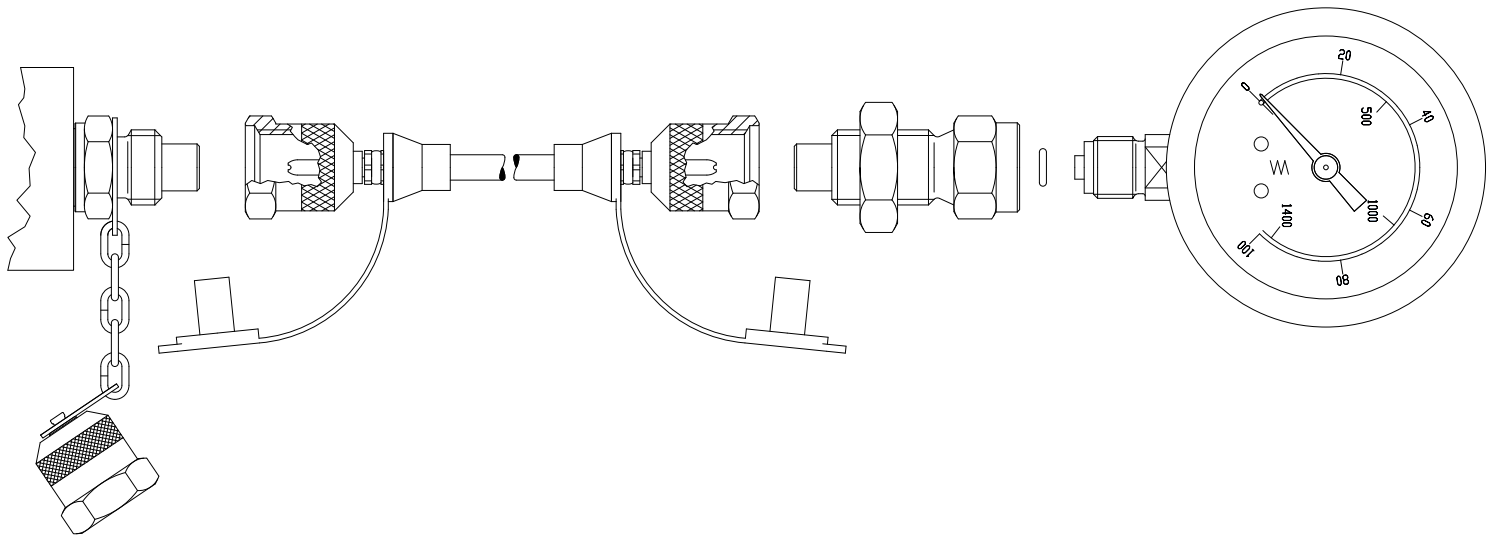




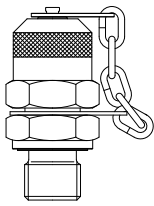
Test Points

Fittings

Hose

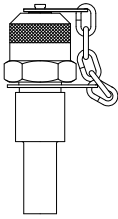


EG
Series M16x2



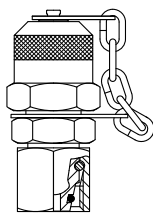
Male stud
8

BE
Series M16x2



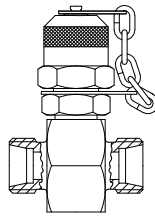
Standpipe
9

DKO
Series M16x2



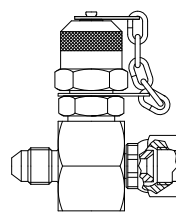
DIN cone 24°
9

GR
Series M16x2



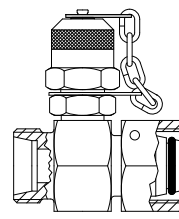
DIN cone 24°
10

GRJ AI
Series M16x2



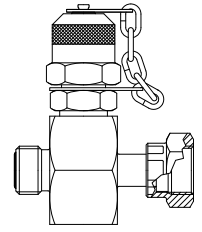
JIC 37°
11

GRM AI
Series M16x2



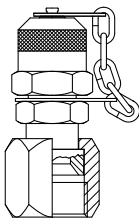
DIN cone 24°
11

GRO AI
Series M16x2



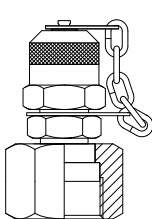
ORFS
12

IG
Series M16x2



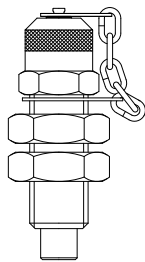
JIC 37°
13

IGO
Series M16x2



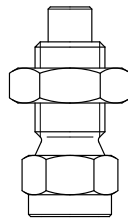
ORFS
13

SCH
Various series



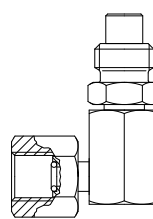
Bulkhead
14

MA
M16x2 + Pin-Lock



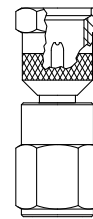
Gauge connector
15

WMA
Various series



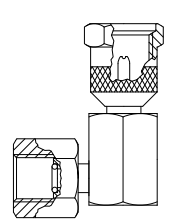
Gauge connector 90°
15

MAD
Series M16x2



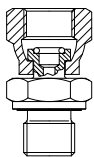
Direct gauge conn.
16

WMAD
Series M16x2



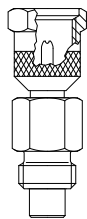
Direct gauge conn. 90°
16

ADMAD
Various types



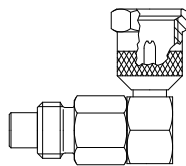
Gauge adapter
17

AD
Various series



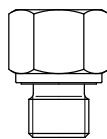
Swivel adapter
18

WAD
Various series



Swivel adapter 90°
19

AD
Various types



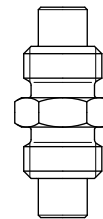
Standard adapter
20

ADI
Various series



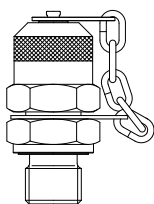
Swivel adapter
20

SAD
Various series



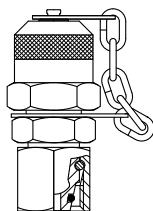
Hose connector
21

EG
Series M16x1.5



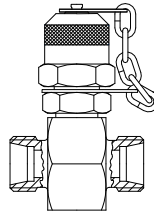
Male stud
22

DKO
Series M16x1.5



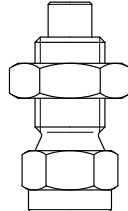
DIN cone 24°
23

GR
Series M16x1.5



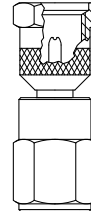
DIN cone 24°
24

MA
Series M16x1.5



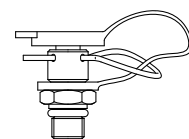
Gauge connector
25

MAD
Series M16x1.5



Direct gauge conn.
25

EG
Series Pin-Lock

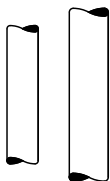


Male stud
26



Hose

DN2 + DN4

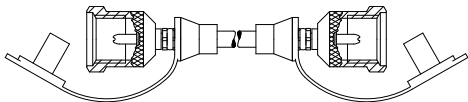


Hose

27

Hose Assemblies

DN2 + DN4

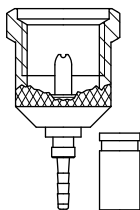


Hose assemblies

28

Hose Fittings

DN2 + DN4

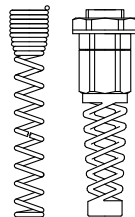


Hose fittings

31

KS

DN2 + DN4

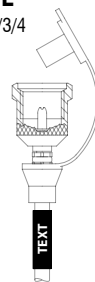


Antikink protection

38

STL

DN2/3/4

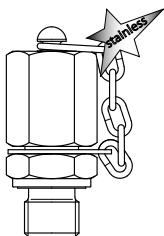


Shrink tube labels

38

EG

Series M16x2

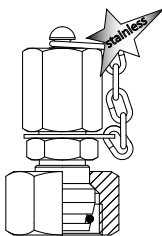


Male stud

39

DKO

Series M16x2

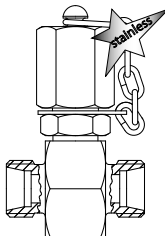


DIN cone 24°

40

GR

Series M16x2

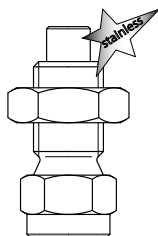


DIN cone 24°

40

MA

Series M16x2

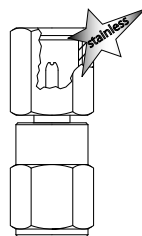


Gauge connector

41

MAD

Series M16x2

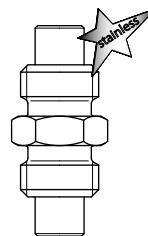


Direct gauge conn.

41

SAD

Various series

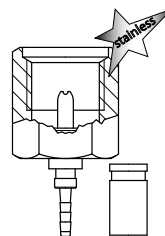


Hose connector

41

Hose Fittings

Various types

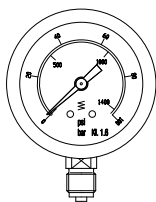


Hose fittings

42

MANO

Various types

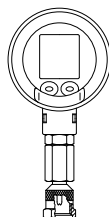


Standard gauge

43

MANOD

Various types

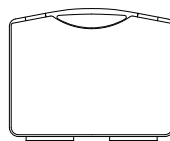


Digital gauge

44

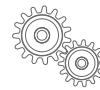
MESSKOFFER

Various types



Test box

45



Company



vdH is a German **manufacturer** and wholesaler of test points, hose fittings, and hose lines for hydraulics. It is located in **Lower Saxony**, near the A1 motorway, between Osnabrück and Bremen.

- Certified according to **ISO 9001**.
- Professional, **CAD**-supported engineering.
- **Modular** system with diverse combination options.
- Small and large-scale production. **Custom-made products**. Rush orders.
- **Monitored production** with 100% inspection of key components.
- Short response times, **reliable** delivery times.
- **English-speaking** specialists in purchasing, sales, and export.
- Technically **trained staff**.

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Kevlar® is a registered trademark of DuPont.
Delrin® is a registered trademark of DuPont de Nemours.

Responsibility

No liability is assumed for improper product handling by the user: use of vdH products with inappropriately manufactured products from other manufacturers, incorrect operating media, forced interaction of parts from incompatible series, inadequate prevention of dust, dirt, or other particles that could affect the product components, unsuitable presses, swaging data, and/or fitting components that do not fit original vdH fitting sets.

Technical changes are reserved at any time.

General Terms

Download General Terms (German only).

Impressum / Legal

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ISO 9001

Download certificate (ENGLISH)

Download certificate (GERMAN)

Technical



Application

Hydraulic diagnostics under system pressure.

Test points are installed in power units, valve blocks, hydraulic cylinders, test benches, tractors, construction machinery, etc.

Quick, safe, and leak-free access to the hydraulic system:

- a) Bleeding (e.g., hydraulic components)
- b) Filling (e.g., filling the hydraulic system with fluid)
- c) Sampling (e.g., for chemical analysis of the fluid)
- d) Pressure testing (e.g., for taking current pressure values).

Depending on the series, the coupling process can be carried out up to a maximum WP of 400 bar (40 MPa).

Valve Technology

Check valve

One-way check valve: Closed in the resting position, open in the working position.

Leak-free connection:

- The valve opens when screwing on the hose fitting (connecting).
- The valve closes when screwing off the hose fitting (uncoupling).

Ball valve & poppet valve

a) Ball valve

A hardened steel ball seals a metal bed. The higher the system pressure, the more force is applied to the ball. Tightness is achieved across the entire pressure range. The ball valve has a very long service life and can withstand peak pressures well. Ball valves are sensitive to dirt and dust particles or contaminated fluids. Not suitable for use with gaseous media.

b) Poppet valve

Unlike the ball valve, the poppet valve seals using an O-ring, meaning tightness is achieved through the combination of elastomer and metal. It withstands the same pressure requirements as the ball valve. Disadvantage: possible wear/aging of the elastomer seal. Advantage: greater resistance to particles. Use with gaseous media (subject to approval).

vdH test points are equipped with ball valves.

Series

The series thread is located under the protective cap.

M16x2 Series

Common standard series. M16 male thread with 2mm pitch.

M16x1.5 Series

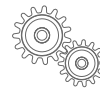
Similar main dimensions to M16x2, but with pitch 1.5mm. Black or olive-coloured coating to visually distinguish it from the M16x2 series.

Steck Series

The Steck series is threadless. A locking pin secures the connection when connecting to a hose fitting. The permissible working pressure is limited. vdH recommends the use of the standard M16x2 series without obligation.

S12.65x1.5 Series

Buttress thread or sawtooth thread, derived from DIN 20401/DIN 513. Originally developed to transmit high forces. The thread contour resembles a sawtooth, with an asymmetrical, self-locking profile. Suitable for confined spaces.



Material

Steel

Free-cutting steel and C-steel.

Stainless steel

1.4571 (AISI 316-Ti), 1.4301 (AISI 304), 1.4305 and others.

Other materials

Hose: PA, Aramid, PUR.
Pins, clips: Soft steel or spring steel.
Test boxes: See test box chapter.

O-rings, seals

Valve bodies made of steel and stainless steel are generally lined with Viton®.
Stainless steel test points are lined with Viton® (FKM/FPM).
Steel test points are equipped with NBR seals unless otherwise noted.
DKO types are equipped with ozone-resistant NBR seals.
FS (FVMQ), EPDM, PUR, and other sealing materials are available upon request.

Coating

Steel parts

ZnNi (zinc-nickel), with transparent friction correction finish („Gleitmo“), Cr6-free, grey-silver.
Some items are blue-galvanized (thick-film passivation, Cr3, Cr6-free).
M16x1.5 series: predominantly ZnNi, black.

Stainless steel parts

Uncoated (bare).

Temperature

The component with the lowest temperature resistance determines the temperature range of the measuring connection, fitting or hose line.

Seals and plastic

NBR:	-20 °C to +100 °C	(-4 °F to +212 °F)
Viton®:	-20 °C to +200 °C	(-4 °F to +392 °F)
POM (Delrin®):	max. +100 °C	(+212 °F)

Steel

DIN 3859-1 (Pipe fittings - Technical delivery conditions) specifies operating temperatures of -20 °C to +120 °C for steel, and an acceptable ambient temperature of -40 °C, although this is not confirmed by steel manufacturers according to DIN. See also ISO 8434-1, §5.
Depending on the steel grade and manufacturer, temperature ranges other than those listed in DIN may apply.

Stainless steel

DIN 3859-1: Permissible operating temperature -60 °C to +200 °C. The pressure rating is reduced by 0% between -60 °C and +20 °C, by 4% at 50 °C, by 11% at 100 °C, and by 20% at 200 °C.

Intermediate values may be linearly interpolated. See also ISO 8434-1, Part 2.

Example for a working pressure of 315 bar:

at 10 °C	-> no reduction necessary
at 100 °C	-> reduce 315 bar by 11%, i.e. to 280.35 bar

Media temperature

It must not exceed the temperature limits of the manufacturer and the component with the lowest temperature resistance.

Fluids

Oil

Suitable for hydraulic oil and other oils based on mineral oil. For other media, please contact vdH.

Gas

Ball valve test points are not suitable for use with gaseous media.
Hose fittings and hose assemblies can be used with certain gaseous media, depending on the media properties and sealing material.
For gaseous media, the hose cover must be pin-pricked.

Pressure

PN and WP

PN stands for **Pressure Nominal** and is supplemented by a dimensionless number that corresponds to international and standardized gradations. Example: PN 400 or PN 630.

PN values are listed in the product tables and refer to an ambient temperature of 20°C. For example, the PN 630 bar of a test point refers to the maximum permissible working pressure (WP) of 630 bar at an ambient temperature of 20°C.

Temperatures above 20°C affect the physical properties (e.g. yield strength) of steel and stainless steel. Therefore, a test point operating at, for example, 120°C should be assigned a reduced maximum permissible working pressure.

PN Nominal Pressure:	Reference to pressure at 20°C	e.g. PN 630
WP Working Pressure:	Reference to pressure at different temperatures	e.g. 630 bar

The pressure unit used in this catalog is bar. The correct unit for pressure is mega-pascals, MPa.

1 bar	=	0.1 MPa	=	10 ⁵ Pa	=	100.000 Pa	=	14.5 psi
1 Pa	=	10 ⁻⁵ bar						
1 MPa	=	10 bar						

Maximum pressure during connection/disconnection

Maximum working pressure: 400 bar at an ambient temperature of 20°C.
The maximum permissible working pressure of the test point and hose line must be obeyed.

Maximum permissible working pressure

The component with the least permissible WP determines the maximum permissible WP of a test point, fitting, or hose assembly. Safety factor for test points: SF4 up to PN 400, ~SF3 for PN 630.
For example, a test point with WP max. = 400 bar combined with an adapter with WP max. = 630 bar would restrict this hydraulic couple to a maximum permissible WP of 400 bar.

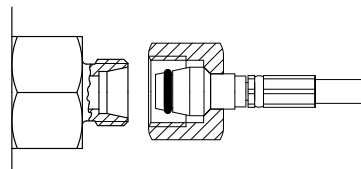
Temporary and permanent use while under fluctuating pressure

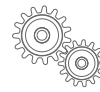
Test points and hose assemblies are designed for diagnostic testing applications, not for hydraulic working circuits.

They may only be kept connected *temporarily* during fluctuating pressure conditions.
Permanently applying high-amplitude pulse pressure while connected for an extended period can damage the internal valve seal.

Therefore, a combination of test point + associated hose fitting (e.g. SK 1620) is not suitable for *permanent* applications. Alternatively, the test point can be replaced with an adapter with a 24° DIN female cone and the hose fitting with a 24° DIN male cone.

*Alternative for permanent application:
Adapter 24° + DKO hose fitting*





Standards & Threads

A. General standards for male & female threads

Metric:	DIN 13; DIN ISO 261	e.g. M14x1.5	parallel thread
UN/UNF:	ASME B1.1; ISO 725	e.g. 7/16-20 UNF	parallel thread
BSPP:	DIN EN ISO 228-1	e.g. G1/4	parallel thread
BSPT ³ :	DIN EN 10226-1; ISO 7-1	e.g. R1/4	male taper thread
	DIN EN 10226-1; ISO 7-1	e.g. Rp1/4	female parallel thread
NPT ¹ :	ANSI/ASME B1.20.1	e.g. 1/4-18 NPT	taper thread
NPTF ² :	ANSI B1.20.3	e.g. 1/4-18 NPTF	dryseal taper thread

B. Stud ends

Metric:	DIN 3852-1	Form B	cutting edge, CE
	DIN EN ISO 9974-2	Form/Type E	elastomeric seal, ED (DIN 3869)
UN/UNF:	ISO 11926-2/3		o-ring, OR
BSPP:	DIN 3852-2	Form B	cutting edge, CE
	DIN EN ISO 1179-2	Form E	elastomeric seal, ED (DIN 3869)
BSPT ³ :	DIN 3852-2	Form C	taper thread, CO
NPT ¹ :	ANSI/ASME B1.20.1		taper thread, CO
NPTF ² :	ANSI B1.20.3		dryseal taper thread, CO

C. Ports

Metric:	DIN 3852-1	Form X, Y	parallel thread
UN/UNF:	ISO 11926-1		parallel thread
BSPP:	DIN 3852-2	Form X, Y	parallel thread
BSPT ³ :	DIN 3852-2	Form Z	parallel thread
NPT ¹ :	ANSI/ASME B1.20.1		taper thread
NPTF ² :	ANSI B1.20.3		dryseal taper thread

D. Fittings (main types)

BE:	DIN 2353	24° compression fittings (standpipe)
DKO, GR:	DIN EN ISO 8434-1; DIN 2353; DIN 3865	24° compression fittings (o-ring)
DKR:	BS 5200	60° conical sealing surface fittings
JIC:	ISO 8434-2; SAE J514	37° flared fittings
ORFS:	ISO 8434-3; SAE J1453	o-ring face seal fittings

¹NPT: Where pressure-tight joints are required, it is intended that taper pipe threads conforming to this standard be made up wrench-tight with a sealant, e.g. teflon thread tape or liquid sealant. To prevent galling on certain piping materials such as stainless steel, the sealant usually contains a lubricant.

²NPTF threads require no additional sealant, provided that crest and root truncation is in accordance with this standard's specifications.

³BSPT: In order to achieve tightness, it is recommended to use sealant aids like teflon thread tape or liquid sealant.

Caps

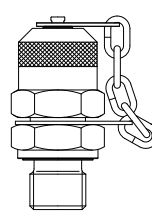
Test points

Type "B"	Standard cap, steel, hex + knurl	e.g. EG 0104.409 B
Type "BR"	Round cap, steel, knurled	e.g. EG 0104.409 BR
Type "BS"	Hex 19, stainless steel	e.g. EG 0104.409 BS-4571

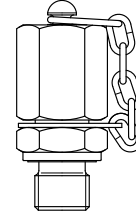
Hose fittings

Type "SK"	Standard cap, steel, hex + knurl	e.g. SK 1620
Type "SR"	Round cap, steel, knurled	e.g. SR 1620
Type "SS"	Hex 19, stainless steel	e.g. SS 1620-4571

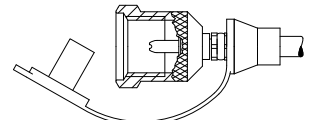
Never tighten caps with a wrench, only by hand.



EG 0104.409 **B**



EG 0104.409 **BS-4571**

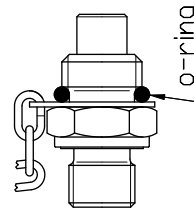


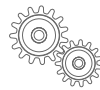
SK 1620

Anti vibration device

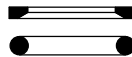
O-ring to prevent the cap from coming loose. Material: NBR. Viton® available upon request.

