tested
- zinc plated, nano-passivated (silver / yellowish)

Type A

temperature resistant up to **100 °C**
Sealing ring rubber NBR (Perbunan)

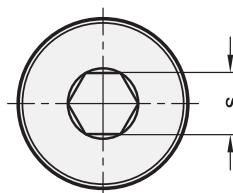
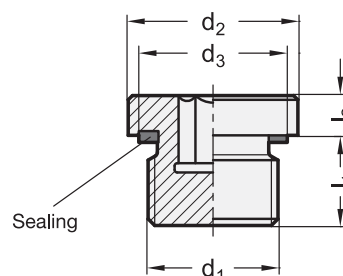
Type B

temperature resistant up to **180 °C**
Sealing ring rubber FPM (Viton®)
Identification by not black finish of the seal

INFORMATION

The dimensions of the threaded plugs GN 749 comply with DIN 908 (see page 1681), but deviating from the latter is the elastic sealing ring (rubber). This sealing ring is retained in a radial undercut in the mating face which prevents it from dropping out and in particular it does not extrude when the plug is tightened.

The details relating to the permissible operating pressure are non-binding recommended values and rule out any liability. They constitute no general warranty of quality and condition. The user must determine from case to case whether a product is suitable for the intended use.



*Complete with type index of the Threaded plugs

A Perbunan
B Viton

GN 749

Description	d1	d2 h14	d3	l1	l2	s	Max. permissible operating pressure in PB	Recommended torque in Nm	⚖
GN 749-M8x1-*	M 8 x 1	12	9.9	8	4	4	400	8	5
GN 749-M10x1-*	M 10 x 1	14	11.9	8	4	5	400	12	7
GN 749-M12x1.5-*	M 12 x 1.5	17	14.4	12	5	6	400	25	14
GN 749-M14x1.5-*	M 14 x 1.5	19	16.5	12	5	6	400	30	19
GN 749-M16x1.5-*	M 16 x 1.5	22	18.9	12	5	8	400	50	24
GN 749-M18x1.5-*	M 18 x 1.5	24	20.9	12	5	8	400	60	31
GN 749-M20x1.5-*	M 20 x 1.5	26	22.9	14	5	10	400	70	41
GN 749-M22x1.5-*	M 22 x 1.5	27	24.3	14	5	10	400	80	49
GN 749-M24x1.5-*	M 24 x 1.5	30	26.9	14	5	12	400	95	56
GN 749-M26x1.5-*	M 26 x 1.5	32	29.2	16	5	12	400	120	75
GN 749-M27x2-*	M 27 x 2	32	29.2	16	5	12	400	120	80
GN 749-M30x1.5-*	M 30 x 1.5	37	32.7	16	6.5	17	400	190	103
GN 749-M33x2-*	M 33 x 2	40	35.7	16	6.5	17	400	225	126
GN 749-M42x2-*	M 42 x 2	50	45.8	16	6.5	22	315	360	201
GN 749-M48x2-*	M 48 x 2	55	50.7	16	6.5	24	315	400	254
GN 749-G1/8-*	G 1/8	14	11.9	8	4	5	400	12	7
GN 749-G1/4-*	G 1/4	19	16.5	12	5	6	400	30	17
GN 749-G3/8-*	G 3/8	22	18.9	12	5	8	400	50	26
GN 749-G1/2-*	G 1/2	27	23.9	14	5	10	400	80	44
GN 749-G3/4-*	G 3/4	32	29.2	16	5	12	400	120	70
GN 749-G1-*	G 1	40	35.7	16	6.5	17	400	225	125
GN 749-G1 1/4-*	G 1 1/4	50	45.8	16	6.5	22	315	360	195
GN 749-G1 1/2-*	G 1 1/2	55	50.7	16	6.5	24	315	400	240

Weight A

Threaded plugs

Steel, zinc plated

SPECIFICATION

Types

- Type **A**: without gasket
- Type **AC**: with gasket in copper
- Type **AA**: with gasket in aluminium

Steel **ST**

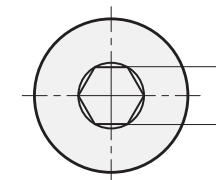
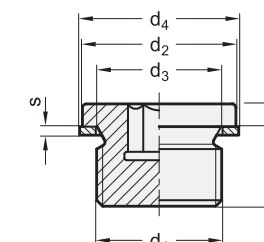
- Tensile strength class 5.8
- ultrasonically and tensile tested
- zinc plated, nano-passivated

INFORMATION

The gaskets in types AC and AA correspond to the gaskets DIN 7603 (see page 1682), type A (flat gaskets).

ON REQUEST

- Stainless Steel version (NI)



*Complete with type index of the Threaded plugs

A **AC** **AA**

DIN 908

Description	d1	d2 h14	d3	d4	l1 ±0.2	l2 +0.5	s	A/F	⚖
DIN 908-ST-M8x1-*	M 8 x 1	12	8.3	11.5	8	3	1	4	4
DIN 908-ST-M10x1-*	M 10 x 1	14	10.3	13.5	8	3	1	5	6
DIN 908-ST-M12x1.5-*	M 12 x 1.5	17	12.3	16	12	3	1.5	6	11
DIN 908-ST-M14x1.5-*	M 14 x 1.5	19	14.3	18	12	3	1.5	6	16
DIN 908-ST-M16x1.5-*	M 16 x 1.5	21	16.3	20	12	3	1.5	8	20
DIN 908-ST-M18x1.5-*	M 18 x 1.5	23	18.3	22	12	4	1.5	8	29
DIN 908-ST-M20x1.5-*	M 20 x 1.5	25	20.3	24	14	4	1.5	10	38
DIN 908-ST-M22x1.5-*	M 22 x 1.5	27	22.3	27	14	4	1.5	10	55
DIN 908-ST-M24x1.5-*	M 24 x 1.5	29	24.3	29	14	4	2	12	60
DIN 908-ST-M26x1.5-*	M 26 x 1.5	31	26.3	31	16	4	2	12	73
DIN 908-ST-M27x2-*	M 27 x 2	32	27.3	32	16	4	2	12	75
DIN 908-ST-M30x1.5-*	M 30 x 1.5	36	30.3	36	16	4	2	17	84
DIN 908-ST-M33x2-*	M 33 x 2	39	33.3	39	16	5	2	17	119
DIN 908-ST-M42x2-*	M 42 x 2	49	42.3	49	16	5	2	22	187
DIN 908-ST-M48x2-*	M 48 x 2	55	48.3	55	16	5	2	24	240
DIN 908-ST-G1/8-*	G 1/8	14	10	13.5	8	3	1	5	6
DIN 908-ST-G1/4-*	G 1/4	18	13.4	18	12	3	1.5	6	14
DIN 908-ST-G3/8-*	G 3/8	22	17	21	12	3	1.5	8	22
DIN 908-ST-G1/2-*	G 1/2	26	21.3	26	14	4	1.5	10	41
DIN 908-ST-G3/4-*	G 3/4	32	26.7	32	16	4	2	12	53
DIN 908-ST-G1-*	G 1	39	33.5	39	16	5	2	17	119
DIN 908-ST-G1 1/4-*	G 1 1/4	49	42.2	49	16	5	2	22	185
DIN 908-ST-G1 1/2-*	G 1 1/2	55	48.1	55	16	5	2	24	237

Weight A

Gaskets

Metal, for threaded plugs DIN 908

SPECIFICATION

Type

- Type **A**: Flat gasket

Copper **CU**

Aluminium **AL**

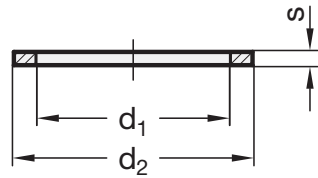
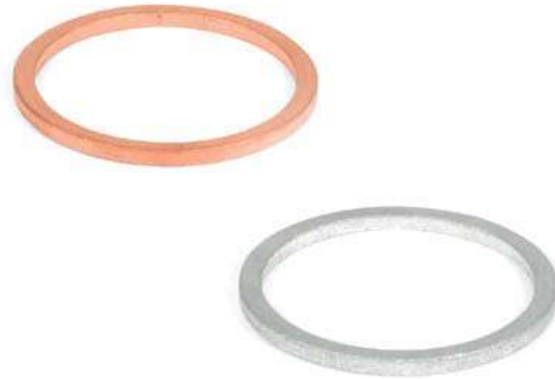
INFORMATION

The gaskets listed in this standard sheet are only an extract of DIN 7603.

They are used in connection with threaded plugs DIN 908 (see page 1681).

ON REQUEST

- other sizes
- other materials
- other types



* Complete with type index of the Gaskets

CU Copper
AL Aluminium

DIN 7603

Description	d1	d1 +0.3	d2	d2 -0.2	s ±0.2	Suitable for DIN 908	ΔΔ
DIN 7603-*-8-11,5-A	8	8.2	11.5	11.4	1	M 8 x 1	1
DIN 7603-*-10-13,5-A	10	10.2	13.5	13.4	1	M 10 x 1	1
DIN 7603-*-12-16-A	12	12.2	16	15.9	1.5	M 12 x 1.5	1
DIN 7603-*-14-18-A	14	14.2	18	17.9	1.5	M 14 x 1.5	1
DIN 7603-*-16-20-A	16	16.2	20	19.9	1.5	M 16 x 1.5	1
DIN 7603-*-18-22-A	18	18.2	22	21.9	1.5	M 18 x 1.5	1
DIN 7603-*-20-24-A	20	20.2	24	23.9	1.5	M 20 x 1.5	1
DIN 7603-*-22-27-A	22	22.2	27	26.9	1.5	M 22 x 1.5	1
DIN 7603-*-24-29-A	24	24.3	29	28.9	2	M 24 x 1.5	1
DIN 7603-*-26-31-A	26	26.3	31	30.9	2	M 26 x 1.5	1
DIN 7603-*-27-32-A	27	27.3	32	31.9	2	M 27 x 2	1
DIN 7603-*-30-36-A	30	30.3	36	35.9	2	M 30 x 1.5	1
DIN 7603-*-33-39-A	33	33.3	39	38.9	2	M 33 x 2	2
DIN 7603-*-42-49-A	42	42.3	49	48.9	2	M 42 x 2	2
DIN 7603-*-48-55-A	48	48.3	55	54.9	2	M 48 x 2	3
DIN 7603-*-10-13,5-A	10	10.2	13.5	13.4	1	G 1/8	1
DIN 7603-*-14-18-A	14	14.2	18	17.9	1.5	G 1/4	1
DIN 7603-*-17-21-A	17	17.2	21	20.9	1.5	G 3/8	1
DIN 7603-*-21-26-A	21	21.2	26	25.9	1.5	G 1/2	1
DIN 7603-*-27-32-A	27	27.3	32	31.9	2	G 3/4	1
DIN 7603-*-33-39-A	33	33.3	39	38.9	2	G 1	2
DIN 7603-*-42-49-A	42	42.3	49	48.9	2	G 1 1/4	2
DIN 7603-*-48-55-A	48	48.3	55	54.9	2	G 1 1/2	3

Weight AL

Welding sockets

with and without collar

SPECIFICATION

Types

- Type **A**: with chamfer
- Type **B**: with collar

Steel **ST**

- weldable
- turned
- blank

INFORMATION

Welding sockets GN 7490 are used in container construction or in hydraulics for mounting instruments such as oil level sight glasses or locking caps.

The plane surfaces are machined, with the effect that they can be used as sealing surface in connection with a sealing element or compound.

The favourably dimensioned wall thickness prevents deformation or burn-through during welding.

Type B is used if exact positioning through the mounting bore or a low construction height is required.

ON REQUEST

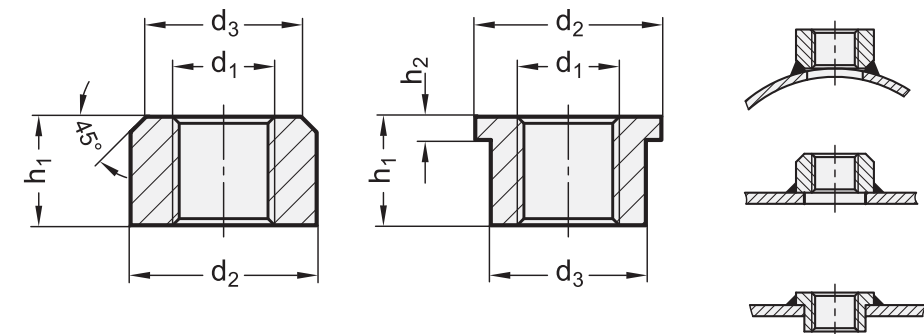
- Stainless Steel-Welding sockets
- metric threads



Type A

Type B

Examples of application



* Complete with type index of the Welding sockets

A with chamfer
B with collar

GN 7490

Description	d1	d2	d3	h1	h2	ΔΔ
GN 7490-ST-G1/8-*	G 1/8	20	16	10	3	18
GN 7490-ST-G1/4-*	G 1/4	24	20	14	3	35
GN 7490-ST-G3/8-*	G 3/8	28	22	14	4.5	42
GN 7490-ST-G1/2-*	G 1/2	32	26	16	4.5	57
GN 7490-ST-G3/4-*	G 3/4	40	32	18	6	97
GN 7490-ST-G1-*	G 1	50	40	20	7.5	165
GN 7490-ST-G1 1/4-*	G 1 1/4	60	50	22	7.5	244
GN 7490-ST-G1 1/2-*	G 1 1/2	65	55	24	7.5	282

Weight A

Threaded plugs

Steel / Stainless Steel, with conical thread

SPECIFICATION

Types

- Type **A**: without micro encapsulation
- Type **GPC**: with micro encapsulation

Version in Steel ST

- ultrasonically and tensile tested
- zinc plated, blue passivated

Version in Stainless Steel AISI 303 NI

Thread coating GPC

Precote 5 (see page A25)

INFORMATION

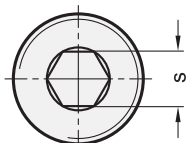
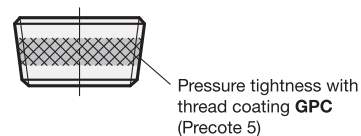
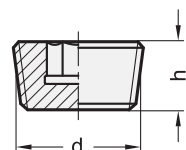
Threaded plugs DIN 906 are used to close bore holes with cylindrical internal thread.

The tightness depends on the medium, pressure, temperature and material pairing. The design with GPC thread coating provides a higher degree of safety.

The official DIN 906 standard sheet also provides for thread sizes M33x2; M38x1.5; M39x2; M52x1.5; M52x2; M56x2 and M60x2.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)



* Complete with type index of the Threaded plugs
A without micro encapsulation **GPC** with micro encapsulation

DIN 906

Description	d	h	s	Δ
DIN 906-ST-M8x1-*	M 8 x 1	8	4	2
DIN 906-ST-M10x1-*	M 10 x 1	8	5	3
DIN 906-ST-M12x1,5-*	M 12 x 1.5	10	6	6
DIN 906-ST-M14x1,5-*	M 14 x 1.5	10	7	8
DIN 906-ST-M16x1,5-*	M 16 x 1.5	10	8	10
DIN 906-ST-M18x1,5-*	M 18 x 1.5	10	8	14
DIN 906-ST-M20x1,5-*	M 20 x 1.5	10	10	17
DIN 906-ST-M22x1,5-*	M 22 x 1.5	10	10	22
DIN 906-ST-M24x1,5-*	M 24 x 1.5	12	12	30
DIN 906-ST-M30x1,5-*	M 30 x 1.5	12	17	45
DIN 906-ST-M36x1,5-*	M 36 x 1.5	15	19	86
DIN 906-ST-M42x1,5-*	M 42 x 1.5	18	22	142
DIN 906-ST-M45x1,5-*	M 45 x 1.5	18	22	163
DIN 906-ST-M48x1,5-*	M 48 x 1.5	20	24	210
DIN 906-ST-R1/8-*	R 1/8	8	5	3
DIN 906-ST-R1/4-*	R 1/4	10	7	7
DIN 906-ST-R3/8-*	R 3/8	10	8	12
DIN 906-ST-R1/2-*	R 1/2	10	10	19
DIN 906-ST-R3/4-*	R 3/4	12	12	37
DIN 906-ST-R1-*	R 1	12	17	57
DIN 906-ST-R11/4-*	R 1 1/4	18	22	133
DIN 906-ST-R11/2-*	R 1 1/2	20	24	200

Weight A

* Complete with type index of the Threaded plugs
A without micro encapsulation **GPC** with micro encapsulation

DIN 906-NI

STAINLESS STEEL

Description	d	h	s	Δ
DIN 906-NI-M8x1-*	M 8 x 1	8	4	2
DIN 906-NI-M10x1-*	M 10 x 1	8	5	4
DIN 906-NI-M12x1,5-*	M 12 x 1.5	10	6	6
DIN 906-NI-M14x1,5-*	M 14 x 1.5	10	7	9
DIN 906-NI-M16x1,5-*	M 16 x 1.5	10	8	11
DIN 906-NI-M18x1,5-*	M 18 x 1.5	10	8	15
DIN 906-NI-M20x1,5-*	M 20 x 1.5	10	10	19
DIN 906-NI-M22x1,5-*	M 22 x 1.5	10	10	23
DIN 906-NI-M24x1,5-*	M 24 x 1.5	12	12	33
DIN 906-NI-R1/8-*	R 1/8	8	5	3
DIN 906-NI-R1/4-*	R 1/4	10	7	7
DIN 906-NI-R3/8-*	R 3/8	10	8	12
DIN 906-NI-R1/2-*	R 1/2	10	10	18
DIN 906-NI-R3/4-*	R 3/4	12	12	39
DIN 906-NI-R1-*	R 1	12	17	63

Weight A



Blanking plugs

SPECIFICATION

Types

- Type **A**: without thread coating
- Type **PRB**: with thread coating (polyamide allround coating)

Steel

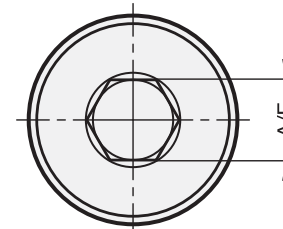
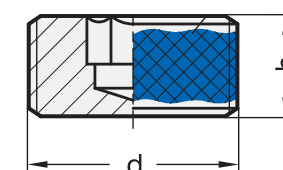
- Tensile strength class 5.8
- blackened

INFORMATION

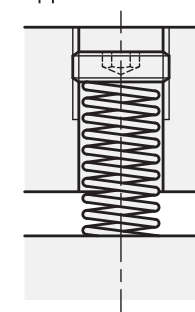
The thread locking PRB (polyamide allround coating) is a clamping lock which prevents the locking screw from being inadvertently being loosened and becoming detached.



iB-Thread coating



Example for application



GN 252

Description	d	h	A/F	Δ
GN 252-M12x1,5-A	M 12 x 1.5	10	6	6
GN 252-M16x1,5-A	M 16 x 1.5	10	8	14
GN 252-M20x1,5-A	M 20 x 1.5	12	10	20
GN 252-M24x1,5-A	M 24 x 1.5	12	14	24
GN 252-M27x1,5-A	M 27 x 1.5	12	14	36
GN 252-M30x1,5-A	M 30 x 1.5	12	17	44
GN 252-M12x1,5-PRB	M 12 x 1.5	10	6	6
GN 252-M16x1,5-PRB	M 16 x 1.5	10	8	10
GN 252-M20x1,5-PRB	M 20 x 1.5	12	10	20
GN 252-M24x1,5-PRB	M 24 x 1.5	12	14	24
GN 252-M27x1,5-PRB	M 27 x 1.5	12	14	36
GN 252-M30x1,5-PRB	M 30 x 1.5	12	17	44
GN 252-M33x1,5-PRB	M 33 x 1.5	12	17	56

GN 252.5

STAINLESS STEEL

Description	d	h	A/F	Δ
GN 252.5-M12x1,5-A	M12x1.5	10	6	5
GN 252.5-M16x1,5-A	M16x1.5	10	8	10
GN 252.5-M20x1,5-A	M20x1.5	12	10	20
GN 252.5-M24x1,5-A	M24x1.5	12	14	26
GN 252.5-M27x1,5-A	M27x1.5	12	14	26
GN 252.5-M12x1,5-PRB	M12x1.5	10	6	6
GN 252.5-M16x1,5-PRB	M16x1.5	10	8	10
GN 252.5-M20x1,5-PRB	M20x1.5	12	10	26
GN 252.5-M24x1,5-PRB	M24x1.5	12	14	30
GN 252.5-M27x1,5-PRB	M27x1.5	12	14	36

Threaded plugs

Resistant up to 100 °C, Aluminium

SPECIFICATION

Identification no.

- No. **1**: without vent hole
- No. **2**: with vent hole

Aluminium

plastic coated
black, RAL 9005, matte finish **SW**

blank **BL**
tumbled

temperature resistant up to **100 °C**
Sealing ring rubber NBR (Perbunan)



INFORMATION

Threaded plugs GN 441 with the external diameter d_1 match the screw-in holes for DIN 3852 pipe bolt connections.

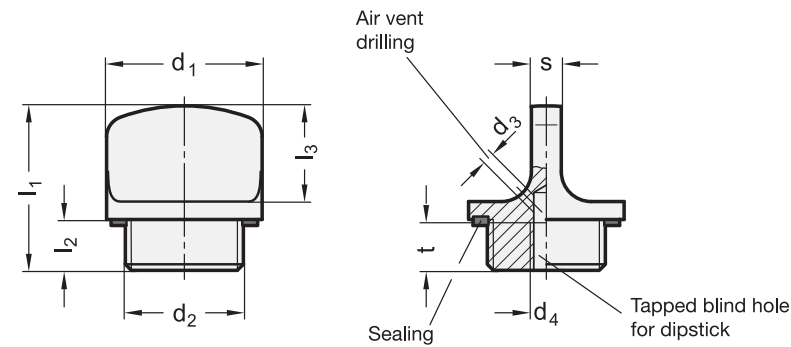
The sealing ring is embedded in a radial recess on the plane side, which makes the sealing ring captive and cannot be squeezed out during tightening. The sealing is also relatively soft, enhancing the sealing effect also on uneven surfaces.

ON REQUEST

- Threaded plugs with dipstick

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)



* Complete with colour index of the Threaded plugs

SW RAL9005
BL blank

GN 441

Description	d1	d2	d3	d4	l1 ±0.5	l2	l3	s	t min.	Δ
GN 441-22-M16x1,5-1-*	22	M 16 x 1.5	-	M 5	26	8	15	5	8	12
GN 441-22-M16x1,5-2-*	22	M 16 x 1.5	2	M 5	26	8	15	5	8	12
GN 441-26-M20x1,5-1-*	26	M 20 x 1.5	-	M 5	27.5	8.5	16	5	8	17
GN 441-26-M20x1,5-2-*	26	M 20 x 1.5	2	M 5	27.5	8.5	16	5	8	17
GN 441-32-M26x1,5-1-*	32	M 26 x 1.5	-	M 5	29	9	17	6	8	27
GN 441-32-M26x1,5-2-*	32	M 26 x 1.5	2	M 5	29	9	17	6	8	27
GN 441-22-G3/8-1-*	22	G 3/8	-	M 5	26	8	15	5	8	12
GN 441-22-G3/8-2-*	22	G 3/8	2	M 5	26	8	15	5	8	12
GN 441-26-G1/2-1-*	26	G 1/2	-	M 5	27.5	8.5	16	5	8	17
GN 441-26-G1/2-2-*	26	G 1/2	2	M 5	27.5	8.5	16	5	8	17
GN 441-32-G3/4-1-*	32	G 3/4	-	M 5	29	9	17	6	8	27
GN 441-32-G3/4-2-*	32	G 3/4	2	M 5	29	9	17	6	8	27
GN 441-40-G1-1-*	40	G 1	-	M 5	32.5	11	18	7	8	48
GN 441-40-G1-2-*	40	G 1	2	M 5	32.5	11	18	7	8	48

Weight colour SW

Threaded plugs

Resistant up to 200 °C, Aluminium

SPECIFICATION

Identification no.

- No. **1**: without vent hole
- No. **2**: with vent hole

Aluminium

plastic coated
black, RAL 9005, matte finish **SW**

blank **BL**
tumbled

temperature resistant up to **200 °C**
Sealing ring rubber FPM (Viton®)



INFORMATION

Threaded plugs GN 442 with the external diameter d_1 match the screw-in holes for DIN 3852 pipe bolt connections.

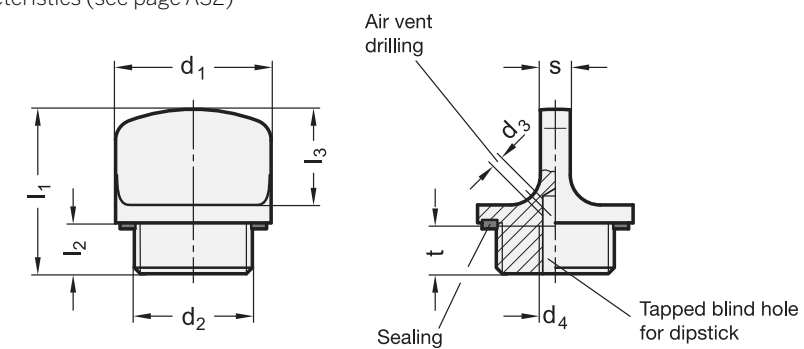
The sealing ring is embedded in a radial recess on the plane side, which makes the sealing ring captive and cannot be squeezed out during tightening. The sealing is also relatively soft, enhancing the sealing effect also on uneven surfaces.

ON REQUEST

- Threaded plugs with dipstick

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)



* Complete with colour index of the Threaded plugs

SW RAL9005
BL blank

GN 442

Description	d1	d2	d3	d4	l1 ±0.5	l2	l3	s	t min.	Δ
GN 442-22-M16x1,5-1-*	22	M 16 x 1.5	-	M 5	26	8	15	5	8	12
GN 442-22-M16x1,5-2-*	22	M 16 x 1.5	2	M 5	26	8	15	5	8	12
GN 442-26-M20x1,5-1-*	26	M 20 x 1.5	-	M 5	27.5	8.5	16	5	8	17
GN 442-26-M20x1,5-2-*	26	M 20 x 1.5	2	M 5	27.5	8.5	16	5	8	17
GN 442-32-M26x1,5-1-*	32	M 26 x 1.5	-	M 5	29	9	17	6	8	27
GN 442-32-M26x1,5-2-*	32	M 26 x 1.5	2	M 5	29	9	17	6	8	27
GN 442-22-G3/8-1-*	22	G 3/8	-	M 5	26	8	15	5	8	12
GN 442-22-G3/8-2-*	22	G 3/8	2	M 5	26	8	15	5	8	12
GN 442-26-G1/2-1-*	26	G 1/2	-	M 5	27.5	8.5	16	5	8	17
GN 442-26-G1/2-2-*	26	G 1/2	2	M 5	27.5	8.5	16	5	8	17
GN 442-32-G3/4-1-*	32	G 3/4	-	M 5	29	9	17	6	8	27
GN 442-32-G3/4-2-*	32	G 3/4	2	M 5	29	9	17	6	8	27
GN 442-40-G1-1-*	40	G 1	-	M 5	32.5	11	18	7	8	48
GN 442-40-G1-2-*	40	G 1	2	M 5	32.5	11	18	7	8	48

Weight colour SW

Oil drain valves

SPECIFICATION

Type

- Type **K**: with plastic protective cap and retaining cable

Valve body

- Steel **ST** zinc plated, blue passivated

- Brass **MS**

Valve plate

- Brass

- O-ring rubber FPM (Viton®)

Sealing disc DIN 7603 A

Copper

Protective cap

Plastic (Polyamide PA)

Retaining cable

Stainless Steel



INFORMATION

Oil drain valves GN 880 may be used for draining non-pressurised oil.

As well conditionally as for vacuum drainage.

The flow volume (l/min.) depends on the viscosity of the medium, the filling quantity and the temperature. Guidance values available on request.

Other features are:

- easy and safe handling
- optimum flow rate
- high pressure resistance (up to 100 bar)
- high temperature resistance (-30 °C to +120 °C, short period up to 180 °C)
- 100 % leak-tight tested

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)

ON REQUEST

- other materials

OPERATION DESCRIPTION

After removing the protective cap secured against loss with a retaining cable, turn in the matching connector pieces GN 880.1 (see page 1690).

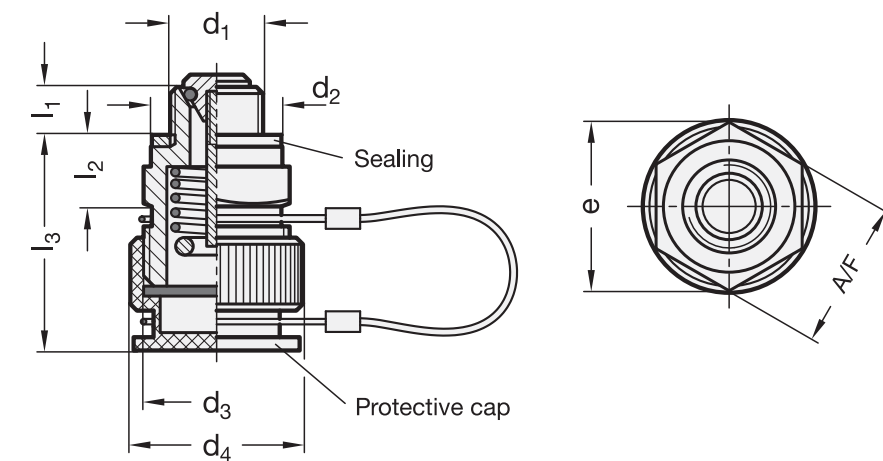
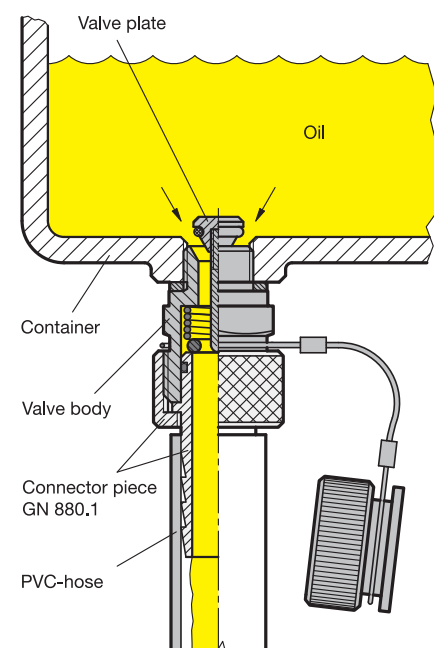
When the connector is screwed in, the valve plate will open and the oil will empty through the hose into a pan.

Take off the connector after the oil has drained. The valve plate will be lowered and closes off the drainage outlet.

The container with the oil drain valve is ready for filling again.

Other benefits of the oil drain valves GN 880:

- No risk of burns caused by hot oil
- No dirt caused by uncontrolled oil drainage
- Quick and easy



GN 880

Description	d1	d2	d3	d4	e ≈	l1	l2	l3	A/F	⚖
GN 880-M14x1,5-ST-K	M 14 x 1.5	20	M22x1.5	26	25.4	7.5	10.5	31	22	54
GN 880-M16x1,5-ST-K	M 16 x 1.5	22	M22x1.5	26	25.4	7.5	10.5	31	22	58
GN 880-M18x1,5-ST-K	M 18 x 1.5	24	M22x1.5	26	25.4	8.5	10.5	31	22	62
GN 880-M20x1,5-ST-K	M 20 x 1.5	26	M22x1.5	26	31.2	8.5	10.5	31	27	81
GN 880-M22x1,5-ST-K	M 22 x 1.5	27	M26x1.5	30	31.2	8.5	12	32	27	94
GN 880-M24x1,5-MS-K	M 24 x 1.5	29	M26x1.5	30	34.7	9	12	32	30	116
GN 880-M26x1,5-MS-K	M 26 x 1.5	32	M26x1.5	30	37	9	12	32	32	132
GN 880-M30x1,5-MS-K	M 30 x 1.5	36	M26x1.5	30	41.6	9	12	32	36	166
GN 880-G1/4-ST-K	G 1/4	20	M22x1.5	26	25.4	7.5	10.5	31	22	55
GN 880-G3/8-ST-K	G 3/8	23	M22x1.5	26	25.4	7.5	10.5	31	22	61
GN 880-G1/2-ST-K	G 1/2	26	M26x1.5	30	31.2	8.5	12	32	27	81
GN 880-G3/4-MS-K	G 3/4	32	M26x1.5	30	37	9	12	32	32	153
GN 880-G1-MS-K	G 1	39	M26x1.5	30	47.3	9	12	32	41	205

Connector pieces

for oil drain valves GN 880 / with or without drain hose

SPECIFICATION

Types

- Type **A**: Connector straight
- Type **B**: Connector 45°
- Type **C**: Connector 90°

Connecting nut
with hose liner
Brass

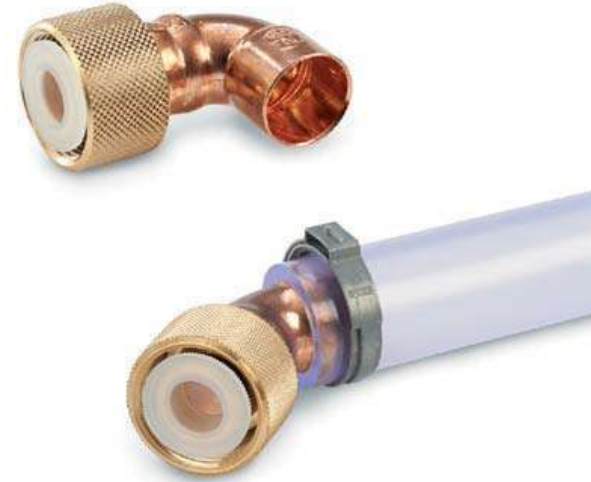
L bend 45° / 90°
Copper

O-Ring
Rubber NBR (Perbunan)

Drain hose
PVC, transparent **T**

Hose clip
Steel, zinc plated

Plug
Plastic, LD-PE



INFORMATION

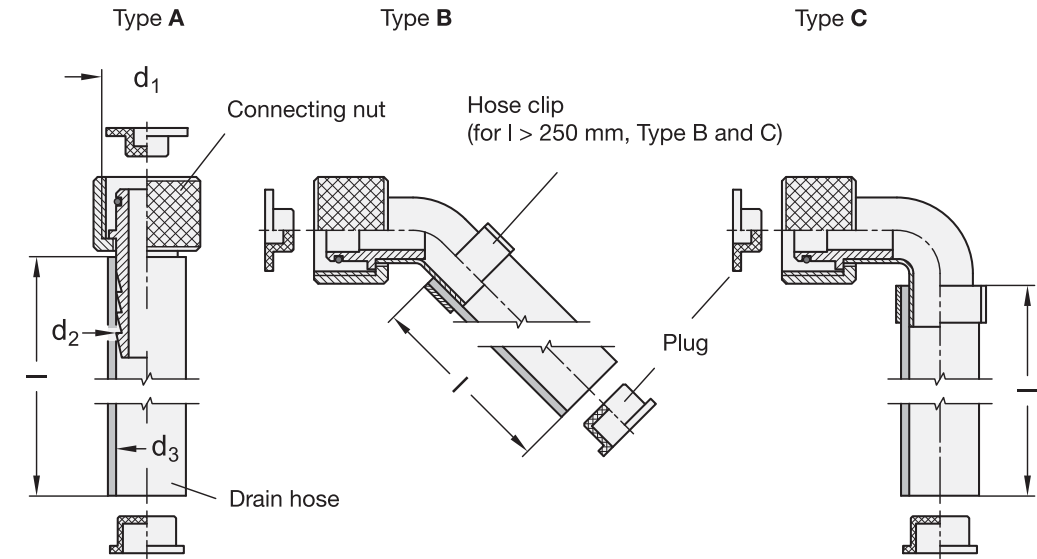
Connector pieces GN 880.1 are needed when using oil drain valves GN 880 (see page 1688).

Screwing on the connector piece will activate the valve plate of the oil drain valve, allowing the oil to flow through the hose into a pan held ready.

The plug prevents remaining oil from dripping out after discharging.

ON REQUEST

- other hose length
- Drain hose with inside webbing (Nylon)



GN 880.1

Description	Size	d1	l	d2	d3	⚖
GN 880.1-22-A	22	M 22 x 1.5	-	15	-	58
GN 880.1-26-A	26	M 26 x 1.5	-	20	-	88
GN 880.1-22-B	22	M 22 x 1.5	-	15	-	58
GN 880.1-26-B	26	M 26 x 1.5	-	20	-	86
GN 880.1-22-C	22	M 22 x 1.5	-	15	-	61
GN 880.1-26-C	26	M 26 x 1.5	-	20	-	89
GN 880.1-22-A-250-T	22	M 22 x 1.5	250	15	14	97
GN 880.1-22-A-500-T	22	M 22 x 1.5	500	15	14	129
GN 880.1-22-A-1000-T	22	M 22 x 1.5	1000	15	14	220
GN 880.1-26-A-250-T	26	M 26 x 1.5	250	20	19	162
GN 880.1-26-A-500-T	26	M 26 x 1.5	500	20	19	237
GN 880.1-26-A-1000-T	26	M 26 x 1.5	1000	20	19	387
GN 880.1-22-B-250-T	22	M 22 x 1.5	250	15	14	93
GN 880.1-22-B-500-T	22	M 22 x 1.5	500	15	14	140
GN 880.1-22-B-1000-T	22	M 22 x 1.5	1000	15	14	223
GN 880.1-26-B-250-T	26	M 26 x 1.5	250	20	19	152
GN 880.1-26-B-500-T	26	M 26 x 1.5	500	20	19	234
GN 880.1-26-B-1000-T	26	M 26 x 1.5	1000	20	19	386
GN 880.1-22-C-250-T	22	M 22 x 1.5	250	15	14	97
GN 880.1-22-C-500-T	22	M 22 x 1.5	500	15	14	140
GN 880.1-22-C-1000-T	22	M 22 x 1.5	1000	15	14	219
GN 880.1-26-C-250-T	26	M 26 x 1.5	250	20	19	153
GN 880.1-26-C-500-T	26	M 26 x 1.5	500	20	19	232
GN 880.1-26-C-1000-T	26	M 26 x 1.5	1000	20	19	389

Breather valves

Brass

SPECIFICATION

Valve body
Brass **MS**
Breather cap
Stainless Steel AISI 304 **M**
Gasket
Brass
with silicone-rubber coating (VMQ)
Spring
Stainless Steel AISI 301
Sealing DIN 7603 A
Soft iron 1.0338
temperature resistant from -30 °C to +100 °C

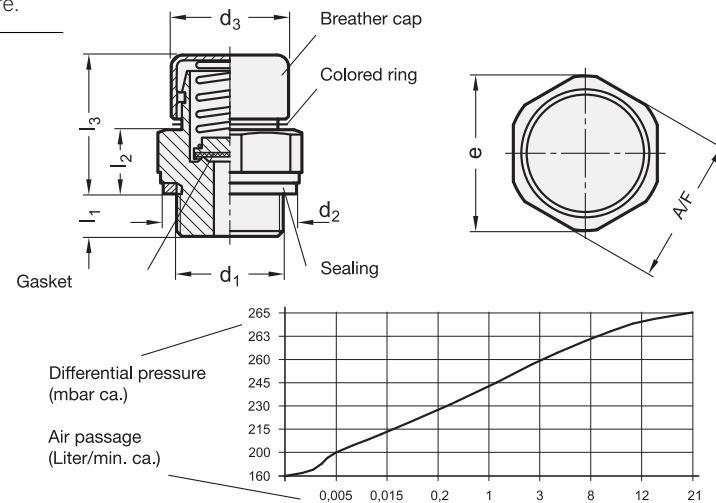


INFORMATION

Once the opening pressure given in the table is exceeded, breather valves GN 881 with gasket will vent into a container and so protect against excessive inside container pressure. A green colour ring marks the opening pressure of 200 mbar. In its normal state, the gasket closes the container and so prevents dirt or dust getting inside the container. The above diagram shows the air outlet as a factor of the opening pressure. The installation position is vertical to the top. The valves are checked for leak tightness and opening pressure.

ON REQUEST

- other materials
- with other opening pressure 50 mbar (yellow ring)
- with dipstick



GN 881

Description	d1	Opening pressure in mbar ±20%	d2	d3	e ≈	l1	l2	l3	A/F	⚖
GN 881-M12x1,5-200-MS-M	M 12 x 1.5	200	18	20	23.5	8.5	11.5	24.5	22	39
GN 881-M14x1,5-200-MS-M	M 14 x 1.5	200	20	20	23.5	8.5	11.5	24.5	22	44
GN 881-M16x1,5-200-MS-M	M 16 x 1.5	200	22	20	23.5	8.5	11.5	24.5	22	49
GN 881-M18x1,5-200-MS-M	M 18 x 1.5	200	24	20	23.5	8.5	11.5	24.5	22	52
GN 881-M20x1,5-200-MS-M	M 20 x 1.5	200	26	20	29	8.5	11.5	24.5	27	74
GN 881-M22x1,5-200-MS-M	M 22 x 1.5	200	27	22	29	8.5	11.5	24.5	27	79
GN 881-M24x1,5-200-MS-M	M 24 x 1.5	200	29	20	32.5	8	12	25	30	96
GN 881-M26x1,5-200-MS-M	M 26 x 1.5	200	32	20	34	8	12	25	32	112
GN 881-M30x1,5-200-MS-M	M 30 x 1.5	200	36	20	39	8	12	25	36	148
GN 881-G1/4-200-MS-M	G 1/4	200	20	20	23.5	8.5	11.5	24.5	22	42
GN 881-G3/8-200-MS-M	G 3/8	200	23	20	23.5	8.5	11.5	24.5	22	51
GN 881-G1/2-200-MS-M	G 1/2	200	26	20	29	8.5	11.5	24.5	27	76
GN 881-G3/4-200-MS-M	G 3/4	200	32	20	34	8	12	25	32	113
GN 881-G1-200-MS-M	G 1	200	39	20	44	8	12	25	41	186

Breather filters

Brass

SPECIFICATION

Valve body
Brass **MS**
Breather cap
Stainless Steel AISI 304 **M**
Air filter
- Stainless Steel-Wire mesh AISI 304
- Filter category G2-G3
- Mean separation rate (Am approx. 65 - 85 %, based on a particle size > 10 µm)
Sealing DIN 7603 A
Soft iron 1.0338
temperature resistant from -30 °C to +100 °C

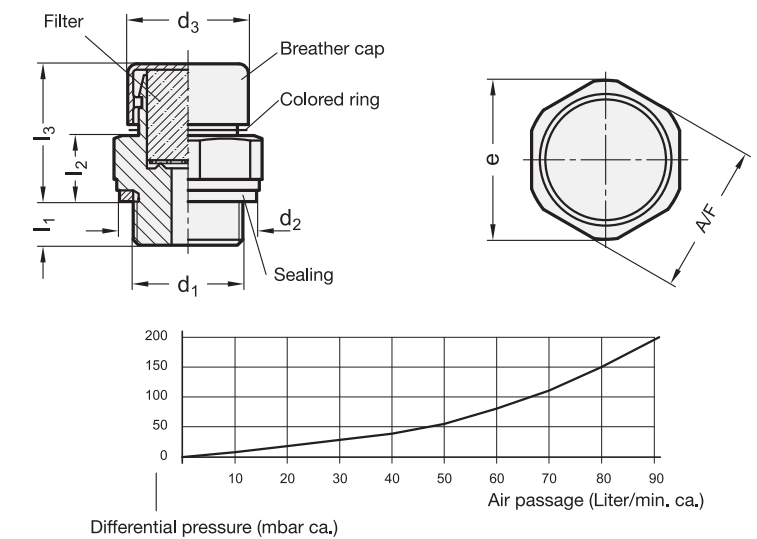


INFORMATION

Breather filters GN 882 are used when the air exchange is to be allowed between the inside of the container and the ambient air. The filter function is marked by a blue colour ring. The filter prevents air-borne particles (e.g. dust) from being carried from the outside to the inside of the container. It also ensures that e.g. oil particles do not escape to the outside. The above diagram shows the air passage as a factor of the differential pressure. The recommended installation position is vertical to the top.

ON REQUEST

- other materials
- with dipstick



GN 882

Description	d1	d2	d3	e	l1	l2	l3	A/F	⚖
GN 882-M12x1,5-MS-M	M 12 x 1.5	18	20	23.5	8.5	11.5	24.5	22	40
GN 882-M14x1,5-MS-M	M 14 x 1.5	20	20	23.5	8.5	11.5	24.5	22	44
GN 882-M16x1,5-MS-M	M 16 x 1.5	22	20	23.5	8.5	11.5	24.5	22	49
GN 882-M18x1,5-MS-M	M 18 x 1.5	24	20	23.5	8.5	11.5	24.5	22	53
GN 882-M20x1,5-MS-M	M 20 x 1.5	26	20	29	8.5	11.5	24.5	27	75
GN 882-M22x1,5-MS-M	M 22 x 1.5	27	20	29	8.5	11.5	24.5	27	79
GN 882-M24x1,5-MS-M	M 24 x 1.5	29	20	32.5	8	12	25	30	97
GN 882-M26x1,5-MS-M	M 26 x 1.5	32	20	34	8	12	25	32	113
GN 882-M30x1,5-MS-M	M 30 x 1.5	36	20	39	8	12	25	36	148
GN 882-G1/4-MS-M	G 1/4	20	20	23.5	7.5	10.5	24.5	22	42
GN 882-G3/8-MS-M	G 3/8	22	20	23.5	8.5	11.5	24.5	22	49
GN 882-G1/2-MS-M	G 1/2	26	20	29	8	12	25	27	75
GN 882-G3/4-MS-M	G 3/4	32	20	34	8	12	25	32	113
GN 882-G1-MS-M	G 1	39	20	44	8	12	25	41	186

Breather valves

Brass

SPECIFICATION

Types

- Type **A**: low design
- Type **B**: high design with Stainless Steel cap

Valve body

Brass **MS**

Ball

Stainless Steel AISI 5210

Spring

Stainless Steel AISI 301

Sealing DIN 7603 A

Soft iron 1.0338

(for d₁ = M10 x 1:PA6)

Breather cap (Type B)

Stainless Steel AISI 304

temperature resistant from -30 °C to +100 °C



INFORMATION

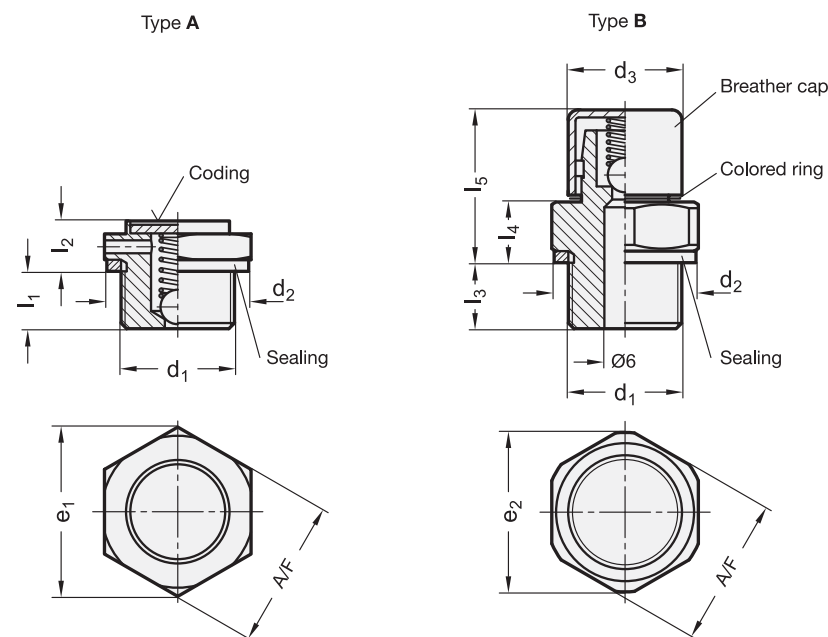
Once the opening pressure given in the table is exceeded, breather valves GN 883 will vent into a container and so protect against excessive inside container pressure. They also feature highly compact dimensions.

A coding (Type A) or a colour ring (Type B) in yellow (20 - 80 mbar) or green (160 - 240 mbar) indicates the different opening pressure ratings.

