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climate control
electromechanical
filtration
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hydraulics
pneumatics
process control
sealing & shielding





Pneumatic
Weld Control Products

Catalog PCD2005-5



Parker

ENGINEERING YOUR SUCCESS.

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⚠WARNING

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Water Retract Actuator

Parker in Automotive Industry

Parker is committed to offering the Automotive Industry the most comprehensive array of motion control products and technologies. Parker is continuously improving the performance and value of our products and services to meet current and future needs of the global Automotive Industry. Parker Automotive manufacturing focus includes body and assembly, power train, metal stamping, components and trim.

Overview

Water Retract Actuator is a solution designed to prevent excessive water spillage during the routine tip change of a spot welding gun.

Excessive water spillage within a weld cell environment presents a number of hazards including, electrical shock, slip hazard, equipment damage, and damage to the product that is being manufactured.

The Water Retract Actuator reduces the water pressure in the closed-off cooling circuit which eliminates the problems of water being expelled under pressure during a tip change.



Features

Parker's water retract solutions are available either as individual components that can be assembled by either the OEM or end-user, as a retooling kit allowing existing systems to be modified, or as a frame mounted solution designed for floor or robot mounting.

Parker's proven cylinder and actuation technology delivers trouble free operation, while materials used ensure compatibility with all cooling water fluids leading to a long service life.



Water Retract System Not in Use



Water Retract System in Use



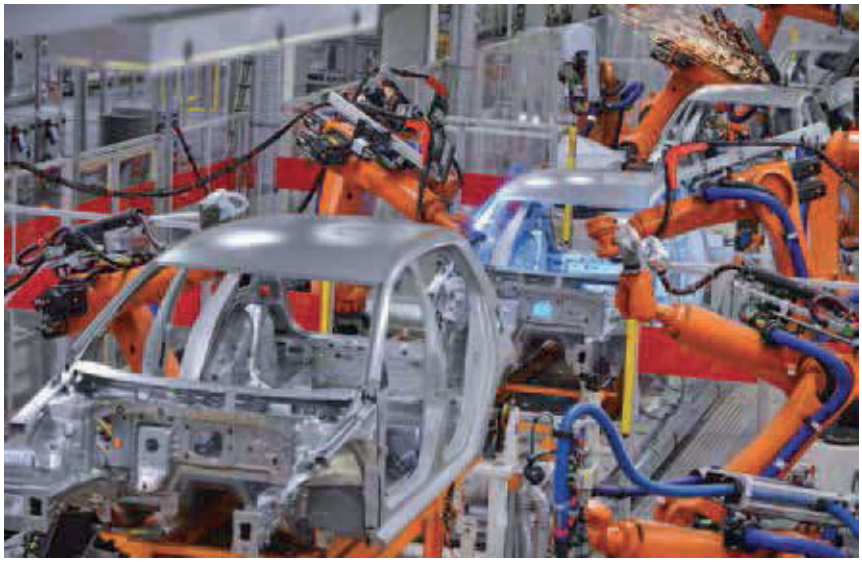
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Application

Parker Hannifin has developed an extensive range of products to accommodate water cooling of spot welding equipment in car manufacturing plants worldwide. This product is the best solution to prevent excessive water spillage during the tip change process of a spot weld gun.

The Water Retract Actuator solves a number of problems for the 'body-in-white' department. It reduces the water pressure in the closed-off cooling circuit eliminating the problems of spilt cooling water on unpainted car body parts, expensive equipment and the production floor.

The Parker Hannifin Water Retract Actuator has been developed according to automobile manufacturer's specification and can be supplied for both new and retooling programs. All our products are designed specifically to work with existing water cooling systems.



Overview of available Components:

For simplified installation and optimum performance of the existing cooling water system, Parker can develop a customized water retract solution that consists of the following main components:

- **Water retract actuator**
- **Control valve to operate water retract actuator**
- **Mounting plate**
- **Water connection tube / fitting kit**



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Model Number Index



The items in bold represent the North American standard.

WR	A	250	N	D	63	63	B	A

	Series
WR	Water Retract Actuator

	Type
A	Active

	Volume
125	Retract volume 125 ml
250	**Retract volume 250 ml (standard)**
500	Retract volume 500 ml

	Water Port
B	BSPP
N	**NPT**

Water Retract Actuator is factory fitted with magnetic piston on air side as standard. In combination with Parker's wide range of sensor technology, position of air piston can be detected. For overview of available sensors, see page 8.

	Mounting
N	No mount
B	**Foot bracket mount**
F	Flange mount

	Diameter piston air volume
63	**Bore 63 mm**

	Diameter piston water volume
63	**Bore 63 mm**

	Pneumatic Control
C	24VDC, Unit retracted in rest position
D	**24VDC, Unit extended in rest position**
G	Pilot operated, unit retracted in rest position
H	Pilot operated, unit extended in rest position
N	No pneumatic control

Other version on request, ask your local Parker Sales office.

Mounting WRA conform to standard ISO 15552. Mountings supplied un-assembled.

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WRA Operation Specifications

Water retract volume	125ml / **250ml** / 500ml
Water connection WRA	1/2 BSPP or **NPT**
Weight	125 ml 2,0 kg (4,40 lbs) / 250 ml 2,60 kg (5,70 lbs) / 500 ml 3,60 kg (7,90 lbs)
Ambient temp	+10 to +40 °C / +50 to +104 °F

Compressed air specification

Air pressure	3-10 bar / 44-147 PSI
Air quality	Class 3.4.3, according ISO 8573-1 2010 (see pages 29-38 for FRL's)

Valve specification

Type	Viking Lite
Medium	Compressed air
Air connection valve	BSPP 1/8
Valve specs	Cv 0,6
Voltage	24 VDC, M12 connector with LED

