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Product Series  
Gas Link Systems

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 **KALLER**<sup>®</sup>

*The Safer Choice*

## Gas Link Systems



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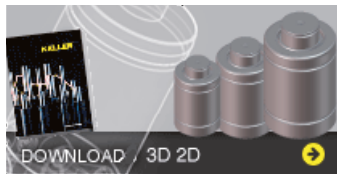
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KALLER is the AP&T standard for gas springs and gas link systems. In the Downloads section you will find the first choice shown in green. If use of components beyond standard is required, please contact the R&D Manager or the person responsible for the CAD Library.

**GREEN:** Preference 1. The items that are “first choice” for AP&T.

**UNCOLORED:** Items that are not provided with AP&T can be used after consulting AP&T.



Symbol for KALLER CAD  
Click to download appropriate CAD file

# GAS LINK SYSTEM

<b>About Gas Link Systems</b>	<b>1</b>
<b>Blocks and Accessories</b>	<b>2</b>
<b>Micro EO24™ Hose and Tube System</b>	<b>3</b>
<b>EZ-Hose System</b>	<b>4</b>
<b>EO24-Hose System</b>	<b>5</b>
<b>Hose Crimping Equipment</b>	<b>6</b>



# About Gas Link Systems

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<b>Linking system selection</b>	<b>Page 4.1/2</b>
---------------------------------	-------------------

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<b>General information</b>	<b>Page 4.1/4</b>
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<b>General precautions</b>	<b>Page 4.1/5</b>
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<b>Fitting assembly guidelines</b>	<b>Page 4.1/6</b>
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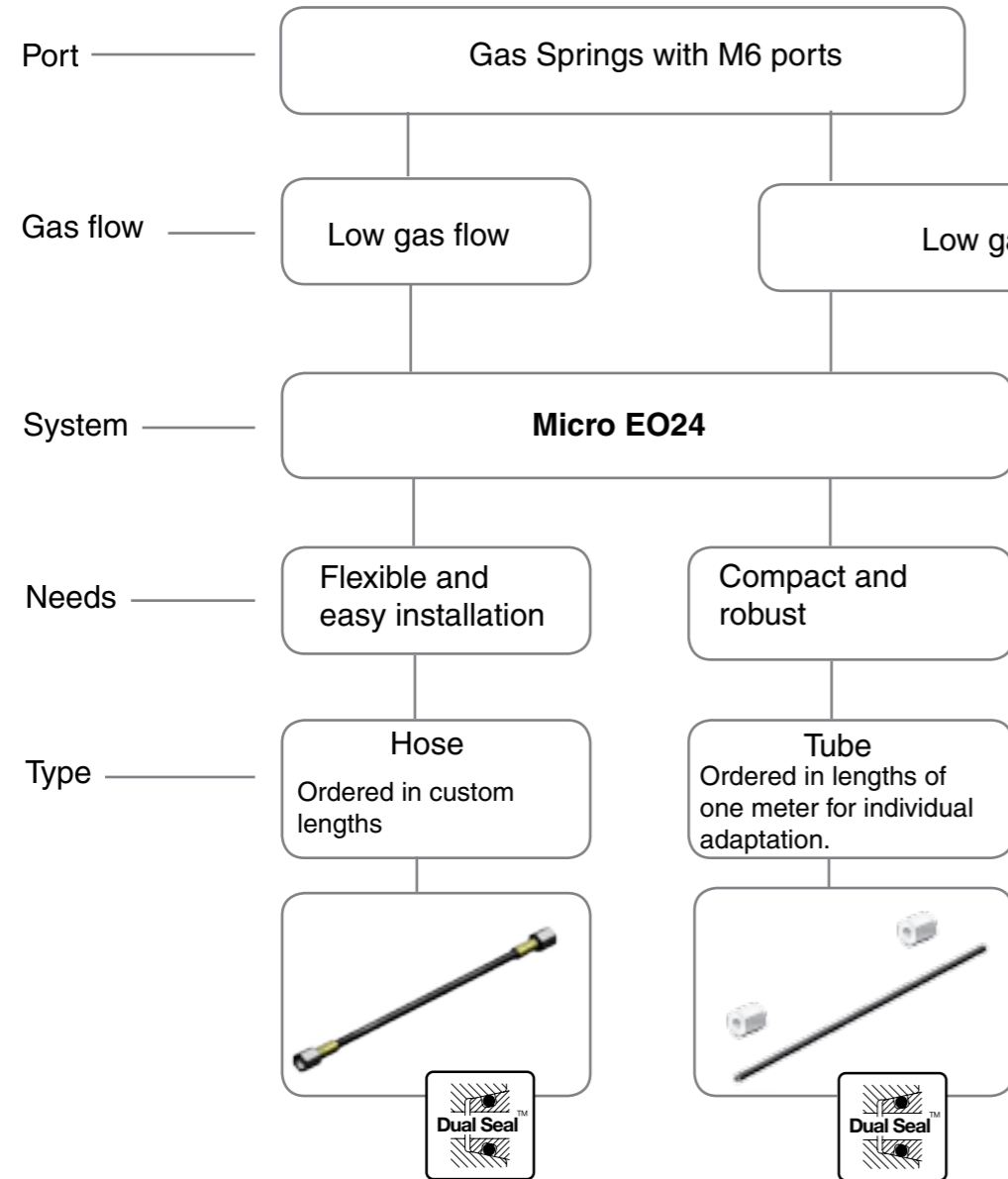
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<b>Hose installation guidelines</b>	<b>Page 4.1/8</b>
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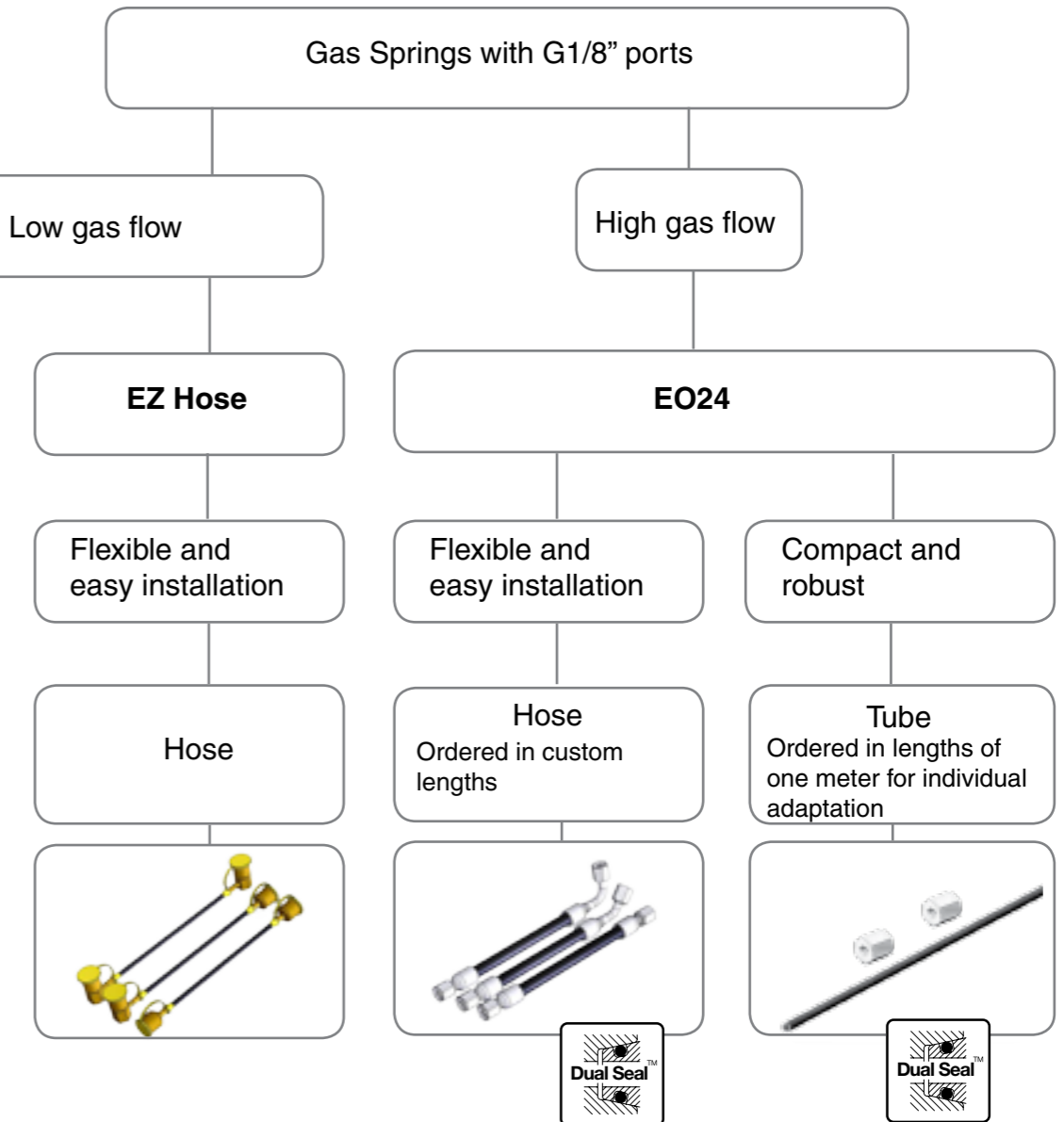
Linking System Selection

1



Linking System Selection

1



General Information

1 Connecting one or more gas springs to form a Link System with a common gas pressure may often be advantageous from a press technique and/or safety perspective.

Gas springs when connected in a Link System to a single Control Block can be easily charged and discharged without needing to open the press tool and remove the individual gas springs. The system pressure can also be remotely monitored and if need be, easily adjusted via the Quick Release Coupling and Discharge Valve.

KALLER offers three different Systems for linking gas springs, namely the **Micro EO24™** Hose and Tube system, **EZ Hose** and **EO24-Hose** systems. **Please note:** Micro-Hose system has now been replaced by the Micro EO24™ Hose and Tube system. Please contact your local distributor for more details.

KALLER has carefully selected all hoses, couplings and other component parts to ensure that they fully comply with the highest requirement standards. The various components have been subjected to rigorous testing, including endurance tests, static leakage tests and performance tests.

Gas Link System	Description
<b>Micro EO24™ Hose and Tube System</b>  	<p>The Micro EO24™ is a combined hose and tube system where the Hose System is a Dual Seal System and our most compact hose system, specially designed to allow gas springs with M6 charge ports to be linked together. Please note: Can also be used with G 1/8" charge ports via an adapter. Not interchangeable with old Micro-Hose System.</p>
	<p>The Micro EO24™ Tube is a system where all connections are soft sealed and self-crimping. This ensures leak-proof tube joints. The tubes are easily cut into correct lengths and can be bent into the desired radius with a tube bending tool or even by hand.</p>
<b>EZ Hose</b>	<p>The EZ Hose System is based on components that have couplings with O-ring seals, which allow hoses to be attached using only finger strength. The EZ Hose system is a well-proven, robust system that for many years has been the standard used in the French automotive industry.</p>

Gas Link System	Description
<b>EO24-Hose and Tube System</b>  	<p>The EO24 system is mainly for larger gas springs with G 1/8" ports. The EO24 hose is recommended whenever high gas flows are required, for example when using the Passive Spring KP in a Controllable Gas Spring system.</p>
	<p>When using larger gas springs with G1/8" ports for the need of higher gas flow, we recommend use of the EO24 system where all connections are soft sealed and self-crimping. This ensures leak-proof tube joints. The tubes are easily cut into correct lengths and can be bent into the desired radius with a tube bending tool.</p>

About Control Blocks

KALLER offers a wide range of Control Blocks for gas pressure monitoring and adjustment. (For more information, please see section 4.2.)

About Hose Crimping equipment

KALLER offers all the necessary equipment to create your Hose System by press fitting hoses to couplings. (For more information, please see Hose Crimping equipment in section 4.6.)

CAUTION!

Do not modify the product in any way. For more information on hoses/linked systems, please contact Strömsholmen ([www.kaller.com](http://www.kaller.com)) or your local KALLER distributor.

General precautions

For reasons of performance and safety, when designing a Hose System it is important the following points are considered:

- When one or more gas springs are connected to a hoses/linked system, the discharge valve in each spring must first be removed.
- Position the Control Block in the tool where it will be protected from mechanical damage and on a level higher than the gas springs in the system to minimize the loss of lubrication oil when discharging the gas.
- Use only nitrogen (N<sub>2</sub>) gas. The use of other gas types could result in personal injury or failure of the gas spring/Control Block.
- Never exceed the maximum gas charging pressure, which is marked on the side of the gas spring tube.
- Generally, the maximum charging pressure at 20°C is 150 bar for standard press tool gas springs.
- All the valves on the Control Block should be closed during operation.
- All gas springs that are hoses/linked together should be of the same size and type.
- To avoid gas leakage, use only components that have been tested by KALLER.
- **Do not use Control Blocks that are fitted with a Rupture Screw for gas springs with a charging pressure of 180 bar at 20°C.**

Fitting assembly guidelines EO24 and Micro EO24™

1 Assembly of straight port connections, two-, three- and four-way adapters and port plugs



1. Screw until hand-tight



2. Then tighten wrench-tight (if possible apply a torque according to next page)

Assembly of swivel nut fittings and hose ends

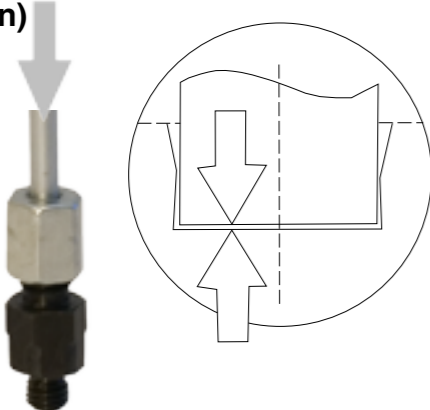


1. Screw on nut until the O-ring is fully compressed (hand-tight)

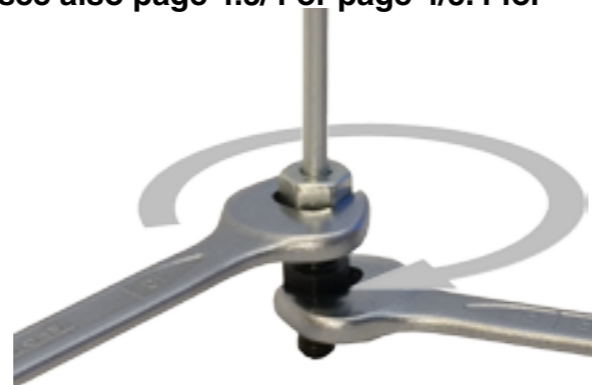


2. Then tighten until sharp increase of resistance, ¼ to ½ turn (if possible use a torque according to next page)

Assembly of steel Functional nut 504589/504047 (see also page 4.3/4 or page 4/5.4 for more information)



1. Press tube end firmly into the assembly cone



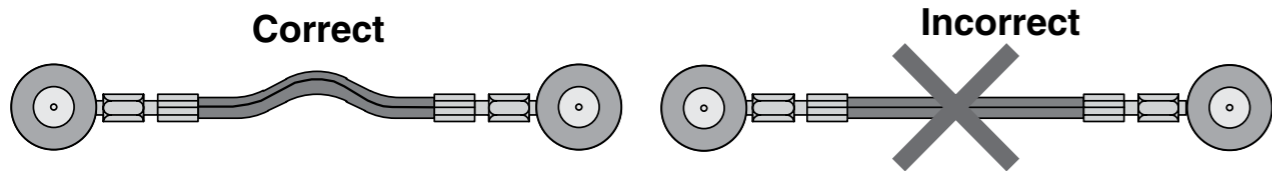
2. Then tighten until sharp increase of resistance, approximately 1 turn (if possible apply a torque according to next page)

Component	Thread Size	Nominal Torque (Nm)
Micro EO24 Port adapters	M6	7
Micro EO24 Hose end	M8	7
Micro EO24 Functional nut	M8	7
Port plug	M6	2
EO24/EZ Port adapters	G1/8"	18
	G1/4"	35
EO24 Functional nut	M12	16
EO24 Swivel nut fitting	M12	16
EO24 Hose end	M12	16
EZ Hose end	S12,65x1.5	Hand-tight
Port plug	G1/8"	13
	G1/4"	30

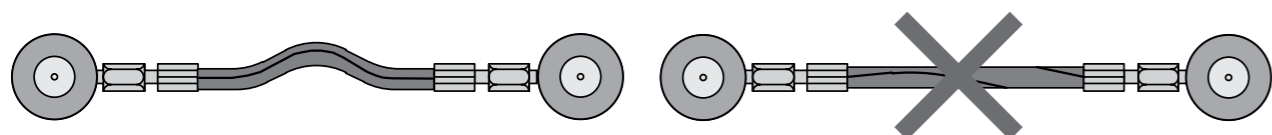


### Hose installation guidelines

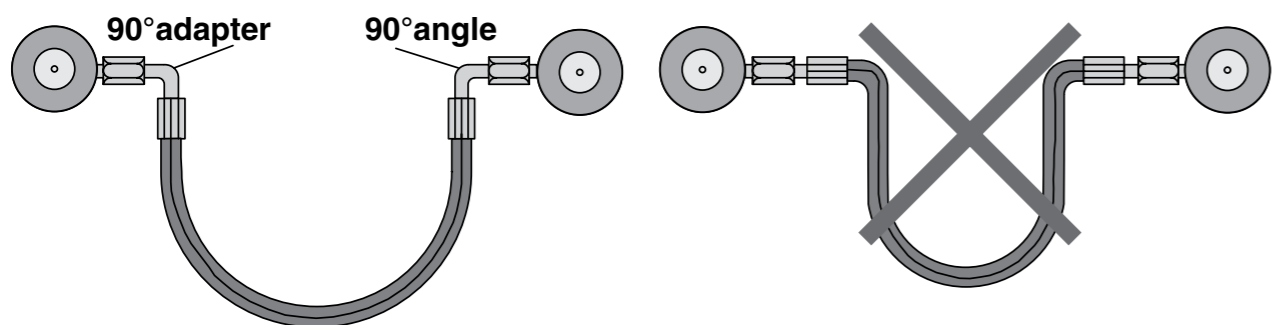
1 Never exceed the maximum values given for pressure and temperature for the hoses. Make sure all hoses and couplings are perfectly clean before fitting.