The simple function principle (pressure spring / ball) ensures long and trouble-free use of the valve. The installation position is vertical to the top.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)



GN 883

Description	d1	Opening pressure in mbar min.	Opening pressure in mbar max.	d2	d3	e1	e2	l1	l2	l3	l4	l5	A/F	Ca. air passage l/min.	
GN 883-M10x1-20-A-MS	M10 x 1	20	80	14.5	-	16	-	6	6	-	-	-	14	1.2	8
GN 883-M10x1-160-A-MS	M10 x 1	160	240	14.5	-	16	-	6	6	-	-	-	14	1.2	8
GN 883-M12x1,5-20-A-MS	M12 x 1.5	20	80	18	-	19.5	-	6.5	6	-	-	-	17	1.2	14
GN 883-M12x1,5-160-A-MS	M12 x 1.5	160	240	18	-	19.5	-	6.5	6	-	-	-	17	1.2	14
GN 883-M14x1,5-20-A-MS	M14 x 1.5	20	80	20	-	19.5	-	6.5	6	-	-	-	17	1.2	16
GN 883-M14x1,5-160-A-MS	M14 x 1.5	160	240	20	-	19.5	-	6.5	6	-	-	-	17	1.2	17
GN 883-M16x1,5-20-A-MS	M16 x 1.5	20	80	22	-	25	-	9	11	-	-	-	22	1.2	35
GN 883-M16x1,5-160-A-MS	M16 x 1.5	160	240	22	-	25	-	9	11	-	-	-	22	1.2	36
GN 883-M10x1-20-B-MS	M10 x 1	20	80	-	12.5	-	18.5	-	-	8	7	16	17	1.8	19
GN 883-M10x1-160-B-MS	M10 x 1	160	240	-	12.5	-	18.5	-	-	8	7	16	17	1.8	19
GN 883-M12x1,5-20-B-MS	M12 x 1.5	20	80	-	12.5	-	18.5	-	-	7.5	7	16.5	17	1.8	22
GN 883-M12x1,5-160-B-MS	M12 x 1.5	160	240	-	12.5	-	18.5	-	-	7.5	7	16.5	17	1.8	22
GN 883-M14x1,5-20-B-MS	M14 x 1.5	20	80	-	12.5	-	18.5	-	-	7.5	7.5	16.5	17	1.8	25
GN 883-M14x1,5-160-B-MS	M14 x 1.5	160	240	-	12.5	-	18.5	-	-	7.5	7.5	16.5	17	1.8	25
GN 883-M16x1,5-20-B-MS	M16 x 1.5	20	80	-	12.5	-	24	-	-	7.5	7.5	16.5	22	1.8	36
GN 883-M16x1,5-160-B-MS	M16 x 1.5	160	240	-	12.5	-	24	-	-	7.5	7.5	16.5	22	1.8	36
GN 883-G1/4-20-A-MS	G 1/4	20	80	20	-	19.5	-	6.5	6	-	-	-	17	1.2	15
GN 883-G1/4-160-A-MS	G 1/4	160	240	20	-	19.5	-	6.5	6	-	-	-	17	1.2	15
GN 883-G3/8-20-A-MS	G 3/8	20	80	23	-	25	-	9	11	-	-	-	22	1.2	37
GN 883-G3/8-160-A-MS	G 3/8	160	240	23	-	25	-	9	11	-	-	-	22	1.2	35
GN 883-G1/2-20-A-MS	G 1/2	20	80	26	-	31	-	8.5	11	-	-	-	27	1.2	46
GN 883-G1/2-160-A-MS	G 1/2	160	240	26	-	31	-	8.5	11	-	-	-	27	1.2	54
GN 883-G3/4-20-A-MS	G 3/4	20	80	32	-	37	-	8.5	11	-	-	-	32	1.2	49
GN 883-G3/4-160-A-MS	G 3/4	160	240	32	-	37	-	8.5	11	-	-	-	32	1.2	83
GN 883-G1/4-20-B-MS	G 1/4	20	80	-	12.5	-	18.5	-	-	7.5	7.5	16.5	17	1.8	24
GN 883-G1/4-160-B-MS	G 1/4	160	240	-	12.5	-	18.5	-	-	7.5	7.5	16.5	17	1.8	24
GN 883-G3/8-20-B-MS	G 3/8	20	80	-	12.5	-	24	-	-	7.5	7.5	16.5	22	1.8	38
GN 883-G3/8-160-B-MS	G 3/8	160	240	-	12.5	-	24	-	-	7.5	7.5	16.5	22	1.8	38
GN 883-G1/2-20-B-MS	G 1/2	20	80	-	12.5	-	29	-	-	8	8	17	27	1.8	56
GN 883-G1/2-160-B-MS	G 1/2	160	240	-	12.5	-	29	-	-	8	8	17	27	1.8	56
GN 883-G3/4-20-B-MS	G 3/4	20	80	-	12.5	-	35	-	-	8	8	17	32	1.8	84
GN 883-G3/4-160-B-MS	G 3/4	160	240	-	12.5	-	35	-	-	8	8	17	32	1.8	84

Breather filters

Brass

SPECIFICATION

Types

- Type **A**: low design
- Type **B**: high design, with Stainless Steel cap

Valve body

Brass **MS**

Air filter

- Stainless Steel-Wire mesh AISI 304
- Filter category G2-G3
- Mean separation rate (Am approx. 65 - 80 %, based on a particle size > 10 µm)

Sealing DIN 7603 A

Soft iron 1.0338

(at d₁ = M10 x 1: PA6)

Breather (Type B)

Stainless Steel AISI 304

temperature resistant from -30 °C to +100 °C



INFORMATION

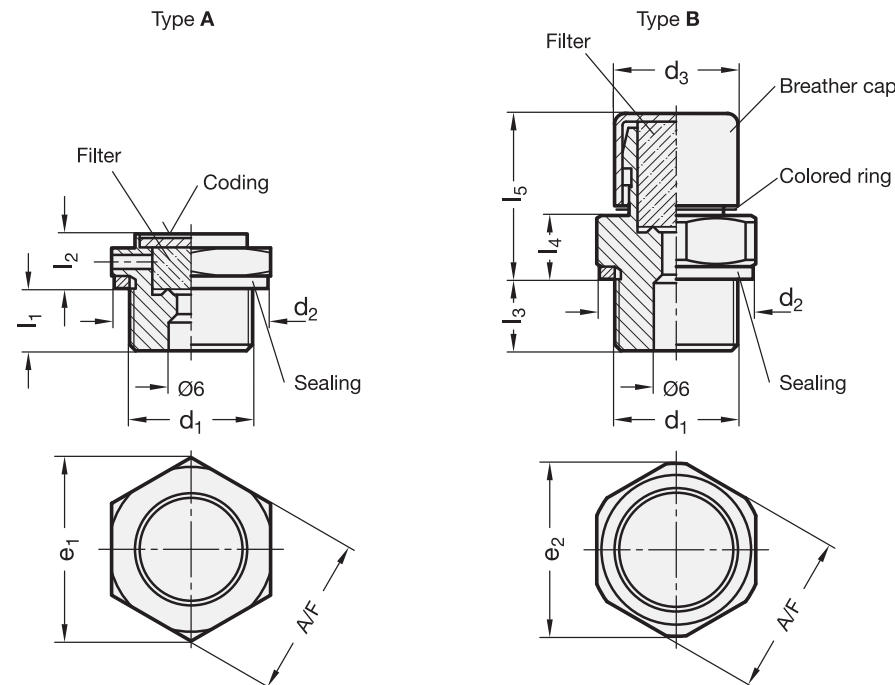
The breather filters GN 884 are used when the air exchange is to be allowed between the inside of the container and the ambient air.

The stainless steel wire mesh prevents air-borne particles of a certain size from being carried into the inside of the container and simultaneously ensures that e.g. oil particles do not escape to the outside.

A label with the symbol "BE" (type A) or a blue coloured ring (type B) marks the filter function. The recommended installation position is vertical to the top.

ON REQUEST

- other materials
- other dimensions



GN 884

Description	d1	d2	d3	e1	e2	l1	l2	l3	l4	l5	A/F	Ca. air passage l/min.	⚖
GN 884-G1/8-A-MS	G 1/8	13.5	-	16	-	6	6	-	-	-	14	24	8
GN 884-M10x1-A-MS	M 10 x 1	14.5	-	16	-	6	6	-	-	-	14	24	7
GN 884-M12x1,5-A-MS	M 12 x 1.5	18	-	19.5	-	6.5	6	-	-	-	17	24	13
GN 884-M14x1,5-A-MS	M 14 x 1.5	20	-	19.5	-	6.5	6	-	-	-	17	24	15
GN 884-G1/4-A-MS	G 1/4	20	-	19.5	-	6.5	6	-	-	-	17	24	14
GN 884-M16x1,5-A-MS	M 16 x 1.5	22	-	25	-	9	11	-	-	-	22	24	33
GN 884-M18x1,5-A-MS	M 18 x 1.5	24	-	25	-	9	11	-	-	-	22	24	37
GN 884-M22x1,5-A-MS	M 22 x 1.5	27	-	31	-	9	11	-	-	-	27	24	55
GN 884-G3/8-A-MS	G 3/8	23	-	25	-	9	11	-	-	-	22	24	36
GN 884-G1/2-A-MS	G 1/2	26	-	31	-	8.5	11	-	-	-	27	24	53
GN 884-G3/4-A-MS	G 3/4	32	-	37	-	8.5	11	-	-	-	32	24	80
GN 884-G1/8-B-MS	G 1/8	13.5	12.5	16	18.5	6	6	8	7	16	17	46	18
GN 884-M10x1-B-MS	M 10 x 1	14.5	12.5	16	18.5	6	6	8	7	16	17	46	18
GN 884-M12x1,5-B-MS	M 12 x 1.5	18	12.5	19.5	18.5	6.5	6	7.5	7.5	16.5	17	46	21
GN 884-M14x1,5-B-MS	M 14 x 1.5	20	12.5	19.5	18.5	6.5	6	7.5	7.5	16.5	17	46	24
GN 884-G1/4-B-MS	G 1/4	20	12.5	19.5	18.5	6.5	6	7.5	7.5	16.5	17	46	23
GN 884-M16x1,5-B-MS	M 16 x 1.5	22	12.5	25	24	9	11	7.5	7.5	16.5	22	46	34
GN 884-M18x1,5-B-MS	M 18 x 1.5	24	12.5	25	24	9	11	7.5	7.5	16.5	22	46	38
GN 884-M22x1,5-B-MS	M 22 x 1.5	27	12.5	31	29	9	11	7.5	7.5	16.5	27	46	55
GN 884-G3/8-B-MS	G 3/8	23	12.5	25	24	9	11	7.5	7.5	16.5	22	46	36
GN 884-G1/2-B-MS	G 1/2	26	12.5	31	29	8.5	11	8	8	17	27	46	52
GN 884-G3/4-B-MS	G 3/4	32	12.5	37	35	8.5	11	8	8	17	32	46	80

Breather caps

Technopolymer

MATERIAL

- Polyamide based (PA) technopolymer.
- Cover: RAL 2004 orange, semi-matte finish, marked "OIL".
- Threaded connector: black colour, semi-matte finish.

PACKING RING

NBR synthetic rubber.

STANDARD EXECUTIONS

- **SFN.**: without air filter.
 - **SFN+F**: with "tech-foam" air filter in polyurethane foam mesh (polyester base), air filtration 40 μ.
 - **SFN.70-BA+F**: with "tech-foam" air filter in polyurethane foam mesh (polyester base), air filtration 40 μ.
- Zinc-plated steel sheet bayonet.
Chrome-plated steel safety chain.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C for execution with "tech-foam" air filter.

FEATURES AND APPLICATIONS

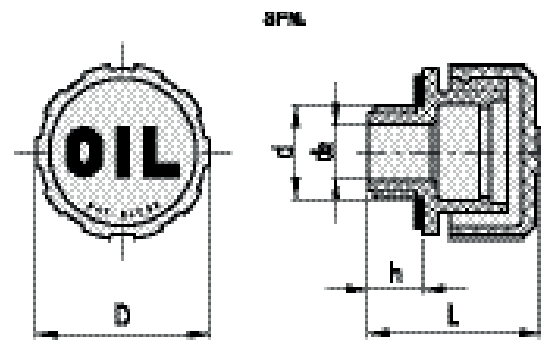
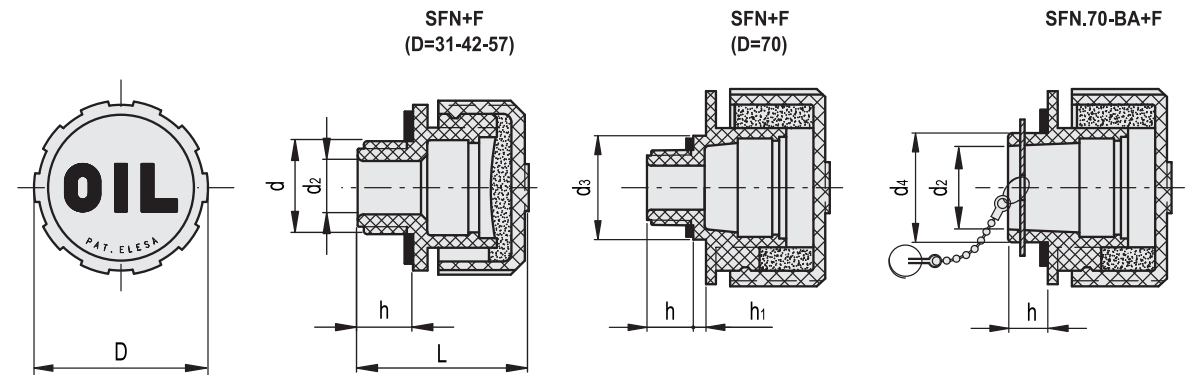
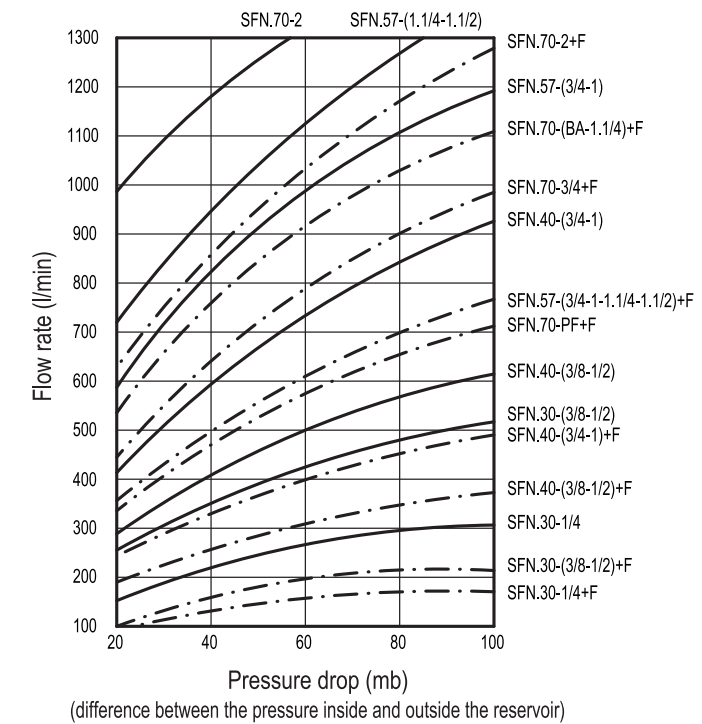
SFN. breather caps, owing to their high air flow rate, are particularly suitable for use on hydraulic power packs or tanks subject to rapid changes in liquid volume.

TECHNICAL DATA

Air flow rate for each model can be determined from the graph calculating the difference between the pressure inside and outside the reservoir.

SPECIAL EXECUTIONS ON REQUEST

- Cover, RAL 2004 orange, without "OIL" mark.
- Black cover with or without "OIL" mark.
- Threaded connector also with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20) for the codes marked with # in the table.



SFN.

Code	Description	d	D	L	d2	h	Δ
56151	SFN.30-1/4#	G 1/4	31	29.5	8	9.5	10
53901	SFN.30-3/8	G 3/8	31	29.5	10	9.5	10
53911	SFN.30-1/2	G 1/2	31	29.5	12	9.5	11
56181	SFN.40-3/8#	G 3/8	42	36.5	10	11.5	20
56201	SFN.40-1/2#	G 1/2	42	36.5	12	11.5	21
53921	SFN.40-3/4#	G 3/4	42	36.5	18	11.5	20
53931	SFN.40-1	G 1	42	36.5	18	11.5	20
56241	SFN.57-3/4#	G 3/4	57	42	18	14	38
56261	SFN.57-1	G 1	57	42	23	14	40
53932	SFN.57-1¼	G 1 1/4	57	44	28	16	41
53933	SFN.57-1½	G 1 1/2	57	44	28	16	40
56381	SFN.70-2	G 2	70	59	23	17	79

Types available on request with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20).

SFN+F

Code	Description	d	D	L	d2	d3	h	h1	Δ
56156	SFN.30-1/4+F#	G 1/4	31	29.5	8	-	9.5	-	10
56161	SFN.30-3/8+F	G 3/8	31	29.5	10	-	9.5	-	10
56171	SFN.30-1/2+F	G 1/2	31	29.5	12	-	9.5	-	11
56191	SFN.40-3/8+F#	G 3/8	42	36.5	10	-	11.5	-	19
56211	SFN.40-1/2+F#	G 1/2	42	36.5	12	-	11.5	-	20
56221	SFN.40-3/4+F#	G 3/4	42	36.5	18	-	11.5	-	20
56231	SFN.40-1+F	G 1	42	36.5	18	-	11.5	-	21
56251	SFN.57-3/4+F#	G 3/4	57	42	18	-	14	-	37
56271	SFN.57-1+F	G 1	57	42	23	-	14	-	38
56281	SFN.57-1¼+F	G 1 1/4	57	44	28	-	16	-	39
56291	SFN.57-1½+F	G 1 1/2	57	44	28	-	16	-	40
54701	SFN.70-3/4+F#	G 3/4	70	63	16	35	15	6	76
54711	SFN.70-1¼+F	G 1 1/4	70	59	23	-	17	-	77
56391	SFN.70-2+F	G 2	70	59	23	-	17	-	82

SFN-BA+F

Code	Description	D	L	d2	d4	h	Δ
54731	SFN.70-BA+F	70	56	23	39	14	85

Types available on request with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20).

Breather cap

with sealing closure, technopolymer

MATERIAL

- Cover: polyamide based (PA) technopolymer, black colour, semi-matte finish.
- Threaded connector: acetal based technopolymer (POM), black colour, semi-matte finish.

PACKING RINGS

NBR synthetic rubber O-Ring.

AIR FILTER

Polyurethane foam mesh "tech-foam" (polyester base), air filtration 10 µ.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

80°C.

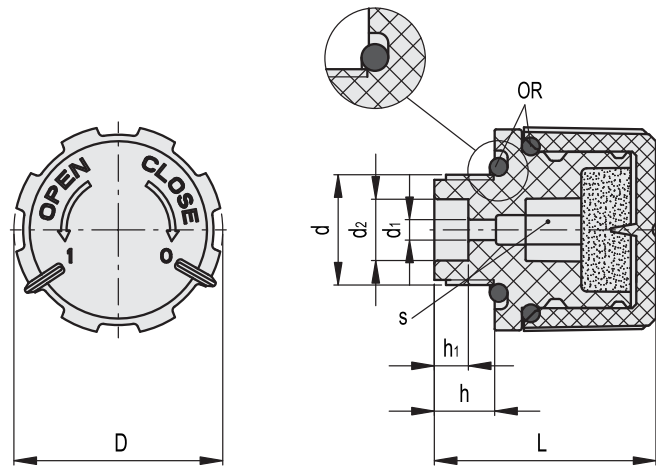
FEATURES AND APPLICATIONS

The cover of the SFC. breather cap (ELESA Patent) can be positioned in two different ways:

- Breather position: air is let in and out of the reservoir in normal conditions of use.
- Closure position: a packing ring between the cover and the threaded connector flange guarantees a perfect sealing of gas or liquid contained in the reservoir.

SPECIAL EXECUTIONS ON REQUEST

- Air filter in polyurethane foam mesh "tech-foam" (polyester base) with air filtration 40 µ.
- Cover in RAL 2004 orange.



ASSEMBLY INSTRUCTIONS

The components are supplied not assembled.

- Screw the threaded connector by means of a hexagon socket, tightening torque 8 Nm (fig. 1).
- Insert the "tech-foam" filter in its proper upper housing.
- Fit the cover on the threaded connector by properly matching the two different teeth (one large and one tight) inside the cover, with the relevant knurlings on the upper part of the threaded connector (fig. 2).
- By turning the cover clockwise of a few degrees the breather position is reached: the index on the cover marked with 1 is in line with the index of the threaded connector (fig. 3).
- By further turning the cover clockwise following the CLOSE arrow, the closure position is reached: the index on the cover marked with 0 is in line with the index of the threaded connector (fig. 4).
- To reach from the closure position to the breather one just turn the cover anticlockwise following the OPEN arrow until the click.
- By further turning the cover anticlockwise following the OPEN arrow, it is possible to remove the cover from the threaded connector, thus allowing the operator to clean the two components or to substitute or clean the "tech-foam" filter (fig. 5).

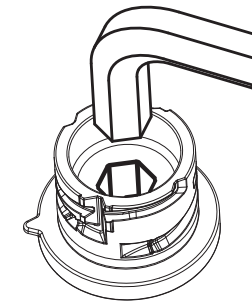
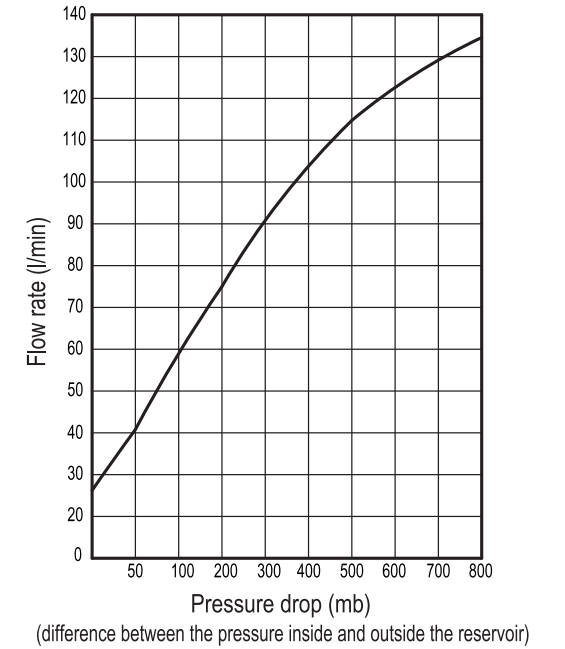


Fig.1

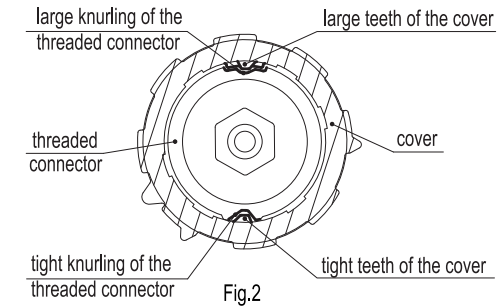


Fig.2

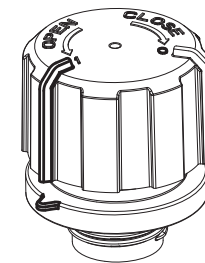


Fig.3

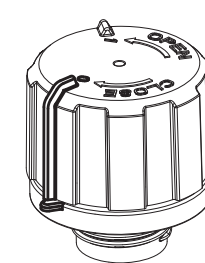


Fig.4

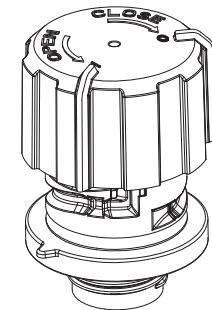


Fig.5

Code	Description	d	D	L	d1	d2	h	h1	s	⚖
52801	SFC.30-3/8+F	G 3/8	30	33	3	9	9	5	8	18

Breather caps

with splash guard, technopolymer

MATERIAL

- Polyamide based (PA) technopolymer.
- Cover: RAL 2004 orange, semi-matte finish, marked "OIL".
- Threaded connector: black colour, semi-matte finish.

PACKING RING

NBR synthetic rubber.

SPLASH GUARD

Technopolymer.

STANDARD EXECUTIONS

- **SFP.**: without air filter (black splash guard).
- **SFP+F**: with "tech-foam" air filter in polyurethane foam mesh (polyester base), air filtration 40 μ (grey splash guard) or with "tech-fil" air filter in zinc-plated steel wire (orange splash guard).
- **SFP.70-BA+F**: with "tech-foam" air filter in polyurethane foam mesh (polyester base), air filtration 40 μ (grey splash guard). Zinc-plated steel sheet bayonet. Chrome-plated steel safety chain.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

FEATURES AND APPLICATIONS

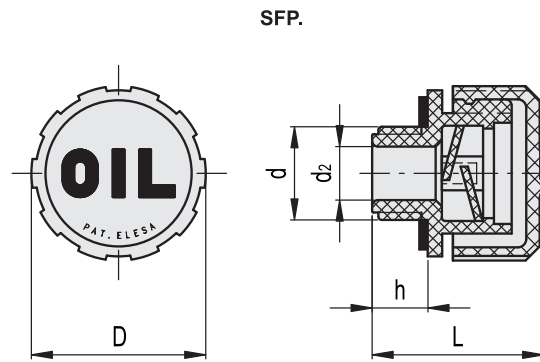
SFP. breather caps come complete with splash guard device (ELESA original design) that prevents oil loss and are particularly suitable for use where oil is violently agitated and could be splashed against breather cap.

TECHNICAL DATA

Air flow rate for each model can be determined from the graph calculating the difference between the pressure inside and outside the reservoir.

SPECIAL EXECUTIONS ON REQUEST

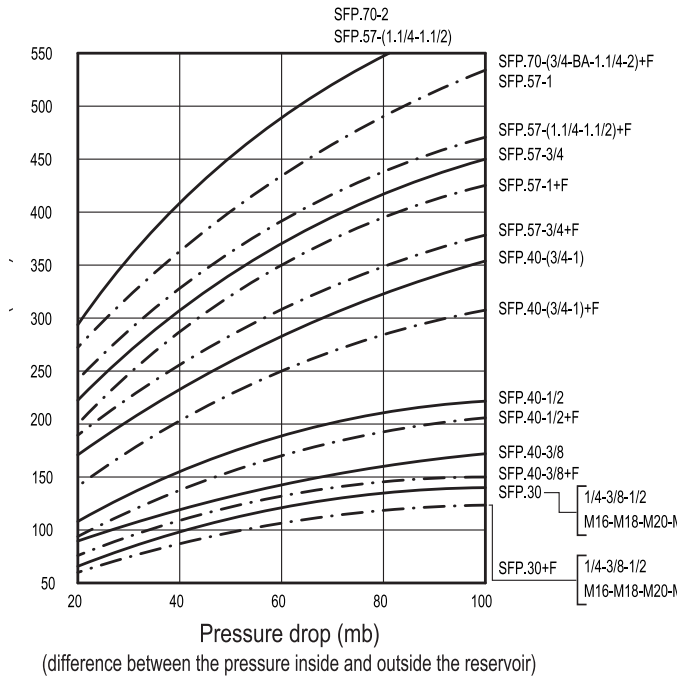
- Cover, RAL 2004 orange, without "OIL" mark.
- Black cover with or without "OIL" mark.
- Threaded connector also with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20) for the codes marked with # in the table.



SFP.

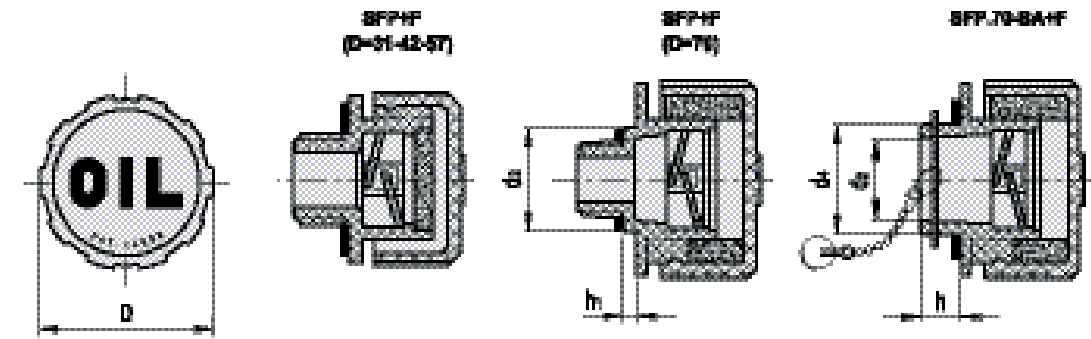
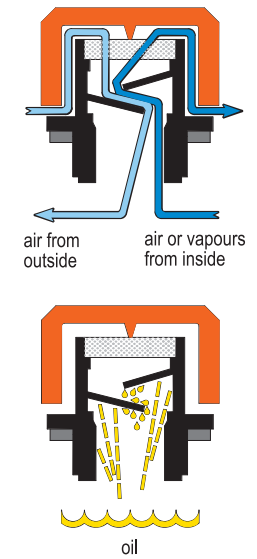
Code	Description	d	D	L	d2	h	ΔΔ
53941	SFP.30-16x1.5	M16x1.5	31	29.5	10	9.5	10
53961	SFP.30-18x1.5	M18x1.5	31	29.5	10	9.5	10
53981	SFP.30-20x1.5	M20x1.5	31	29.5	12	9.5	11
53991	SFP.30-22x1.5	M22x1.5	31	29.5	12	9.5	11
53935	SFP.30-1/4#	G 1/4	31	29.5	8	9.5	10
54001	SFP.30-3/8	G 3/8	31	29.5	10	9.5	11
54101	SFP.30-1/2	G 1/2	31	29.5	12	9.5	11
56651	SFP.40-3/8#	G 3/8	42	36.5	10	11.5	20
56671	SFP.40-1/2#	G 1/2	42	36.5	12	11.5	22
54201	SFP.40-3/4#	G 3/4	42	36.5	18	11.5	22
54301	SFP.40-1	G 1	42	36.5	18	11.5	22
56701	SFP.57-3/4#	G 3/4	57	42	18	14	40
56731	SFP.57-1	G 1	57	42	23	14	40
54401	SFP.57-1¼	G1 1/4	57	44	28	16	41
54501	SFP.57-1½	G1 1/2	57	44	28	16	45
54876	SFP.70-2	G 2	70	59	23	17	82

Types available on request with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20).



(difference between the pressure inside and outside the reservoir)

Operating layout



SFP+F

Code	Description	Code	Description	d	D	L	d2	d3	h	h1	ΔΔ
53951	SFP.30-16x1.5+F FIL	53952	SFP.30-16x1.5+F FOAM	M16x1.5	31	29.5	10	-	9.5	-	12
53971	SFP.30-18x1.5+F FIL	53972	SFP.30-18x1.5+F FOAM	M18x1.5	31	29.5	10	-	9.5	-	13
53986	SFP.30-20x1.5+F FIL	53987	SFP.30-20x1.5+FFOAM	M20x1.5	31	29.5	12	-	9.5	-	13
53996	SFP.30-22x1.5+F FIL	53997	SFP.30-22x1.5+F FOAM	M22x1.5	31	29.5	12	-	9.5	-	14
53937	SFP.30-1/4+F FIL	53938	SFP.30-1/4+F FOAM	G 1/4	31	29.5	8	-	9.5	-	11
54021	SFP.30-3/8+F FIL	54022	SFP.30-3/8+F FOAM	G 3/8	31	29.5	10	-	9.5	-	13
54121	SFP.30-1/2+F FIL	54122	SFP.30-1/2+F FOAM	G 1/2	31	29.5	12	-	9.5	-	15
56661	SFP.40-3/8+F FIL	56662	SFP.40-3/8+F FOAM#	G 3/8	42	36.5	10	-	11.5	-	23
56681	SFP.40-1/2+F FIL	56682	SFP.40-1/2+F FOAM#	G 1/2	42	36.5	12	-	11.5	-	26
54221	SFP.40-3/4+F FIL	54222	SFP.40-3/4+F FOAM#	G 3/4	42	36.5	18	-	11.5	-	28
54321	SFP.40-1+F FIL	54322	SFP.40-1+F FOAM	G 1	42	36.5	18	-	11.5	-	24
56711	SFP.57-3/4+F FIL	56712	SFP.57-3/4+F FOAM#	G 3/4	57	42	18	-	14	-	50
56741	SFP.57-1+F FIL	56742	SFP.57-1+F FOAM	G 1	57	42	23	-	14	-	50
54421	SFP.57-1¼+F FIL	54422	SFP.57-1¼+F FOAM	G1 1/4	57	44	28	-	16	-	50
54521	SFP.57-1½+F FIL	54522	SFP.57-1½+F FOAM	G1 1/2	57	44	28	-	16	-	54
-	-	54851	SFP.70-3/4+F FOAM#	G 3/4	70	63	16	35	15	6	80
-	-	54861	SFP.70-1¼+F FOAM	G1 1/4	70	59	23	-	17	-	80
-	-	54878	SFP.70-2+F FOAM	G 2	70	59	23	-	17	-	85

SFP.70-BA+F

Code	Description	D	L	d2	d4	h	ΔΔ
54881	SFP.70-BA+F FOAM	70	56	30	39	14	91

Types available on request with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20).

Breather caps

with splash guard and flat dipstick, technopolymer

MATERIAL

- Polyamide based (PA) technopolymer.
- Cover: RAL 2004 orange, semi-matte finish, marked "OIL".
- Threaded connector: black, semi-matte finish.

PACKING RING

NBR synthetic rubber.

FLAT DIPSTICK

Flat section phosphatised steel. On request and for sufficient quantities dipstick can be supplied in different lengths and/or complete with MAX-MIN level lines.

SPLASH GUARD

Technopolymer.

STANDARD EXECUTIONS

- SFP+a**: without air filter (black splash guard).
- SFP+F+a**: D = 31, 42 and 57 with "tech-fil" air filter in zinc-plated steel wire (orange splash guard); D = 70 with "tech-foam" air filter in polyurethane foam mesh (polyester base), air filtration 40 μ (grey splash guard).
- SFP.70-BA+F+a**: with "tech-foam" air filter in polyurethane foam mesh (polyester base), air filtration 40 μ (grey splash guard). Zinc-plated steel sheet bayonet. Chrome-plated steel safety chain.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

FEATURES AND APPLICATIONS

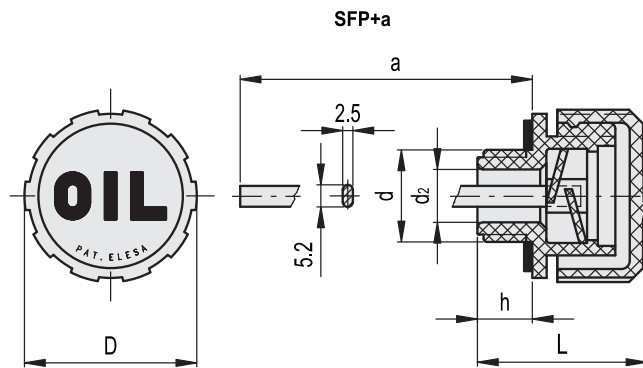
SFP+a breather caps come complete with splash guard device (ELESA originale design) that prevents oil loss and are particularly suitable for use where oil is violently agitated and could be splashed against the breather cap.

TECHNICAL DATA

Air flow rate for each model can be determined from the graph calculating the difference between the pressure inside and outside the reservoir.

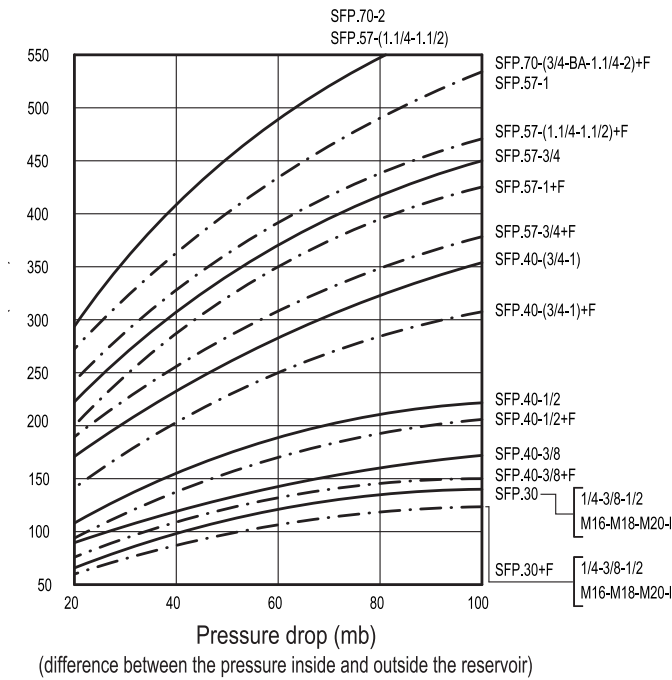
SPECIAL EXECUTIONS ON REQUEST

- Cover, RAL 2004 orange, without "OIL" mark.
- Black cover with or without "OIL" mark.

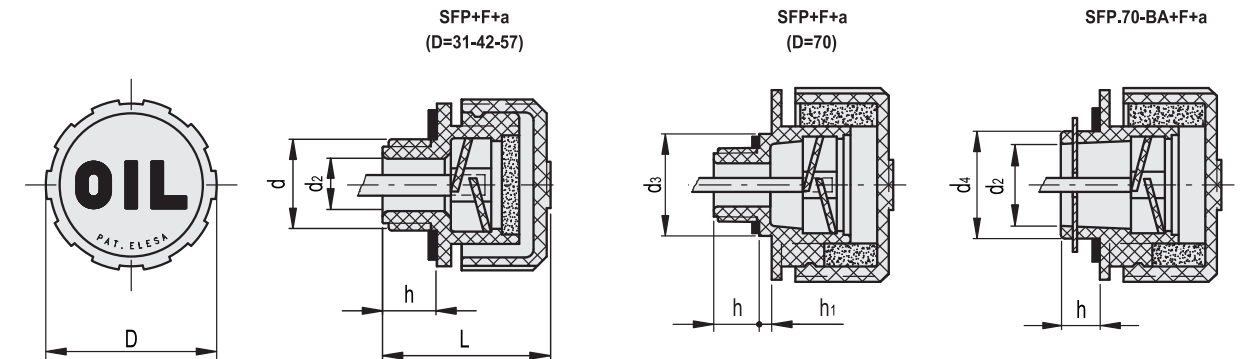
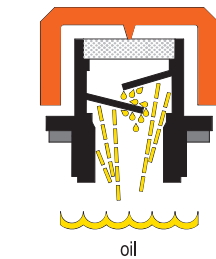
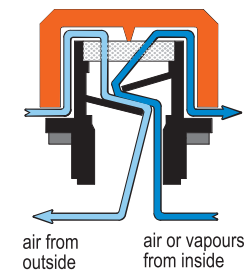


SFP+a

Code	Description	d	D	L	d2	h	a	Δ
53946	SFP.30-16x1.5+a	M16x1.5	31	29.5	10	9.5	188	30
53966	SFP.30-18x1.5+a	M18x1.5	31	29.5	10	9.5	188	30
53983	SFP.30-20x1.5+a	M20x1.5	31	29.5	12	9.5	188	31
53993	SFP.30-22x1.5+a	M22x1.5	31	29.5	12	9.5	188	31
53936	SFP.30-1/4+a	G 1/4	31	29.5	8	9.5	188	30
54011	SFP.30-3/8+a	G 3/8	31	29.5	10	9.5	188	30
54111	SFP.30-1/2+a	G 1/2	31	29.5	12	9.5	188	30
54211	SFP.40-3/4+a	G 3/4	42	36.5	18	11.5	184	42
54311	SFP.40-1+a	G 1	42	36.5	18	11.5	184	44
54411	SFP.57-1/4+a	G 1 1/4	57	44	28	16	184	63
54511	SFP.57-1/2+a	G 1 1/2	57	44	28	16	184	65
54877	SFP.70-2+a	G 2	70	59	23	17	179	106



Operating layout



SFP+F+a

Code	Description	d	D	L	d2	d3	h	h1	a	Δ
53956	SFP.30-16x1.5+F+a	M16x1.5	31	29.5	10	-	9.5	-	188	34
53976	SFP.30-18x1.5+F+a	M18x1.5	31	29.5	10	-	9.5	-	188	34
53989	SFP.30-20x1.5+F+a	M20x1.5	31	29.5	12	-	9.5	-	188	32
53999	SFP.30-22x1.5+F+a	M22x1.5	31	29.5	12	-	9.5	-	188	33
53939	SFP.30-1/4+F+a	G 1/4	31	29.5	8	-	9.5	-	188	31
54031	SFP.30-3/8+F+a	G 3/8	31	29.5	10	-	9.5	-	188	33
54131	SFP.30-1/2+F+a	G 1/2	31	29.5	12	-	9.5	-	188	34
54231	SFP.40-3/4+F+a	G 3/4	42	36.5	18	-	11.5	-	184	50
54331	SFP.40-1+F+a	G 1	42	36.5	18	-	11.5	-	184	50
54431	SFP.57-1/4+F+a	G 1 1/4	57	44	28	-	16	-	184	75
54531	SFP.57-1/2+F+a	G 1 1/2	57	44	28	-	16	-	184	75
54853	SFP.70-3/4+F+a	G 3/4	70	63	16	35	15	6	173	100
54863	SFP.70-1/4+F+a	G 1 1/4	70	59	23	-	17	-	179	105
54879	SFP.70-2+F+a	G 2	70	59	23	-	17	-	179	110

SFP.70-BA+F+a

Code	Description	D	L	d2	d4	h	a	Δ
54883	SFP.70-BA+F+a	70	56	30	39	14	179	100

Breather caps

with splash guard, technopolymer

MATERIAL

Polyamide based (PA) technopolymer.
 - Cover: RAL 2004 orange, semi-matte finish, marked "OIL".
 - Threaded connector: black colour, semi-matte finish.

PACKING RING

NBR synthetic rubber.

SPLASH GUARD

Technopolymer.

STANDARD EXECUTIONS

- **SFP-EX**: without air filter (black splash guard).
 - **SFP+F-EX**: with "tech-foam" air filter in polyurethane foam mesh (polyester base), air filtration 40 µ (grey splash guard).

ATEX DIRECTIVE COMPLIANCE

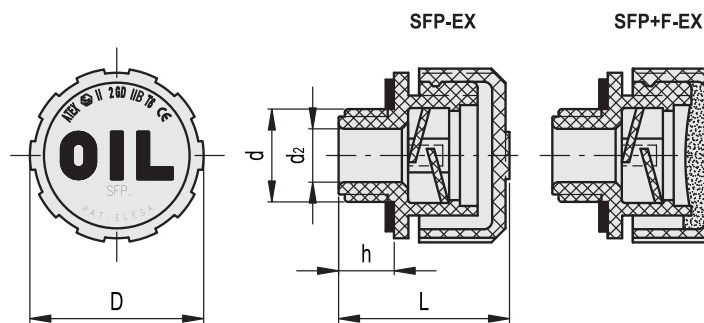
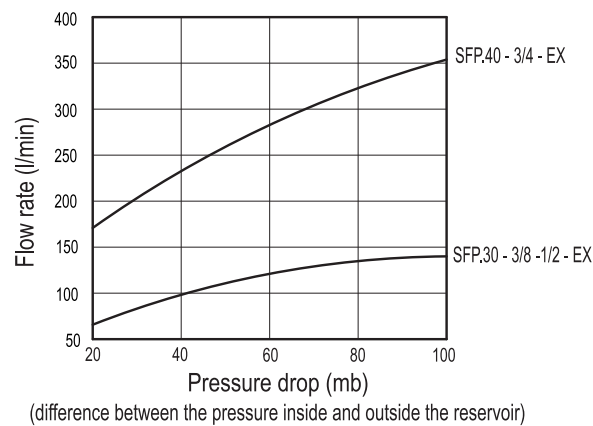
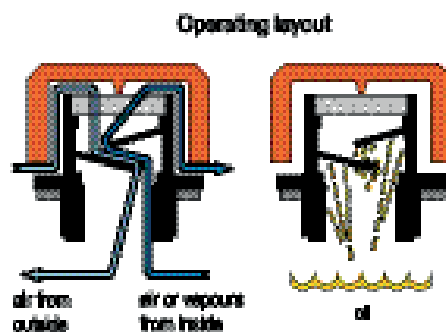
The breather caps of the SFP-EX series comply with Health and Safety Requirements intended in 94/9/EC ATEX European Directive (explosive atmospheres) for equipments in Group II, category 2GD. II 2 G D IIB T6, marked on the SFP-EX breather caps, represents the identification according to ATEX directive.
 II: group of substances for which the product is suitable
 2: identification of the category
 G: identification of the type of explosive atmosphere (Gases or vapours)
 D: identification of the type of explosive atmosphere (Dust)
 IIB: group of explosive gases
 T6: temperature class
 Ambient and/or fluid temperature: -30 ÷ +80°C
 The declaration of conformity to European Directives of this product is available and it is part of the product itself.

FEATURES AND APPLICATIONS

SFP-EX breather caps come complete with splash guard device (ELESA original design) that prevents oil loss and are particularly suitable for use where oil is violently agitated and could be splashed against breather cap.

TECHNICAL DATA

Air flow rate for each model can be determined from the graph calculating the difference between the pressure inside and outside the reservoir.



Code	Description	d	D	L	d2	h	⚖
54001-EX	SFP30-3/8-EX	G 3/8	31	29.5	10	9.5	11
54101-EX	SFP30-1/2-EX	G 1/2	31	29.5	12	9.5	11
54201-EX	SFP40-3/4-EX	G 3/4	42	36.5	18	11.5	22

Code	Description	d	D	L	d2	h	⚖
54022-EX	SFP30-3/8+F-EX	G 3/8	31	29.5	10	9.5	13
54122-EX	SFP30-1/2+F-EX	G 1/2	31	29.5	12	9.5	15
54222-EX	SFP40-3/4+F-EX	G 3/4	42	36.5	18	11.5	28

Breather caps

with splash guard and flat dipstick, technopolymer

MATERIAL

Polyamide based (PA) technopolymer.
 - Cover: RAL 2004 orange, semi-matte finish, marked "OIL".
 - Threaded connector: black colour, semi-matte finish.

PACKING RING

NBR synthetic rubber.

FLAT DIPSTICK

Flat section phosphatised steel.
 On request and for sufficient quantities dipstick can be supplied in different lengths and/or complete with MAX-MIN level lines.

SPLASH GUARD

Technopolymer.

ATEX DIRECTIVE COMPLIANCE

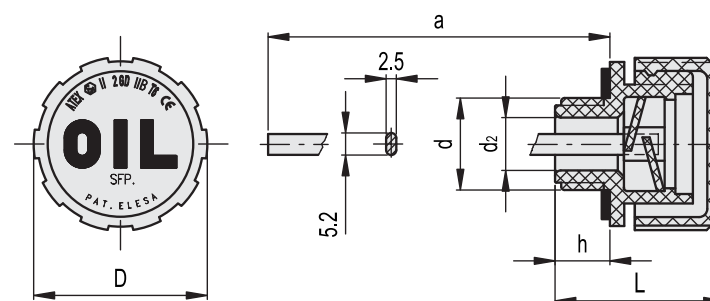
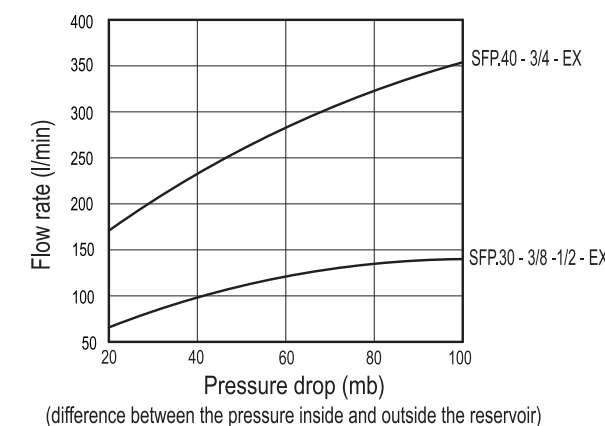
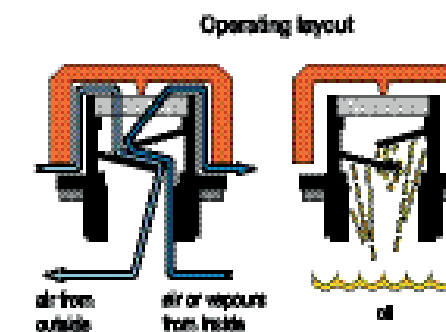
The breather caps of the SFP+a-EX series comply with Health and Safety Requirements intended in 94/9/EC ATEX European Directive (explosive atmospheres) for equipments in Group II, category 2GD. II 2 G D IIB T6, marked on the SFP-EX breather caps, represents the identification according to ATEX directive.
 II: group of substances for which the product is suitable
 2: identification of the category
 G: identification of the type of explosive atmosphere (Gases or vapours)
 D: identification of the type of explosive atmosphere (Dust)
 IIB: group of explosive gases
 T6: temperature class
 Ambient and/or fluid temperature: -30 ÷ +80°C
 Every product codes will be supplied with declaration of conformity to European Directives.

FEATURES AND APPLICATIONS

SFP+a-EX breather caps come complete with splash guard device (ELESA original design) that prevents oil loss and are particularly suitable for use where oil is violently agitated and could be splashed against breather cap.

TECHNICAL DATA

Air flow rate for each model can be determined from the graph calculating the difference between the pressure inside and outside the reservoir.



Code	Description	d	D	L	d2	h	a	⚖
54011-EX	SFP30-3/8+a-EX	G 3/8	31	29.5	10	9.5	188	30
54111-EX	SFP30-1/2+a-EX	G 1/2	31	29.5	12	9.5	188	30
54211-EX	SFP40-3/4+a-EX	G 3/4	42	36.5	18	11.5	184	42

Breather caps with vacuum breaker valve

Technopolymer

MATERIAL

Polypropylene based (PP) technopolymer.
 - Cover: red colour (TVD-EPDM), green (TVD-FKM).
 Graphic symbol "valve" tampoprinted in black colour.
 - Avoid contact with solvents, alcohol or detergents containing alcohol to preserve tampoprinted graphic symbol.
 Threaded connector: black colour.

STANDARD EXECUTIONS

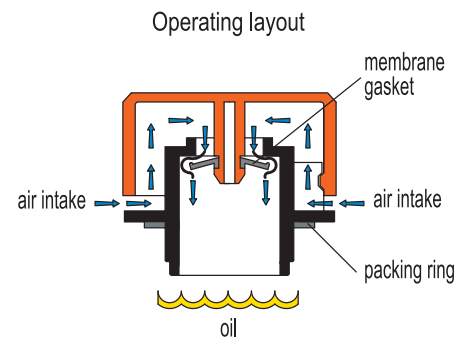
- **TVD-FKM**: flat packing ring and FKM membrane gasket, hardness 70 Shore A.
 - **TVD-EPDM**: flat packing ring and EPDM membrane gasket, hardness 70 Shore A.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

50°C.

FEATURES AND APPLICATIONS

TVD. breather caps with vacuum breaker valve are suitable for reservoirs and tanks for liquid transport.
 The membrane retaining system allows a quick emptying out of the reservoir by letting in big quantities of air through the cap. Thus avoiding the vacuum inside the reservoir, slowing down the liquid exit. The pre-set pressure of the membrane gasket stops any liquid loss when the reservoir is shaken (for example during transportation). The liquid pressure on the gasket guarantees a perfect seal of the cap, for example in case of overturning of the reservoir.



The membrane gasket warps and lets air inside the reservoir due to the effect of the vacuum which is created by the liquid discharge.

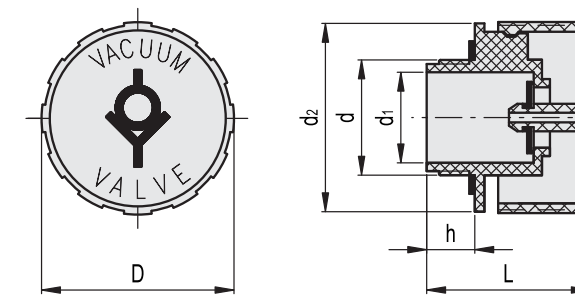
DEPRESSION	FLOW RATE	
	FKM	EPDM
50 mb	360 l/min	370 l/min
40 mb	320 l/min	330 l/min
30 mb	260 l/min	280 l/min
20 mb	210 l/min	230 l/min
10 mb	140 l/min	160 l/min
5 mb	110 l/min	130 l/min

RESISTANCE TO CHEMICAL AGENTS

Tests carried out under standard laboratory conditions at 23°C. Values to be considered only as guidelines. Please contact ELESA Technical Department for further chemical resistance details to particular liquids not reported in the table.

CHEMICAL AGENTS	EPDM	FKM	PP
POOR ACIDS	●	●	●
STRONG ACIDS	●	▲	●
CONC. ACETIC ACID 40%	●	▲	●
CONC. HYDROCHLORIC ACID 10%	●	●	●
CONC. NITRIC ACID 10%	▲	●	■
CONC. SULPHURIC ACID 20%	▲	●	●
ALCOHOL	●	▲	●
ALDEHYDE (FORMALDEHYDE)	●	▲	●
AMMONIA	●	▲	●
POOR BASES	●	●	●
STRONG BASES	●	▲	●
BENZOL	▲	●	▲
KETONES (Acetone, Methyl Ethyl Ketone)	●	▲	●
ESTERS	●	▲	●
GLYCOL	●	●	●
ALIPHATIC HYDROCARBONS (Petrol, Gas oil, Ethane, Propane, Butane)	▲	●	■
AROMATIC HYDROCARBONS (Toluol, Xylol)	▲	●	■
ANIMAL AND VEGETAL OILS AND GREASES	▲	●	●
MINERAL OIL AND GREASES	▲	●	■

Resistance: Good ● Fair ■ Poor ▲



Code	Description	d	D	L	d1	d2	h	ΔΔ
61011	TVD.70-1¼-FKM	G1 1/4	70	59	33	68.5	17	80
61021	TVD.70-1¼-EPDM	G1 1/4	70	59	33	68.5	17	80

Breather cap

push-fit, technopolymer

MATERIAL

Polyamide based (PA) technopolymer.
 - Cover: RAL 2004 orange, semi-matte finish, marked "OIL".
 - Threaded connector: black colour, semi-matte finish.