E.g. EG 0104.409 B	standard, no anti vibration device
E.g. EG 0104.490 B-VS	with anti vibration device in NBR
E.g. EG 0104.409 B-VS-Vi	with anti vibration device in Viton®





Sealing Types



Sealing type: **OR**

O-ring
Metric

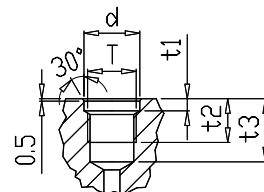
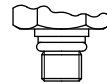
Stud end:

- parallel thread
- works standard

Port:

- parallel thread
- works standard

T Port	d +0.1	t1	t2 min.	t3 min.
M8x1	9.5	2.5	9	13
M10x1	11.5	2.5	9	13



Sealing type: **OR**

O-ring
UNF

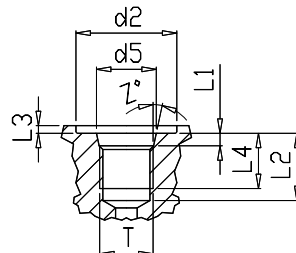
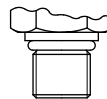
Stud end:

- parallel thread
- ISO 11926-2/3

Port:

- parallel thread
- ISO 11926-1

T Port	d2 min.	d5 ±0.05	L1 +0.4	L2 min.	L3 max.	L4 min.	Z° ±1°
5/16-24 UNF	17	9.1	1.9	12	1.6	10	12
7/16-20 UNF	21	12.45	2.4	14	1.6	11.5	12
1/2-20 UNF	23	14.05	2.4	14	1.6	11.5	12
9/16-18 UNF	25	15.7	2.5	15.5	1.6	12.7	12



Sealing type: **CO**

Taper
BSPT

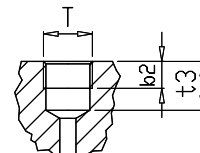
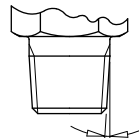
Stud end:

- taper thread (R)
- DIN 3852-2, Form C

Port:

- parallel thread (Rp)
- DIN 3852-2, Form Z

T Port	b2 min.	t3 min.
Rp1/8	5.5	8.5
Rp1/4	8.5	12.5



Sealing type: **CO**

Taper
NPT

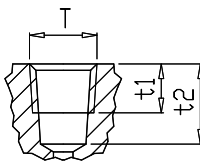
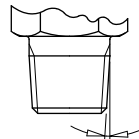
Stud end:

- taper thread
- ANSI/ASME B1.20.1

Port:

- taper thread
- ANSI/ASME B1.20.1

T Port	t1 min.	t2 min.
1/8-27 NPT	6.9	11.6
1/4-18 NPT	10	16.4
3/8-18 NPT	10.3	17.4



Sealing type: **CE**

Cutting Edge
BSPP + Metric

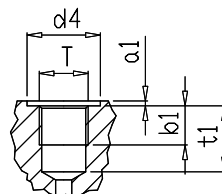
Stud end:

- parallel thread
- DIN 3852-1, Form B (metric)
(EN ISO 9974-3)
- DIN 3852-2, Form B (BSPP)
(DIN EN ISO 1179-4)

Port:

- parallel thread
- DIN 3852-1, Form X (metric)
- DIN 3852-2, Form X (BSPP)

T Port	a1 max.	b1 min.	d4 min.	t1
G1/4 BSPP	1.5	12	20	15
G3/8 BSPP	2	12	23	15
G1/2 BSPP	2.5	14	28	18
M12x1.5	1.5	12	18	15
M14x1.5	1.5	12	20	15
M16x1.5	1.5	12	23	15
M18x1.5	2	12	25	15



Sealing type: **ED**

ED ring
BSPP + Metric

Stud end:

- parallel thread
- DIN EN ISO 9974-2, Form/Type E (metric)
- DIN EN ISO 1197-2, Form E (BSPP)

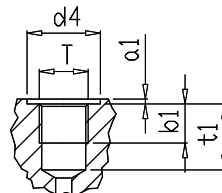
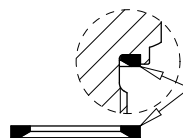
Port:

- parallel thread
- DIN 3852-1, Form X (metric)
- DIN 3852-2, Form X (BSPP)

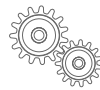
Seal:

- DIN 3869, ED Ring

T Port	a1 max.	b1 min.	d4 min.	t1
G1/8 BSPP	1	8	15	10
G1/4 BSPP	1.5	12	20	15
G3/8 BSPP	2	12	23	15
G1/2 BSPP	2.5	14	28	18
G3/4 BSPP	2.5	16	33	20
M12x1.5	1.5	12	18	15
M14x1.5	1.5	12	20	15
M16x1.5	1.5	12	23	15



For information only. Subject to change without prior notice. For design, only data from relevant up to date standards apply.



Group 113

EG ... Test point with male stud

Series M16x2

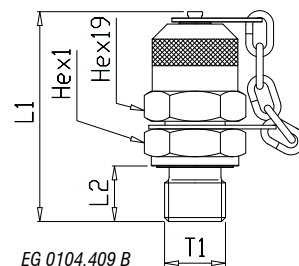
Part No.	Series	T1	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6-free ^x
EG 0108.409 B	M16x2	G1/8 BSPP	E	ED	NBR	40	8	17		400	53	ZnNi
EG 0104.400 B	M16x2	G1/4 BSPP	D	CE		44	12	19		400	64	ZnNi
EG 0104.409 B	M16x2	G1/4 BSPP	E	ED	NBR	45	12	19		630	64	ZnNi
EG 0308.409 B	M16x2	G3/8 BSPP	E	ED	NBR	45	12	22		630	79	ZnNi
EG 0102.400 B ¹	M16x2	G1/2 BSPP	D	CE		57	14	19	27	400	118	ZnNi
EG 0102.409 B	M16x2	G1/2 BSPP	E	ED	NBR	49	14	27		400	109	ZnNi
EG 0304.409 B ¹	M16x2	G3/4 BSPP	E	ED	NBR	59	16	19	32	400	164	ZnNi
EG 0188.400 B	M16x2	R1/8 BSPT	C	CO		39	8	17		400	53	ZnNi
EG 0184.400 B	M16x2	R1/4 BSPT	C	CO		43	12	17		630	59	ZnNi
EG 0118.400 B	M16x2	1/8-27 NPT	C	CO		42	10	17		400	55	ZnNi
EG 0114.400 B	M16x2	1/4-18 NPT	C	CO		47	16	17		630	63	ZnNi
EG 0318.400 B	M16x2	3/8-18 NPT	C	CO		49	17	19		400	79	ZnNi
EG 0516.409 B	M16x2	5/16-24 UNF	B	OR	FPM	42	10	17		250	52	ZnNi
EG 0716.409 B	M16x2	7/16-20 UNF	B	OR	NBR	43	11	17		630	57	ZnNi
EG 1020.409 B	M16x2	1/2-20 UNF	B	OR	NBR	44	11	19		630	63	ZnNi
EG 0916.409 B	M16x2	9/16-18 UNF	B	OR	NBR	44	12	19		630	66	ZnNi
EG 0810.409 B ²	M16x2	M8x1	A	OR	FPM	41	8	17		250	53	ZnNi
EG 1010.409 B	M16x2	M10x1	A	OR	NBR	41	8	17		630	54	ZnNi
EG 1215.409 B	M16x2	M12x1.5	E	ED	NBR	45	12	17		630	59	ZnNi
EG 1415.409 B	M16x2	M14x1.5	E	ED	NBR	44	12	19		630	65	ZnNi
EG 1615.409 B	M16x2	M16x1.5	E	ED	NBR	45	12	22		630	76	ZnNi
EG 1815.400 B ¹	M16x2	M18x1.5	D	CE		50	9	17	24	400	92	ZnNi

¹Adapter version. ²Do not use for new design.

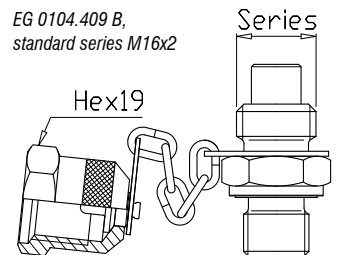
Description: Test point with male threaded stud. Popular standard series M16x2.
Materials: Steel.
Seals: Valve seals are generally made of Viton® (FKM/FPM). For other seals see table.
Standards: See *Technical*.



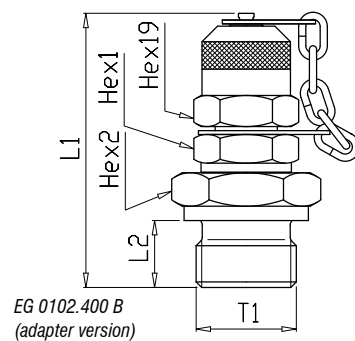
EG 0104.409 B



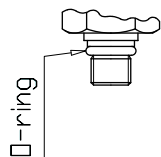
EG 0104.409 B



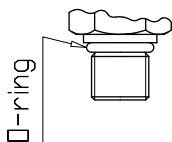
EG 0104.409 B,
standard series M16x2



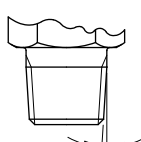
EG 0102.400 B
(adapter version)



OR
o-ring, metric



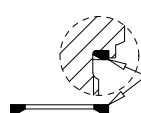
OR
o-ring, UNF



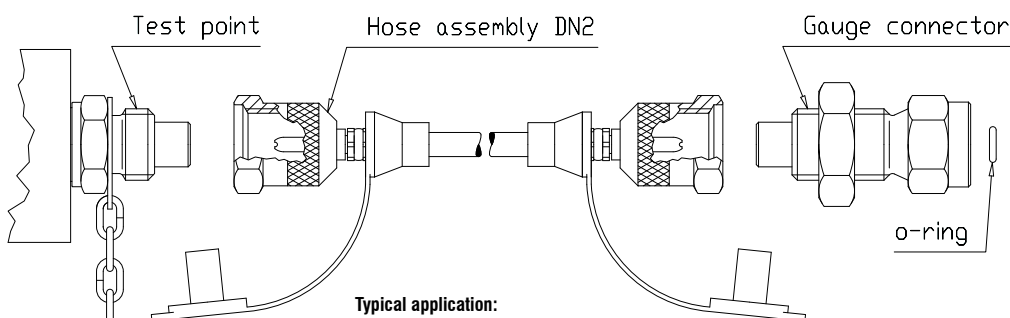
CO
conical



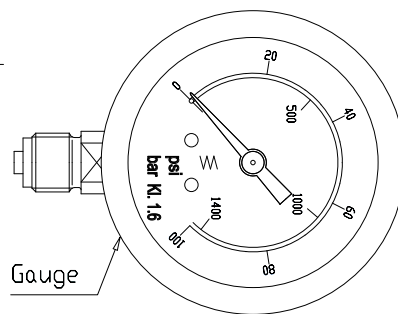
CE
cutting edge



ED
elastomeric seal



Typical application:
Test point + hose assembly DN2 +
gauge connector + gauge



^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 111

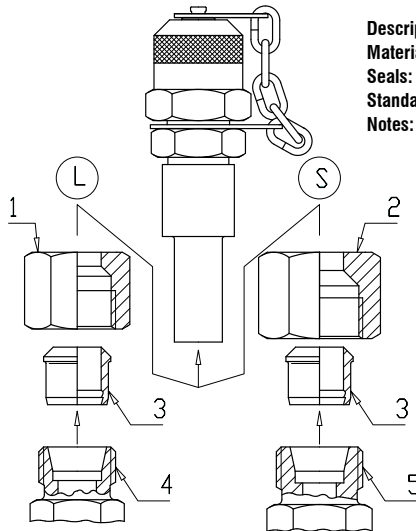
BE ... Test point with standpipe

Series M16x2

Part No.	L/S	Series	Fig.	D mm	L1 mm	L2 mm	L3 mm	Hex1 mm	PN bar (L/S)	Weight g	Cr6- free ^x
BE 06.400 B	L+S	M16x2	A	6	69	20	37	17	250/400	74	ZnNi
BE 08.400 B	L+S	M16x2	A	8	69	22	37	17	250/400	74	ZnNi
BE 10.400 B	L+S	M16x2	A	10	68	20	36	17	250/400	79	ZnNi

L = light series, S = heavy series.

Description: Test point with standpipe.
Materials: Steel.
Seals: BE 06 ... = Viton®. BE 08 ... + BE 10 ... = Viton®.
Standards: DIN 2353, 24° compression fittings.
Notes:
- Other sizes on request.
- Recommended: use DKO type for new design.
- Cutting rings and swivel nuts not included.



Typical assembly:

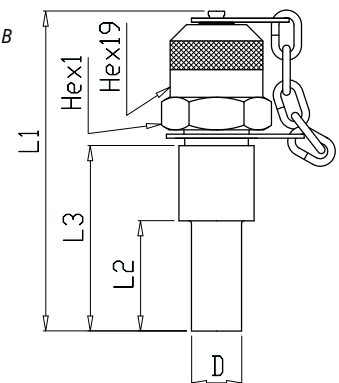
- 1 = Swivel nut, L, DIN 3870 / DIN EN ISO 8434-1.
- 2 = Swivel nut, S, DIN 3870 / DIN EN ISO 8434-1.
- 3 = Cutting ring, L+S, DIN 3861 / DIN EN ISO 8434-1.
- 4 = Metallic tube connector for 24° compression fittings, L, DIN EN ISO 8434-1.
- 5 = Metallic tube connector for 24° compression fittings, S, DIN EN ISO 8434-1.

Drawing: typical assembly of standpipe, swivel nut, and cutting ring. The assemblies of either L (light) or S (heavy) fit into tube connectors for 24° compression fittings according to standard. Threads: metric.



BE 10.400 B

Fig. A
BE 10.400 B



Group 112

DKO ... Test point with 24° male cone

Series M16x2

Part No.	D	L/S	Series	T1	Fig.	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
DKO 06.250 B	6	L	M16x2	M12x1.5	C	48	16	14	250	63	ZnNi
DKO 08.250 B	8	L	M16x2	M14x1.5	C	48	16	17	250	70	ZnNi
DKO 10.250 B	10	L	M16x2	M16x1.5	C	49	16	19	250	77	ZnNi
DKO 12.250 B	12	L	M16x2	M18x1.5	C	48	16.5	22	250	90	ZnNi
DKO 15.250 B	15	L	M16x2	M22x1.5	B	52	19.5	27	250	113	ZnNi
DKO 18.160 B	18	L	M16x2	M26x1.5	B	59	25.5	32	160	153	ZnNi
DKO 22.160 B	22	L	M16x2	M30x2	B	57	25.5	36	160	201	ZnNi
DKO 28.100 B	28	L	M16x2	M36x2	B	63	26.5	41	100	260	ZnNi
DKO 35.100 B	35	L	M16x2	M45x2	B	67	31.5	50	100	422	ZnNi
DKO 42.100 B	42	L	M16x2	M52x2	B	63	26.5	60	100	551	ZnNi
DKO 06.400 B	6	S	M16x2	M14x1.5	C	48	16	17	630	69	ZnNi
DKO 08.400 B	8	S	M16x2	M16x1.5	C	49	16	19	630	76	ZnNi
DKO 10.400 B	10	S	M16x2	M18x1.5	C	48	16	22	630	86	ZnNi
DKO 12.400 B	12	S	M16x2	M20x1.5	C	50	16.5	24	630	97	ZnNi
DKO 14.400 B	14	S	M16x2	M22x1.5	B	58	21.5	27	400	121	ZnNi
DKO 16.400 B	16	S	M16x2	M24x1.5	B	58	23.5	30	400	147	ZnNi
DKO 20.400 B	20	S	M16x2	M30x2	B	62	26.5	36	400	212	ZnNi
DKO 25.400 B	25	S	M16x2	M36x2	B	63	26.5	46	400	347	ZnNi
DKO 30.250 B	30	S	M16x2	M42x2	B	69	31.5	50	250	437	ZnNi
DKO 38.250 B	38	S	M16x2	M52x2	B	75	34.5	60	250	667	ZnNi

Description: Test point with 24° male cone and metric swivel nut (either thrust pin or slip-on type).
Materials: Steel.
Seals: Valve seals are generally made of Viton® (FKM/FPM). All other seals are made of NBR.
Standards: DIN EN ISO 8434-1; DIN 2353; DIN 3865, 24° compression fittings.



DKO 12.250 B

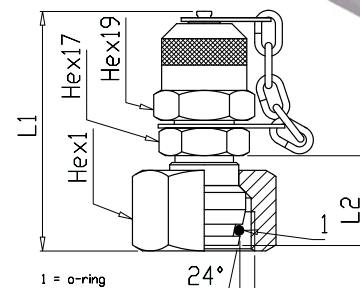


Fig. B
DKO 15.250 B
Hex1 = swivel nut

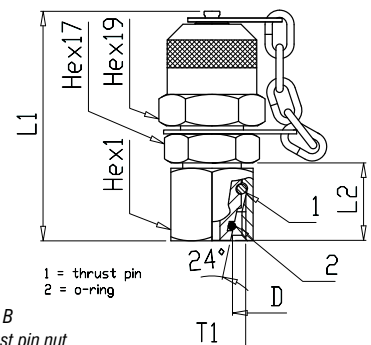
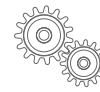


Fig. C
DKO 08.250 B
Hex1 = thrust pin nut

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 114

GR ... Test point + union with 24° female cone Series M16x2

Part No.	D	L/S	Series	T1	Fig.	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
GR 06.250 B	6	L	M16x2	M12x1.5	A	37	23	45	24	14	250	142	ZnNi
GR 08.250 B	8	L	M16x2	M14x1.5	A	37	23	45	24	17	250	153	ZnNi
GR 10.250 B	10	L	M16x2	M16x1.5	A	39	25	46	27	19	250	179	ZnNi
GR 12.250 B	12	L	M16x2	M18x1.5	A	39	25	46	27	22	250	197	ZnNi
GR 15.250 B	15	L	M16x2	M22x1.5	A	41	27	48	30	27	250	261	ZnNi
GR 18.160 B	18	L	M16x2	M26x1.5	A	41	26	49	32	32	160	321	ZnNi
GR 22.160 B	22	L	M16x2	M30x2	A	45	30	51	36	36	160	389	ZnNi
GR 28.100 B	28	L	M16x2	M36x2	A	45	30	53	41	41	100	457	ZnNi
GR 35.100 B	35	L	M16x2	M45x2	A	49	28	56	46	50	100	641	ZnNi
GR 42.100 B	42	L	M16x2	M52x2	A	49	27	60	55	60	100	899	ZnNi
GR 06.400 B	6	S	M16x2	M14x1.5	A	41	27	45	24	17	630	159	ZnNi
GR 08.400 B	8	S	M16x2	M16x1.5	A	41	27	45	24	19	630	178	ZnNi
GR 10.400 B	10	S	M16x2	M18x1.5	A	41	26	46	27	22	630	200	ZnNi
GR 12.400 B	12	S	M16x2	M20x1.5	A	41	26	46	27	24	630	231	ZnNi
GR 14.400 B	14	S	M16x2	M22x1.5	A	45	29	46	27	27	400	275	ZnNi
GR 16.400 B	16	S	M16x2	M24x1.5	A	45	28	48	30	30	400	328	ZnNi
GR 20.400 B	20	S	M16x2	M30x2	A	49	28	51	36	36	400	479	ZnNi
GR 25.400 B	25	S	M16x2	M36x2	A	53	29	53	41	46	400	751	ZnNi
GR 30.250 B	30	S	M16x2	M42x2	A	57	30	56	46	50	250	884	ZnNi
GR 38.250 B	38	S	M16x2	M52x2	A	61	29	60	55	60	250	1277	ZnNi



GR 10.250 B

Description: Test point mounted on a union with both ends 24° female cone, with nuts and cutting rings.

Materials: Steel. Nuts and cutting rings acc. to DIN 3859-1.

Seals: Valve seals are generally made of Viton® (FKM/FPM).

Standards: DIN EN ISO 8434-1; DIN 2353.

Notes: Also available:

- without nuts + cutting rings (e.g. GR 08.250 B-oMoS)

- without test point (e.g. GR 08.250 G)

Radial port thread in Hex1 = M10x1.

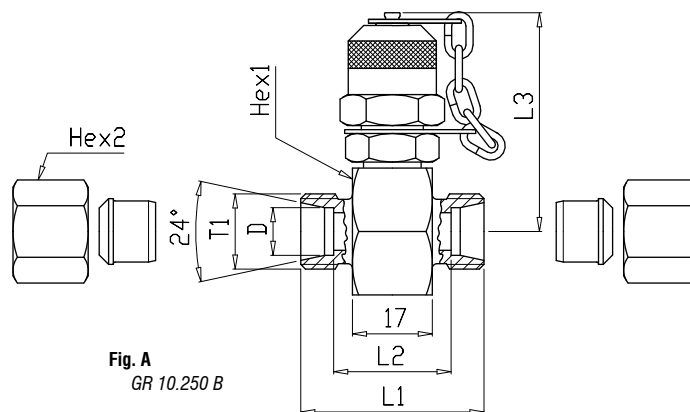


Fig. A
GR 10.250 B

Technical Information

24° fittings are widely used in European mechanical engineering and hydraulic systems. They provide a metal-to-metal seal.

Unlike SAE J514 JIC fittings, the pipe is not flared but simply cut straight. A cutting ring is pushed onto the pipe end and tightened with the union nut.

24° fittings require little assembly effort, cover a wide pressure range, are available in a wide variety of types, and are easily reusable if the cutting ring is installed correctly.

Their vibration resistance is limited (cutting ring). For higher requirements, thus use of SAE J514 JIC fittings (37°) or ORFS fittings is recommended. The latter are particularly vibration-resistant and tolerant to contamination (O-ring seal).

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 117

GRJ AI ... Test point + JIC 37° male / female swivel

Series M16x2

Part No.	Series	T1	Fig.	Tube mm	Tube inch	D mm	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	WP bar	Weight g	Cr6- free ^x
GRJ AI 0716.400 B	M16x2	7/16-20 UNF	A	6	1/4	4.4	52	14	47	27	16	350	167	yes
GRJ AI 0916.400 B	M16x2	9/16-18 UNF	A	10	3/8	7.5	53	14.1	49	32	19 ¹	350	209	ZnNi
GRJ AI 0304.400 B	M16x2	3/4-16 UNF	A	12	1/2	9.9	58	16.7	51	36	24	310	267	ZnNi
GRJ AI 0708.400 B	M16x2	7/8-14 UNF	A	16	5/8	12.3	65	19.3	51	36	27	240	291	ZnNi
GRJ AI 1-0116.400 B	M16x2	1-1/16-12 UN	A	20	3/4	15.5	70	21.9	54	41	32	240	370	ZnNi
GRJ AI 1-0516.400 B	M16x2	1-5/16-12 UN	A	25	1	21.4	71	23.1	56	46	41	210	479	ZnNi

¹Hex2 can also be AF11/16".

Description: Test point mounted on an in-line connector with JIC 37° male / female swivel end.

Materials: Steel.

Seals: Valve seals are generally made of Viton® (FKM/FPM).

Standards: ISO 8434-2; SAE J514, 37° flared fittings. WP rates acc. to ISO 8434-2.

Notes: Radial port thread in Hex1 = 7/16-20 UNF.

Technical Information

JIC fittings are widely used in North America, for example, in mobile machinery and agriculture. They seal metal-to-metal, just like 24° fittings.

A nut and a support ring are pushed over the pipe. The pipe end is then flared to a total opening angle of 74° (2 x 37°).

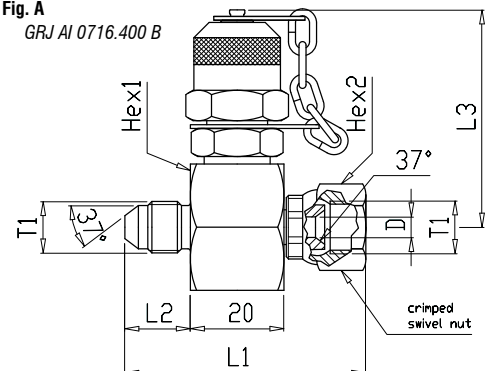
Unlike 24° fittings, assembly effort is greater (flaring tool). The variety of types and pressure range are somewhat narrower. When installed correctly, reusability is good. The longer sealing surfaces due to the 74° angle result in a larger contact area; this allows the use of thicker-walled pipes and higher mechanical loads.

Vibration resistance is good, but, like 24° fittings, it does not reach the performance of ORFS fittings. The latter are particularly vibration-resistant and tolerant to contamination (O-ring seal).