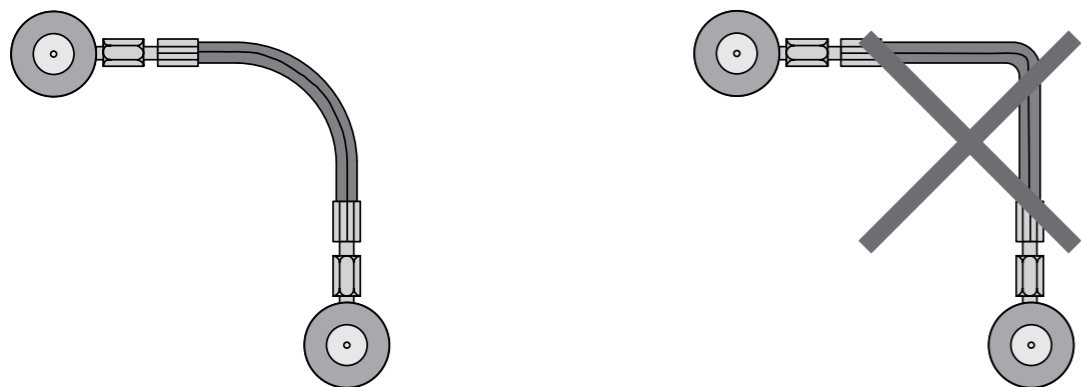
Select a hose length that will allow for a certain amount of play.



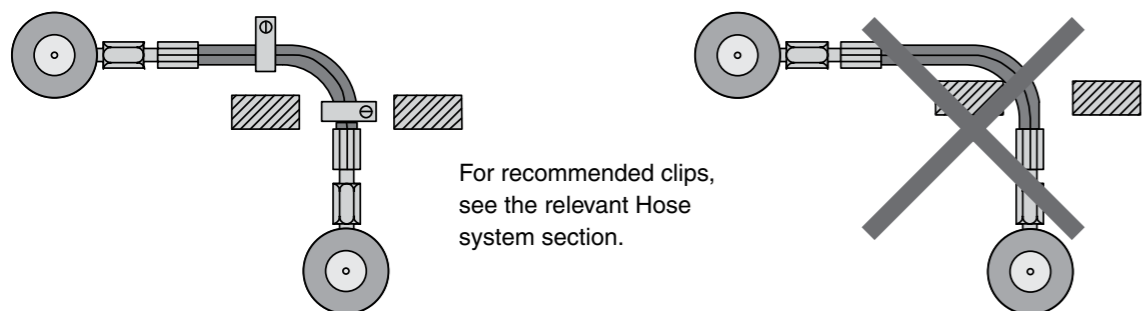
The longitudinal marking on the hose must not be twisted after fitting.



Select hose couplings that avoid sharp bends in the hose.



Never go below the recommended minimum bend radius of the hose.



For recommended clips, see the relevant Hose system section.

Fix the hose correctly to avoid mechanical damage.

## Blocks and accessories

Charging Block, 3014206



Page 4.2/2

Control Block, 3116114-XX



Page 4.2/3

Control Block, 4017241



Page 4.2/4

Control Block, 2014325



Page 4.2/5

Section Control Block



Page 4.2/6

Multi-Coupling Blocks



Page 4.2/8

Charging & Control Block Accessories

Page 4.2/10

Micro EO24™ Block

Page 4.3/8

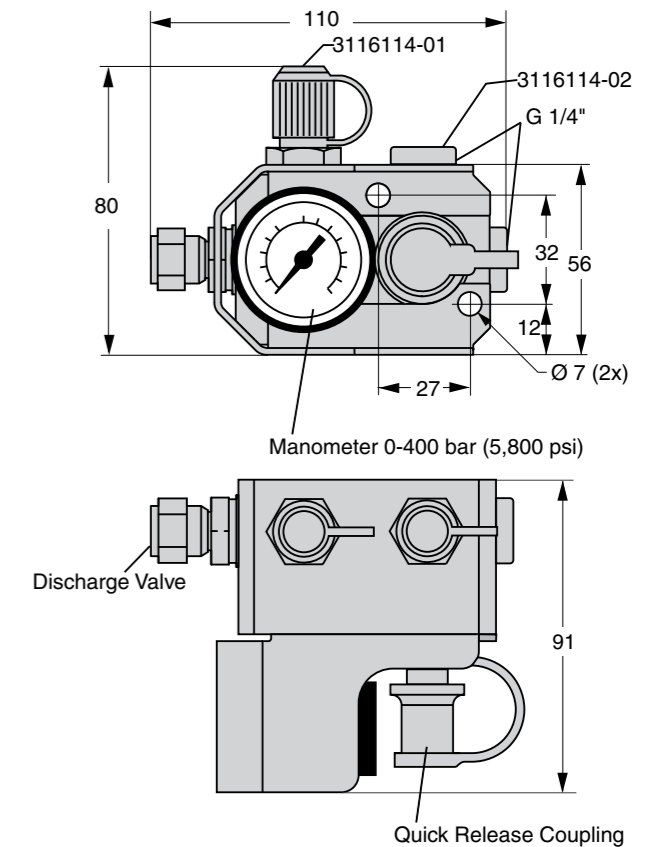
## Notes

## Control Block

## Order No.

3116114-01 (with 2 pcs EZ Hose G1/4" adapters)

3116114-02 (with all ports plugged)



The 3116114 Control Block is a very compact aluminum block with protective stainless steel cover that complies with the CNOMO standard.

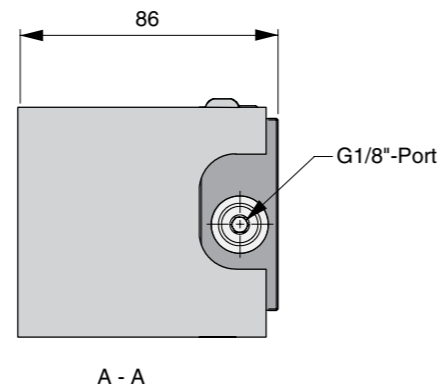
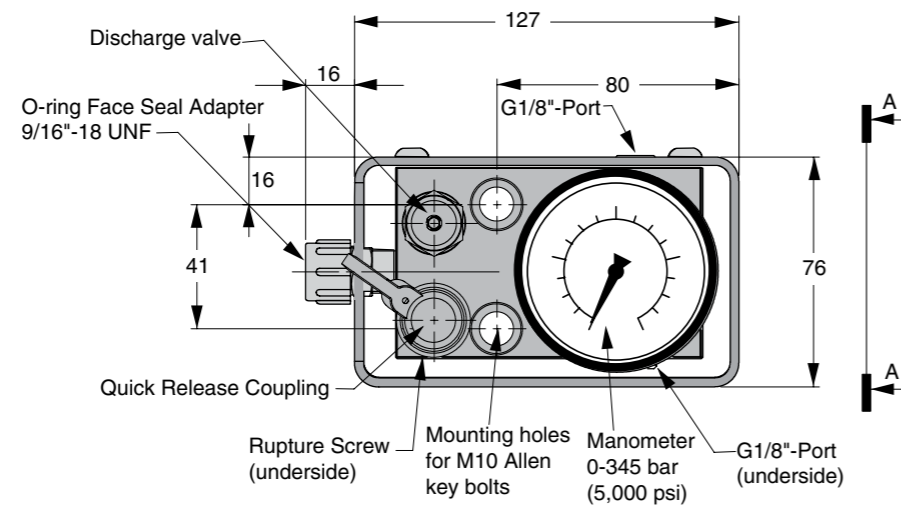
This block is intended for continuous monitoring of the gas pressure in the Hose System.

It is fitted with a manometer (0 – 400 bar/5,800 psi), a Quick Release Coupling for gas charging and a Discharge Valve for gas evacuation.

The block has three G1/4" connection ports, one of which can be used to connect a Pressure Relief Safety Screw or a Pressure Switch.

## Control Block

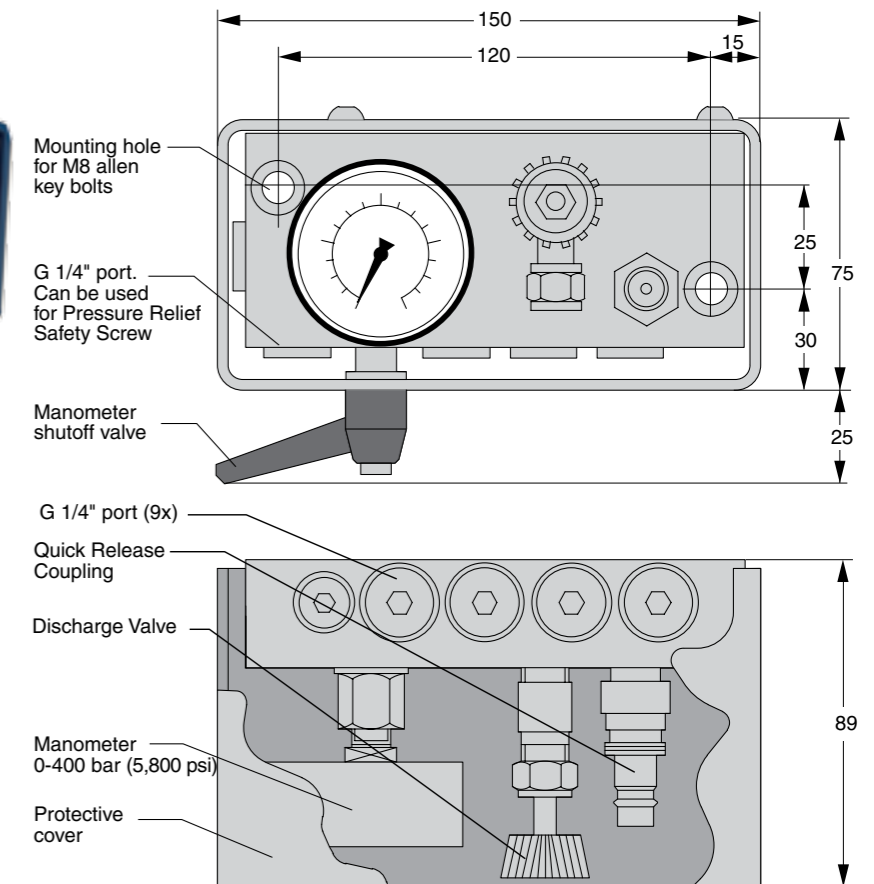
Order No. 4017241



The 4017241 Control Block is a compact aluminum block with protective steel cover that complies with the Ford, Chrysler and GM die standards. This block is intended for continuous monitoring of the gas pressure in the Hose System. It is fitted with a manometer (0 – 345 bar/5,000 psi), a Quick Release Coupling for gas charging, a Discharge Valve for gas evacuation and a Rupture Screw for overpressure protection. The block has four G1/8" connection ports, with the left-hand port featuring a 9/16"-18 UNF O-ring face sealed hose adapter. It can also be used with EO24 and EZ Hose systems.

## Control Block

Order No. 2014325



The 2014325 Control Block is a compact aluminum block with protective steel cover and a manometer shutoff valve.

This block is intended for continuous monitoring of the gas pressure in the Hose System when the manometer shutoff valve is open. The shutoff valve can subsequently be closed in order to protect the manometer from pressure pulsations during operation, thus extending its service life.

The Control Block is fitted with a manometer (0 – 400 bar/5,800 psi), a Quick Release Coupling for gas charging and a Discharge Valve for gas evacuation.

The block has nine G1/4" connection ports, four on the top, four on the bottom and one on the right-hand side.



# Charging & Control Blocks

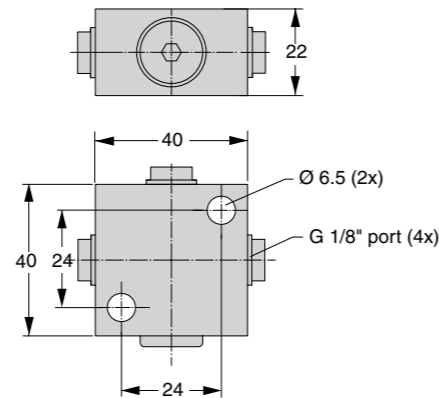


## Multi-Coupling Blocks

Order No. 4017032



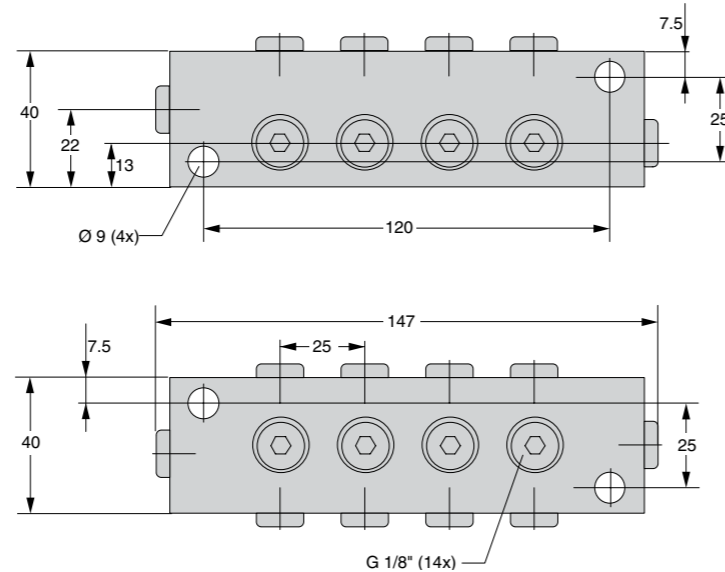
This is a small and compact block for linking hoses. The block has four G1/8" connection ports. On delivery, one of the ports is fitted with a sealing plug, while the other three ports are fitted with plastic protective covers only.



Order No. 3015044

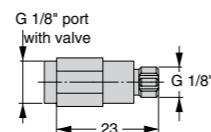


The Multi-Coupling Block 3015044 is manufactured in steel and has fourteen G1/8" connection ports. On delivery, all ports are fitted with sealing plugs.



Order No. 3015303-01

This Valve Adapter is available as an accessory and can be fitted to one of the G1/8" connection ports. The adapter has the same G1/8" valve port as found on standard gas springs. The Multi-Coupling Block can then be used as a charging block to enable gas charging and evacuation using gas spring charging equipment.

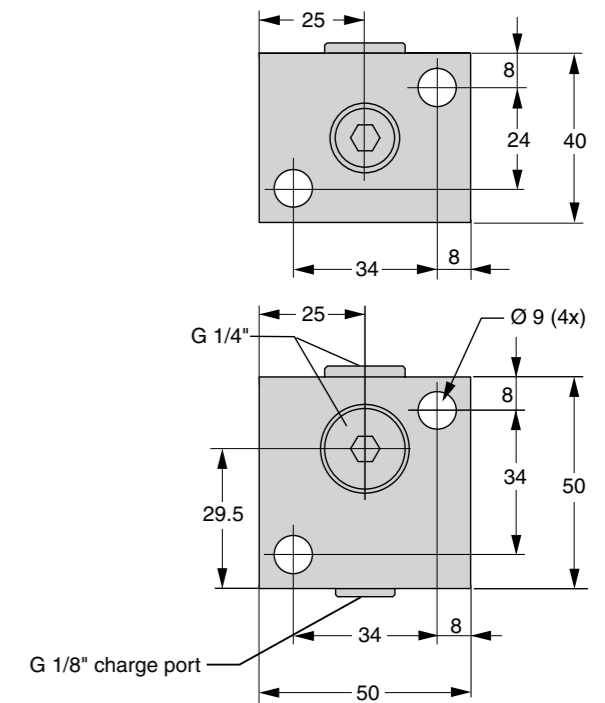
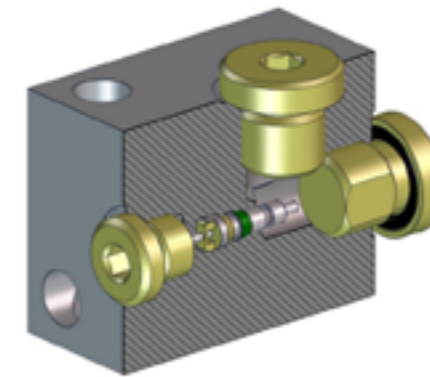


# Charging & Control Blocks



## Charging Block

Order No. 3014206



The 3014206 Charging Block comes with two G1/4" connection ports and a G1/8" charge port, identical to that found on standard gas springs. The G1/8" charge port allows gas charging of the Hose System using the gas spring charging armature. One of the G1/4" connection ports can also be used to connect a Pressure Relief Safety Screw or a Pressure Switch. (For more information, please see Charging & Control Block accessories).

**Pressure Switch**

The Pressure Switch is ideal for gas pressure control and monitoring in hoses/linked systems and can be connected to both control blocks and distribution blocks that have G1/4" connection ports.

If there is no M1/4 port available in the existing hose/ tube system, an additional connection block (3022143) with suitable hose/tube has to be connected.

The Pressure Switch contains two separate set-points:

- S1 - Normally Open (NO)
- S2 - Normally Closed (NC)

These set-points can be easily adjusted to either make or break an electrical circuit if the system pressure should drop below or rise above the set trigger pressures.

For example:

If S1 is set to 100 bar and S2 is set to 200 bar, then S1 will make a circuit connection if the system pressure falls below 100 bar. S2 will break a circuit connection if the system pressure rises above 200 bar. The set-points can be used simultaneously or individually depending what system pressures require monitoring.

**Electronic Pressure Switch**

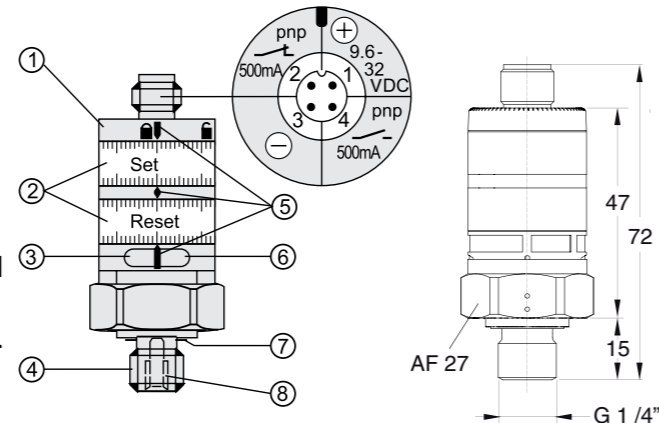
**Order No. 504320**

The electronic pressure switch has a very compact construction and allows for the control and monitoring of two pressure limits. It is recommended to use this switch when it is necessary to stop the process if the pressure in the gas spring is lower or higher than the decided values.

**Note!** The unit must be connected by a suitably qualified electrician. The national and international regulations for the installation of electrical equipment must be observed.