MOUNTING

Push-fit on pipes with max outside diameter of 39 mm and min inside diameter of 32 mm.

CLIP

Black-oxide steel.

RING-SHAPED AIR FILTER

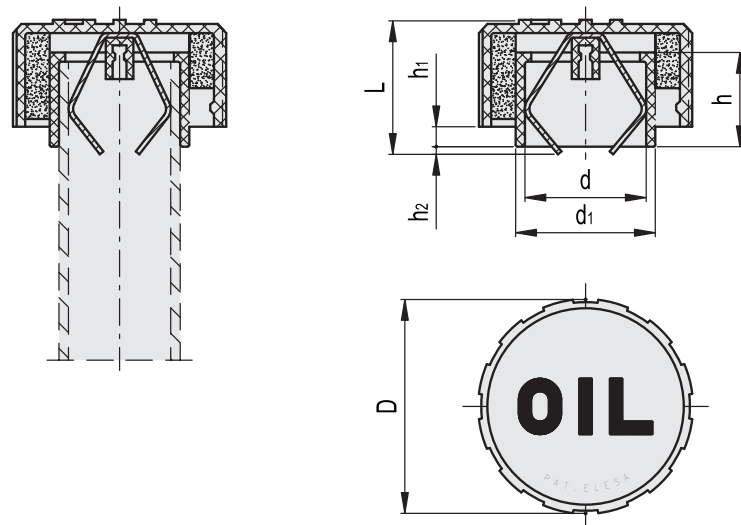
"Tech-foam" polyurethane foam mesh (polyester base), air filtration 40 µ.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

SPECIAL EXECUTIONS ON REQUEST

- Cover, RAL 2004 orange, without "OIL" mark.
 - Black cover with or without "OIL" mark.



Code	Description	d	D	L	d1	h	h1	h2	Δ
54761	SFN.70-PF+F	39.5	70	43	45.5	27.5	2.5	6.5	67

Valve breather caps

Technopolymer

MATERIAL

Polyamide based (PA) technopolymer.
 - Cover: RAL 2004 orange, semi-matte finish, with graphic symbol "valve".
 - Threaded connector: black colour, semi-matte finish.

PACKING RING

NBR synthetic rubber.

SEALING DISK

Technopolymer with NBR synthetic rubber O-ring.

SPRING

Stainless steel.

STANDARD EXECUTIONS

- **SFV-10 mb**: valve (sealing disk) opens when pressure exceeds 0.010 bar (set at 10 mb).
 - **SFV-100 mb**: valve (sealing disk) opens when pressure exceeds 0.100 bar (set at 100 mb).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

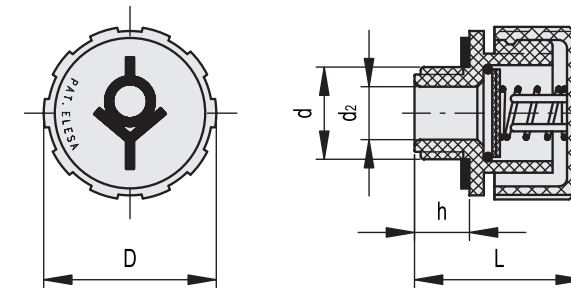
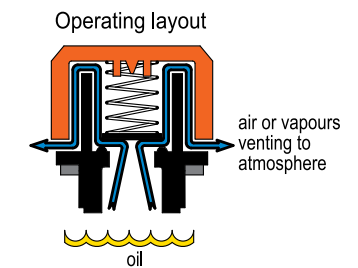
FEATURES AND APPLICATIONS

SFV. valve breather caps are particularly suitable for all those applications (speed reducers, variators or compressors) when the internal air pressure must not exceed a certain value (10 or 100 mb). In these cases, the safety valve of the cap allows the expulsion of the exceeding air in the reservoir, thus re-establishing the pressure values for which the valve is set.

Sealing disc (closed in normal pressure conditions) prevents dust from getting in and oil-losses.

SPECIAL EXECUTIONS ON REQUEST

Black cover.



Code	Description	Code	Description	d	D	L	d2	h	Δ
54611	SFV.16x1.5 10mb	54616	SFV.16x1.5 100mb	M16x1.5	31	29.5	10	9.5	12
54621	SFV.18x1.5 10mb	54626	SFV.18x1.5 100mb	M18x1.5	31	29.5	10	9.5	12
54631	SFV.20x1.5 10mb	54636	SFV.20x1.5 100mb	M20x1.5	31	29.5	10	9.5	12
54641	SFV.22x1.5 10mb	54646	SFV.22x1.5 100mb	M22x1.5	31	29.5	10	9.5	13
54651	SFV.1/4 10mb	54656	SFV.1/4 100mb	G 1/4	31	29.5	8	9.5	11
54661	SFV.3/8 10mb	54666	SFV.3/8 100mb	G 3/8	31	29.5	10	9.5	12
54671	SFV.1/2 10mb	54676	SFV.1/2 100mb	G 1/2	31	29.5	10	9.5	12
54681	SFV.3/4 10mb	54686	SFV.3/4 100mb	G 3/4	42	36.5	17	11.5	23
54691	SFV.1 10mb	54696	SFV.1 100mb	G 1	42	36.5	17	11.5	25

Pressurised breather caps

with double valve, technopolymer

MATERIAL

Polyamide based (PA) technopolymer.
 - Cover: RAL 2004 orange, semi-matte finish, with graphic symbol "valve".
 - Threaded connector: black colour, semi-matte finish.

PACKING RING

NBR synthetic rubber.

OVERPRESSURE VALVE

Technopolymer with NBR synthetic rubber O-ring and stainless steel spring.
 Set at around 0.350 bar (on request 0.700 bar).

SUCTION VALVE

Technopolymer sealing disk with NBR synthetic rubber O-ring and stainless steel spring.
 Set at around 0.030 bar.

RING-SHAPED AIR FILTER

"Tech-foam" polyurethane foam mesh (polyester base), air filtration 40 µ.

FLAT DIPSTICK

Flat section phosphatised steel.
 On request and for sufficient quantities dipstick can be supplied in different lengths and/or complete with MAX-MIN level lines.

STANDARD EXECUTIONS

- **SFW+F**: without flat dipstick.
- **SFW-BA+F**: with zinc-plated steel sheet bayonet, without flat dipstick. Chrome-plated steel safety chain.
- **SFW+F+a**: with flat dipstick.
- **SFW-BA+F+a**: with zinc-plated steel sheet bayonet and flat dipstick. Chrome-plated steel safety chain.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

SPECIAL EXECUTIONS ON REQUEST

- Black cover.
- Threaded connector also with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20) for the codes marked with # in the table.



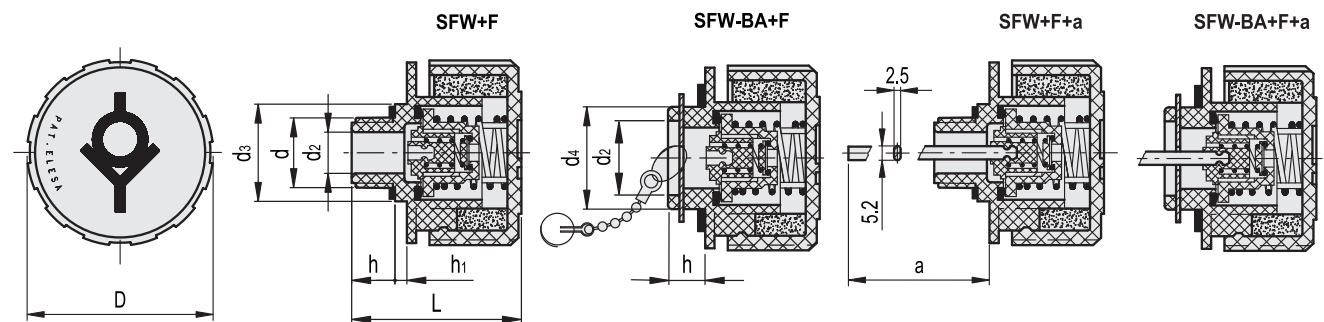
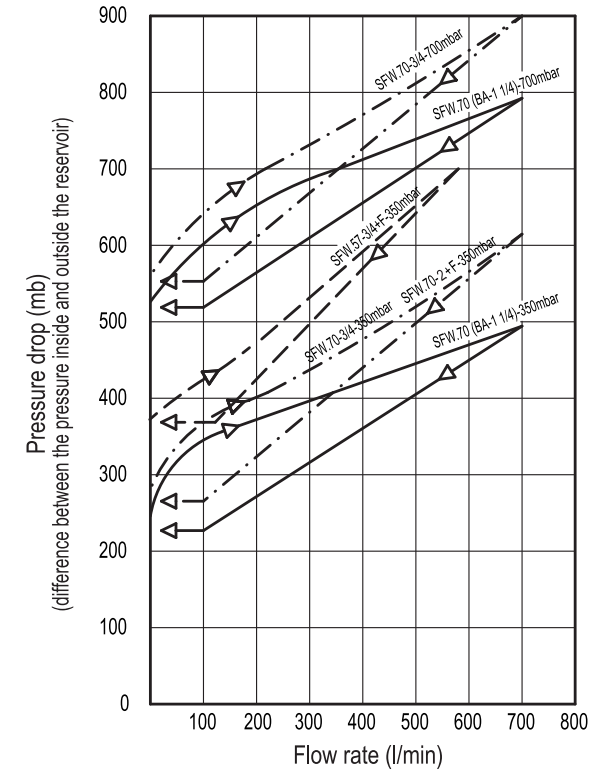
FEATURES

The use of SFW. pressurised breather caps which create a pressure plenum chamber right above the oil level within tested limit conditions, in order to avoid any reservoir deformation, offers the following advantages:

- reduces reservoir air volume intake keeping clean oil and filter
- improves suction pump action during working conditions reducing cavitation phenomenon
- prevents fluid leakage when the system is part of a mobile unit
- reduces foam in fluid.

TECHNICAL DATA

Air flow rate for each model can be determined from the graph calculating the difference between the pressure inside and outside the reservoir.



SFW+F

Code	Description	d	D	L	d2	d3	h	h1	Δ
54801	SFW.57-3/4+F-350 mb	G 3/4	57	48	16	35	13	6	67
54911	SFW.70-3/4+F-350 mb#	G 3/4	70	63	16	35	15	6	98
54921	SFW.70-1 1/4+F-350 mb	G1 1/4	70	59	23	-	17	-	101
54931	SFW.70-2+F-350 mb	G 2	70	59	23	-	17	-	108

SFW-BA+F

Code	Description	D	L	d2	d4	h	Δ
54941	SFW.70-BA+F-350 mb	70	56	30	39	14	105

SFW-BA+F+a

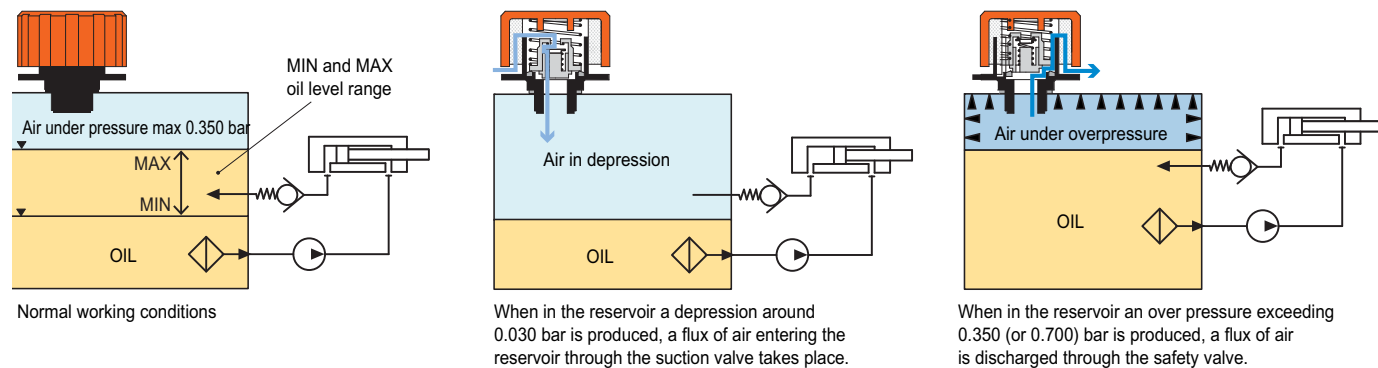
Code	Description	D	L	d2	d4	h	a	Δ
54943	SFW.70-BA+F+a-350 mb	70	56	30	39	14	195	124

SFW+F+a

Code	Description	d	D	L	d2	d3	h	h1	a	Δ
54913	SFW.70-3/4+F+a-350 mb#	G 3/4	70	63	16	35	15	6	188	117
54923	SFW.70-1 1/4+F+a-350 mb	G1 1/4	70	59	23	-	17	-	195	120

Types available on request with NPT thread (National Taper pipe Thread - ANSI-ASME B1-20).

SFW. pressurised breather cap functioning in a hydraulic circuit



Pressurised breather caps

with double valve and vandal-proof device, technopolymer

MATERIAL

- Cover: polyamide based (PA) technopolymer, black colour, matte finish. Graphic symbol "double valve".
- Threaded connector: acetal based technopolymer (POM), black colour, matte finish.

PACKING RING

NBR synthetic rubber.

OVERPRESSURE VALVE

Technopolymer with NBR synthetic rubber O-ring and stainless steel spring.
Set at around 0.350 bar (on request 0.700 bar).

SUCTION VALVE

Technopolymer sealing disk with NBR synthetic rubber O-ring and stainless steel spring.
Set at around 0.030 bar.

RING-SHAPED AIR FILTER

"Tech-foam" polyurethane foam mesh (polyester base), air filtration 40 μ.

KEY

Acetal resin-based (POM) technopolymer, red colour, with stainless steel anti-intrusion-profile insert. Folding. On request it can be supplied in black colour too.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

"VANDAL-PROOF" SAFETY DEVICE (ELESA PATENT)

It is especially designed to prevent the cap from being unscrewed without permission. It is provided with a "controlled-torque" mechanism which guarantees the best seal of the packing ring.

SPECIAL EXECUTIONS ON REQUEST

Flat dipstick, flat section phosphatised steel.

APPLICATIONS

SFW-VP pressurised breather caps are suitable for material handling equipment, machines for the agriculture sector and in general for those machines which remain unattended.

Thanks to its small dimensions, the key can be kept together with others (e.g. starting key of the engine).



FEATURES

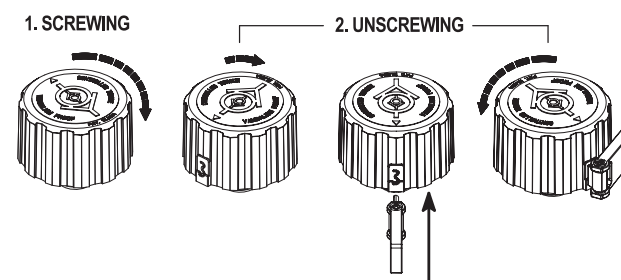
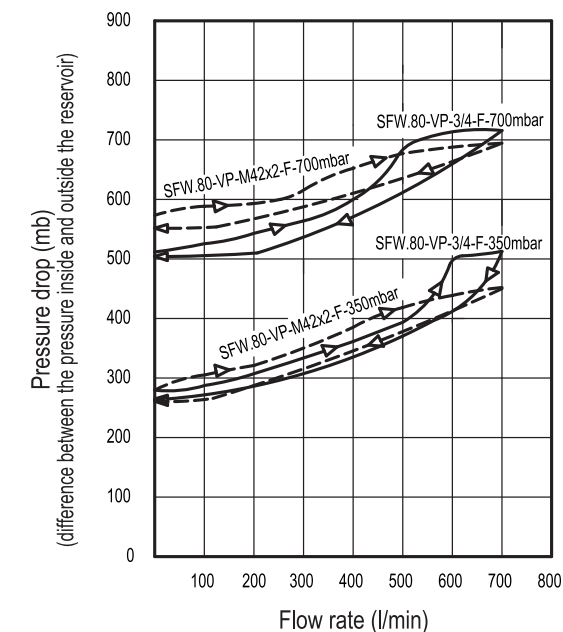
The use of SFW-VP pressurised breather cap which create a pressure plenum chamber right above the oil level within tested limit conditions, in order to avoid any reservoir deformation, offers also other advantages (see features of the breather caps type SFW. on page 1712).

TECHNICAL DATA

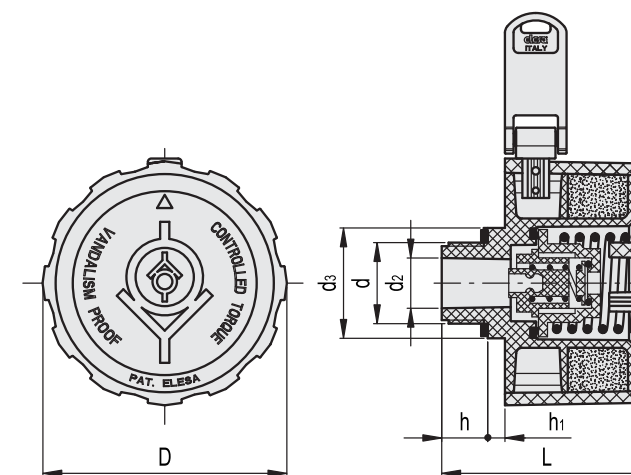
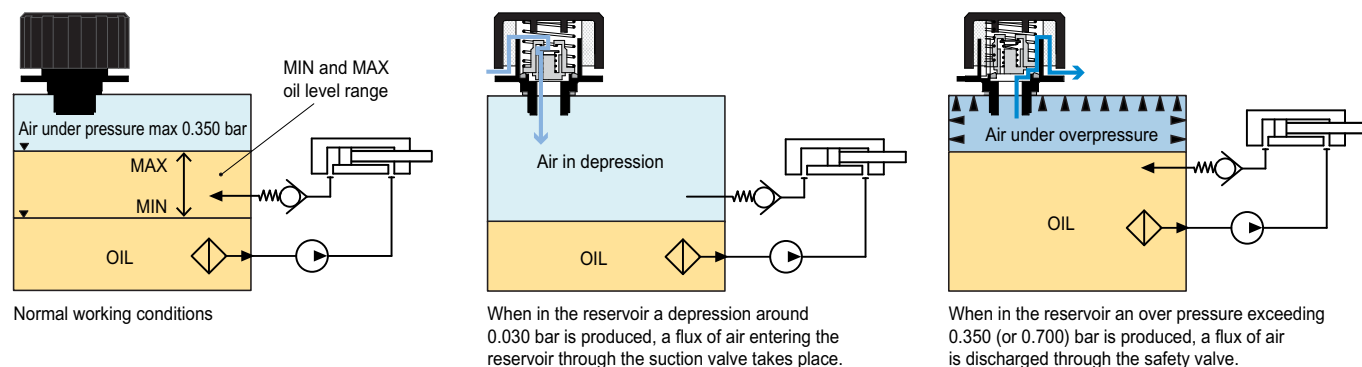
Air flow rate for each model can be determined from the graph calculating the difference between the pressure inside and outside the reservoir.

"VANDAL-PROOF" SAFETY DEVICE FUNCTIONING

- Cap screwing.
Take out the key and screw the cap clockwise until the friction-click controlled torque mechanism is engaged so that to guarantee the best sealing of the packing ring. The maximum torque is reached at the first mechanism release (click).
After that, the cap can neither be screwed (to protect the packing ring) nor unscrewed (to protect the cap from any tampering attempt).
WARNING: during screwing the key must not be inserted.
- Cap unscrewing.
Turn the cap clockwise until one of the two resistance points is reached. Only at one of these two positions the key, which couples the cover to the threaded connector, can be completely inserted and the cap can be unscrewed.



SFW.VP pressurised breather cap functioning in a hydraulic circuit



Code	Description	d	D	L	d2	d3	h	h1	Δ
54961	SFW.80-VP-3/4-F-350mb	G 3/4	80	68	16	36	15	5.5	140
54967	SFW.80-VP-M42x2-F-350mb	M42x2	80	74	32	47	21	4	150

Pressurised breather caps

with double valve and threaded connector, steel

MATERIAL

- Cover: steel sheet, with chrome plating superficial treatment.
- Flange: zinc-plated steel sheet.
- Threaded connector: zinc-plated steel.

PACKING RING

NBR synthetic rubber.

OVERPRESSURE VALVE (ONLY FOR SMW.)

Technopolymer with NBR synthetic rubber O-ring and stainless steel spring.
Set at around 0.350 bar (0.700 bar on request).

SUCTION VALVE (ONLY FOR SMW.)

Technopolymer sealing disk with NBR synthetic rubber O-ring and stainless steel spring.
Set at around 0.030 bar.

RING-SHAPED AIR FILTER

Tech-foam 40 μ.

FILTER SETTING SPRING (ONLY FOR SMN.)

Zinc-plated steel.

STANDARD EXECUTIONS

- **SMN.:** breather cap.
- **SMW.:** double-valve breather cap.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

SPECIAL EXECUTIONS ON REQUEST

With dipstick for fluid level indication (only for SMW.).



FEATURES AND APPLICATIONS

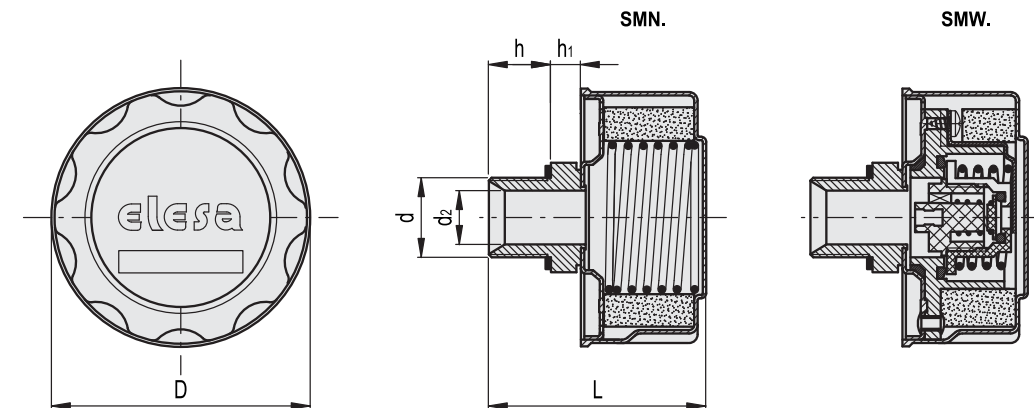
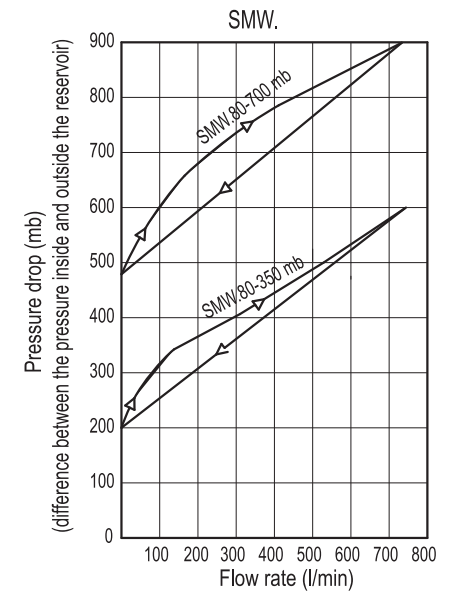
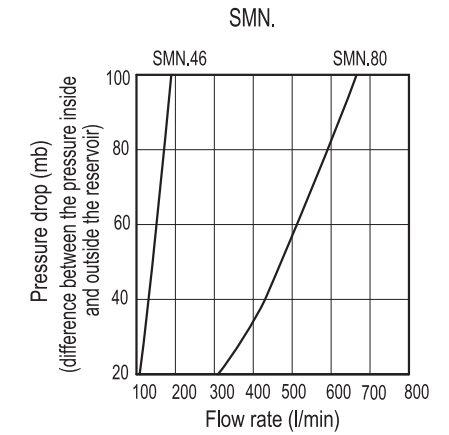
Double-valve breather cap SMW. creates a pressure plenum chamber right above the oil level within given limit conditions in order to avoid any reservoir deformation.

Advantages:

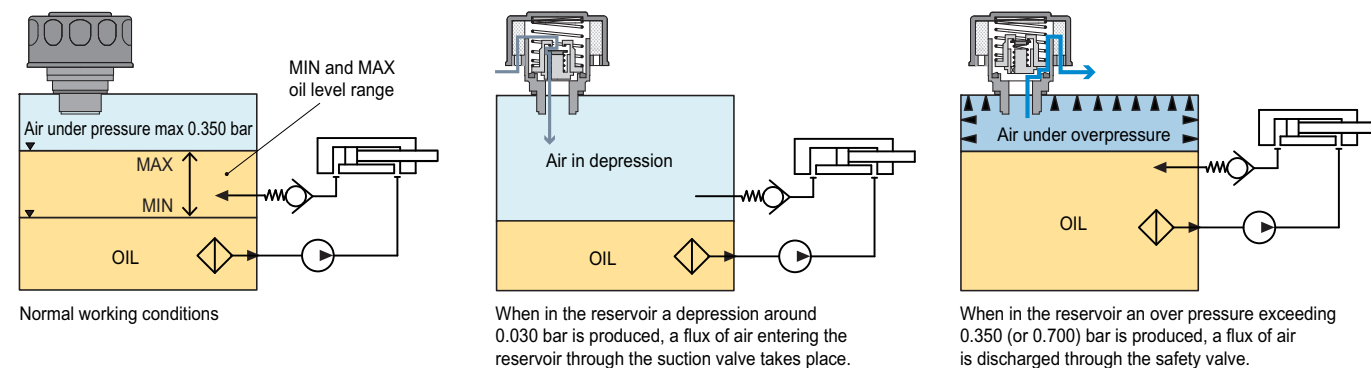
- it reduces reservoir air volume intake keeping clean fluid and filter;
- it improves suction pump action under working conditions reducing cavitation phenomenon;
- it prevents fluid leakage when the system is part of a mobile unit;
- it reduces foam in fluid.

TECHNICAL DATA

Air flow rate for the different executions of breather caps can be obtained from the diagram on the basis of the difference of air pressure inside and outside the reservoir.



SMW. pressurised breather cap functioning in a hydraulic circuit



SMN.

Code	Description	d	D	L	d2	h	h1	⚖
156833	SMN.46-1/4-F40	G 1/4	47	51	7	10	5	57
156883	SMN.80-3/4-F40	G 3/4	81	70	17	16	12	239

SMW.

Code	Description	d	D	L	d2	h	h1	⚖
156983	SMW.80-3/4-F40-350mb	G 3/4	81	70	17	16	12	308

Pressurised breather caps

with double valve and bayonet assembly, steel

MATERIAL

- Cover: steel sheet, with chrome plating superficial treatment.
- Flange: zinc-plated steel sheet.
- Bayonet and flange with bayonet: zinc-plated steel sheet.

PACKING RINGS

- SMN.46: two flat packing rings in rubber-impregnated cork and one in NBR synthetic rubber.
- SMN.80 SMW.80: three flat packing rings in rubber-impregnated cork.

OVERPRESSURE VALVE (ONLY FOR SMW-BA)

Technopolymer with NBR synthetic rubber O-ring and stainless steel spring.
Set at around 0.350 bar (0.700 bar on request).

SUCTION VALVE (ONLY FOR SMW-BA)

Technopolymer sealing disk with NBR synthetic rubber O-ring and stainless steel spring.
Set at around 0.030 bar.

RING-SHAPED AIR FILTER

Tech-foam 40 µ.

FILTER SETTING SPRING (ONLY FOR SMN-BA)

Zinc-plated steel.

FILTRATION BASKET

Electro zinc-plated steel, degree of filtration 800 µ.

SAFETY CHAIN (ONLY FOR SMN.80-BA/SMW.80-BA)

Brass

STANDARD EXECUTIONS

- **SMN-BA**: breather cap.
- **SMW-BA**: double-valve breather cap.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

SPECIAL EXECUTIONS ON REQUEST

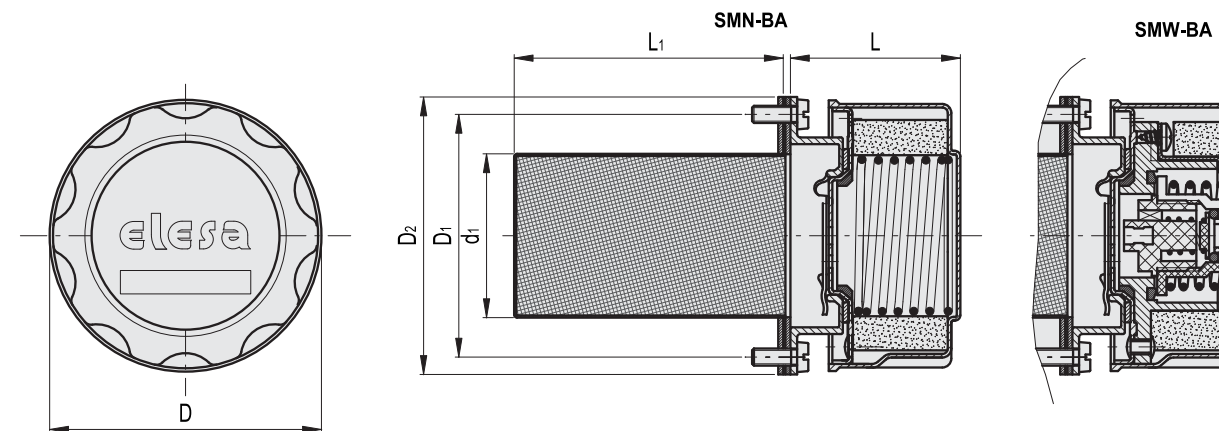
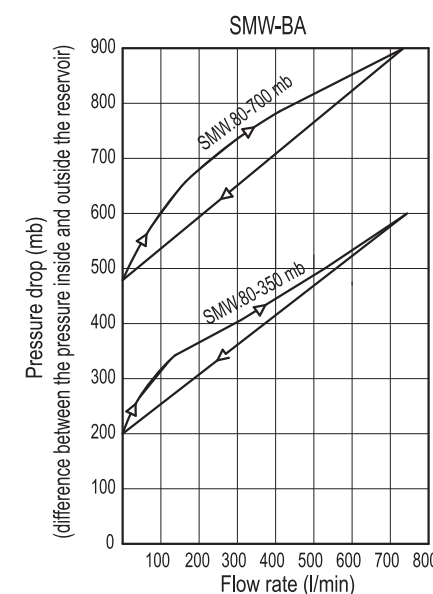
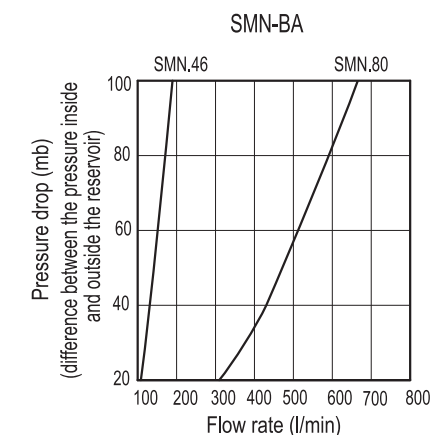
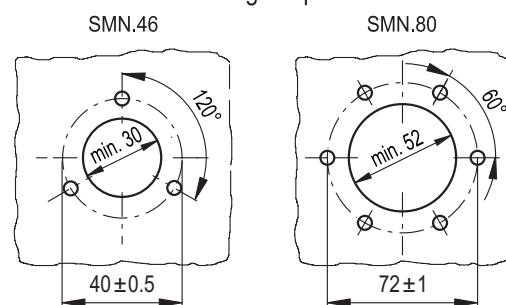
With dipstick for fluid level indication (only for SMW-BA).



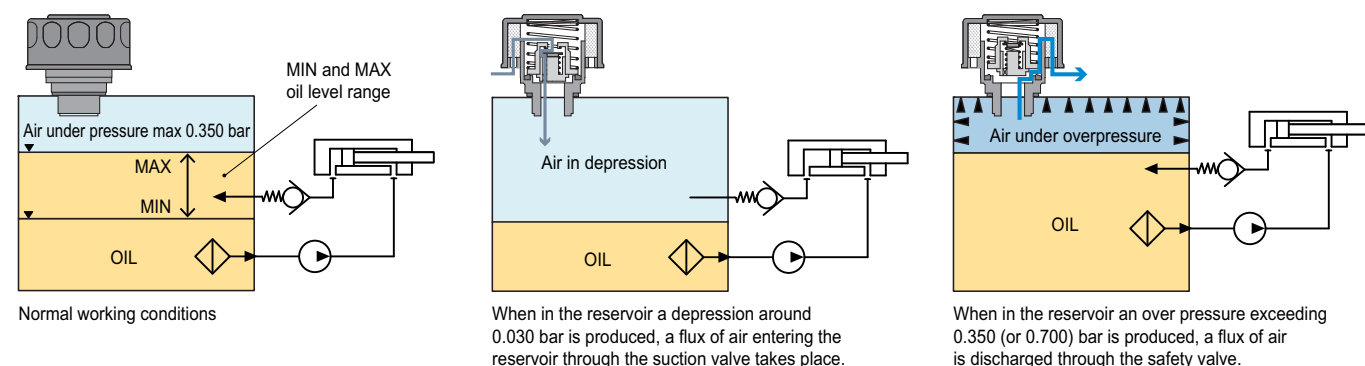
MOUNTING

- SMN.46: by means of three glossy zinc-plated steel screws with screwdriver slot head M5x12, supplied.
- SMN.80 SMW.80: by means of six glossy zinc-plated steel screws with screwdriver slot head M5x12, supplied.

Drilling templates



SMW-BA pressurised breather cap functioning in a hydraulic circuit



SMN-BA

Code	Description	D	D1	D2	L	L1	d1	⚖️
156836	SMN.46-BA-F40	47	40	52	42	66	27	91
156886	SMN.80-BA-F40	81	72	83	55	80	49	370

SMW-BA

Code	Description	D	D1	D2	L	L1	d1	⚖️
156986	SMW.80-BA-F40-350mb	81	72	83	55	80	49	410

Flange

for threaded cap, technopolymer

MATERIAL

- Flange: glass-fibre reinforced polyamide based (PA) technopolymer with threaded connector.
- Basket: polypropylene based (PP) technopolymer.

COLOUR

Black, matte finish.

PACKING RINGS

Cork impregnated MGS based rubber.

MOUNTING

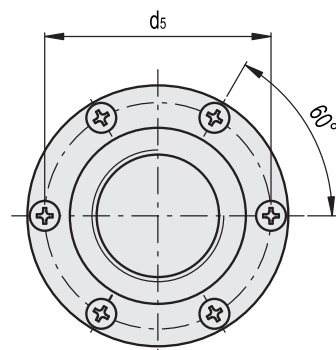
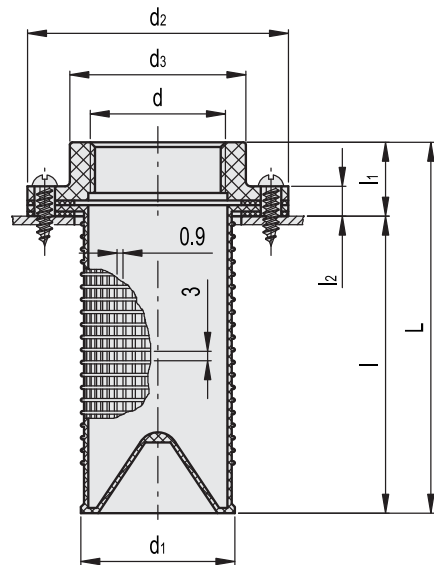
By means of six zinc-plated steel self-tapping screws TC-N10 (Ø 4.8x19) UNI 6951-DIN 7971, supplied.

NOTE

The breather cap to be coupled to the flange is not included in the supply and has to be ordered separately. Depending on the customer's requirements, can be used breather caps type SFN. (see page 1698), SFP. (see page 1702), SFW. (see page 1712).

SPECIAL EXECUTIONS ON REQUEST

Threaded flange without basket (FRF).



Code	Description	d	L	d1	d2	d3	d5	l	l1	l2	△
9101	FRF+C	G 1¼	118	49	83	56	72	93.5	24.5	10.5	105

Flange

for bayonet cap, technopolymer

MATERIAL

- Flange: zinc-plated steel with bayonet connector.
- Basket: polypropylene based (PP) technopolymer, black colour.

PACKING RINGS

Cork impregnated MGS based rubber.

MOUNTING

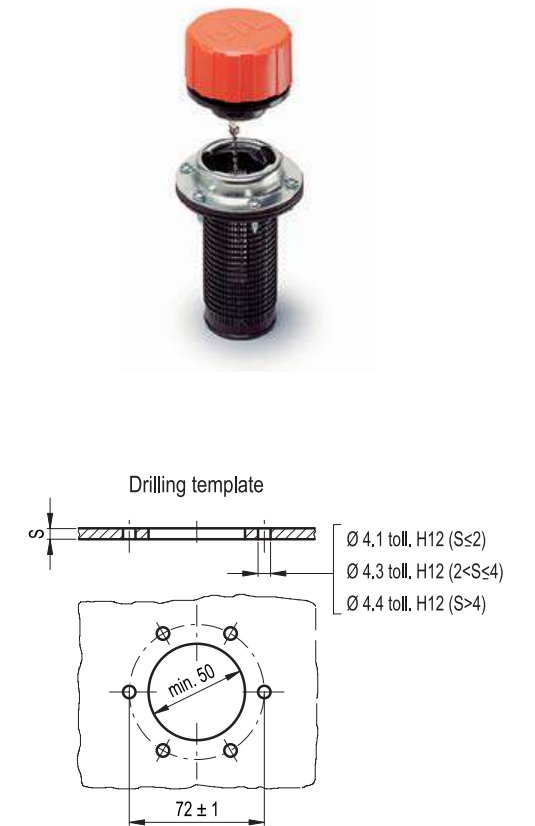
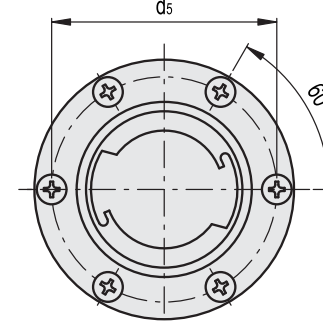
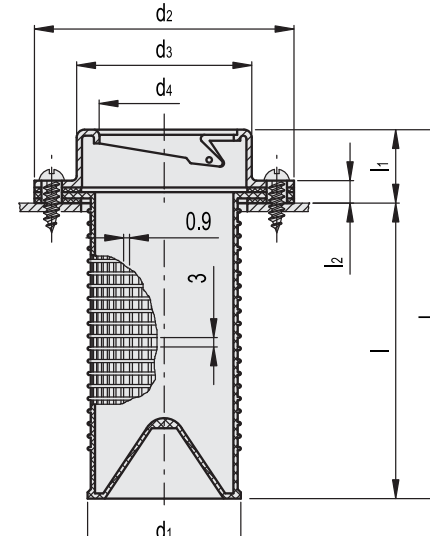
By means of six zinc-plated steel self-tapping screws TC-N10 (Ø 4.8x19) UNI 6951-DIN 7971, supplied.

NOTE

The breather cap to be coupled to the flange is not included in the supply and has to be ordered separately. Depending on the customer's requirements, can be used breather caps type SFN. (see page 1698), SFP. (see page 1702), SFW. (see page 1712).

SPECIAL EXECUTIONS ON REQUEST

Flange with bayonet connector without basket (FRB).



Code	Description	L	d1	d2	d3	d4	d5	l	l1	l2	△
9201	FRB+C	114.5	49	83	58	39	72	94.5	20	7	125

Side mount

for threaded cap, technopolymer

MATERIAL

- Mount: polyamide based (PA) technopolymer with NBR synthetic rubber packing ring.
- Flange: glass-fibre reinforced polyamide based (PA) technopolymer, threaded connector with flat gasket in cork impregnated MGS based rubber
- Basket: polypropylene based (PP) technopolymer.

COLOUR

Black, matte finish.

MOUNTING

Flange and basket are fitted to the mount by means of six zinc-plated steel self-tapping screws TC-N10 (Ø 4.8x19) UNI 6951-DIN 7971, supplied.

The mount is fitted to the reservoir by means of seven M6 screws and relative washers (not supplied).

Maximum recommended tightening torque: 8 Nm.

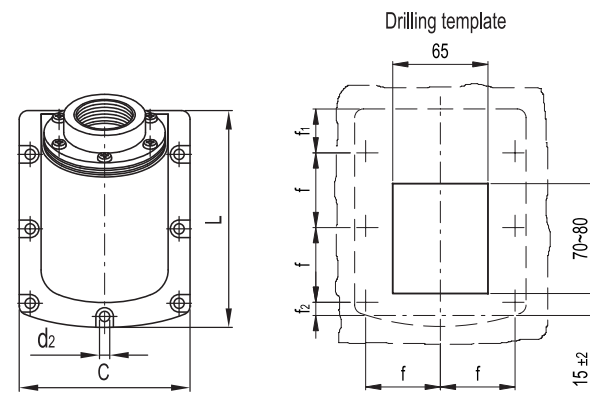
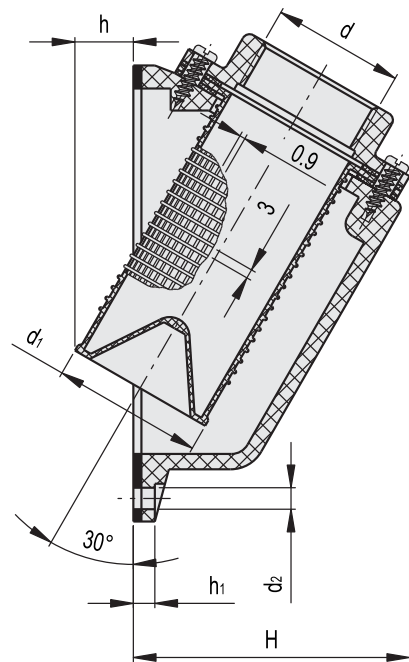
NOTE

The breather cap to be coupled to the flange is not included in the supply and has to be ordered separately.

Depending on the customer's requirements, can be used breather caps type SFN. (see page 1698), SFP. (see page 1702), SFW. (see page 1712).

SPECIAL EXECUTIONS ON REQUEST

Mount with threaded flange without basket (PLRF).



Code	Description	d	L	C	H	d1	d2	h	h1	f	f1	f2	⚖
49411	PLRF+C	G 1¼	148.5	117	92	49	7	18	7	51	30	9	335

Side mount

for bayonet cap, technopolymer

MATERIAL

- Mount: polyamide based (PA) technopolymer with NBR synthetic rubber packing ring.
- Flange: zinc-plated steel, bayonet with flat gasket in cork impregnated MGS based rubber.
- Basket: polypropylene based (PP) technopolymer.

COLOUR

Black, matte finish.

MOUNTING

Flange and basket are fitted to the mount by means of six zinc-plated steel self-tapping screws TC-N10 (Ø 4.8x19) UNI 6951-DIN 7971, supplied.

The mount is fitted to the reservoir by means of seven M6 screws and relative washers (not supplied).

Maximum recommended tightening torque: 8 Nm.

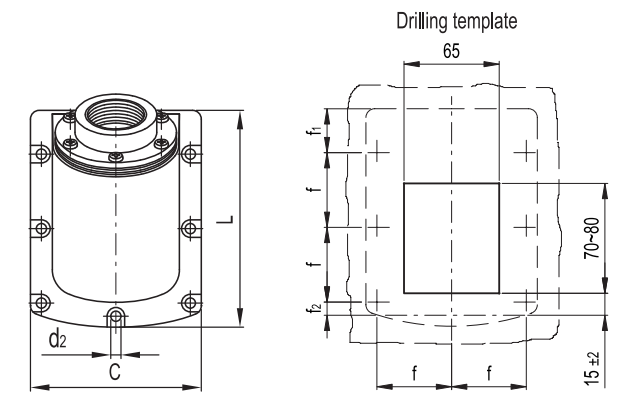
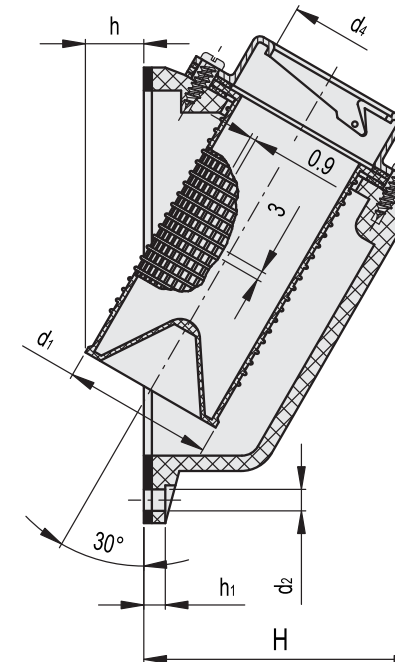
NOTE

The breather cap to be coupled to the flange is not included in the supply and has to be ordered separately.

Depending on the customer's requirements, can be used breather caps type SFN. (see page 1698), SFP. (see page 1702), SFW. (see page 1712).

SPECIAL EXECUTIONS ON REQUEST

Mount with bayonet flange without basket (PLRB).



Code	Description	L	C	H	d1	d2	d4	h	h1	f	f1	f2	⚖
49401	PLRB+C	148.5	117	90	49	7	39	18	7	51	30	9	355

Oil level indicators

Technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black or red colour, glossy finish (HGFT/SL only black colour).

WINDOW

Transparent polyamide based (PA-T/AR) technopolymer.

PACKING RING

NBR synthetic rubber.

STANDARD EXECUTIONS

- **HGFT.**: with matte anodised aluminium star-shaped contrast screen with red central level point.
- **HGFT/SL**: without contrast screen.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

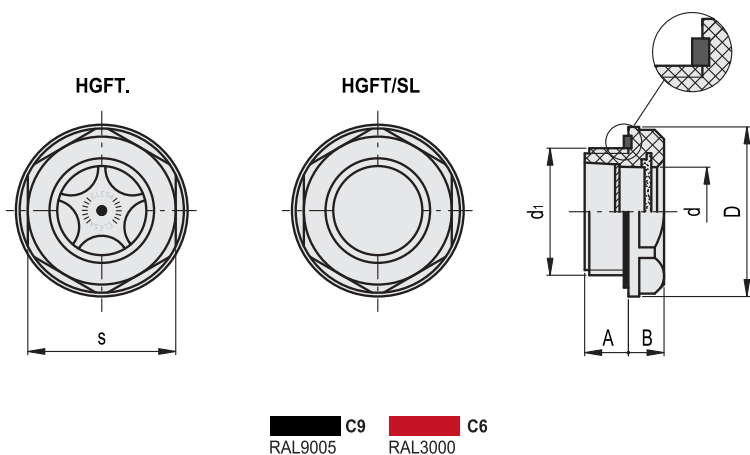
100°C at 3 bar pressure.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



C9 RAL9005
 C6 RAL3000

HGFT.

Code	Description	Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
14441	HGFT.10-3/8 C9	14444	HGFT.10-3/8 C6	G 3/8	8	7	24	11	22	4÷8	4
14461	HGFT.13-1/2 C9	14464	HGFT.13-1/2 C6	G 1/2	10	8.5	28	14.5	24	6÷8	6
14481	HGFT.16-3/4 C9	14484	HGFT.16-3/4 C6	G 3/4	9.5	8.5	35	18	32	8÷10	10
14521	HGFT.21-1 C9	14524	HGFT.21-1 C6	G 1	11	9.5	42.5	23	38	10÷12	15
14541	HGFT.25-1¼ C9	14544	HGFT.25-1¼ C6	G 1¼	11	9	50	30	46	12÷15	30
14561	HGFT.40-2 C9	14564	HGFT.40-2 C6	G 2	12	11	68	40	62	12÷15	60

HGFT/SL

Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
14446	HGFT.10/SL-3/8	G 3/8	8	7	24	11	22	4÷8	3
14466	HGFT.13/SL-1/2	G 1/2	10	8.5	28	14.5	24	6÷8	5
14486	HGFT.16/SL-3/4	G 3/4	9.5	8.5	35	18	32	8÷10	9
14526	HGFT.21/SL-1	G 1	11	9.5	42.5	23	38	10÷12	14
14546	HGFT.25/SL-1¼	G 1¼	11	9	50	30	46	12÷15	29
14566	HGFT.40/SL-2	G 2	12	11	68	40	62	12÷15	59

Oil level indicators

Technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black colour, glossy finish.

WINDOW

Transparent polyamide based (PA-T/AR) technopolymer.

PACKING RING

NBR synthetic rubber.

STANDARD EXECUTIONS

- **HGFT-EX**: with matte anodised aluminium star-shaped contrast screen with red central level point.
- **HGFT/SL-EX**: without contrast screen.

ATEX DIRECTIVE COMPLIANCE

The level indicators of the HGFT-EX series comply with Health and Safety Requirements intended in 94/9/EC ATEX European Directive (explosive atmospheres) for equipments in Group II, category 2GD. Level indicators have "kX" protection degree and can therefore be mounted on equipment protected by means of "immersion in liquid", without lowering protection degree.

II 2 G D k T6 X, marked on the HGFT-EX level indicators, represents the identification according to ATEX directive.

II: group of substances for which the product is suitable

2: identification of the category

G: identification of the type of explosive atmosphere (Gases or vapours)

D: identification of the type of explosive atmosphere (Dust)

kX: protection degree by means of immersion in liquid

IIB: explosive gases group (only for HGFT.16)

T6: temperature class

Ambient and/or fluid temperature: -30 to +80°C

The declaration of conformity to European Directives of this product is available and it is part of the product itself.