GRJ AI 0916.400 B

Fig. A
GRJ AI 0716.400 B



Group 122

GRM AI ... Test point + 24° cone fem./ male swivel Series M16x2

Part No.	D	L/S	Series	T1, T2	Fig.	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
GRM AI 06.250 B	6	L	M16x2	M12x1.5							250		ZnNi
GRM AI 08.250 B	8	L	M16x2	M14x1.5	B	45	17	45	24	17	250	145	yes
GRM AI 10.250 B	10	L	M16x2	M16x1.5	B	46	18	46	27	19	250	168	yes
GRM AI 12.250 B	12	L	M16x2	M18x1.5	B	48	20	46	27	22	250	182	ZnNi
GRM AI 15.250 B	15	L	M16x2	M22x1.5	B	49	20	48	30	27	250	223	ZnNi
GRM AI 18.160 B	18	L	M16x2	M26x1.5	B	53	24	49	32	32	160	282	yes
GRM AI 22.160 B	22	L	M16x2	M30x2	B	57	26	51	36	36	160	345	yes
GRM AI 28.100 B	28	L	M16x2	M36x2							100		ZnNi
GRM AI 35.100 B	35	L	M16x2	M45x2							100		ZnNi
GRM AI 42.100 B	42	L	M16x2	M52x2							100		ZnNi
GRM AI 06.400 B	6	S	M16x2	M14x1.5							630		ZnNi
GRM AI 08.400 B	8	S	M16x2	M16x1.5	B	48	19	45	24	19	630	157	yes
GRM AI 10.400 B	10	S	M16x2	M18x1.5	B	49	20	46	27	22	630	186	yes
GRM AI 12.400 B	12	S	M16x2	M20x1.5	B	50	21	46	27	24	630	196	ZnNi
GRM AI 16.400 B	16	S	M16x2	M24x1.5	B	52	21	48	30	30	400	257	yes
GRM AI 20.400 B	20	S	M16x2	M30x2	B	59	26	51	36	36	400	368	yes
GRM AI 25.400 B	25	S	M16x2	M36x2							400		ZnNi
GRM AI 30.250 B	30	S	M16x2	M42x2							250		ZnNi
GRM AI 38.250 B	38	S	M16x2	M52x2							250		ZnNi

Description: Test point mounted on an in-line connector with 24° female cone / male cone swivel end.

Materials: Steel.

Seals: Valve seals are generally made of Viton® (FKM/FPM). All other seals are made of NBR.

Standards: DIN EN ISO 8434-1; DIN 2353.

Notes: Swivel end with thrust pin swivel nut.

Grey italics = available on request. No standard stock item.

Also available:

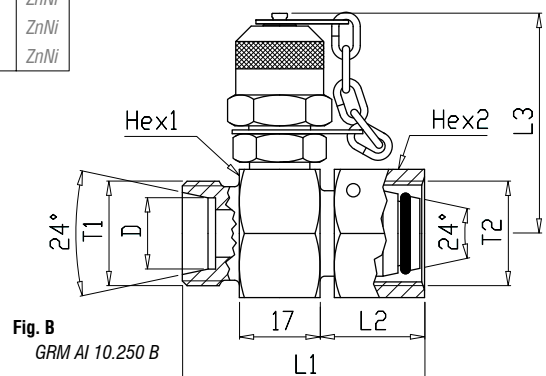
- nut + cutting ring for 24° female cone end

- without test point (e.g. GRM AI 08L-G)

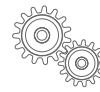
Radial port thread in Hex1 = M10x1.



GRM AI 12.250 B



^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 118

GRO AI ... Test point + ORFS male / female swivel

Series M16x2

Part No.	Series	T1	Fig.	Tube mm	Tube inch	D1 mm	D2 mm	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
GRO AI 0916.400 B	M16x2	9/16-18 UNF	A	6	1/4	4.5	4	45	10	49	32	19	630	214	ZnNi
GRO AI 1116.400 B	M16x2	11/16-16 UN	A	10	3/8	6.5	6.5	49	11	49	32	22	630	230	ZnNi
GRO AI 1316.400 B	M16x2	13/16-16 UN	A	12	1/2	9.5	9	55	13	49	32	27	630	262	ZnNi
GRO AI 1-0000.400 B	M16x2	1-14 UNS	A	16	5/8	12.5	11.5	60	15.5	51	36	30	400	328	ZnNi
GRO AI 1-0316.400 B	M16x2	1-3/16-12 UN	A	20	3/4	15.5	14	63	17	54	41	36	400	442	ZnNi
GRO AI 1-0716.400 B	M16x2	1-7/16-12 UN	A	25	1	20.5	20	66	17.5	56	46	41	400	542	ZnNi

Description: Test point mounted on an in-line ORFS connector with ORFS. End1 flat face with o-ring. End2 flat face w/o o-ring and with swivel nut.

Materials: Steel.

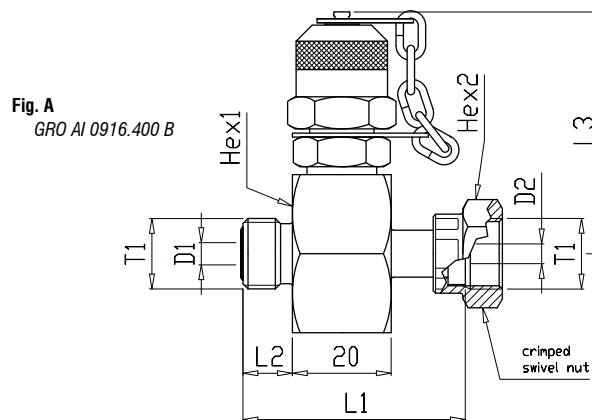
Seals: Valve seals are generally made of Viton® (FKM/FPM). All other seals are made of NBR.

Standards: ISO 8434-3; SAE J1453. WP rates acc. to ISO 8434-3.

Notes: Radial port thread in Hex1 = 7/16-20 UNF.



GRO AI 0916.400 B



Technical Information

ORFS fittings are widely used in North America, for example, in mobile machinery and agriculture. Sealing is achieved via an O-ring.

The fittings are compact (require little space), very easy to install (simple design, O-ring quickly replaceable), and ideal for applications involving high and dynamic pressure. Prerequisites for optimal performance are clean and precisely machined end faces, as well as consideration of the aging properties of O-rings.

Vibration resistance, high-pressure resistance, and reusability are very good.

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 119

IG ... Test point JIC 37° female

Series M16x2

Part No.	Series	T1	Fig.	Tube mm	Tube inch	L1 mm	L2 mm	Hex1 mm	WP bar	Weight g	Cr6- free ^x
IG 0716.400 B	M16x2	7/16-20 UNF	A	6	1/4	44	18	17	350	66	ZnNi
IG 0102.400 B	M16x2	1/2-20 UNF	A	8	5/16	50	24	19	350	86	ZnNi
IG 0916.400 B	M16x2	9/16-18 UNF	A	10	3/8	46	20	19	350	72	ZnNi
IG 0304.400 B	M16x2	3/4-16 UNF	B	12	1/2	60	21	22	310	95	ZnNi
IG 0708.400 B	M16x2	7/8-14 UNF	B	16	5/8	63	25	27	240	130	ZnNi
IG 1-0116.400 B	M16x2	1-1/16-12 UN	B	20	3/4	66	26	32	240	163	ZnNi
IG 1-0516.400 B	M16x2	1-5/16-12 UN	B	25	1	67	28	41	210	264	ZnNi
IG 1-0508.400 B	M16x2	1-5/8-12 UN	B	30+32	1-1/4	72	31	50	170	379	ZnNi
IG 1-0708.400 B	M16x2	1-7/8-12 UN	B	38	1-1/2	79	36	60	140	613	ZnNi

Description: Test point with JIC 37° female cone and UN/UNF rigid or swivel nut.

Materials: Steel.

Seals: Fig. A: all seals are made of Viton® (FKM/FPM).

Fig. B: valve seals are made of Viton® (FKM/FPM), rest is made of NBR.

Standards: ISO 8434-2; SAE J514, 37° flared fittings. WP rates acc. to ISO 8434-2.

Notes: Special versions / adapter versions available on request.



IG 0716.400 B

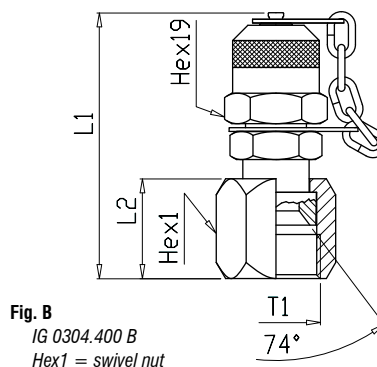


Fig. B
IG 0304.400 B
Hex1 = swivel nut

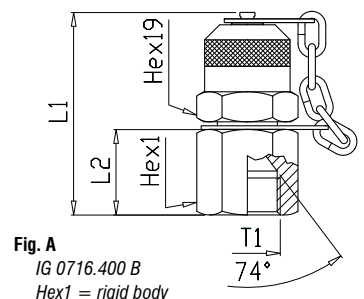


Fig. A
IG 0716.400 B
Hex1 = rigid body

Group 120

IGO ... Test point ORFS female swivel

Series M16x2

Part No.	Series	T1	Fig.	Tube mm	Tube inch	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
IGO 0916.400 B	M16x2	9/16-18 UNF	C	6	1/4	54	18	19	400	84	ZnNi
IGO 1116.400 B	M16x2	11/16-16 UN	C	10	3/8	56	17	22	400	91	ZnNi
IGO 1316.400 B	M16x2	13/16-16 UN	C	12	1/2	54	20	24	400	100	ZnNi
IGO 1-0000.400 B	M16x2	1-14 UNS	C	16	5/8	58	24	30	400	138	ZnNi
IGO 1-0316.400 B	M16x2	1-3/16-12 UN	C	20	3/4	62	27	36	400	196	ZnNi
IGO 1-0716.400 B	M16x2	1-7/16-12 UN	C	25	1	63	28	41	400	251	ZnNi
IGO 1-1116.400 B	M16x2	1-11/16-12 UN	C	30	1-1/4	63	28	50	250	355	ZnNi

Description: Test point with ORFS flat face and UN/UNF/UNS swivel nut. Flat face w/o o-ring.

Materials: Steel.

Seals: IGO 0916... + IGO 1116...: all seals are made of Viton® (FKM/FPM).

Other part nos.: valve seals are made of Viton® (FKM/FPM), rest is made of NBR.

Standards: ISO 8434-3, o-ring face seal fittings.

Notes: Special versions / adapter versions available on request.



IGO 0916.400 B

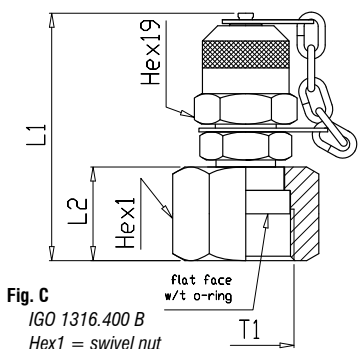
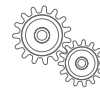


Fig. C
IGO 1316.400 B
Hex1 = swivel nut

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 121

SCH ... Bulkhead test point Series M16x2 + others

Part No.	Series1	Series2	T1	Fig.	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
SCH 1620.1620 B	M16x2	M16x2	M16x2	A	70	36	24	630	115	ZnNi
SCH 1620.1615 B	M16x2	M16x1.5	M16x1.5	B	87	46	24	630	139	no
SCH 1620.Steck B	M16x2	Pin-Lock	M16x2	C	~83	46	24	400	125	ZnNi
SCH 1615.1615 B	M16x1.5	M16x1.5	M16x1.5	A	75	36	24	630	129	no

Description: Bulkhead test point with male threaded rod and 2 locknuts. Suitable for mounting in control panels or for linking hose ends of equal / different series.

Materials: Steel.

Seals: Valve seals are generally made of Viton® (FKM/FPM).

Standards: See *Technical*.

Notes: Series1 end = valve insert with ball (standard).

Series2 end = valve insert has no ball, i.e. no check valve device applies.



SCH 1620.1620 B

Typical application:
Bulkhead test point

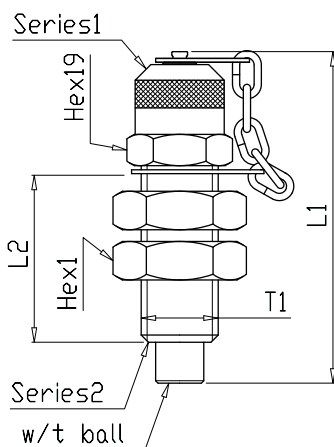
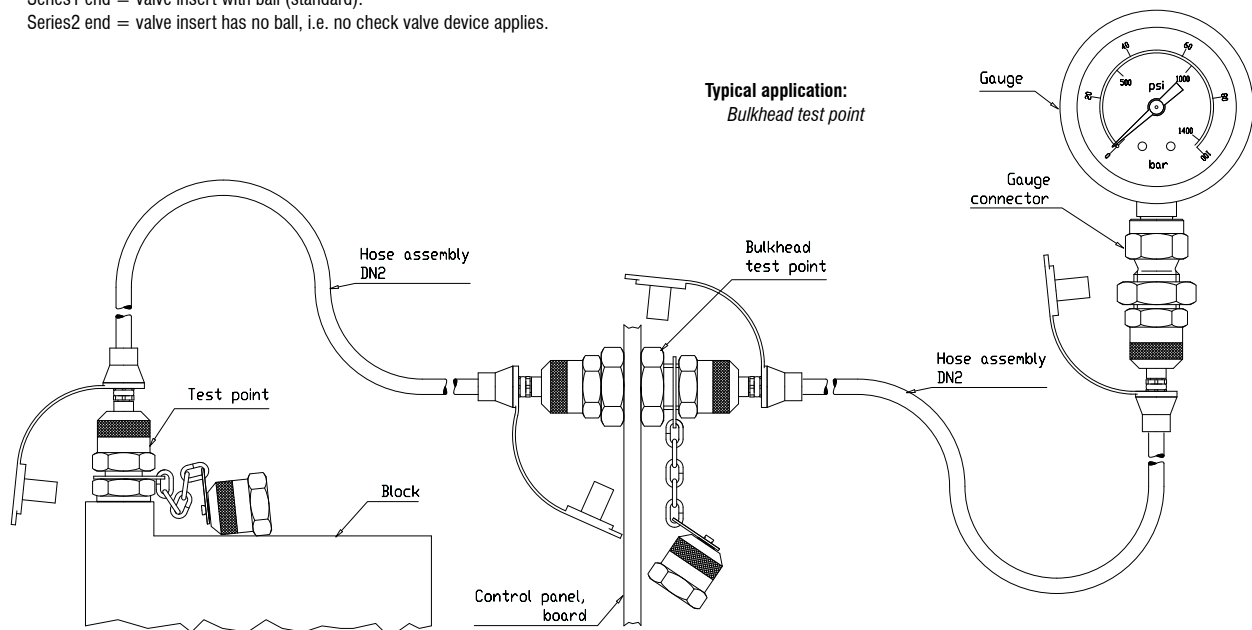


Fig. A
SCH 1620.1620 B

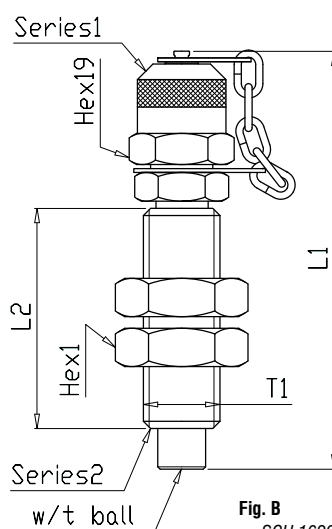


Fig. B
SCH 1620.1615 B

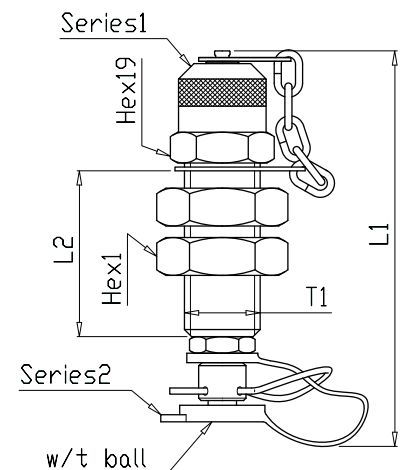


Fig. C
SCH 1620.Steck B

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 141

MA ... Gauge connector

Series M16x2 + Series Pin-Lock

Part No.	Series	T1	T2	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6-free ^x
MA 1620.104	Pin-Lock	G1/4 BSPP	M16x2	A	O-ring	NBR	~65	14	22	19	24	400	78	ZnNi
MA 1620.104 A/B	M16x2	G1/4 BSPP		B	O-ring	NBR	48	14	22	19	24	630	72	ZnNi
MA 1620.102	Pin-Lock	G1/2 BSPP	M16x2	A	O-ring	NBR	~75	24	22	27	24	400	117	ZnNi
MA 1620.102 A/B	M16x2	G1/2 BSPP		B	O-ring	NBR	58	24	22	27	24	630	111	ZnNi
MA 1620.114	Pin-Lock	1/4-18 NPT	M16x2	A	taper		~69	18	22	19	24	400	81	ZnNi
MA 1620.114 A/B	M16x2	1/4-18 NPT		B	taper		52	18	22	19	24	400	75	ZnNi



MA 1620.104 A/B

Description: Gauge connector for standard operations like the linking of gauge, hose assembly, and test point. Locknut included for fixing the gauge connector to a panel or a test rig board.

Materials: Steel.

Seals: Valve seals are generally made of Viton® (FKM/FPM). For other seals see table.

Standards: See *Technical*.

Notes: Valves at the series end have no ball, i.e. no check valve device applies.

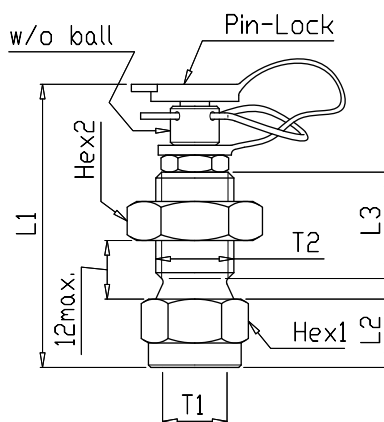
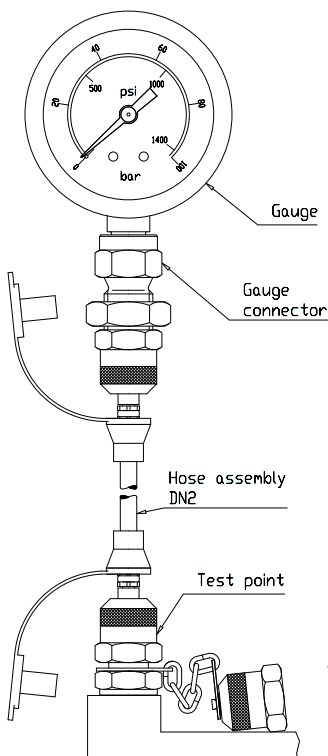


Fig. A
MA 1620.104

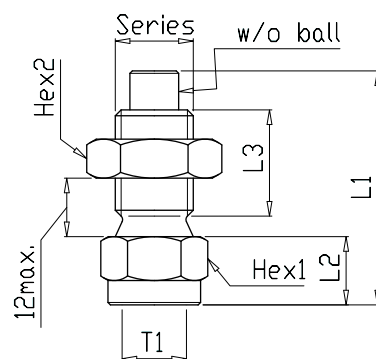


Fig. B
MA 1620.104 A/B

Typical application:
Gauge + gauge connector +
hose assembly + test point

Group 143

WMA ... Gauge connector 90°

Series M16x2

Part No.	Series	T1	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6-free ^x
WMA 1620.104 A/B	M16x2	G1/4 BSPP	C	O-ring	NBR	52	25	39	19	19	630	120	ZnNi
WMA 1620.102 A/B	M16x2	G1/2 BSPP	C	O-ring	NBR	52	25	43	27	19	630	133	ZnNi

Description: Gauge connector 90° for the linking of gauge and hose assembly.

Materials: Steel.

Seals: Valve seals are generally made of Viton® (FKM/FPM). For other seals see table.

Standards: See *Technical*.

Caps: Steel cap for M16x2 end available on request.

Notes: Valves at the series end have no ball, i.e. no check valve device applies.

Pin-Lock version available on request.



WMA 1620.104 A/B

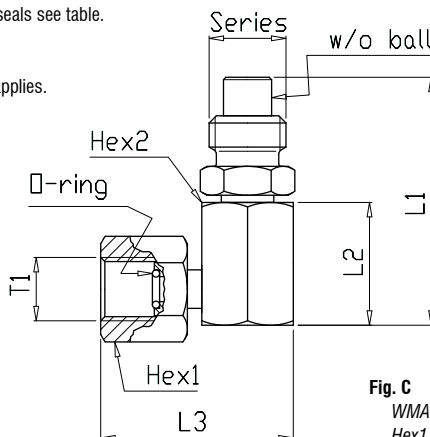
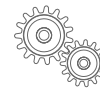


Fig. C
WMA 1620.104 A/B
Hex1 = swivel nut

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 142

MAD ... Direct gauge connector

Series M16x2 + Series S12.65

Part No.	Series	T1	Fig.	Sealing Type	Seal Material	D mm	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6-free ^x
MAD 1620.104 A/B	M16x2	G1/4 BSPP	A	O-ring	NBR	20	55	30	13	19	19	630	80	ZnNi
MAD 1620.104 S ¹	M16x2	G1/4 BSPP	B	O-ring	NBR	20	55	28	13	22	19	630	88	ZnNi
MAD 1620.102 A/B	M16x2	G1/2 BSPP	A	O-ring	NBR	26	59	34	15	27	19	630	130	ZnNi
MAD 1620.102 S ¹	M16x2	G1/2 BSPP	B	O-ring	NBR	26	59	34	15	27	19	630	129	ZnNi
MAD 1620.1215 S ¹	M16x2	M12x1.5	C				59	32	12	19	19	630	88	ZnNi
MAD 1620.114 A/B	M16x2	1/4-18 NPT	A				55	30		19	19	400	81	ZnNi
MAD 1215.104 A/B	S12.65x1.5	G1/4 BSPP	(A)	O-ring	NBR		49	30		19	17	630	77	ZnNi
MAD 1215.102 A/B	S12.65x1.5	G1/2 BSPP	(A)	O-ring	NBR		52	34		27	17	630	124	ZnNi
MAD 1215.114 A/B	S12.65x1.5	1/4-18 NPT	(A)				50	30		19	17	400	74	ZnNi



MAD 1620.104 A/B

¹ S version = for sensors, special length of L3.

Description: Direct gauge connector for mounting a gauge directly to a test point.
Materials: Steel.
Seals: Nipple seal is made of Viton® (FKM/FPM). For other seals see table.
Standards: See Technical.
Notes: Cf. notes of WMAD ...