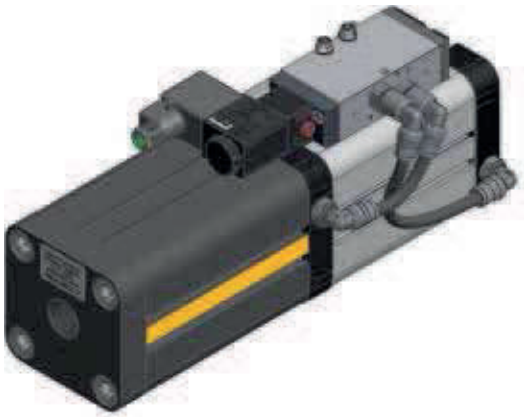
Cooling water specifications

Water medium	Cooling water
PH Level of cooling water	pH7-pH8
Contamination limitation	no metal particles (water filtration is recommended to extend the life of the WRA)
Water temp range	-10 to +70 °C / +14 to +158 °F
System water pressure	9 bar Max, air pressure must always exceed water pressure with a min. of 1 bar

Materials

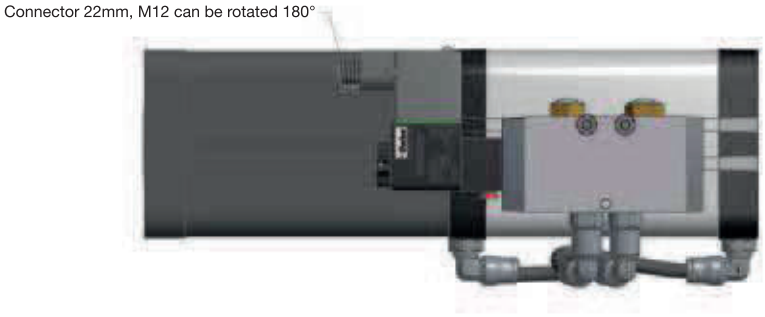
Endcover water side	PA 6G
Actuator tube water side	Brass
Endcovers air side	Aluminum Hard Anodized
Actuator tube air side	Aluminum Hard Anodized
Piston water retract	UHMW-PE
Piston air side	NBR
Control valve WRA	Aluminium
Fitting air side push-in	Nickel-Plated Brass
Air connection tubing	PU, weld resistant

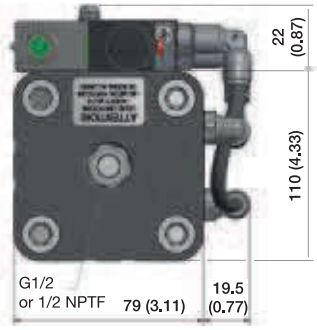
Dimension - No mount

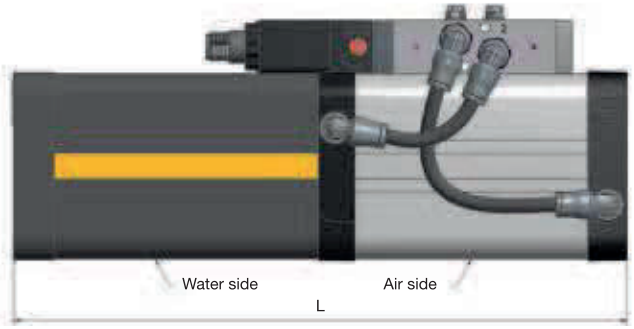


Dimensions

Type	Volume (cm^3)	Overall Length L
WRA125	125	182
WRA250	250	264
WRA500	500	423









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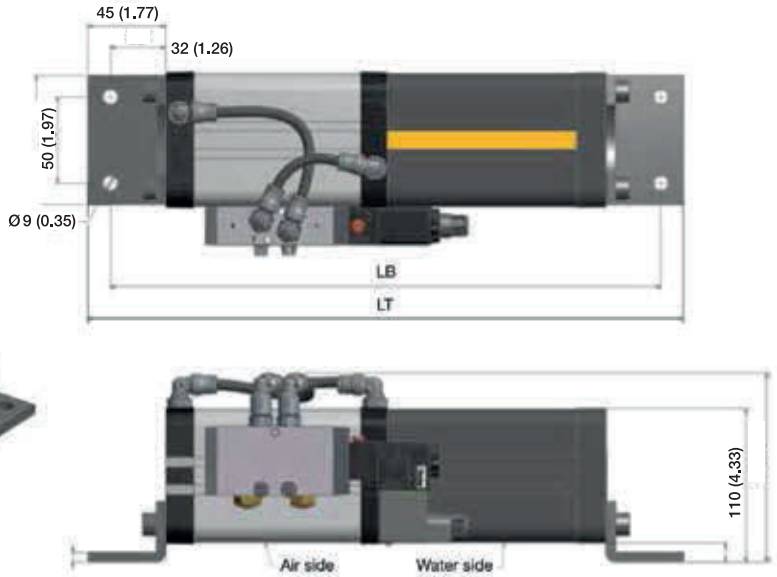
Dimension - Foot bracket

Foot bracket - North American standard

Description	Order code
Foot bracket	P1C-4NMF



Type	Volume	Length (LB)	Length (LT)
WRA125	125	246	272
WRA250	250	328	354
WRA500	500	487	513



WRA mounting conforms to ISO 15552 standards

Mounting supplied un-assembled.