**Electronic Pressure Switch data:**

Electrical connection	M12x1 (4-pin)
Pressure connection	G1/4"
Protection class	IP67
Working range	0 - 400 bar
Max. pressure	600 bar
Burst pressure	1,600 bar
Voltage	9.6 - 32 VDC
Switching current	500 mA
Switching frequency	100 Hz
Current consumption	≤ 25 mA
Temperature range	-25 to +80 °C
Weight	100 g
Max. deviation	≤ ±2.5 %



1. Locking ring
  2. Setting rings (manually adjustable after unlocking)
  3. Green LED: supply voltage O.K.
  4. Process connection G¼ A; tightening torque 25 Nm
  5. Setting marks
  6. Yellow LED: set value reached, OUT1 = ON / OUT2 = OFF
  7. Sealing FPM / DIN 3869-14
  8. Internal thread M5
- Minimum distance between Set and Reset = 2% of the final value of the measuring range.
  - To obtain the setting accuracy: Set the rings to the minimum value, then set therequested value.



**Digital Pressure Switch Monitor**

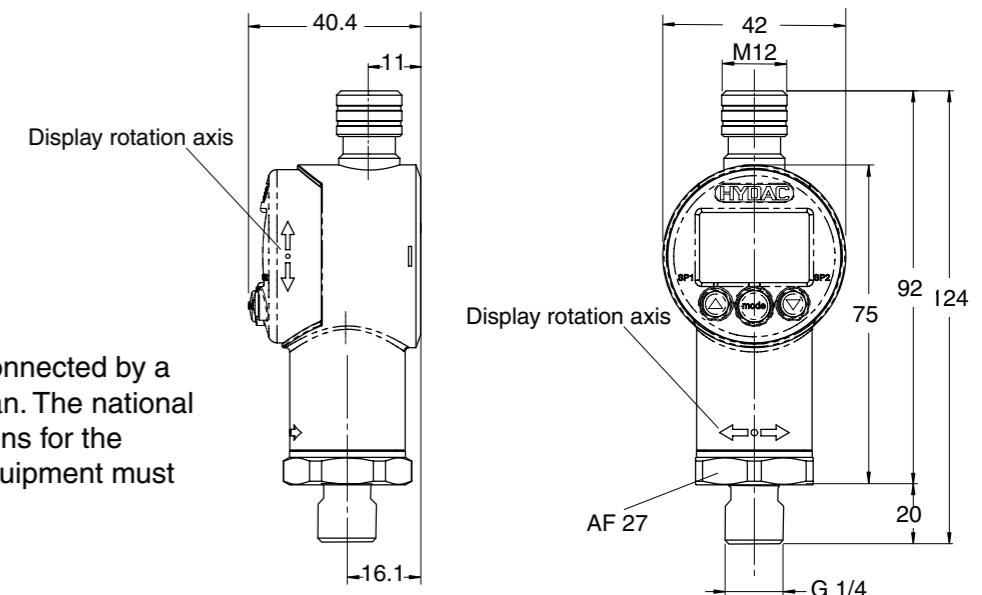
**Order No. 504107**

The Digital Pressure Switch has a very compact construction and allows for the control and monitoring of two pressure limits. It is recommended to use this switch when it is necessary to stop the process if the pressure in the gas spring is lower or higher than the decided values.

The Digital Pressure Switch is equipped with a 4 digit digital display which can show the pressure in either bar, PSI or MPa. The display can also be rotated in two axis excluding the need for a swivel adapter to get the display in the direction desired. The switch has two switching outputs that are easily programmed by the keys on the front. Pressure working range is 0 up to 400 bar.

**Digital Pressure Switch data:**

Set-points	2 PNP transistor switching outputs
Electrical connection	M12x1 (4-pin)
Pressure connection	G1/4"
Protection class	IP67
Working range	0 - 400 bar
Max. pressure	800 bar
Burst pressure	2000 bar
Voltage	9 - 35 VDC
Switching current	max. 1.2 A
Current consumption	≤ 35 mA (inactive switching outputs)
Temperature range	-25 to +80 °C
Weight	120 g
Max. deviation	≤ ±1 % (relative to full measuring range)

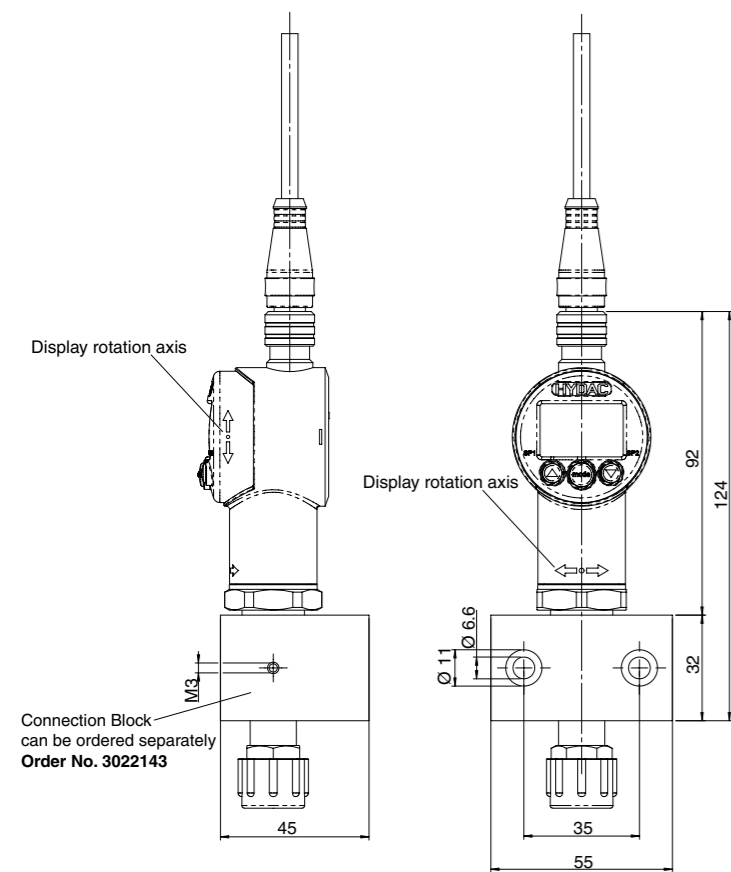


**Note!** The unit must be connected by a suitably qualified electrician. The national and international regulations for the installation of electrical equipment must be observed.

**Digital monitoring kit**

Order No. 3021172

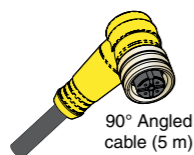
In accordance with GM standard 90.25.225, a Digital Monitoring Kit is available, supplied with a block (3022143) and a 5 m cable with a straight or 90° angled cable contact.



Cable (5 m) with straight cable contact  
Order No. 504105



Cable (5 m) with 90° angled cable contact  
Order No. 504161



- 1. + Current feed 9 - 35 VDC    Brown
- 2. Set-point 1                    White
- 3. - Current feed (0V)            Blue
- 4. Set-point 2                    Black

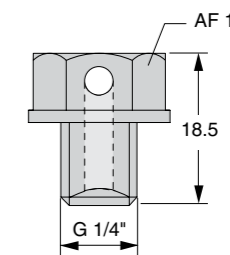
**Pressure Relief Safety Screw**

Order No. 502179

The G1/4" Pressure Relief Safety Screw can be attached to a Hose System to protect hoses and system components from excessively high gas pressures.

The static rupture pressure is 360 bar ±5 % at +20°C, and to achieve maximum service life, the screw should not be exposed to dynamic pressure pulsations exceeding 275 bar.

Note: The G1/4" Pressure Relief Safety Screw is not recommended for Hose Systems where initial gas charging pressure at 20°C exceeds 150 bar.



**Pressure Switch**

Order No. 4021247 (Straight Cable Contact)

Order No. 4121247 (90° Cable Contact)

The Semi-Electronic Pressure switch is ideal for gas pressure monitoring in hoses/linked systems and can be connected to both Control Blocks and Distribution Blocks that have G1/4" connection ports.

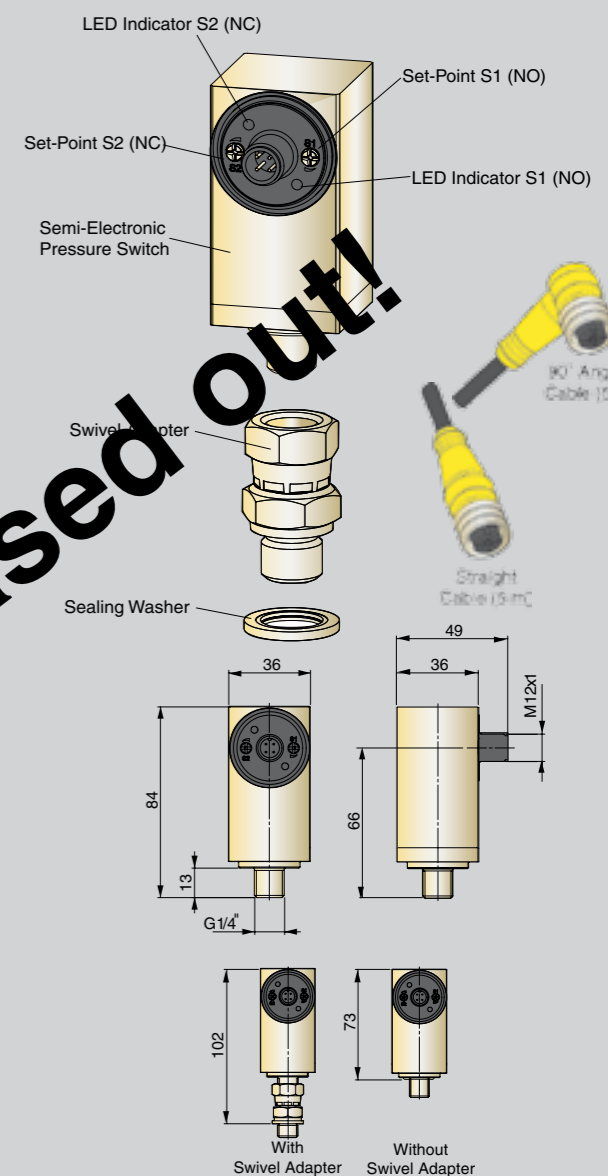
The pressure switch contains two separate set-points:  
S1 - Normally Open (NO)  
S2 - Normally Closed (NC)

These set-points can be easily adjusted to either make or break an electrical circuit if the system pressure should drop below or rise above the set trigger pressures.

For example:

If S1 is set to 100 bar and S2 is set to 200 bar, then S1 will make a circuit connection if the system pressure falls below 100 bar. S2 will break a circuit connection if the system pressure rises above 200 bar. The set-points can be used simultaneously or individually depending what system pressures require monitoring.

Electrical connection	M12 x 1 (4-pin)
Pressure connection	G 1/4"
Protection class	IP65
Working range	25 -250 bar
Max. pressure	500 bar
Voltage	10 - 30 VDC
Current	max. 100 mA
Temperature range	-20 to +80 °C
Max. deviation	≤ 1% of end value



Pressure Switch is delivered complete with Sealing Washer, Swivel Adapter and 5 m cable with either straight or 90° angle contact (see Order No.)

# Charging & Control Block accessories



## Gas charging equipment

Our gas charging equipment is available with or without a Pressure Regulator (recommended with) for nitrogen gas charging of self-contained gas springs and/or hosed systems and is delivered in a robust and portable plastic case. A charging hose with a length of 2 meters is included as standard.

Different countries have different bottle connections. Make sure the correct connection code is selected according to the table below. When ordering equipment, including a regulator and charging hose, the connection thread is always according to B. If ordered without a regulator, the connection on the hose is according to A.

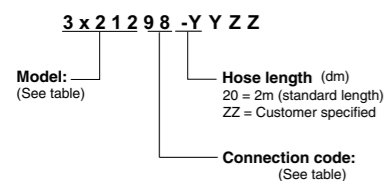
Hosed systems can be charged via a Control Block using the female quick release coupling (QRC) with shutoff valve. By attaching the Control Armature with male QRC, self contained gas springs can be charged using a suitable Charge Port Adapter.

The following tables indicate the various combinations of Gas Charging Equipment available:

Order No.	Pressure regulator:	Charging hose	Control armature: 4215072	Protective case: 2024238
3021298 - YYZZ	X	X	X	X
3121298 - YYZZ	--	X	X	X
3221298 - YYZZ	X	X	--	X
3421298 - YYZZ	X	X	X	--
3521298 - YYZZ	--	X	X	--
3621298 - YYZZ	X	X	--	--
3721298 - YYZZ	--	X	--	--

Connection code (YY)	Country example	Threads		Pressure regulator can be ordered separately using Order No.*
		A Bottle connection	B Regulator connection	
01	Sweden	W24.32x1/4"female	W24.32x1/14"	4021296
02	India	G 5/8" male	W24.32x1/14"	4121296
03	China	G 5/8" female	W24.32x1/14"	4221296
04	UK	G 3/8" female	W24.32x1/14"	--
05	USA/Canada	CGA-580 or CGA-680	CGA 580 & 680	8700-3000-680

### How to order:



\*When connecting a Pressure Regulator to a Charging Hose, the connection must be according to B. Connection B with W24.32x1/14" female for charging hose can be ordered separately, Order No. 4013715.

# Micro EO24™ Hose and Tube System

Micro EO24™ Page 4.3/2

Micro EO24™ Hose Page 4.3/3

Micro EO24™ Tube Page 4.3/4

Micro EO24™ Adapters Page 4.3/5

Micro EO24™ Block Page 4.3/8



**Micro EO24™ Hose and Tube System**

The Micro EO24™ Hose and Tube System is our most compact, soft sealed gas link system. It is a flexible system, including both a dual seal hose system and a soft sealed tube system using the same adapters.

3



Micro EO24™ Hose and Tube can now be combined in the same gas link system.

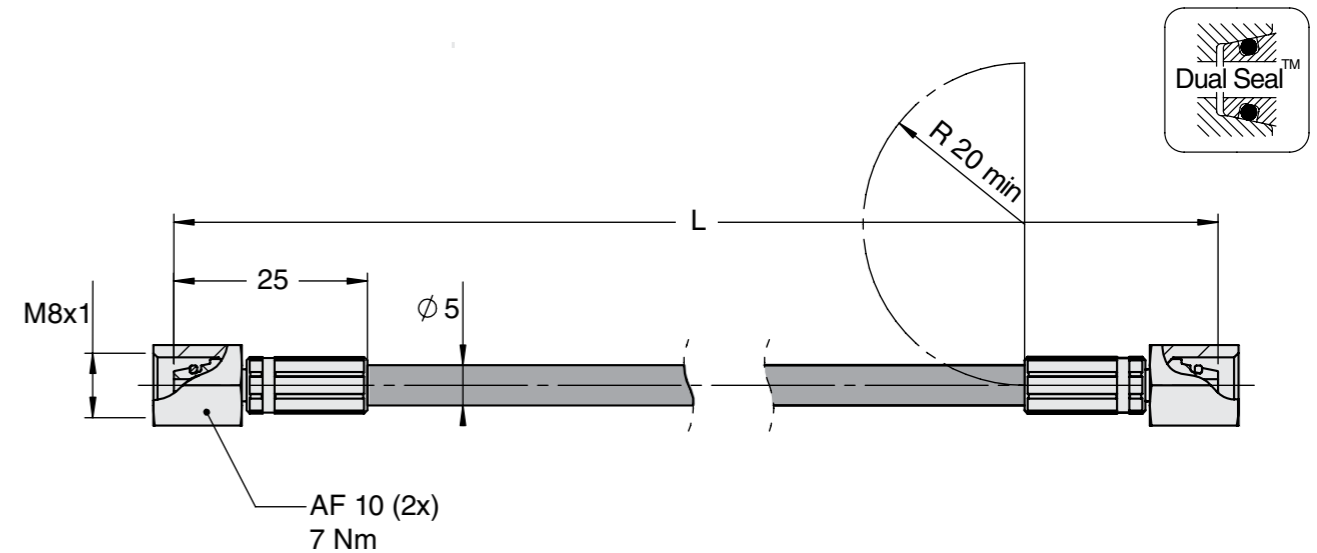
**Micro EO24™ Hose**

The Micro EO24™ Hose is a Dual Seal System and our most compact hose system available and takes full benefit of the two integrated metal and soft sealing systems. This ensures double leak proof joints as well as rotational protection.

The Hose System shares the same adapters and connectors as the Micro EO24™ Tube System, resulting in a wide range of flexible installation possibilities.

G1/8" and G1/4" ports can also be connected to the Micro EO24™ with the use of an appropriate adapter. A number of different standard hose lengths are available (see table below). Custom hose lengths can also be ordered **from 100 mm upwards**. Subsequent numbers are added to the order number according to the length required, e.g. hose length 2,500 mm = Order No. 4023500-2500.

3



Micro/EZ-Hose clip, **Order No. 502646**  
(Can be used to secure hoses using an M5 screw)

Order No	L (mm)
4023500-0100	100
4023500-0200	200
4023500-0300	300
4023500-0400	400
4023500-0630	630
4023500-0800	800
4023500-1000	1000
4023500-1500	1500
4023500-2000	2000
4023500-XXXX	XXXX*

\*\*For customer specified lengths.

\* Minimum recommended L = 75 mm

**Basic Information**

- Material ..... Polyamide, black
- Dimension ..... Ø 5 mm exterior (5/64)
- Volume ..... 3 ml/metre
- Outer casing ..... Perforated
- Min. bend radius ..... 20 mm
- Max dynamic working pressure ..... 475 bar
- Min. burst pressure ..... 1900 bar at +20° C
- Operating temperature ..... -20 - +80°C

# Micro EO24™ Tube

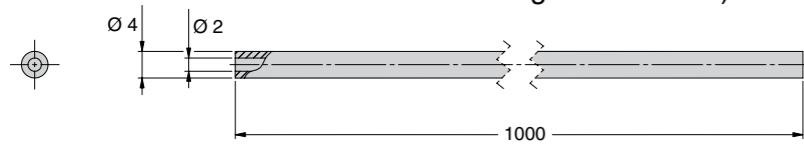


## Micro EO24™ Tube

The Micro EO24™ Tube is a system for linking gas springs together. As the name suggests, Micro EO24™ Tube is a tube system where all connections are soft sealed and self-crimping. This ensures leak-proof tube joints. The tubes are easily cut into correct lengths and can be bent into the desired radius with a tube bending tool or even by hand.

There are numerous options for connecting tubes to gas springs and Control Blocks. Various adapters are available allowing the Micro EO24™ Tube to connect to almost all KALLER gas springs and Control Blocks. All adapters and their dimensions are presented on the following pages.