Typical application:
Gauge + direct gauge connector + test point

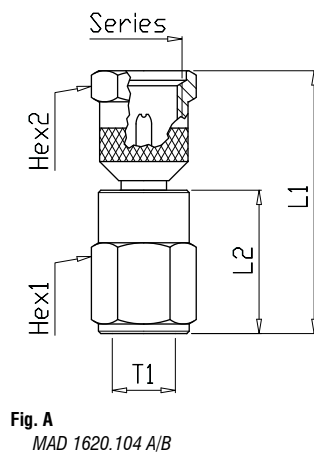
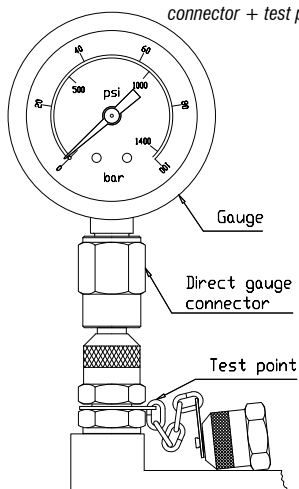


Fig. A
MAD 1620.104 A/B

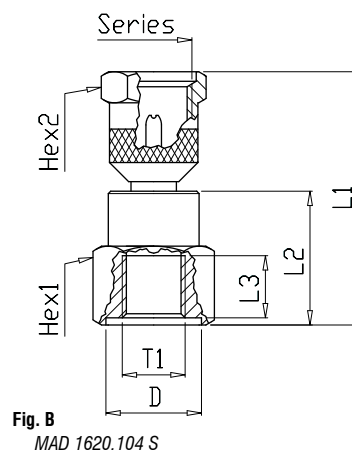


Fig. B
MAD 1620.104 S

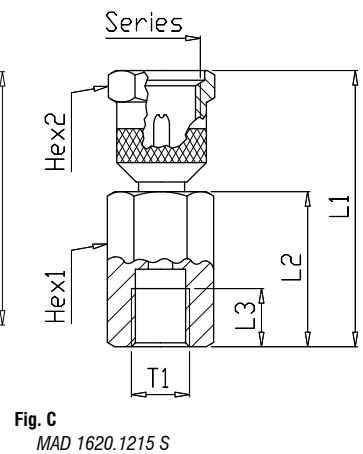


Fig. C
MAD 1620.1215 S

Group 144

WMAD ... Direct gauge connector 90°

Series M16x2

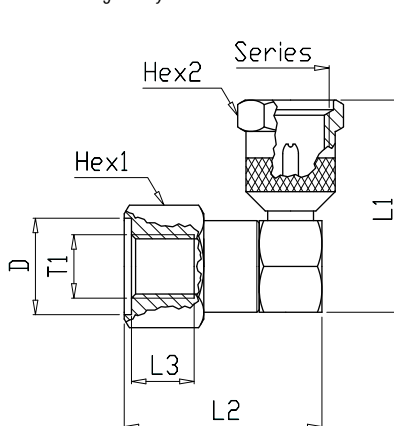
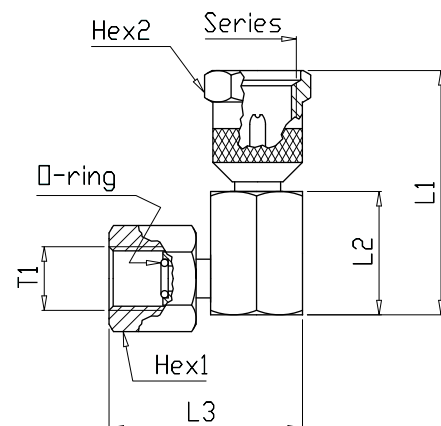
Part No.	Series	T1	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6-free ^x
WMAD 1620.104 A/B	M16x2	G1/4 BSPP	D	O-ring	NBR	52	25	40	19	19	630	111	ZnNi
WMAD 1620.104 S ¹	M16x2	G1/4 BSPP	E	O-ring	NBR	44	41	14	22	19	630	116	ZnNi
WMAD 1620.102 A/B	M16x2	G1/2 BSPP	D	O-ring	NBR	45	25	43	27	19	630	154	ZnNi
WMAD 1620.102 S ¹	M16x2	G1/2 BSPP	E	O-ring	NBR	45	47	15	27	19	630	157	ZnNi
WMAD 1620.1215 S ¹	M16x2	M12x1.5	E			45	45	12	19	19	630	117	ZnNi
WMAD 1620.114 A/B	M16x2	1/4-18 NPT	E			45	43	>10	19	19	400	110	ZnNi



WMAD 1620.104 A/B

Fig. D
WMAD 1620.104 A/B
Hex1 = swivel nut

Fig. E
WMAD 1620.104 S
Hex1 = rigid body



¹ S version = for sensors, special length of L3.

Description: Direct gauge connector 90° for mounting a gauge directly to a test point.
Materials: Steel.
Seals: Nipple seal is made of Viton® (FKM/FPM). For other seals see table.
Standards: See Technical.
Notes: Imperial (inch) stud ends acc. to DIN 3852-2 and DIN EN ISO 1179-2 Form E only fit to S version of WMAD (see Fig. E). Gauge studs only fit to A/B version of WMAD. For series S12.65x1.5 please call.

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 151

ADMAD ... Gauge adapter

Male / Female

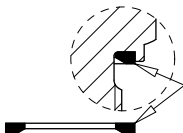
Part No.	T1	T2	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6-free ^x
<i>ADMAD 0104.0108-WD</i>	<i>G1/4 BSPP</i>	<i>G1/8 BSPP</i>	<i>A</i>	<i>O-ring</i>	<i>NBR</i>	<i>36</i>	<i>12</i>	<i>19</i>	<i>17</i>	<i>400</i>		<i>ZnNi</i>
ADMAD 0104.0104-WD	G1/4 BSPP	G1/4 BSPP	A	O-ring	NBR	38	12	19	19	400	53	ZnNi
<i>ADMAD 0104.0102-WD</i>	<i>G1/4 BSPP</i>	<i>G1/2 BSPP</i>	<i>A</i>	<i>O-ring</i>	<i>NBR</i>	<i>46</i>	<i>12</i>	<i>19</i>	<i>27</i>	<i>400</i>		<i>ZnNi</i>



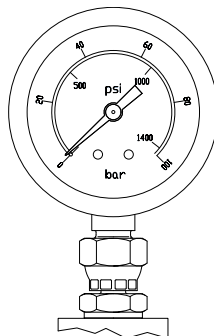
ADMAD 0104.0104-WD

Description: Adapter for adjustable gauge mounting.
Material: Steel.
Seals: Gauge stud's o-ring see table. ED ring (NBR) at T1 see Fig. B.
Standards: See *Technical*.
Notes: Grey italics = available on request. No standard stock item.

Fig. B



Sealing type: ED
(ED ring, DIN 3869)



Typical application:
Gauge + ADMAD adapter

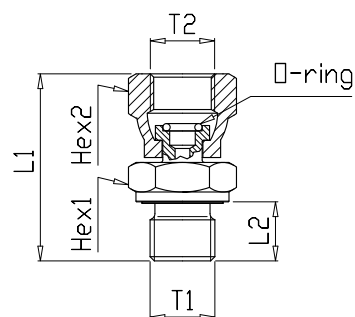
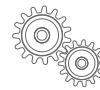


Fig. A
ADMAD 0104.0104-WD

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 151

AD ... Adapter swivel / male

Various Series

Part No.	Series1	Series2	T1	Fig.	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
AD 1620/1620 B	M16x2	M16x2		A	74			17		630	60	ZnNi
AD 1620/1615 B	M16x2	M16x1.5		A	61			17		630	66	ZnNi
AD 1620/Steck	M16x2	Pin-Lock		B	72			17		400	67	ZnNi
AD 1620/0104 B ¹	M16x2		G1/4 BSPP	C	56	12	28	19		630	65	ZnNi
AD 1615/1615 B	M16x1.5	M16x1.5		A	59			17		630	67	ZnNi
AD 1615/1620 B	M16x1.5	M16x2		A	55			17		630	61	ZnNi
AD 1615/Steck	M16x1.5	Pin-Lock		B	71			17		400	68	ZnNi
AD 1615/0104 B ¹	M16x1.5		G1/4 BSPP	C	55	12	28	19		630	67	ZnNi
AD 1215/1620 B	S12.65x1.5	M16x2		D	50			17	17	630	57	ZnNi
AD 1215/1615 B	S12.65x1.5	M16x1.5		D	53			17	17	630	64	ZnNi
AD 1215/Steck	S12.65x1.5	Pin-Lock		(B)	65			17	17	400	64	ZnNi
AD 1215/0104 B ¹	S12.65x1.5		G1/4 BSPP	(C)	47	12	28	19	17	630	63	ZnNi

¹T1 = stud end G1/4 acc. to DIN EN ISO 1179-2, Form E, with ED-seal in NBR. Due to modular design, Series1 of Fig. C type can be combined with almost any of the housing components/studs of the EG type.

Description: Adapter with female swivel and male rigid, to adapt from one series to another. This item is useful for test boxes with a limited number of uncommon test points, e.g. AD 1620/Steck allows to quickly adapt from M16x2 standard series to Pin-Lock series (Steck series). Can also be combined with ADI+SAD.

Materials: Steel.

Seals: All seals are made of Viton® (FKM/FPM). AD with G1/4 male: ED seal in NBR.

Standards: See *Technical*.

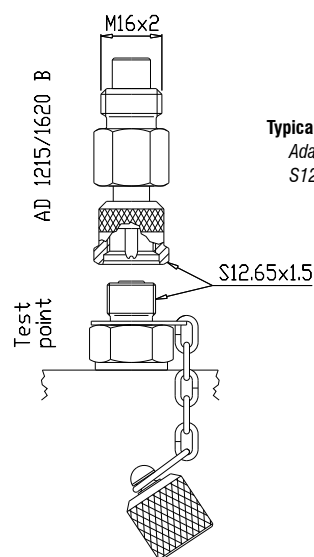
Caps: Steel caps for Series1 ends available as shown only.

Steel caps for Series2 ends available on request.

Notes: Special versions available on request, e.g. AD in 90° (see WAD ...).

Thread S12.65x1.5 is a metric buttress thread with sawtooth profile, providing retardant properties.

AD type is without ball, i.e. no check valve device applies.



Typical application:

Adaption from uncommon series
S12.65x1.5 to common series M16x2

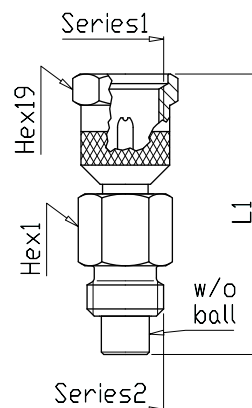


Fig. A
AD 1620/1615 B

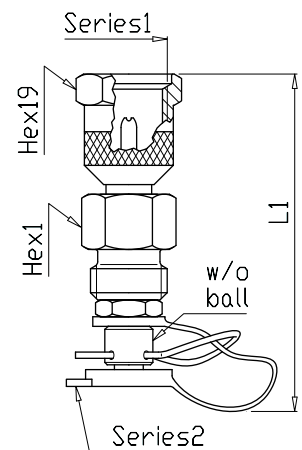


Fig. B
AD 1620/Steck

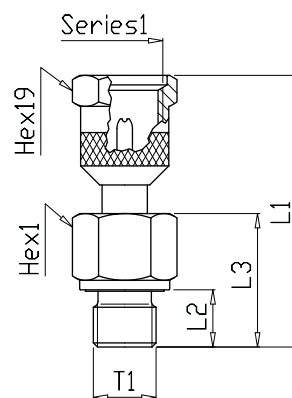


Fig. C
AD 1620/0104 B

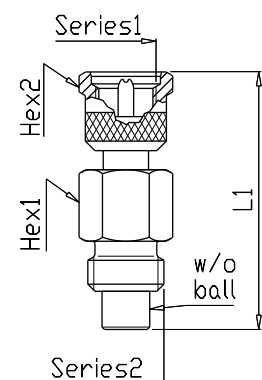
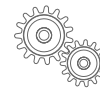


Fig. D
AD 1215/1620 B

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



AD 1615/1620 B



Group 157

WAD ... Adapter 90° swivel / male

Various Series

Part No.	Series1	Series2	T1	Fig.	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
WAD 1620/1620 B	M16x2	M16x2	G1/4 BSPP	A	45	44		17		630	90	ZnNi
WAD 1620/1615 B	M16x2	M16x1.5		A	45	48		17		630	93	ZnNi
WAD 1620/Steck	M16x2	Pin-Lock		B	45	44		19		400	92	ZnNi
WAD 1620/0104 B ¹	M16x2			C	45	12	44	19		630	90	ZnNi
WAD 1615/1615 B	M16x1.5	M16x1.5	G1/4 BSPP	A	45	46		17		630	95	ZnNi
WAD 1615/1620 B	M16x1.5	M16x2		A	45	44		17		630	90	ZnNi
WAD 1615/Steck	M16x1.5	Pin-Lock		B	45	44		19		400	93	ZnNi
WAD 1615/0104 B ¹	M16x1.5			C	45	12	44	19		630	90	ZnNi
WAD 1215/1620 B	S12.65x1.5	M16x2	G1/4 BSPP	D	40	44		17	17	630	88	ZnNi
WAD 1215/1615 B	S12.65x1.5	M16x1.5		D	40	48		17	17	630	93	ZnNi
WAD 1215/Steck	S12.65x1.5	Pin-Lock		(B)	40	44		19	17	400	92	ZnNi
WAD 1215/0104 B ¹	S12.65x1.5			(C)	40	12	44	19	17	630	90	ZnNi

¹T1 = stud end G1/4 acc. to DIN EN ISO 1179-2, Form E, with ED seal in NBR. Adjust orientation of Series2 end when tightening Series1 end.

Due to modular design, Series1/Fig. C type can be equipped with almost any of the T1 components available from the standard range (cf. EG type).

Description: Adapter 90° with female swivel and male rigid, to adapt from one series to another.
Useful for test boxes with a limited number of test points, e.g. WAD 1620/Steck allows to quickly adapt from M16x2 standard series to Pin-Lock series (Steck series).
Can also be combined with ADI+SAD.

Materials: Steel.

Seals: All seals are made of Viton® (FKM/FPM).
WAD with G1/4 male: ED seal in NBR.

Standards: See *Technical*.

Caps: Steel caps for Series1 ends available as shown only.
Steel caps for Series2 ends available on request.

Notes: Special versions on request.
Thread S12.65x1.5 is a metric buttress thread with sawtooth profile, providing retardant properties.
WAD type is without ball, i.e. no check valve device applies.



WAD 1615/1620 B

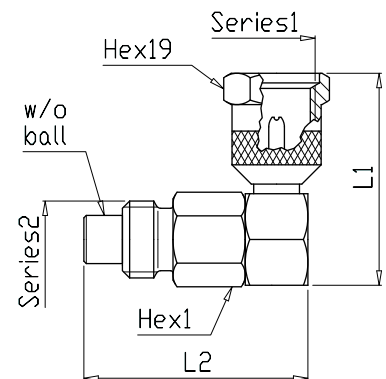


Fig. A
WAD 1620/1615 B

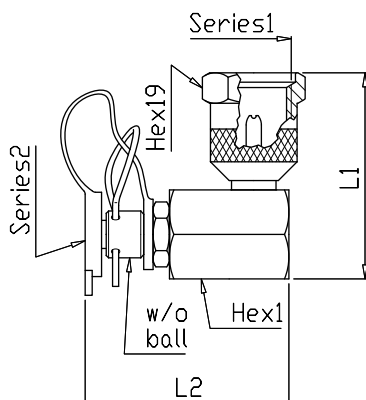


Fig. B
WAD 1620/Steck

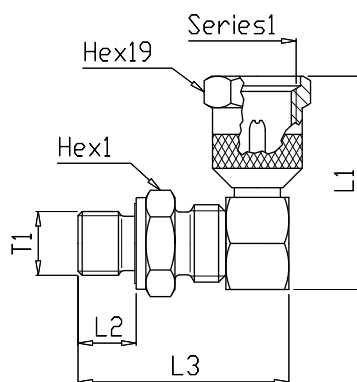


Fig. C
WAD 1620/0104 B

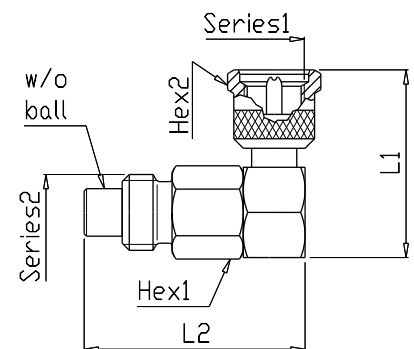
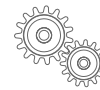


Fig. D
WAD 1215/1620 B

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 152

AD ... Common adapter

Male / Female

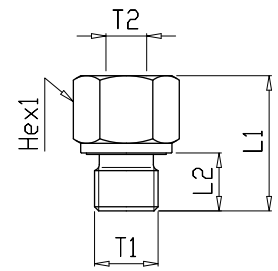
Part No.	T1	T2	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	Hex1 mm	Weight g	Cr6-free ^x
AD 0104.0108-WD	G1/4 BSPP	G1/8 BSPP	B	ED	NBR	28	12	19	38	ZnNi
AD 0308.0104-WD	G3/8 BSPP	G1/4 BSPP	B	ED	NBR	36	12	22	75	ZnNi
AD 0102.0104	G1/2 BSPP	G1/4 BSPP	A	CE		24	14	27	55	ZnNi
AD 0102.0104-WD	G1/2 BSPP	G1/4 BSPP	B	ED	NBR	24	14	27	55	ZnNi
AD 0304.0104-WD	G3/4 BSPP	G1/4 BSPP	B	ED	NBR	26	16	32	100	ZnNi
AD 1000.0104	G1 BSPP	G1/4 BSPP	A	CE		29	18	41	196	ZnNi
AD 1415.0810-WD	M14x1.5	M8x1	B	ED	NBR	28	12	19	42	ZnNi
AD 1815.0810	M18x1.5	M8x1	A	CE		18	9	24	42	ZnNi
AD 2215.1215	M22x1.5	M12x1.5	A	CE		24	14	27	65	ZnNi

Description: Common adapter, e.g. for the use with test boxes. Can also be used with hose fittings, e.g. adapter AD 0104.0108-WD + DN2 hose fitting AG 0108.

Materials: Steel.

Seals: See table.

Standards: See *Technical*.

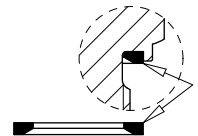


AD 0104.0108-WD

Fig. A



Fig. B



Group 155

ADI ... Swivel adapter

Various Series

Part No.	Series1	Series2	Fig.	L1 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6-free ^x
ADI 1620.1620 B	M16x2	M16x2	A	75	17		630	82	ZnNi
ADI 1620.1615 B	M16x2	M16x1.5	A	74	17		630	83	ZnNi
ADI 1620.1215 B	M16x2	S12.65x1.5	B	67	17	17	630	79	ZnNi
ADI 1615.1615 B	M16x1.5	M16x1.5	A	72	17		630	84	ZnNi
ADI 1615.1215 B	M16x1.5	S12.65x1.5	B	65	17	17	630	80	ZnNi
ADI 1215.1215 B	S12.65x1.5	S12.65x1.5	C	58	17	17	630	76	ZnNi

Description: Adapter with both ends female swivel, for linking male ends of equal / different series. This item is useful for test boxes with a limited number of test points. Can also be combined with SAD.

Materials: Steel.

Seals: All seals are made of Viton® (FKM/FPM).

Standards: See *Technical*.

Caps: Steel caps available as shown only.

Notes: Special versions available on request, e.g. ADI in 90°.

Thread S12.65x1.5 is a metric buttress thread with sawtooth profile, providing retardant properties.

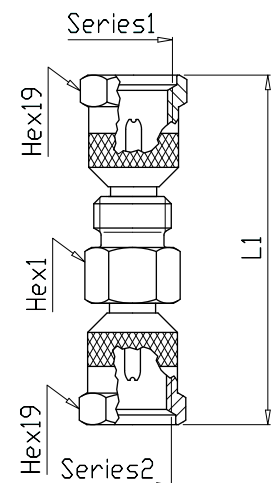


Fig. A

ADI 1620.1620 B

Fig. B

ADI 1620.1215 B

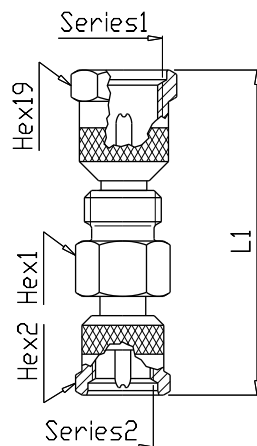
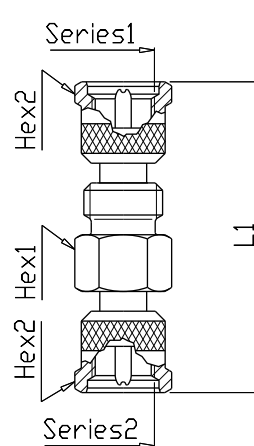


Fig. C

ADI 1215.1215 B



^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 156

SAD ... Hose connector *Various Series*

Part No.	Series1	Series2	Fig.	L1 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
SAD 1620/1620	M16x2	M16x2	A	43	17	630	39	ZnNi
SAD 1620/1615	M16x2	M16x1.5	B	56	17	630	62	ZnNi
SAD 1620/Steck	M16x2	Pin-Lock	C	55	17	400	45	ZnNi
SAD 1615/1615	M16x1.5	M16x1.5	B	59	17	630	68	ZnNi
SAD 1615/Steck	M16x1.5	Pin-Lock	C	57	17	400	52	ZnNi
SAD Steck/Steck	Pin-Lock	Pin-Lock	D	70	17	400	50	ZnNi

Description: Hose connector, for linking hose ends of equal / different series. Suitable for test boxes with a limited number of hose assemblies: hose assemblies can be combined to form one long assembly.
Can also be combined with swivel adapter ADI.

Materials: Steel.

Seals: Valve seals are generally made of Viton® (FKM/FPM).

Standards: See *Technical*.

Caps: Steel cap for M16x2 end and M16x1.5 end available on request.

Notes: Valves at the series end have no ball, i.e. no check valve device applies.



SAD 1620/1620



SAD 1615/1615

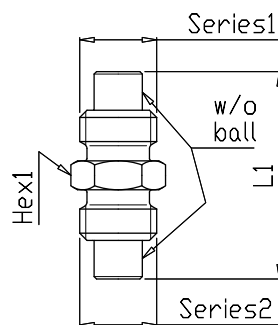


Fig. A
SAD 1620/1620

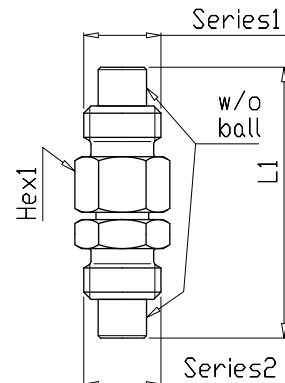


Fig. B
SAD 1620/1615

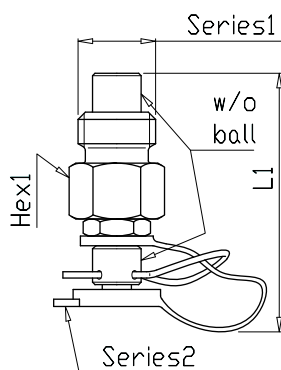


Fig. C
SAD 1620/Steck

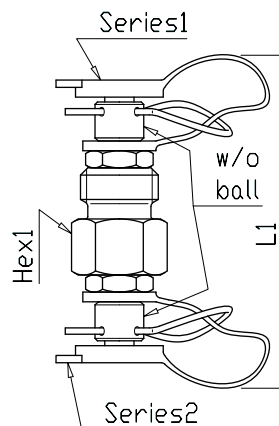
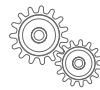


Fig. D
SAD Steck/Steck

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 113

EG ... Test point with male stud

Series M16x1.5

Part No.	Series	T1	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g
EG 0108.639 B	M16x1.5	G1/8 BSPP	E	ED	NBR	40	8	17	400	63
EG 0104.630 B	M16x1.5	G1/4 BSPP	D	CE	NBR	44	12	19	400	74
EG 0104.639 B	M16x1.5	G1/4 BSPP	E	ED	NBR	45	12	19	630	72
EG 0102.630 B ¹	M16x1.5	G1/2 BSPP	D	CE	NBR	60	14	27	400	127
EG 0102.639 B ¹	M16x1.5	G1/2 BSPP	E	ED	NBR	60	14	27	630	128
EG 0114.630 B	M16x1.5	1/4-18 NPT	C	CO		47	15	19	630	74
EG 0716.639 B	M16x1.5	7/16-20 UNF	B	OR	NBR	43	11	17	630	66
EG 0916.639 B	M16x1.5	9/16-18 UNF	B	OR	NBR	44	12	19	630	75
EG 0810.639 B ²	M16x1.5	M8x1	A	OR	FPM	41	8	17	250	61
EG 1010.639 B	M16x1.5	M10x1	A	OR	NBR	41	8	17	630	64
EG 1215.639 B	M16x1.5	M12x1.5	E	ED	NBR	45	12	17	630	67
EG 1415.630 B	M16x1.5	M14x1.5	D	CE	NBR	48	12	19	400	73
EG 1415.639 B	M16x1.5	M14x1.5	E	ED	NBR	44	12	19	630	74

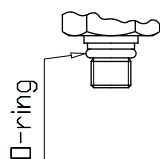
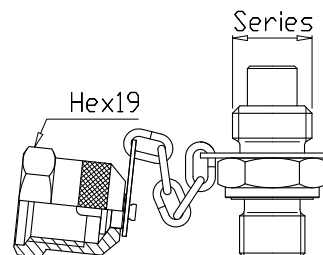
¹Adapter version. ²Do not use for new design.