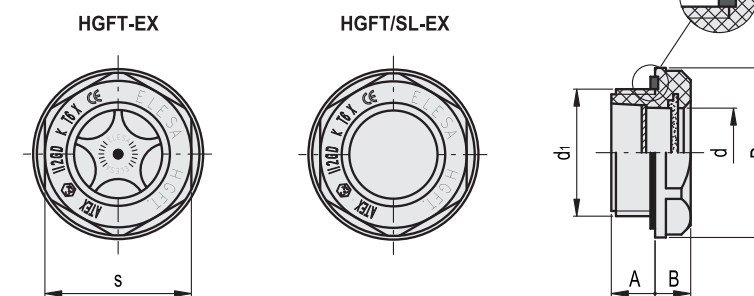


NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



HGFT-EX

Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
14441-EX	HGFT.10-3/8-C9-EX	G 3/8	8	7	24	11	22	4÷8	4
14461-EX	HGFT.13-1/2-C9-EX	G 1/2	10	8.5	28	14.5	24	6÷8	6
14481-EX	HGFT.16-3/4-C9-EX	G 3/4	9.5	8.5	35	18	32	8÷10	10

HGFT/SL-EX

Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
14446-EX	HGFT.10/SL-3/8-C9-EX	G 3/8	8	7	24	11	22	4÷8	3
14466-EX	HGFT.13/SL-1/2-C9-EX	G 1/2	10	8.5	28	14.5	24	6÷8	5
14486-EX	HGFT.16/SL-3/4-C9-EX	G 3/4	9.5	8.5	35	18	32	8÷10	9

Oil level sight glasses

Aluminum / natural glass, up to 100°C

SPECIFICATION

Types

- Type **A**: with contrast screen, blank
- Type **AS**: with contrast screen, black anodized
- Type **B**: without contrast screen, blank
- Type **BS**: without contrast screen, black anodized

Body

Aluminium

- Type A and B: fine turned, blank
- Type AS and BS: fine turned, black anodized

Contrast screen

Technopolymer (Polysulfon)

- temperature resistant up to **100 °C**
- Sight glass Float-glass
- Sealing ring rubber NBR (Perbunan)

INFORMATION

Oil level sight glasses GN 743 offer genuine glass of high stability and scratch proof. The sealing is achieved with an O-ring on the **periphery** and not on the face edge of the glass. Leak tightness is therefore not affected by axial pressures.

The outside diameter of these oil level sight glasses with recessed hexagon is chosen to match mounting holes for tube connections according to DIN 3852.

The seal is housed in a groove and it can therefore not be lost. In addition, this groove prevents the seal from being extruded when the sight glass is tightened.

Oil level sight glasses GN 743 can be used on pressurised oil tanks. Tests regarding maximum pressure are available on request.

Assembly instruction:

For mounting on walls of less than 4 mm thickness please use a fixing nut GH. (see page 1743).

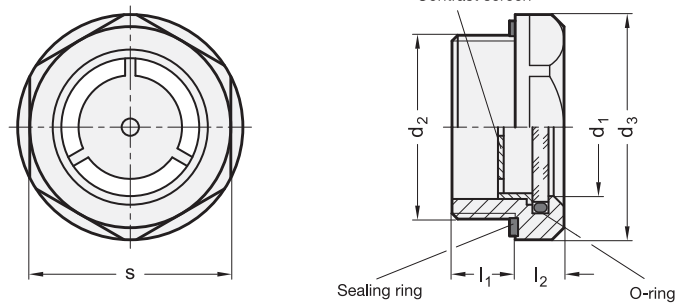
- RoHS compliant (only types AS and BS)

ACCESSORY

- Fixing nut GH. (see page 1743)

ON REQUEST

- EPDM seal



*Complete with type index of the Oil level sight glasses

A AS B BS

GN 743

Description	d1	d2	d3	l1	l2	s	⚖
GN 743-7-M14x1,5-*	7	M 14 x 1.5	20	7.5	6.5	18	6
GN 743-11-M16x1,5-*	11	M 16 x 1.5	22	8	7.5	20	10
GN 743-14-M20x1,5-*	14	M 20 x 1.5	26	8.5	7.5	23	12
GN 743-18-M26x1,5-*	18	M 26 x 1.5	32	9	8	30	18
GN 743-18-M27x1,5-*	18	M 27 x 1.5	32	9	8	30	18
GN 743-24-M33x1,5-*	24	M 33 x 1.5	40	11	8.5	36	26
GN 743-32-M40x1,5-*	32	M 40 x 1.5	50	12	9	46	39
GN 743-32-M42x1,5-*	32	M 42 x 1.5	50	12	9	46	48
GN 743-7-G1/4-*	7	G 1/4	20	7.5	6.5	18	9
GN 743-11-G3/8-*	11	G 3/8	22	8	7.5	20	10
GN 743-14-G1/2-*	14	G 1/2	26	8.5	7.5	23	12
GN 743-18-G3/4-*	18	G 3/4	32	9	8	30	18
GN 743-24-G1-*	24	G 1	40	11	8.5	36	26
GN 743-32-G1 1/4-*	32	G 1 1/4	50	12	9	46	40
GN 743-32-G1 1/2-*	32	G 1 1/2	60	13	9	55	80

Weight type A

Oil level sight glasses

Aluminum / natural glass, up to 180°C

SPECIFICATION

Types

- Type **A**: with contrast screen, blank
- Type **AS**: with contrast screen, black anodized
- Type **B**: without contrast screen, blank
- Type **BS**: without contrast screen, black anodized

Body

Aluminium

- Type A and B: fine turned, blank
- Type AS and BS: fine turned, black anodized

Contrast screen

Technopolymer (Polysulfon)

- temperature resistant up to **180 °C**
 - Sight glass ESG-glass
 - Sealing ring rubber FPM (Viton®)
- Identification by not black finish of the sealing ring



INFORMATION

Oil level sight glasses GN 743.1 offer genuine glass of high stability and scratch proof. The sealing is achieved with an O-ring on the **periphery** and not on the face edge of the glass. Leak tightness is therefore not affected by axial pressures.

The outside diameter of these oil level sight glasses with recessed hexagon is chosen to match mounting holes for tube connections according to DIN 3852.

The seal is housed in a groove and it can therefore not be lost. In addition, this groove prevents the seal from being extruded when the sight glass is tightened.

Oil level sight glasses GN 743.1 can be used on pressurised oil tanks. Tests regarding maximum pressure are available on request.

Assembly instruction:

For mounting on walls of less than 4 mm thickness please use a fixing nut GH. (see page 1743).

- RoHS compliant (only types AS and BS)

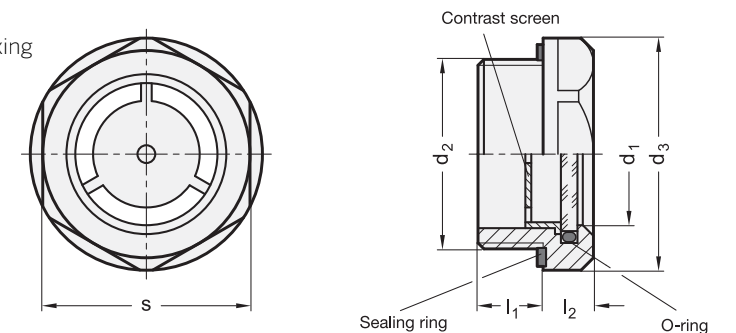
* Complete with type index of the Oil level sight glasses

A AS B BS

GN 743.1

Description	d1	d2	d3	l1	l2	s	⚖
GN 743.1-7-M14x1,5-*	7	M 14 x 1.5	20	7.5	6.5	18	6
GN 743.1-11-M16x1,5-*	11	M 16 x 1.5	22	8	7.5	20	8
GN 743.1-14-M20x1,5-*	14	M 20 x 1.5	26	8.5	7.5	23	10
GN 743.1-18-M26x1,5-*	18	M 26 x 1.5	32	9	8	30	18
GN 743.1-18-M27x1,5-*	18	M 27 x 1.5	32	9	8	30	18
GN 743.1-24-M33x1,5-*	24	M 33 x 1.5	40	11	8.5	36	26
GN 743.1-32-M40x1,5-*	32	M 40 x 1.5	50	12	9	46	45
GN 743.1-32-M42x1,5-*	32	M 42 x 1.5	50	12	9	46	43
GN 743.1-7-G1/4-*	7	G 1/4	20	7.5	6.5	18	6
GN 743.1-11-G3/8-*	11	G 3/8	22	8	7.5	20	9
GN 743.1-14-G1/2-*	14	G 1/2	26	8.5	7.5	23	12
GN 743.1-18-G3/4-*	18	G 3/4	32	9	8	30	18
GN 743.1-24-G1-*	24	G 1	40	11	8.5	36	31
GN 743.1-32-G1 1/4-*	32	G 1 1/4	50	12	9	46	45
GN 743.1-32-G1 1/2-*	32	G 1 1/2	60	13	9	55	91

Weight type A



Oil level sight glasses

Brass / natural glass, up to 100°C

SPECIFICATION

Types

- Type **A**: with contrast screen
- Type **B**: without contrast screen

- Body
Brass
CuZn40Pb2
- Contrast screen
Technopolymer (Polysulfon)
- temperature resistant up to **100 °C**
 - Sight glass Float-glass
 - Sealing ring rubber NBR (Perbunan)



INFORMATION

Oil level sight glasses GN 743.2 offer genuine glass of high stability and scratch proof. The sealing is achieved with an O-ring on the **periphery** and not on the face edge of the glass. Leak tightness is therefore not affected by axial pressures.

The outside diameter of these oil level sight glasses with recessed hexagon is chosen to match mounting holes for tube connections according to DIN 3852.

The seal is housed in a groove and it can therefore not be lost. In addition, this groove prevents the seal from being extruded when the sight glass is tightened.

Oil level sight glasses GN 743.2 can be used on pressurised oil tanks. Tests regarding maximum pressure are available on request.

Assembly instruction:

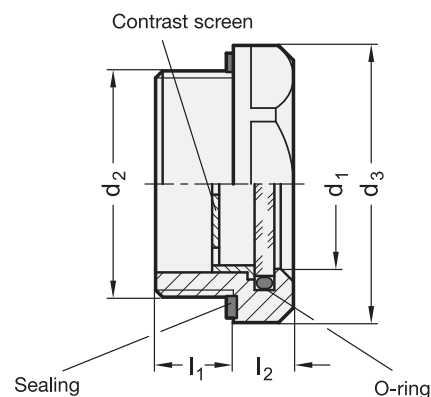
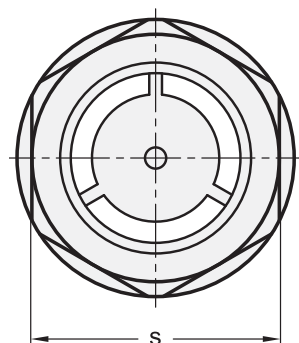
For mounting on walls of less than 4 mm thickness please use a fixing nut GH. (see page 1743).

ACCESSORY

- Fixing nut GH. (see page 1743)

ON REQUEST

- EPDM seal



* Complete with type index of the Oil level sight glasses

- A** with contrast screen
B without contrast screen

GN 743.2

Description	d1	d2	d3	l1	l2	s	Δ
GN 743.2-11-M16x1,5-*	11	M 16 x 1.5	22	8	7.5	20	19
GN 743.2-14-M20x1,5-*	14	M 20 x 1.5	26	8.5	7.5	23	23
GN 743.2-18-M26x1,5-*	18	M 26 x 1.5	32	9	8	30	44
GN 743.2-18-M27x1,5-*	18	M 27 x 1.5	32	9	8	30	46
GN 743.2-24-M33x1,5-*	24	M 33 x 1.5	40	11	8.5	36	70
GN 743.2-11-G3/8-*	11	G 3/8	22	8	7.5	20	20
GN 743.2-14-G1/2-*	14	G 1/2	26	8.5	7.5	23	23
GN 743.2-18-G3/4-*	18	G 3/4	32	9	8	30	44
GN 743.2-24-G1-*	24	G 1	40	11	8.5	36	69

Weight type A

Oil level sight glasses

Brass / natural glass, up to 180 °C

SPECIFICATION

Types

- Type **A**: with contrast screen
- Type **B**: without contrast screen

- Body
Brass
CuZn40Pb2
- Contrast screen
Technopolymer (Polysulfon)
- temperature resistant up to **180 °C**
 - Sight glass ESG-glass
 - Sealing ring rubber FPM (Viton®)
- Identification by not black finish of the sealing ring



INFORMATION

Oil level sight glasses GN 743.3 offer genuine glass of high stability and scratch proof. The sealing is achieved with an O-ring on the **periphery** and not on the face edge of the glass. Leak tightness is therefore not affected by axial pressures.

The outside diameter of these oil level sight glasses with recessed hexagon is chosen to match mounting holes for tube connections according to DIN 3852.

The seal is housed in a groove and it can therefore not be lost. In addition, this groove prevents the seal from being extruded when the sight glass is tightened.

Oil level sight glasses GN 743.3 can be used on pressurised oil tanks. Tests regarding maximum pressure are available on request.

Assembly instruction:

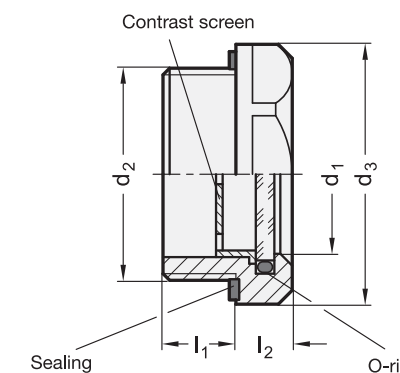
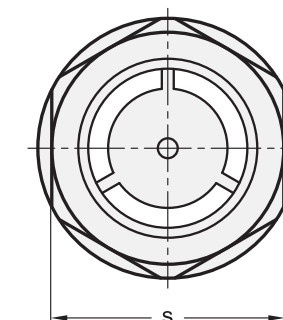
For mounting on walls of less than 4 mm thickness please use a fixing nut GH. (see page 1743).

ACCESSORY

- Fixing nut GH. (see page 1743)

ON REQUEST

- EPDM seal



* Complete with type index of the Oil level sight glasses

- A** with contrast screen
B without contrast screen

GN 743.3

Description	d1	d2	d3	l1	l2	s	Δ
GN 743.3-11-M16x1,5-A	11	M 16 x 1.5	22	8	7.5	20	19
GN 743.3-14-M20x1,5-A	14	M 20 x 1.5	26	8.5	7.5	23	23
GN 743.3-18-M26x1,5-A	18	M 26 x 1.5	32	9	8	30	44
GN 743.3-18-M27x1,5-A	18	M 27 x 1.5	32	9	8	30	46
GN 743.3-24-M33x1,5-A	24	M 33 x 1.5	40	11	8.5	36	70
GN 743.3-11-G3/8-A	11	G 3/8	22	8	7.5	20	20
GN 743.3-14-G1/2-A	14	G 1/2	26	8.5	7.5	23	23
GN 743.3-18-G3/4-A	18	G 3/4	32	9	8	30	43
GN 743.3-24-G1-A	24	G 1	40	11	8.5	36	65

Weight type A

Stainless Steel- Oil level sight glasses

Natural glass, up to 100 °C

SPECIFICATION

Types

- Type **A**: with contrast screen
- Type **B**: without contrast screen

Body

Stainless Steel AISI 303

Contrast screen (Type A)

Technopolymer (Polysulfan)

Circlip (Type B)

Stainless Steel AISI 301

- temperature resistant up to **100 °C**
- Sight glass Float-glass
- Sealing ring rubber NBR (Perbunan®)

INFORMATION

Stainless Steel-Oil level sight glasses GN 743.4 offer genuine glass of high stability and scratch proof. The sealing is achieved with an O-ring on the **periphery** and not on the face edge of the glass. Leak tightness is therefore not affected by axial pressures.

The outside diameter of these oil level sight glasses with recessed hexagon is chosen to match mounting holes for tube connections according to DIN 3852.

The seal is housed in a groove and it can therefore not be lost. In addition, this groove prevents the seal from being extruded when the sight glass is tightened.

Stainless Steel-Oil level sight glasses GN 743.4 can be used on pressurised oil tanks. Tests regarding maximum pressure are available on request.

ON REQUEST

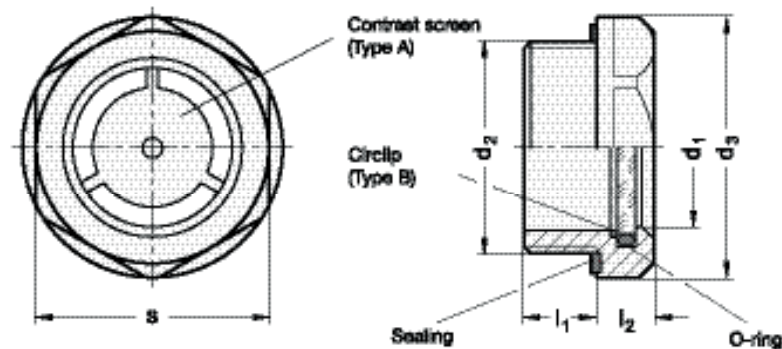
- EPDM seal

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Stainless Steel characteristics (see page A26)

* Complete with type index of the Oil level sight glasses

- A** with contrast screen **B** without contrast screen



GN 743.4

STAINLESS STEEL

Description	d1	d2	d3	l1	l2	s	△
GN 743.4-11-M16x1,5-*	11	M 16 x 1.5	22	8	7.5	20	20
GN 743.4-14-M20x1,5-*	14	M 20 x 1.5	26	8.5	7.5	23	20
GN 743.4-18-M26x1,5-*	18	M 26 x 1.5	32	9	8	30	40
GN 743.4-24-M33x1,5-*	24	M 33 x 1.5	40	11	8.5	36	63
GN 743.4-32-M42x1,5-*	32	M 42 x 1.5	50	12	9	46	101
GN 743.4-11-G3/8-*	11	G 3/8	22	8	7.5	20	20
GN 743.4-14-G1/2-*	14	G 1/2	26	8.5	7.5	23	52
GN 743.4-18-G3/4-*	18	G 3/4	32	9	8	30	55
GN 743.4-24-G1-*	24	G 1	40	11	8.5	36	61
GN 743.4-32-G1 1/4-*	32	G 1 1/4	50	12	9	46	99

Weight type A

Stainless Steel- Oil level sight glasses

Natural glass, up to 180 °C

SPECIFICATION

Types

- Type **A**: with contrast screen
- Type **B**: without contrast screen

Body

Stainless Steel AISI 303

Contrast screen (Type A)

Technopolymer (Polysulfan)

Circlip (Type B)

Stainless Steel AISI 301

- temperature resistant up to **180 °C**
 - Sight glass ESG-glass
 - Sealing ring rubber FPM (Viton®)
- Identification by not black finish of the sealing ring

INFORMATION

Stainless Steel-Oil level sight glasses GN 743.5 offer genuine glass of high stability and scratch proof. The sealing is achieved with an O-ring on the periphery and not on the face edge of the glass. Leak tightness is therefore not affected by axial pressures.

The outside diameter of these oil level sight glasses with recessed hexagon is chosen to match mounting holes for tube connections according to DIN 3852.

The seal is housed in a groove and it can therefore not be lost. In addition, this groove prevents the seal from being extruded when the sight glass is tightened.

Stainless Steel-Oil level sight glasses GN 743.5 can be used on pressurised oil tanks. Tests regarding maximum pressure are available on request.

ON REQUEST

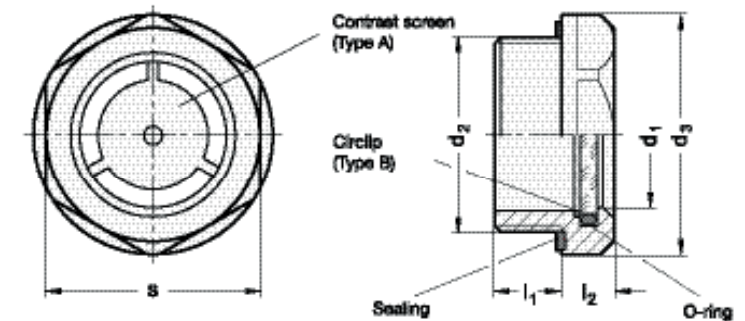
- EPDM seal

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Stainless Steel characteristics (see page A26)

* Complete with type index of the Oil level sight glasses

- A** with contrast screen **B** without contrast screen



GN 743.5

STAINLESS STEEL

Description	d1	d2	d3	l1	l2	s	△
GN 743.5-11-M16x1,5-*	11	M 16 x 1.5	22	8	7.5	20	19
GN 743.5-14-M20x1,5-*	14	M 20 x 1.5	26	8.5	7.5	23	20
GN 743.5-18-M26x1,5-*	18	M 26 x 1.5	32	9	8	30	42
GN 743.5-24-M33x1,5-*	24	M 33 x 1.5	40	11	8.5	36	64
GN 743.5-32-M42x1,5-*	32	M 42 x 1.5	50	12	9	46	90
GN 743.5-11-G3/8-*	11	G 3/8	22	8	7.5	20	19
GN 743.5-14-G1/2-*	14	G 1/2	26	8.5	7.5	23	23
GN 743.5-18-G3/4-*	18	G 3/4	32	9	8	30	41
GN 743.5-24-G1-*	24	G 1	40	11	8.5	36	64
GN 743.5-32-G1 1/4-*	32	G 1 1/4	50	12	9	46	102

Weight type A

ATEX-Sight glasses

Aluminium / Natural glass

SPECIFICATION

Body
Aluminium
Surface fine turned
Sight glass
ESG-glass
Sealing ring
rubber FPM (Viton®)
Circlip
Stainless Steel AISI 301
Temperature range:
-20 °C up to +150 °C



INFORMATION

ATEX-Sight glasses GN 743.6 are suitable for use in an explosion risk environment. They comply with the guidelines 94/9/EG. Detailed documentation is available and forms part of an order for this product.

A detailed operating instruction is included.

In addition, the body is provided with an ATEX-label.

Further salient points of the oil level sight glasses GN 743.6 are:

Genuine glass of high stability and scratch proof. The sealing is achieved with an O-ring on the **periphery** and not on the face edge of the glass. Leak tightness is therefore not affected by axial pressures.

The sealing ring is embedded in a radial groove and cannot drop out, nor can it be extruded when tightening torque is applied.

Sight glasses GN 743.6 can be used on pressurised oil tanks. Tests regarding maximum pressure are available on request.

Assembly instruction:

For mounting on walls of less than 4 mm thickness please use a fixing nut GH. (see page 1743).

ACCESSORY

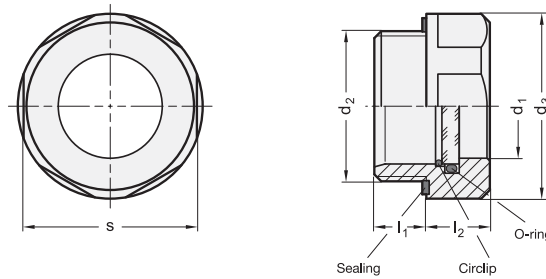
- Fixing nut GH. (see page 1743)

ON REQUEST

- EPDM seal

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Stainless Steel characteristics (see page A26)



GN 743.6

Description	d1	d2	d3	l1	l2	s	Δ
GN 743.6-11-M16x1,5	11	M16 x 1.5	22	8	8	20	18
GN 743.6-14-M20x1,5	14	M20 x 1.5	26	8.5	9	23	20
GN 743.6-18-M26x1,5	18	M26 x 1.5	32	9	11	30	21
GN 743.6-18-M27x1,5	18	M27 x 1.5	32	9	11	30	22
GN 743.6-18-M27x2	18	M27 x 2	32	9	11	30	22
GN 743.6-11-G3/8	11	G 3/8	22	8	8	20	20
GN 743.6-14-G1/2	14	G 1/2	26	8.5	9	23	20
GN 743.6-18-G3/4	18	G 3/4	32	9	11	30	35

Oil level sight glasses

Brass / natural glass, resistant up to 100 °C

SPECIFICATION

Types

- Type **A**: with contrast screen
- Type **B**: without contrast screen

Body
Brass
CuZn40Pb2

Contrast screen
Technopolymer (Polysulfon)

- temperature resistant up to **100 °C**
- Sight glass Float-glass
- O-Ring rubber NBR (Perbunan)



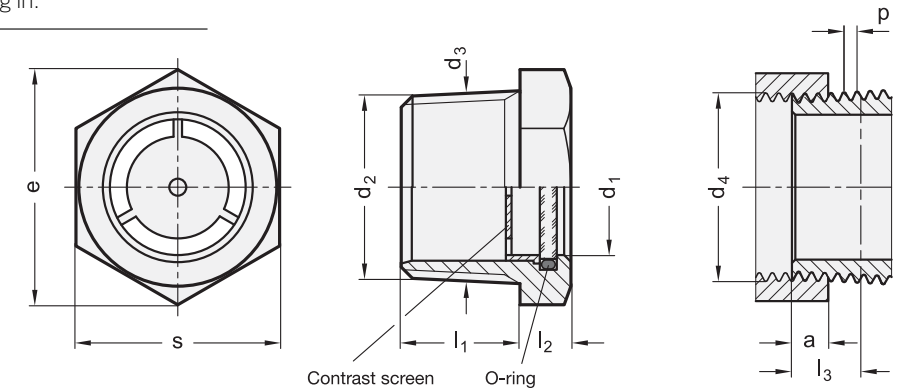
INFORMATION

The conical thread of the oil level sight glasses GN 743.7 makes a metallic seal possible. When tightening the conical male thread R it blocks itself with the appropriate cylindrical female thread Rp.

With the datum plane a the R-male thread has the same thread diameter as the Rp-female thread, so that it can be screwed in by hand. The strong tightening by means of a tool increases the length of engagement and seals the screw connection. Additionally a sealant (hemp or teflon band) is usually used. The R-thread is „roughened“, so that the sealant does not shift when screwing in.

ON REQUEST

- EPDM O-rings



GN 743.7

Description	d1	d2	a	d3	d4	e	l1	l2	l3	s	p	Δ
GN 743.7-11-R3/8-A	11	R 3/8	6.4	16.7	Rp 3/8	22	13	6	10.1	19	1.34	19
GN 743.7-14-R1/2-A	14	R 1/2	8.2	21	Rp 1/2	27.5	17	7	13.2	24	1.81	40
GN 743.7-18-R3/4-A	18	R 3/4	9.5	26.4	Rp 3/4	31	18	8	14.5	27	1.81	50
GN 743.7-24-R1-A	24	R 1	10.4	33.2	Rp 1	40.5	21	9	16.8	36	2.3	91
GN 743.7-32-R1 1/4-A	32	R 1 1/4	12.7	42	Rp 1 1/4	53	24	9	19.1	46	2.3	149
GN 743.7-11-R3/8-B	11	R 3/8	6.4	16.7	Rp 3/8	22	13	6	10.1	19	1.34	20
GN 743.7-14-R1/2-B	14	R 1/2	8.2	21	Rp 1/2	27.5	17	7	13.2	24	1.81	33
GN 743.7-18-R3/4-B	18	R 3/4	9.5	26.4	Rp 3/4	31	18	8	14.5	27	1.81	49
GN 743.7-24-R1-B	24	R 1	10.4	33.2	Rp 1	40.5	21	9	16.8	36	2.3	91
GN 743.7-32-R1 1/4-B	32	R 1 1/4	12.7	42	Rp 1 1/4	53	24	9	19.1	46	2.3	140
GN 743.7-32-11/4NPT-B	32	11/4 NPT	10.7	42.2	11/4 NPT	51.5	23	9	-	44.5	2.21	133
GN 743.7-11-3/8NPT-A	11	3/8 NPT	6.1	17.1	3/8 NPT	22	15	6	-	19.1	1.41	19
GN 743.7-14-1/2NPT-A	14	1/2 NPT	8.1	21.2	1/2 NPT	27.5	16	7	-	23.8	1.81	31
GN 743.7-18-3/4NPT-A	18	3/4 NPT	8.6	26.6	3/4 NPT	33	18	8	-	28.6	1.81	55
GN 743.7-24-1NPT-A	24	1 NPT	10.2	33.7	1 NPT	41.5	22	8	-	34.9	2.21	73
GN 743.7-32-11/4NPT-A	32	11/4 NPT	10.7	42.2	11/4 NPT	51.5	23	9	-	44.5	2.21	135
GN 743.7-11-3/8NPT-B	11	3/8 NPT	6.1	17.1	3/8 NPT	22	15	6	-	19.1	1.41	200
GN 743.7-14-1/2NPT-B	14	1/2 NPT	8.1	21.2	1/2 NPT	27.5	16	7	-	23.8	1.81	34
GN 743.7-18-3/4NPT-B	18	3/4 NPT	8.6	26.6	3/4 NPT	33	18	8	-	28.6	1.81	60
GN 743.7-24-1NPT-B	24	1 NPT	10.2	33.7	1 NPT	41.5	22	8	-	34.9	2.21	83
GN 743.7-32-11/4NPT-B	32	11/4 NPT	10.7	42.2	11/4 NPT	51.5	23	9	-	44.5	2.21	133

Oil level sight glasses

Brass / natural glass, resistant up to 180 °C

SPECIFICATION

Types

- Type **A**: with contrast screen
- Type **B**: without contrast screen

Body
Brass
CuZn40Pb2

Contrast screen
Technopolymer (Polysulfon)

- temperature resistant up to **180 °C**
- Sight glass ESG-glass
- O-Ring rubber FPM (Viton®)

Identification by not black finish of the sealing ring

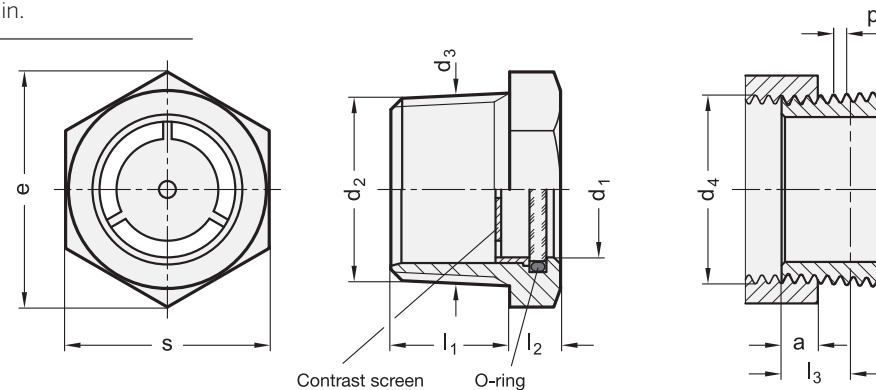


INFORMATION

The conical thread of the oil level sight glasses GN 743.8 makes a metallic seal possible. When tightening the conical male thread R it blocks itself with the appropriate cylindrical female thread Rp. With the datum plane a the R-male thread has the same thread diameter as the Rp-female thread, so that it can be screwed in by hand. The strong tightening by means of a tool increases the length of engagement and seals the screw connection. Additionally a sealant (hemp or teflon band) is usually used. The R-thread is „roughened“, so that the sealant does not shift when screwing in.

ON REQUEST

- EPDM O-rings



GN 743.8

Description	d1	d2	a	d3	d4	e	l1	l2	l3	s	p	Δ
GN 743.8-11-R3/8-A	11	R 3/8	6.4	16.7	Rp 3/8	22	13	6	10.1	19	1.34	19
GN 743.8-14-R1/2-A	14	R 1/2	8.2	21	Rp 1/2	27.5	17	7	13.2	24	1.81	34
GN 743.8-18-R3/4-A	18	R 3/4	9.5	26.4	Rp 3/4	31	18	8	14.5	27	1.81	49
GN 743.8-24-R1-A	24	R 1	10.4	33.2	Rp 1	40.5	21	9	16.8	36	2.3	92
GN 743.8-32-R11/4-A	32	R 1 1/4	12.7	42	Rp 1 1/4	53	24	9	19.1	46	2.3	140
GN 743.8-11-R3/8-B	11	R 3/8	6.4	16.7	Rp 3/8	22	13	6	10.1	19	1.34	22
GN 743.8-14-R1/2-B	14	R 1/2	8.2	21	Rp 1/2	27.5	17	7	13.2	24	1.81	40
GN 743.8-18-R3/4-B	18	R 3/4	9.5	26.4	Rp 3/4	31	18	8	14.5	27	1.81	60
GN 743.8-24-R1-B	24	R 1	10.4	33.2	Rp 1	40.5	21	9	16.8	36	2.3	80
GN 743.8-32-R11/4-B	32	R 1 1/4	12.7	42	Rp 1 1/4	53	24	9	19.1	46	2.3	140
GN 743.8-32-11/4NPT-B	32	1 1/4 NPT	10.7	42.2	1 1/4 NPT	51.5	23	9	-	44.5	2.21	140
GN 743.8-11-3/8NPT-A	11	3/8 NPT	6.1	17.1	3/8 NPT	22	15	6	-	19.1	1.41	27
GN 743.8-14-1/2NPT-A	14	1/2 NPT	8.1	21.2	1/2 NPT	27.5	16	7	-	23.8	1.81	34
GN 743.8-18-3/4NPT-A	18	3/4 NPT	8.6	26.6	3/4 NPT	33	18	8	-	28.6	1.81	55
GN 743.8-24-1NPT-A	24	1 NPT	10.2	33.7	1 NPT	41.5	22	8	-	34.9	2.21	100
GN 743.8-32-11/4NPT-A	32	1 1/4 NPT	10.7	42.2	1 1/4 NPT	51.5	23	9	-	44.5	2.21	150
GN 743.8-11-3/8NPT-B	11	3/8 NPT	6.1	17.1	3/8 NPT	22	15	6	-	19.1	1.41	20
GN 743.8-14-1/2NPT-B	14	1/2 NPT	8.1	21.2	1/2 NPT	27.5	16	7	-	23.8	1.81	32
GN 743.8-18-3/4NPT-B	18	3/4 NPT	8.6	26.6	3/4 NPT	33	18	8	-	28.6	1.81	60
GN 743.8-24-1NPT-B	24	1 NPT	10.2	33.7	1 NPT	41.5	22	8	-	34.9	2.21	140
GN 743.8-32-11/4NPT-B	32	1 1/4 NPT	10.7	42.2	1 1/4 NPT	51.5	23	9	-	44.5	2.21	140

Oil level indicators

with prismatic window, technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black colour, glossy finish.

PRISMATIC WINDOW

Transparent polyamide based (PA-T/AR) technopolymer. The window consists of a continuous series of prisms which provide a clear and immediate reading of the level of the oil contained in the reservoir.

PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

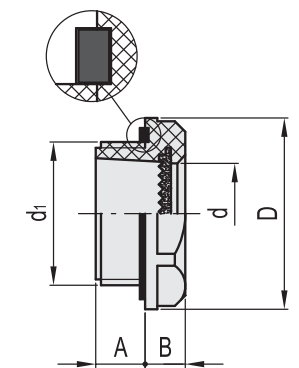
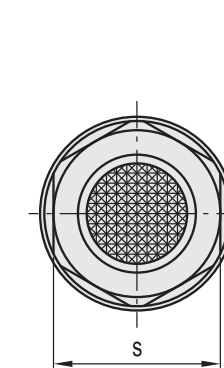
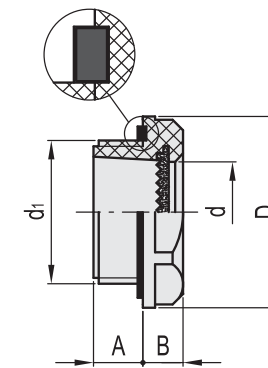
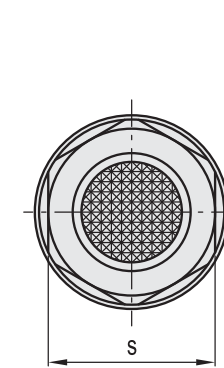
100°C at 3 bar pressure.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	Δ
14462	HGFT.13/PR-1/2-C9	G 1/2	10	8.5	28	14.5	24	6+8	5
14482	HGFT.16/PR-3/4-C9	G 3/4	9.5	8.5	35	18	32	8+10	9
14522	HGFT.21/PR-1-C9	G 1	11	9.5	42.5	23	38	10+12	14
14542	HGFT.25/PR-1 1/4-C9	G 1 1/4	11	9	50	30	46	12+15	30

Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	Δ
14463	HGFT.13/HT-PR-1/2	G 1/2	10	8.5	28	14.5	24	6+8	5
14483	HGFT.16/HT-PR-3/4	G 3/4	9.5	8.5	35	18	32	8+10	9
14523	HGFT.21/HT-PR-1	G 1	11	9.5	42.5	23	38	10+12	14

Breather strainers with Stainless Steel mesh

SPECIFICATION

Body

- Aluminium **AL**
- Stainless Steel AISI 303 **NI**

Strainer

Stainless Steel mesh
AISI 304

Strainer bezel

Plastic Polyamide (PA)

- glass fibre reinforced
- temperature resistant up to 100 °C

Sealing / O-Ring

Rubber NBR (Perbunan[®])

INFORMATION

Breather strainers GN 7403 are used in enclosure and device construction. Inserted into the wall of the enclosure, they ensure pressure equilibrium between the inside of the enclosure and the outside.

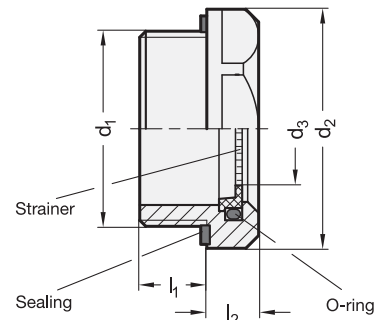
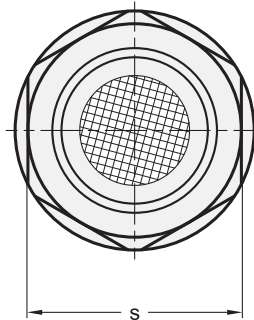
Any dirt and dust particles carried by the medium (usually gas) are prevented from exiting depending on the mesh size. This protects the insides of sensitive devices and machinery parts from dirt and pollution and also protects the environment from any exiting dust.

The outside diameter of the enclosure with the recessed hexagon matches the bolt mounting holes for DIN 3852 threaded pipe connectors.

The sealing ring is embedded in a radial and plane-sided recess which makes the seal captive and prevents it from being squeezed out during tightening.

Assembly instruction:

For mounting on walls of less than 4 mm thickness, please use mounting nut GH. (see page 1743).



ACCESSORY

- Mounting nut GH. (see page 1743)

ON REQUEST

- Body in brass
- Other mesh size
- Other material for the strainer

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Plastic characteristics (see page A2)

GN 7403-AL

Description	d1	Mesh size in µm	d2	d3	l1	l2	s	⚖
GN 7403-AL-G1/2-100	G1/2	100	26	10	8.5	7.5	23	11
GN 7403-AL-G1/2-500	G1/2	500	26	10	8.5	7.5	23	11
GN 7403-AL-G3/4-100	G3/4	100	32	14	9	8	30	17
GN 7403-AL-G3/4-500	G3/4	500	32	14	9	8	30	17
GN 7403-AL-G1-100	G1	100	40	20	11	8.5	36	28
GN 7403-AL-G1-500	G1	500	40	20	11	8.5	36	20
GN 7403-AL-M20x1.5-100	M20x1.5	100	26	10	8.5	7.5	23	10
GN 7403-AL-M20x1.5-500	M20x1.5	500	26	10	8.5	7.5	23	10
GN 7403-AL-M26x1.5-100	M26x1.5	100	32	14	9	8	30	17
GN 7403-AL-M26x1.5-500	M26x1.5	500	32	14	9	8	30	17
GN 7403-AL-M33x1.5-100	M33x1.5	100	40	20	11	8.5	36	20
GN 7403-AL-M33x1.5-500	M33x1.5	500	40	20	11	8.5	36	20

GN 7403-NI

STAINLESS STEEL

Description	d1	Mesh size in µm	d2	d3	l1	l2	s	⚖
GN 7403-NI-G1/2-100	G1/2	100	26	10	8.5	7.5	23	23
GN 7403-NI-G1/2-500	G1/2	500	26	10	8.5	7.5	23	20
GN 7403-NI-G3/4-100	G3/4	100	32	14	9	8	30	38
GN 7403-NI-G3/4-500	G3/4	500	32	14	9	8	30	38
GN 7403-NI-G1-100	G1	100	40	20	11	8.5	36	59
GN 7403-NI-G1-500	G1	500	40	20	11	8.5	36	66
GN 7403-NI-M20x1.5-100	M20x1.5	100	26	10	8.5	7.5	23	20
GN 7403-NI-M20x1.5-500	M20x1.5	500	26	10	8.5	7.5	23	20
GN 7403-NI-M26x1.5-100	M26x1.5	100	32	14	9	8	30	38
GN 7403-NI-M26x1.5-500	M26x1.5	500	32	14	9	8	30	37
GN 7403-NI-M33x1.5-100	M33x1.5	100	40	20	11	8.5	36	59
GN 7403-NI-M33x1.5-500	M33x1.5	500	40	20	11	8.5	36	59

Stainless Steel-Strainer fittings

SPECIFICATION

Types

- Type **A**: Fitting with female thread on both ends
- Type **B**: Fitting with female / male thread

Housing

Stainless Steel AISI 304 **NI**

Strainer

Stainless Steel mesh
AISI 304

Strainer bezel

Plastic (Polyamide PA)

- glass fibre reinforced
- temperature resistant up to 100 °C

O-ring

NBR (Perbunan)



INFORMATION

GN 7405 Stainless Steel-Strainer fittings are suited for assembly into piping systems as upstream or downstream protection devices. Depending on the mesh size, particles carried by liquid or gaseous media can be prevented from passing through. Units or housing interiors are thereby protected from foreign objects which can impair function or durability due to their size.

The housing is separately bolted through a union nut, making assembly/disassembly easier and allowing the strainer insert to be exchanged if necessary.

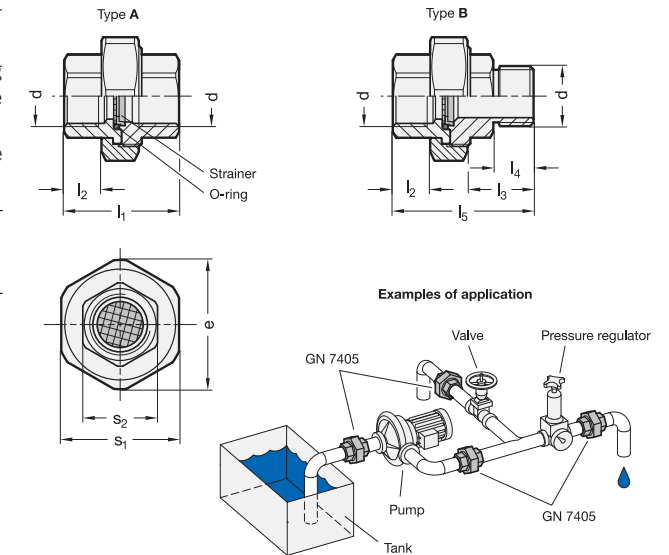
Replacement or maintenance Stainless Steel-Strainers are available under the GN 7403.1 (see page 1738) standard.

ACCESSORY

- Stainless Steel-Strainers GN 7403.1 (see page 1738)

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Plastic characteristics (see page A2)
- Stainless Steel characteristics (see page A26)



GN 7405

STAINLESS STEEL

Description	d	Mesh size in µm	e	l1	l2	l3	l4	l5	s1	s2	Differential pressure Δ 1 bar		Hydraulic oil (HPL 46)		⚖
											Flow volume in l/min. Water 100 µm	Flow volume in l/min. Water 500 µm	100 µm	500 µm	
GN 7405-NI-G3/8-A-100	G3/8	100	40	36.5	12	-	-	-	36	22	21	25	7	18	140
GN 7405-NI-G3/8-A-500	G3/8	500	40	36.5	12	-	-	-	36	22	21	25	7	18	140
GN 7405-NI-G1/2-A-100	G1/2	100	45	40	13	-	-	-	41	26	48	61	15.5	38.5	168
GN 7405-NI-G1/2-A-500	G1/2	500	45	40	13	-	-	-	41	26	48	61	15.5	38.5	168
GN 7405-NI-G3/4-A-100	G3/4	100	55	46	15	-	-	-	50	34	96	104	30	77.5	303
GN 7405-NI-G3/4-A-500	G3/4	500	55	46	15	-	-	-	50	34	96	104	30	77.5	303
GN 7405-NI-G3/8-B-100	G3/8	100	40	36.5	12	21	12	45	36	22	21	25	7	18	140
GN 7405-NI-G3/8-B-500	G3/8	500	40	36.5	12	21	12	45	36	22	21	25	7	18	140
GN 7405-NI-G1/2-B-100	G1/2	100	45	40	13	23	14	49	41	26	48	61	15.5	38.5	188
GN 7405-NI-G1/2-B-500	G1/2	500	45	40	13	23	14	49	41	26	48	61	15.5	38.5	187
GN 7405-NI-G3/4-B-100	G3/4	100	55	46	15	25	16	55	50	34	96	104	30	77.5	333
GN 7405-NI-G3/4-B-500	G3/4	500	55	46	15	25	16	55	50	34	96	104	30	77.5	333

Stainless Steel-Strainers

SPECIFICATION

Strainer
Stainless Steel mesh **NI**
AISI 304
Strainer bezel
Plastic (Polyamide PA)
- glass fibre reinforced
- temperature resistant up to 100 °C

INFORMATION

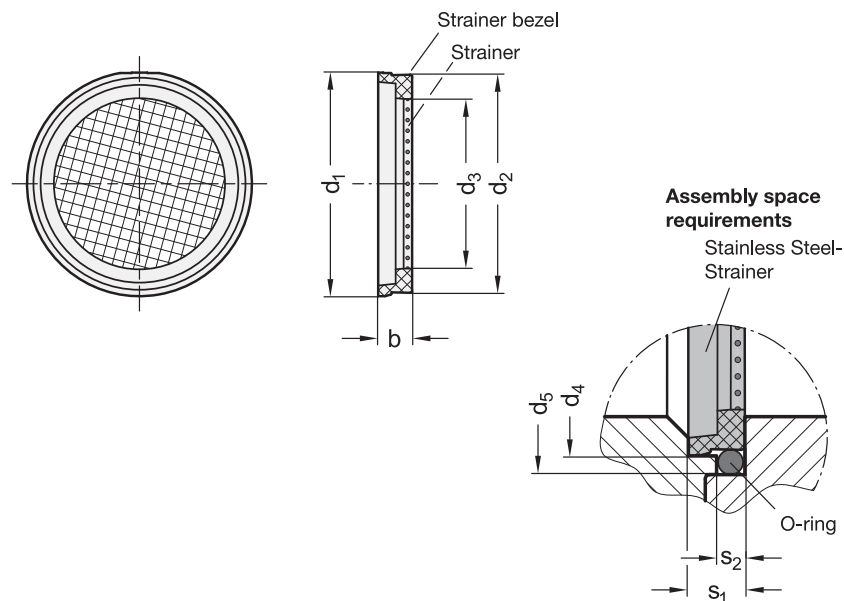
GN 7403.1 Stainless-Steel-Strainers are adapted for use as replacements for GN 7405 (see page 1737) strainer fittings. They are also suitable for the application-specific assembly of upstream or downstream protection devices. Depending on the mesh size, particles carried by liquid or gaseous media can be prevented from passing through. Units or housing interiors are thereby protected from foreign objects which can impair function or durability due to their size. The assembly space required is shown in the drawing. An additional O-ring is generally mounted at the circumference as a seal.

ON REQUEST

- other mesh sizes
- Plastic strainer mesh

TECHNICAL INFORMATION

- Plastic characteristics (see page A2)
- Stainless Steel characteristics (see page A26)



GN 7403.1

STAINLESS STEEL

Description	Nominal size	Mesh size in µm	b	d1	d2	d3	d4 +0.1	d5 ±0.05	s1 +0.1	s2 -0.1	Suitable O-ring	Suitable for nominal size d of GN 7405	⚖
GN 7403.1-NI-14-100	14	100	4	16.6	15.7	10	16.6	18.7	4	2	16x2	G3/8	32
GN 7403.1-NI-14-500	14	500	4	16.6	15.7	10	16.6	18.7	4	2	16x2	G3/8	32
GN 7403.1-NI-18-100	18	100	4	20.6	19.7	14	20.6	22.7	4	2	20x2	G1/2	35
GN 7403.1-NI-18-500	18	500	4	20.6	19.7	14	20.6	22.7	4	2	20x2	G1/2	35
GN 7403.1-NI-24-100	24	100	4	26.6	25.7	20	26.6	28.7	4	2	26x2	G3/4	30
GN 7403.1-NI-24-500	24	500	4	26.6	25.7	20	26.6	28.7	4	2	26x2	G3/4	30

Oil level sight glasses

Aluminium / crystal-clear plastic

SPECIFICATION

Types

- Type **A**: with prismatic effect (only d1 = 14/18/24)
- Type **B**: without contrast screen (all sizes)
- Type **C**: with red marking ring (only d1 = 11/14/18/24)

Body

Aluminium
fine turned

Sight glass
Plastic

- crystal-clear Polyamide (PA-T)
- temperature resistant up to 110 °C

Red marking ring
pad printing

Sealing ring
Rubber NBR (Perbunan)

INFORMATION

Oil level sight glasses GN 744 use the so called prismatic effect of a cat's eye to display the oil level unaffected by oil colour or oil viscosity. The advantage of this effect is particularly obvious in the case of under or overfilling or for inspection under unfavourable light conditions.

The seal is housed in a radial groove in the aluminium body and hence cannot be lost. In addition it cannot be extruded when tightening the sight glass.

Oil level sight glasses GN 744 can also be used on pressurised tanks. Data of pressure and a vacuum pressure tests is available.