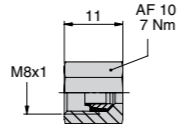
Tube  
(delivered in 1 m lengths)  
**Order No. 504594**



Micro/EZ Hose clip,  
**Order No. 502646**  
(Can be used to secure hoses using an M5 screw)



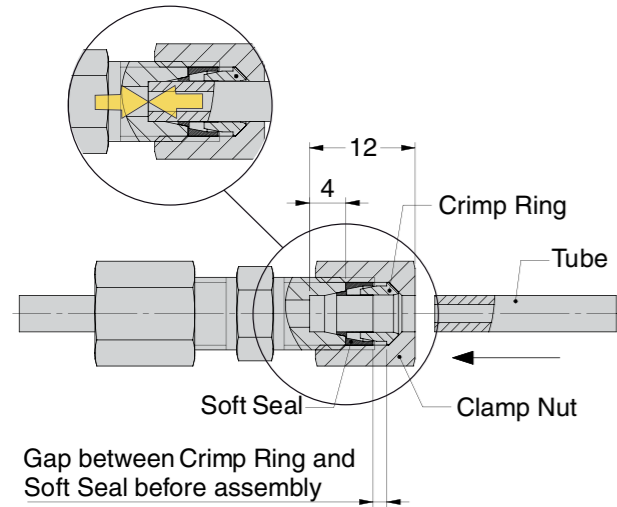
Clamp Nut  
**Order No. 504589**



## Using Micro EO24™ Tube

To cut the tube, a hacksaw can be used.

**Note:** Cutting angle 90° ±1°. If a regular tube cutter or cutting pliers are used, the tube might become clogged resulting in zero or limited gas flow. After cutting, de-burr the tube both inside and outside (max. 0.3 x 45° or R0.3) using the Tube De-burring Tool below. Make sure the tube is cleaned after cutting and de-burring. Use compressed air to remove all loose particles. Fit the clamp nut onto the adapter.



Gap between Crimp Ring and Soft Seal before assembly

## Basic Information

Tube external diameter.....	Ø 4 mm
Tube internal diameter.....	Ø 2 mm
Min. bend radius.....	12 mm (3 x e.d.)
Tube material.....	Seamless steel tube St. 37.4 (Parker Order No. R04X1CF)
Max. dynamic pressure (system).....	430 bar
Min. burst pressure (system).....	1100 bar
Max. working temperature.....	100 °C *
Tube min. recommended length.....	75 mm

\* Micro EO24™ Tube for high temperature applications is available on request.

**Note:** Do not tighten! Run the tube through the nut until it stops (~12 mm from the top surface of the nut). When tightening the nut, use a torque of 7 Nm. Recommended tools to have available: hacksaw, tube cutting fixture, tube bending tool, de-burring tool, compressed air and a torque wrench (AF 10 mm, 7 Nm).



Tube Deburring Tool  
**Order No. 505096**



Tube Bending Tool (Bend radius 20 mm)  
**Order No. 504711**



# Micro EO24™ Adapters

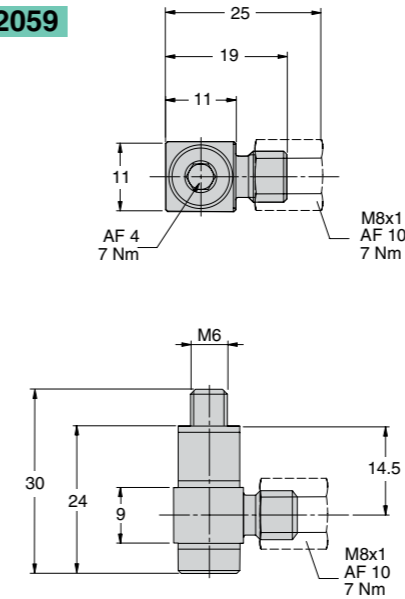
## Adapters for Gas Spring Charge Ports

Following adapters are used to connect Micro EO24™ hoses and tubes to gas springs with M6 charging port:

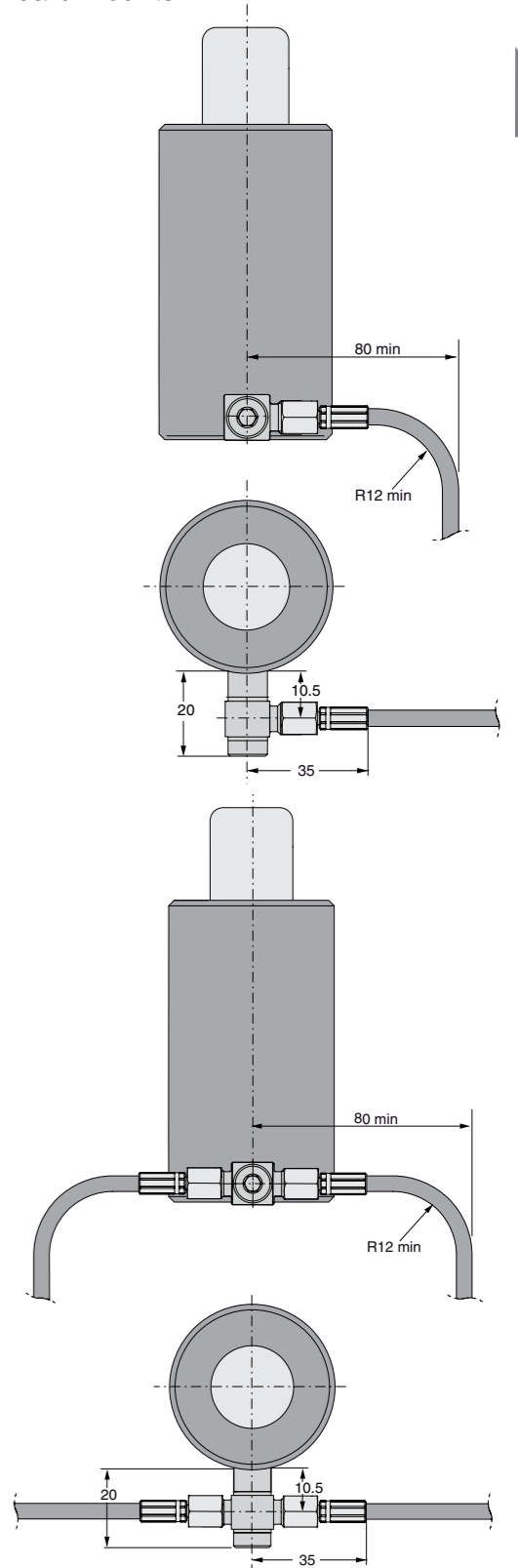
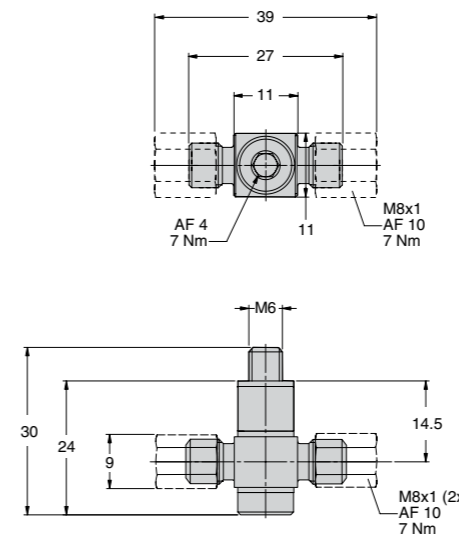
Using G 1/8 adapters (see 4.3/7) the M6 adapters can be connected (retrofitted) to springs with G 1/8 ports. All gas springs charge ports adapters fit into our standard mounts.

**Note! When using tubes, please order Functional nut No. 504589 separately.**

Banjo Elbow M6  
**Order No. 4022059**



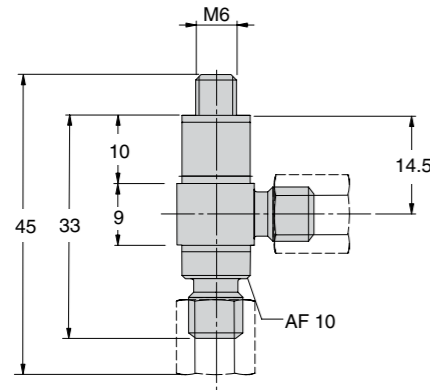
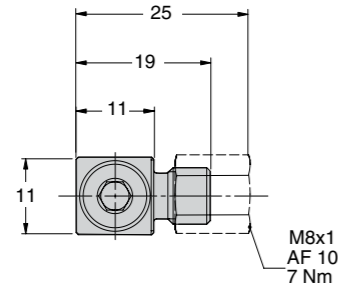
Banjo Tee M6  
**Order No. 4022061**



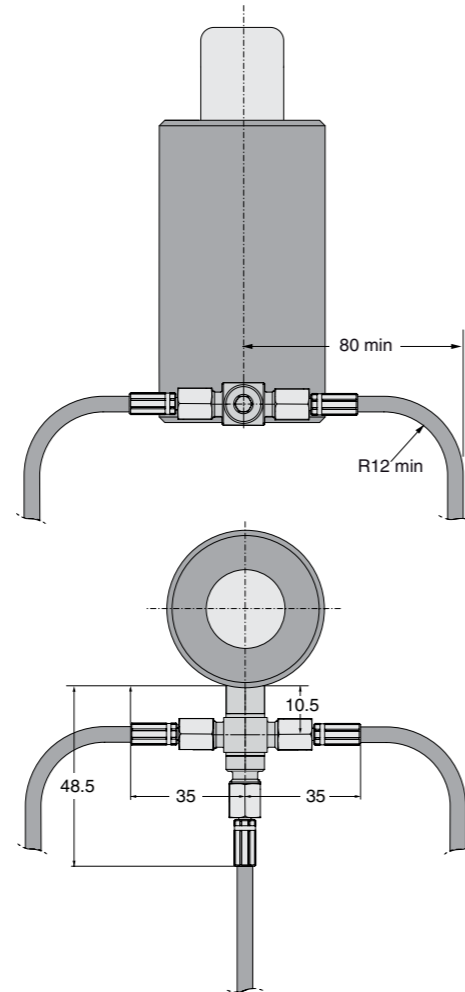
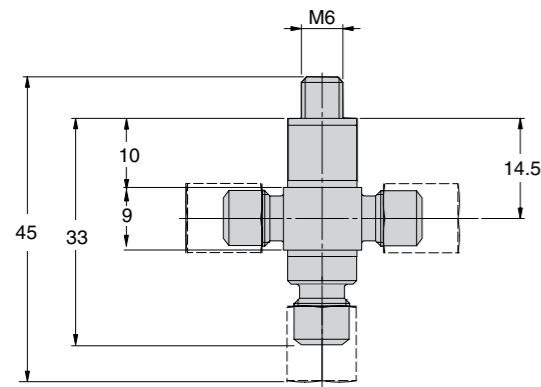
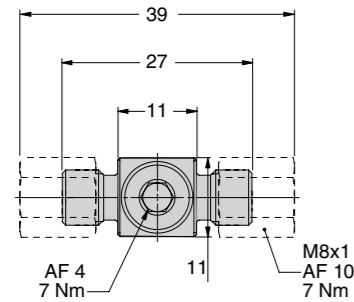
# Micro EO24™ Adapters



Banjo Run Elbow M6  
Order No. 4024092



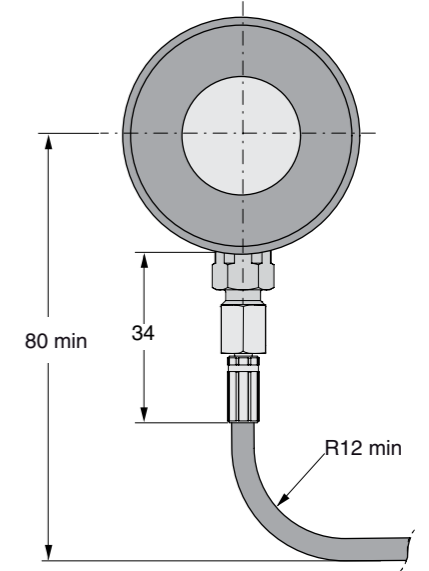
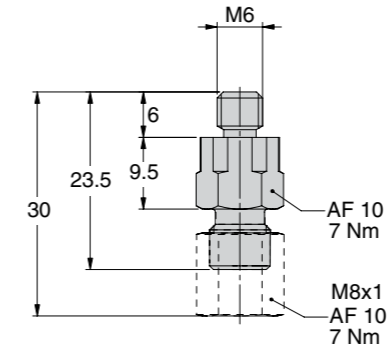
Banjo Run Tee M6  
Order No. 4024348



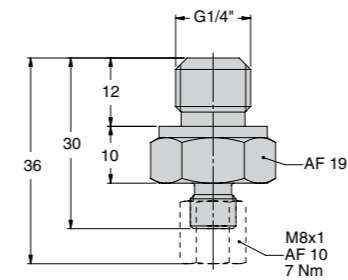
# Micro EO24™ Adapters



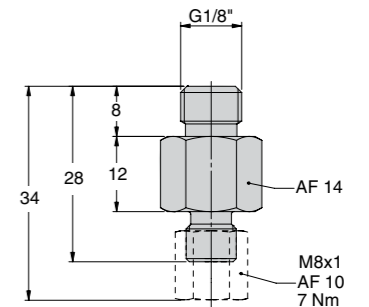
Straight Adapter M6  
Order No. 4022057



Straight Adapter G1/4"  
Order No. 4022063



Straight Adapter G1/8"  
Order No. 4022058



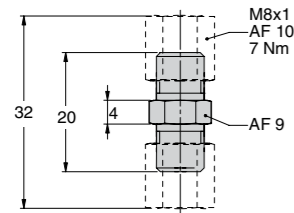
# Micro EO24™ Adapters



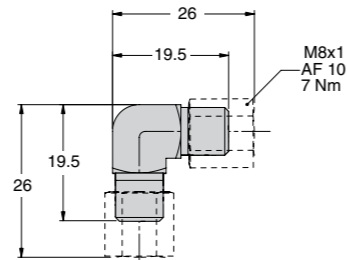
## Hose to Hose, Tube to Tube or Hose to Tube Couplings

Note! When using tubes, order Functional nut No. 504589 separately.

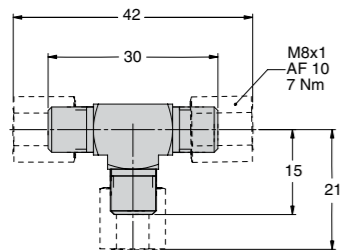
Union Straight  
Order No. 504590



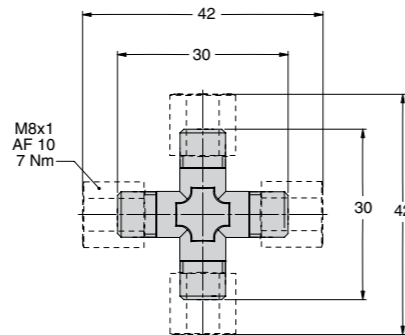
Union Elbow  
Order No. 504591



Union Tee  
Order No. 504592



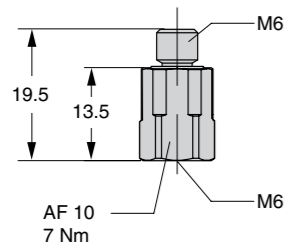
Union Cross  
Order No. 504593



## M6 charge port to Micro EO24™ Hose and Tube Adapters

Male/Female Connector M6  
Order No. 503762

Extension for gas springs using foot mounts



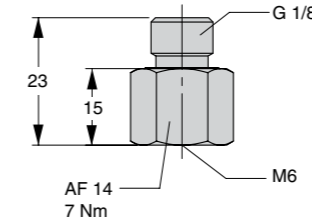
# Micro EO24™ Adapters



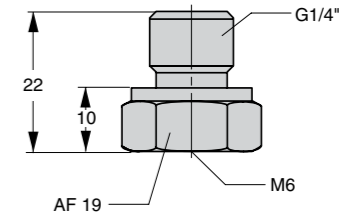
## Micro EO24™ Hose and Tube Adapters for G1/8" and G1/4" Connection Ports

Note! When using tubes, order Functional nut No. 504589 separately.

Thread Reducer G 1/8" to M6  
Order No. 503764



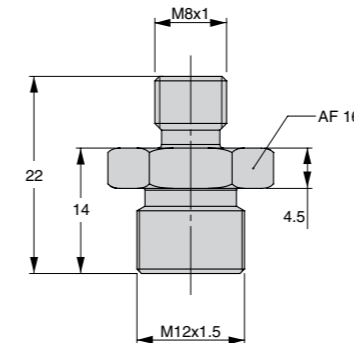
Thread Reducer G 1/4" to M6  
Order No. 503966



For connection to angled Micro EO24™ Hose Adapters

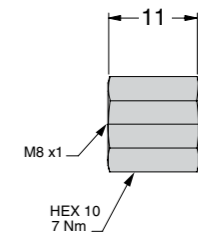
## Micro EO24™ Hose and Tube Adapter for EO24 M12 hose

Male Stud Connector M8 to M12  
Order No. 4024351



## Micro EO24™ Cap/Plug

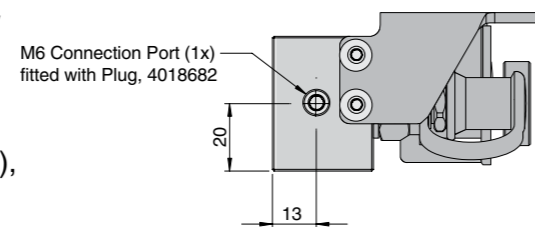
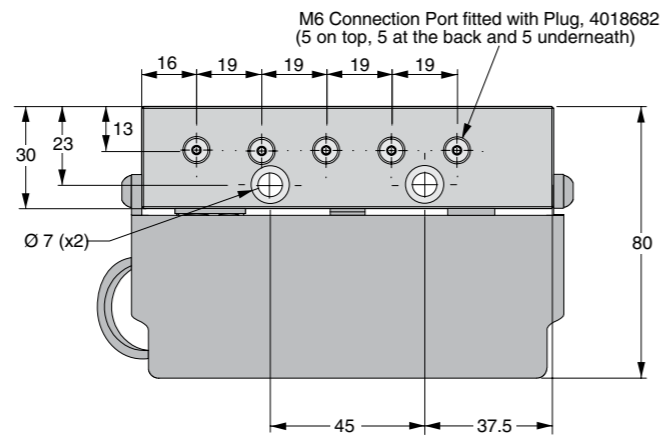
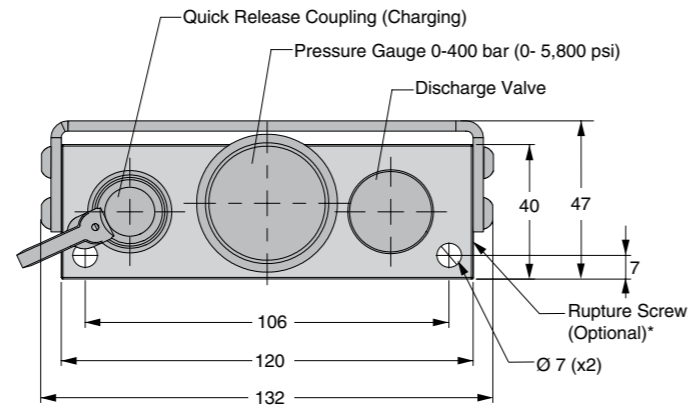
Order No. 4024353