Description: Test point with male threaded stud. Special series M16x1.5.
Materials: Steel. Black or olive plated.
Seals: Valve seals are generally made of Viton® (FKM/FPM). For other seals see table.
Standards: See *Technical*.

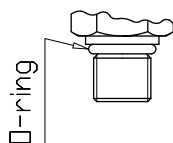
Special Series



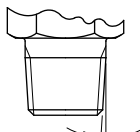
EG 0104.639 B



OR
o-ring, metric



OR
o-ring, UNF



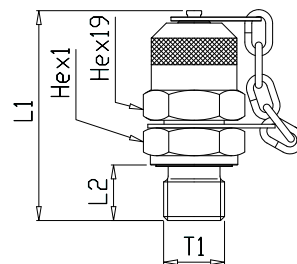
CO
conical

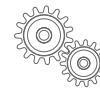


CE
cutting edge



ED
elastomeric seal





Group 112

DKO ... Test point with 24° male cone Series M16x1.5

Part No.	D	L/S	Series	T1	Fig.	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g
DKO 06.600 B	6	L	M16x1.5	M12x1.5	C	51	17	14	250	64
DKO 08.600 B	8	L	M16x1.5	M14x1.5	C	68	16	17	250	70
DKO 10.600 B ¹	10	L	M16x1.5	M16x1.5	B	68	16	19	250	107
DKO 12.600 B ¹	12	L	M16x1.5	M18x1.5	B	88	16.5	22	250	120
DKO 15.600 B	15	L	M16x1.5	M22x1.5	A	54	19.5	27	250	121
DKO 18.600 B	18	L	M16x1.5	M26x1.5	A	61	25.5	32	160	161
DKO 22.600 B	22	L	M16x1.5	M30x2	A	59	25.5	36	160	209
DKO 28.600 B	28	L	M16x1.5	M36x2	A	65	26.5	41	100	268
DKO 35.600 B	35	L	M16x1.5	M45x2	A	69	31.5	50	100	430
DKO 42.600 B	42	L	M16x1.5	M52x2	A	65	26.5	60	100	559
DKO 06.630 B	6	S	M16x1.5	M14x1.5	C	51	17	17	630	71
DKO 08.630 B	8	S	M16x1.5	M16x1.5	C	68	16	19	630	75
DKO 10.630 B ¹	10	S	M16x1.5	M18x1.5	B	68	16	22	630	116
DKO 12.630 B ¹	12	S	M16x1.5	M20x1.5	B	68	16.5	24	630	129
DKO 14.630 B	14	S	M16x1.5	M22x1.5	A	60	21.5	27	400	129
DKO 16.630 B	16	S	M16x1.5	M24x1.5	A	60	23.5	30	400	155
DKO 20.630 B	20	S	M16x1.5	M30x2	A	64	26.5	36	400	220
DKO 25.630 B	25	S	M16x1.5	M36x2	A	65	26.5	46	400	355
DKO 30.630 B	30	S	M16x1.5	M42x2	A	71	31.5	50	250	445
DKO 38.630 B	38	S	M16x1.5	M52x2	A	77	34.5	60	250	675

¹Adapter version.

Description: Test point with 24° male cone and metric swivel nut (either thrust pin or slip-on type).
Special series M16x1.5.

Materials: Steel. Black or olive plated.

Seals: Valve seals are generally made of Viton® (FKM/FPM). All other seals are made of NBR.

Standards: DIN EN ISO 8434-1; DIN 2353; DIN 3865, 24° compression fittings.

Special Series



DKO 15.600 B

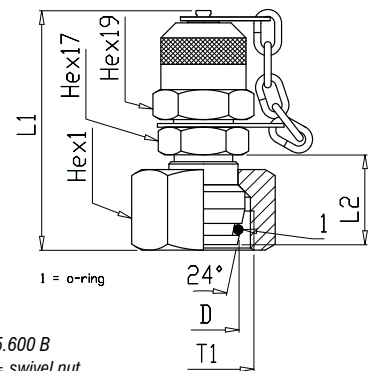


Fig. A
DKO 15.600 B
Hex1 = swivel nut

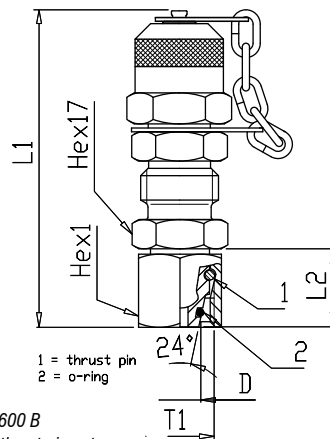


Fig. B
DKO 10.600 B
Hex1 = thrust pin nut

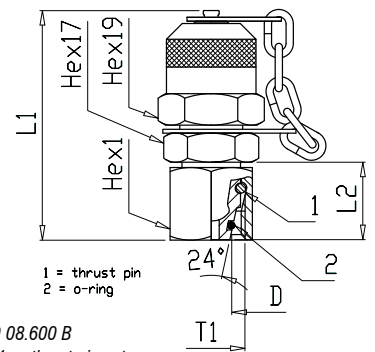
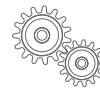


Fig. C
DKO 08.600 B
Hex1 = thrust pin nut



Group 114

GR ... Test point + union with 24° female cone Series M16x1.5

Part No.	D	L/S	Series	T1	Fig.	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g
GR 06.600 B	6	L	M16x1.5	M12x1.5	A	37	23	45	24	14	250	152
GR 08.600 B	8	L	M16x1.5	M14x1.5	A	37	23	45	24	17	250	163
GR 10.600 B	10	L	M16x1.5	M16x1.5	A	39	25	46	27	19	250	189
GR 12.600 B	12	L	M16x1.5	M18x1.5	A	39	25	46	27	22	250	207
GR 15.600 B	15	L	M16x1.5	M22x1.5	A	41	27	48	30	27	250	271
GR 18.600 B	18	L	M16x1.5	M26x1.5	A	41	26	49	32	32	160	331
GR 22.600 B	22	L	M16x1.5	M30x2	A	45	30	51	36	36	160	399
GR 28.600 B	28	L	M16x1.5	M36x2	A	45	30	53	41	41	100	467
GR 35.600 B	35	L	M16x1.5	M45x2	A	49	28	56	46	50	100	651
GR 42.600 B	42	L	M16x1.5	M52x2	A	49	27	60	55	60	100	909
GR 06.630 B	6	S	M16x1.5	M14x1.5	A	41	27	45	24	17	630	169
GR 08.630 B	8	S	M16x1.5	M16x1.5	A	41	27	45	24	19	630	188
GR 10.630 B	10	S	M16x1.5	M18x1.5	A	41	26	46	27	22	630	210
GR 12.630 B	12	S	M16x1.5	M20x1.5	A	41	26	46	27	24	630	241
GR 14.630 B	14	S	M16x1.5	M22x1.5	A	45	29	46	27	27	400	285
GR 16.630 B	16	S	M16x1.5	M24x1.5	A	45	28	48	30	30	400	338
GR 20.630 B	20	S	M16x1.5	M30x2	A	49	28	51	36	36	400	489
GR 25.630 B	25	S	M16x1.5	M36x2	A	53	29	53	41	46	400	761
GR 30.630 B	30	S	M16x1.5	M42x2	A	57	30	56	46	50	250	894
GR 38.630 B	38	S	M16x1.5	M52x2	A	61	29	60	55	60	250	1287

Special Series



GR 10.600 B

Description: Test point mounted on a union with both ends 24° female cone, with nuts and cutting rings. Special series M16x1.5.

Materials: Steel. Nuts and cutting rings acc. to DIN 3859-1.

Seals: Valve seals are generally made of Viton® (FKM/FPM).

Standards: DIN EN ISO 8434-1; DIN 2353.

Notes: Also available:

- without nuts + cutting rings (e.g. GR 08.600 B-oMoS)

- without test point (e.g. GR 08.250 G)

Radial port thread in Hex1 = M10x1.

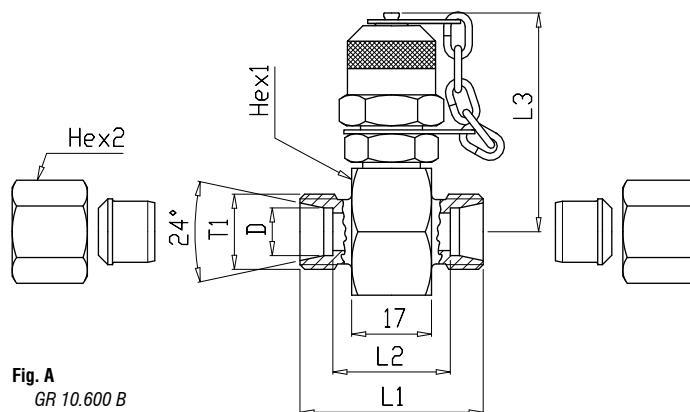
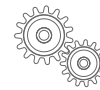


Fig. A
GR 10.600 B



Group 141

MA ... Gauge connector

Series M16x1.5

Part No.	Series	T1	Sealing Type	Seal Material	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g
MA 1615.104 A/B	M16x1.5	G1/4 BSPP	O-ring	NBR	48	14	22	19	24	630	72
MA 1615.102 A/B	M16x1.5	G1/2 BSPP	O-ring	NBR	58	24	22	27	24	630	114

Description: Gauge connector for standard operations like the linking of gauge, hose assembly, and test point. Locknut included for fixing the gauge connector to a panel or a test rig board. Special series M16x1.5.

Materials: Steel.

Seals: Valve seals are generally made of Viton® (FKM/FPM). For other seals see table.

Standards: See *Technical*.

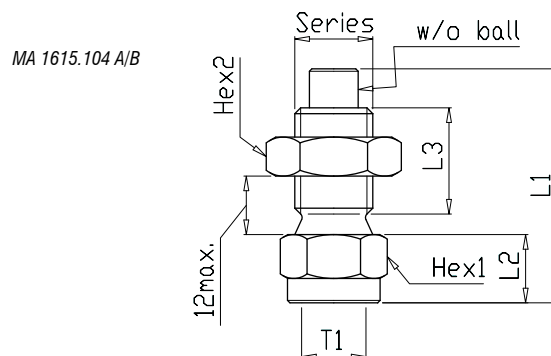
Caps: Steel cap for M16x1.5 end available on request.

Notes: Valves at the series end have no ball, i.e. no check valve device applies.

Special Series



MA 1615.104 A/B



Group 142

MAD ... Direct gauge connector

Series M16x1.5

Part No.	Series	T1	Fig.	Sealing Type	Seal Material	D mm	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g
MAD 1615.104 A/B	M16x1.5	G1/4 BSPP	A	O-ring	NBR	20	55	30		19	19	630	89
MAD 1615.104 S¹	M16x1.5	G1/4 BSPP	B				55	28	13	22	19	630	88
MAD 1615.102 A/B	M16x1.5	G1/2 BSPP	A	O-ring	NBR	26	59	34		27	19	630	130
MAD 1615.102 S¹	M16x1.5	G1/2 BSPP	B				59	34	15	27	19	630	129
MAD 1615.1215 S¹	M16x1.5	M12x1.5	C				59	32	12	19	19	630	88
MAD 1615.114 A/B	M16x1.5	1/4-18NPT	A				55	30		19	19	400	81

¹ S version = for sensors, special length of L3.

Description: Direct gauge connector for mounting a gauge directly to a test point. Special series M16x1.5.

Materials: Steel.

Seals: Nipple seal is made of Viton® (FKM/FPM). For other seals see table.

Standards: See *Technical*.

Notes: Imperial (inch) stud ends acc. to DIN 3852-2 and DIN EN ISO 1179-2 Form E only fit to S version of MAD (see Fig. B). Gauge studs only fit to A/B version of MAD.
For series S12.65x1.5 please call.

Special Series



MAD 1615.104 A/B

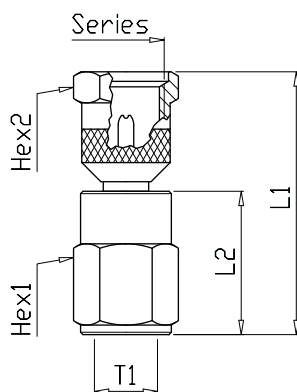


Fig. A
MAD 1615.104 A/B

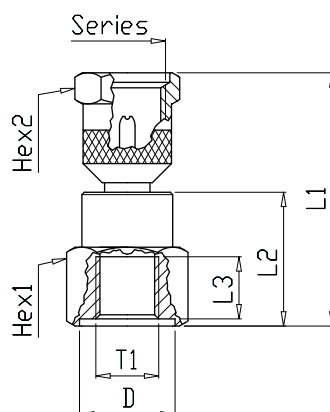


Fig. B
MAD 1615.104 S

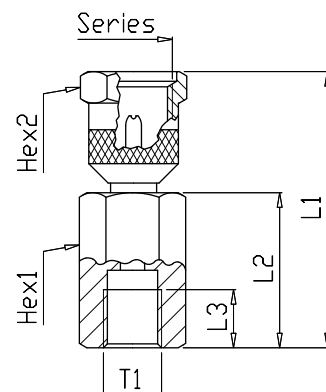


Fig. C
MAD 1615.1215 S



Group 113

EG ... Test point with male stud

Series Pin-Lock

Part No.	Series	T1	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	L3 mm	Hex1 mm	PN bar	Weight g	Cr6-free ^x
EG 0810.409 ¹	Pin-Lock	M8x1	A	OR	FPM	~33	9	~25	12	400	14	ZnNi
EG 1010.409	Pin-Lock	M10x1	A	OR	NBR	~33	9	~25	12	400	15	yes
EG 0104.409 ²	Pin-Lock	G1/4 BSPP	B	ED	NBR	~53	12	~25	19	400	53	ZnNi

¹Do not use for new design. ²Adapter version.

Description: Test point with male threaded stud. For applications with limited space and weight. Note limited PN.

Materials: Steel.

Seals: Internal seals in Viton® (FKM/FPM). External seals see table.

Standards: See *Technical*.

Caps: Black plastic cap with brass insert.

Notes: Not available in stainless steel.

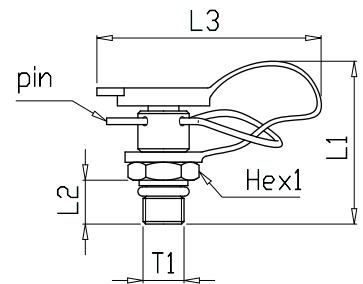
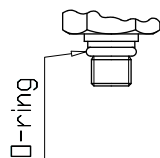
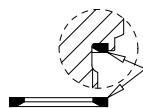


Fig. A
EG 1010.409



OR
o-ring, metric



ED
elastomeric seal

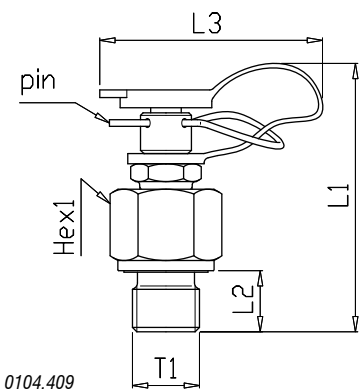


Fig. B
EG 0104.409
(adapter version)

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.

Group 511/512/513

Hose

DN2 + DN4

Part No.	DN	Pricked yes/no	PN bar	Pdyn bar	Pburst bar	D1 mm	D2 mm	Tube Material	Reinforcement Material	Cover Material	Temp. range °C	r min. mm	Weight g/m
S2	DN2	yes	630	500	2000	2.0 ± 0.1	5.45 ± 0.1	PA	Aramid	PUR	-40 ... +100	20	22
S4GE	DN4	yes	630	500	2000	4.0 ± 0.1	8.1 ± 0.1	PA	Aramid	PUR	-40 ... +100	40	40

Description

High performance test hose for hydraulic applications.
Increased resistance to aging.
Suitable for media like hydraulic oil and fluids based on mineral oil.
For reasons of compatibility, adjust media to the materials shown in the table.
For media resistance please call.

On request

- Hose for media other than hydraulic oil.
- Low temperature hose.
- Customised cover label.
- Other pressure ranges.
- Swaging instructions.

Information

The abbreviation *r min.* refers to the minimum bending radius. This value must not be undercut to avoid excessive compression/stretching of the hose. See table values and Fig. B.

Pricked hose is needle-punched, i.e., the cover is perforated. Also suitable for gaseous media.

Depending on the required length, hose is supplied in coil bundles, on wooden reels, or on hard cardboard reels.
The undivided production lengths for hoses are limited for technical reasons; therefore, the total length of the hose on reels is divided into sections.

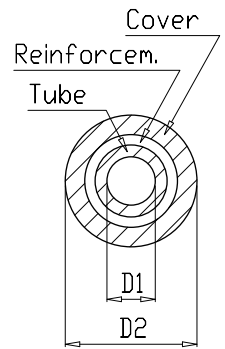
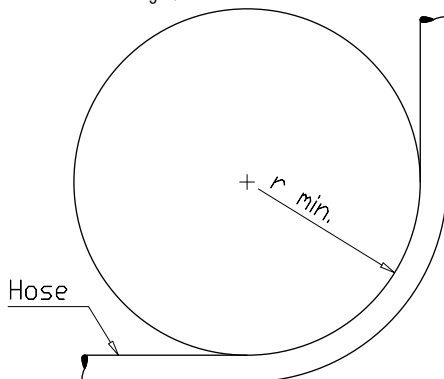


Fig. A
Test hose



Fig. B
Minimum bending radius



Aramid

Aramid (no trademark) is a generic term for a class of synthetic fibers known as **aromatic polyamides**. This strong and heat-resistant synthetic fibre is commonly known as Kevlar® (Trademark by DuPont).

Main features:

- good resistance against abrasion and organic solvents
- low flammability
- non-conductive
- very good strength-to-weight properties
- sensitive to acids, salts, and ultraviolet radiation

Test hose has 1 braid of Aramid fibre, providing excellent technical features for hose reinforcement.

Best results for cutting hose are achieved by using micro-serrated cutting tools. The white or yellow colour of the fibre can change to light brown when exposed to sunlight / ultraviolet radiation. During waterjet cutting, aramid is weakened by liquid or moisture absorption.

vdH hose can be easily cut using sharp blades (carbon steel recommended).

Regulations & Recommendations for Test Hose / Hose Assemblies

Test hoses and hose assemblies are subject to natural wear and tear. Their service life and storage life are limited. The service life of these products is influenced by excessive stress due to temperature, movement, high impulse pressures, and other mechanical, physical, or chemical factors.

- 1) Pressure: The weakest element of a hose assembly determines the pressure limits.
- 2) Media: Select hoses and fittings according to the medium's requirements. For gaseous media, only use pricked hose.
- 3) Crimping: Use only original vdH hose and fittings. Combinations with hoses and fittings from other manufacturers are possible. Details on adaptations are available upon request.
- 4) Handling: Never overstretch, twist, or compress the hose.
- 5) Clamps: Do not use clamps for *rubber* hoses. Only use clamps that do not constrict the hose. Only fasten clamps loosely to the hose, never tightly. Hose assemblies must be able to move freely in the axial direction, otherwise defects may occur. Avoid clamps whenever possible.
- 6) Storage: Store in a cool, dry place at room temperature (20 °C ± 5 °C / 68 °F ± 41 °F recommended). See DIN 7716 and ISO 8331.
- 7) Protection: Avoid sunlight, heat, ultraviolet radiation, and especially ozone exposure. Do not apply solvents to the hose cover.
- 8) Safety: Never repair defective hose assemblies or fittings. Observe occupational safety regulations when handling hose assemblies.
- 9) Installation: Follow DIN specifications for optimal installation of hose assemblies. See DIN 20066.
- 10) Damage: Handle with care. Avoid dust and dirt. Never connect the hose assembly and the test point if the connecting parts are dirty.
- 11) Paint: Avoid applying paint. Dyes can damage the hose and fitting material.
- 12) Age: See DIN 20066. Thermoplastic hoses are more durable than rubber hoses, but more sensitive to mechanical stress and cold.
- 13) Fittings: Common fitting types such as SK 1620 are only suitable for temporary use. For permanent use, choose the DKO type. See *Technical*.
- 14) Fastening: Do not tighten fitting and test point caps with a wrench. Tightening by hand is sufficient.

Hose assemblies DN2+ DN4

Description

A hose assembly consists of a piece of hose with two fitting ends, which are crimped with the hose using ferrules.

Layout of a hose assembly, Fig. A

The layout of a hose assembly is determined by 3 lengths:

- L1 Length of hose assembly -> determined by customer, e.g. 1200mm; fixed length
- L2 Partial length of fitting(s) -> fixed length due to design of fitting
- L3 Length of hose -> to be determined, cutting length

For an outstretched hose assembly, **L1** measures from the face of end 1 to the face of end 2, in mm. For 45° or 90° fittings, it measures from the centre point of the fitting's face, i.e. it should not measure from the very end of an elbow end to the other end, see Fig. A.

The overall length **Lmax.** is not relevant for the layout of a hose assembly.

L2 has to be taken into consideration when cutting a piece of hose at a length of L3. L2 is the partial length of a fitting to be measured. L2 measures from the adjoining point of hose + fitting's tail (see X, Fig. A) to the fitting's front face.

$L1 = L3 + L2(\text{end1}) + L2(\text{end2})$ = standard definition of a hose assembly

$L3 = L1 - L2(\text{end1}) - L2(\text{end2})$ = determination for the length of the hose, cutting length

Example:

- L1 = 1200mm
- L2 (end1) = 20mm
- L2 (end2) = 25mm
- L3 = $L1 - L2(\text{end1}) - L2(\text{end2}) = 1200 - 20 - 25 = 1155\text{mm}$

Consequently, L3 must be cut to a nominal length of 1155mm. The actual length to be cut should be a few mm less, because ferrules stretch when pressed. With experience, accurate results can be achieved, meeting the L1 allowances.

Note: L2 can vary due to technical changes left to the discretion of the manufacturer, and technical data of L2 in this catalogue are generally subject to change without prior notice.

Allowance for length L1, Table A

Hose assemblies require an allowance in length, because it is hardly possible to make a hose assembly of e.g. 2000mm with an allowance of $\pm 1\text{mm}$. Table A shows allowances according to DIN 20066.