Assembly instruction:

For mounting on walls of less than 4 mm thickness please use a fixing nut GH. (see page 1743)

ACCESSORY

- Fixing nut GH. (see page 1743)

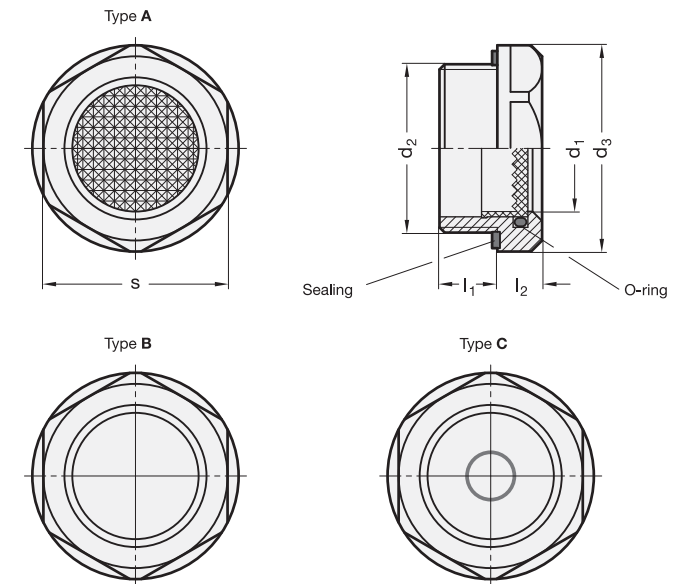


ON REQUEST

- EPDM seal

TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)
- Plastic characteristics (see page A2)



GN 744

Description	d1	d2	d3	l1	l2	s	⚖
GN 744-14-G1/2-A	14	G1/2	26	8.5	7.5	23	12
GN 744-14-M20x1,5-A	14	M 20 x 1.5	26	8.5	7.5	23	5
GN 744-18-G3/4-A	18	G 3/4	32	9	8	30	15
GN 744-18-M26x1,5-A	18	M 26 x 1.5	32	9	8	30	15
GN 744-18-M27x1,5-A	18	M 27 x 1.5	32	9	8	30	16
GN 744-24-G1-A	24	G 1	40	11	8.5	36	23
GN 744-24-M33x1,5-A	24	M 33 x 1.5	40	11	8.5	36	30
GN 744-7-G1/4-B	7	G 1/4	20	7.5	6.5	18	5
GN 744-7-M12x1,5-B	7	M 12 x 1.5	20	7.5	6.5	18	5
GN 744-11-G3/8-B	11	G 3/8	22	8	7.5	20	6
GN 744-11-M16x1,5-B	11	M 16 x 1.5	22	8	7.5	20	6
GN 744-14-G1/2-B	14	G 1/2	26	8.5	7.5	23	8
GN 744-14-M20x1,5-B	14	M 20 x 1.5	26	8.5	7.5	23	8
GN 744-18-G3/4-B	18	G 3/4	32	9	8	30	15

GN 744

Description	d1	d2	d3	l1	l2	s	⚖
GN 744-18-M26x1,5-B	18	M 26 x 1.5	32	9	8	30	14
GN 744-18-M27x1,5-B	18	M 27 x 1.5	32	9	8	30	16
GN 744-24-G1-B	24	G 1	40	11	8.5	36	22
GN 744-24-M33x1,5-B	24	M 33 x 1.5	40	11	8.5	36	23
GN 744-11-G3/8-C	11	G 3/8	22	8	7.5	20	6
GN 744-11-M16x1,5-C	11	M 16 x 1.5	22	8	7.5	20	6
GN 744-14-G1/2-C	14	G 1/2	26	8.5	7.5	23	8
GN 744-14-M20x1,5-C	14	M 20 x 1.5	26	8.5	7.5	23	8
GN 744-18-G3/4-C	18	G 3/4	32	9	8	30	15
GN 744-18-M26x1,5-C	18	M 26 x 1.5	32	9	8	30	14
GN 744-18-M27x1,5-C	18	M 27 x 1.5	32	9	8	30	16
GN 744-24-G1-C	24	G 1	40	11	8.5	36	22
GN 744-24-M33x1,5-C	24	M 33 x 1.5	40	11	8.5	36	23

Oil level indicators

Technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Avoid contact with alcohol or detergents containing alcohol.

STAR-SHAPED CONTRAST SCREEN

Matte anodised aluminium with red central level point.

PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

FEATURES

The particular shape of the magnifying lens increases and improves visibility even from side positions.

TECHNICAL DATA

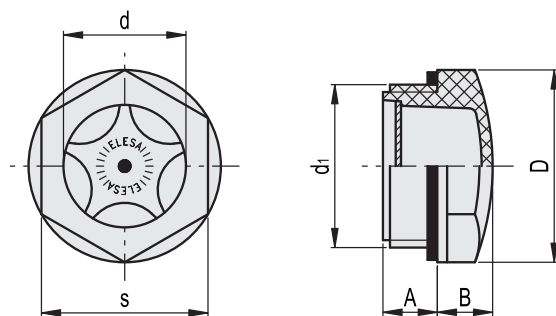
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
13661	HFTX.11-M16x1.5	M16x1.5	8	7	22	11	19	2÷3	4
13681	HFTX.14-M20x1.5	M20x1.5	9.5	8	26	14	22	8÷10	5
13701	HFTX.18-M25x1.5	M25x1.5	8	9	31.5	18	27	8÷10	8
13726	HFTX.21-M26x1.5	M26x1.5	13	9	31.5	18	27	8÷10	8
13711	HFTX.19-M27x1.5	M27x1.5	9	9	31.5	20	27	8÷10	8
13731	HFTX.22-M30x1.5	M30x1.5	9	10	35	22	30	8÷10	10
13751	HFTX.26-M35x1.5	M35x1.5	11	10	40	25	34	8÷10	13
13771	HFTX.31-M40x1.5	M40x1.5	11.5	13	47	30	40.5	8÷10	20
13651	HFTX.9-1/4	G 1/4	10	6	18	9	15	2÷3	3
13671	HFTX.12-3/8	G 3/8	7.5	7	22	11	19	3÷5	4
13691	HFTX.15-1/2	G 1/2	10.5	8	26	14	22	4÷6	5
13721	HFTX.20-3/4	G 3/4	10.5	9	31.5	20	27	6÷8	8
13741	HFTX.24-1	G 1	11	10	40	25	34	8÷10	12
13761	HFTX.30-1¼	G 1¼	11.5	13	47.5	30	40.5	8÷10	20

Oil level indicators

with prismatic window, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Avoid contact with alcohol or detergents containing alcohol.

The window consists of a continuous series of prisms which provide a clear and immediate reading of the level of the oil contained in the reservoir.

PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

TECHNICAL DATA

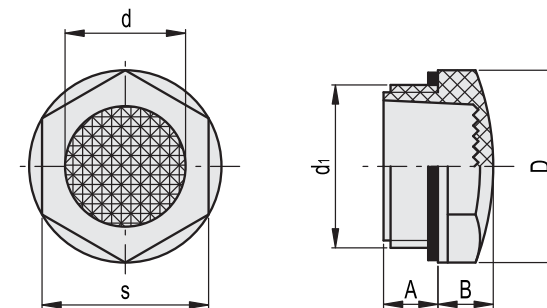
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
13652	HFTX.9/PR-1/4	G 1/4	10	6	18	9	15	2÷3	3
13672	HFTX.12/PR-3/8	G 3/8	7.5	7	22	11	19	3÷5	4
13692	HFTX.15/PR-1/2	G 1/2	10.5	8	26	14	22	4÷6	5
13722	HFTX.20/PR-3/4	G 3/4	10.5	9	31.5	20	27	6÷8	8
13742	HFTX.24/PR-1	G 1	11	10	40	25	34	8÷10	12

Oil level indicators

with prismatic window, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Avoid contact with alcohol or detergents containing alcohol.

The window consists of a continuous series of prisms which provide a clear and immediate reading of the level of the oil contained in the reservoir.

PACKING RING

NBR synthetic rubber

The positioning of the packing ring in its housing guarantees a high tightening torque.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

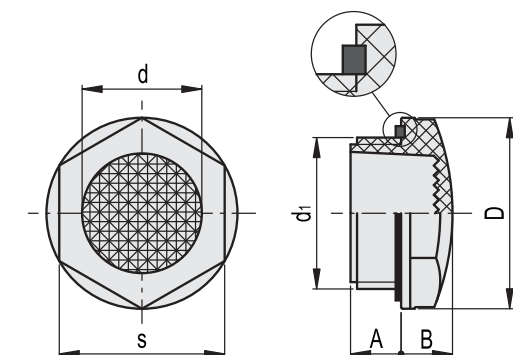
100°C.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
14692	HFTR.15/PR-1/2	G 1/2	10.5	9	28	15	24	8÷10	6
14722	HFTR.20/PR-3/4	G 3/4	10.5	10.5	35	20	32	10÷12	9
14742	HFTR.24/PR-1	G 1	11	13.5	42.5	24	38	10÷12	13
14762	HFTR.30/PR-1¼	G 1¼	19	16	52	30.5	41	12÷14	21



Oil level indicators

push-fit, technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black colour, matte finish.

WINDOW

Transparent polyamide based (PA-T/AR) technopolymer.

CONTRAST SCREEN

White lacquered aluminium with red level line.

PACKING RING

NBR synthetic rubber O-Ring.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

FEATURES AND APPLICATIONS

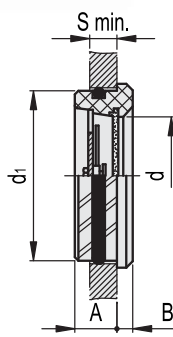
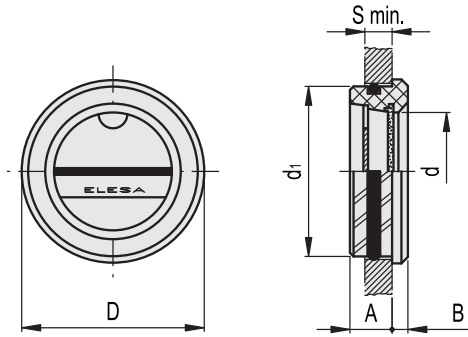
The push-fit assembly is guaranteed by optimized ribbings. Sealing is guaranteed by the O-ring. HRT. oil level indicators push-fit are particularly suitable for assembly on reservoirs with limited pressure.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ASSEMBLY INSTRUCTIONS

Chamfer hole 1x45° and grease slightly the outside surface of the O-ring to make assembly easier.



Code	Description	d1	A	B	D	d	Smin	Mounting hole d1 H11	⚖️
10751	HRT.15-26	26	9	4.5	28	14.5	6	26	6
10756	HRT.20-32	32	10.5	4.5	36	18	8	32	10
10761	HRT.25-38	38	11	5	42	23	8	38	12
10766	HRT.40-60	60	11	5.5	64	40	9	60	29



Oil level indicators

push-fit with temperature reading, technopolymer

MATERIAL

Polyamide based (PA) technopolymer, black colour, matte finish.

WINDOW

Transparent polyamide based (PA-T/AR) technopolymer.

CONTRAST SCREEN WITH BIMETALLIC THERMOMETER

Graduated scale up to 100°C to read oil temperature, even when oil level is at minimum, thanks to the conductivity of the aluminium contrast screen.

PACKING RING

NBR synthetic rubber O-Ring.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

FEATURES AND APPLICATIONS

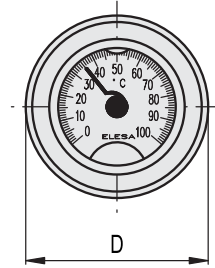
The push-fit assembly is guaranteed by optimized ribbings. Sealing is guaranteed by the O-ring. HRT-T oil level indicators push-fit are particularly suitable for assembly on reservoirs with limited pressure.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ASSEMBLY INSTRUCTIONS

Chamfer hole 1x45° and grease slightly the outside surface of the O-ring to make assembly easier.



Code	Description	d1	A	B	D	d	Smin	Mounting hole d1 H11	⚖️
10781	HRT.25/T-38	38	11	5	42	23	8	38	12
10786	HRT.40/T-60	60	11	5.5	64	40	9	60	29



Oil level indicators

push-fit, polycarbonate

MATERIAL

Transparent high mechanical resistance polycarbonate. Not suitable for use with oils with additives and solvents. Avoid contact with alcohol or detergents containing alcohol.

CONTRAST SCREEN

White lacquered aluminium with red level line.

PACKING RING

NBR synthetic rubber O-Ring.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

FEATURES AND APPLICATIONS

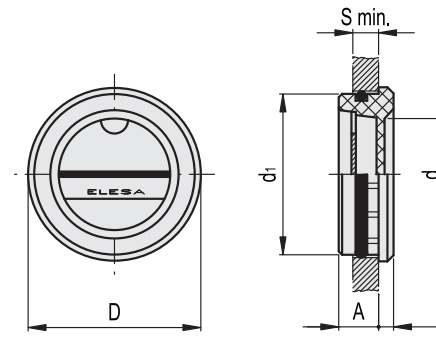
The push-fit assembly is guaranteed by optimized ribbings. Sealing is guaranteed by the O-ring. HE. oil level indicators push-fit are particularly suitable for assembly on reservoirs with limited pressure.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ASSEMBLY INSTRUCTIONS

Chamfer hole 1x45° and grease slightly the outside surface of the O-ring to make assembly easier.



Code	Description	d1	A	B	D	d	Smin	Mounting hole d1 H11	⚖️
11401	HE.17	17	6.5	3	18	9	5	17	2
11501	HE.20	20	8	3	21	12	6	20	3
11601	HE.26	26	7.5	3.5	28	17	6	26	5
11701	HE.30	30	8	4	32	20	7	30	7
11801	HE.35	35	9	4	38	25	8	35	10
11901	HE.40	40	10	4.5	43	28	9	40	13
12001	HE.45	45	11	5.5	47	32	9	45	18



Nuts

Brass

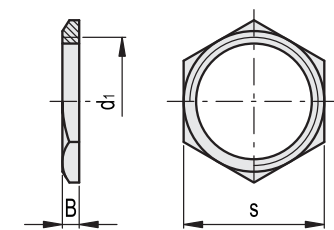
MATERIAL

Brass.

FEATURES AND APPLICATIONS

GH. nuts can be used for fitting the following indicators to reservoirs with thin walls (thickness smaller than 5 mm):

- HGFT. (see page 1724)
- HGFT-EX (see page 1725)
- GN 743 (see page 1726)
- GN 743.1 (see page 1727)
- GN 743.2 (see page 1728)
- GN 743.3 (see page 1729)
- GN 743.4 (see page 1730)
- GN 743.5 (see page 1731)
- GN 743.6 (see page 1732)
- HGFT-PR (see page 1735)
- HGFT-HT-PR (see page 1735)
- GN 744 (see page 1739)
- HFTX (see page 1740)
- HFTX-PR (see page 1741)
- HCFE (see page 1745)
- HCFE-C (see page 1745)
- HCFE-EX (see page 1746)



Code	Description	d1	B	s	⚖️
14991	GH.1/4	G 1/4	6	19	9
15001	GH.3/8	G 3/8	3	19	3
15011	GH.1/2	G 1/2	4	26	8
15021	GH.3/4	G 3/4	5	31	12
15031	GH.1	G 1	4.5	37	14
15041	GH.1¼	G 1¼	5	46	23
15051	GH.2	G 2	6	65	50

Oil level sight glasses

Aluminium / Perspex / without thread

SPECIFICATION

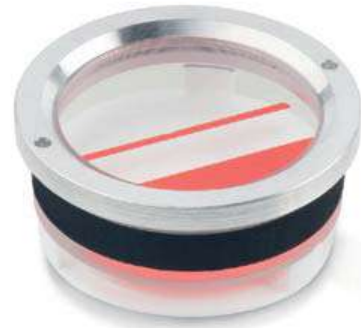
Types

- Type **A**: without oil level mark
- Type **B**: with oil level mark

Ring nut
Aluminium
Sight glass
Perspex (PMMA)
temperature resistant up to 80 °C

Sealing ring
Rubber NBR (Perbunan)

Contrast screen
Plastic
white, with red oil level marks



INFORMATION

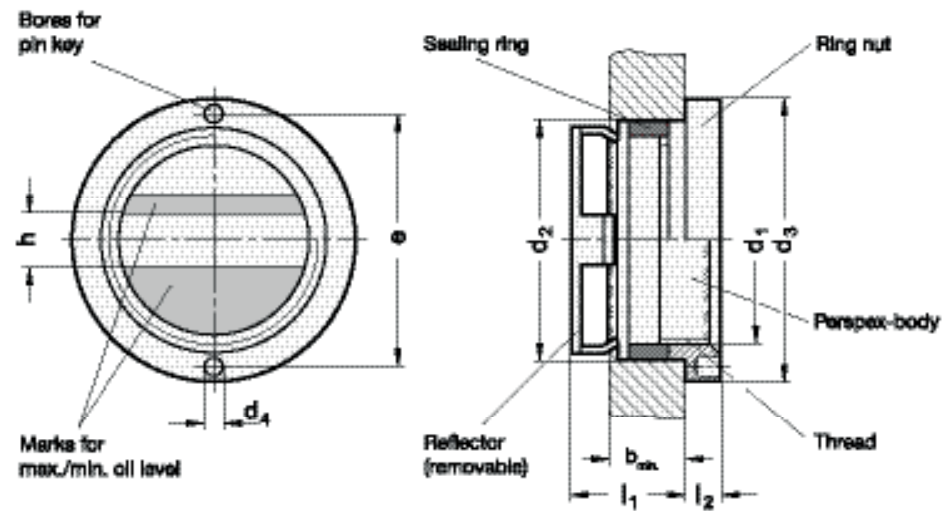
This oil level glass GN 537 does not require a thread. The oil level sight glass is inserted into the bore d2 to H11. By simply tightening the ring nut using the pin key the seal is pressed against the contact surface which, at the same time, will hold the sight glass in position. For removal reverse the procedure. Their application is limited to non-pressurised or only slightly pressurised tanks.

ACCESSORY

- Pin key for installation GN 537.1 (Code no. see table)

TECHNICAL INFORMATION

- Elastomer characteristics (see page A 32)



GN 537

Description	d1 Window glass	d2 Bore Ø	b min.	d3	d4	e ±0.1	h	l1	l2	Code no. pin key for installation	⚖
GN 537-16-20-A	16	20	9	25	2.2	21	5	15	3.5	GN 537.1-21	8
GN 537-22-28-A	22	28	10	35	3	30	6	15	4.5	GN 537.1-30	17
GN 537-32-38-A	32	38	12	45	3	40	8	18	5.5	GN 537.1-40	34
GN 537-50-58-A	50	58	14	64	3	58.5	10	22	5.5	GN 537.1-58.5	80
GN 537-16-20-B	16	20	9	25	2.2	21	5	15	3.5	GN 537.1-21	8
GN 537-22-28-B	22	28	10	35	3	30	6	15	4.5	GN 537.1-30	17
GN 537-32-38-B	32	38	12	45	3	40	8	18	5.5	GN 537.1-40	30
GN 537-50-58-B	50	58	14	64	3	58.5	10	22	5.5	GN 537.1-58.5	80

Oil circulation sights

Technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Avoid contact with alcohol or detergents containing alcohol.

PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

TECHNICAL DATA

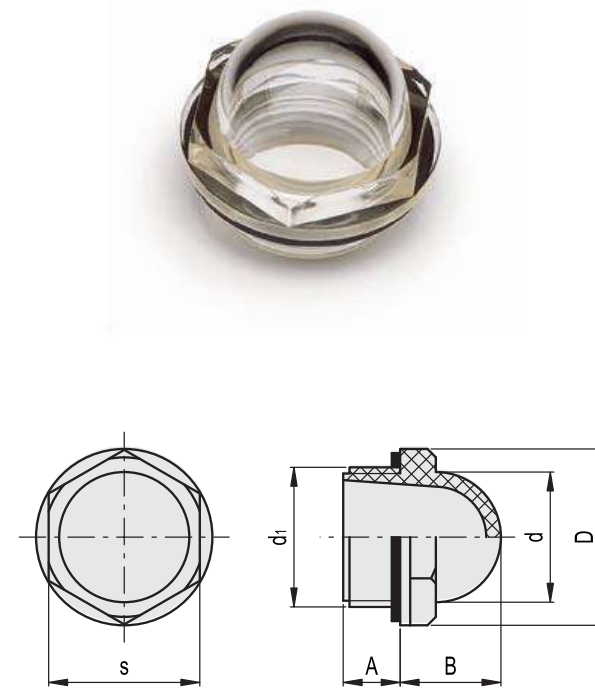
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖
10851	HCFE.12-3/8	G 3/8	7.5	13	22.5	15	19	3+5	4
10901	HCFE.15-1/2	G 1/2	10.5	16	26	19	22	4+6	5
11001	HCFE.20-3/4	G 3/4	10.5	19.5	31.5	25	27	6+8	8
11101	HCFE.24-1	G 1	11	24	42	31	36	8+10	18
11111	HCFE.30-1¼	G 1¼	11.5	26.5	46.5	38	40.5	12+15	22

Oil circulation sights

Technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Avoid contact with alcohol or detergents containing alcohol.

CIRCLE FOR OIL LEVEL CHECK

Delimited by a small red coloured externally tampprinted circle. Tampprinting resistant to oils with additives, greases, alkali and white spirit; resistant to abrasions under normal working conditions. Avoid contact with solvents, alcohol or detergents containing alcohol.

PACKING RING

NBR synthetic rubber.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C.

TECHNICAL DATA

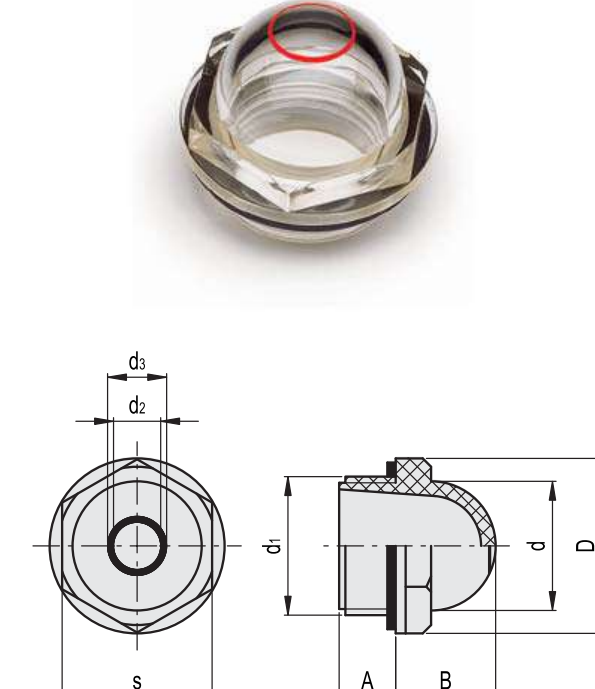
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



Code	Description	d1	A	B	D	d	d2	d3	s	Tightening torque [Nm]	⚖
10906	HCFE.15/C-1/2	G 1/2	10.5	16	26	19	6	7	22	4+6	5
11006	HCFE.20/C-3/4	G 3/4	10.5	19.5	31.5	25	11	12	27	6+8	8
11106	HCFE.24/C-1	G 1	11	24	42	31	14	15	36	8+10	18

Oil circulation sights

Technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Avoid contact with alcohol or detergents containing alcohol.

PACKING RING

NBR synthetic rubber.

ATEX DIRECTIVE COMPLIANCE

The level indicators of the HCFE-EX series comply with Health and Safety Requirements intended in 94/9/EC ATEX European Directive (explosive atmospheres) for equipments in Group II, category 2GD.

Level indicators have "kX" protection degree and can therefore be mounted on equipment protected by means of "immersion in liquid", without lowering protection degree.

II 2 G D k T6, marked on the HCFE-EX level indicators, represents the identification according to ATEX directive.

II: group of substances for which the product is suitable

2: identification of the category

G: identification of the type of explosive atmosphere (Gases or vapours)

D: identification of the type of explosive atmosphere (Dust)

k: protection degree by means of immersion in liquid

II B: explosive gases group (only for HCFE.20)

T6: temperature class

Ambient and/or fluid temperature: -30 to +80°C

The declaration of conformity to European Directives of this product is available and it is part of the product itself.

TECHNICAL DATA

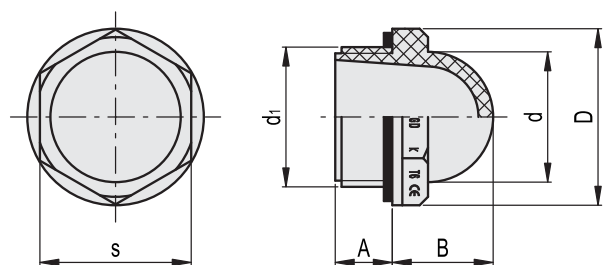
The tightening torque indicated in the table guarantees an optimal tightness, keeping the packing ring in the correct position.

NOTE

For use with other fluids with special additives, please contact ELESA Sales Department.

ACCESSORIES ON REQUEST

Brass nut type GH. (see page 1743) for fitting to reservoirs with wall thickness smaller than 5 mm.



Code	Description	d1	A	B	D	d	s	Tightening torque [Nm]	⚖️
10851-EX	HCFE.12-3/8-EX	G 3/8	7.5	13	22.5	15	19	3÷5	4
10901-EX	HCFE.15-1/2-EX	G 1/2	10.5	16	26	19	22	4÷6	5
11001-EX	HCFE.20-3/4-EX	G 3/4	10.5	19.5	31.5	25	27	6÷8	8

Visual flow indicators

Technopolymer ends

ENDS

Polypropylene based (PP) technopolymer, black colour, matte finish.

AXIS AND ROTOR PROPELLER

Polypropylene based (PP) technopolymer, red colour.

TUBULAR WINDOW

PYREX® glass, high-resistance, also suitable for use with glycol-based solutions.

Maximum visibility of the flow from all angles.

TIE RODS

Nickel-plated brass.

PACKING RINGS

NBR synthetic rubber.

THREADED FITTINGS

Brass bosses with cylindrical gas thread according to UNI ISO 228/1.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100° C.

FEATURES AND APPLICATIONS

The indicator can be mounted in any position.

In case of mounting on rigid tubes, it is recommended to place the indicator perfectly aligned with the tubes.

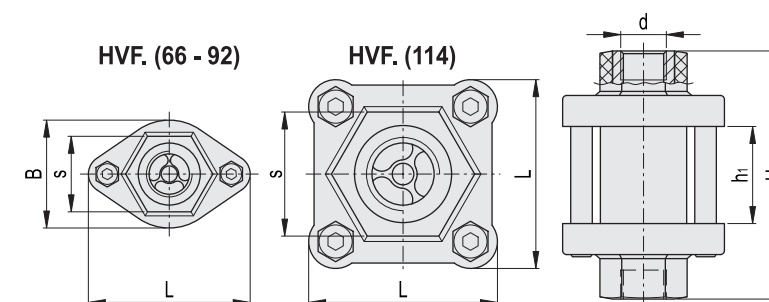
The indicator operates with two-way liquid flows.

For rotating the propeller it is required a minimum fluid flow rate (Q**) depending on the type of fluid and its viscosity (shown in cSt, see table)

SPECIAL EXECUTIONS ON REQUEST

- AISI 316 stainless steel bosses.
- Bosses with NPT conical threads.
- Axis and rotor propeller in blue colour.

* Registered trademark by Corning Inc.



Code	Description	d	H	L	B	h1	s	Q max* l/min	P max # Bar	Q** l/min H2O	Q** l/min 0÷40 cSt	Q** l/min 41÷150 cSt	ΔP max ## Bar	⚖️
111301	HVF.66-1/4	1/4	66	44	27	22	20	10	25	0.6	2.5	3.5	0.15	74
111311	HVF.92-3/8	3/8	92	60	40	36	28	20	15	1.2	3	4	0.25	176
111321	HVF.92-1/2	1/2	92	60	40	36	28	40	15	1.2	3	4	0.3	167
111331	HVF.114-3/4	3/4	114	70	-	46	46	60	12	2.1	3.7	5	0.17	663
111341	HVF.114-1	1	114	70	-	46	46	80	12	2.1	3.7	5	0.15	667

* Maximum flow rate

Maximum pressure

** Minimum flow rate to start the rotor for fluids of different viscosity

Pressure drop due to the indicator presence



Column Indicators

Series **Features**

HCZ.
page 1752



With or without incorporated thermometer. With or without SUPER-technopolymer protection frame. Zinc-plated steel assembly screws. Hole centre distance 76, 127, 254 mm

HCZ-VT
page 1754



For applications requiring corrosion resistance with no need of using stainless steel screws. With or without incorporated thermometer. With or without SUPER-technopolymer protection frame. SUPER-technopolymer assembly screws. Hole centre distance 76, 127, 254 mm

HCX.
page 1756



With or without incorporated thermometer. Zinc-plated steel assembly screws. Hole centre distance 76, 127, 254 mm

HCX-SST
page 1758



For applications requiring corrosion resistance. With or without incorporated thermometer. Stainless steel assembly screws. Hole centre distance 76, 127, 254 mm

HCX-AR
page 1763



For applications with fluids containing alcohol. With or without incorporated thermometer. Zinc-plated steel assembly screws. Hole centre distance 76, 127, 254 mm

HCX-BW-SST
page 1762



For applications with hot water. Without thermometer. Stainless steel assembly screws. Hole centre distance 76, 127, 254 mm

HCX-VT
page 1760



For applications requiring corrosion resistance with no need of using stainless steel screws. With or without incorporated thermometer. SUPER-technopolymer assembly screws. Hole centre distance 127, 254 mm

Series **Features**

HCX-LT
page 1769



With float for indirect level reading. Zinc-plated steel assembly screws. Hole centre distance 254 mm

HCX-PT
page 1764



With or without incorporated thermometer. SUPER-technopolymer protection frame. Zinc-plated steel assembly screws (HCX-PT), stainless steel (HCX-PT-SST), SUPER-technopolymer (HCX-PT-VT). Hole centre distance 76, 127, 254 mm.

HCX-P
page 1766



With or without incorporated thermometer. Zinc-alloy protection frame. Zinc-plated steel assembly screws. Hole centre distance 127 mm

HCK.
page 1770



Aluminium protection frame. With or without transparent polycarbonate protection frame. Zinc-plated steel assembly screws. Hole centre distance 76, 127, 176, 254, 381, 508 mm

HCK-GL
page 1772



For applications with water/glycol-based solutions. Aluminium protection frame and transparent polycarbonate front protection. Zinc-plated or stainless steel assembly screws. Hole centre distance 76, 127, 176, 254, 381, 508 mm

SLCK
page 1774



For the electric control of a fluid level for HCK and HCK-GL

HCL.
page 1776



With aluminium protection frame. Zinc-plated steel assembly screws. Hole centre distance 300, 400, 500 mm

Column Indicators

Series **Features**

HCX-ST
page 1778



With MAX temperature electrical sensor. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCX-STL
page 1780



With electrical probe for indirect temperature reading by means of analogue signal. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCX-E
page 1782



With MIN level electrical sensor. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCX-E-ST
page 1784



With MIN level and MAX temperature electrical sensors. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCX-E-STL
page 1786



With MIN level electrical sensor and electrical probe for indirect temperature reading by means of analogue signal. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCV-ST
page 1788



With MAX temperature electrical sensor. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCV-STL
page 1790



With electrical probe for indirect temperature reading by means of analogue signal. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

Series **Features**

HCV-E
page 1792




With MIN level electrical sensor. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCV-E-ST
page 1794



With MIN level and MAX temperature electrical sensors. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCV-E-STL
page 1796



With MIN level electrical sensor and electrical probe for indirect temperature reading by means of analogue signal. Zinc-plated steel assembly screws. Hole centre distance 127, 254 mm

HCY-E
page 1798




With MIN level electrical sensor. Nickel-plated brass assembly screws. Hole centre distance 76, 127, 254 mm

HCY-E-ST
page 1800




With MIN level and MAX temperature electrical sensors. Nickel-plated brass assembly screws. Hole centre distance 76, 127, 254 mm

HFL-E
page 1802



Level electrical sensor with float. Assembly by means of flange or threaded coupler.

HFLT-E
page 1804



Level electrical sensor with float. Assembly by means of flange or threaded coupler.

Column level indicators

with or without protection frame, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol and detergents containing alcohol.

PROTECTION FRAME

Glass-fibre reinforced polyamide (PA) SUPER-technopolymer, black colour, matte finish. Supplied assembled, removable by a screwdriver.

SCREWS AND NUTS

Zinc-plated steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring screw underneath. Suggested roughness of the packing ring application surface Ra = 3 µm.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid.

It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCZ**: without thermometer and without protection frame.
- **HCZ/T**: with thermometer incorporated, without protection frame.
- **HCZ-P**: without thermometer, with protection frame.
- **HCZ/T-P**: with thermometer incorporated and protection frame.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

Ultrasound welding to guarantee a perfect seal. Lens effect for a better visibility of the fluid level and temperature. Special openings in the protection frame provide maximum fluid level visibility even from side positions. All shocks are absorbed by the frame that transmits them directly onto the wall of the reservoir.

TECHNICAL DATA

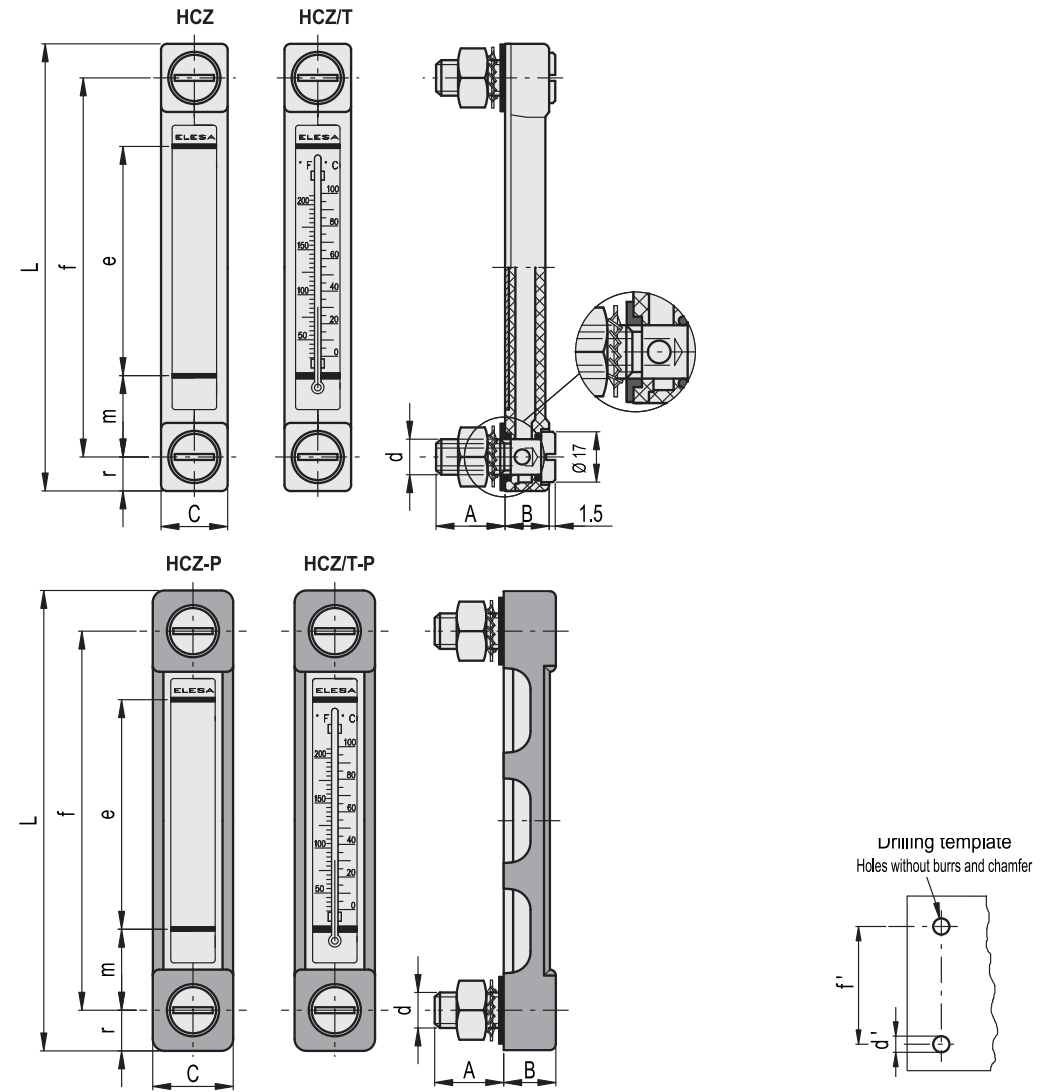
In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCZ.76 and HCZ.127) 12 bar (HCZ.254).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

SPECIAL EXECUTIONS ON REQUEST

- HCZ.127: with M10 screws and nuts.
- UV resistant transparent technopolymer indicators.



HCZ.

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	C# [Nm]	⚖
11382	HCZ.76	76	M10	22	15	22	99	40	18	11.5	10.5	76	12	90
11385	HCZ.127	127	M12	22	15	22	150	80	23	11.5	12.5	127	12	120
11388	HCZ.254	254	M12	22	15	24	278	203	25	12.5	12.5	254	12	150

HCZ/T

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
11383	HCZ.76/T	76	M10	22	15	22	99	40	18	11.5	10.5	76	20÷100	68÷210	12	91
11386	HCZ.127/T	127	M12	22	15	22	150	80	23	11.5	12.5	127	0÷100	32÷210	12	121
11389	HCZ.254/T	254	M12	22	15	24	278	203	25	12.5	12.5	254	0÷100	32÷210	12	170

HCZ-P

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	C# [Nm]	⚖
11392	HCZ.76-P	76	M10	22	17.5	27	105	40	18	14.5	10.5	76	12	101
11395	HCZ.127-P	127	M12	22	17.5	27	156	80	23	14.5	12.5	127	12	138
11398	HCZ.254-P	254	M12	22	17.5	29	284	203	25	15.5	12.5	254	12	150

HCZ/T-P

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
11393	HCZ.76/T-P	76	M10	22	17.5	27	105	40	18	14.5	10.5	76	20÷100	68÷210	12	102
11396	HCZ.127/T-P	127	M12	22	17.5	27	156	80	23	14.5	12.5	127	0÷100	32÷210	12	139
11399	HCZ.254/T-P	254	M12	22	17.5	29	284	203	25	15.5	12.5	254	0÷100	32÷210	12	150

Maximum tightening torque.

Column level indicators

SUPER-technopolymer assembly screws, with or without protection frame

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

PROTECTION FRAME

Glass-fibre reinforced polyamide (PA) SUPER-technopolymer, black colour, matte finish. Supplied assembled, removable by a screwdriver.

SCREWS

Glass-fibre reinforced polyamide (PA) SUPER-technopolymer, lightweight and high mechanical strength. Anticorrosive material: suitable even in the presence of liquid or humidity. Resistant to several washing cycles with solvents and detergents, for this reason it is suitable for applications in the pharmaceutical or food industry.

NUTS AND WASHERS

AISI 304 stainless steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring screw underneath. Suggested roughness of the packing ring application surface $R_a = 3 \mu\text{m}$.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCZ-VT**: without thermometer and without protection frame.
- **HCZ/T-VT**: with thermometer incorporated, without protection frame.
- **HCZ-P-VT**: without thermometer, with protection frame.
- **HCZ/T-P-VT**: with thermometer incorporated and protection frame.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

SPECIAL EXECUTIONS ON REQUEST

UV resistant transparent technopolymer indicators.



FEATURES AND PERFORMANCES

Thanks to the SUPER-technopolymer screws, HCZ-VT column level indicator can be used in corrosion resistance applications where stainless steel is not necessary.

The special slotted head of the SUPER-technopolymer screws is especially designed to reach an optimum tightening of the packing rings by applying an adequate tightening torque (ELESA patent) thus avoiding unnecessary stress to the screws.

Ultrasound welding to guarantee a perfect seal.

Lens effect for a better visibility of the fluid level and temperature.

Special openings in the protection frame provide maximum fluid level visibility even from side positions.

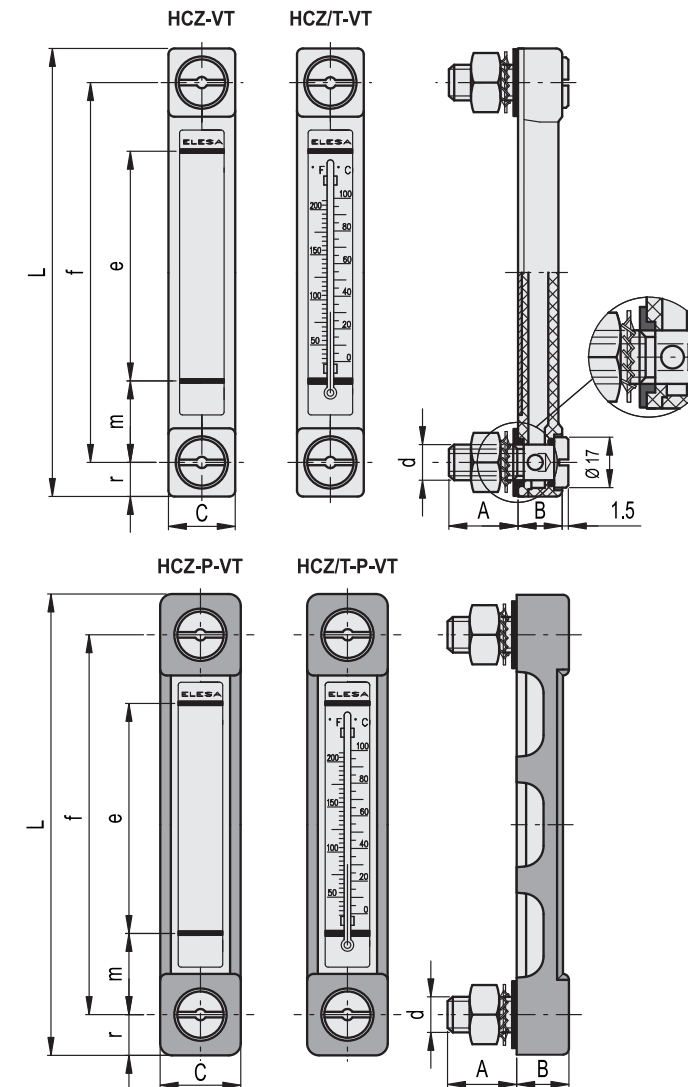
All shocks are absorbed by the frame that transmits them directly onto the wall of the reservoir.

TECHNICAL DATA

Considering the SUPER-technopolymer screws, the maximum working pressure cannot be higher than 5 bar at 20°C and 2 bar at 90°C.

For higher pressure values use HCZ-SST with stainless steel screws. For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.



HCZ-VT

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	C# [Nm]	⚖
111382	HCZ.76-VT-M12	76	M12	23.5	15	22	99	40	18	11.5	12.5	76	6	67
111385	HCZ.127-VT-M12	127	M12	23.5	15	22	150	80	23	11.5	12.5	127	6	78
111388	HCZ.254-VT-M12	254	M12	23.5	15	24	278	203	25	12.5	12.5	254	6	110

HCZ/T-VT

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
111383	HCZ.76/T-VT-M12	76	M12	23.5	15	22	99	40	18	11.5	12.5	76	20÷100	68÷210	6	68
111386	HCZ.127/T-VT-M12	127	M12	23.5	15	22	150	80	23	11.5	12.5	127	0÷100	32÷210	6	79
111389	HCZ.254/T-VT-M12	254	M12	23.5	15	24	278	203	25	12.5	12.5	254	0÷100	32÷210	6	111

HCZ-P-VT

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	C# [Nm]	⚖
111392	HCZ.76-P-VT-M12	76	M12	23.5	17.5	27	105	40	18	14.5	12.5	76	6	85
111395	HCZ.127-P-VT-M12	127	M12	23.5	17.5	27	156	80	23	14.5	12.5	127	6	104
111398	HCZ.254-P-VT-M12	254	M12	23.5	17.5	29	284	203	25	15.5	12.5	254	6	169

HCZ/T-P-VT

Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
111393	HCZ.76/T-P-VT-M12	76	M12	23.5	17.5	27	105	40	18	14.5	12.5	76	20÷100	68÷210	6	86
111396	HCZ.127/T-P-VT-M12	127	M12	23.5	17.5	27	156	80	23	14.5	12.5	127	0÷100	32÷210	6	105
111399	HCZ.254/T-P-VT-M12	254	M12	23.5	17.5	29	284	203	25	15.5	12.5	254	0÷100	32÷210	6	170

Maximum tightening torque

Column level indicators

Technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring. Suggested roughness of the packing ring application surface Ra = 3 µm.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid.

It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCX.**: without thermometer.
- **HCX/T**: with incorporated thermometer.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

Ultrasound welding to guarantee a perfect seal. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level and temperature.

TECHNICAL DATA

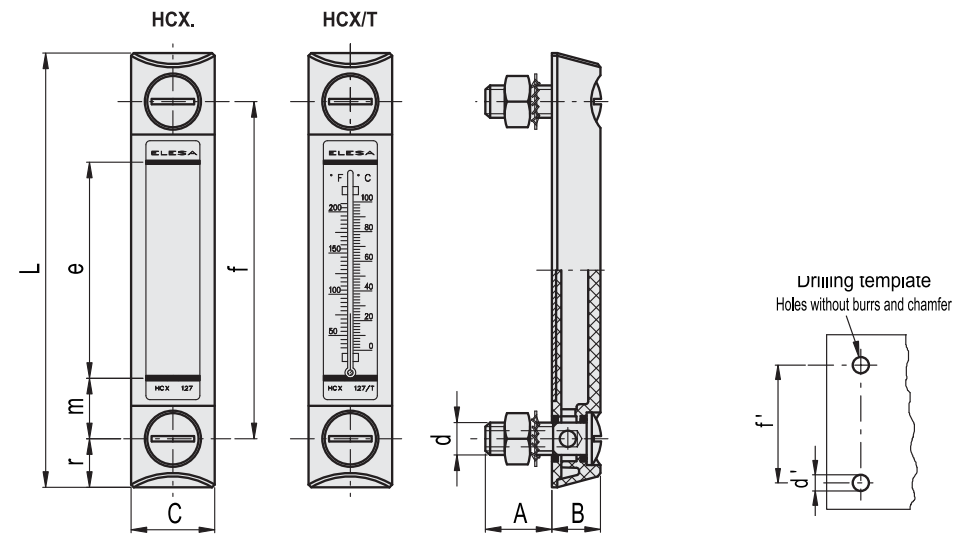
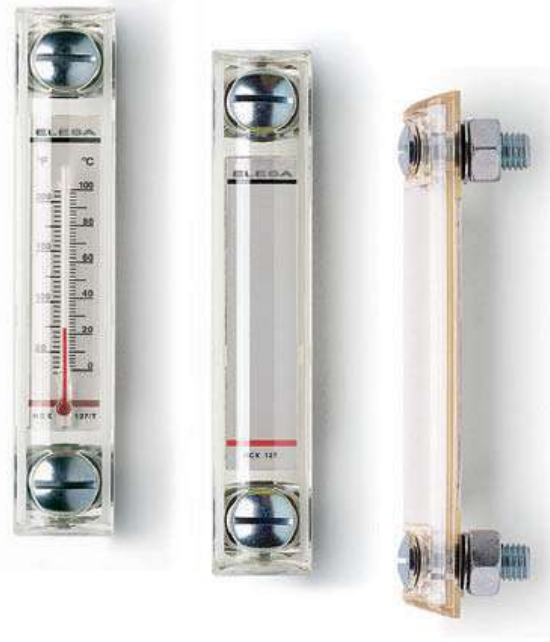
In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCX.76 e HCX.127) 12 bar (HCX.254). For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department. In any case we suggest to verify the suitability of the product under the actual working conditions.

OTHER STANDARD EXECUTIONS

- HCX-AR (see page 1763) for use with fluids containing alcohol.
- HCX-BW-SST (see page 1762) for use with hot water.
- HCX-PT (see page 1764) with SUPER-technopolymer protection frame.

SPECIAL EXECUTIONS ON REQUEST

- UV resistant transparent technopolymer indicators.
- Indicators with two red ball-shaped floats (only for the execution without thermometer).
- Indicators with cylindrical or step-shaped (NBR or FKM) packing rings (instead of OR) for mounting on reservoirs having rough surfaces or in any case not perfectly flat.



Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
11341	HCX.76-M10	76	M10	22	16	27	107	40	18	15.5	10.5	76	-	-	12	87
11346	HCX.76/T-M10	76	M10	22	16	27	107	40	18	15.5	10.5	76	20÷100	68÷210	12	87
11349	HCX.127-M10	127	M10	23	18	31	161	80	23	17	10.5	127	-	-	12	138
11354	HCX.127/T-M10	127	M10	23	18	31	161	80	23	17	10.5	127	0÷100	32÷210	12	138
11351	HCX.127-M12	127	M12	23	18	31	161	80	23	17	12.5	127	-	-	12	138
11356	HCX.127/T-M12	127	M12	23	18	31	161	80	23	17	12.5	127	0÷100	32÷210	12	138
11361	HCX.254-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	-	-	10	185
11366	HCX.254/T-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	0÷100	32÷210	10	185

Maximum tightening torque

Column level indicators

stainless steel assembly screws, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

AISI 303 stainless steel screws, AISI 304 stainless steel nuts and washers.

PACKING RINGS

FKM type VITON®*O-Ring. Suggested roughness of the packing ring application surface Ra = 3 µm.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid.

It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HGX-SST**: without thermometer.
- **HGX/T-SST**: with incorporated thermometer.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

Ultrasound welding to guarantee a perfect seal. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level and temperature.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCX.76-SST and HCX.127-SST) 12 bar (HCX.254-SST).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

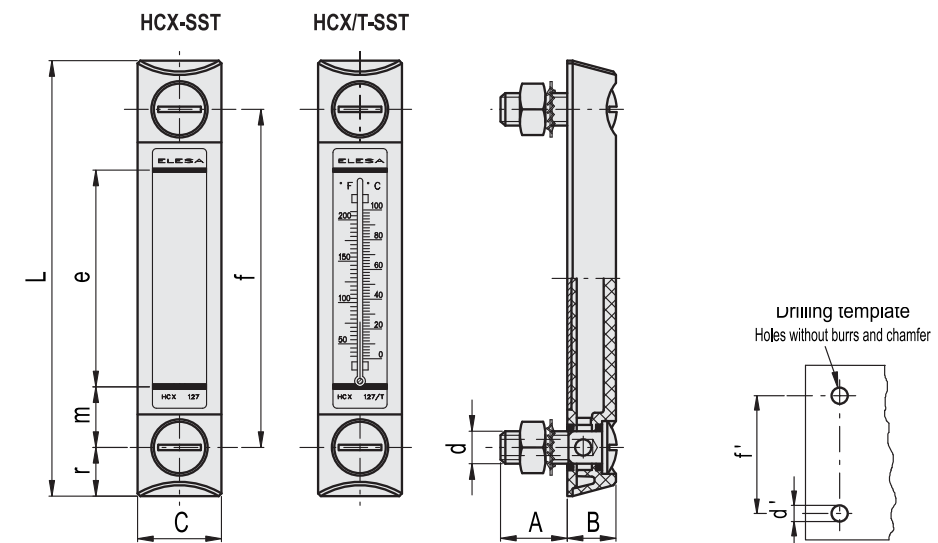
OTHER STANDARD EXECUTIONS

- HCX-AR (see page 1763) for use with fluids containing alcohol.
- HCX-BW-SST (see page 1762) for use with hot water.
- HCX-PT (see page 1764) with SUPER-technopolymer protection frame.

SPECIAL EXECUTIONS ON REQUEST

- UV resistant transparent technopolymer indicators.
- Indicators with two red ball-shaped floats (only for the execution without thermometer).
- Indicators with cylindrical or step-shaped (NBR or FKM) packing rings (instead of OR) for mounting on reservoirs having rough surfaces or in any case not perfectly flat.

* Registered trademark by DuPont Dow Elastomers.



STAINLESS STEEL																
Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
11343	HCX.76-SST-M10	76	M10	22	16	27	107	40	18	15.5	10.5	76	-	-	12	87
11348	HCX.76/T-SST-M10	76	M10	22	16	27	107	40	18	15.5	10.5	76	20÷100	68÷210	12	87
11353	HCX.127-SST-M12	127	M12	23	18	31	161	80	23	17	12.5	127	-	-	12	138
11358	HCX.127/T-SST-M12	127	M12	23	18	31	161	80	23	17	12.5	127	0÷100	32÷210	12	138
11363	HCX.254-SST-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	-	-	10	185
11368	HCX.254/T-SST-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	0÷100	32÷210	10	185

Maximum tightening torque

Column level indicators

SUPER-technopolymer assembly screws

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS

Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer

NUTS AND WASHERS

AISI 304 stainless steel.