Micro EO24™ Control Block

Order No. 3023888 (without Rupture Screw)

Order No. 3123888 (with Rupture Screw)



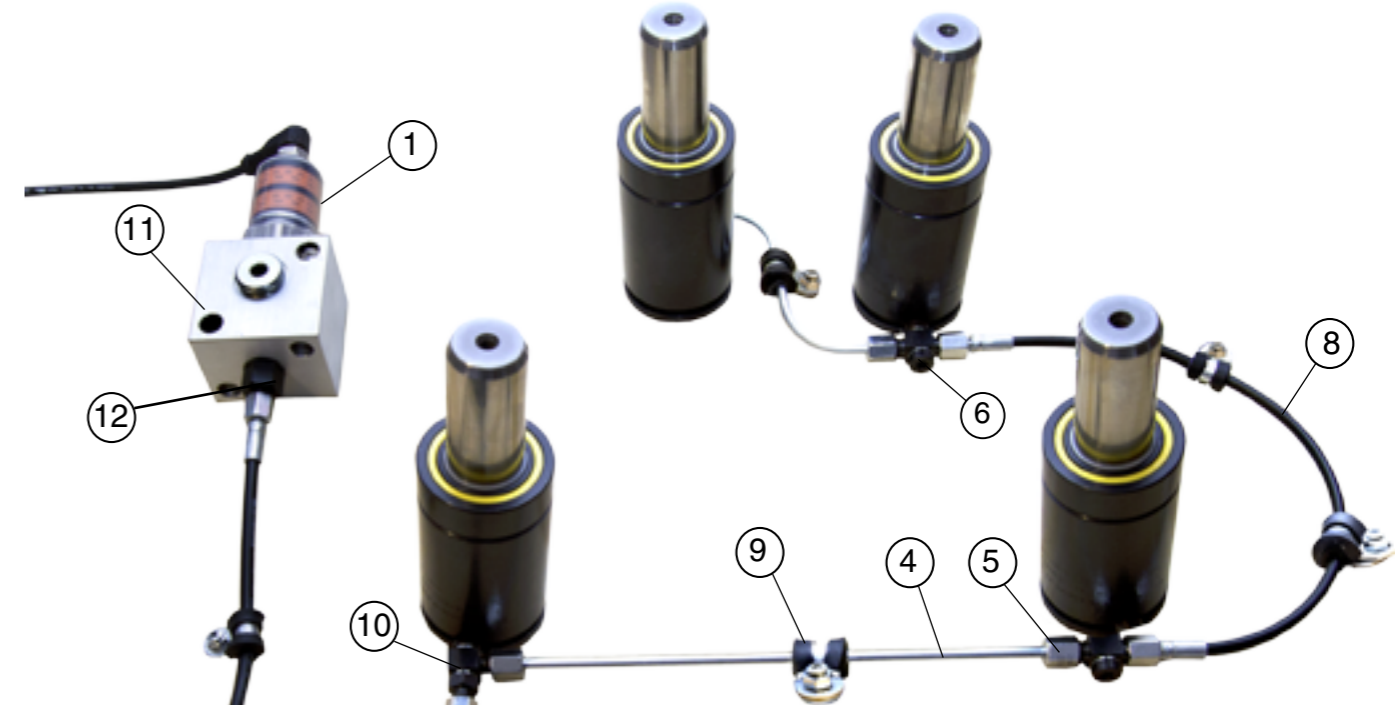
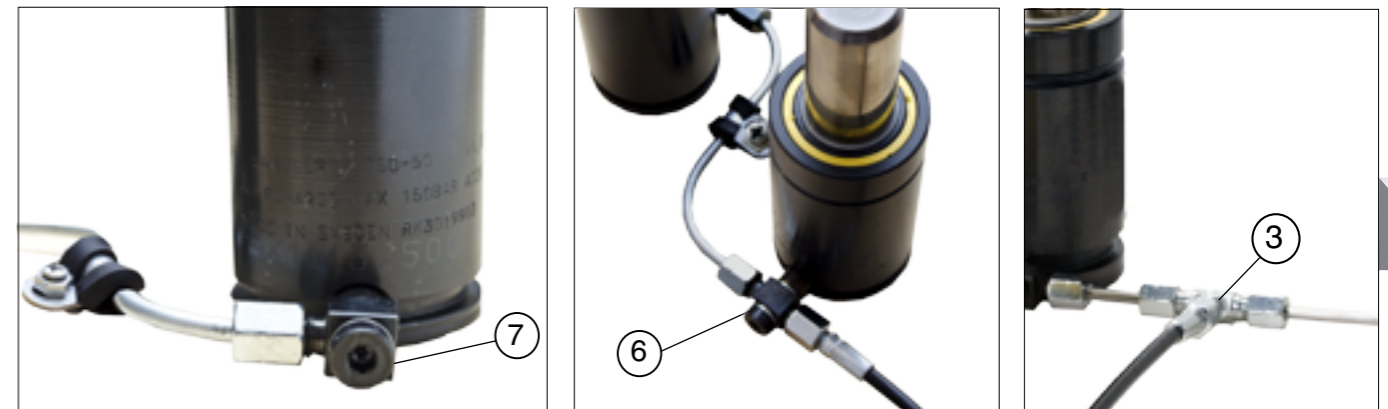
The Micro EO24™ Control Block is a very compact block with protective stainless steel cover specially designed for the Micro EO24™ System. This block is intended for continuous monitoring of the gas pressure in the Hose and Tube System. It is fitted with a manometer (0 – 400 bar/5,800 psi), a Quick Release Coupling for gas charging and a Discharge Valve for gas evacuation. The block has sixteen M6 connection ports, which are plugged upon delivery, and it is available in two versions:

**3023888** (without Rupture Screw)

**3123888** (with Rupture Screw\*)

\* Please note that Rupture Screws are not recommended where the initial gas charging pressure at 20°C exceeds 150 bar.

Micro EO24™ Hose and Tube System, installation example



Position	Quantity	Description	Order No
1	1	Pressure Switch	504320
2	1	Micro EO24™ Control Block	3023888
3	1	Union Tee	504592
4	3	Micro EO24™ Tube	504594
5	6	Clamp Nut	504589
6	2	Branch Tee M6	4022061
7	1	Angle Adapter M6	4022059
8	2	Micro EO24™ Hose	4023500-XXXX
9	5	Hose Clip	502646
10	1	Run Tee M6	4024092
11	1	Charging Block	3014206
12	1	Straight Adapter G 1 /8"	4022058

## Notes

## EZ Hose

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**EZ Hose System**

**Page 4.4/2**

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**EZ Hose Adapters**

**Page 4.4/3**

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**Installation Examples, EZ Hose System**

**Page 4.4/8**

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# EZ Hose System

## EZ Hose System

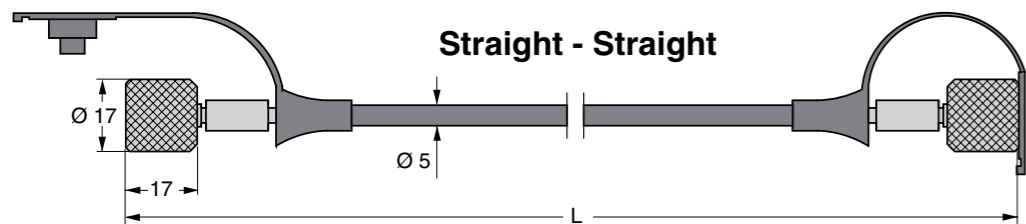
The EZ Hose System is our most popular Hose System. It is a very compact and versatile O-ring sealed Hose System that allows connections to be tightened by hand. G 1/8" and G 1/4" connection ports can be connected to the EZ Hose System with the use of an appropriate adapter. A number of different standard hose lengths are available (see table below). Custom hose lengths can also be ordered **from 150 mm upwards**. Subsequent numbers are added to the order number according to the length required, e.g. hose length 2,500 mm = Order No. 4014974-2500

4	Min. bend radius	20 mm
	Temp. range	-20 to + 80°C
	Rupture pressure	2,000 bar
	Max. dynamic working pressure	500 bar



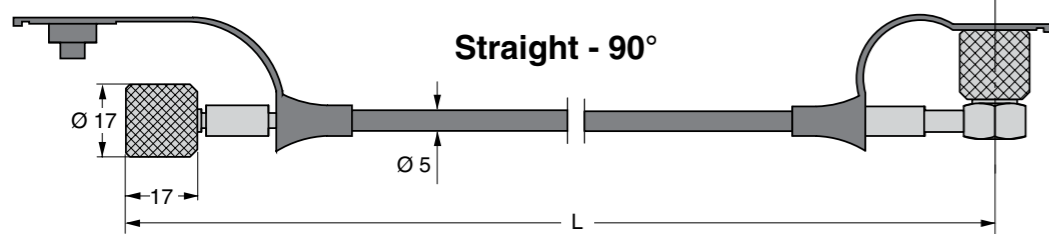
Micro/EZ-Hose clip, **Order No. 502646**  
(Can be used to secure hoses using an M5 screw.)

Order No. 4014974-XXXX



Order No.	L (mm)*
4014974-0200	200
4014974-0300	300
4014974-0400	400
4014974-0630	630
4014974-0800	800
4014974-1000	1000
4014974-1500	1500
4014974-2000	2000
4014974-XXXX**	XXXX

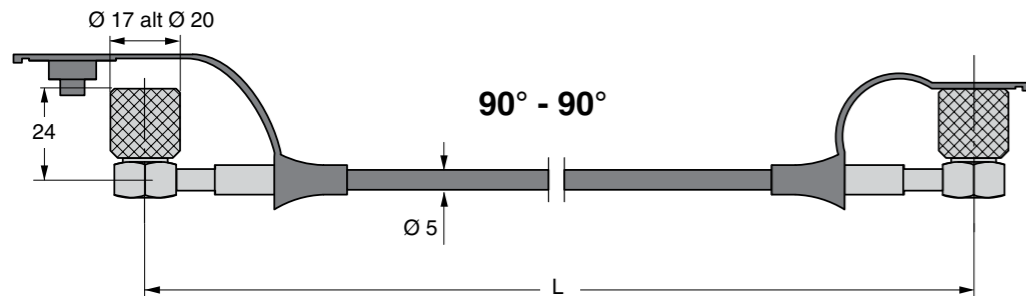
Order No. 4017568-XXXX



Order No.	L (mm)*
4017568-0200	200
4017568-0300	300
4017568-0400	400
4017568-0630	630
4017568-0800	800
4017568-1000	1000
4017568-1500	1500
4017568-2000	2000
4017568-XXXX**	XXXX

Order No. 4117568-XXXX

(To avoid twisting the hose, we recommend hose 4017568-XXXX together with angle adapter.)



Order No.	L (mm)*
4117568-0200	200
4117568-0300	300
4117568-0400	400
4117568-0630	630
4117568-0800	800
4117568-1000	1000
4117568-1500	1500
4117568-2000	2000
4117568-XXXX**	XXXX

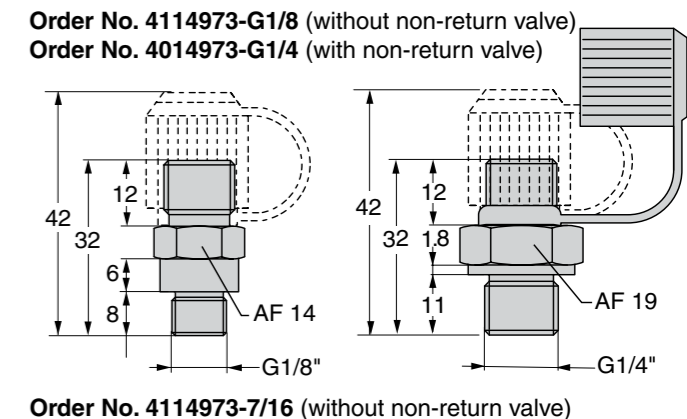
\* Minimum recommended L=75  
\*\*For customer specified lengths.

# EZ Hose Adapters

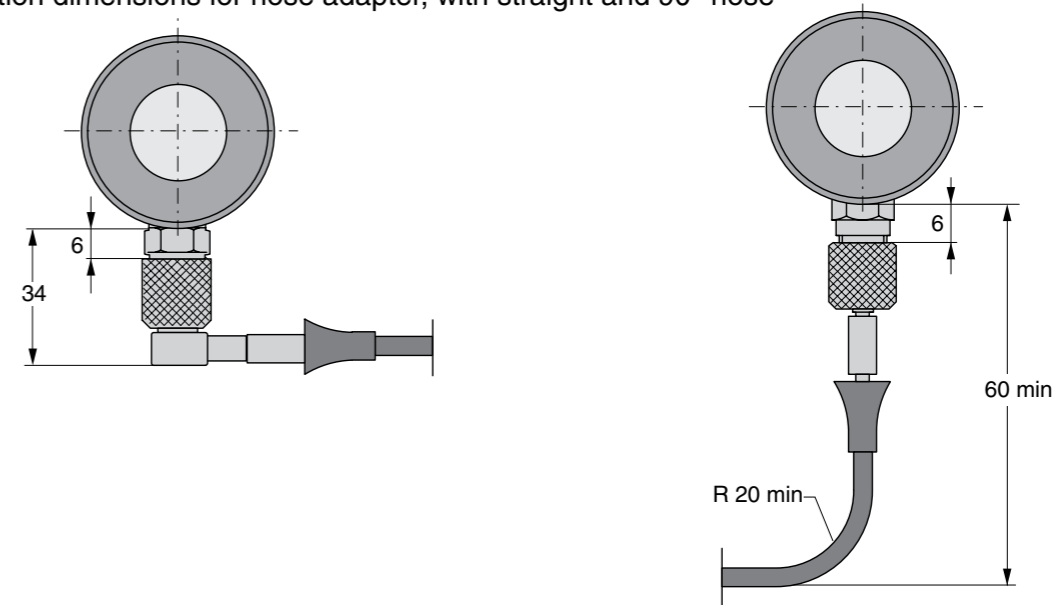
## EZ Hose Adapters

Hose adapters are available with three different connecting threads: G 1/8", G 1/4" or 7/16". The adapter with G 1/4" thread fits most control blocks.

The version without the non-return valve (4114973-G 1/8) is recommended for gas springs. When fitting the adapter with a non-return valve directly to a gas spring, there is a risk that the valve will not open properly if a poor hose connection is made, thus preventing the gas spring from being discharged.

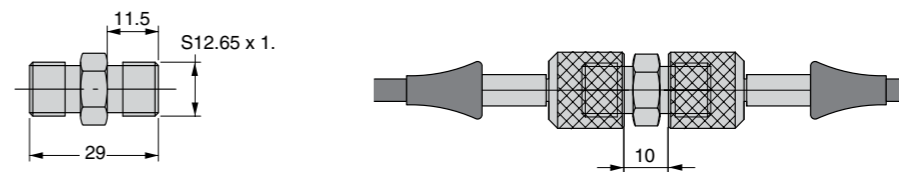


Installation dimensions for hose adapter, with straight and 90° hose



## Joining Coupling

Coupling for joining of EZ Hoses, Order No. 503674.

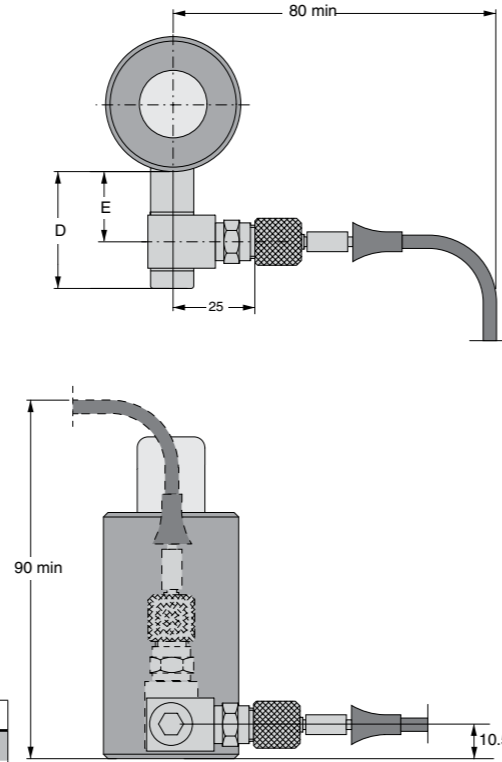
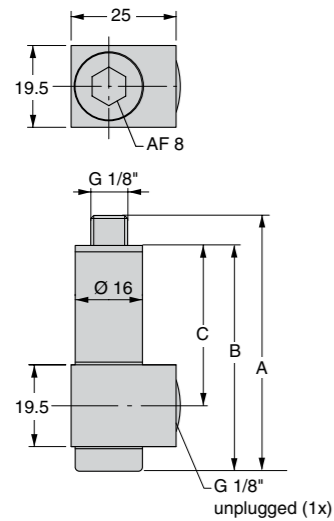


# EZ Hose Adapters



## Angle Adapter

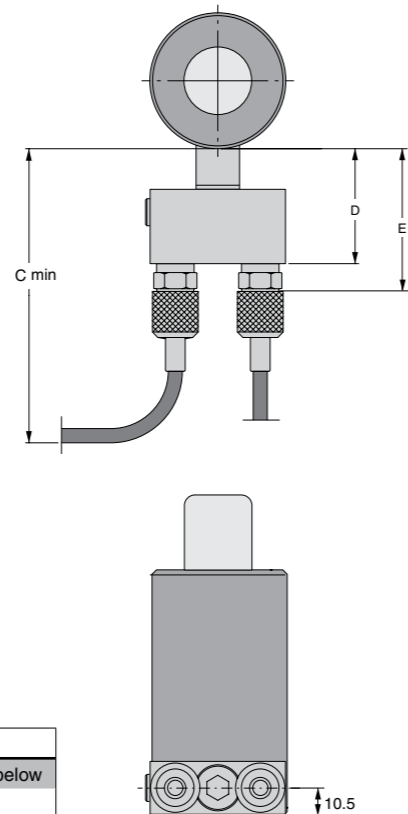
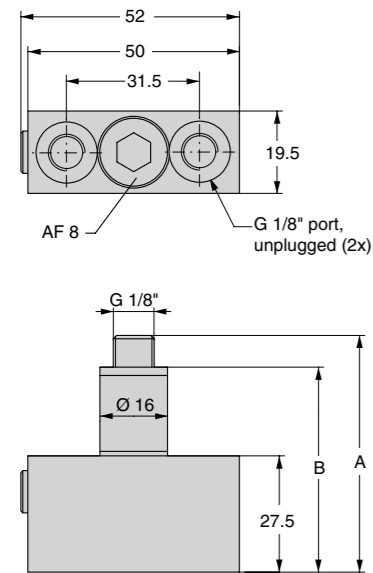
Order No. 4016050-XX