Lengths for hose assemblies, Tables B and C

Standard lengths as shown in Table C are recommended, yet all hose assembly lengths starting from about 160mm are possible.

Note that very long hose assemblies can involve a significant pressure drop.



1. Measure L2 with a vernier caliper



2. Cut hose to length L3



3. Assemble components



4. Press ferrule



5. Check swage diameter



6. Flush + final inspection

Table A: Allowance for length L1

L1 mm	Allowance mm; %	
≤ 630	+7mm	-3mm
>630 ... 1250	+12mm	-4mm
>1250 ... 2500	+20mm	-6mm
>2500 ... 8000	+1.5%	-0.5%
>8000	+3.0%	-1.0%



Hose assembly: hose with 2 fitting ends

Fig. A

Layout of typical hose assemblies

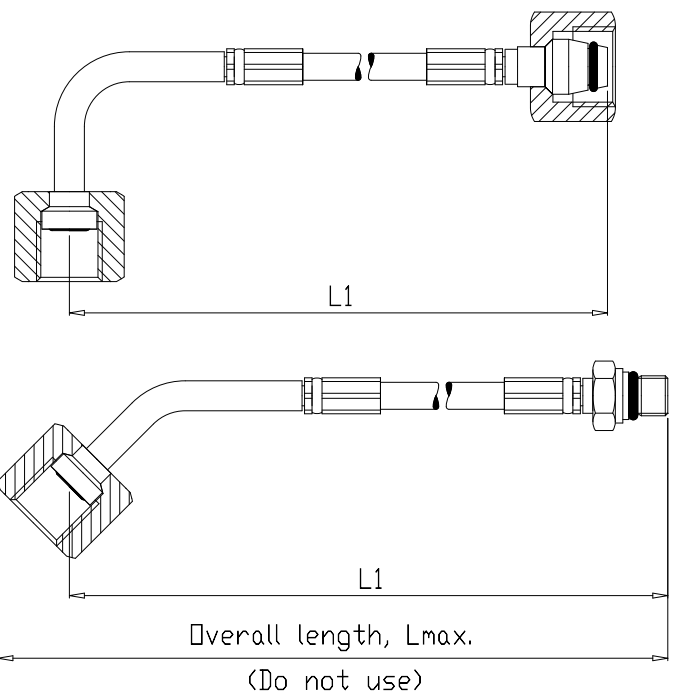
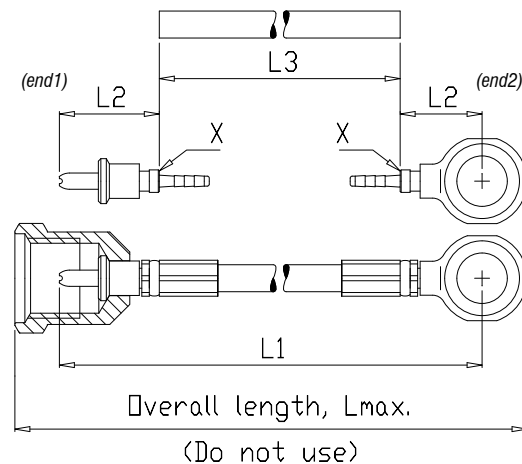
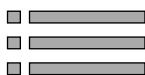


Table B: DIN lengths for hose assemblies [mm]

160	200	250	315	400	500	630	800	1000	1250	1400	1600
1800	2000	2500	3150	4000	5000	6300	8000	10000	12500	14000	16000

Table C: vdH standard lengths for hose assemblies [mm]

160	200	300	400	500	630	800	1000
1200	1500	2000	2500	3200	4000	5000	6000



Group 171/172/173

Common hose assemblies DN2

Part No. Hose-End1/End2 x L1	DN	¹ L1 mm	End1 Series	End2 Series	Fig.	PN bar	Cr6- free ^x
S2-SK 1620/SK 1620x630	DN2	630	M16x2	M16x2	A	630	ZnNi
S2-SK 1620/SK 1620x1000	DN2	1000	M16x2	M16x2	A	630	ZnNi
S2-SK 1620/SK 1620x1500 x etc.	DN2	1500	M16x2	M16x2	A	630	ZnNi
S2-SK 1620/SK 1615x630	DN2	630	M16x2	M16x1.5	A	630	ZnNi
S2-SK 1620/SK 1615x1000	DN2	1000	M16x2	M16x1.5	A	630	ZnNi
S2-SK 1620/SK 1615x1500 x etc.	DN2	1500	M16x2	M16x1.5	A	630	ZnNi
S2-SK 1620/MD 0104x630	DN2	630	M16x2	MD 0104	B	630	ZnNi
S2-SK 1620/MD 0104x1000	DN2	1000	M16x2	MD 0104	B	630	ZnNi
S2-SK 1620/MD 0104x1500 x etc.	DN2	1500	M16x2	MD 0104	B	630	ZnNi
S2-SK 1620/Steckx630	DN2	630	M16x2	Pin-Lock	C	400	ZnNi
S2-SK 1620/Steckx1000	DN2	1000	M16x2	Pin-Lock	C	400	ZnNi
S2-SK 1620/Steckx1500 x etc.	DN2	1500	M16x2	Pin-Lock	C	400	ZnNi
S2-Steck/Steckx630	DN2	630	Pin-Lock	Pin-Lock	D	400	ZnNi
S2-Steck/Steckx1000	DN2	1000	Pin-Lock	Pin-Lock	D	400	ZnNi
S2-Steck/Steckx1500 x etc.	DN2	1500	Pin-Lock	Pin-Lock	D	400	ZnNi
S2-SR 1620/SR 1620x630	DN2	630	M16x2	M16x2	E	630	ZnNi
S2-SR 1620/SR 1620x1000	DN2	1000	M16x2	M16x2	E	630	ZnNi
S2-SR 1620/SR 1620x1500 x etc.	DN2	1500	M16x2	M16x2	E	630	ZnNi
S2-SK 1615/SK 1615x630	DN2	630	M16x1.5	M16x1.5	A	630	ZnNi
S2-SK 1615/SK 1615x1000	DN2	1000	M16x1.5	M16x1.5	A	630	ZnNi
S2-SK 1615/SK 1615x1500 x etc.	DN2	1500	M16x1.5	M16x1.5	A	630	ZnNi
S2-SK 1215/SK 1215x630	DN2	630	S12.65x1.5	S12.65x1.5	(A)	630	ZnNi
S2-SK 1215/SK 1215x1000	DN2	1000	S12.65x1.5	S12.65x1.5	(A)	630	ZnNi
S2-SK 1215/SK 1215x1500 x etc.	DN2	1500	S12.65x1.5	S12.65x1.5	(A)	630	ZnNi

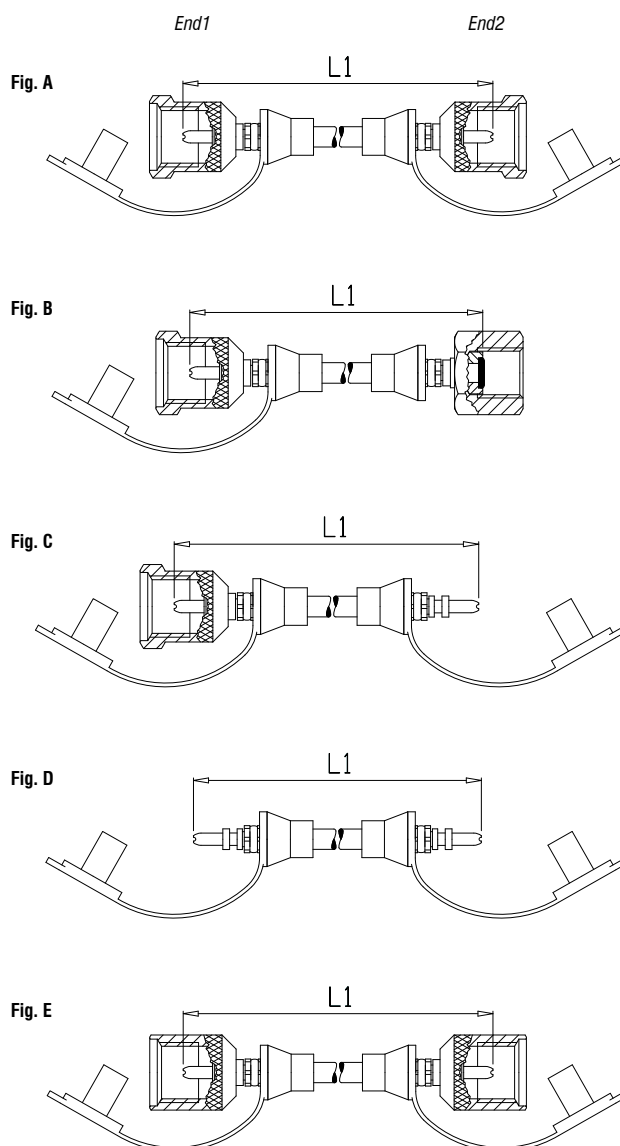
¹L1: Common lengths for hose assemblies [mm]

200	400	500	630	800	1000	1200	1500	2000	2500	3200	4000
-----	-----	-----	-----	-----	------	------	------	------	------	------	------

Other fitting types and lengths available.

DN3 and DN4 on request.

For stainless steel, see corresponding chapters.



How to read a typical hose assembly DN2 (example for Fig. B):

S2-SK 1620/MD 0104x1200

S2 Hose type
SK 1620 Fitting type, end1
MD 0104 Fitting type, end2
1200 Length of hose assembly, L1

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Hose fittings DN2+DN4

Description

High precision hose fittings are sold as sets (...-Lose), and match with vdH hose.

Subject to reservation, they can be used with hoses from other manufacturers; in that case, different pressing parameters must be obeyed.

Bent fittings (45°, 90°) are manufactured from solid metal and are non-brazed. Deviations in adapter versions.

Pressure

The component (fitting, hose) with the lowest permissive pressure sets the maximum permissive pressure limit of a hose assembly.

Part number examples

1) Hose assy, assembled by vdH:

Example: S2-SK 1620/BE 06 x 1200

2) Fitting set, for DIY swaging by customer:

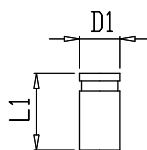
Example: SK 1620-Lose, BE 06-Lose

Group 181/182/183

Hülse ... Ferrule

DN2+DN4

Part No.	DN	Application for fittings	D1 mm	L1 mm	Weight g	Cr6- free ^x
Hülse 8-5.6	DN2	Standard for DN2	8	15	4	ZnNi
Hülse 11-6	DN4	Special slim version for DN4	11	21	7	ZnNi
Hülse 13-6	DN4	Standard for DN4	13	21	13	ZnNi



Hülse 8-5.6 (DN2)



Hülse 13-6 (DN4)

Description: Ferrules for swaging.

Materials: Steel.

Group 181/183

AG ... Male stud

DN2+DN4

Part No.	DN	T1	Type	Seal Type	Seal Material	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
AG 0108	DN2	G1/8 BSPP	straight	CE		32	22	8	14		400	16	ZnNi
AG 0104	DN2	G1/4 BSPP	straight	ED	NBR	52	42	12	14	19	400	55	ZnNi
AG 0810	DN2	M8x1	straight	OR	FPM	31	21	8	12		400	14	ZnNi
AG 1010	DN2	M10x1	straight	OR	NBR	35	25	8	14		630	20	ZnNi
AG 0114	DN2	1/4-18 NPT	straight	CO		36	26	20	19		630	37	ZnNi
AG4 0810	DN4	M8x1	straight	OR	FPM	39	23	8	12		400	23	ZnNi
AG4 0114	DN4	1/4-18 NPT	straight	CO		43	27	14	14		630	34	ZnNi
AG4 0184	DN4	R1/4 BSPT	straight	CO		43	27	14	14		630	34	ZnNi

Description: Set, male stud fittings for swaging.

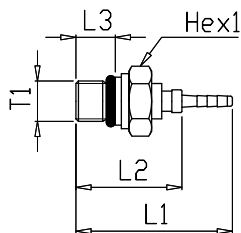
Materials: Steel.



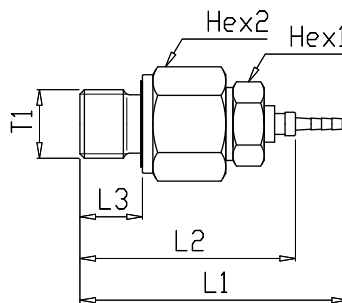
AG4 0114



AG 0104



AG 0810



AG 0104

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 181/182/183

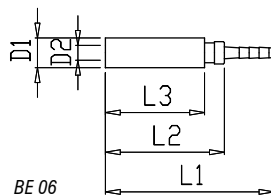
BE ... Standpipe DN2+DN4

Part No.	DN	Type	D1 mm	D2 mm	L1 mm	L2 mm	L3 mm	PN bar (L/S)	Weight g	Cr6- free ^x
BE 04	DN2	straight	4	2	34	24	18	100	6	ZnNi
BE 06	DN2	straight	6	3	34	24	20	250/400	7	ZnNi
BE 0645	DN2	45°	6	3	58	48	21	250/400	12	ZnNi
BE 0690	DN2	90°	6	3	44	34	30	250/400	12	yes
BE 08	DN2	straight	8	3	36	26	20	250/400	11	ZnNi
BE4 06	DN4	straight	6	2.4	45	29	23	250/400	19	ZnNi
BE4 0645	DN4	45°	6	2.4	55	39	21	250/400	22	ZnNi
BE4 0690	DN4	90°	6	2.4	41	25	30	250/400	22	ZnNi
BE4 08	DN4	straight	8	3.5	41	25	20	250/400	20	ZnNi

Description: Set, Standpipe hose fittings, for the use with cutting rings + swivel nuts; L + S series.
BE 04 = LL series.

Materials: Steel.

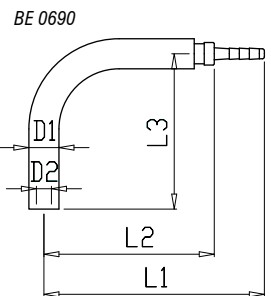
Standards: DIN 2353, 24° compression fittings.



BE 06



BE 06



BE 0690



BE 0690

Group 181

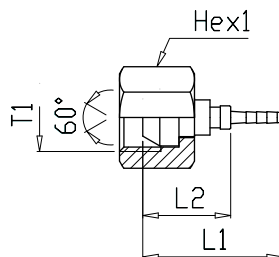
DKR ... 60° male cone DN2

Part No.	DN	Type	T1	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
DKR 0104	DN2	straight	G1/4 BSPP	27	17	17	630	26	ZnNi

Description: Set, 60° male with conical sealing surface. Fits female cone adapters
acc. to BS 5200.

Materials: Steel. Plastic sleeve.

Standards: BS 5200.



DKR 0104



^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 181/183

DKO ... 24° male cone

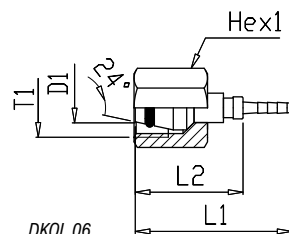
DN2+DN4

Part No.	DN	D1 mm	L/S	Type	T1	L1 mm	L2 mm	L3 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
DKOL 06	DN2	6	L	straight	M12x1.5	32	22		14	250	18	ZnNi
DKOL 0645	DN2	6	L	45°	M12x1.5	64	56	25	14	250	26	ZnNi
DKOL 0690	DN2	6	L	90°	M12x1.5	41	31	37	14	250	26	ZnNi
DKOS 06	DN2	6	S	straight	M14x1.5	32	22		17	630	26	ZnNi
DKOS 0645	DN2	6	S	45°	M14x1.5	64	56	25	17	630	33	ZnNi
DKOS 0690	DN2	6	S	90°	M14x1.5	41	31	37	17	630	33	ZnNi
DKOL 08	DN2	8	L	straight	M14x1.5	35	25		17	250	28	ZnNi
DKOL 0845	DN2	8	L	45°	M14x1.5	62	52	31	17	250	35	ZnNi
DKOL 0890	DN2	8	L	90°	M14x1.5	38	28	41	17	250	35	ZnNi
DKOS 08	DN2	8	S	straight	M16x1.5	35	25		19	630	33	ZnNi
DKOS 0845	DN2	8	S	45°	M16x1.5	62	52	31	19	630	40	ZnNi
DKOS 0890	DN2	8	S	90°	M16x1.5	38	28	41	19	630	40	ZnNi
DKOLL4 06	DN4	6	LL	straight	M10x1.0	35	16		12	100	23	ZnNi
DKOLL4 0690	DN4	6	LL	90°	M10x1.0	45	28	34	12	100	30	ZnNi
DKOL4 06	DN4	6	L	straight	M12x1.5	39	23		14	250	29	ZnNi
DKOL4 0645	DN4	6	L	45°	M12x1.5	64	48	28	14	250	34	ZnNi
DKOL4 0690	DN4	6	L	90°	M12x1.5	43	27	38	14	250	34	ZnNi
DKOS4 06	DN4	6	S	straight	M14x1.5	39	23		17	630	36	ZnNi
DKOS4 0645	DN4	6	S	45°	M14x1.5	64	48	28	17	630	43	ZnNi
DKOS4 0690	DN4	6	S	90°	M14x1.5	43	27	38	17	630	43	ZnNi
DKOL4 08	DN4	8	L	straight	M14x1.5	40	23		17	250	36	ZnNi
DKOL4 0845	DN4	8	L	45°	M14x1.5	68	52	25	17	250	48	yes
DKOL4 0890	DN4	8	L	90°	M14x1.5	48	32	38	17	250	48	yes
DKOS4 08	DN4	8	S	straight	M16x1.5	40	23		19	630	42	ZnNi
DKOS4 0845	DN4	8	S	45°	M16x1.5	68	52	25	19	630	53	yes
DKOS4 0890	DN4	8	S	90°	M16x1.5	48	32	38	19	630	53	yes
DKOL4 10	DN4	10	L	straight	M16x1.5	38	22		19	250	43	ZnNi
DKOS4 10	DN4	10	S	straight	M18x1.5	38	22		22	630	56	ZnNi
DKOL4 12	DN4	12	L	straight	M18x1.5	39	23		22	250	55	ZnNi
DKOS4 12	DN4	12	S	straight	M20x1.5	39	23		24	630	64	ZnNi

Description: Set, fitting with 24° male cone and metric swivel nut.
Materials: Steel. Plastic sleeve.
Seals: NBR. Viton® (FKM/FPM) on request.
Standards: DIN EN ISO 8434-1; DIN 2353; DIN 3865, 24° compression fittings.
Notes: 45° + 90° = high quality fitting body manufactured from solid, i.e. non-brazed.



DKOL 06

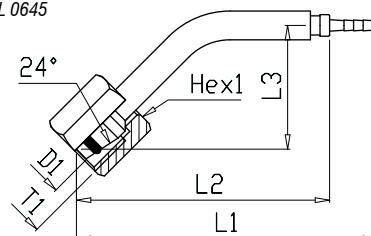


DKOL 06



DKOL 0690

DKOL 0645



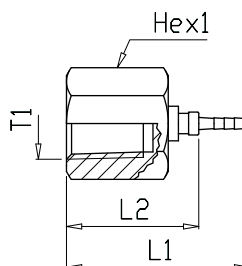
Group 181/183

IG ... NPT female

DN2+DN4

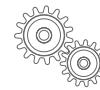
Part No.	DN	Type	T1	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
IG 0114	DN2	straight	1/4-18 NPT	36	26	19	400	37	ZnNi
IG4 0114	DN4	straight	1/4-18 NPT	42	26	19	400	46	ZnNi

Description: Set, fitting with NPT taper female thread. Hex is non-swivel (rigid).
Materials: Steel.
Standards: ANSI/ASME B1.20.1.



IG 0114

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 181/183

JIC ... 74° female cone

DN2+DN4

Part No.	DN	Type	T1	Fig.	Tube mm	Tube inch	L1 mm	L2 mm	L3 mm	Hex1 mm	WP bar	Weight g	Cr6- free ^x
JIC 0716	DN2	straight	7/16-20 UNF	A	6	1/4	24	14		14	350	18	ZnNi
JIC 0916	DN2	straight	9/16-18 UNF	A	10	3/8	26	16		19	350	34	ZnNi
JIC 0304	DN2	straight	3/4-16 UNF	B	12	1/2	36	26		22	310	55	ZnNi
JIC 0708	DN2	straight	7/8-14 UNF	B	16	5/8	37	27		27	240	92	ZnNi
JIC 1-116	DN2	straight	1-1/16-12 UN	B	20	3/4	39	29		32	240	124	ZnNi
JIC 1-516	DN2	straight	1-5/16-12 UN	B	25	1	40	30		41	210	222	ZnNi
JIC 1-508	DN2	straight	1-5/8-12 UN	B	30+32	1-1/4	43	33		50	170	342	ZnNi
JIC 1-708	DN2	straight	1-7/8-12 UN	B	38	1-1/2	48	38		60	140	581	ZnNi
JIC4 0716	DN4	straight	7/16-20 UNF	A	6	1/4	30	14		14	350	27	ZnNi
JIC4 071645	DN4	45°	7/16-20 UNF	C	6	1/4	64	48	26	14	350	35	ZnNi
JIC4 071690	DN4	90°	7/16-20 UNF	C	6	1/4	43	27	37	14	350	35	ZnNi
JIC4 0916	DN4	straight	9/16-18 UNF	A	10	3/8	33	16		19	350	46	ZnNi

Description: Set, fitting with 74° female cone and UN/UNF swivel nut (37° flared fittings).

Materials: Steel. Plastic sleeve.

Standards: ISO 8434-2; SAE J514. WP rates acc. to ISO 8434-2.



JIC 0716

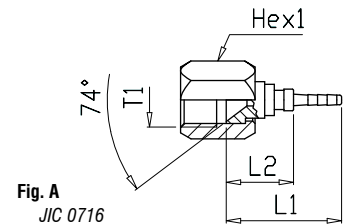


Fig. A
JIC 0716

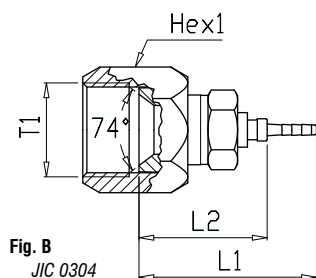


Fig. B
JIC 0304



JIC4 071690

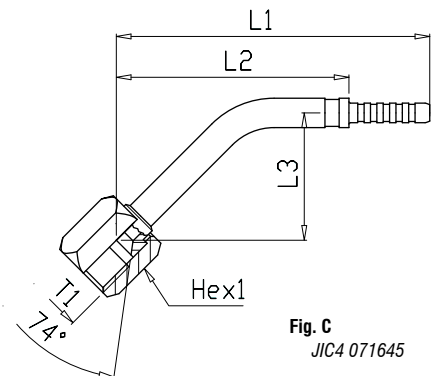


Fig. C
JIC4 071645

Group 183

KB ... Ball type

DN4

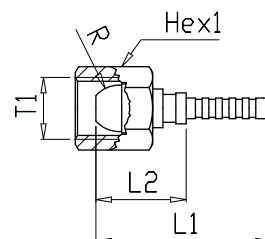
Part No.	DN	Type	T1	R	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
KB4 06L	DN4	straight	M12x1.5	6	34	18	14	*100	27	ZnNi
KB4 0104	DN4	straight	G1/4 BSPP	6	34	18	17	-	33	ZnNi

Description: Set, fitting with spherical ball-type head. Fits to 60° female cone form U acc. to DIN 3863.