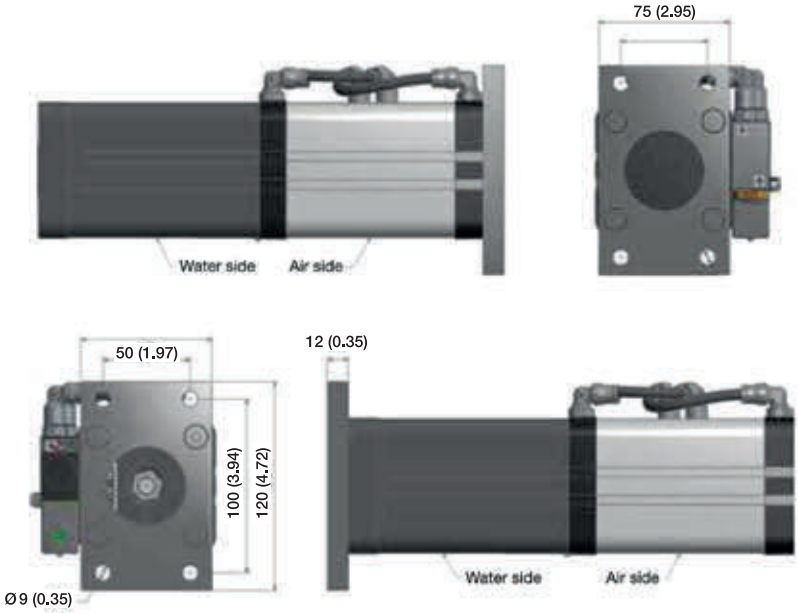
Dimension - Foot mount

Flange

Description	Type	Order code
Flange	MF1/MF2	P1C-4NMB







WRA mounting conforms to ISO 15552 standards

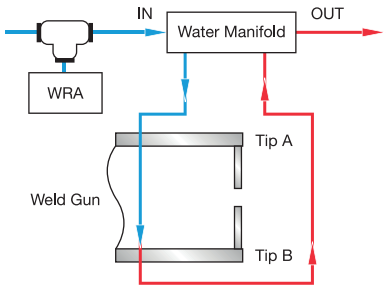
Mounting supplied un-assembled.

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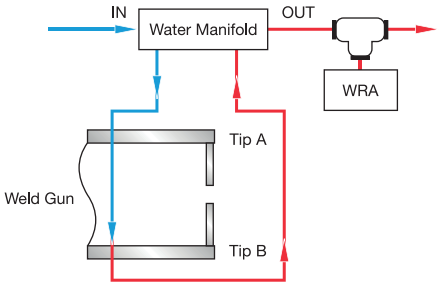
Water Retract Actuator (WRA) Water Schematic

Series Connection

Scenario 1, the WRA can be placed on the **IN** line of the water manifold. In this situation, you would engage the unit and remove tip B first, replace it, and then remove tip A.

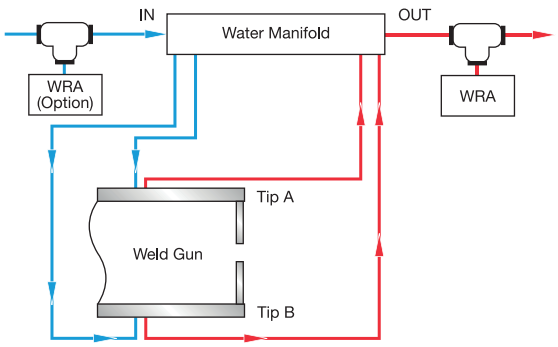


Scenario 2, the WRA can be placed on the **OUT** Line of the water manifold. In this situation, you would engage the unit and remove tip A first, replace it, and then remove tip B.



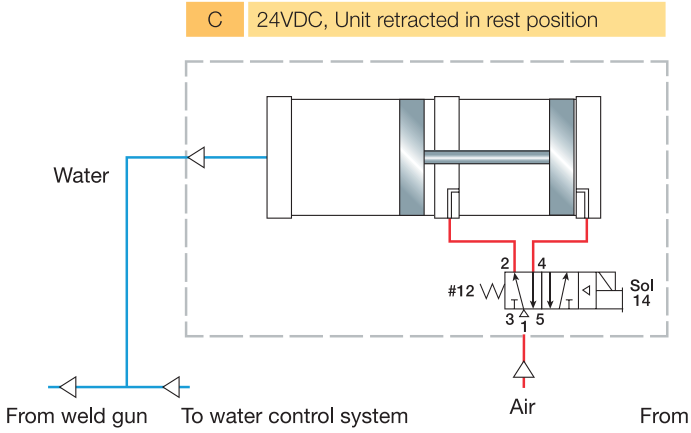
Parallel Connection

In parallel configuration, the WRA is placed on the **IN** or the **OUT** line of the water manifold. In this situation, you would engage the unit and then you would be able to remove both tips at the same time.