Order No	A	B	C	D	E	Suitable together with mounts
4016050-01	40	32.5	17	26	11	All applicable mounts, except those mentioned below
4016050-02	54	46.5	31	40.5	25	FFC 500, 750, 1500, 3000 + K
4016050-03	61	53.5	38	47.5	32	FFC 5000, 7500, 10000 + K

## Front Adapter

Order No. 4017314-XX



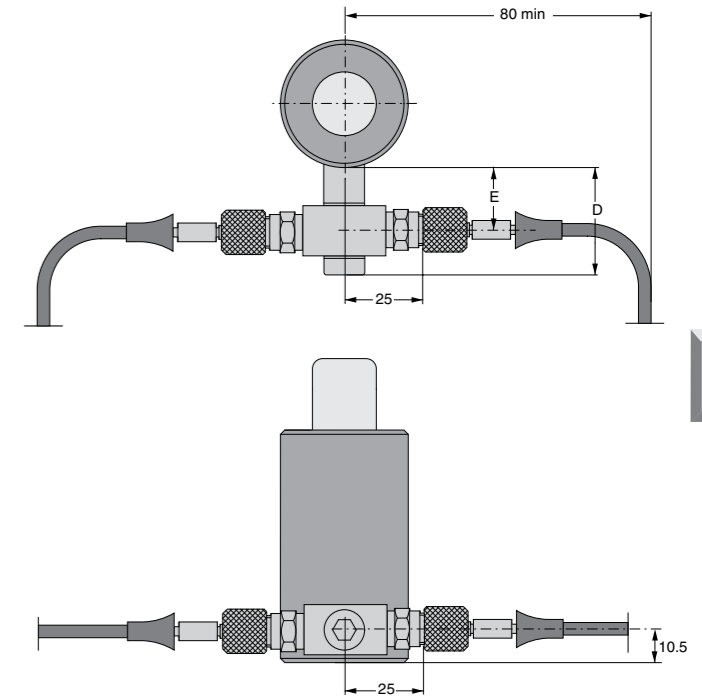
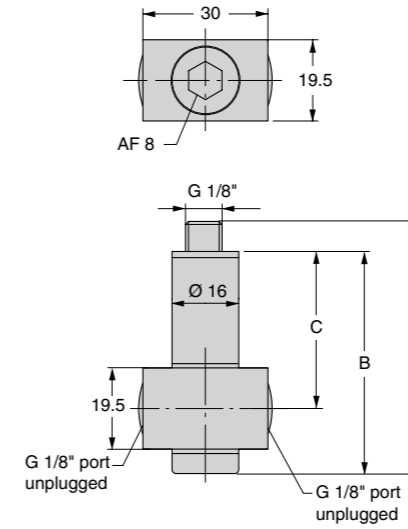
Order No	A	B	C	D	E	Suitable together with mounts
4017314-01	42	34.5	95	28.5	40	All applicable mounts, except those mentioned below
4017314-02	56	48.5	110	42.5	54	FFC 500, 750, 1500, 3000 + K
4017314-03	63	55.5	115	49.5	61	FFC 5000, 7500, 10000 + K

# EZ Hose Adapters



## Two-way Adapter

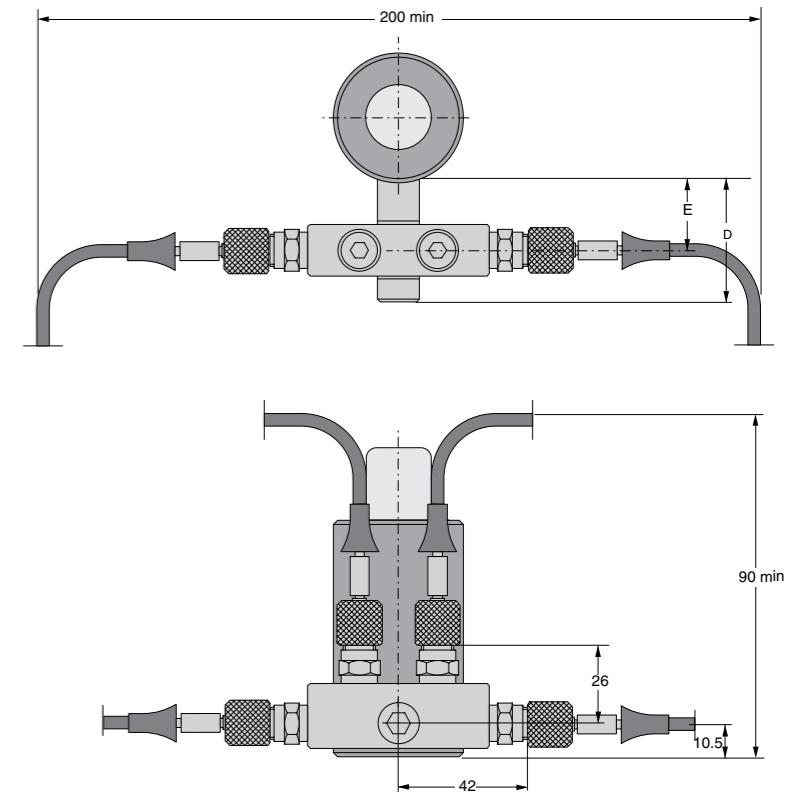
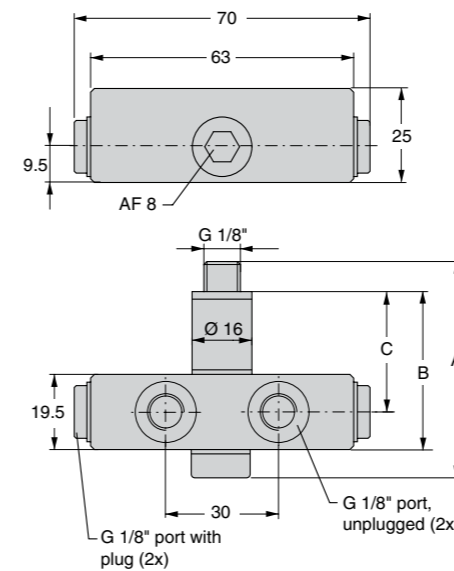
Order No. 4016051-XX



Order No	A	B	C	D	E	Suitable together with mounts
4016051-01	40	32.5	17	26.5	11	All applicable mounts except those mentioned below
4016051-02	54	46.5	31	40.5	25	FFC 500, 750, 1500, 3000 + K
4016051-03	61	53.5	38	47.5	32	FFC 5000, 7500, 10000 + K

## Four-way Adapter

Order No. 4015035-XX



Order No.	A	B	C	D	E	Suitable together with Mounts
4015035-01	40	32.5	17	26.5	11	All applicable mounts, except those mentioned below
4015035-02	54	46.5	31	40.5	25	FFC 500, 750, 1500, 3000 + K
4015035-03	61	53.5	38	47.5	32	FFC 5000, 7500, 10000 + K

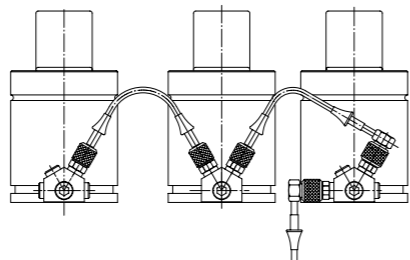


# EZ Hose Adapters

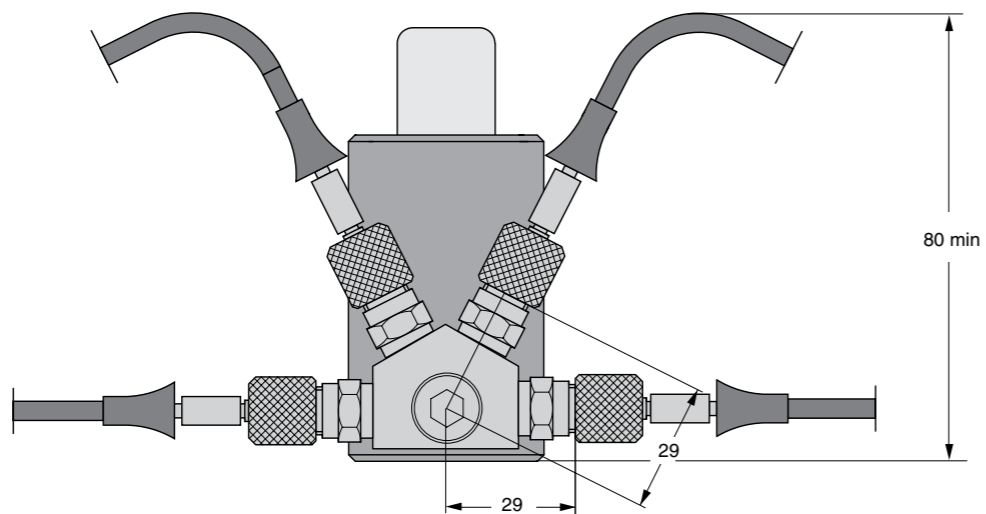
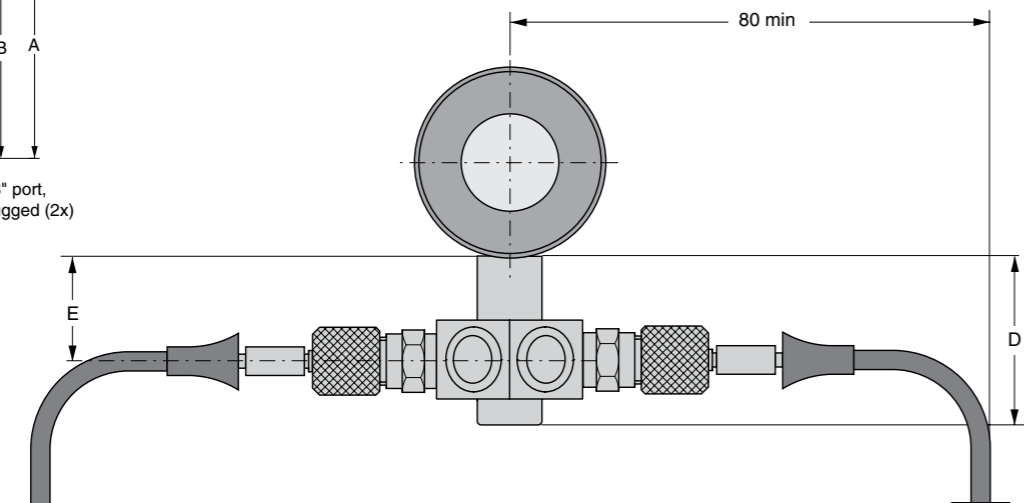
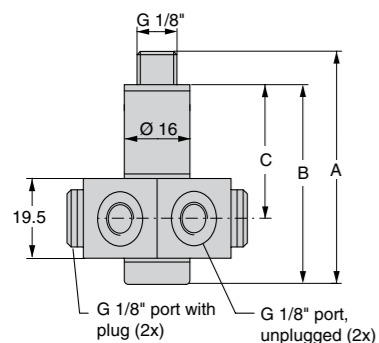
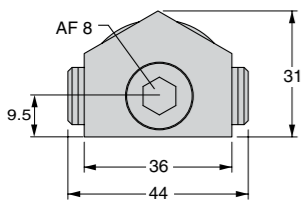


## Multi-way Adapter

Order No. 3017191-XX



This adapter is highly suitable when the distance between gas springs is short.



Order No	A	B	C	D	E	Suitable together with mounts
3017191-01	40	32.5	17	26.5	11	All applicable mounts, except those mentioned below
3017191-02	54	45.5	31	40.5	25	FFC 500, 750, 1500, 3000 + K
3017191-03	61	53.5	38	47.5	32	FFC 5000, 7500, 10000 + K

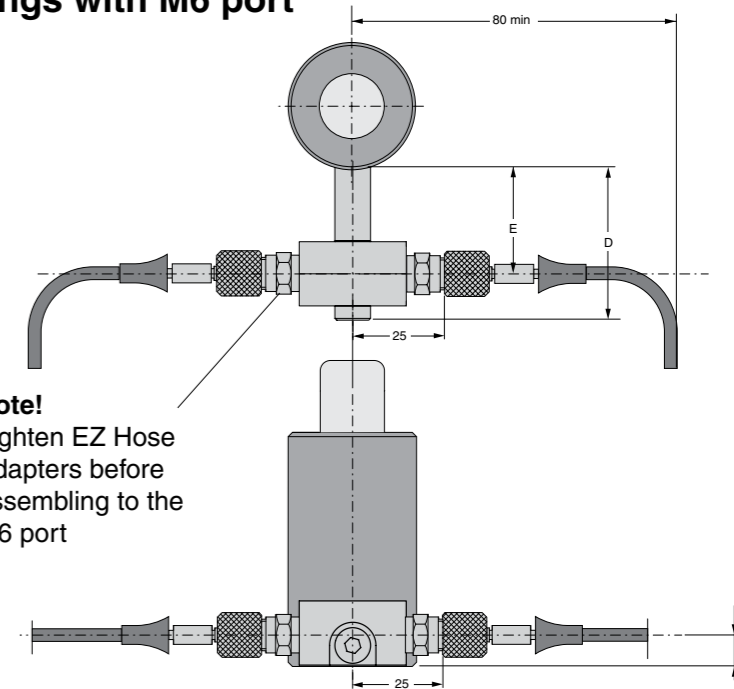
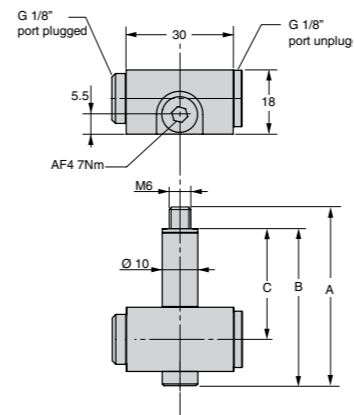
# EZ Hose Adapters



## Two-way Adapter for gas springs with M6 port

Order No. 4023519

Order No. 4023506



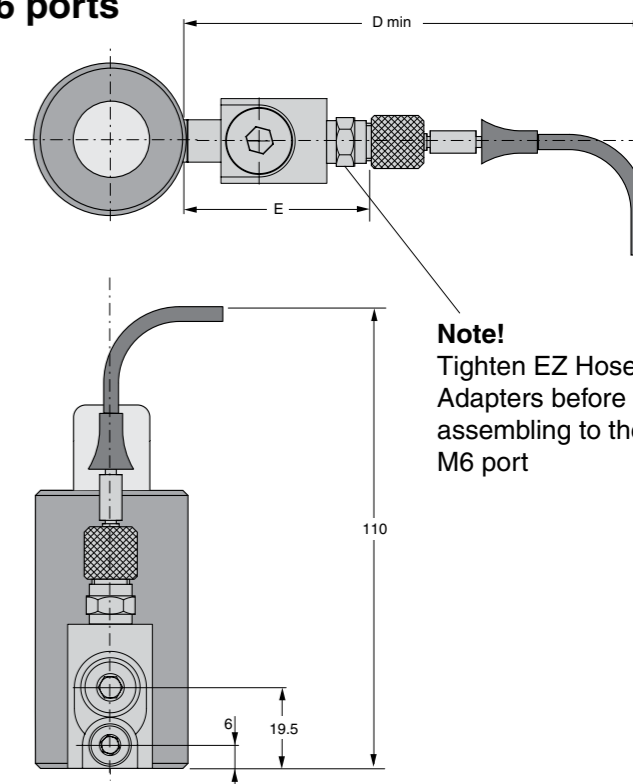
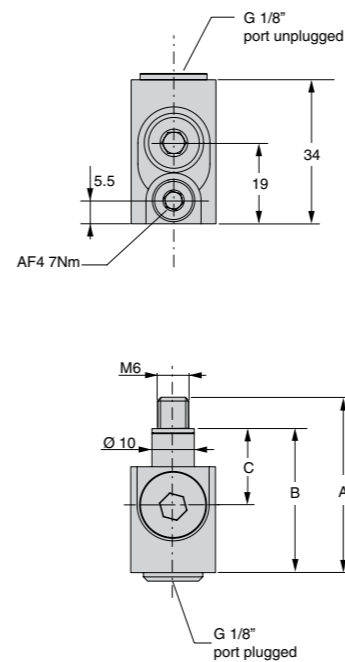
**Note!**  
Tighten EZ Hose Adapters before assembling to the M6 port

Order No	A	B	C	D	E	Suitable together with mounts
4023519	36	30	17	25.5	12.5	All applicable mounts, except those mentioned below
4023506	49	44	31	39.5	26.5	FFC 500, 750, 1500 + K