Materials: Steel.

Standards: DIN 3863 (KB4 06L), metric thread. BS 5200 (KB4 0104), BSPP thread.

Notes: *Pressure acc. to DIN 3863. The ball type fitting was developed in the 1960ies as an *universal fitting* for the use with petrol, gaseous and hydraulic media, and fits to 24°, 45°, and 60° female cones likewise. KB4 0104: cf. BS 5200.



KB4 06L

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 181

MD ... Gauge connector

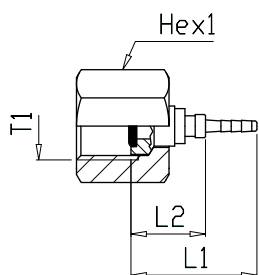
DN2

Part No.	DN	Type	T1	D1 mm	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
MD 0104	DN2	straight	G1/4 BSPP		25	15		19		630	37	ZnNi
MD 010445	DN2	45°	G1/4 BSPP	6	61	51	25	19		630	45	yes
MD 010490	DN2	90°	G1/4 BSPP	6	42	32	34	19		630	45	ZnNi
MD 0102	DN2	straight	G1/2 BSPP		24	14		27		630	70	ZnNi
MD 010290	DN2	90°	G1/2 BSPP		48	30	18	27	19	630	127	ZnNi

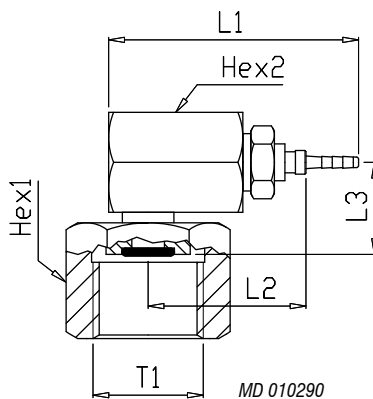
Description: Set, fitting for connection to male G1/4 or G1/2 gauge studs.
Materials: Steel. Plastic sleeve.
Seals: NBR, Viton® (FKM/FPM) on request.
Notes: Bent fittings for G1/4 = high quality nipple body manufactured from solid, i.e. non-brazed.



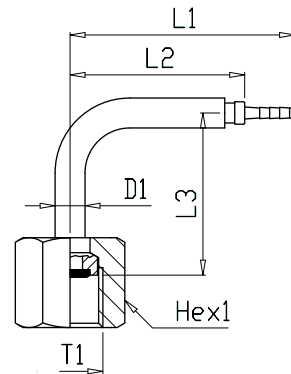
MD 010490



MD 0104



MD 010290



Group 181

ORFS ... ORFS flat face

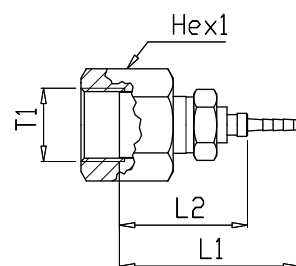
DN2+DN4

Part No.	DN	Type	T1	Tube mm	Tube inch	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
ORFS 0916	DN2	straight	9/16-18 UNF	6	1/4	35	25	19	400	44	ZnNi
ORFS 1116	DN2	straight	11/16-16 UN	8, 10	5/16, 3/8	36	26	22	400	52	ZnNi
ORFS 1316	DN2	straight	13/16-16 UN	12	1/2	37	27	24	400	66	ZnNi
ORFS 1-14	DN2	straight	1-14 UNS	14, 15, 16	5/8	38	28	30	400	106	ZnNi
ORFS 1-0316	DN2	straight	1-3/16-12 UN	18, 20	3/4	41	31	36	400	163	ZnNi
ORFS 1-0716	DN2	straight	1-7/16-12 UN	25	1	42	32	41	400	217	ZnNi
ORFS 1-1116	DN2	straight	1-11/16-12 UN	30, 32	1-1/4	42	32	50	250	322	ZnNi
ORFS4 0916	DN4	straight	9/16-18 UNF	6	1/4	43	27	19	400	54	ZnNi
ORFS4 1116	DN4	straight	11/16-16 UN	8, 10	5/16, 3/8	43	27	22	400	62	ZnNi

Description: Set, ORFS flat face fitting with UN/UNF/UNS swivel nut. Flat face w/o o-ring.
Materials: Steel.
Standards: ISO 8434-3.



ORFS 0916



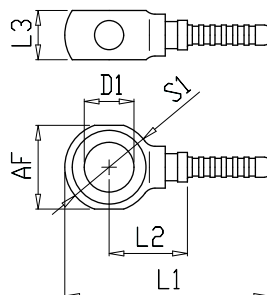
Group 183

RS ... Banjo

DN4

Part No.	DN	Type	D1 mm	S1 mm	L1 mm	L2 mm	L3 mm	AF mm	PN bar	Weight g	Cr6- free ^x
RS4 10	DN4	straight	10	18	42	16	10	17	200	18	ZnNi

Description: Set, ring type banjo fitting. Fits banjo bolts (hollow screws) G1/8 + M10x1.
Materials: Steel.
Standards: Based on DIN 7642.
Notes: High quality nipple body manufactured from the solid, i.e. non-brazed.
 Banjo bolts: call for part no. *HS ...* (DIN 7643).



RS4 10

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 181/183

SK/SR ... Swivel nut

DN2+DN4

Part No.	DN	Type	Series	Fig.	Cap	D1 mm	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g	Cr6- free ^x
SK 1620	DN2	straight	M16x2	A	hex/knurl		30	20		19		630	28	ZnNi
SK 162090	DN2	90°	M16x2	B	hex/knurl		48	30	37	19	19	630	97	ZnNi
SR 1620	DN2	straight	M16x2	D	knurl	20	30	20				630	34	ZnNi
SK 1615	DN2	straight	M16x1.5	A	hex/knurl		30	20		19		630	28	ZnNi
SK 161590	DN2	90°	M16x1.5	B	hex/knurl		48	30	37	19	19	630	97	ZnNi
SK 1215	DN2	straight	S12.65x1.5	(A)	hex/knurl		30	20		17		630	25	ZnNi
SK 121590	DN2	90°	S12.65x1.5	C	hex/knurl		48	30	31	17	19	630	90	ZnNi
SK4 1620	DN4	straight	M16x2	(A)	hex/knurl		38	22		19		630	37	ZnNi
SK4 162090	DN4	90°	M16x2	(B)	hex/knurl		57	33		19	19	630	105	ZnNi
SK4 1615	DN4	straight	M16x1.5	(A)	hex/knurl		38	22		19		630	37	ZnNi
SK4 161590	DN4	90°	M16x1.5	(B)	hex/knurl		57	33		19	19	630	105	ZnNi
SK4 1215	DN4	straight	S12.65x1.5	(A)	hex/knurl		38	22		17		630	32	ZnNi
SK4 121590	DN4	90°	S12.65x1.5	(C)	hex/knurl		55	32	29	17	19	630	97	ZnNi

Description: Set, swivel nut hose fitting. Standard connection for hose assembly and test point.

Materials: Steel. Plastic sleeve.

Seals: Internal seals of 90° pre-assembled fittings are made of Viton® (FKM/FPM).



SK 1620

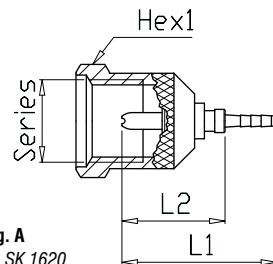


Fig. A
SK 1620



SK 162090



SK4 162090



SK 1620



SK 1615

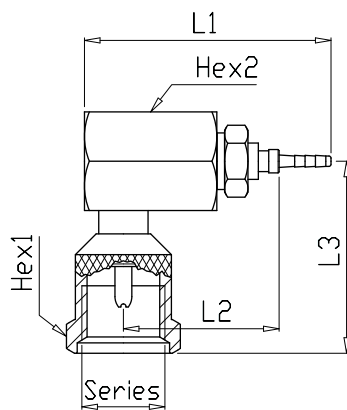


Fig. B
SK 162090

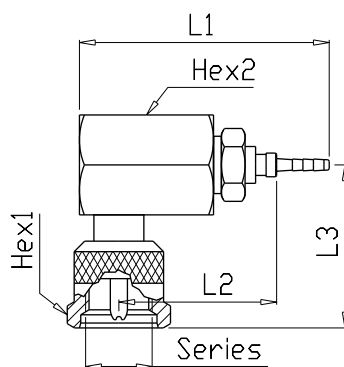


Fig. C
SK 121590

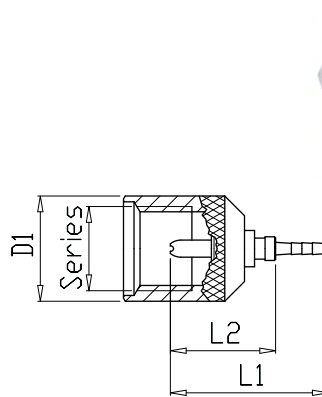
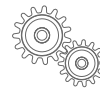


Fig. D
SR 1620



SK 1215

^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 181

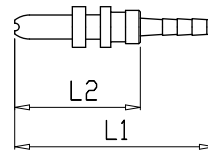
Steck ... Pin-lock

DN2

Part No.	DN	Type	Series	L1 mm	L2 mm	PN bar	Weight g	Cr6- free ^x
Steck	DN2	straight	Pin-Lock	27	17	400	7	ZnNi

Description: Set, Pin-lock hose fitting, to connect hose assembly and pin-lock series test point.

Materials: Steel. Plastic sleeve.



Steck

Group 181

SK/SR ... Swivel nut + antikink spring

DN2

Part No.	DN	Type	Series	Fig.	Cap	D1 mm	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g	Cr6- free ^x
SK 162K	DN2	straight	M16x2	A	hex/knurl		30	20	19	630	39	yes
SR 162K	DN2	straight	M16x2	B	knurl	20	30	20		630	45	yes
SK 161K	DN2	straight	M16x1.5	A	hex/knurl		30	20	19	630	39	yes
SK 121K	DN2	straight	S12.65x1.5	(A)	hex/knurl		30	20	17	630	35	yes

Description: Set, swivel nut hose fitting to connect hose assembly and test point. With antikink spring (KS).

Materials: Steel. Spring: spring steel, white (silverish) galvanised. Plastic sleeve.

Notes:
The antikink spring KS fits to all DN2 fitting sets that have a sleeve or a dust cap.
The use of a plastic dust cap or a plastic sleeve is compulsory for a tight fit of the spring.
The spring is not retrofittable, and it is available for DN2 only.
For springs on both ends of a hose assembly, a minimum hose length of at least ~400mm is required.
90° version on request.



SK 162K

Fig. A
SK 1620

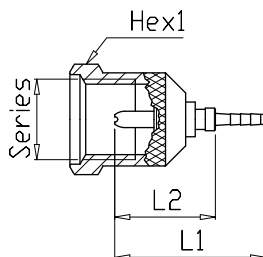
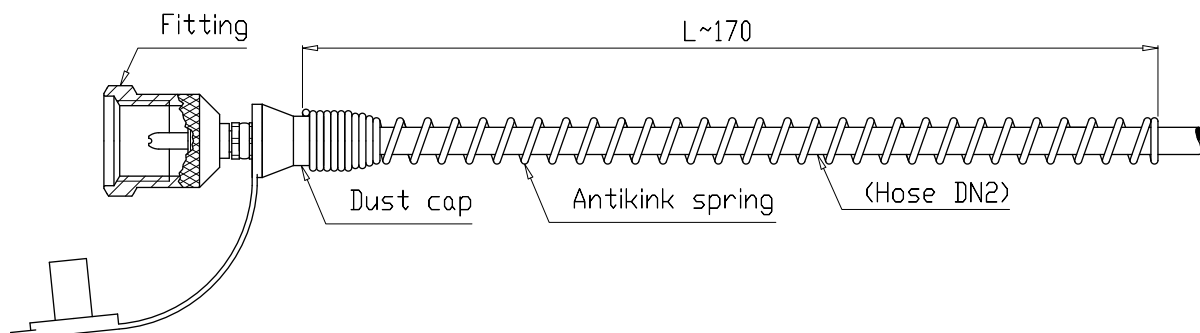
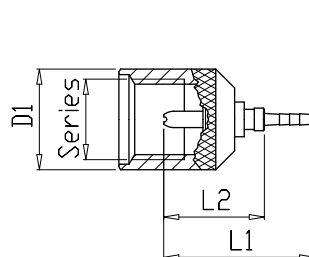


Fig. B
SR 1620



^x refers to coating: "ZnNi" = Zinc-Nickel + transparent coating, Cr6-free. "yes" = other coating, Cr6-free. "no" = not Cr6-free.



Group 191

KS ... Antikink protection

DN2+DN4

Part No.	DN	Mat.	Fig.	Ferrule	Use of dust cap	D1 mm	D2 mm	L1 mm	L2 mm	Weight g
KS	DN2	Steel	A	Hülse 8-5.6	mandatory	-	12	170	-	13
KS2	DN2	PA	B	Hülse 8-5.6	not possible	21	16.8	65	~30	7
KS4	DN4	PA	C	Hülse 11-6	not possible	23	20.4	74	~30	10

Description: Antikink protection, suitable for hose ends that are subjected to higher bending loads.

Materials: KS: Spring steel, spring steel, white (silverish) galvanised, Cr6-free.

KS2/4: PA (Polyamide), black.

Notes: The parts are not retrofittable.

Proper function only with vdH fittings and vdH hose.

KS: Dust cap is mandatory. Minimum hose length of at least ~400mm is required for KS on both ends.

KS2: Alternative to KS.

KS4: Can only be used with special DN4 ferrule Hülse 11-6.

KS3 (DN3) on request.



KS



KS2, KS4

Fig. A
KS

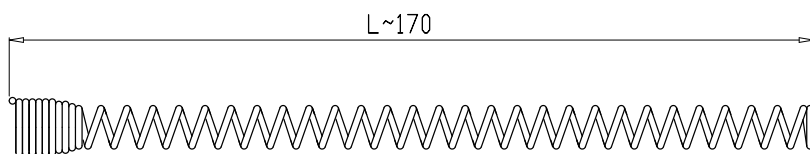


Fig. B
KS2

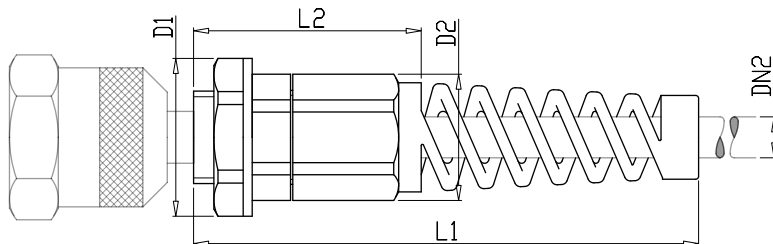
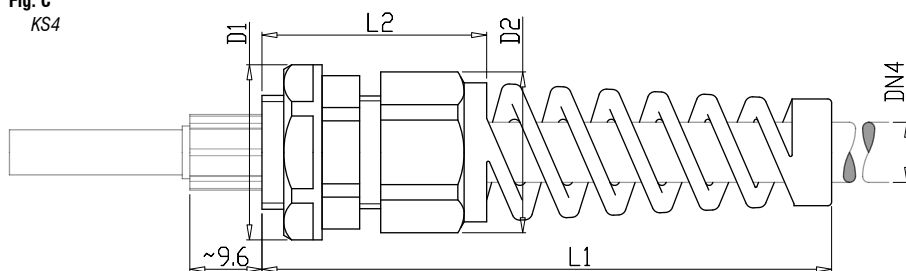


Fig. C
KS4



Group 541

STL ... Shrink tube label

DN2/DN3/DN4

Description: Shrink tube labels for professional labeling of hose assemblies.

Application: Hydraulics, chemical and medical industry, defense.

Materials: Cross-linked polyolefin, yellow, -55 °C to +135 °C (-67 °F to 275 °F), strong adhesion (w/o adhesive).

Resistance: Abrasion, military fuels, oil, cleaning agents.

Standards: AMS-DTL-23053/5 Klasse 1+3, SAE AS 81531, MIL-STD-202F method 215J.

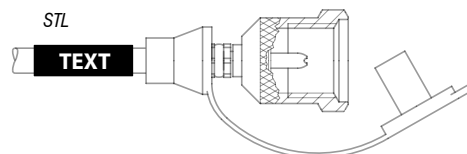
Notes: Data sheet and advice on request.

- Not retrofittable.

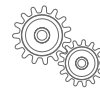
- Custom lengths, labeling, company logo

- Sequential serial numbers

- Transparent additional label for increased abrasion protection



[Download here](#)



Test points, adapter, and fittings in stainless steel

Group 313

EG ... Test point with male stud

Series M16x2

Part No. <i>Stainless steel</i>	Series	T1	Fig.	Sealing Type	L1 mm	L2 mm	Hex1 mm	Hex2 mm	PN bar	Weight g
EG 0108.409 BS-4571	M16x2	G1/8 BSPP	E	ED	46	8	17		400	66
EG 0104.409 BS-4571	M16x2	G1/4 BSPP	E	ED	51	12	19		630	78
EG 0308.409 BS-4571 ¹	M16x2	G3/8 BSPP	D	CE	60	12	17	22	400	103
EG 0308.409 BS-4571 ¹	M16x2	G3/8 BSPP	E	ED	60	12	17	22	630	103
EG 0102.409 BS-4571 ¹	M16x2	G1/2 BSPP	D	CE	63	14	19	27	400	134
EG 0102.409 BS-4571 ¹	M16x2	G1/2 BSPP	E	ED	63	14	19	27	400	134
EG 0114.409 BS-4571	M16x2	1/4-18 NPT	C	CO	53	16	17		630	75
EG 0716.409 BS-4571	M16x2	7/16-20 UNF	B	OR	49	11	17		630	70
EG 0916.409 BS-4571	M16x2	9/16-18 UNF	B	OR	50	12	19		630	80
EG 0810.409 BS-4571 ²	M16x2	M8x1	A	OR	47	9	17		250	66
EG 1010.409 BS-4571	M16x2	M10x1	A	OR	47	9	17		630	67

¹Adapter version. ²Do not use for new design.

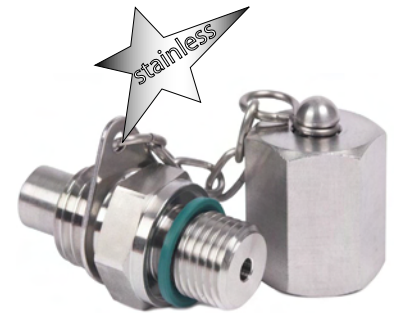
Description: Test point with male threaded stud. Standard series M16x2.

Materials: 1.4571 (AISI 316-Ti); st. steel.

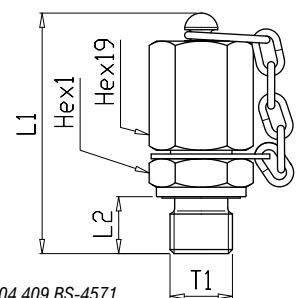
Seals: All seals are made of Viton® (FKM/FPM).

Standards: See *Technical*.

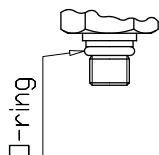
Caps: Hex version only. Round knurled type on request.



EG 0104.409 BS-4571

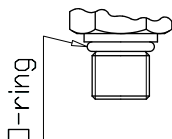


EG 0104.409 BS-4571



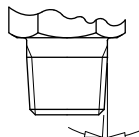
OR

O-ring, metric



OR

O-ring, UNF



CO

conical



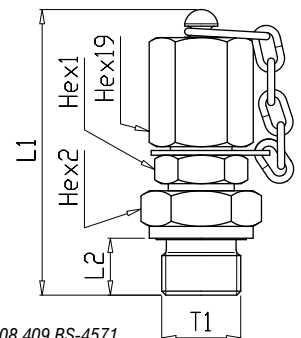
CE

cutting edge

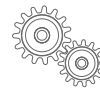


ED

elastomeric seal



EG 0308.409 BS-4571
(adapter version)



Group 312

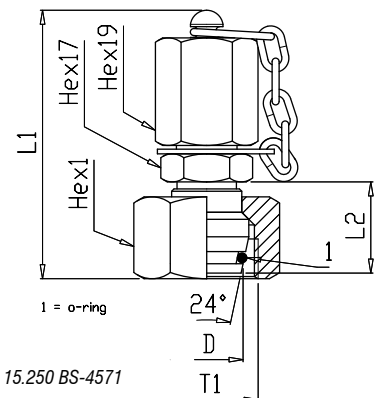
DKO ... Test point with 24° male cone Series M16x2

Part No. <i>Stainless steel</i>	D	L/S	Series	T1	L1 mm	L2 mm	Hex1 mm	PN bar	Weight g
DKO 08.250 BS-4571	8	L	M16x2	M14x1.5	61	19	17	250	95
DKO 10.250 BS-4571	10	L	M16x2	M16x1.5	67	25	19	250	107
DKO 12.250 BS-4571	12	L	M16x2	M18x1.5	58	20	22	250	104
DKO 15.250 BS-4571	15	L	M16x2	M22x1.5	56	20	27	250	128
DKO 18.160 BS-4571	18	L	M16x2	M26x1.5	59	21	32	160	175
DKO 22.160 BS-4571	22	L	M16x2	M30x2	63	26	36	160	226
DKO 08.400 BS-4571	8	S	M16x2	M16x1.5	61	19	19	630	100
DKO 10.400 BS-4571	10	S	M16x2	M18x1.5	67	25	22	630	121
DKO 12.400 BS-4571	12	S	M16x2	M20x1.5	56	20	24	630	113
DKO 14.400 BS-4571	14	S	M16x2	M22x1.5	67	31	27	400	147
DKO 16.400 BS-4571	16	S	M16x2	M24x1.5	50	23	30	400	160
DKO 20.400 BS-4571	20	S	M16x2	M30x2	64	26	36	400	228
DKO 25.400 BS-4571	25	S	M16x2	M36x2	63	26	46	400	372

Description: Test point with 24° male cone and metric swivel nut.
Materials: 1.4571 (AISI 316-Ti); st. steel.
Seals: All seals are made of Viton® (FKM/FPM).
Standards: DIN EN ISO 8434-1; DIN 2353; DIN 3865, 24° compression fittings.