PACKING RINGS

NBR synthetic rubber (on request FKM) O-Ring. Suggested roughness of the packing ring application surface $Ra = 3 \mu m$.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HGX-VT**: without thermometer.
- **HGX/T-VT**: with incorporated thermometer.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

Thanks to the SUPER-technopolymer screws, HCX/VT column level indicator can be used in corrosion resistance applications where stainless steel is not necessary.

The special slotted head of the SUPER-technopolymer screws is especially designed to reach an optimum tightening of the packing rings by applying an adequate tightening torque (ELESA patent) thus avoiding unnecessary stress to the screws.

Ultrasound welding to guarantee a perfect seal.

Maximum fluid level visibility even from side positions.

Lens effect for a better visibility of the fluid level and temperature.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCX.127-VT) 12 bar (HCX.254-VT).

Considering the SUPER-technopolymer screws, the maximum working pressure cannot be higher than 5 bar at 20°C and 2 bar at 90°C.

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

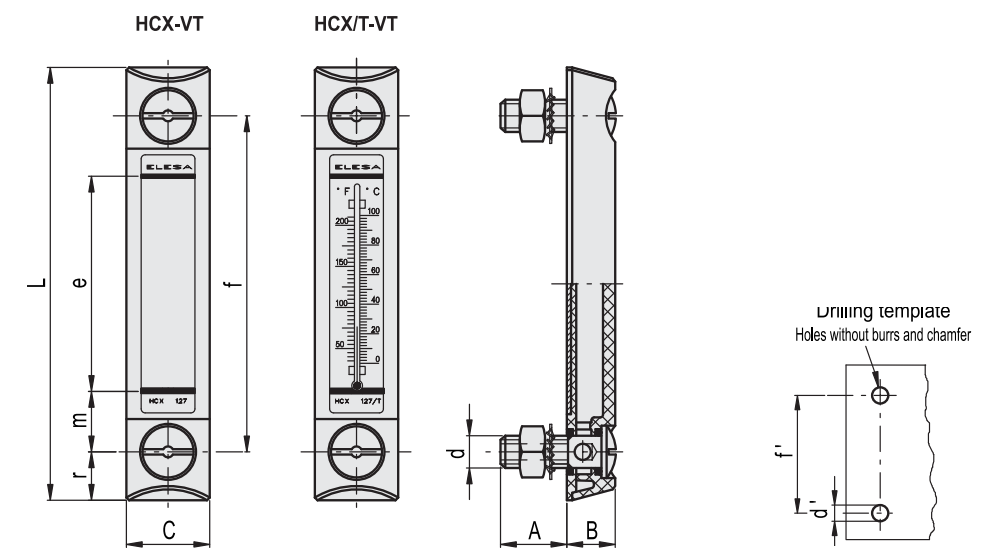
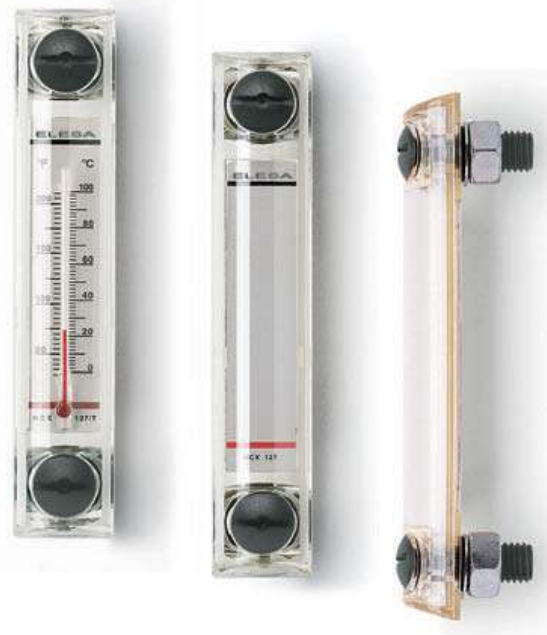
In any case we suggest to verify the suitability of the product under the actual working conditions.

ANOTHER STANDARD EXECUTION

HCX-PT (see page 1764) with SUPER-technopolymer protection frame.

SPECIAL EXECUTIONS ON REQUEST

- UV resistant transparent technopolymer indicators.
- Indicators with two red ball-shaped floats (only for the execution without thermometer).
- Indicators with cylindrical or step-shaped (NBR or FKM) packing rings (instead of OR) for mounting on reservoirs having rough surfaces or in any case not perfectly flat.



Code	Description	f	d	A	B	C	L	e	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C#	⚖
111351	HCX.127-VT-M12	127	M12	23	18	31	161	80	23	17	12.5	127	-	-	6	94
111361	HCX.127/T-VT-M12	127	M12	23	18	31	161	80	23	17	12.5	127	0+100	32+210	6	94
111371	HCX.254-VT-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	-	-	6	141
111381	HCX.254/T-VT-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	0+100	32+210	6	141

Maximum tightening torque

Column level indicators

for hot water, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters.

Avoid contact with alcohol or detergents containing alcohol.

The special technopolymer used for HCX-BW-SST column level indicator allows to use it even in circuits working with very hot water and prevents milk effect on the transparent surface.

SCREWS, NUTS AND WASHERS

AISI 303 stainless steel screws, AISI 304 stainless steel nuts and washers.

PACKING RINGS

FKM type VITON®*O-Ring.

Suggested roughness of the packing ring application surface $R_a = 3 \mu m$.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

80°C with peaks of 90°C.

FEATURES AND PERFORMANCES

Ultrasound welding to guarantee a perfect seal.

Maximum fluid level visibility even from side positions.

Lens effect for a better visibility of the fluid level.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to 10 bar.

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

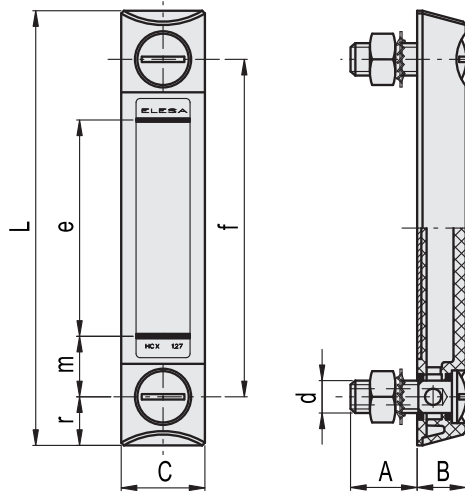
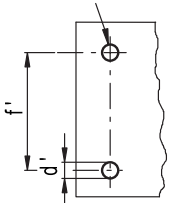
SPECIAL EXECUTIONS ON REQUEST

- Level indicators with SUPER-technopolymer protection frame.
- Indicators with two red ball-shaped floats (only for the execution without thermometer).

* Registered trademark by DuPont Dow Elastomers.



Drilling template
Holes without burrs and chamfer



STAINLESS STEEL

Code	Description	f	d	A	B	C	L	e	m	r	d'±0.2	f'±0.2	C# [Nm]	⚖️
11345	HCX.76-BW-SST-M10	76	M10	22	16	27	107	40	18	15.5	10.5	76	8	87
11355	HCX.127-BW-SST-M12	127	M12	23	18	31	161	80	23	17	12.5	127	8	138
11365	HCX.254-BW-SST-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	8	185

Maximum tightening torque

Column level indicators

for use with fluids containing alcohol, technopolymer

MATERIAL

Transparent polyamide based (PA-T/AR) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters, additives and detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring.

Suggested roughness of the packing ring application surface $R_a = 3 \mu m$.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- HCX-AR: without thermometer.
- HCX/T-AR: with incorporated thermometer.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

80°C.

FEATURES AND PERFORMANCES

Ultrasound welding to guarantee a perfect seal.

Maximum fluid level visibility even from side positions.

Lens effect for a better visibility of the fluid level and temperature.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 13 bar (HCX.76-AR and HCX.127-AR) 10 bar (HCX.254-AR).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

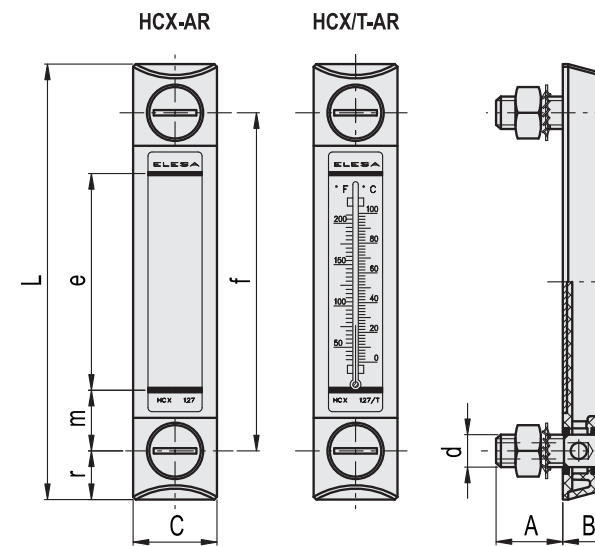
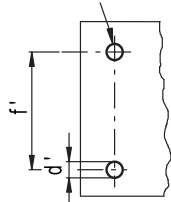
In any case we suggest to verify the suitability of the product under the actual working conditions.

SPECIAL EXECUTIONS ON REQUEST

- Level indicators with with SUPER-technopolymer protection frame.
- Indicators with two red ball-shaped floats (only for the execution without thermometer).
- Indicators with cylindrical or step-shaped (NBR or FKM) packing rings (instead of OR) for mounting on reservoirs having rough surfaces or in any case not perfectly flat.



Drilling template
Holes without burrs and chamfer



Code	Description	f	d	A	B	C	L	e	m	r	d'±0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖️
11342	HCX.76-AR-M10	76	M10	22	16	27	107	40	18	15.5	10.5	76	-	-	8	87
11347	HCX.76/T-AR-M10	76	M10	22	16	27	107	40	18	15.5	10.5	76	20÷100	68÷210	8	87
11352	HCX.127-AR-M12	127	M12	23	18	31	161	80	23	17	12.5	127	-	-	8	138
11357	HCX.127/T-AR-M12	127	M12	23	18	31	161	80	23	17	12.5	127	0÷100	32÷210	8	138
11362	HCX.254-AR-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	-	-	8	185
11367	HCX.254/T-AR-M12	254	M12	21	18	35	291	203	26	18.5	12.5	254	0÷100	32÷210	8	185

Maximum tightening torque

Column level indicators

with SUPER-technopolymer protection frame

INDICATOR BODY

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

PROTECTION FRAME

Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer, black colour, matte finish. Supplied assembled, removable by a screwdriver.

SCREWS, NUTS AND WASHERS

- Zinc-plated steel. (HCX-PT).
- AISI 303 stainless steel screws, AISI 304 stainless steel nuts and washers. (HCX-PT-SST).
- Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer screws, AISI 304 stainless steel nuts and washers. (HCX-PT-VT).

PACKING RINGS

- NBR synthetic rubber O-Ring. (HCX-PT and HCX-PT-VT).
 - FKM type VITON®*O-Ring. (HCX-PT-SST).
- Suggested roughness of the packing ring application surface Ra = 3 µm.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCX-PT**: without thermometer. Zinc-plated steel screws, nuts and washers.
- **HCX/T-PT**: with incorporated thermometer. Zinc-plated steel screws, nuts and washers.
- **HCX-PT-SST**: without thermometer. AISI 303 stainless steel screws, AISI 304 stainless steel nuts and washers.
- **HCX/T-PT-SST**: with incorporated thermometer. AISI 303 stainless steel screws, AISI 304 stainless steel nuts and washers.
- **HCX-PT-VT**: without thermometer. Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer screws, AISI 304 stainless steel nuts and washers.
- **HCX/T-PT-VT**: with incorporated thermometer. Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer screws, AISI 304 stainless steel nuts and washers.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

Ultrasound welding to guarantee a perfect seal.
 Lens effect for a better visibility of the fluid level and temperature.
 Special openings in the protection frame provide maximum fluid level visibility even from side positions.
 All shocks are absorbed by the frame that transmits them directly onto the wall of the reservoir.



TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCX.76-PT e HCX.127-PT) 12 bar (HCX.254-PT). For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department. In any case we suggest to verify the suitability of the product under the actual working conditions.

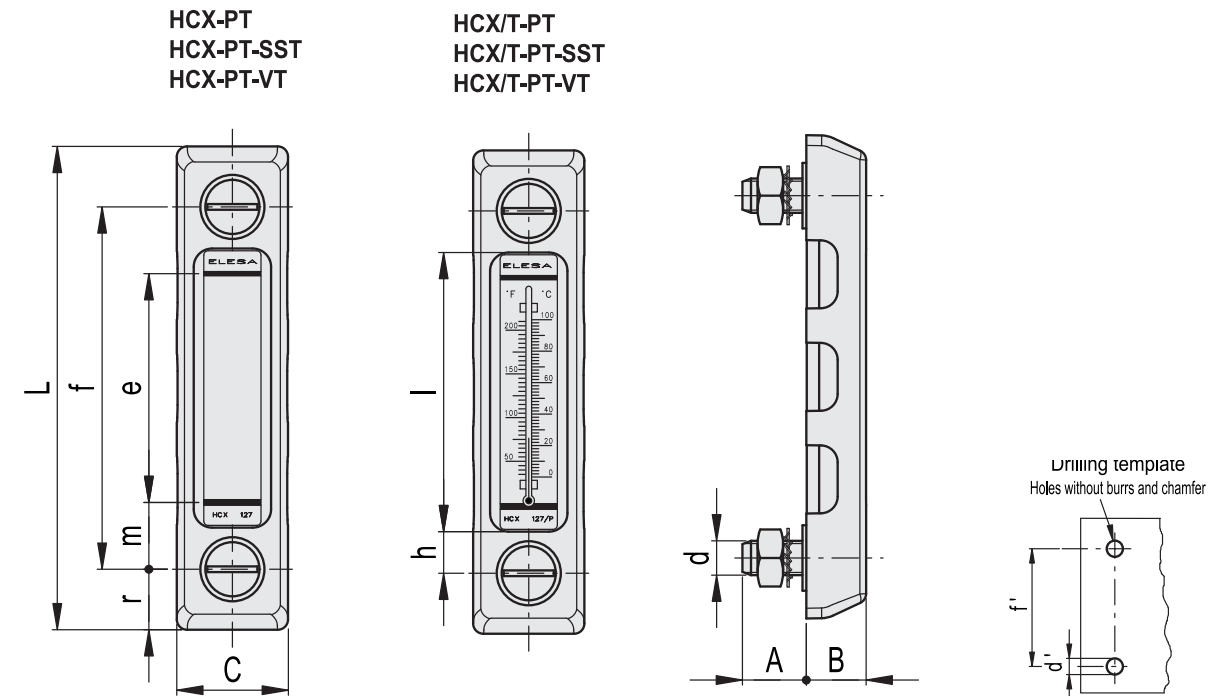
OTHER STANDARD EXECUTIONS

- HCX-AR (see page 1761) for use with fluids containing alcohol.
- HCX-BW-SST (see page 1760) for use with hot water.

SPECIAL EXECUTIONS ON REQUEST

- UV resistant transparent technopolymer indicators.
- Indicators with two red ball-shaped floats (only for the execution without thermometer).
- Indicators with cylindrical or step-shaped (NBR or FKM) packing rings (instead of OR) for mounting on reservoirs having rough surfaces or in any case not perfectly flat.

* Registered trademark by DuPont Dow Elastomers.



HCX-PT - HCX/T-PT

Code	Description	f	d	A	B	C	L	e	h	l	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
11332	HCX.76-PT-M10	76	M10	20	19	35.5	115	40	13.5	49	18	19.5	10.5	76	-	-	12	117
11336	HCX.76/T-PT-M10	76	M10	20	19	35.5	115	40	13.5	49	18	19.5	10.5	76	20÷100	68÷210	12	117
11372	HCX.127-PT-M12	127	M12	22	21	39	169	80	15	96	23	21	12.5	127	-	-	12	191
11377	HCX.127/T-PT-M12	127	M12	22	21	39	169	80	15	96	23	21	12.5	127	0÷100	32÷210	12	191
11359	HCX.254-PT-M12	254	M12	21	21.5	44.5	301	203	18	218	26	23.5	12.5	254	-	-	12	288
11369	HCX.254/T-PT-M12	254	M12	21	21.5	44.5	301	203	18	218	26	23.5	12.5	254	0÷100	32÷210	12	288

HCX-PT-SST - HCX/T-PT-SST

Code	Description	f	d	A	B	C	L	e	h	l	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
11334	HCX.76-PT-SST-M10	76	M10	20	19	35.5	115	40	13.5	49	18	19.5	10.5	76	-	-	12	119
11338	HCX.76/T-PT-SST-M10	76	M10	20	19	35.5	115	40	13.5	49	18	19.5	10.5	76	20÷100	68÷210	12	119
11373	HCX.127-PT-SST-M12	127	M12	22	21	39	169	80	15	96	23	21	12.5	127	-	-	12	193
11378	HCX.127/T-PT-SST-M12	127	M12	22	21	39	169	80	15	96	23	21	12.5	127	0÷100	32÷210	12	193
11360	HCX.254-PT-SST-M12	254	M12	21	21.5	44.5	301	203	18	218	26	23.5	12.5	254	-	-	12	290
11370	HCX.254/T-PT-SST-M12	254	M12	21	21.5	44.5	301	203	18	218	26	23.5	12.5	254	0÷100	32÷210	12	290

HCX-PT-VT - HCX/T-PT-VT

Code	Description	f	d	A	B	C	L	e	h	l	m	r	d'-0.2	f'±0.2	Thermometer scale°C	Thermometer scale°F	C# [Nm]	⚖
111353	HCX.127-PT-VT-M12	127	M12	22	21	39	169	80	15	96	23	21	12.5	127	-	-	6	147
111363	HCX.127/T-PT-VT-M12	127	M12	22	21	39	169	80	15	96	23	21	12.5	127	0÷100	32÷210	6	147
111373	HCX.254-PT-VT-M12	254	M12	21	21.5	44.5	301	203	18	218	26	23.5	12.5	254	-	-	6	248
111379	HCX.254/T-PT-VT-M12	254	M12	21	21.5	44.5	301	203	18	218	26	23.5	12.5	254	0÷100	32÷210	6	248

Maximum tightening torque

Column level indicators

technopolymer, with zinc alloy protection frame

MATERIAL

Transparent polyamide based (PA-T) technopolymer. High resistance to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

PROTECTION FRAME

Zinc-alloy, sandblasted and treated finish.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring screw underhead.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCX-P**: without thermometer.
- **HCX/T-P**: with incorporated thermometer.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

Ultrasound welding to guarantee a perfect seal. Lens effect for a better visibility of the fluid level and temperature. Special openings in the protection frame provide maximum fluid level visibility even from side positions. All shocks are absorbed by the frame that transmits them directly onto the wall of the reservoir

TECHNICAL DATA

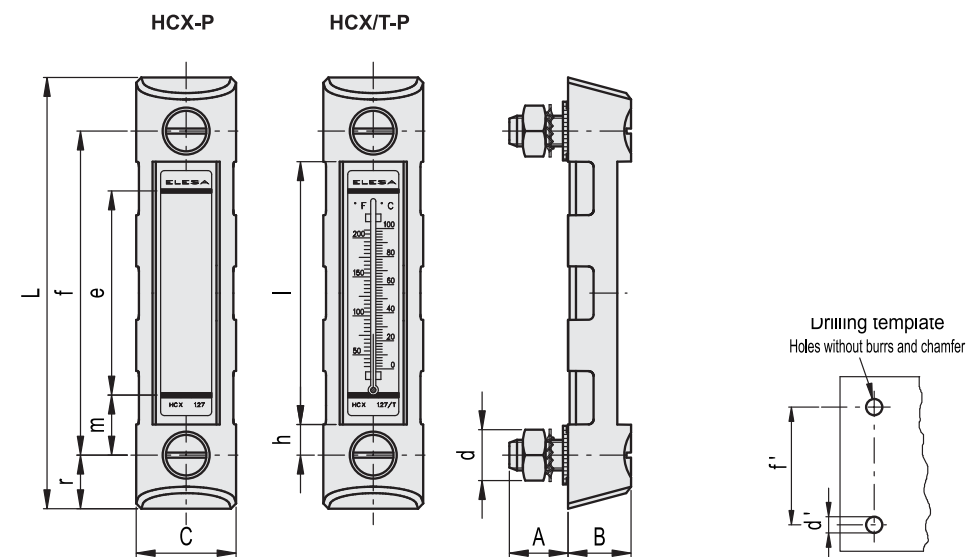
In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to 18 bar.

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

SPECIAL EXECUTIONS ON REQUEST

- Level indicators for use with fluids containing alcohol or with hot water.
- UV resistant transparent technopolymer indicators.
- Protection frame with indicators type HCX-SST (see page 1758), HCX-BW-SST (see page 1762), HCX-AR (see page 1763).
- Indicators with two red ball-shaped floats (only for the execution without thermometer).
- Indicators with cylindrical or step-shaped (NBR or FKM) packing rings (instead of OR) for mounting on reservoirs having rough surfaces or in any case not perfectly flat.



Code	Description	f	d	A	B	C	L	e	h	l	m	r	d'-0.2	f'±0.2	C#	[Nm]	⚙
11371	HCX.127-P-M12	127	M12	22	25	39	169	80	12	103	23	21	12.5	127	12	279	
11376	HCX.127/T-P-M12	127	M12	22	25	39	169	80	12	103	23	21	12.5	127	12	281	

Maximum tightening torque

Fast Mounting Kit

Steel and rubber

NUT

Zinc-plated steel.

PACKING RING

NBR synthetic rubber.

FEATURES

The FM kit (fast mounting kit) has been designed for mounting level indicators series HCX. from the outside when nuts cannot be fitted from the inside of the reservoir.

ASSEMBLY OF THE INDICATOR WITH THE FM KIT (FAST MOUNTING KIT)

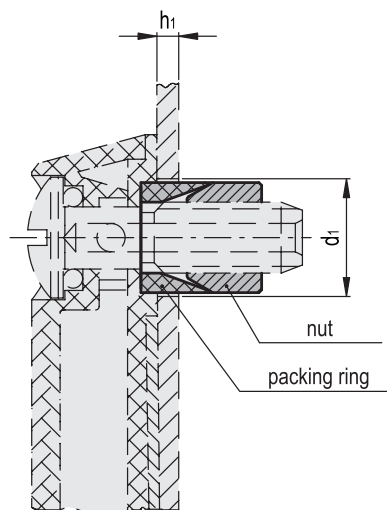
- Arrange the holes d_1 as reported in the table and make sure that the holes in the plate do not have any burs, especially inside the reservoir.
- Unscrew the nuts from the HCX. indicator and take out the washers supplied with the standard execution, put the packing ring inside and screw the nuts (with or without O-Ring according to the thickness h_1).
- Before assembly of the indicator on the reservoir, slightly tighten the nut by hand against the packing ring.

We advise you, then, to deform slightly the threaded end of the screw in order to prevent the nut from falling into the reservoir while disassembling the indicator.

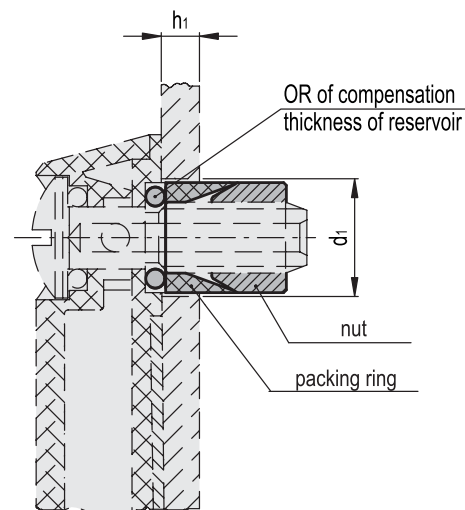
- To disassemble the indicator from the reservoir, just rotate the screw 3/4 of a turn keeping the plastic part of the indicator under tension (pulling).



$1.5 < h_1 < 4.7$
(assembly without O-ring)



$4.7 < h_1 < 6.3$
(assembly with O-ring)



Code	Description	$d_1 + 0.1$	Without O-ring h_1 min	Without O-ring h_1 max	With O-ring h_1 min	With O-ring h_1 max	Tightening torque max. [Nm]
31801	FM-HCX.76-M10-KIT	16	1.5	4.7	4.7	6.3	7
31811	FM-HCX.127-254-M12-KIT	17.5	1.5	4.7	4.7	6.3	7

Column level indicator

with float for indirect level reading, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. High resistance to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring.
Suggested roughness of the packing ring application surface $R_a = 3 \mu m$.

FLOAT

Ebonite, black colour.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

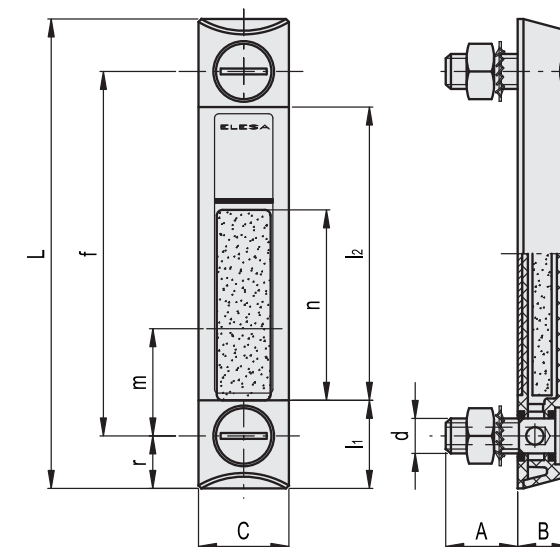
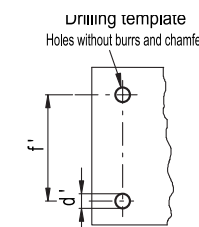
FEATURES AND PERFORMANCES

HCX-LT column level indicator allows the fluid level reading by means of a float when, due to the particular design of the system, the fluid level cannot be seen directly from the lower part of the indicator. The plastic foam float is moved upward by the fluid contained in the reservoir. This system allows an indirect reading of the level. The red line on the lacquered contrast screen is visible only when the float is in its lowest position (minimum fluid level = m). Ultrasound welding to guarantee a perfect seal. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to 12 bar.

For use with other fluids and under different pressure and temperature conditions, please contact ELESa Technical Department. In any case we suggest to verify the suitability of the product under the actual working conditions.



Code	Description	f	d	A	B	C	L	L1	L2	m*	n	r	$d'-0.2$	$f'±0.2$	C# [Nm]	⚖
11364	HCX.254-LT-M12	254	M12	21	18	35	291	32	225	46	140	18.5	12.5	254	6	215

* See assembly instructions

Maximum tightening torque



SPECIAL EXECUTIONS ON REQUEST

Level indicators with SUPER-technopolymer protection frame. UV resistant transparent technopolymer indicators.

ASSEMBLY INSTRUCTIONS

To ensure proper assembly of the indicator, please follow these instructions:

1. Set the minimum oil level of your reservoir.
2. Drill two holes on the reservoir wall. The lower hole axis should be drilled at "m" distance (see table) under the minimum oil level. "m" is the minimum oil level allowed. This is the level from which the float starts to be moved upward. The value "m" is calculated with an oil density of 875 Kg/m³ at 15°C. If the red line of the contrast screen appears, the oil level is under its minimum level allowed.

Column level indicators

with or without transparent protection, technopolymer

ASSEMBLY ENDS

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour.

SUPPORT

Aluminium in natural colour.

LEVEL COLUMN WINDOW

Polycarbonate transparent tube.
Maximum fluid level visibility even from side positions

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR rubber O-Ring.

GRADUATED CONTRAST SCREEN

White lacquered aluminium. It can be taken out before assembly to allow the insertion of level lines or words.
Fitted to the aluminium support.

STANDARD EXECUTIONS

- **HCK:** with transparent front protection (against accidental shocks), in polycarbonate (PC), extractable for cleaning operations.
- **HCK-NP:** without transparent front protection.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

100°C (with oil).

TECHNICAL DATA

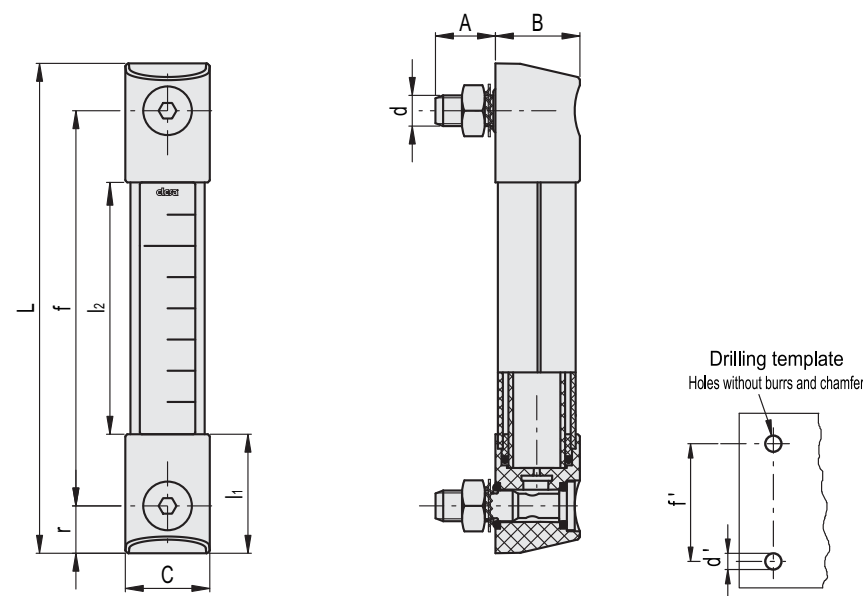
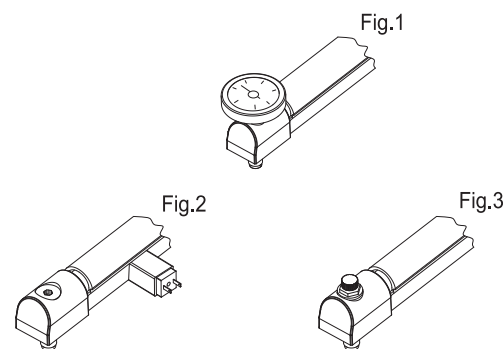
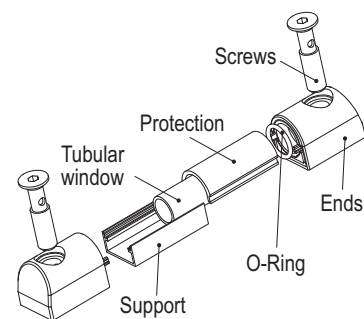
In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the values of pressure resistance were much higher than 35 bar.

If you need to use the indicator with other oils or fluids and under different pressure and temperature conditions, please contact ELESA+GANTER Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

SPECIAL EXECUTIONS ON REQUEST

- Column level window in transparent methylmethacrylate (PMMA) for max 70°C use.
- AISI 303 stainless steel screws with hexagon socket.
- Polyamide based technopolymer float (from HCK.127) red colour.
- Expanded NBR float (from HCK.176) black colour with AISI 316 stainless steel spiral for special executions, viscous liquids, high temperatures.
- Column level window with visibility (l₂) superior to 452 mm and holes centre distance (f) for fixing up to 1.500 mm.
- Electric sensor bracket pre-set at the following temperatures: 50°C, 60°C, 70°C, 80°C.
- Packing rings in special material depending on the customer's needs.
- Built-in thermometer with red indication line.
- External scale thermometer (Fig. 1) with internal probe for fluid temperature.
- SLCK electric level sensor (Fig.2, from HCK.127) which can be fitted along the axis of the indicator according to the actual needs. With right (DX) or left (SX) connectors, normally closed (NC), normally open (NO).
- Special screw with nickel-plated brass tap (Fig. 3) to be fitted to the lower assembly end for any maintenance operation requiring the indicator exclusion.



HCK

HCK-NP

Code	Description	Code	Description	f	d	A	B	C	L	l ₁	l ₂	r	d'-0.2	f'	C#	[Nm]	⚖
111001	HCK.76-M10	111001-NP	HCK.76-M10-NP	76	M10	20	33	33	113	35.5	42	18.5	10.5	76 ±0.2	12	183	
111011	HCK.127-M12	111011-NP	HCK.127-M12-NP	127	M12	20	33	33	164	46.5	71	18.5	12.5	127 ±0.5	12	220	
111021	HCK.176-M12	111021-NP	HCK.176-M12-NP	176	M12	20	33	33	213	46.5	120	18.5	12.5	176 ±0.5	12	250	
111031	HCK.254-M12	111031-NP	HCK.254-M12-NP	254	M12	20	33	33	291	46.5	198	18.5	12.5	254 ±0.5	12	298	
111041	HCK.381-M12	111041-NP	HCK.381-M12-NP	381	M12	20	33	33	418	46.5	325	18.5	12.5	381 ±0.5	12	377	
111051	HCK.508-M12	111051-NP	HCK.508-M12-NP	508	M12	20	33	33	545	46.5	452	18.5	12.5	508 ±0.5	12	455	

Maximum tightening torque

Column level indicators

with transparent protection for glycol-based solutions, technopolymer

ASSEMBLY ENDS

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour.

SUPPORT

Aluminium in natural colour.

LEVEL COLUMN WINDOW

Transparent tube in PYREX** glass, also suitable for use with glycol-based solutions.

Maximum fluid level visibility even from side positions

TRANSPARENT FRONT PROTECTION (AGAINST ACCIDENTAL SHOCKS)

Polycarbonate (PC), extractable for cleaning operations

SCREWS, NUTS AND WASHERS

- **HCK-GL:** : zinc-plated steel screws with hexagon socket, nuts and washers.

- **HCK-GL-SST:** : AISI 303 stainless steel screws with hexagon socket, AISI 304 stainless steel nuts and washers.

PACKING RINGS

- **HCK-GL:** : NBR rubber O-Ring

- **HCK-GL-SST:** : FKM type VITON*** synthetic rubber O-Ring.

GRADUATED CONTRAST SCREEN

White lacquered aluminium. It can be taken out before assembly to allow the insertion of level lines or words.

Fitted to the aluminium support.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

- **HCK-GL-SST:** 100°C (with oil, water, glycol-based solutions).

- **HCK-GL-SST:** 130°C (with oil, water, glycol-based solutions).

In laboratory tests these indicators showed an excellent resistance to temperatures up to 150/160°C for many hours with pressures of 5/6 bar.

SPECIAL EXECUTIONS ON REQUEST

- Polyamide based technopolymer float (from HCK.127) red colour.

- Expanded NBR float (from HCK.176) black colour with AISI 316 stainless steel spiral for special executions, viscous liquids, high temperatures.

- Column level window with visibility (l₂) superior to 452 mm and holes centre distance (f) for fixing up to 1.500 mm.

- Electric sensor bracket pre-set at the following temperatures: 50°C, 60°C, 70°C, 80°C.

- Packing rings in special material depending on the customer's needs.

- Built-in thermometer with red indication line.

- External scale thermometer (Fig. 1) with internal probe for fluid temperature.

- SLCK electric level sensor (Fig.2, from HCK.127) which can be fitted along the axis of the indicator according to the actual needs. With right (DX) or left (SX) connectors, normally closed (NC), normally open (NO).

- Special screw with nickel-plated brass tap (Fig. 3) to be fitted to the lower assembly end for any maintenance operation requiring the indicator exclusion.

* Registered trademark by Corning Inc.

** Registered trademark by DuPont Dow Elastomers.

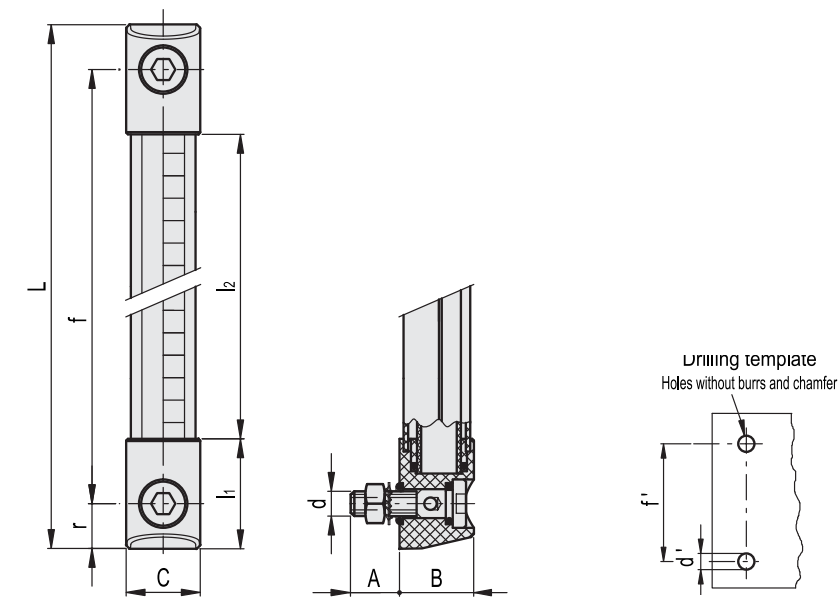
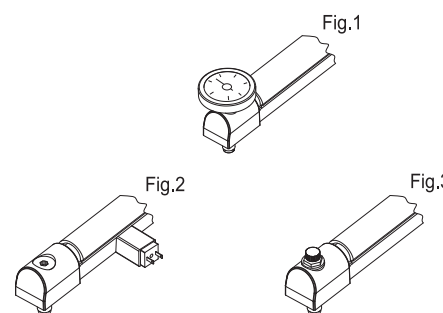
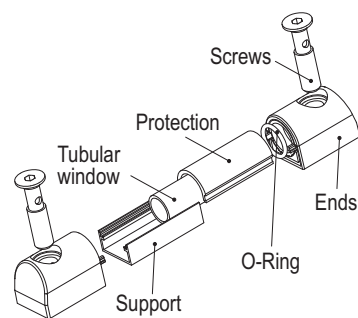


TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the values of pressure resistance were much higher than 35 bar.

If you need to use the indicator with other oils or fluids and under different pressure and temperature conditions, please contact ELESAGANTER Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.



HCK-GL

Code	Description	f	d	A	B	C	L	l ₁	l ₂	r	d'-0.2	f'	C# [Nm]	⚖
111004	HCK.76-GL-M10	76	M10	20	33	33	113	35.5	42	18.5	10.5	76±0.2	12	183
111014	HCK.127-GL-M12	127	M12	20	33	33	164	46.5	71	18.5	12.5	127±0.5	12	220
111024	HCK.176-GL-M12	176	M12	20	33	33	213	46.5	120	18.5	12.5	176±0.5	12	250
111034	HCK.254-GL-M12	254	M12	20	33	33	291	46.5	198	18.5	12.5	254±0.5	12	298
111044	HCK.381-GL-M12	381	M12	20	33	33	418	46.5	325	18.5	12.5	381±0.5	12	377
111054	HCK.508-GL-M12	508	M12	20	33	33	545	46.5	452	18.5	12.5	508±0.5	12	455

HCK-GL-SST

STAINLESS STEEL

Code	Description	f	d	A	B	C	L	l ₁	l ₂	r	d'-0.2	f'	C# [Nm]	⚖
111005	HCK.76-GL-SST-M10	76	M10	20	33	33	113	35.5	42	18.5	10.5	76±0.2	12	183
111015	HCK.127-GL-SST-M12	127	M12	20	33	33	164	46.5	71	18.5	12.5	127±0.5	12	220
111025	HCK.176-GL-SST-M12	176	M12	20	33	33	213	46.5	120	18.5	12.5	176±0.5	12	250
111035	HCK.254-GL-SST-M12	254	M12	20	33	33	291	46.5	198	18.5	12.5	254±0.5	12	298
111045	HCK.381-GL-SST-M12	381	M12	20	33	33	418	46.5	325	18.5	12.5	381±0.5	12	377
111055	HCK.508-GL-SST-M12	508	M12	20	33	33	545	46.5	452	18.5	12.5	508±0.5	12	455

Maximum tightening torque

Kit for the electric control of a fluid level

for HCK. and HCK-GL column level indicators

SENSOR HOLDER BRACKET

In polyamide based (PA) technopolymer, black colour, watertight, with a built-in relay (reed) with two conductors wired to the two-pin connector. It can be moved along the axis of the indicator and secured in the preferred position with the appropriate screw (set screw) in technopolymer.

ELECTRIC SENSOR

- NO: the electric circuit closes on reaching the preset level.
- NC: the electric circuit opens on reaching the preset level.

CONNECTOR

With built-in cable gland and contact holders. Properly set, it offers an effective product protection against water sprays (IP 65 protection class according to EN 60529 table on page A23) that can be increased during installation with the necessary adjustments. NBR synthetic rubber packing rings.

FLOAT

Polypropylene based (PP) technopolymer, max temperature limit 80° C or polyamide based (PA) technopolymer, max temperature limit 120°C, max chemical compatibility, black colour.

The float incorporates a magnetic element to activate the electric contact. When the float reaches the intervention level set by the user, by suitably positioning the sensor holder along the axis of the indicator, the electrical contact activates.

Max operating pressure 2 bar (operation with oil).

SPACERS

In polyamide based (PA) technopolymer. Essential in cases where the reservoir is made out of ferromagnetic material in order to prevent the interaction between the magnet and the metal mass of the reservoir.

KIT

The kit includes one or two sensor holder brackets, a float, 4 O-rings (2 FKM for HCK-GL and 2 NBR for HCK) and two spacers. It is possible to apply more than one kit to get the electric control of different levels, consistently with the height of the transparent column.

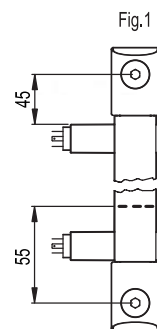
STANDARD EXECUTIONS

For applications with temperatures up to 80°C: polypropylene based (PP) technopolymer float.

- **SLCK-NO**: with electric contact normally open.
- **SLCK-NC**: with electric contact normally closed.
- **SLCK-NO-NC**: with one electric contact normally open and one electric contact normally closed.
- **SLCK-NC-NC**: with two electric contacts normally closed.
- **SLCK-NO-NO**: with two electric contacts normally open.

For applications with temperatures up to 120°C: polyamide based (PA) technopolymer float.

- **SLCK-HT-NO**: with electrical contact normally open.
- **SLCK-HT-NC**: with electrical contact normally closed.
- **SLCK-HT-NO-NC**: with one electrical contact normally open and one electrical contact normally closed.
- **SLCK-HT-NC-NC**: with two electrical contacts normally closed.
- **SLCK-HT-NO-NO**: with two electrical contacts normally opened.



FEATURES AND PERFORMANCES

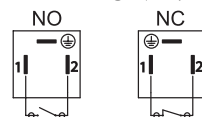
With the application of the SLCK kit, HCK. and HCK-GL column level indicators provide an electric signal when the fluid level reaches the level of preset intervention, besides the visual control of the level. The electric control of the level can be applied on all versions of HCK. from the version with 127 mm hole centre distance while always maintaining the visibility of fluid level even from side positions.

In the highest position, the sensor holder must be positioned at least 45 mm below the axis of the high screw (Fig.1), so that the switching takes place correctly.

In the lowest position, the fluid level which determines the switching of the electric circuit is about 55 mm above the axis of the low screw of fluid supply (data referring to mineral oil type CB68, according to ISO 3498, temperature 23°C) (Fig. 1).

The sensor holder is arranged to be installed to the left with respect to the axis of the indicator. However, if required it can also be mounted on the right. The connector can be rotated by 90° in four positions when wiring.

For a correct assembly see Warnings (on page 1775).



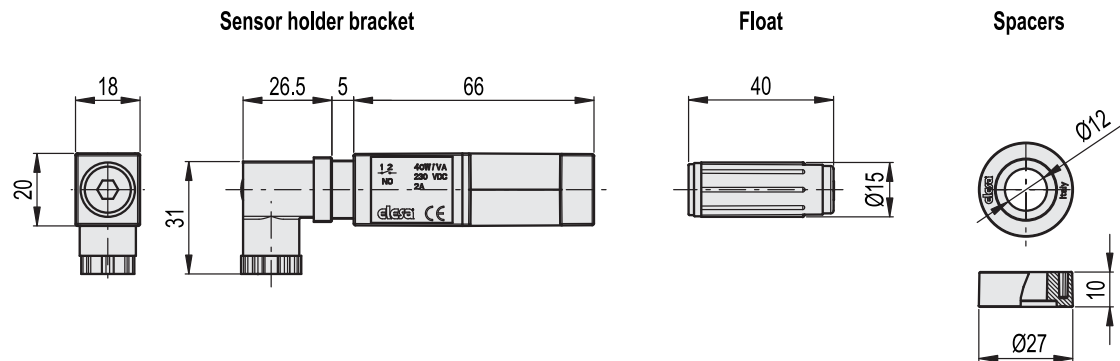
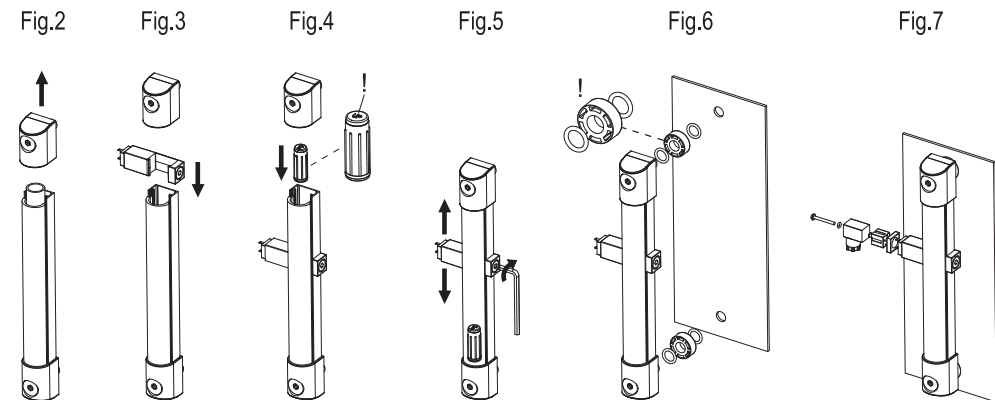
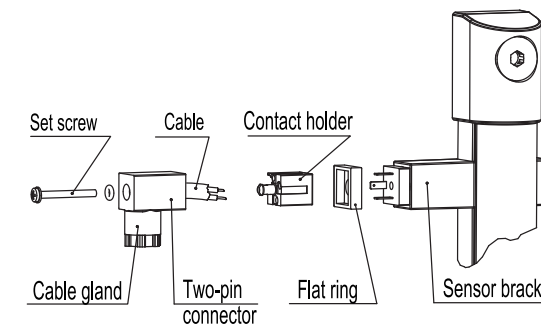
Level sensor electric characteristics	
Tension feed	AC/DC
Electric contacts	NO normally open NC normally close
Maximum applicable voltage	230 Vdc / Vac
Max. opening capacity (CC CA)	2 A
Maximum commutable power	40 W / VA
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	

KIT ASSEMBLY INSTRUCTIONS

- Remove the assembly end of the indicator (Fig. 2).
- Insert the sensor holder bracket (Fig.3).
- Insert the float with the word "up" to the top and relocate the assembly end in place (Fig.4).
- Clamp the bracket with the set screw to the desired position (Fig. 5).
- Install the indicator on the reservoir using the spacers included in the supply (necessary in case of reservoir made out of ferromagnetic material in order to avoid interaction between the magnet and the metal mass (Fig.6).
- Assemble the two-pin connector (Fig. 7).

TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the sensor holder bracket by unscrewing the axial set screw, take off the contact holder and unscrew the cable gland as required.
2. Slip on the cable into the connector and connect the wires to the terminals of the contact holder.
3. Assemble by pressing the contact holder into the connector (the contact holder can be rotated by 90° in four positions to have a different orientation of the connector).
4. Screw again the connector to the sensor holder by means of the axial set screw and then tighten the cable gland.



Code	Description	Code	Description	⚖
110081	SLCK-NO	110082	SLCK-HT-NO	235
110083	SLCK-NC	110084	SLCK-HT-NC	235
110085	SLCK-NO-NC	110086	SLCK-HT-NO-NC	235
110087	SLCK-NC-NC	110088	SLCK-HT-NC-NC	235
110089	SLCK-NO-NO	110090	SLCK-HT-NO-NO	235

Column level indicators with U shaped protection, technopolymer

ASSEMBLY ENDS

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour.

SUPPORT

Aluminium in natural colour. It can be turned by 90°C where necessary.

LEVEL COLUMN WINDOW

Polymethylmethacrylate transparent tube.

SCREWS

Zinc-plated steel with hexagon socket.

PACKING RINGS

NBR synthetic rubber O-Ring.

GRADUATED CONTRAST SCREEN

Plastic material, resistant to oils and greases. Fitted to the aluminium protection by means of an adhesive tape.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

70°C (with oil or water).

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 30 bar (HCL.300), 25 bar (HCL.400) and 20 bar (HCL.500).

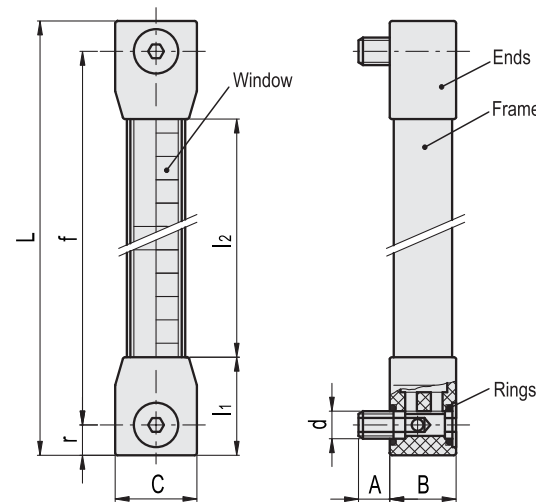
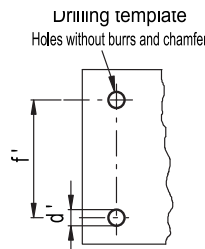
For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

SPECIAL EXECUTIONS ON REQUEST

- Column level indicators with tubes and assembly ends in different materials for the use with special fluids and/or at high temperatures.
- AISI 316 stainless steel or nickel-plated brass screws.
- Polyamide based (PA) technopolymer float, red colour to highlight the level also from a long distance.
- Column level indicators with fitting centre-holes up to 2000 mm.
- HCL-E column oil level indicators including float, minimum level signal, normally closed contacts (NC), normally open (NO) or CHANGE OVER.
- Adjustable level sensors which can be placed along the axis of the indicator, with right (DX) or left (SX) connectors, normally closed (NC), normally open (NO) or CHANGE OVER contacts.
- EPDM or FKM type VITON®* packing rings.

* Registered trademark by DuPont Dow Elastomers.