## Angle Adapter for gas springs with M6 ports

Order No. 4023520

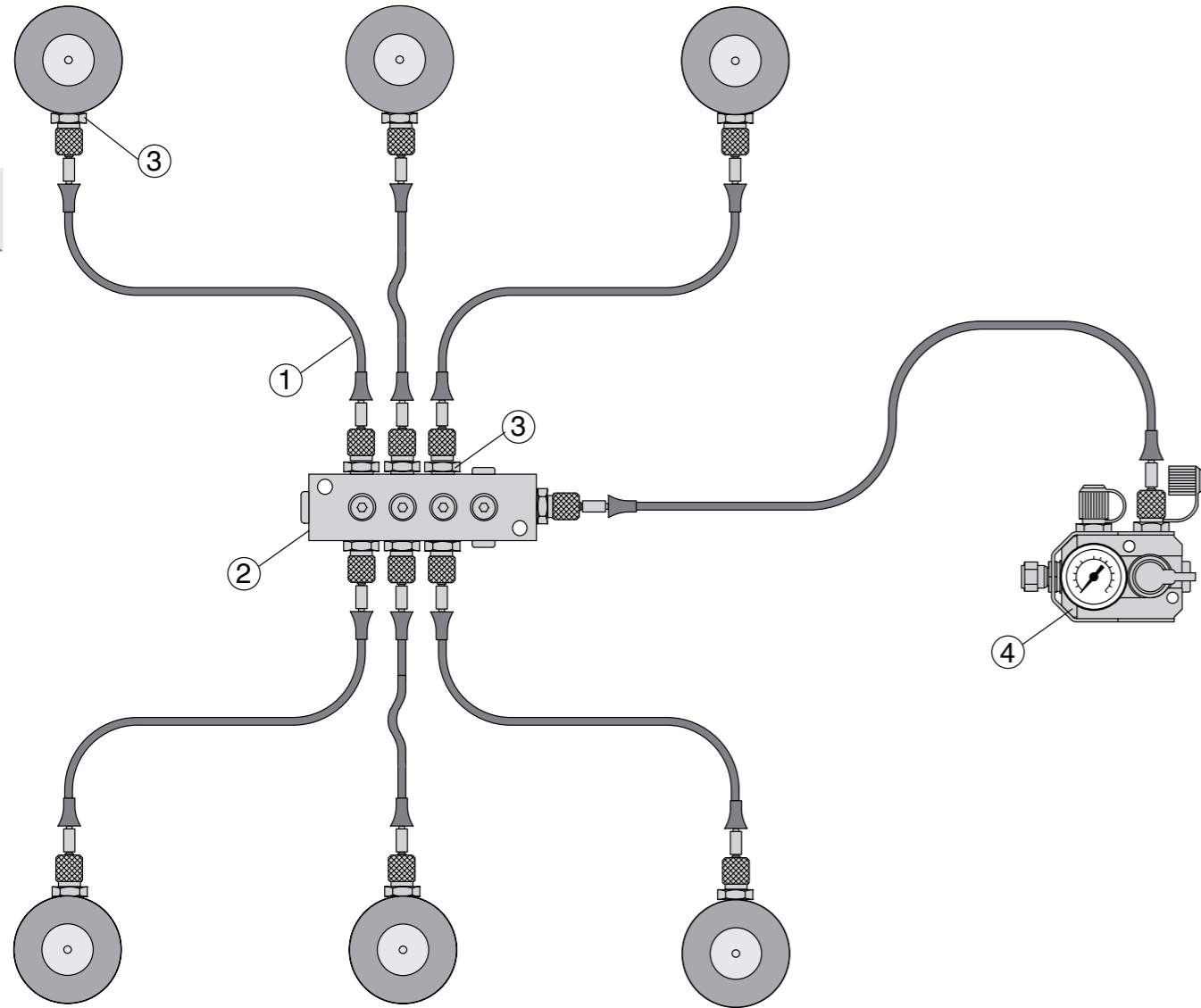
Order No. 4023518



**Note!**  
Tighten EZ Hose Adapters before assembling to the M6 port

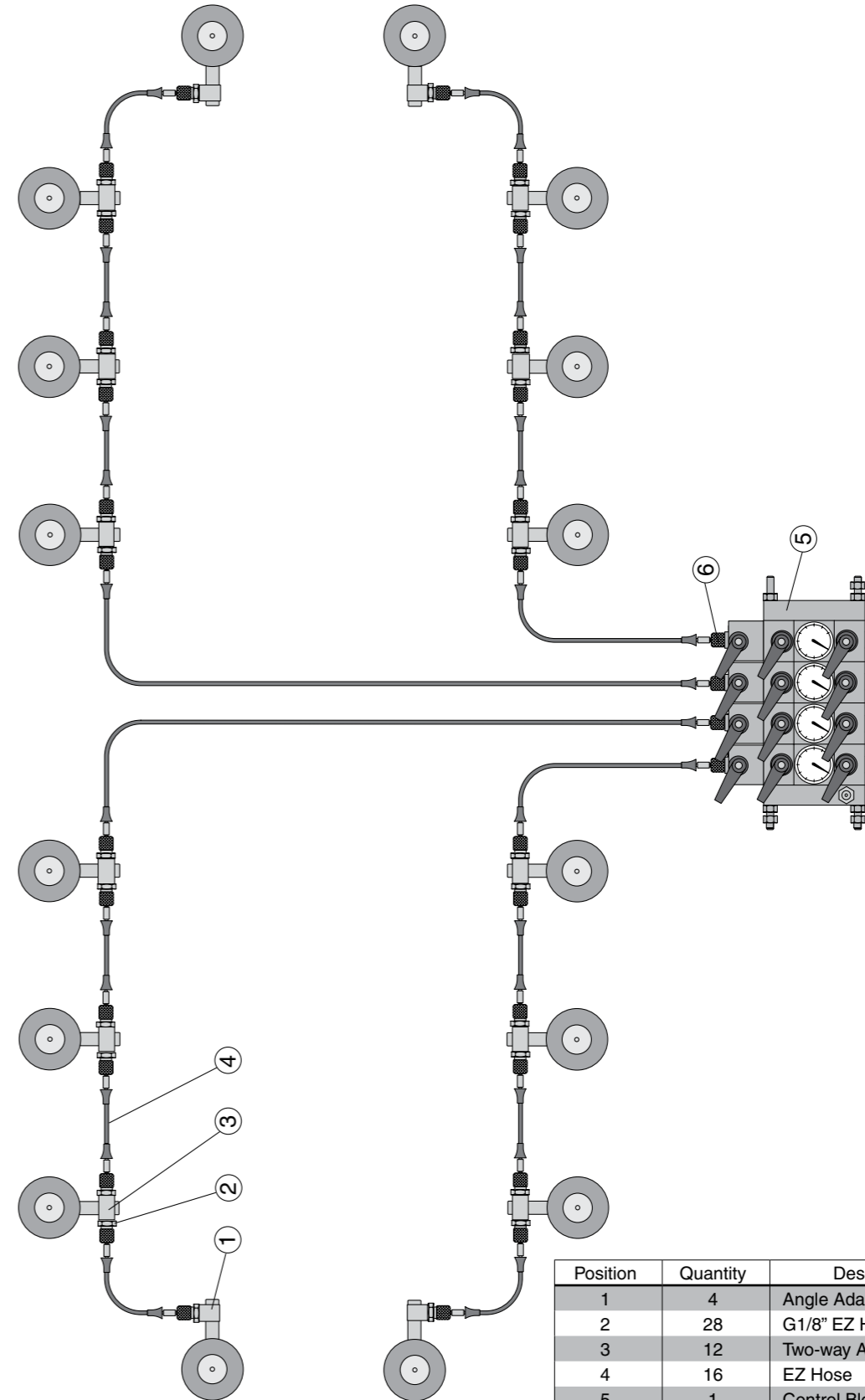
Order No	A	B	C	D	E	Suitable together with mounts
4023520	39	34	18	110	45	All applicable mounts, except those mentioned below
4023518	51	46	30	120	57	FFC 500, 750, 1500 + K

**Installation Examples, EZ Hose System**



Position	Quantity	Description	Order No
1	7	EZ Hose	4014974-XXXX
2	1	Multi-Coupling Block	3015044
3	13	G1/8" EZ Hose Adapter	4114973-G1/8
4	1	Control Block	3116114-01

**Installation Examples, EZ Hose system**

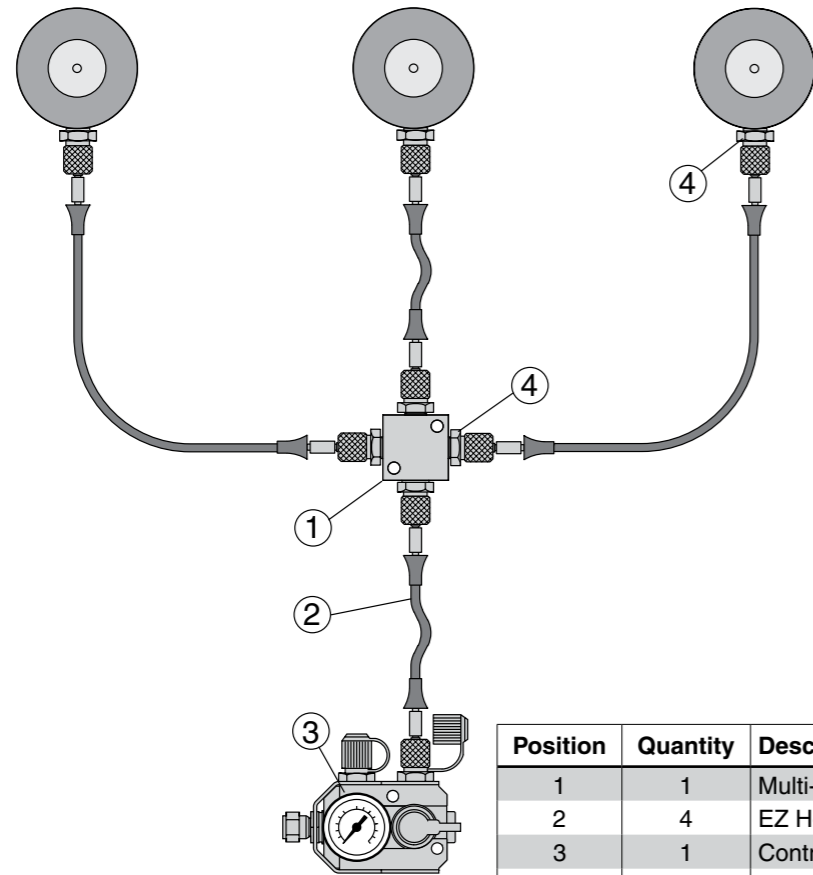


Position	Quantity	Description	Order No
1	4	Angle Adapter	4016050-xx
2	28	G1/8" EZ Hose Adapter	4114973-G1/8
3	12	Two-way Adapter	4016051-xx
4	16	EZ Hose	4014974-xxxx
5	1	Control Block	2014839-04
6	4	G1/4" EZ Hose Adapter	4014973-G1/4

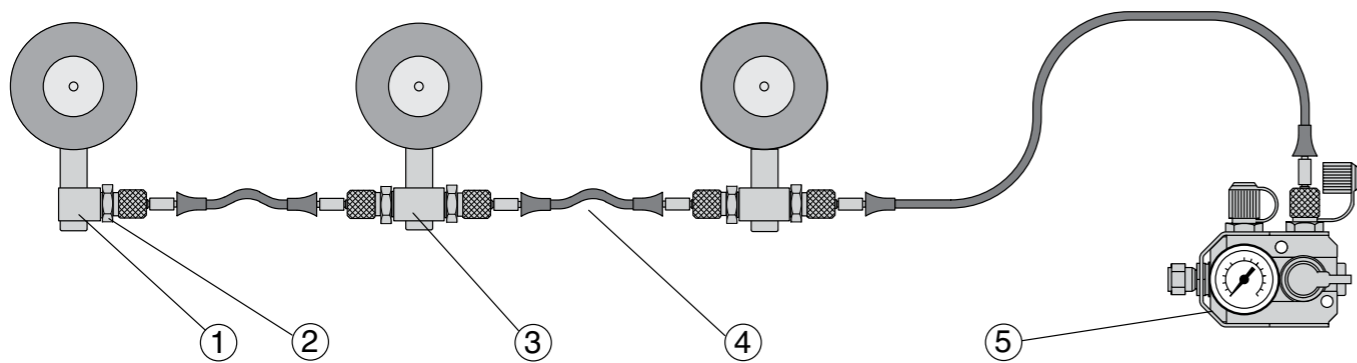
# EZ Hose System



## Installation Examples, EZ Hose system



Position	Quantity	Description	Order No.
1	1	Multi-Coupling Block	4017032
2	4	EZ Hose	4014974-XXXX
3	1	Control Block	3116114-01
4	7	G1/8" EZ Hose Adapter	4114973-G1/8



Position	Quantity	Description	Order No.
1	1	Angle Adapter	4016050-xx
2	5	G1/8" EZ Hose Adapter	4114973-G1/8
3	2	Two-way Adapter	4016051-xx
4	3	EZ Hose	4014974-xxxx
5	1	Control Block	3116114-01

## EO24 Hose and Tube System

**EO24 Hose** **Page 4.5/2**

**EO24 Tube** **Page 4.5/4**

**EO24 Adapters** **Page 4.5/6**

**Installation Examples, EO24 Hose System** **Page 4.5/7**

**EO24 Hose System**

The EO24 Hose System is our largest Hose System available. G1/8" and G1/4" connection ports can be connected to the EO24 Hose System with the use of an appropriate adapter.

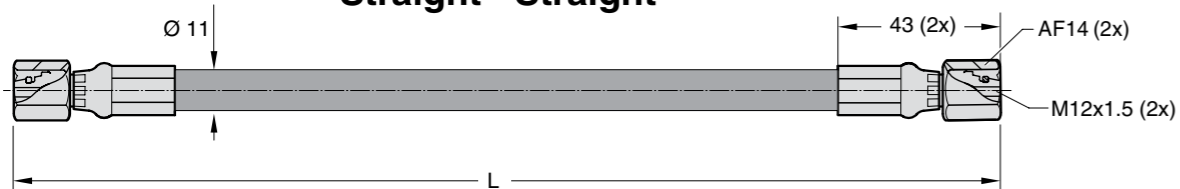
Custom hose lengths can be ordered **from 120 mm upwards**. Subsequent numbers are added to the order number according to the length required, e.g. hose length 2500 mm = Order No. 3x20857-2500.

EO24 Hose and EO24 Hose Couplings for crimping are also sold separately; for information on hose crimping, see Hose Crimping equipment on page 4.6/2.



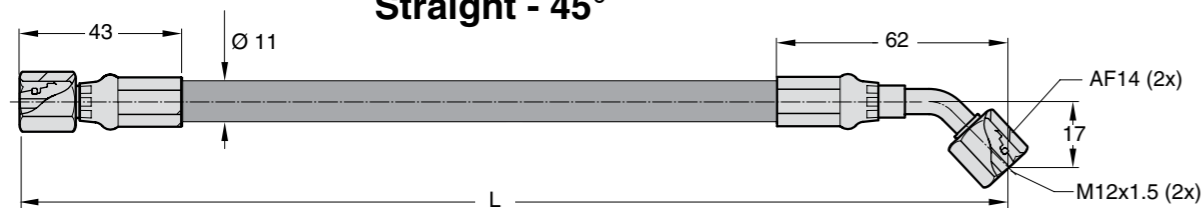
Order No. 3020857-XXXX

**Straight - Straight**



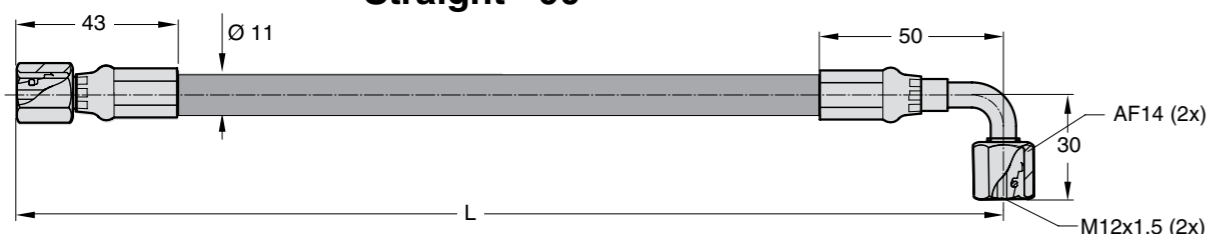
Order No. 3120857-XXXX

**Straight - 45°**



Order No. 3220857-XXXX

**Straight - 90°**



**EO24 Hose**

**Note!** The hose must be cleaned internally after cutting!

Material.....	Thermoplastic
Dimension.....	3/16" (exterior 11 mm)
Volume.....	18 ml/metre
Standard.....	SAE 100 R8 or ISO 3949 II
Outer casing.....	Perforated
Min. bend radius.....	40 mm
Temp. range.....	-40°C to +93°C
Max. dynamic working pressure....	345 bar
Min. rupture pressure.....	1380 bar at 20°C
Min. recommended length.....	120 mm



EO24 hose clip, **Order No. 502322**  
Can be used to secure hoses using an M6 screw.



**Order No. 502319**

**EO24 Tube**

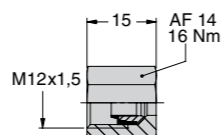
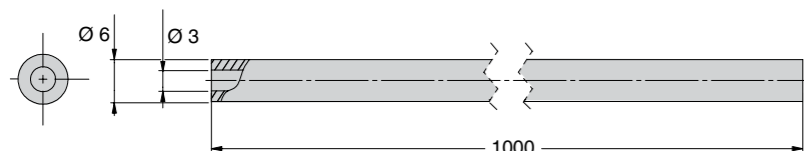
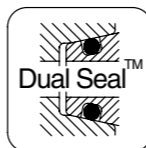
The EO24™ Tube is a system for linking larger gas springs together. Springs with G1/8", G1/4" connection and high gas flow requires a large tube. As the name suggests, EO24™ Tube is a tube system where all connections are soft sealed and self-crimping. This ensures leak-proof tube joints. The tubes are easily cut into correct lengths and can be bent into the desired radius with a tube bending tool or even by hand. There are numerous options for connecting tubes to gas springs and Control Blocks. Various adapters are available allowing the EO24™ Tube to connect to almost all KALLER large gas springs and Control Blocks. All adapters and their dimensions are presented on the following pages.

Steel tube  
(supplied in 1 m lengths)  
**Order No. 505393**

EO24 clip,  
**Order No. 502322**  
(Can be used to secure hoses using an M6 screw)



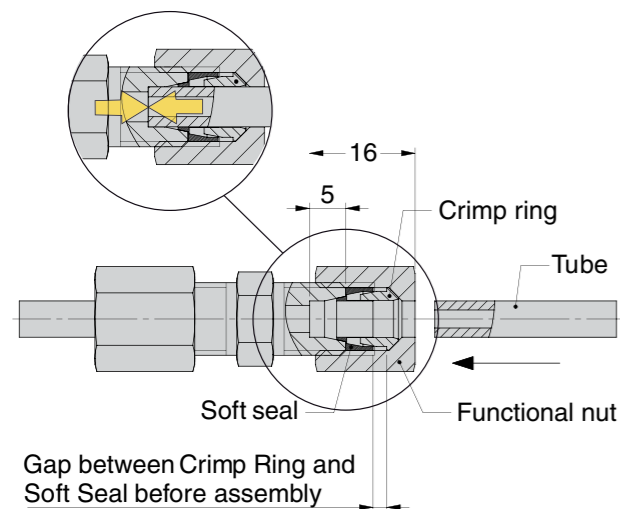
Functional nut  
**Order No. 504047**



**Using EO24 Tube**

To cut the tube, a hacksaw can be used.

**Note:** Cutting angle 90° ±1°. If a regular tube cutter or cutting pliers are used, the tube might become clogged resulting in zero or limited gas flow. After cutting, de-burr the tube both inside and outside (max. 0.3 × 45° or R0.3) using the Tube De-burring Tool below. Make sure the tube is cleaned after cutting and de-burring. Use compressed air to remove all loose particles. Fit the clamp nut onto the adapter.



**Note:** Do not tighten! Run the tube through the nut until it stops (~16 mm from the top surface of the nut). When tightening the nut, use a torque of 16 Nm. Recommended tools to have available: hacksaw, tube cutting fixture, tube bending tool, de-burring tool, compressed air and a torque wrench (AF 14 mm, 16 Nm).