DKO 12.250 BS-4571



DKO 15.250 BS-4571

Group 314

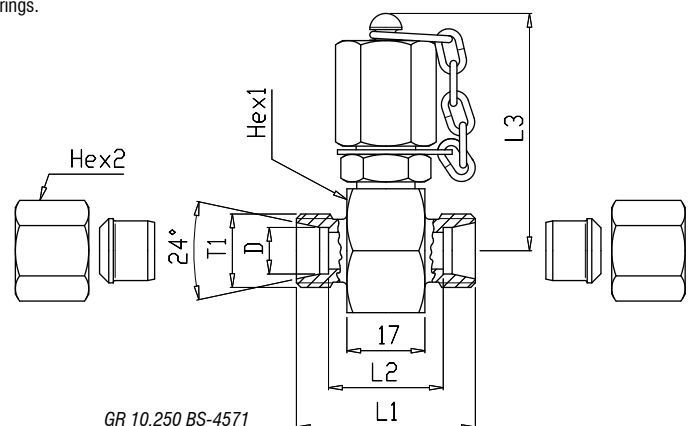
GR ... Test point + union with 24° female cone Series M16x2

Part No. <i>Stainless steel</i>	D	L/S	Series	T1	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g
GR 06.250 BS-4571	6	L	M16x2	M12x1.5	37	23	50	24	14	250	155
GR 08.250 BS-4571	8	L	M16x2	M14x1.5	37	23	50	24	17	250	173
GR 10.250 BS-4571	10	L	M16x2	M16x1.5	39	25	51	27	19	250	180
GR 12.250 BS-4571	12	L	M16x2	M18x1.5	39	25	51	27	22	250	210
GR 15.250 BS-4571	15	L	M16x2	M22x1.5	41	27	53	30	27	250	265
GR 18.160 BS-4571	18	L	M16x2	M26x1.5	41	26	54	32	32	160	322
GR 22.160 BS-4571	22	L	M16x2	M30x2	45	30	56	36	36	160	410
GR 06.400 BS-4571	6	S	M16x2	M14x1.5	41	27	50	24	17	630	179
GR 08.400 BS-4571	8	S	M16x2	M16x1.5	41	27	50	24	19	630	196
GR 10.400 BS-4571	10	S	M16x2	M18x1.5	41	26	51	27	22	630	216
GR 12.400 BS-4571	12	S	M16x2	M20x1.5	41	26	51	27	24	630	220
GR 14.400 BS-4571	14	S	M16x2	M22x1.5	45	29	51	27	27	400	289
GR 16.400 BS-4571	16	S	M16x2	M24x1.5	45	28	53	30	30	400	330
GR 20.000 BS-4571	20	S	M16x2	M30x2	49	28	56	36	36	400	477

Description: Test point mounted on a union with both ends 24° female cone, with nuts and cutting rings.
Materials: 1.4571 (AISI 316-Ti); st. steel. Nuts and cutting rings acc. to DIN 3859-1.
Seals: All seals are made of Viton® (FKM/FPM).
Standards: DIN EN ISO 8434-1; DIN 2353.
Notes: Also available
 - without nuts + cutting rings (e.g. GR 08.250 BS-oMoS-4571)
 - without test point (e.g. GR 08.250 G-4571)



GR 10.250 BS-4571



GR 10.250 BS-4571



Group 341

MA ... Gauge connector

Series M16x2

Part No. Stainless steel	Series	T1	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	L3 mm	Hex1 mm	Hex2 mm	PN bar	Weight g
MA 1620.104 A/B-4571	M16x2	G1/4 BSPP	A	O-ring	FPM	48	14	22	19	24	630	72
MA 1620.102 A/B-4571	M16x2	G1/2 BSPP	A	O-ring	FPM	58	24	22	27	24	630	113

Description: Gauge connector for standard operations like the linking of gauge, hose assembly, and test point. Locknut included for fixing the gauge connector to a panel or a test rig board.

Materials: 1.4571 (AISI 316-Ti); st. steel.

Seals: All seals are made of Viton® (FKM/FPM).

Standards: See *Technical*.

Caps: Hex-shaped cap for M16x2 series thread available on request.

Notes: Valves at the series end have no ball, i.e. no check valve device applies.
Series M16x1.5 on request.

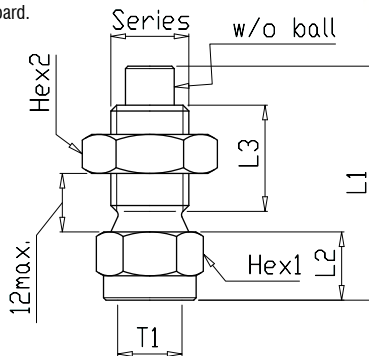


Fig. A
MA 1620.104 A/B-4571



MA 1620.104 A/B-4571

Group 342

MAD ... Direct gauge connector

Series M16x2

Part No. Stainless steel	Series	T1	Fig.	Sealing Type	Seal Material	L1 mm	L2 mm	Hex1 mm	Hex2 mm	PN bar	Weight g
MAD 1620.104 A/B-4571	M16x2	G1/4 BSPP	B	O-ring	FPM	55	30	19	19	630	97

Description: Direct gauge connector for mounting a gauge directly to a test point.

Materials: 1.4571 (AISI 316-Ti); st. steel.

Seals: All seals are made of Viton® (FKM/FPM).

Standards: See *Technical*.

Notes: Other sizes (e.g. G1/2 BSPP) and series M16x1.5 on request.

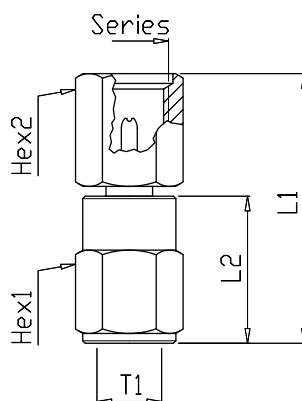


Fig. B
MAD 1620.104 A/B-4571



MAD 1620.104 A/B-4571

Group 356

SAD ... Hose connector

Various Series

Part No. Stainless steel	Series1	Series2	Fig.	L1 mm	Hex1 mm	PN bar	Weight g
SAD 1620/1620-4571	M16x2	M16x2	C	56	17	630	64
SAD 1620/1615-4571	M16x2	M16x1.5	C	56	17	630	64

Description: Hose connector, for linking hose ends of equal / different series. This item is useful for test boxes with a limited number of hose assemblies: hose assemblies can be combined to form one long assembly. Can also be combined with ADI swivel adapter.

Materials: 1.4571 (AISI 316-Ti); st. steel.

Seals: All seals are made of Viton® (FKM/FPM).

Standards: See *Technical*.

Caps: Stainless steel caps for both ends on request.

Notes: Valves at the series end have no ball, i.e. no check valve device applies.

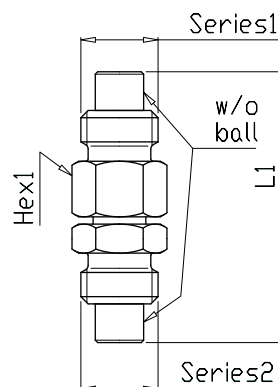
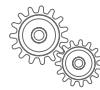


Fig. C
SAD 1620/1620-4571



SAD 1620/1620-4571



Group 381

Hose fittings in stainless steel

DN2

Part No. <i>Stainless steel</i>	DN	Type	L/S	D1 mm	D2 mm	T1	Fig.	L1 mm	L2 mm	L3 mm	Hex1 mm	PN bar (L/S)	Weight g
BE 06-4571	DN2	straight		6	3		A	34	24	20		250/400	7
BE 08-4571	DN2	straight		8	3		A	36	26	20		250/400	10
DKOL 06-4571	DN2	straight	L	6		M12x1.5	B	32	22		14	250	18
DKOS 06-4571	DN2	straight	S	6		M14x1.5	B	32	22		17	630	25
JIC 0716-4571	DN2	straight				7/16-20 UNF	C	24	14		14	350	18
MD 0104-4571	DN2	straight				G1/4 BSPP	D	25	15		19	630	37
SS 1620-4571	DN2	straight				M16x2	E	30	20		19	630	38
SS 1615-4571	DN2	straight				M16x1.5	E	30	20		19	630	38

Description: Hose fitting sets DN2.

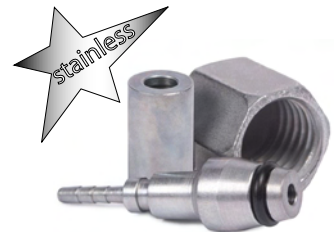
Materials: 1.4571 (AISI 316-Ti); st. steel. Sleeve/dust cap: plastic.

Seals: All seals are made of Viton® (FKM/FPM).

Notes: JIC 0716-4571: WP acc. to ISO 8434-2.



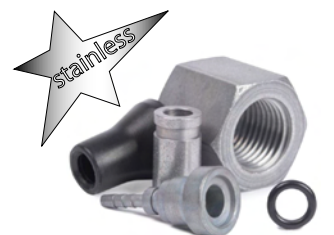
BE 06-4571



DKOL 06-4571



JIC 0716-4571



MD 0104-4571



SS 1620-4571

Fig. A
BE 06-4571

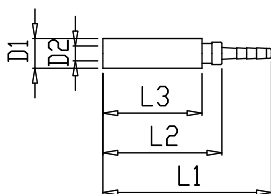


Fig. B
DKOL 06-4571

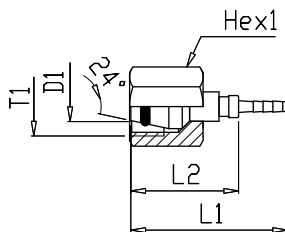


Fig. C
JIC 0716-4571

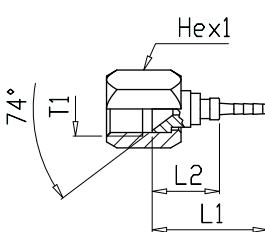


Fig. D
MD 0104-4571

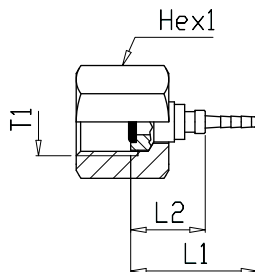
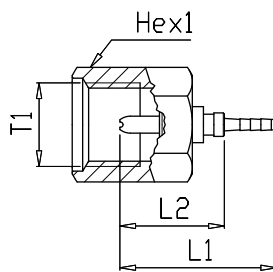


Fig. E
SS 1620-4571



Group 371

Common hose assemblies DN2 in stainless steel

Part No. <i>Hose-End1/End2xL1</i>	DN	L1' mm	End1	End2	Fig.	PN bar
S2-SS 1620-4571/SS 1620-4571x630	DN2	630	M16x2	M16x2	F	630
S2-SS 1620-4571/SS 1620-4571x1000	DN2	1000	M16x2	M16x2	F	630
S2-SS 1620-4571/SS 1620-4571x1500	DN2	1500	M16x2	M16x2	F	630
x etc.						

¹Common lengths for hose assemblies [mm]

200	400	500	630	800	1000	1200	1500	2000	2500	3200	4000
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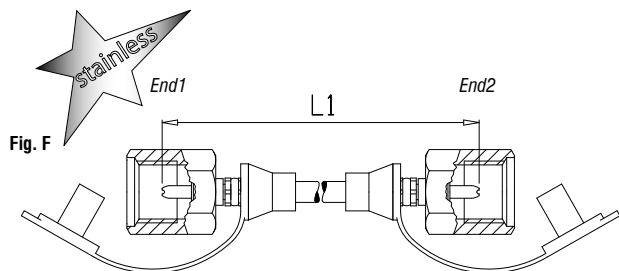


Fig. F

Other fitting types and lengths available.
DN3 and DN4 on request.



Group 562

MANO ... Pressure gauge

ø 63

Part No.	P Range (bar)	T1	D1 mm	D2 mm	D3 mm	D4 mm	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm	L6 mm	AF mm	Weight g
MANO 010	0-10	G1/4 BSPP	63	68	5	9.5	52	7	31	2	13	15	14	~210
MANO 016	0-16	same data												
MANO 025	0-25													
MANO 040	0-40													
MANO 060	0-60													
MANO 100	0-100													
MANO 160	0-160													
MANO 250	0-250													
MANO 400	0-400													
MANO 600	0-600													

Description

Pressure gauge for hydraulic applications.

Standard: DIN EN 837-1.
Type: Bourdon tube pressure gauge, case dia. 63mm.
Class, accuracy: 1.6 (i.e. $\pm 1.6\%$ of full scale, F.S.).
Male stud: G1/4 BSPP, brass.
Stud orientation: L (lower bottom entry).
Filling: Glycerine.
Seal: O-ring or other seal. Not included.
Flange ring: 1.4301 / AISI 304, st. steel.
Case: 1.4301 / AISI 304, st. steel.
Scale: Dual scale, bar / psi.
Window: Plastic.

On request

Pressure range exceeding 600 bar.
Other material, class, rubber shield, stud orientation, metal sealing ring, etc.

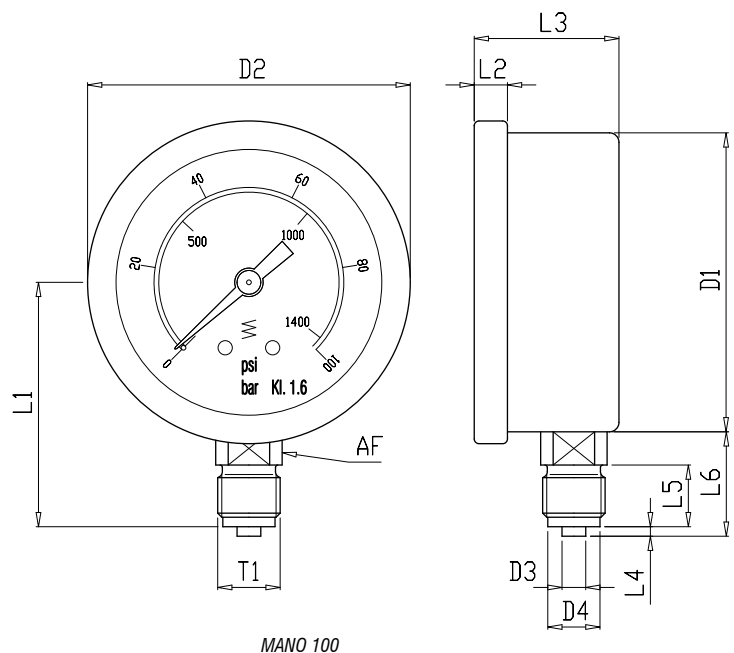
Information

The class relates to the accuracy of a gauge. A gauge with a class of 1.6 is more accurate than a gauge with a class of 2.5 or 4. Class 1.6 is sufficient for a wide range of standard applications in hydraulics.

Two examples:

MANO 100, class 1.6. The needle points at 60 bar. The actual pressure value ranges within $\pm 1.6\%$ of the full scale value (F.S. = 100 bar), i.e. within 58.4 bar ... 61.6 bar.

For a MANO 100, class 1.0, pointing at 60 bar, the actual pressure value would range within $\pm 1\%$ of F.S. = 59 bar ... 61 bar.





Group 562

MANOD ... Digital pressure gauge

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Part No.	P Range (bar)	Series	D1 mm	D2 mm	L1 mm	L2 mm	L3 mm	L4 mm	Hex1 mm	Hex2 mm	Hex3 mm	Weight g
MANOD 300 Set	0-300	M16x2	65	70	110	25	58	41	17	17	19	~200
MANOD 700 Set	0-700	M16x2	65	70	110	25	58	41	17	17	19	~200

Description Digital pressure gauge for hydraulic applications.

Type: Microprocessor-controlled, highly accurate instrument with digital data display, dia. 70mm (with rubber shield).

Main feature: Display shows actual pressure and max./min. pressure. Two buttons for selection of function (on/off, reset, units, etc.).

Accuracy: <0.1% FS (i.e. less than $\pm 0.1\%$ of full scale, F.S.) at ambient room temperature. Includes linearity, repeatability, hysteresis, temperature error and resolution of the display. Does not consider zero stability.

Total error band: <0.2% F.S. (full scale).

Connection: Special adapter series M16x2, steel, pre-assembled, included.

Stud: 7/16-20 UNF male stud, st. steel, pre-assembled with special adapter series M16x2.

Stud orientation: L (lower bottom entry).

Storage temp.: -20 °C ... +70 °C.

Operating temp.: 0 °C ... +50 °C.

Temp. range: 0 °C ... +50 °C (compensated).

Protection: (CEI 529) IP 65.

Power supply: Battery 3V, CR 2430 (1.000 hrs. continuous operation).

Case + window: Plastic.

Scale, units: Bar, mbar, hPa, kPa, MPa, psi, kp/cm².

Manual: English or German, included.

On request

- Ranges -1 ... 3 bar, -1 ... 30 bar.
- Special adapters, e.g. for series M16x1.5 or S12.65x1.5.
- Test kit (test box) with digital gauges + adapters.
- Ex version for hazardous applications: intrinsically safe version, 94/9/CE, ATEX 100a; classification EX II 1 G EEx ia IIC T6 or T5; LCIE 01 ATEX 6001 X.
- Customised design of front panel (logo, text, etc.).

Information

As shown in Fig. A, MANOD ... Set comes with one special swivel adapter to connect the gauge directly to a test point of standard series M16x2 (Fig. B).

The additional use of a hose assembly adapter like SAD 1620/1620 allows to connect the gauge to a standard M16x2 swivel hose end (Fig. C). Any other SAD type adapter can be used, giving maximum versatility in terms of quick adaption to many series. SAD adapters are not included.

All data are subject to change without prior notice from the gauge manufacturer.

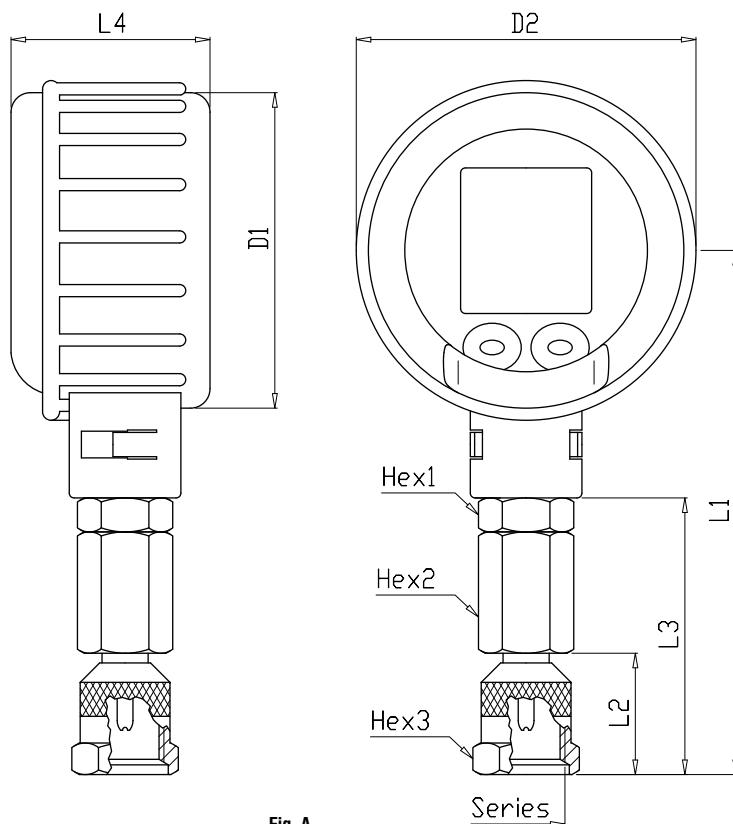


Fig. A
MANOD 300 Set

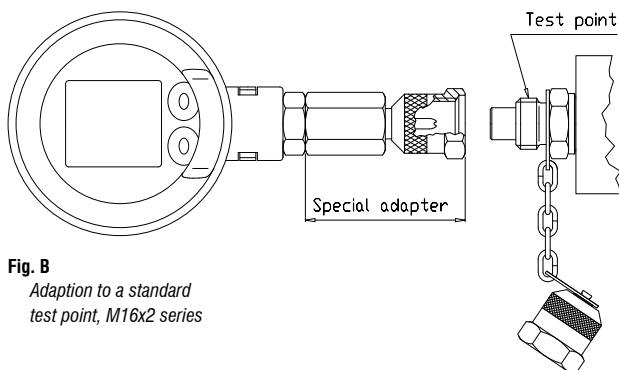


Fig. B
Adaption to a standard
test point, M16x2 series

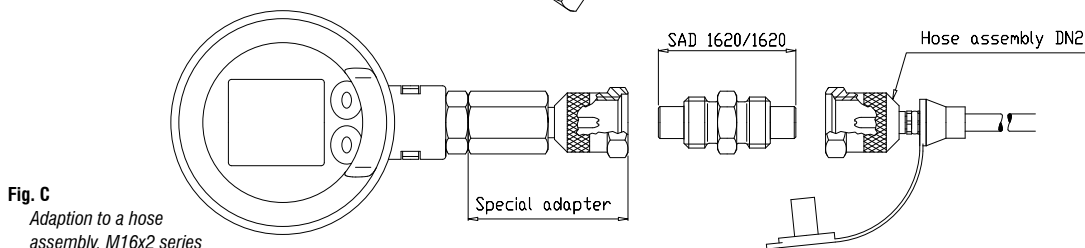


Fig. C
Adaption to a hose
assembly, M16x2 series



Group 561

Test box

Type 1: MESSKOFFER (Box+ inlays, w/o test equipment)
Application: For tough conditions. Shock-resistant double wall housing.
Size: Medium standard size, 355 x 300 x 80 (length x width x height).
Material: Box PP, inlays foamed plastic.
Slots: 3 slots for gauges ø63mm in horizontal positioning; 10 round slots for upright positioning of test points; 4 rectangular slots for horizontal positioning of test points; 1 rectangular slot for accessories and/or short hose assemblies, e.g. 1.000mm.

Type 2: MESSKOFFER-K (Box+ inlays, w/o test equipment)
Application: For standard conditions, e.g. shop floor, or for applications where only limited space is available. Single wall housing. Recommend for kits that shall include adapters.
Size: Compact size, 275 x 230 x 83 (length x width x height).
Material: Box PP, inlays foamed plastic. Red clips.
Slots: 3 slots for gauges ø63mm in upright position; 15 round slots for upright positioned test points; 1 small slot for accessories; 1 round slot for short hose assemblies, e.g. 1.000mm.

Typical configuration of MESSKOFFER

1 pce. EG 0104.409 B
1 pce. EG 0108.409 B
1 pce. EG 1010.409 B
1 pce. EG 1415.409 B
1 pce. EG 0114.400 B
1 pce. EG 0716.409 B
1 pce. EG 0916.409 B
1 pce. MAD 1620.104 A/B
2 pcs. MA 1620.104 A/B
1 pce. SAD 1620/1620
1 pce. AD 1615/1620 B
1 pce. DKO 10.250 B
1 pce. DKO 12.250 B
1 pce. S2-SK 1620/SK 1620 x 1000
1 pce. MANO 060
1 pce. MANO 250
1 pce. MANO 400

Typical configuration of MESSKOFFER-K

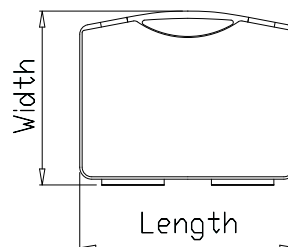
1 pce. EG 0104.409 B
1 pce. EG 0108.409 B
1 pce. EG 1010.409 B
1 pce. EG 1415.409 B
1 pce. EG 0114.400 B
1 pce. EG 0716.409 B
1 pce. EG 0916.409 B
1 pce. MAD 1620.104 A/B
2 pcs. MA 1620.104 A/B
1 pce. SAD 1620/1620
1 pce. AD 1615/1620 B
1 pce. DKO 10.250 B
1 pce. DKO 12.250 B
1 pce. S2-SK 1620/SK 1620 x 1000
1 pce. MANO 060
1 pce. MANO 250
1 pce. MANO 400
1 pce. AD 0102.0104-WD

Supplied with inlays and plugs, test equipment not included.

Box configuration on customer's request. Configurations shown are exemplary.

Other box sizes, configurations, boxes for ø100mm gauges, and customised design on request.

Labelling or silk-screen printing on box lid available for Type 2.



Type 1 MESSKOFFER



MESSKOFFER
Closed top



MESSKOFFER
With plugs



MESSKOFFER
Plugs removed



MESSKOFFER
With test equipment

Type 2 MESSKOFFER-K



MESSKOFFER-K
Closed top



MESSKOFFER-K
With plugs



MESSKOFFER-K
Plugs removed



MESSKOFFER-K
With test equipment