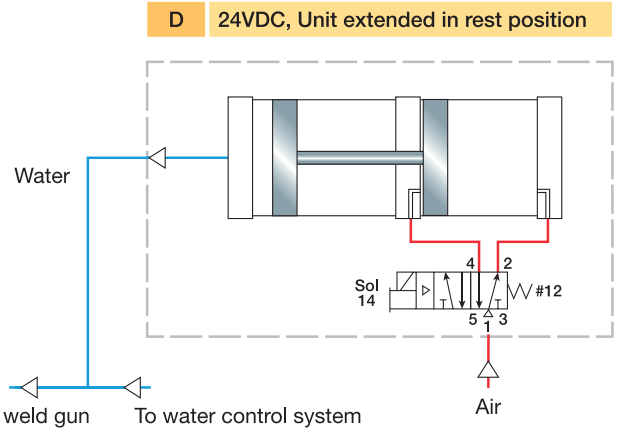


Pneumatic Control

C 24VDC, Unit retracted in rest position



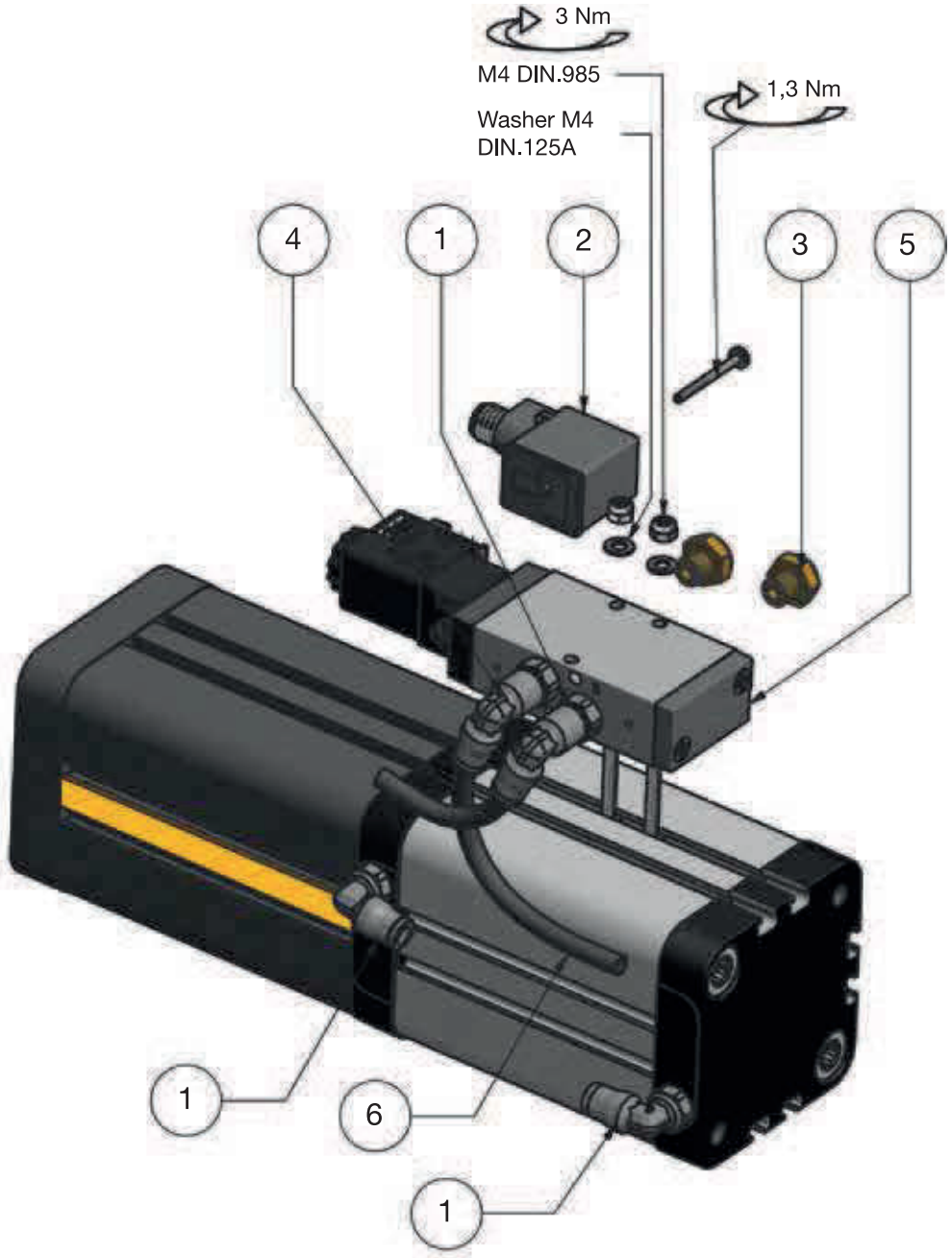
D 24VDC, Unit extended in rest position



D = North America standard

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Spare Parts



Spare Parts List

Item	Qty	Part no.	Description
1	3	3699 06 10	Stud elbow, BSP Parallel and Metric 6
2	1	5566310	Connector 22 mm, M12 with LED
3	2	0673 00 10	Muffler G1/8
4	1	3669 06 10	Extended stud elbow, BSP Parallel and Metric 6
5	1	P2LAZ511ESNDCB49	G1/8 5/2 Solenoid-Spring 24 VDC Viking Lite
6		SGPWPU6X1/5-50	Soft Grade PWPU 6x1 MM BLACK

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P8S-G Sensors



Note: The pneumatic portion of the WRA comes with a magnetic piston as standard, permitting the operator to attach a Parker sensor to the unit and add additional confirmation of the condition of the WRA is engaged or not.

The P8S-G sensors can easily be installed from the side in the sensor groove, at any position along the piston stroke. The sensors are completely recessed and thus mechanically protected. Choose between electronic or reed sensors and several cable lengths and 8 mm and M12 connectors. The same standard sensors are used for all Water Retract Actuators.

Electronic sensors

The electronic sensors are “Solid State”, i.e. they have no moving parts at all. They are provided with short-circuit protection and transient protection as standard. The built-in electronics make the sensors suitable for applications with high on and off switching frequency, and where very long service life is required.

Technical data	
Design	GMR (Giant Magnetic Resistance) magneto-resistive function
Installation	From side, down into the sensor groove, so-called drop-in
Outputs	PNP, normally open (also available in NPN design, normally closed, on request)
Voltage range	10-30 VDC 10-18 VDC, ATEX sensor
Ripple	max 10%
Voltage drop	max 2,5 V
Load current	max 100 mA
Internal consumption	max 10 mA
Actuating distance	min 9 mm
Hysteresis	max 1,5 mm
Repeatability accuracy	max 0,2 mm
On/off switching frequency	max 5 kHz
On switching time	max 2 ms
Off switching time	max 2 ms
Encapsulation	IP67 (EN 60529)
Temperature range	–25 °C to +75 °C –20 °C to +45 °C, ATEX sensor
Indication	LED, yellow
Material housing	PA 12
Material screw	Stainless steel
Cable	PVC or PUR 3x0.25 mm^2 see order code respectively

Reed sensors

The sensors are based on proven reed switches, which offer reliable function in many applications. Simple installation, a protected position on the cylinder and clear LED indication are important advantages of this range of sensors.