Code	Description	f	d	A	B	C	L	l1	l2	r	d'±0.2	f'±0.2	C# [Nm]	⚖️
111211	HCL-300-M12	300	M12	13.5	28.5	35	326	42	242	13	12.5	300	15	227
111221	HCL-400-M12	400	M12	13.5	28.5	35	426	42	342	13	12.5	400	15	268
111231	HCL-500-M12	500	M12	13.5	28.5	35	526	42	442	13	12.5	500	15	306

Maximum tightening torque

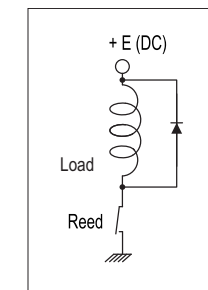
Warnings for an effective protection of the Reed switches

The electric features on the Reed switches, shown in the descriptive tables, are supplied by the manufacturers. For a Reed switch connection, it is recommended to pay special attention to the type of load to which the switch is going to be connected. Inductive, capacitive or lamp loads may produce surges during operation, for their own nature. These surges may damage the Reed switch or drastically reduce its operating life.

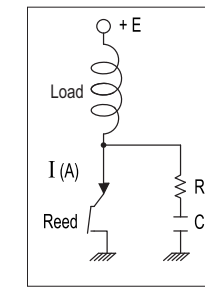
Inductive load

When a Reed switch is used to guide an inductive load such as engines and solenoid valves, the energy stored in the load may cause an inverse voltage when the Reed contact breaks. The voltage depends on the inductance value. The following circuits provide a protection in the cases hereunder mentioned.

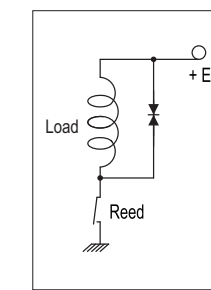
In case of continuous voltage, it is enough to introduce a diode in parallel to the load respecting the polarity, to avoid any damage to the Reed switch.



In case of alternating voltage, it is possible to use a resistance and a capacitance in parallel to the Reed switch. The capacitance and resistance values come out from the following formula.



An alternative solution may be to use a varistor in parallel to the load.

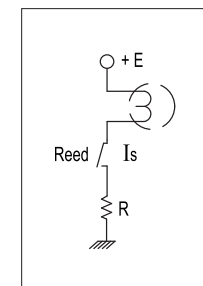


$$C [\mu F] = \frac{I^2}{10}$$

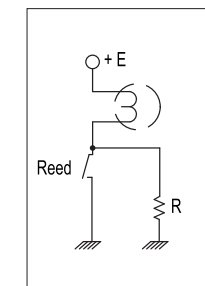
$$R [\Omega] = \frac{E}{10 \cdot I \left(1 + \frac{E}{50}\right)}$$

Lamp load

In case of a tungsten filament lamp, the filament resistance is 10 times smaller when the lamp is switched off (cold filament) than in case of the lamp switched on (hot filament). After the Reed contact commutation and after the lamp turning on, for a short time the in-rush current is 10 times higher than the one circulating in steady state. This flow may damage the Reed contact or jeopardise its duration. In this case, the solution is to introduce a resistance in series to the Reed switch, thus cutting the maximum value of the current, or a resistance in parallel to the Reed switch, to keep the filament hot (by increasing the resistance) without causing the lamp to turn on.



R = Protection resistance
It must be properly chosen so that
 $I_s < 0.5 A$

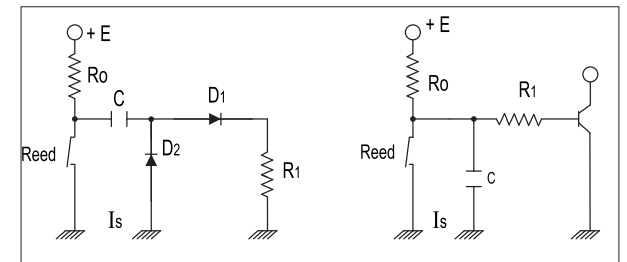


$$R < \frac{\text{Filament resistance}}{3}$$

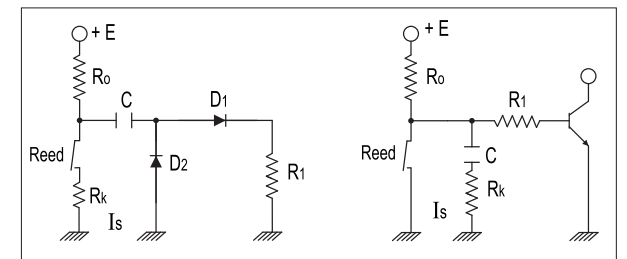
Capacitive load

The in-rush current flowing during charge and discharge of the capacitor will cause deterioration of the Reed contacts in case when a capacitor is connected in series or in parallel with a Reed switch in a closed circuit. In this situation, the easiest and more effective solution is to position a resistance in series to the Reed switch or, in general, a resistance properly set in order to cut the maximum value of the currents of charge and discharge. Here are two examples of a circuit: the energy, stored in the capacitive load "C", generates rush currents discharging through the Reed contact. The use of a properly calibrated resistance reduces the value of these currents and protects the operating life of the Reed contact.

Circuit without protection



Circuit with protection

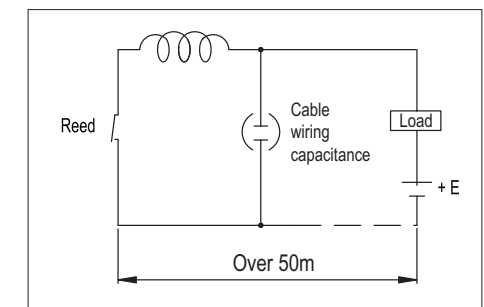


R_k is the resistance limiting the surges.
The R_k resistance value depends on the circuit electric configuration.
As a general rule:

$$I_s = \frac{V \text{ stored in the load}}{kR [K\Omega]} < 0,1 A$$

Wiring capacitance

In case a Reed switch is connected to a load by a cable, over a long distance, the cable static capacitance will affect the Reed switch. In case the cable length exceeds 50 metres, it is recommended to use a protection for assuring a longer operating life of the Reed switch (although it depends on the type of cable used). In this situation an inductance in series to the Reed switch or a small resistance (current limiting resistance of 10 to 500 ohms) can be inserted.



Column level indicators

with MAX temperature electrical sensor, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREW, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring. Suggested roughness of the packing ring application surface Ra = 3 µm.

MAX TEMPERATURE ELECTRICAL SENSOR (80°C)

Zinc-plated screw with built-in sensor. Temperature of intervention is 80°C. For a correct assembly see Warnings (see page 1777).

SWIVELLING TWO-PIN CONNECTOR

With built-in cable gland and contact holder. Front or side output (right or left) including protection against water sprays (protection class IP 65 according to EN 60529 table on page A23) that can be increased during installation with the necessary adjustments. Flat NBR synthetic rubber packing rings.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HGX-ST-NO**: with electrical contact normally open.
- **HGX-ST-NC**: with electrical contact normally closed.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

SPECIAL EXECUTIONS ON REQUEST

- Level indicators with SUPER-technopolymer protection frame.
- Level indicators for use with fluids containing alcohol or with hot water.
- UV resistant transparent technopolymer indicators.
- Temperature electrical sensor with pre-set temperatures different from 80°C.
- Indicators with two red ball-shaped floats.



FEATURES AND PERFORMANCES

This column level indicator generates an electric signal when the temperature reaches the pre-set degrees (80°C). Ultrasound welding to guarantee a perfect seal. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level and temperature.

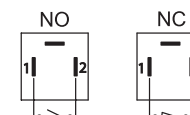
TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCX.127-ST) 12 bar (HCX.254-ST). For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department. In any case we suggest to verify the suitability of the product under the actual working conditions.

FUNCTIONING

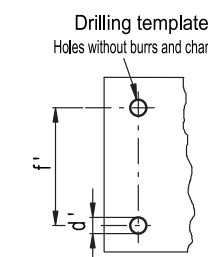
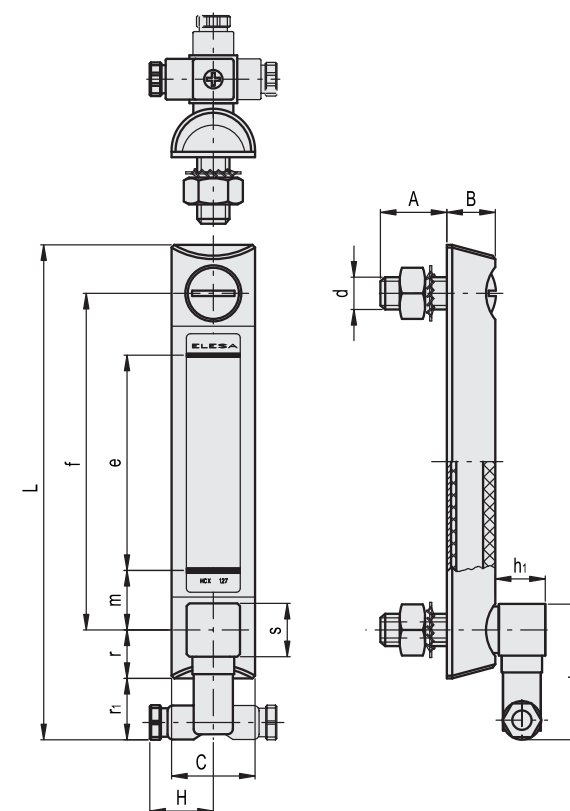
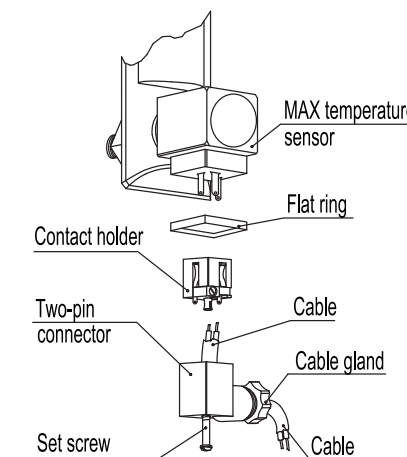
- HCX-ST-NO with electrical contact normally open. Electrical temperature sensor: the electrical circuit is closed when the pre-set temperature at 80°C is reached.
 - HCX-ST-NC with electrical contacts normally closed. Electrical temperature sensor: the electrical circuit is open when the pre-set temperature at 80°C is reached.

Electrical features	MAX temperature sensor	
Tension feed	AC/DC	
Electric contacts	NO normally open NC normally closed	
Voltage / Maximum current	250 Vac - 10 A	(resistive loads)
	48 Vdc - 5 A	
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)	
Conductors cross-section	Max 1.5 mm ²	



TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the indicator by unscrewing the set screw placed in the bottom, take the contact holder out and loosen the cable gland.
2. Slip on the two-pole cable into the connector (standard connector) and connect the wires to the terminals nr. 1 and nr. 2 of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



Code	Description	f	d	A	B	C	H	L	e	h1	h2	m	r	r1	s	d'±0.2	f±0.2	C#	Δ
11161	HCX.127-ST-NO-M12	127	M12	23	18	31	27	187	80	21	54	23	17	26	22	12.5	127	12	220
11162	HCX.127-ST-NC-M12	127	M12	23	18	31	27	187	80	21	54	23	17	26	22	12.5	127	12	220
11171	HCX.254-ST-NO-M12	254	M12	21	18	35	27	315	203	21	54	26	18.5	24	22	12.5	254	10	265
11172	HCX.254-ST-NC-M12	254	M12	21	18	35	27	315	203	21	54	26	18.5	24	22	12.5	254	10	265

Maximum tightening torque

Column level indicators

with temperature electrical probe, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREW, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring. Suggested roughness of the packing ring application surface $R_a = 3 \mu\text{m}$.

TEMPERATURE ELECTRICAL PROBE

Zinc-plated steel screw with built-in probe. The probe is made out of a platinum resistor whose ohmic resistance changes according to the temperature.

For a correct assembly see Warnings (see page 1777).

SWIVELLING TWO-PIN CONNECTOR

With built-in cable gland and contact holder. Front or side output (right or left) including protection against water sprays (protection class IP 65 according to EN 60529 table on page A23) that can be increased during installation with the necessary adjustments. Flat NBR synthetic rubber packing rings.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid.

It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

This column level indicator generates an analogic electric signal of the oil temperature.

Ultrasound welding to guarantee a perfect seal.

Maximum fluid level visibility even from side positions.

Lens effect for a better visibility of the fluid level and temperature.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCX.127-STL) 12 bar (HCX.254-STL).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

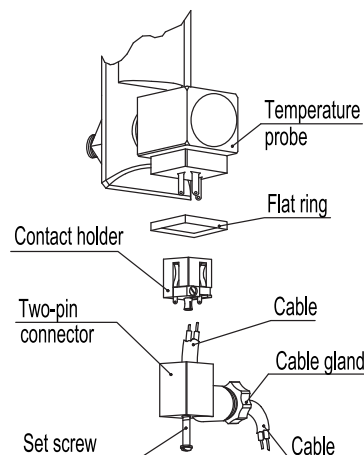
SPECIAL EXECUTIONS ON REQUEST

- Level indicators for use with fluids containing alcohol or with hot water.
- UV resistant transparent technopolymer indicators.
- Indicators with two red ball-shaped floats.



TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the indicator by unscrewing the set screw placed in the bottom, take the contact holder out and loosen the cable gland.
2. Slip on the two-pole cable into the connector (standard connector) and connect the wires to the terminals nr. 1 and nr. 2 of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



FUNCTIONING OF THE TEMPERATURE ELECTRICAL PROBE

The working principle of the temperature probe is to measure the variation of resistance of a platinum element: 100 ohm = 0°C, 138.4 ohm = 100°C.

The function between temperature (T) and resistance (R) is approximately linear over a small temperature range: for example, if you assume that it is linear over the 0° to 100°C range, the error at 50°C is 0.4°C.

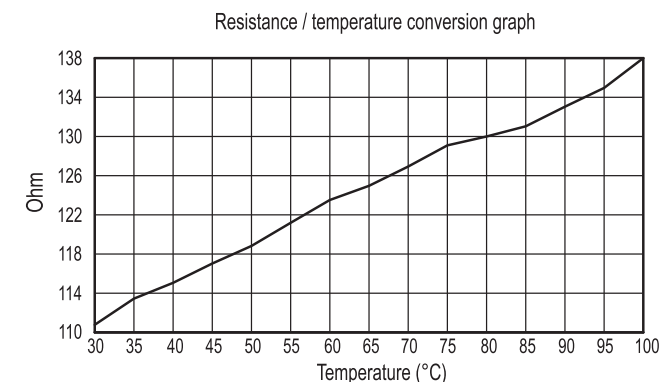
For precision measurement, it is necessary to linearise the resistance to give an accurate temperature. The most recent definition of the function between resistance and temperature is International Temperature Standard 90 (ITS-90). The function between resistance and temperature, obtained in laboratory tests, measuring directly the resistance value on the contacts is shown in the graph.

We suggest, anyway, to set the system in order to compensate both heat dissipation and cable resistance.

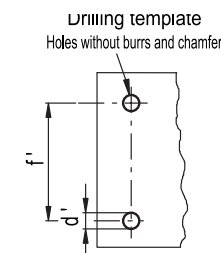
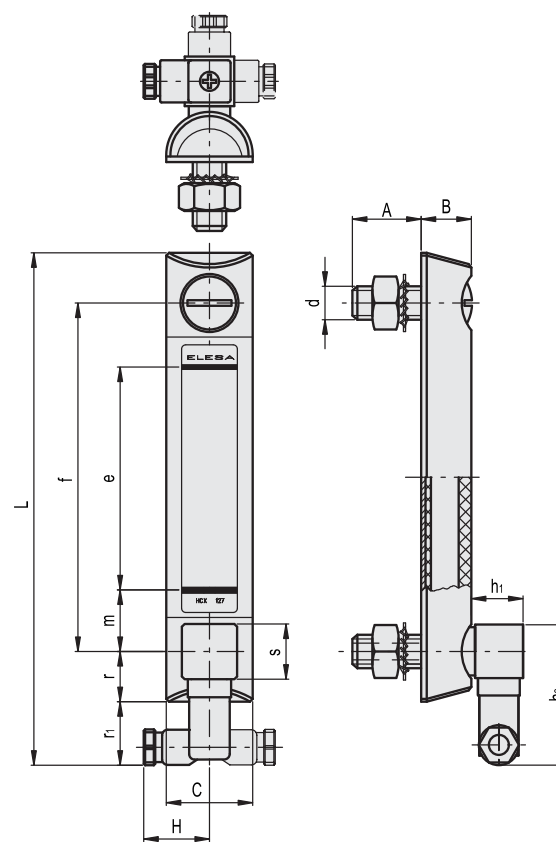
A 1°C temperature change will cause a 0.384 ohm change in resistance, so even a small error in measurement of the resistance (for example, the resistance of the wires leading to the sensor) can cause a large error in the measurement of the temperature.

Because of the low signal levels, it is important to keep any cables away from electric cables, motors, switchgear and other devices that may emit magnetic or electrical noise. Using screened cable, with the screen grounded at one end, may help to reduce interference.

When using long cables, it is necessary to check that the measuring equipment is able to handle the cable resistance.



Electrical features	Temperature probe
Tension feed	AC/DC
Maximum current	2 mA
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max 1.5 mm ²



Code	Description	f	d	A	B	C	H	L	e	h1	h2	m	r	r1	s	d'-0.2	f'±0.2	C#	[Nm]	⚖
11166	HCX.127-STL-M12	127	M12	23	18	31	27	187	80	21	54	23	17	26	22	12.5	127	12	220	
11176	HCX.254-STL-M12	254	M12	21	18	35	27	315	203	21	54	26	18.5	24	22	12.5	254	10	265	

Maximum tightening torque

Column level indicators

with MIN level electrical sensor, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring.
Suggested roughness of the packing ring application surface $R_a = 3 \mu\text{m}$.

FLOAT

Polyamide based (PA) expanded technopolymer, black colour, with a built-in magnetic element to activate the electric contact when the oil level drops to a minimum; alarm threshold located at about 50 mm from the centre of the lower nut (in presence of mineral oil type CB68, according to ISO 3498, at 23°C).

SENSOR BRACKET

Watertight in polypropylene based (PP) technopolymer, black colour, with a built-in relay (reed) with two conductors wired to the two-pin connector.

For a correct assembly see Warnings (on page 1777).

SWIVELLING TWO-PIN CONNECTOR

With built-in cable gland and contact holder. Front or side output (right or left) including protection against water sprays (protection class IP 65 according to EN 60529 table see page A23).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCX-E-NO**: with electrical contact normally open.
- **HCX-E-NC**: with electrical contact normally closed.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

The column level indicator HCX-E, in addition to the visual control, generates an electric signal when the oil level drops to a minimum. Ultrasound welding to guarantee a perfect seal. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level and temperature.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to 13 bar.

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

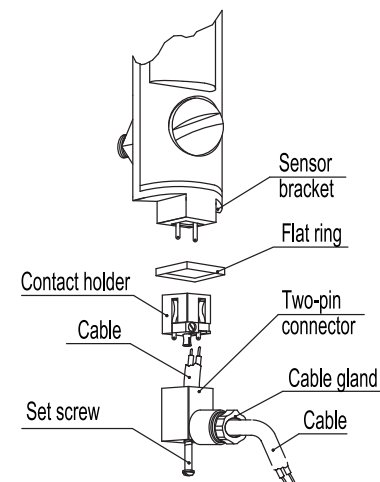


SPECIAL EXECUTIONS ON REQUEST

- Level indicators for use with fluids containing alcohol.
- UV resistant transparent technopolymer indicators.

TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

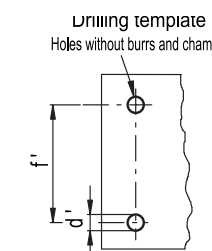
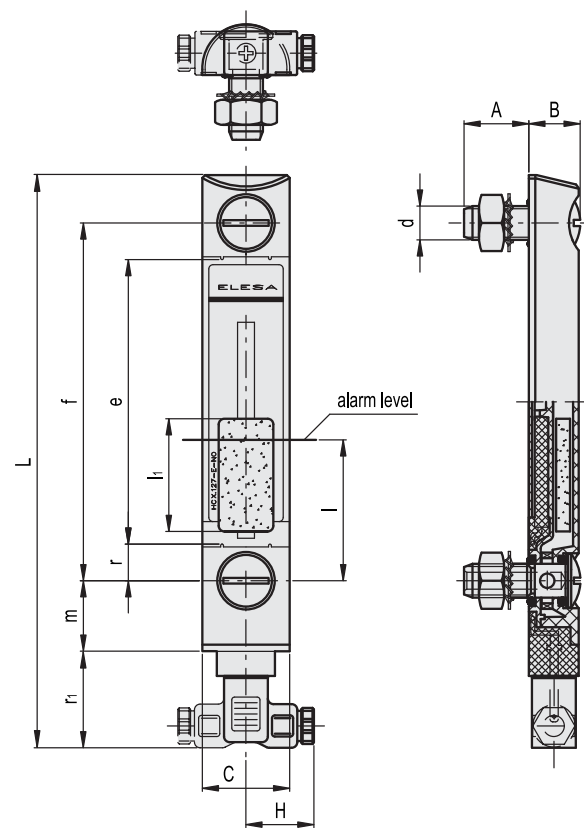
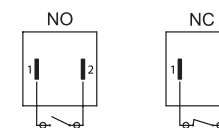
1. Remove the connector from the indicator by unscrewing the set screw placed in the bottom, take the contact holder out and loosen the cable gland.
2. Slip on the two-pole cable into the connector (standard connector) and connect the wires to the terminals nr. 1 and nr. 2 of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



FUNCTIONING OF THE MIN LEVEL ELECTRICAL SENSOR

- HCX-E-NO: the electrical circuit is closed when the minimum level is reached.
- HCX-E-NC: the electrical circuit is open when the minimum level is reached.

Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally close
Maximum applicable voltage	NO: 150 Vac, 100 Vdc NC: 150Vac, 150 Vdc
Maximum switching current	1 A
Maximum current	NO: 1A NC: 2A
Maximum switching power	NO: 10 Va NC: 20 Va
Cable gland	Pg 7 (for cables in sheath with $\varnothing 6$ or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	



Code	Description	f	d	A	B	C	H	L	e	l	l1	m	r	r1	d'-0.2	f±0.2	C#	[Nm]	Δ
11141	HCX.127-E-NO-M12	127	M12	23	20	32	26	202	101	50	40	25	13	32.5	12.5	127	12	150	
11142	HCX.127-E-NC-M12	127	M12	23	20	32	26	202	101	50	40	25	13	32.5	12.5	127	12	150	
11145	HCX.254-E-NO-M12	254	M12	23	20	31	25	328	228	50	40	25	13	32.5	12.5	254	12	177	
11146	HCX.254-E-NC-M12	254	M12	23	20	31	25	328	228	50	40	25	13	32.5	12.5	254	12	177	

Maximum tightening torque

Column level indicators

with MIN level and MAX temperature electrical sensors, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREW, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring. Suggested roughness of the packing ring application surface Ra = 3 µm.

FLOAT

Polyamide based (PA) expanded technopolymer, black colour, with a built-in magnetic element to activate the electric contact when the oil level drops to a minimum; alarm threshold located at about 50 mm from the centre of the lower nut (in presence of mineral oil type CB68, according to ISO 3498, at 23°C).

SENSOR BRACKET

Watertight in polypropylene based (PP) technopolymer, black colour, with a built-in relay (reed) with two conductors wired to the two-pin connector.

For a correct assembly see Warnings (on page 1777).

MAX TEMPERATURE ELECTRICAL SENSOR (80°C)

Zinc-plated screw with built-in sensor. Temperature of intervention is 80°C.

SWIVELLING TWO-PIN CONNECTORS

With built-in cable glands and contact holders. Front or side output (right or left) including protection against water sprays (protection class IP 65 according to EN 60529 table on page A23) that can be increased during installation with the necessary adjustments. Flat NBR synthetic rubber packing rings.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCX-E-ST-NO**: with electrical contact normally open.
- **HCX-E-ST-NC**: with electrical contact normally closed.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

SPECIAL EXECUTIONS ON REQUEST

- Level indicators for use with fluids containing alcohol.
- UV resistant transparent technopolymer indicators.
- Temperature electrical sensor with pre-set temperatures different from 80°C.



FEATURES AND PERFORMANCES

This column level indicator generates two electric signals: one when the oil goes down to the minimum level allowed and the other one when the temperature reaches the pre-set degrees (80°C).

TECHNICAL DATA

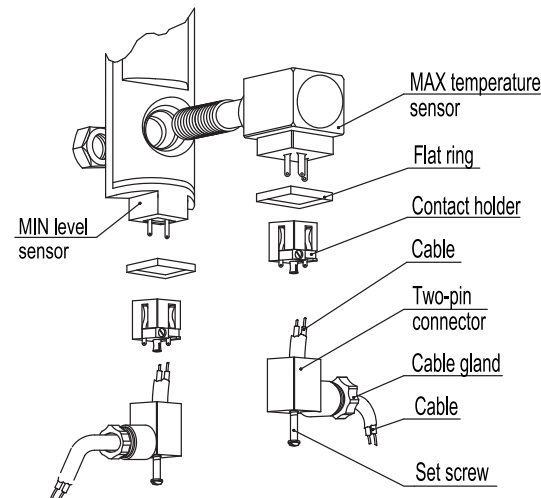
In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to 13 bar.

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

TWO-PIN CONNECTORS ASSEMBLY INSTRUCTIONS

1. Remove the connectors from the indicator by unscrewing the set screw placed in the bottom, take the contact holders out and loosen the cable glands.
2. Slip on the two-pole cable into the connectors (standard connectors) and connect the wires to the terminals nr. 1 and nr. 2 of the relative contact holders.
3. Assemble by pressing the contact holders into the relative connectors in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



FUNCTIONING OF THE ELECTRICAL SENSORS

- HCX-E-ST-NO with electrical contacts normally open.

MIN level electrical sensor: the electrical circuit is closed when the minimum level is reached.

MAX temperature electrical sensor: the electrical circuit is closed when the pre-set temperature at 80°C is reached.

- HCX-E-ST-NC with electrical contacts normally closed.

MIN level electrical sensor: the electrical circuit is open when the minimum level is reached.

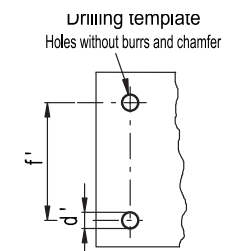
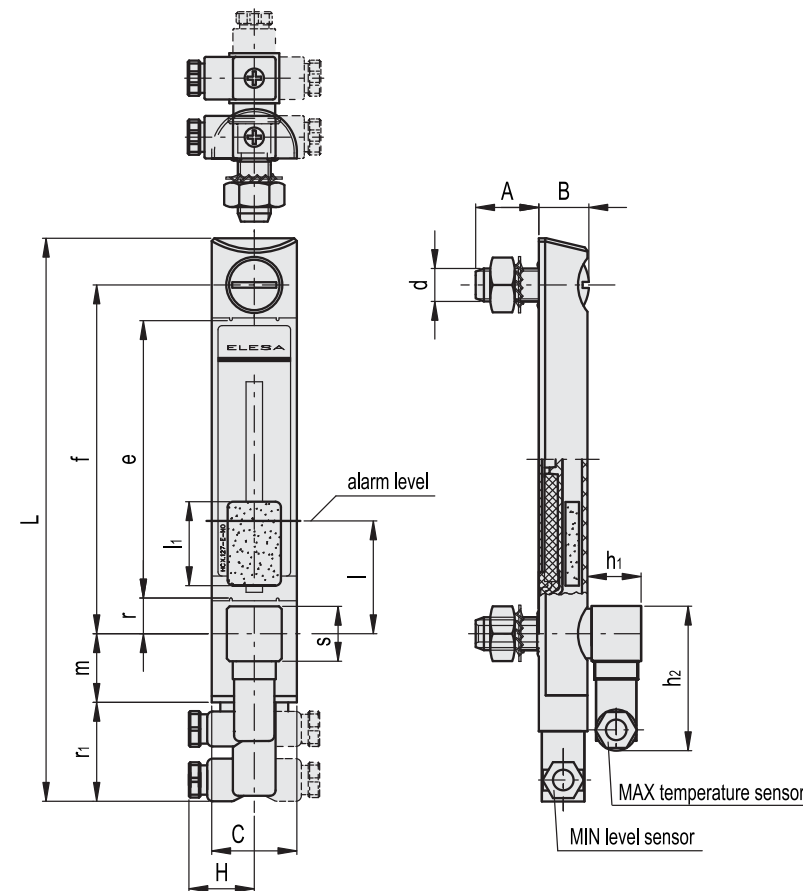
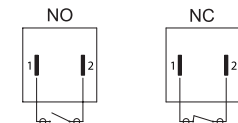
MAX temperature electrical sensor: the electrical circuit is open when the pre-set temperature at 80°C is reached.

Electrical features	MAX temperature sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally close
Voltage / Maximum current	250 Vac - 10 A 48 Vdc - 5 A
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²

(resistive loads)

Do not mount this indicator in proximity to magnetic fields.

Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally close
Maximum applicable voltage	NO: 150 Vac, 100 Vdc NC: 150Vac, 150 Vdc
Maximum switching current	1 A
Maximum current	NO: 1A NC: 2A
Maximum switching power	NO: 10 Va NC: 20 Va
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²



Code	Description	f	d	A	B	C	H	L	e	h1	h2	l	l1	m	r	r1	s	d'-0.2	f±0.2	C#	Δ
11151	HCX.127-E-ST-NO-M12	127	M12	23	20	31.5	25	202	101	21	54	50	40	25	13	32.5	22	12.5	127	12	235
11152	HCX.127-E-ST-NC-M12	127	M12	23	20	31.5	25	202	101	21	54	50	40	25	13	32.5	22	12.5	127	12	235
11153	HCX.254-E-ST-NO-M12	254	M12	23	20	31	25	328	228	21	54	50	40	25	13	32.5	22	12.5	254	12	262
11154	HCX.254-E-ST-NC-M12	254	M12	23	20	31	25	328	228	21	54	50	40	25	13	32.5	22	12.5	254	12	262

Maximum tightening torque

Column level indicators

with MIN level electrical sensor and temperature electrical probe, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREW, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

NBR synthetic rubber O-Ring. Suggested roughness of the packing ring application surface Ra = 3 µm.

FLOAT

Polyamide based (PA) expanded technopolymer, black colour, with a built-in magnetic element to activate the electric contact when the oil level drops to a minimum; alarm threshold located at about 50 mm from the centre of the lower nut (in presence of mineral oil type CB68, according to ISO 3498, at 23°C).

SENSOR BRACKET

Watertight in polypropylene based (PP) technopolymer, black colour, with a built-in relay (reed) with two conductors wired to the two-pin connector.

For a correct assembly see Warnings (on page 1777).

TEMPERATURE ELECTRICAL PROBE

Zinc-plated steel screw with built-in probe. The probe is made out of a platinum resistor whose ohmic resistance changes according to the temperature.

SWIVELLING TWO-PIN CONNECTORS

With built-in cable glands and contact holders. Front or side output (right or left) including protection against water sprays (protection class IP 65 according to EN 60529 table on page A23) that can be increased during installation with the necessary adjustments. Flat NBR synthetic rubber packing rings.

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCX-E-STL-NO**: with electrical contact normally open.
- **HCX-E-STL-NC**: with electrical contact normally closed.

MOUNTING

When fitting is not possible from the inside of the reservoir and the walls are not thick enough, the screws can be used together with Fast Mounting Kit (see page 1768).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

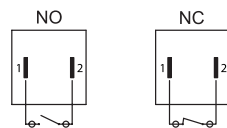
SPECIAL EXECUTIONS ON REQUEST

UV resistant transparent technopolymer indicators.

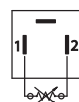


FUNCTIONING OF THE MIN LEVEL ELECTRICAL SENSOR

- HCX-E-STL-NO: the electrical circuit is closed when the minimum level is reached.
- HCX-E-STL-NC: the electrical circuit is open when the minimum level is reached.



Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally closed
Maximum applicable voltage	NO: 150 Vac, 100 Vdc NC: 150 Vac, 150 Vdc
Maximum switching current	1 A
Maximum current	NO: 1A NC: 2A
Maximum switching power	NO: 10 Va NC: 20 Va
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	



Electrical features	Temperature probe
Tension feed	DC
Maximum current	2 mA
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²

FUNCTIONING OF THE TEMPERATURE ELECTRICAL PROBE

The working principle of the temperature probe is to measure the variation of resistance of a platinum element: 100 ohm = 0°C, 138.4 ohm = 100°C.

The function between temperature (T) and resistance (R) is approximately linear over a small temperature range: for example, if you assume that it is linear over the 0° to 100°C range, the error at 50°C is 0.4°C.

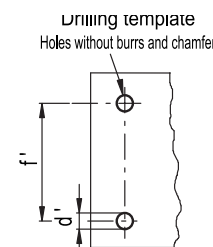
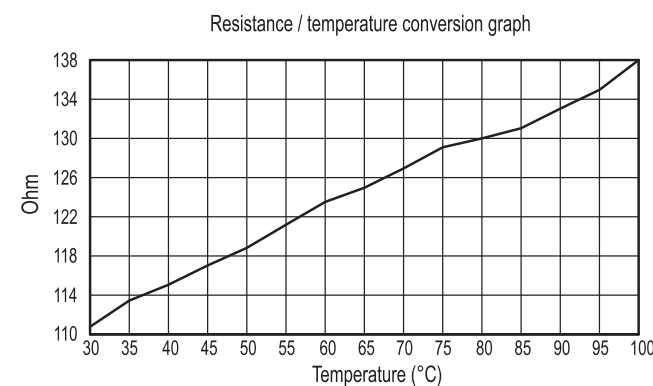
For precision measurement, it is necessary to linearise the resistance to give an accurate temperature. The most recent definition of the function between resistance and temperature is International Temperature Standard 90 (ITS-90). The function between resistance and temperature, obtained in laboratory tests, measuring directly the resistance value on the contacts is shown in the graph.

We suggest, anyway, to set the system in order to compensate both heat dissipation and cable resistance.

A 1°C temperature change will cause a 0.384 ohm change in resistance, so even a small error in measurement of the resistance (for example, the resistance of the wires leading to the sensor) can cause a large error in the measurement of the temperature.

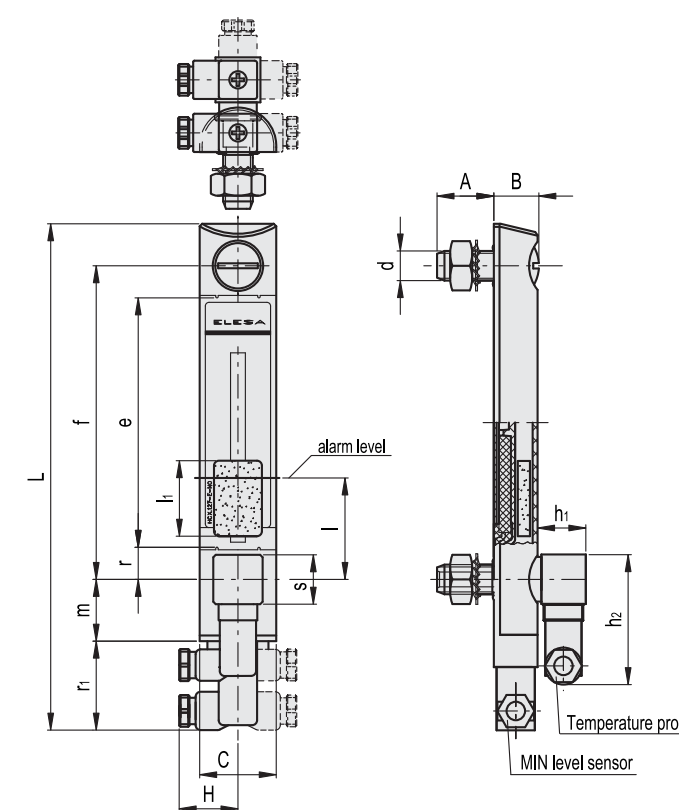
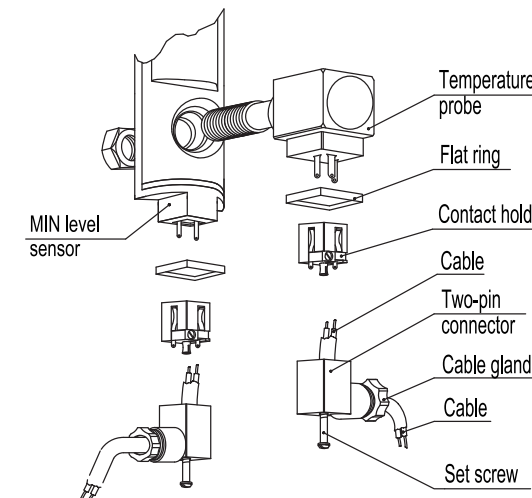
Because of the low signal levels, it is important to keep any cables away from electric cables, motors, switchgear and other devices that may emit magnetic or electrical noise. Using screened cable, with the screen grounded at one end, may help to reduce interference.

When using long cables, it is necessary to check that the measuring equipment is able to handle the cable resistance.



TWO-PIN CONNECTORS ASSEMBLY INSTRUCTIONS

1. Remove the connectors from the indicator by unscrewing the set screw placed in the bottom, take the contact holders out and loosen the cable glands.
2. Slip on the two-pole cable into the connectors (standard connectors) and connect the wires to the terminals nr. 1 and nr. 2 of the relative contact holders.
3. Assemble by pressing the contact holders into the relative connectors in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



Code	Description	f	d	A	B	C	H	L	e	h1	h2	l	l1	m	r	r1	s	d'-0.2	f'±0.2	C#	⚖
11156	HCX.127-E-STL-NO-M12	127	M12	23	20	31.5	25	202	101	21	54	50	40	25	13	32.5	22	12.5	127	12	236
11157	HCX.127-E-STL-NC-M12	127	M12	23	20	31.5	25	202	101	21	54	50	40	25	13	32.5	22	12.5	127	12	236
11158	HCX.254-E-STL-NO-M12	254	M12	23	20	31	25	328	228	21	54	50	40	25	13	32.5	22	12.5	254	12	263
11159	HCX.254-E-STL-NC-M12	254	M12	23	20	31	25	328	228	21	54	50	40	25	13	32.5	22	12.5	254	12	263

Maximum tightening torque

Column level indicators

with MAX temperature electrical sensor

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring under screw head. Suggested roughness of the packing ring application surface $Ra = 3 \mu m$.

SENSOR BRACKET

Watertight in glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with MAX temperature sensor (80°C). For a correct assembly see Warnings (on page 1777).

SWIVELLING CONNECTOR

With built-in cable gland and contact holder. Front or axial output (high or low) ensuring protection against water sprays (protection class IP 65 according to table EN 60529 table on page A23).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCV-ST-NO**: with electric contact normally open (NO).
- **HCV-ST-NC**: with electric contact normally closed (NC).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

In addition to the visual control, HCV-ST column level indicator, generates an electric signal when the temperature reaches the pre-set degrees (80°C).

Ultrasound welding to guarantee a perfect seal. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCV.127) 12 bar (HCV.254).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

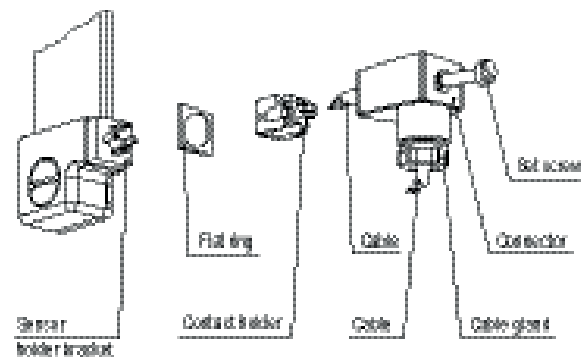
SPECIAL EXECUTIONS ON REQUEST

- Level indicators with stainless steel screws, nuts and washers.
- Level indicators for use with fluids containing alcohol.
- UV resistant transparent technopolymer level indicators.
- MAX temperature electrical sensor with trigger threshold at 70°C or 90°C.



CONNECTOR ASSEMBLY INSTRUCTIONS

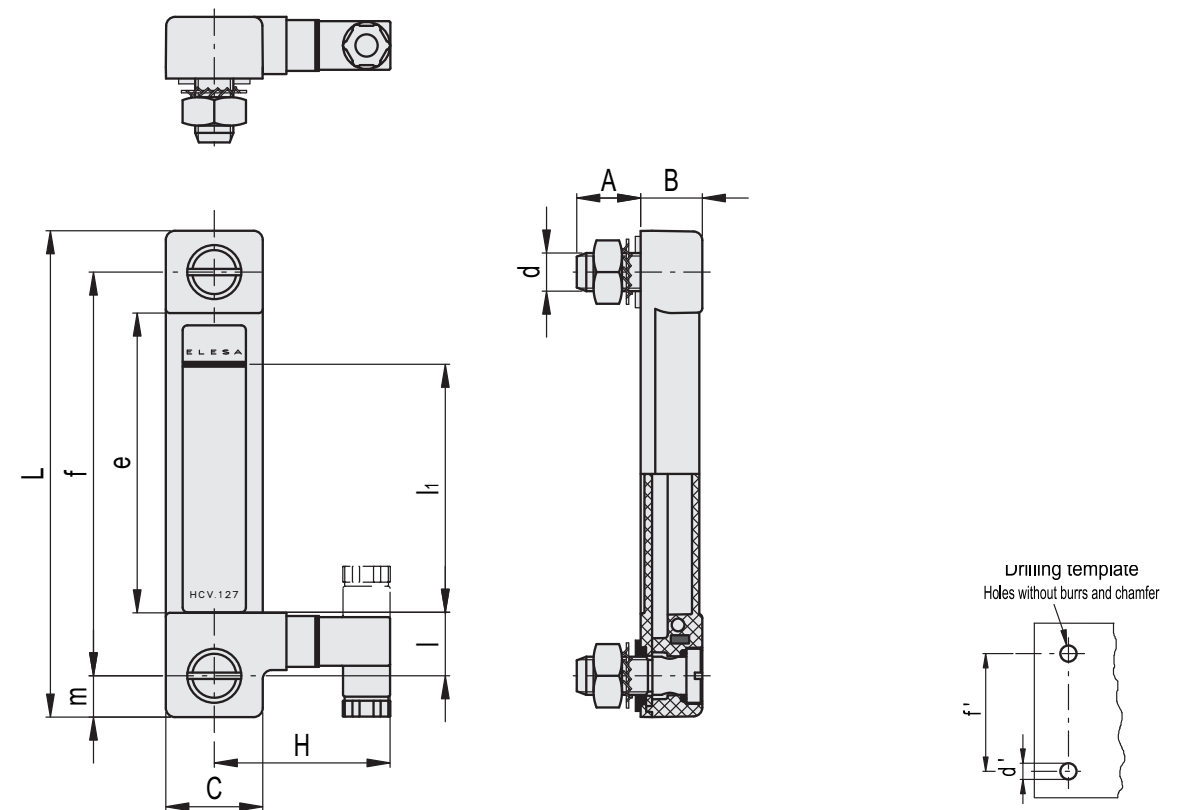
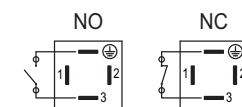
1. Remove the connector from the indicator by unscrewing the set screw placed on the connector, take the contact holders out and loosen the cable gland.
2. Slip on the cable into the connector (standard connector) and connect the wires to the terminals 3 and earth of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



FUNCTIONING OF THE MAX LEVEL ELECTRICAL SENSOR

- HCV-ST-NO: the electrical contact closes when the pre-set temperature is reached at 80°C.
- HCV-ST-NC: the electrical contact opens when the pre-set temperature at 80°C is reached.

Electrical features	MAX temperature sensor	
Tension feed	AC/DC	
Electric contacts	NO normally open NC normally closed	
Voltage / Maximum current	250 Vac - 2 A	(resistive loads)
	115 Vac - 3 A	
	24 Vdc - 3 A	
	12 Vdc - 4 A	
Minimum current	50 mA	
Cable gland	Pg 7 (for cables in sheath with $\varnothing 6$ or 7 mm)	
Conductors cross-section	Max. 1.5 mm ²	



Code	Description	f	d	A	B	C	H	L	e	l	l1	m	d'±0.2	f'±0.2	C#	[Nm]	Δ
11112	HCV.127-ST-NO-M12	127	M12	20	19.5	30.5	55	153	97	20	78.5	13	12.5	127	12	149	
11113	HCV.127-ST-NC-M12	127	M12	20	19.5	30.5	55	153	97	20	78.5	13	12.5	127	12	149	
11122	HCV.254-ST-NO-M12	254	M12	20	19.5	30.5	55	280	224	20	205.5	13	12.5	254	12	176	
11123	HCV.254-ST-NC-M12	254	M12	20	19.5	30.5	55	280	224	20	205.5	13	12.5	254	12	176	

Maximum tightening torque

Column level indicators

with temperature electrical probe

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring under screw head.

Suggested roughness of the packing ring application surface $R_a = 3 \mu\text{m}$.

TEMPERATURE PROBE BRACKET

Watertight in glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with temperature electrical probe, made out of a platinum resistor whose ohmic resistance changes according to the temperature.

For a correct assembly see Warnings (on page 1777).

SWIVELLING CONNECTOR

With built-in cable gland and contact holder. Front or axial output (high or low) ensuring protection against water sprays (protection class IP 65 according to table EN 60529 table on page A23).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

In addition to the visual control, HCV-STL column level indicator generates an analogue electric signal of oil temperature. Ultrasound welding to guarantee a perfect seal. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCV.127) 12 bar (HCV.254).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

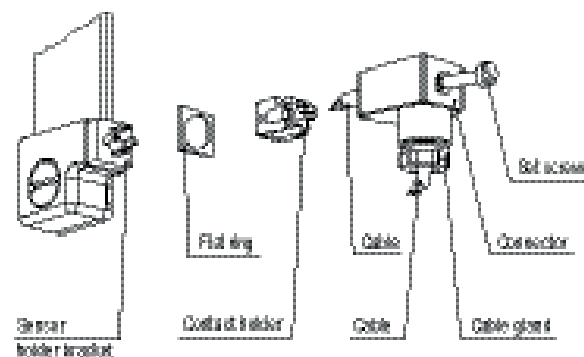
SPECIAL EXECUTIONS ON REQUEST

- Level indicators with stainless steel screws, nuts and washers.
- Level indicators for use with fluids containing alcohol.
- UV resistant transparent technopolymer level indicators.



CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the indicator by unscrewing the set screw placed on the connector, take the contact holders out and loosen the cable gland.
2. Slip on the cable into the connector (standard connector) and connect the wires to the terminals 3 and earth of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



FUNCTIONING OF THE TEMPERATURE ELECTRICAL PROBE

The working principle of the temperature probe is to measure the variation of resistance of a platinum element: 100 ohm = 0°C, 138.4 ohm = 100°C.

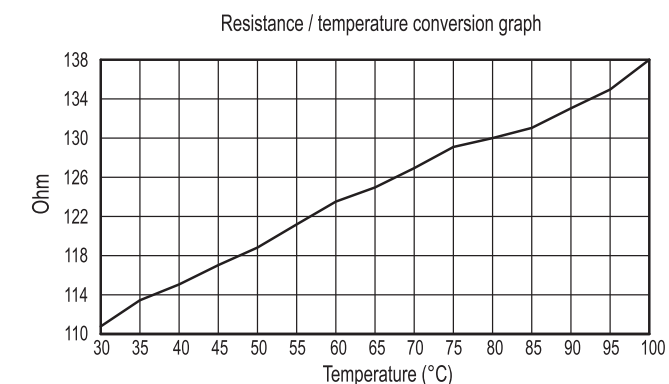
The function between temperature (T) and resistance (R) is approximately linear over a small temperature range: for example, if you assume that it is linear over the 0° to 100°C range, the error at 50°C is 0.4°C.

For precision measurement, it is necessary to linearise the resistance to give an accurate temperature. The most recent definition of the function between resistance and temperature is International Temperature Standard 90 (ITS-90). The function between resistance and temperature, obtained in laboratory tests, measuring directly the resistance value on the contacts is shown in the graph. We suggest, anyway, to set the system in order to compensate both heat dissipation and cable resistance.

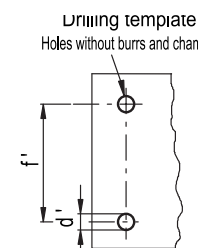
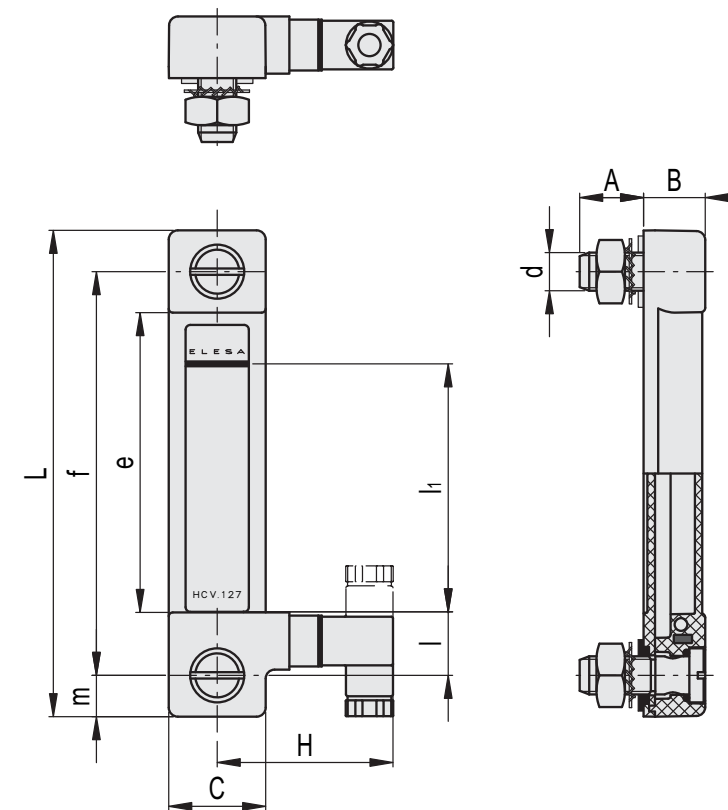
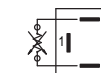
A 1°C temperature change will cause a 0.384 ohm change in resistance, so even a small error in measurement of the resistance (for example, the resistance of the wires leading to the sensor) can cause a large error in the measurement of the temperature.

Because of the low signal levels, it is important to keep any cables away from electric cables, motors, switchgear and other devices that may emit magnetic or electrical noise. Using screened cable, with the screen grounded at one end, may help to reduce interference.

When using long cables, it is necessary to check that the measuring equipment is able to handle the cable resistance.



Electrical features	Temperature probe
Tension feed	AC/DC
Maximum current	1mA
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	



Code	Description	f	d	A	B	C	H	L	e	l	ll	m	d'±0.2	f'±0.2	C#	Δ
11114	HCV.127-STL-M12	127	M12	20	19.5	30.5	55	153	97	20	78.5	13	12.5	127	12	149
11124	HCV.254-STL-M12	254	M12	20	19.5	30.5	55	280	224	20	205.5	13	12.5	254	12	176

Maximum tightening torque

Column level indicators

with MIN level electrical sensor

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring under screw head. Suggested roughness of the packing ring application surface $Ra = 3 \mu m$.