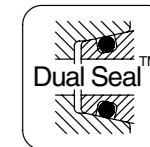
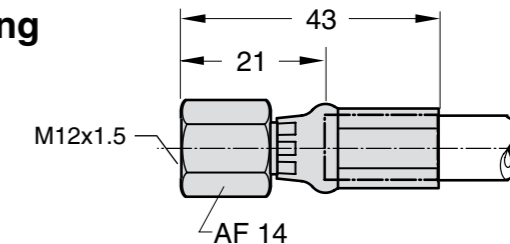
Tube De-burring Tool  
**Order No. 505096**



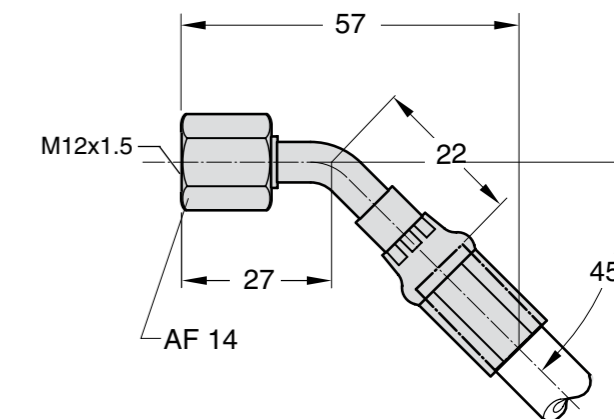
Tube Bending Tool (bend radius 20 mm)  
**Order No. 504711**

**EO24 Hose Couplings for crimping**

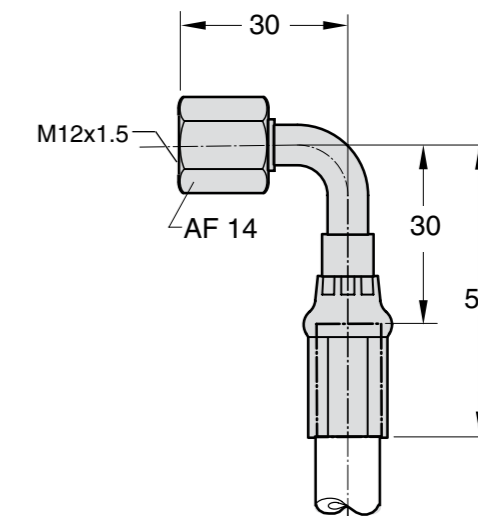
EO24 Straight  
**Order No. 504141**



EO24 45° Elbow  
**Order No. 504142**

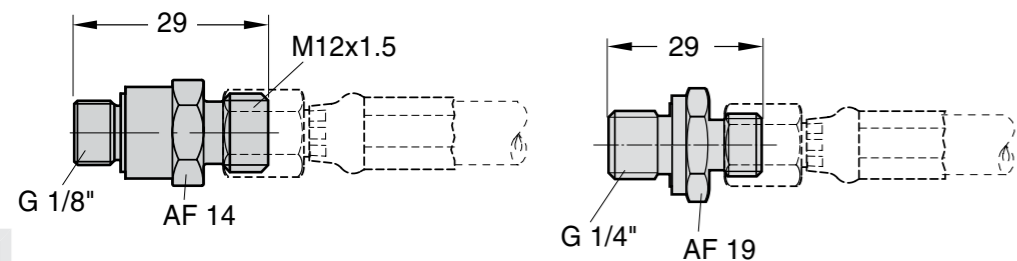


EO24 90° Elbow  
**Order No. 504143**

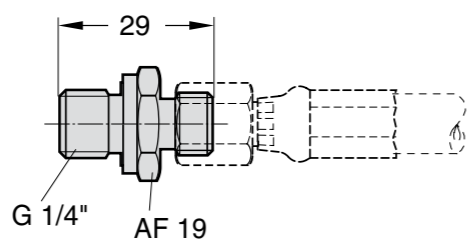


The EO24-Hose coupling system has M12x1.5 threads for connection between hose and adapter. G1/8" or G1/4" are used for connecting to springs and blocks.

**EO24-Hose Adapters**



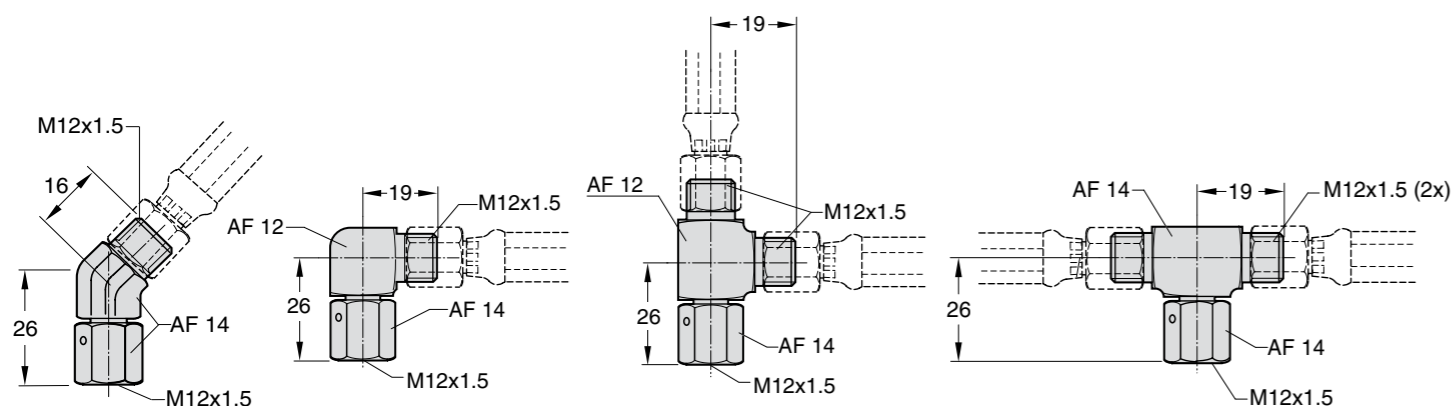
Male Stud Connector G1/8" (for gas springs and Coupling Blocks)  
**Order No. 503593**



Male Stud Connector G1/4" (for Control Blocks)  
**Order No. 504144**

Cap/plug (for Control Blocks)  
**Order No. 504913**

**Adapter to Hose Couplings**



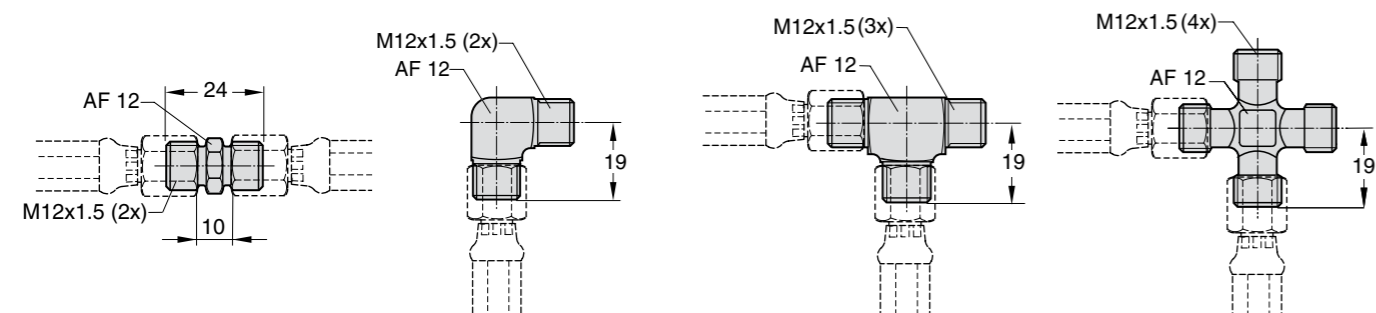
Swivel Nut Elbow 45°  
**Order No. 504145**

Swivel Nut Elbow 90°  
**Order No. 504146**

Swivel Nut Run Tee  
**Order No. 504147**

Swivel Nut Branch Tee  
**Order No. 504148**

**Hose to Hose Couplings**



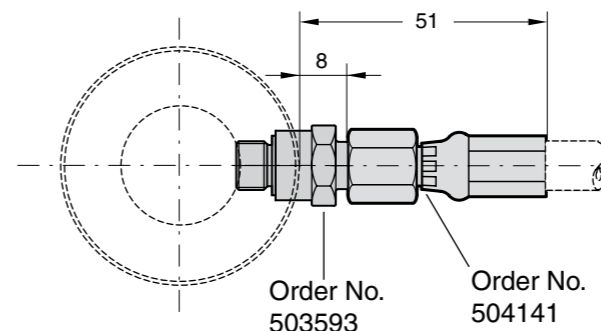
Union Straight  
**Order No. 504149**

Union Elbow  
**Order No. 504150**

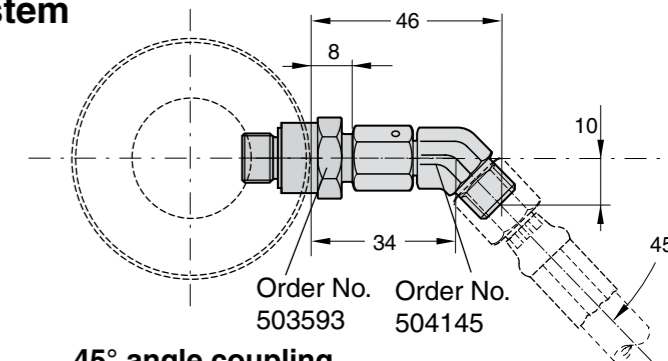
Union Tee  
**Order No. 504151**

Union Cross  
**Order No. 504152**

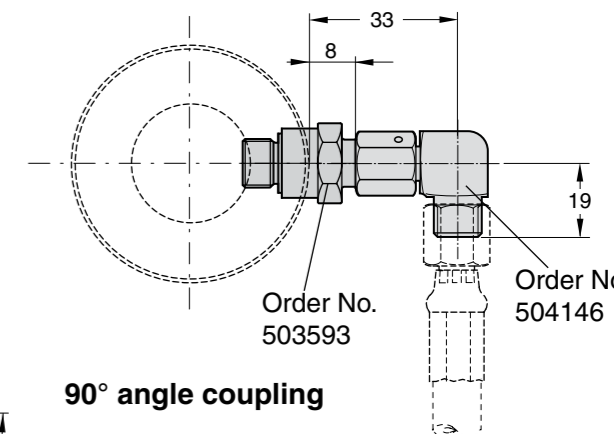
**Installation Examples, EO24-Hose System**



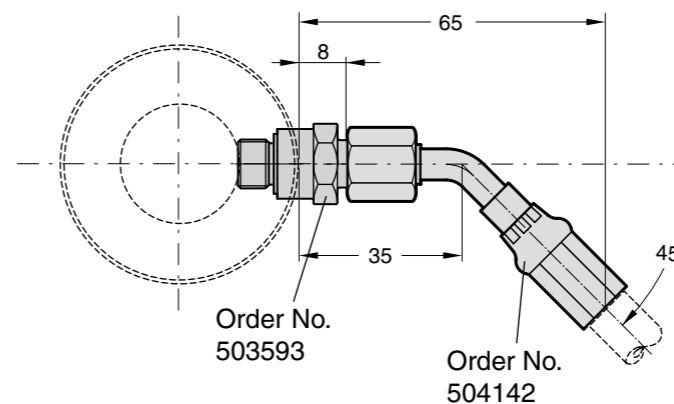
**Straight hose coupling**



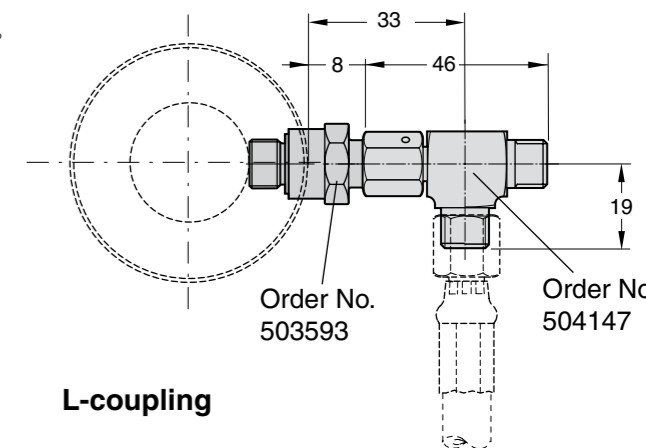
**45° angle coupling**



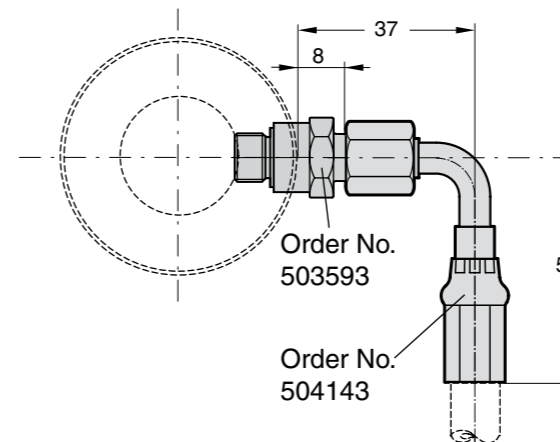
**90° angle coupling**



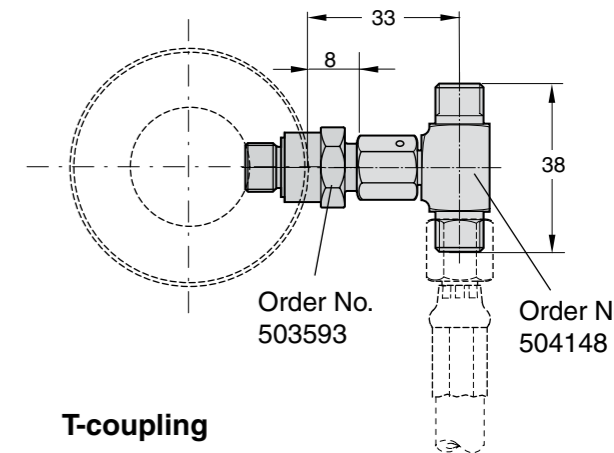
**45° hose coupling**



**L-coupling**



**90° hose coupling**



**T-coupling**

# Hose Crimping Equipment

Pneumatically operated

Page 4.6/2

**KALLER**  
The Safer Choice

## Hose crimping equipment

### Crimping equipment for Micro EO24™, EZ Hose, EO24-Hose

Our Hose Crimping Equipment can be used for Micro EO24™, EZ and EO24 Hose systems

- Pneumatically operated hydraulic pump
- Mechanical stop for accurate hose crimping
- Can be used to crimp straight, 45° and 90° fittings
- Lubrication-free crimping
- Crimping force: 300 kN
- Size: 380 × 305 × 685
- Weight: 32 kg
- Press instructions included No. 8200-1288

Crimp die Micro EO24™,  
EZ Hose  
Order No. 3024010



Crimp die EO24  
Order No. 5031496



Pneumatic operated crimping press.  
Order No. 3121381  
(Crimping die not included)

Below is a list of the order numbers of the various couplings and hoses that can be ordered from us:

Hose System	Order Numbers			
	Separate Hose (in metres)	Straight Hose Connector	45° Hose Connector	90° Hose Connector
Micro EO24™	505081-XX	505082	N/A	N/A
EZ	503810-XX	503962	N/A	503963*
EO24	502319-XX	504141	504142	504143

Where: -XX is no. of meters of hose required (eg. -10 indicates length 10 meters)

\*You cannot crimp EZ Hose 90° - 90° using Crimp die 3024010



Stop Tool  
(for Micro EO24™ hose end assembly)  
Order No. 4024183



Hose cutting plier  
Order No. 502839

# Hose connectors

Hose System	Order No.			
	Straight Hose Connector	45° Hose Connector	90° Hose Connector	Separate Hose (in meters)
Micro EO24™	505082	N/A	N/A	505081-XX
				
Example: Straight Hose Connector 505082				
EZ	503962	N/A	503963*	503810-XX
				
Example: Straight Hose Connector 503962				
EO24	504141	504142	504143	502319-XX
				
Example: Straight Hose Connector 504141				

Where: -XX is no. of meters of hose required (eg. -10 indicates length 10 meters)

\* You cannot crimp EZ Hose 90° - 90° using Crimp die 3024010



# Recommended tool

The following standard tool can be used to cover all assembling situations.  
**Please note!** This tool is not delivered by KALLER.



**Universal torque wrench**  
Torofix 2 - 25 Nm

**Accessories**

Sizes mm: 9, 10, 14, 16, 19

Sizes mm: 3, 4, 5, 8

Potential suppliers,  
[www.toolstore.com](http://www.toolstore.com)



## **CRC Leak Finder**

Water-based gas leak detector, containing surface-active and anti-corrosion agents and stabilizers. Leak Finder detects and locates quickly and reliably gas leaks and pressure losses in pipes, pressurized systems, etc. by forming highly visible bubbles when applied over any leak. Contributes to protect the environment by locating emissions of toxic and/or polluting gases.

Potential suppliers,  
<http://www.crceurope.com>

## Notes

## Notes

# The Safer Choice

Introduced in 1983, the KALLER gas spring technology quickly led to world-wide demand. The Safer Choice - Training, Safety and Reliability - has always been a KALLER top priority for providing the safer working environment. We recommend looking through all available KALLER features when selecting gas springs and gas or hose linked systems.



## KALLER Training Program

**TRAINING.** Without doubt the KALLER Training Program is the best and most creative way to fully understand and appreciate the importance of the safety and reliability features.



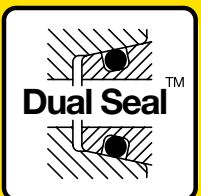
## PED approved for 2 million strokes

**RELIABILITY.** Our 2 million stroke PED approval ensures safer component cycle life.



## Flex Guide™ System

**RELIABILITY.** Prolongs service life, allows more strokes per minute, and offers greater tolerance to lateral tool movements.



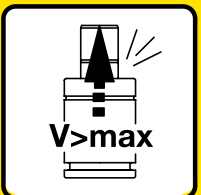
## Dual Seal™ Link Systems

**RELIABILITY.** Fewer production interruptions due to leakage caused by vibration. Simplified installation thanks to the non-rotation feature.



## Over-Stroke Protection System

**SAFETY.** When a gas spring is over-stroked, this helps reduce the risk of tool damage or injury.



## Overload Protection System

**SAFETY.** Jammed cam or tool part being forced by gas springs? This will help reducing such risks.



## Overpressure Protection System

**SAFETY.** Vents the spring if the internal gas pressure exceeds the maximum allowable limit to prevent accidents.