Technical data	
Design	Reed element
Mounting	From side, down into the sensor groove, so-called drop-in
Output	Normally open, or normally closed
Voltage range	10-30 V AC/DC or 10-120 V AC/DC 24-230 V AC/DC
Load current	max 500 mA for 10-30 V or max 100 mA for 10-120 V max 30 mA for 24-230 V
Breaking power (resistive)	max 6 W/VA
Actuating distance	min 9 mm
Hysteresis	max 1,5 mm
Repeatability accuracy	0,2 mm
On/off switching frequency	max 400 Hz
On switching time	max 1,5 ms
Off switching time	max 0,5 ms
Encapsulation	IP67 (EN 60529)
Temperature range	–25 °C to +75 °C
Indication	LED, yellow
Material housing	PA12
Material screw	Stainless steel
Cable	PVC or PUR 3x0.14 mm^2 see order code respectively

Sensors Ordering Data

Output/function	Cable/connector	Weight kg	Order code
Electronic sensors, 10-30 V DC			
PNP type, normally open	0,27 m PUR-cable and 8 mm snap-in male connector	0,007	P8S-GPSHX
PNP type, normally open	0,27 m PUR-cable and 12 mm screw male connector	0,015	P8S-GPMHX
PNP type, normally open	3 m PVC-cable without connector	0,030	P8S-GPFLX
PNP type, normally open	10 m PVC-cable without connector	0,110	P8S-GPFTX
Reed sensors, 10-30 V AC/DC			
Normally open	0,27 m PUR-cable and 8 mm snap-in male connector	0,007	P8S-GSSHX
Normally open	0,27 m PUR-cable and 12 mm screw male connector	0,015	P8S-GSMHX
Normally open	3 m PVC-cable without connector	0,030	P8S-GSFLX
Normally open	10 m PVC-cable without connector	0,110	P8S-GSFTX
Normally closed	5 m PVC-cable without connector	0,050	P8S-GCFPX

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Waterblock Series WBB



Designed for Welding Applications

Waterblock is an integrated manifold made from brass that supplies and monitors water to the weld cell. Utilizing a highly sensitive Vortex Flow Sensor to detect leakage or improper supply to the cell, the Parker WBB will provide the essential protection for expensive welding equipment. The system includes both an integrated electronic shut-off along with an internal check valve to assure proper shutdown, should an event occur. System balance is maintained with the input flow restrictor, which allows repeatable setup. Welding control circuit is included into the package to allow cooling control from ONE location. Maintenance is simple due to the unique manifold design allowing removal of all major components without the need to remove the connections to the manifold. Assembled options are available on request.

Technical Data

Water Service Unit

Supply Return Connection	3/4" BSPP / JIC / NPT
Robot Connections	3/4" BSPP JIC / NPT
Pressure	6 bar (87 PSI)
Operation Temperature	-25°C to +80°C
Voltage	20 to 30VDC
Check Valve	Return Path
Flow	40 L/min (10.6 G/min)

Performance

Leak Detection	< 1s
Shut-off	< 100ms
Outputs	2 PNP or NPN
Flow Restrictor	5 –100% (Approx)

Materials

Housing	Brass
Fittings	Brass
Weight	Brass: 3.5 kg (7.8 lb)

Model Number Index

WB B – 1 – C 3 – * X

Bold Items are North American Standard

	Series
WB	Water Distribution Block

	Material
B	Brass Water Block

	Porting
1	BSPP
3	JIC *
9	NPT **

* Male JIC uses adapter CDN12F4OMXB
** NPT uses adapter 3/4X3/4F4OHGB

	Flow Sensor
3	40L/min Integrated Temperature and I/O Link
5	40L/min Integrated Temperature and I/O Link + Pressure Switch