FLOAT

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with a built-in magnetic element to activate the electric contact when the float reaches the contact threshold located at about 50 mm above the axis of the lower screw (data referred to mineral oil type CB68, according to ISO 3498, temperature 23°C).

SENSOR BRACKET

Watertight in glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with a built-in relay (reed) with two conductors (NO and NC versions) at the output or three connectors (SW version). For a correct assembly see Warnings (on page 1777).

SWIVELLING CONNECTOR

With built-in cable gland and contact holder. Front or axial output (high or low) ensuring protection against water sprays (protection class IP 65 according to table EN 60529 table on page A23).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCV-E-NO**: with electric contact normally open (NO).
- **HCV-E-NC**: with electric contact normally closed (NC).
- **HCV-E-SW**: with change-over electrical contact (SW).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

The column level indicator HCV-E, in addition to the visual control, generates an electric signal when the oil level drops to a minimum. Ultrasound welding to guarantee a perfect seal. Thanks to the side output of the connector, HCV-E level indicator allows to minimise the level of intervention of the sensor. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCV.127) 12 bar (HCV.254). For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department. In any case we suggest to verify the suitability of the product under the actual working conditions.

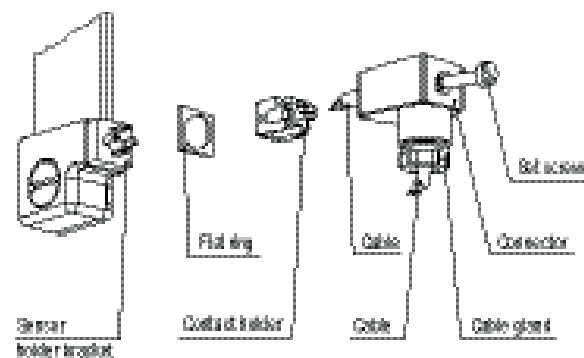


SPECIAL EXECUTIONS ON REQUEST

- Level indicators with stainless steel screws, nuts and washers.
- Level indicators for use with fluids containing alcohol.
- UV resistant transparent technopolymer level indicators.

CONNECTOR ASSEMBLY INSTRUCTIONS

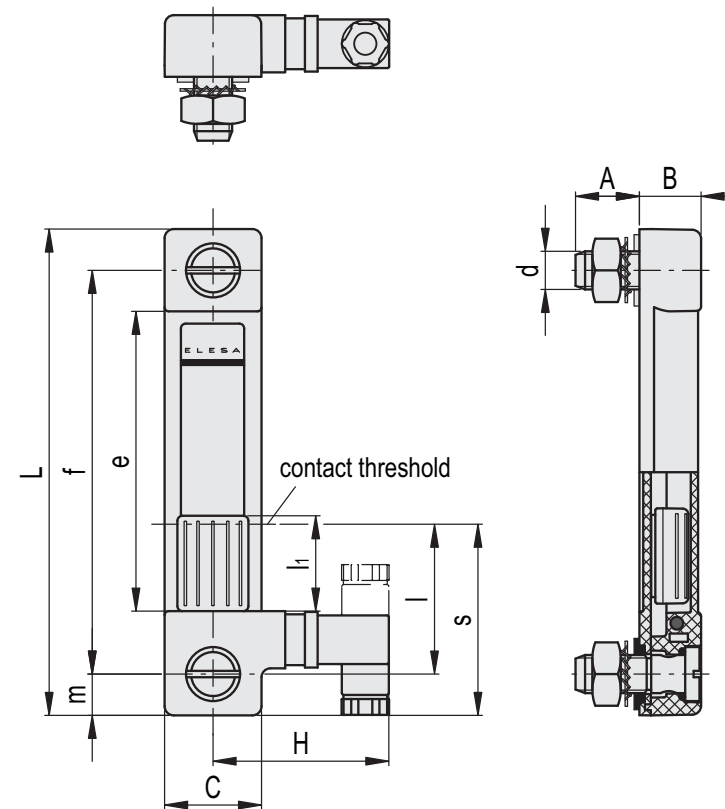
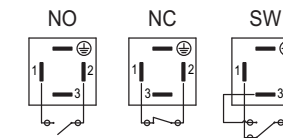
1. Remove the connector from the indicator by unscrewing the set screw placed on the connector, take the contact holders out and loosen the cable gland.
2. Slip on the cable into the connector (standard connector) and connect the wires to the terminals 1 and 2 (NO and NC version) or 1, 2 and 3 (SW version) of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



FUNCTIONING OF THE MIN LEVEL ELECTRICAL SENSOR

- HCV-E-NO: the electrical contact closes on reaching the minimum level.
- HCV-E-NC: the electrical contact is opened when it reaches the minimum level.
- HCV-E-SW (change-over electrical contact): the electrical contact switches between the two terminals.

Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally closed SW change-over contact
Maximum applicable voltage	NO: 140 Vac, 200 Vdc NC: 140 Vac, 150 Vdc SW: 140 Vac, 150 Vdc
Maximum switching current	1 A
Maximum current	NO: 1.2A NC: 2A SW: 2A
Maximum commutable power	NO: 10 Va NC: 20 Va SW: 20 Va
Cable gland	Pg 7 (for cables in sheath with $\varnothing 6$ or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	



Code	Description	f	d	A	B	C	H	L	e	l	ll	m	s	d ^{1-0.2}	f ^{±0.2}	C# [Nm]	⚖
11131	HCV.127-E-NO-M12	127	M12	20	19.5	30.5	55	153	97	50	30	13	63	12.5	127	12	153
11132	HCV.127-E-NC-M12	127	M12	20	19.5	30.5	55	153	97	50	30	13	63	12.5	127	12	153
11133	HCV.127-E-SW-M12	127	M12	20	19.5	30.5	55	153	97	50	30	13	63	12.5	127	12	153
11135	HCV.254-E-NO-M12	254	M12	20	19.5	30.5	55	280	224	50	30	13	63	12.5	254	12	180
11136	HCV.254-E-NC-M12	254	M12	20	19.5	30.5	55	280	224	50	30	13	63	12.5	254	12	180
11137	HCV.254-E-SW-M12	254	M12	20	19.5	30.5	55	280	224	50	30	13	63	12.5	254	12	180

Maximum tightening torque

Column level indicators

with MIN level and MAX temperature electrical sensors

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring under screw head. Suggested roughness of the packing ring application surface $R_a = 3 \mu\text{m}$.

FLOAT

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with a built-in magnetic element to activate the electric contact when the float reaches the contact threshold located at about 50 mm above the axis of the lower screw (data referred to mineral oil type CB68, according to ISO 3498, temperature 23°C).

BRACKET WITH LEVEL AND TEMPERATURE SENSORS.

Watertight in glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with a built-in relay (reed) with two conductors and a MAX temperature sensor (80°C). For a correct assembly see Warnings (on page 1777).

SWIVELLING CONNECTOR

With built-in cable gland and contact holder. Front or axial output (high or low) ensuring protection against water sprays (protection class IP 65 according to table EN 60529 table on page A23).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCV-E-ST-NO**: with electric contacts normally open (NO).
- **HCV-E-ST-NC**: with electric contacts normally closed (NC).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

In addition to the visual control, HCV-E-ST column level indicator, generates also an electric signal when the oil level drops to a minimum and an electric signal when the temperature reaches the max pre-set degrees (80°C). Ultrasound welding to guarantee a perfect seal.

Thanks to the side output of the connector, HCV-E-ST level indicator allows to minimise the level of intervention of the sensor. Maximum fluid level visibility even from side positions.

Lens effect for a better visibility of the fluid level.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCV.127) 12 bar (HCV.254).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

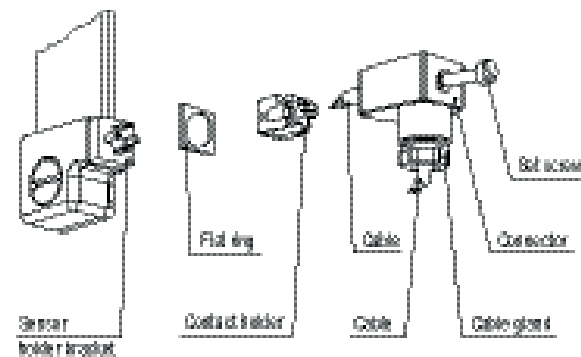


SPECIAL EXECUTIONS ON REQUEST

- Level indicators with stainless steel screws, nuts and washers.
- Level indicators for use with fluids containing alcohol.
- UV resistant transparent technopolymer level indicators.
- MAX temperature electrical sensor with trigger threshold at 70°C or 90°C.

CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the indicator by unscrewing the set screw placed on the connector, take the contact holders out and loosen the cable gland.
2. Slip on the cable into the connector (standard connector) and connect the wires to the terminals 1 and 2 for the functioning of the MIN level sensor, to the terminals 3 and earth for the functioning of the MAX temperature sensor.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.

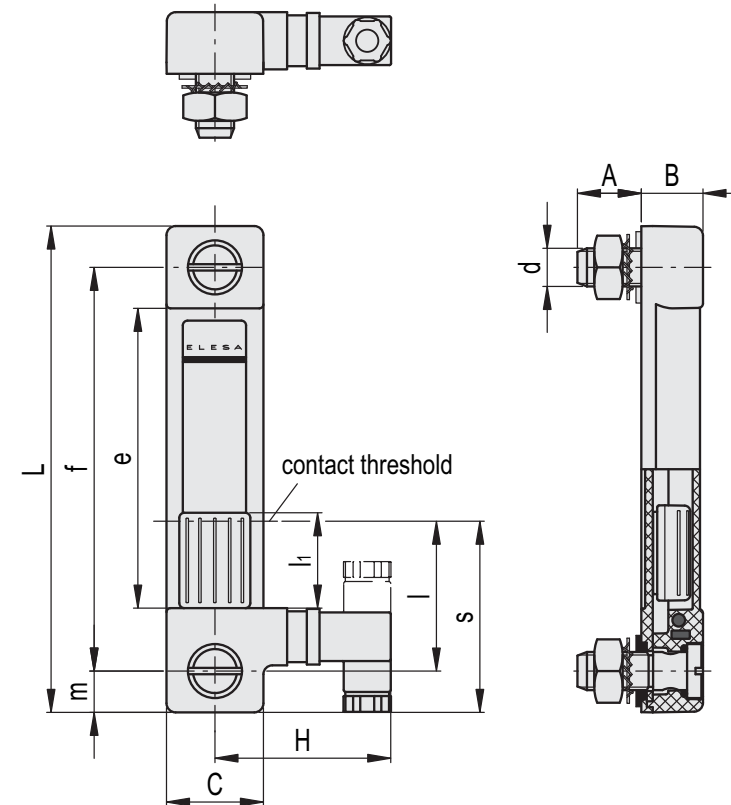
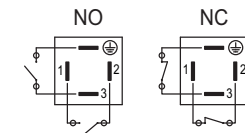


FUNCTIONING OF THE SENSOR

- HCV-E-ST-NO: the electrical contact closes when the minimum level and/or the pre-set temperature at 80°C is reached.
- HCV-E-ST-NC: the electrical contact opens when the minimum level and/or the pre-set temperature at 80°C is reached.

Electrical features	MAX temperature sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally closed
Voltage / Maximum current	250 Vac - 2 A
	115 Vac - 3 A
	24 Vdc - 3 A
	12 Vdc - 4 A
(resistive loads)	
Minimum current	50 mA
Cable gland	Pg 7 (for cables in sheath with \varnothing 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²

Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally closed
Maximum applicable voltage	NO: 140 Vac, 200 Vdc NC: 140Vac, 150 Vdc
Maximum switching current	1 A
Maximum current	NO: 1.2A NC: 2A
Maximum commutable power	NO: 10 Va NC: 20 Va
Cable gland	Pg 7 (for cables in sheath with \varnothing 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	



Code	Description	f	d	A	B	C	H	L	e	l	ll	m	s	d'±0.2	f'±0.2	C# [Nm]	Δ
11115	HCV.127-E-ST-NO-M12	127	M12	20	19.5	30.5	55	153	97	50	30	13	63	12.5	127	12	153
11116	HCV.127-E-ST-NC-M12	127	M12	20	19.5	30.5	55	153	97	50	30	13	63	12.5	127	12	153
11125	HCV.254-E-ST-NO-M12	254	M12	20	19.5	30.5	55	280	224	50	30	13	63	12.5	254	12	180
11126	HCV.254-E-ST-NC-M12	254	M12	20	19.5	30.5	55	280	224	50	30	13	63	12.5	254	12	180

Maximum tightening torque

Column level indicators

with MIN level electrical sensor and temperature electrical probe

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS, NUTS AND WASHERS

Zinc-plated steel.

PACKING RINGS

Step-shaped for the seal on the reservoir walls and NBR synthetic rubber O-ring under screw head. Suggested roughness of the packing ring application surface $R_a = 3 \mu\text{m}$.

FLOAT

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with a built-in magnetic element to activate the electric contact when the float reaches the contact threshold located at about 50 mm above the axis of the lower screw (data referred to mineral oil type CB68, according to ISO 3498, temperature 23°C).

BRACKET WITH LEVEL SENSOR AND TEMPERATURE PROBE

Watertight in glass-fibre reinforced polyamide based (PA) technopolymer, black colour, with a built-in relay (reed) with two conductors and a temperature electrical probe, made out of a platinum resistor whose ohmic resistance changes according to the temperature.

For a correct assembly see Warnings (on page 1777).

SWIVELLING CONNECTOR

With built-in cable gland and contact holder. Front or axial output (high or low) ensuring protection against water sprays (protection class IP 65 according to table EN 60529 table on page A23).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid. It can be taken out from the inclined side, before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCV-E-STL-NO**: with electric contact normally open (NO).
- **HCV-E-STL-NC**: with electric contact normally closed (NC).

MAXIMUM CONTINUOUS WORKING TEMPERATURE

90°C (with oil).

FEATURES AND PERFORMANCES

In addition to the visual control, HCV-E-STL column level indicator generates an electric signal when the oil level drops to a minimum and an analogic electric signal of the oil temperature. Ultrasound welding to guarantee a perfect seal. Thanks to the side output of the connector, HCV-E-STL level indicator allows to minimise the level of intervention of the sensor. Maximum fluid level visibility even from side positions. Lens effect for a better visibility of the fluid level.

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 18 bar (HCV.127) 12 bar (HCV.254). For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department. In any case we suggest to verify the suitability of the product under the actual working conditions.



SPECIAL EXECUTIONS ON REQUEST

- Level indicators with stainless steel screws, nuts and washers.
- Level indicators for use with fluids containing alcohol.
- UV resistant transparent technopolymer level indicators.

FUNCTIONING OF THE TEMPERATURE ELECTRICAL PROBE

The working principle of the temperature probe is to measure the variation of resistance of a platinum element: 100 ohm = 0°C, 138.4 ohm = 100°C.

The function between temperature (T) and resistance (R) is approximately linear over a small temperature range: for example, if you assume that it is linear over the 0° to 100°C range, the error at 50°C is 0.4°C.

For precision measurement, it is necessary to linearise the resistance to give an accurate temperature. The most recent definition of the function between resistance and temperature is International Temperature Standard 90 (ITS-90). The function between resistance and temperature, obtained in laboratory tests, measuring directly the resistance value on the contacts is shown in the graph. We suggest, anyway, to set the system in order to compensate both heat dissipation and cable resistance.

A 1°C temperature change will cause a 0.384 ohm change in resistance, so even a small error in measurement of the resistance (for example, the resistance of the wires leading to the sensor) can cause a large error in the measurement of the temperature.

Because of the low signal levels, it is important to keep any cables away from electric cables, motors, switchgear and other devices that may emit magnetic or electrical noise. Using screened cable, with the screen grounded at one end, may help to reduce interference.

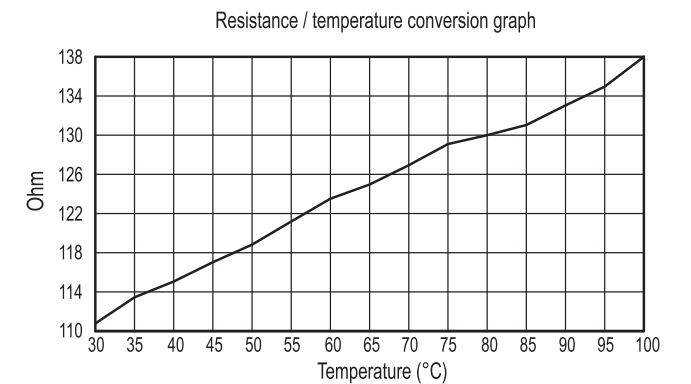
When using long cables, it is necessary to check that the measuring equipment is able to handle the cable resistance.

Electrical features	Temperature probe
Tension feed	AC/DC
Maximum current	1mA
Cable gland	Pg 7 (for cables in sheath with $\varnothing 6$ or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	

FUNCTIONING OF THE MIN LEVEL ELECTRICAL SENSOR

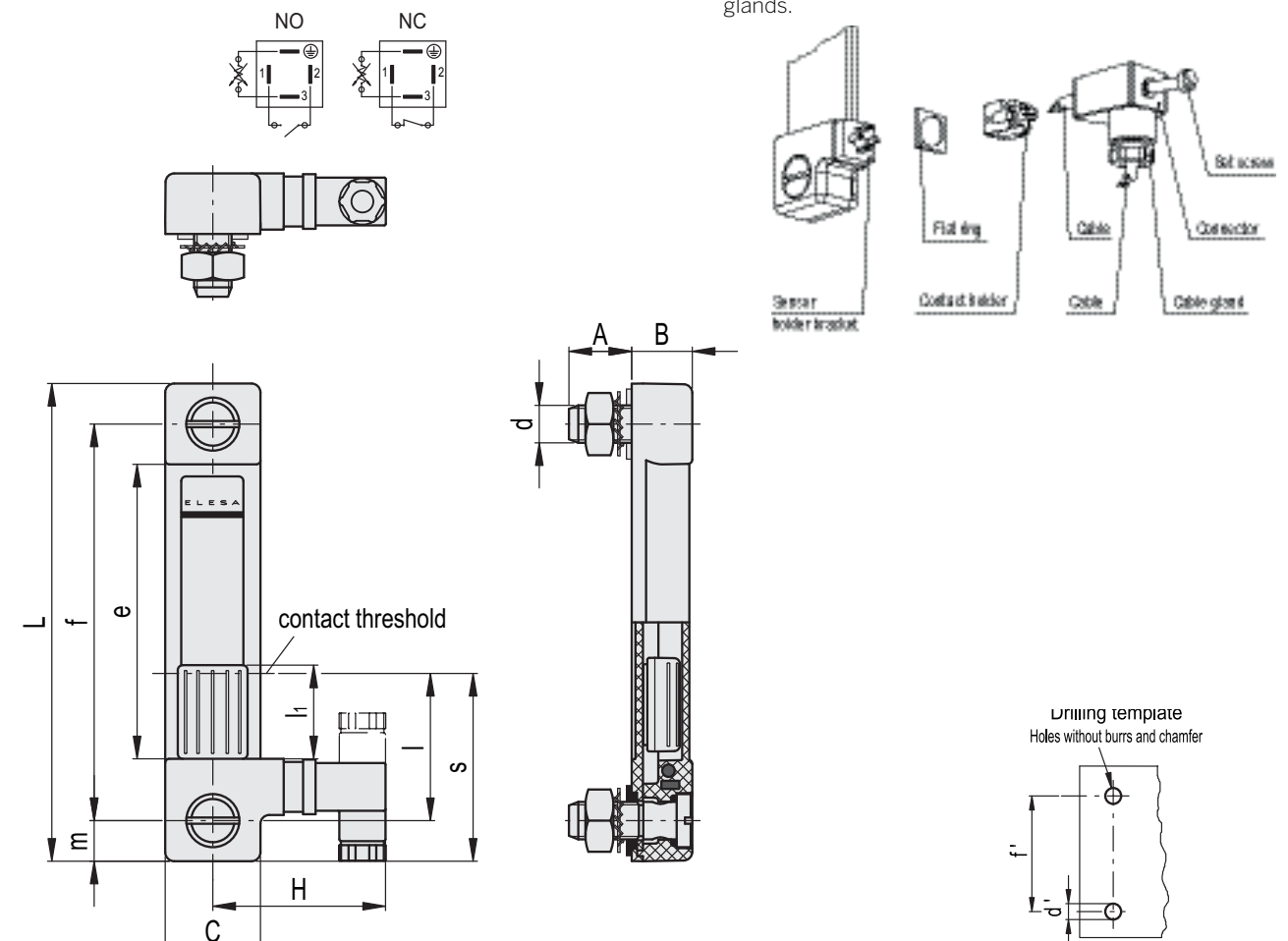
- HCV-E-STL-NO: the electrical contact closes on reaching the minimum level.
- HCV-E-STL-NC: the electrical contact is opened when it reaches the minimum level.

Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally closed
Maximum applicable voltage	NO: 140 Vac, 200 Vdc NC: 140Vac, 150 Vdc
Maximum switching current	1 A
Maximum current	NO: 1.2A NC: 2A
Maximum commutable power	NO: 10 Va NC: 20 Va
Cable gland	Pg 7 (for cables in sheath with $\varnothing 6$ or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	



CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the indicator by unscrewing the set screw placed on the connector, take the contact holders out and loosen the cable gland.
2. Slip on the cable into the connector (standard connector) and connect the wires to the terminals 1 and 2 for the functioning of the MIN level sensor, to the terminals 3 and earth for the functioning of the temperature probe.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



Code	Description	f	d	A	B	C	H	L	e	l	li	m	s	d'-0.2	f'±0.2	C# [Nm]	⚠
11117	HCV.127-E-STL-NO-M12	127	M12	20	19.5	30.5	55	153	97	50	30	13	63	12.5	127	12	153
11118	HCV.127-E-STL-NC-M12	127	M12	20	19.5	30.5	55	153	97	50	30	13	63	12.5	127	12	153
11127	HCV.254-E-STL-NO-M12	254	M12	20	19.5	30.5	55	280	224	50	30	13	63	12.5	254	12	180
11128	HCV.254-E-STL-NC-M12	254	M12	20	19.5	30.5	55	280	224	50	30	13	63	12.5	254	12	180

Maximum tightening torque

Column level indicators

with MIN level electrical sensor, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS

Nickel-plated brass with hexagon socket.

PACKING RINGS

NBR synthetic rubber O-Ring.

FLOAT

Polyamide based (PA) technopolymer in red colour, with a built-in magnetic element to activate the electric contact when the oil level drops to the minimum set at 40mm over the screw axis (dimension l).

SENSOR BRACKET

Watertight, black colour, with a built-in relay (reed). For a correct assembly see Warnings (see page 1777).

CONNECTOR

Right side output including protection against water sprays (protection class IP 65 according to EN 60529 table on page A23).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid.

It can be taken out before assembly to allow the insertion of level lines or words.

STANDARD EXECUTIONS

- **HCY-E-NO**: with electrical contact normally open.
- **HCY-E-NC**: with electrical contact normally closed.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

80°C (with oil).

TECHNICAL DATA

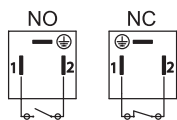
In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 14 bar (HCY.76), 9 bar (HCY.127) and 8 bar (HCY.254).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

SPECIAL EXECUTIONS ON REQUEST

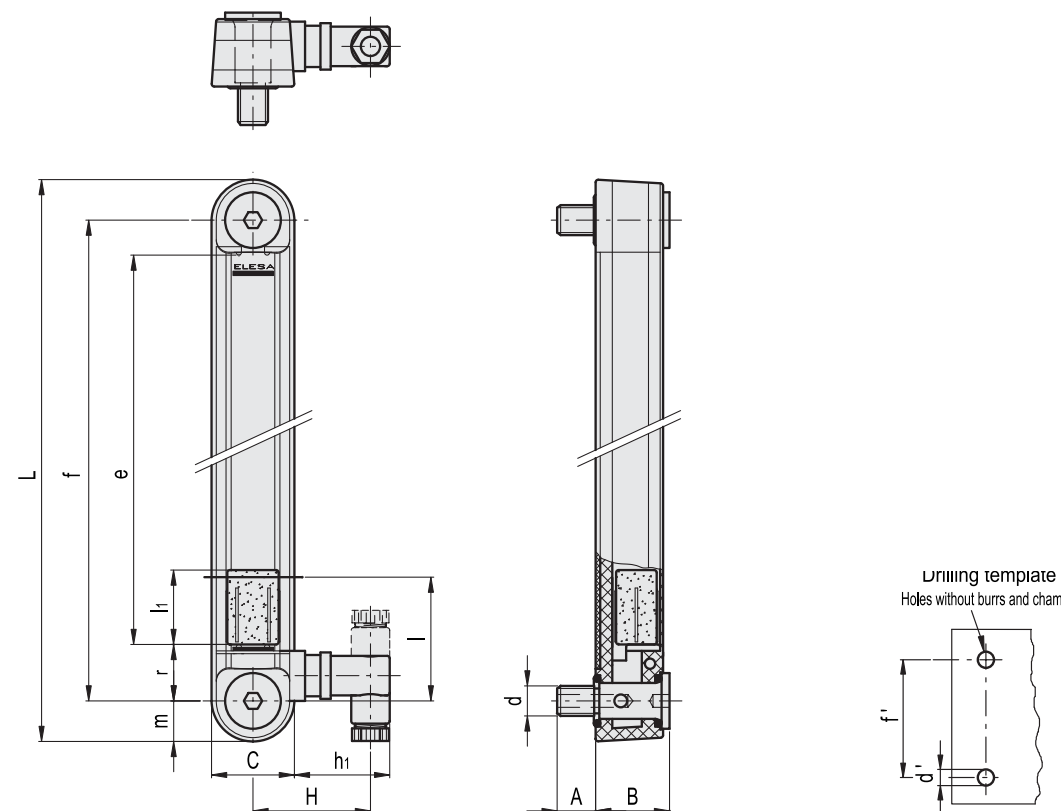
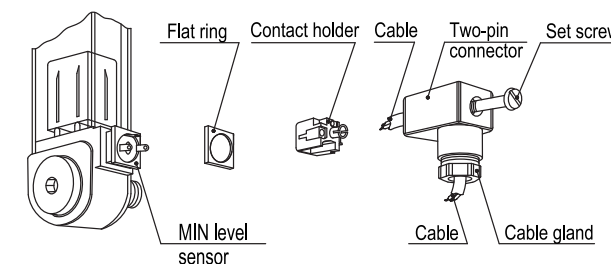
- Column level indicators in different materials (polycarbonate), for use with special fluids and/or at high temperatures.
- AISI 316 stainless steel or nickel-plated brass screws
- Column level indicators with change-over electrical contact.



Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally closed
Maximum applicable voltage	NO: 150 Vac, 150 Vdc NC: 230Vac, 230 Vdc
Maximum commutable opening capacity	NO: 1A NC: 2A
Maximum commutable power	NO: 20 W / 20 V.A. NC: 40 W / 40 V.A.
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²
Do not mount this indicator in proximity to magnetic fields.	

TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the indicator by unscrewing the set screw placed in the bottom, take the contact holder out and loosen the cable gland.
2. Slip on the two-pole cable into the connector (standard connector) and connect the wires to the terminals nr. 1 and nr. 2 of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



Code	Description	f	d	A	A1	B	C	H	L	e	h1	l	l1	m	r	d ^{±0.2}	f ^{±0.2}	C#	[Nm]
111101	HCY.76-E-NO-M10	76	M10	16	16	29	32	46	108	41	37	40	17	16	20	10.5	76	12	150
111102	HCY.76-E-NC-M10	76	M10	16	16	29	32	46	108	41	37	40	17	16	20	10.5	76	12	150
111111	HCY.127-E-NO-M12	127	M12	16	16	29	32	46	159	93	37	40	29	16	20	12.5	127	12	170
111112	HCY.127-E-NC-M12	127	M12	16	16	29	32	46	159	93	37	40	29	16	20	12.5	127	12	170
111121	HCY.254-E-NO-M12	254	M12	16	16	29	32	46	286	219	37	40	29	16	20	12.5	254	10	215
111122	HCY.254-E-NC-M12	254	M12	16	16	29	32	46	286	219	37	40	29	16	20	12.5	254	10	215

Maximum tightening torque

Column level indicators

with MIN level and MAX temperature electrical sensors, technopolymer

MATERIAL

Transparent polyamide based (PA-T) technopolymer. Highly resistant to shocks, solvents, oils with additives, aliphatic and aromatic hydrocarbons, petrol, naphtha, phosphoric esters. Avoid contact with alcohol or detergents containing alcohol.

SCREWS

Nickel-plated brass with hexagon socket.

PACKING RINGS

NBR synthetic rubber O-Ring.

FLOAT

Polyamide based (PA) technopolymer in red colour, with a built-in magnetic element to activate the electric contact when the oil level drops to the minimum set at 40mm over the screw axis (dimension I).

MIN LEVEL ELECTRICAL SENSOR

It generates an electric signal when the oil level reaches the minimum level.

The inside of the cavity where the sensor is contained is completely resinated in order to increase the thermal and electric insulation.

CONNECTOR

Right side output including protection against water sprays (protection class IP 65 according to EN 60529 on page A23).

MAX TEMPERATURE ELECTRICAL SENSOR (80°C)

It is set at a standard intervention temperature of 80°C, placed close to a metallic plate which serves as a conductor of the heat of the fluid for a faster transmission and a lower dissipation. The inside of the cavity where the sensor is contained is completely resinated in order to increase the thermal and electric insulation.

For a correct assembly see Warnings (on page 1777).

CONTRAST SCREEN

White lacquered aluminium. The housing, in the appropriate external rear slot, guarantees the best protection from direct contact with fluid.

It can be taken out before assembly to allow the insertion of level lines or words.

SCREW-COVERS

Polyamide based technopolymer, grey colour.

STANDARD EXECUTIONS

- HCY-E-ST-NO: with electrical contact normally open.
- HCY-E-ST-NC: with electrical contact normally closed.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

80°C (with oil).

TECHNICAL DATA

In laboratory tests carried out with mineral oil type CB68 (according to ISO 3498) at 23°C for a limited period of time, the weld stood up to: 14 bar (HCY.76), 9 bar (HCY.127) and 8 bar (HCY.254).

For use with other fluids and under different pressure and temperature conditions, please contact ELESA Technical Department.

In any case we suggest to verify the suitability of the product under the actual working conditions.

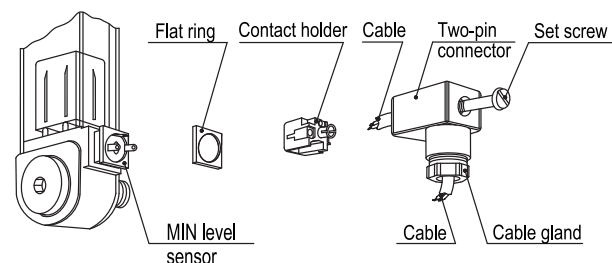


SPECIAL EXECUTIONS ON REQUEST

- Column level indicators in different materials (polycarbonate), for use with special fluids and/or at high temperatures.
- AISI 316 stainless steel or nickel-plated brass screws
- Column level indicators with change-over electrical contact.
- Execution with PT100 temperature electrical probe for connection to PLC.
- Electrical sensors set at the following temperatures: 50°, 60°, 70°C.

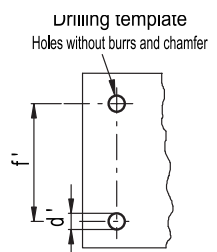
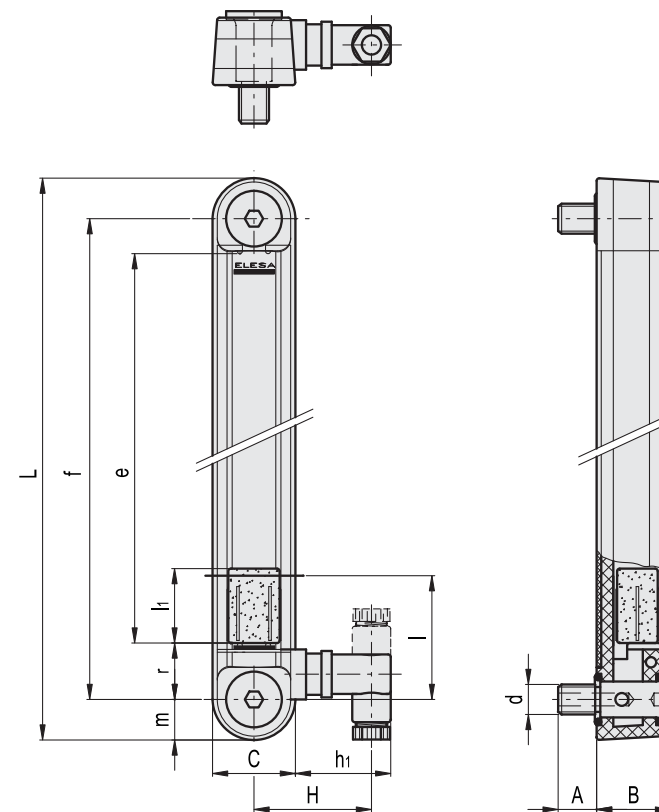
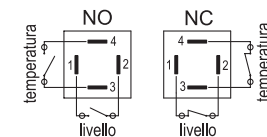
TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connector from the indicator by unscrewing the set screw placed in the bottom, take the contact holder out and loosen the cable gland.
2. Slip on the two-pole cable into the connector (standard connector) and connect the wires to the terminals nr. 1 and nr. 2 of the contact holder.
3. Assemble by pressing the contact holder into the connector in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



Electrical features	MIN level sensor
Tension feed	AC/DC
Electric contacts	NO normally open NC normally closed
Maximum applicable voltage	NO: 150 Vac, 150 Vdc NC: 230Vac, 230 Vdc
Maximum commutable opening capacity	NO: 1A NC: 2A
Maximum commutable power	NO: 20 W / 20 V.A. NC: 40 W / 40 V.A.
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)
Conductors cross-section	Max. 1.5 mm ²

Electrical features	MAX temperature sensor	
Tension feed	AC/DC	
Electric contacts	NO normally open NC normally closed	
Voltage / Maximum applicable voltage	250 Vac - 10 A	(resistive loads)
	60 Vdc - 3 A	
Cable gland	Pg 7 (for cables in sheath with Ø 6 or 7 mm)	
Conductors cross-section	Max. 1.5 mm ²	
Do not mount this indicator in proximity to magnetic fields.		



Code	Description	f	d	A	A1	B	C	H	L	e	h1	I	li	m	r	d'-0.2	f±0.2	C# [Nm]	⚠
111151	HCY.76-E-ST-NO-M12	76	M12	22	16	29	32	46	108	41	37	40	17	16	20	10.5	76	12	175
111152	HCY.76-E-ST-NC-M12	76	M12	22	16	29	32	46	108	41	37	40	17	16	20	10.5	76	12	175
111161	HCY.127-E-ST-NO-M12	127	M12	22	16	29	32	46	159	93	37	40	29	16	20	12.5	127	12	173
111162	HCY.127-E-ST-NC-M12	127	M12	22	16	29	32	46	159	93	37	40	29	16	20	12.5	127	12	173
111171	HCY.254-E-ST-NO-M12	254	M12	22	16	29	32	46	286	219	37	40	29	16	20	12.5	254	10	240
111172	HCY.254-E-ST-NC-M12	254	M12	22	16	29	32	46	286	219	37	40	29	16	20	12.5	254	10	240

Maximum tightening torque

Rapid levels with float

Technopolymer

MATERIAL

Polyamide-based (PA) technopolymer, grey colour.

PACKING RINGS

- TPE flat gasket (HFL-EF).
- NBR synthetic rubber O-Ring (HFL-ER).

CONNECTOR WITH SENSOR BLOCK

Right side output including protection against water sprays (protection class IP 65 according to EN 60529 table on page A23). For a correct assembly see Warnings (on page 1777).

DIPSTICK

AISI 304 stainless steel tube, fastened to the body by a nickel-plated brass coupler.

FLOAT

NBR synthetic rubber.

STANDARD EXECUTIONS

- **HFL-EF**: assembly by means of a flange with 3 holes at 120° for 3 zinc-plated steel screws with hexagon socket, supplied. It can be assembled also with 2 holes at 180°.
- **HFL-ER**: assembly by means of a 1" Gas threaded coupler.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

80°C.

FEATURES AND APPLICATIONS

HFL-E rapid levels show a minimum or maximum default level, according to the application needs.

Highly versatile, these rapid levels allow to define the most accurate set point by simply disassembling the dipstick float and cutting the dipstick exactly where needed, according to the specifications shown in the table.

Free from magnetic parts, the float is integral to the dipstick making this level indicator ideal for use in tanks containing dirty liquids, water, oil, coolant oil, also with iron metal parts or foams. Moreover, the operation is independent of the fluid electrical conductivity.

To ensure utmost safety, the electrical components are separated from the tank and perfectly sealed by means of ultrasound welding.

SPECIAL EXECUTIONS ON REQUEST

- Level indicators in different materials for use with particularly aggressive fluids and/or maximum working temperature up to 120°C.
- Dipsticks in different lengths and/or in AISI 316 stainless steel.
- Float with through holes to allow positioning according to different needs, avoiding cutting the dipstick.
- Double dipstick and double float manufactured for double minimum and maximum level reading.

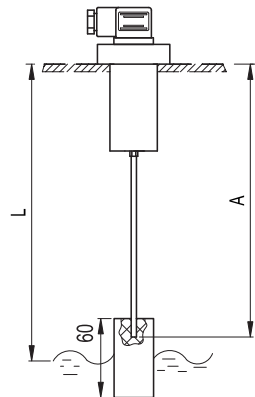
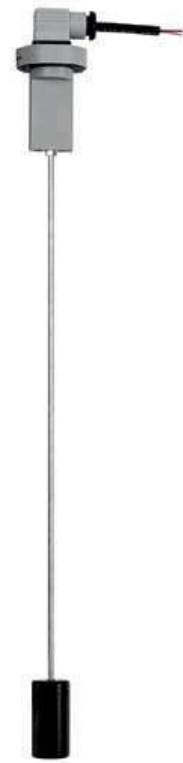


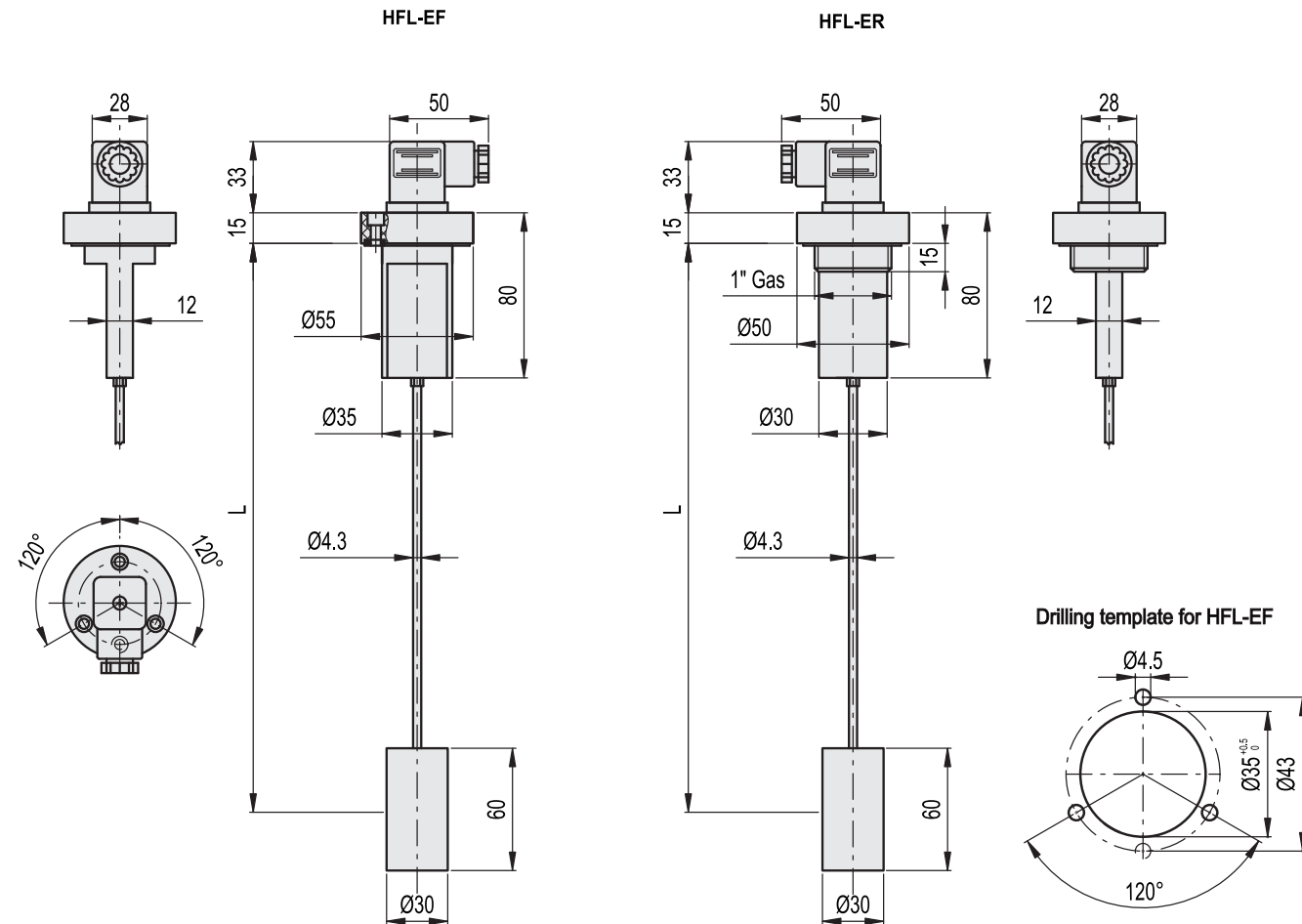
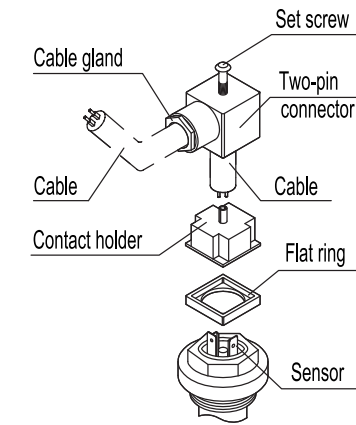
Table for cutting dipstick	
Control quote L = (mm)	Dipstick cut quote for minimum level A = (mm)
120	116
140	137
160	158
180	179
200	200
220	221
240	242
260	263
280	284
300	305
320	326
340	347
360	368
380	389
400	410
420	431
440	452
460	473
480	494
500	515



Electrical features	
Tension feed	AC/DC
Electric contacts	NO normally open in the presence of liquid NC normally closed Pin the presence of liquid
Maximum commutable voltage	230 Vdc, 230 Vac
Maximum opening capacity	3 A
Commutable power	60 W 60 VA
Cable gland	Pg 9 / Pg 11 UNIFIED
Conductors cross-section	Max. 1.5 mm ²

TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

1. Remove the connectors from the indicator by unscrewing the set screw placed in the bottom, take the contact holders out and loosen the cable glands.
2. Slip on the two-pole cable into the connectors (standard connectors) and connect the wires to the terminals nr. 1 and nr. 2 of the relative contact holders.
3. Assemble by pressing the contact holders into the relative connectors in the required position.
4. Screw the connectors to the indicator and then tighten the cable glands.



HFL-EF			
Code	Description	L	Δ
111281	HFL-EF-NO	500	135
111283	HFL-EF-NC	500	135

HFL-ER			
Code	Description	L	Δ
111286	HFL-ER-NO	500	135
111288	HFL-ER-NC	500	135

Rapid levels with float

Technopolymer

MATERIAL

Body, dipstick and float: polyamide based (PA) technopolymer, grey colour.

PACKING RINGS

- TPE flat gasket (HFLT-EF).
- NBR synthetic rubber O-Ring (HFLT-ER).

CONNECTOR

EN 175301-803 (A and C shape) / ISO 4400

DIPSTICK

Featuring two raised scales (for floatation in oil or water)

STANDARD EXECUTIONS

- **HFLT-EF**: assembly by means of a flange with 3 holes at 120° for 3 zinc-plated steel screws with hexagon socket, supplied, and a threaded coupler.
- **HFLT-ER**: assembly by means of a 1" Gas threaded coupler.

MAXIMUM CONTINUOUS WORKING TEMPERATURE

80° C.

FEATURES AND APPLICATIONS

HFLT-E rapid levels detects a predefined minimum or maximum level, according to the application needs.

Highly versatile, these rapid levels allow to define both the most accurate set point required by simply disassembling the dipstick float and cutting the dipstick exactly where needed, and the kind of operation required, with normally open (NO) or normally closed (NC) contact in presence of liquid, by loosening the fastening nut on the opposite end of the dipstick and positioning the inner magnet according to specific requirements (refer to the adhesive label).

The magnet is generally supplied with normally open (NO) contact in presence of liquid.

Free from magnetic parts, the float is integral to the dipstick making this level indicator ideal for use in tanks containing dirty liquids, water, oil, coolant oil, also with iron metal parts or foams. Moreover, the operation is independent of the fluid electrical conductivity.

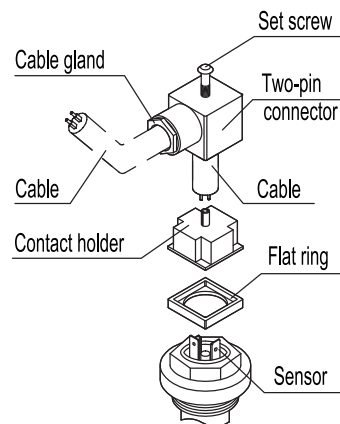
To ensure utmost safety, the electrical components are separated from the tank and perfectly sealed by means of ultrasound welding.

SPECIAL EXECUTIONS ON REQUEST

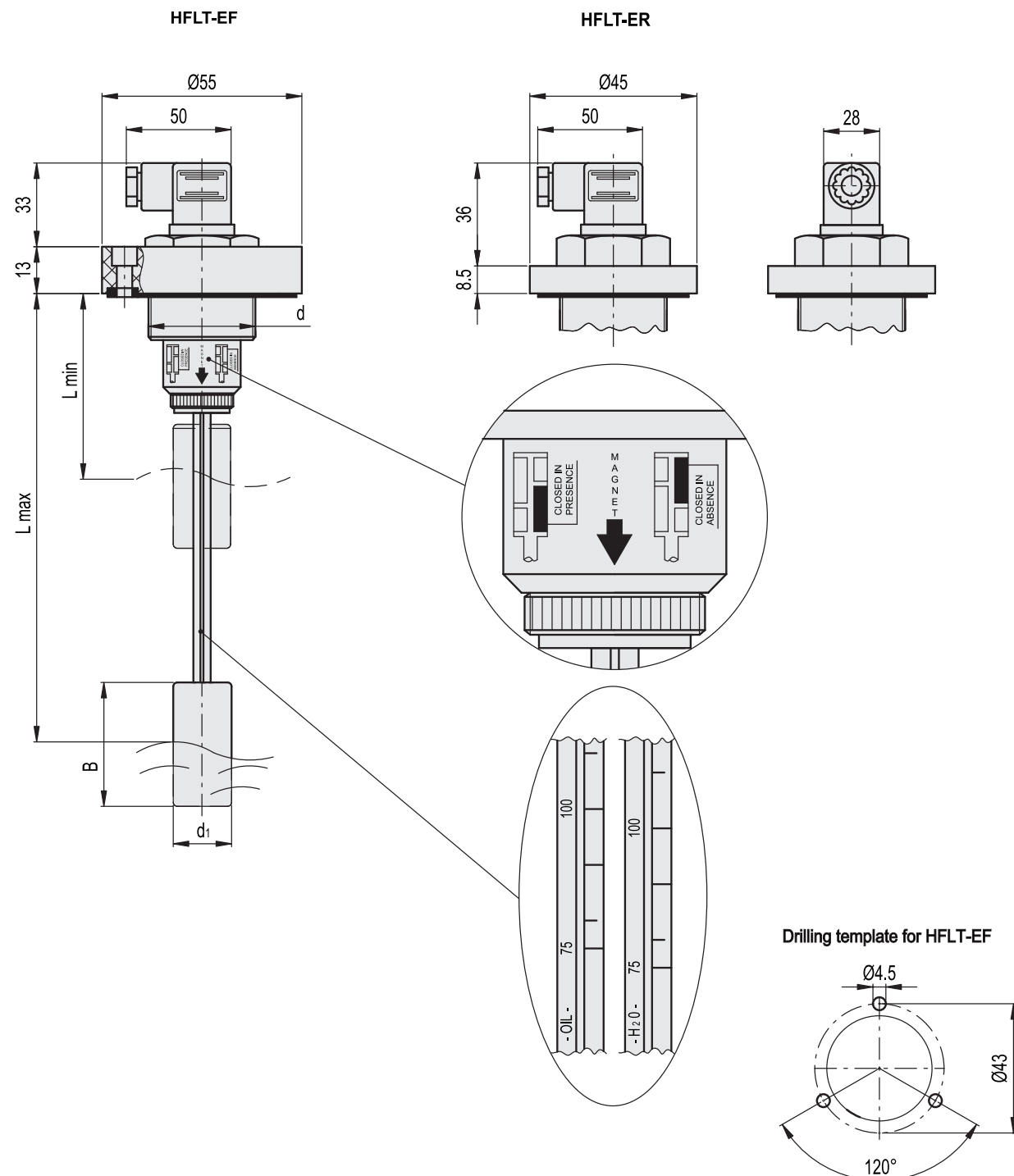
- Polypropylene body (PP).
- With flange with 6 holes for fastening with cylindrical head screws (supplied), in addition to the threaded body.
- For use with maximum working temperature up to 120°C.

TWO-PIN CONNECTOR ASSEMBLY INSTRUCTIONS

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Electrical features	
Tension feed	AC/DC
Electric contacts	NO normally open in the presence of liquid NC normally closed in the presence of liquid
Maximum commutable voltage	230 Vdc, 230 Vac
Maximum opening capacity	2 A
Commutable power	40 W 40 VA
Cable gland	Pg 9 / Pg 11 UNIFIED
Conductors cross-section	Max. 1.5 mm ²



HFLT-EF

Code	Description	d	B	Lmin	Lmax	d1	⚖
111276	HFLT-EF-3/4	G 3/4	50	75	250	23	110
111278	HFLT-EF-1	G 1	60	85	360	30	110

HFLT-ER

Code	Description	d	B	Lmin	Lmax	d1	⚖
111271	HFLT-ER-3/4	G 3/4	50	75	250	23	110
111273	HFLT-ER-1	G 1	60	85	360	30	110