	Electronic Shutoff
C	Integrated, 24VDC NC

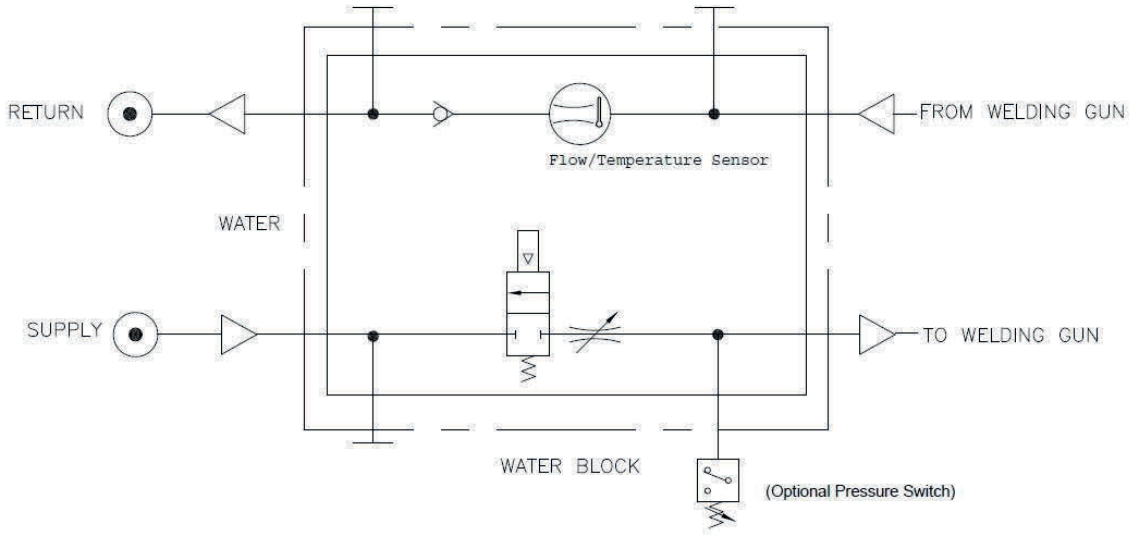
	Engineering Level
B	Current Level

	Specials as Required
X	

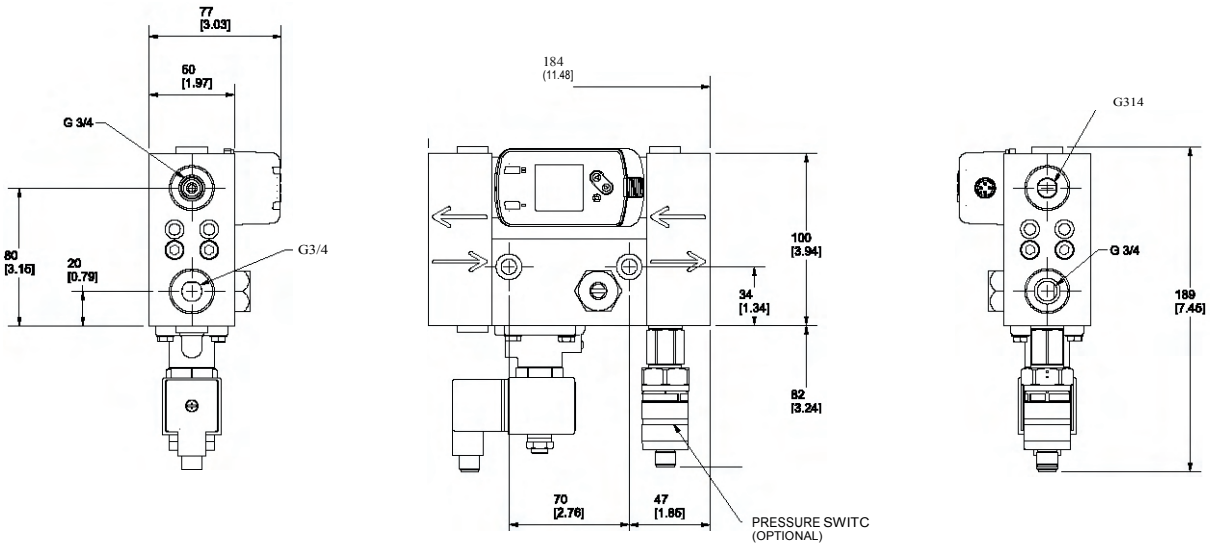
Note: Part number WBB1C3, supercedes part numbers WBB-16666-C1/C2, WBB112/4, 3554800. Refer to dimensions on next page for current model.

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Schematic



Dimensions



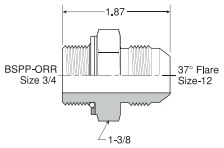
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Spare Parts

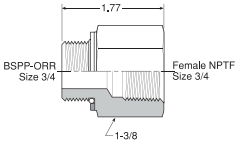
	CDN12F4OMXB	Water Fittings - Brass
	3/4 x 3/4F4OHGB	Water Fittings - Brass
	5554851	Check Valve
1	**7321BAN00**	Skinner Valve N/C
2	**481865C2**	Coil
3	**6506341**	40L Flow Sensor Kit
4	**5554715**	30MM DIN to M12 Connector 24VDC
	PK6524	Pressure Switch
	CDN 1/4F4HG4B	.374 Drill Sensor Adapter
	RKM 56-5M/S1587	5-Pin Female M12 x Flying Leads 5 Meters
	WKM 56-5M/S1567	5-Pin Right Angle Female M12 Flying Leads 5 Meters

Fittings

CDN12F4OMXB
Male Connector - BSPP
Brass Body / Nitrile O-ring

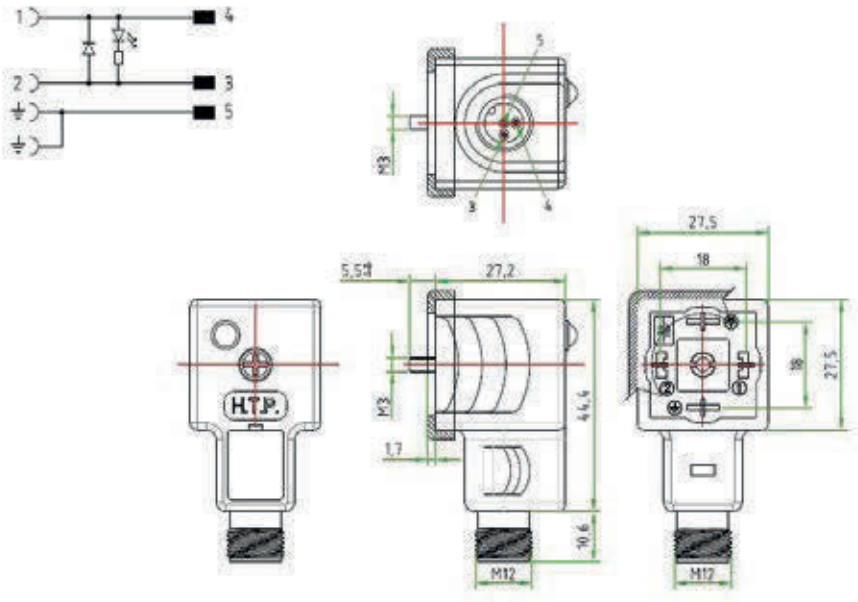


3/4x3/4F4OHGB
Conversion Adapter
Brass Body / Nitrile O-ring





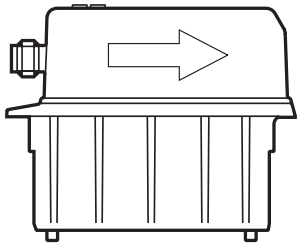
Part Number 5554715 Wiring Diagram for 30MM DIN to M12 Connector 24VDC



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Operating instructions
Vortex flow meter
Parker 5097335

CE



1 Safety instructions

- Please read this document prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property can occur.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application. That is why installation, electrical connection, set-up, operation and maintenance of the unit must only be carried out by qualified personnel authorised by the machine operator.
- In order to guarantee the correct condition of the device for the operating time it is necessary to use the device only for media to which the wetted materials are sufficiently resistant (→ Technical data).
- The responsibility whether the measurement devices are suitable for the respective application lies with the operator. The manufacturer assumes no liability for consequences of misuse by the operator. Improper installation and use of the units result in a loss of the warranty claims.

⚠ CAUTION

For medium temperatures above 50 °C (122 °F) some parts of the housing can heat up to over 65 °C (149 °F). Risk of burns.

▶ In this case do not touch the unit.

▶ Protect the housing against contact with flammable substances and unintentional contact.

▶ Do not press the pushbuttons manually; instead use another object (e.g. ballpoint pen).

2 Functions and features

The unit monitors water-based fluids (water, deionised water, cooling water).

It detects the two process categories volumetric flow and medium temperature.

Pressure Equipment Directive (PED):
The units comply with the Pressure Equipment Directive and are designed and manufactured for group 2 fluids in accordance with the sound engineering practice. Use of group 1 fluids on request.

3 Function

- The unit detects the volumetric flow quantity based on the Vortex measuring principle.
- It features an IO-Link interface.
- The unit displays the current flow and temperature. It generates 2 output signals according to the parameter setting:

OUT1/IO-Link: 2 selection options

- switching signal for volumetric flow quantity limit value
- or frequency signal for volumetric flow quantity

OUT2: 4 selection options

- switching signal for volumetric flow quantity limit value
- or switching signal for temperature limit value
- or frequency signal for volumetric flow quantity
- or frequency signal for temperature

4 Installation

▶ Flow in the direction of the arrow. Observe the installation direction.

▶ Make sure that pipe and sensor have the same internal diameter.

▶ Avoid deposits, accumulated gas and air in the pipe system. Install the unit so that the measuring pipe is always completely filled with medium

▶ Install in front of or in a rising pipe.

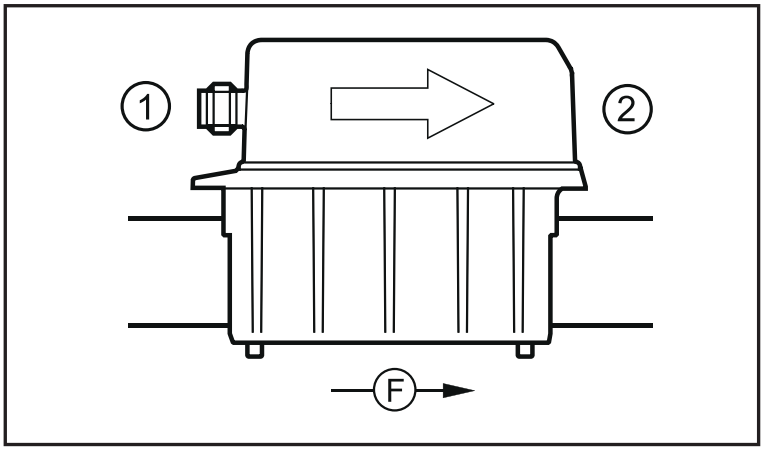
▶ Mount the unit in a way that no mechanical forces are exerted on the pipe. To do so, use angle brackets if required

▶ Avoid the following installation positions:

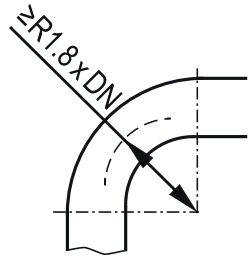
- Directly in front of a falling pipe.
- In a falling pipe.
- At the highest point of the pipe system.
- Directly in front of the spout of the pipe.
- On the suction side of a pump.

4.1 Inlet and outlet pipe lengths

▶ Avoid disturbances on the inlet and outlet side. To do so, provide for the following inlet and outlet pipe lengths:

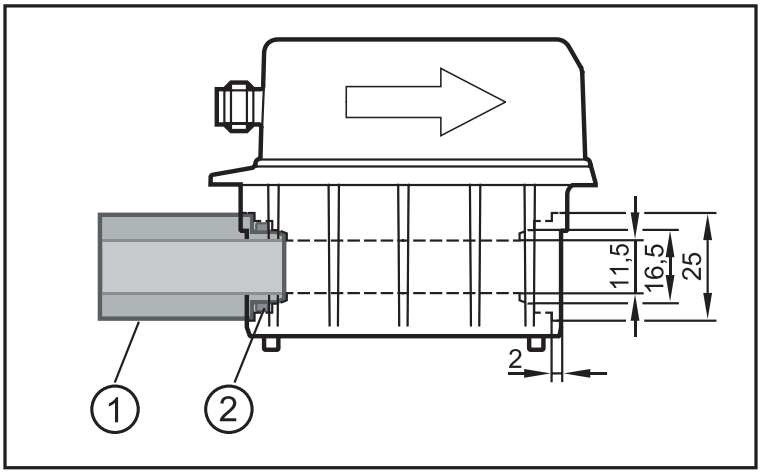


DN = nominal width of the pipe
R = radius

Disturbance	Inlet pipe length (1)	Outlet pipe length (2)
Non-ideal bend	≥ 5 x DN	≥ 1 x DN
Ideal bend 	≥ 0.5 x DN	
Multiple bends (2 x 90°)	≥ 15 x DN	
Reduction of internal pipe diameter	≥ 15 x DN	≥ 15 x DN
Valve or pump	≥ 25 x DN	

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4.2 Installation in pipes



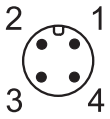
1: pipe
2: O-ring

5 Electrical connection

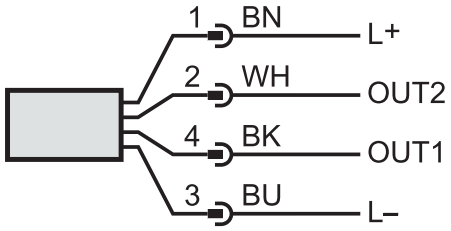
The unit must be connected by a qualified electrician.
The national and international regulations for the installation of electrical equipment must be adhered to.
Voltage supply according to EN 50178, SELV, PELV.

▶ Disconnect power.

▶ Connect the unit as follows:



BK: black
BN: brown
BU: blue
WH: white

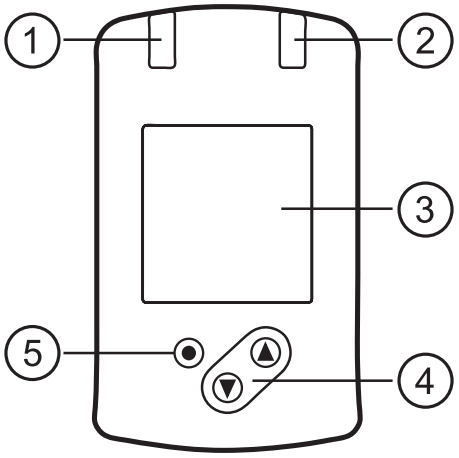


Colours to DIN EN 60947-5-2

Pin 1	L+
Pin 3	L-
Pin 4 (OUT1)	• Switching signal: limit values for volumetric flow • Frequency signal for volumetric flow quantity • IO-Link

Pin 2 (OUT2)	• Switching signal: limit values for volumetric flow • Switching signal: limit values for temperature • Frequency signal for volumetric flow quantity • Frequency signal for temperature

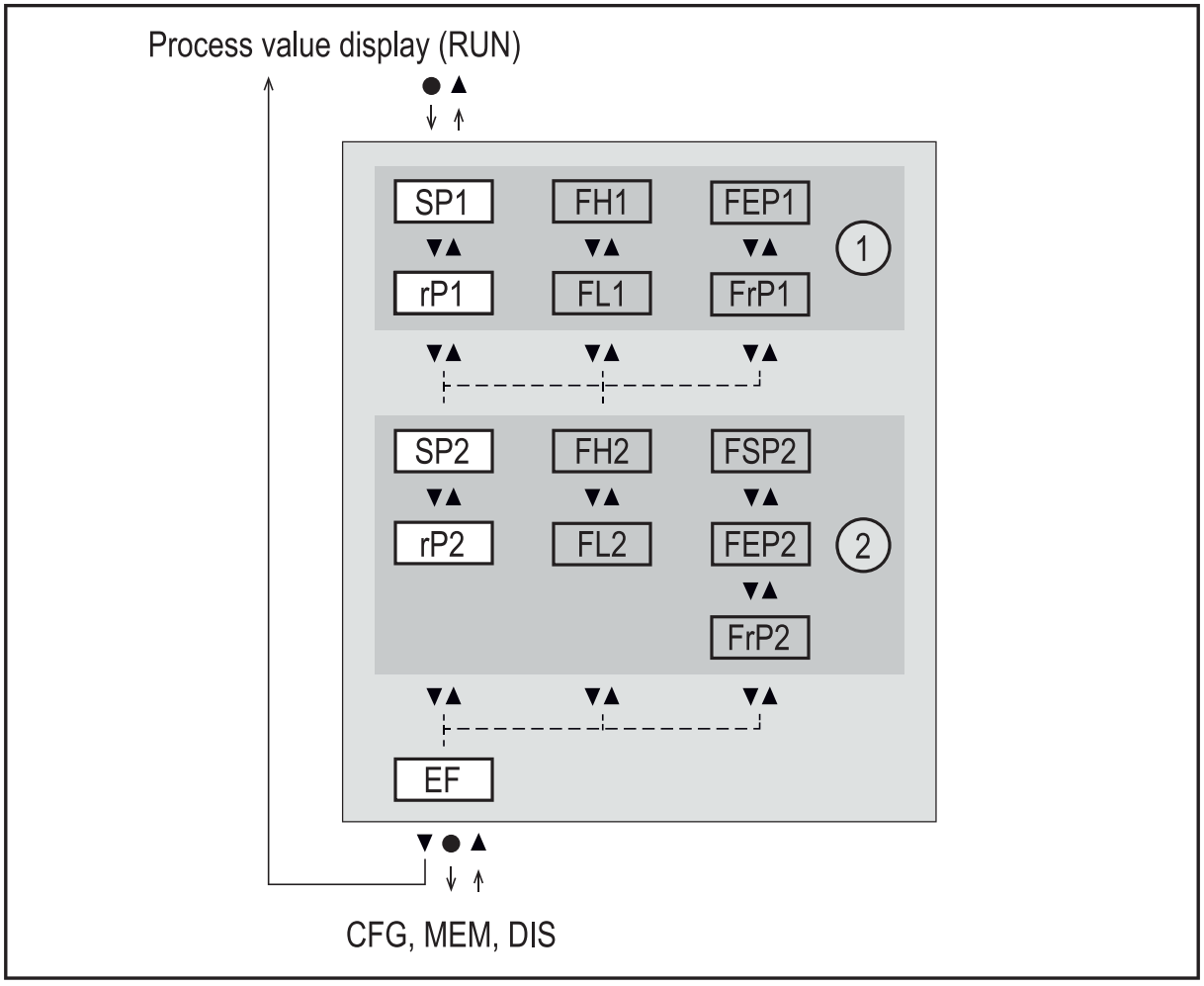
6 Operating and display elements



1 and 2: switching status LEDs
• LED 1 = switching status OUT1 (lights when output 1 is switched) • LED 2 = switching status OUT2 (lights when output 2 is switched)
3: TFT display
• Display of current process values (volumetric flow quantity, temperature) • Display of the parameters and parameter values
4: Buttons [▲] and [▼]
• Select parameters • Change parameter values (hold button pressed) • Change of the process value display in the normal operating mode (Run mode) • Locking / unlocking (press buttons simultaneously > 10 seconds)
5: Button [•] = Enter
• Change from RUN mode to the main menu • Change to setting mode • Acknowledgement of the set parameter value

7 Menu

7.1 Main menu



1: Output functions ou1 (→ 7.2.1)
2: Output functions ou2 (→ 7.2.1)

The parameters are only displayed when selected at ou1 / ou2.

7.1.1 Explanation main menu

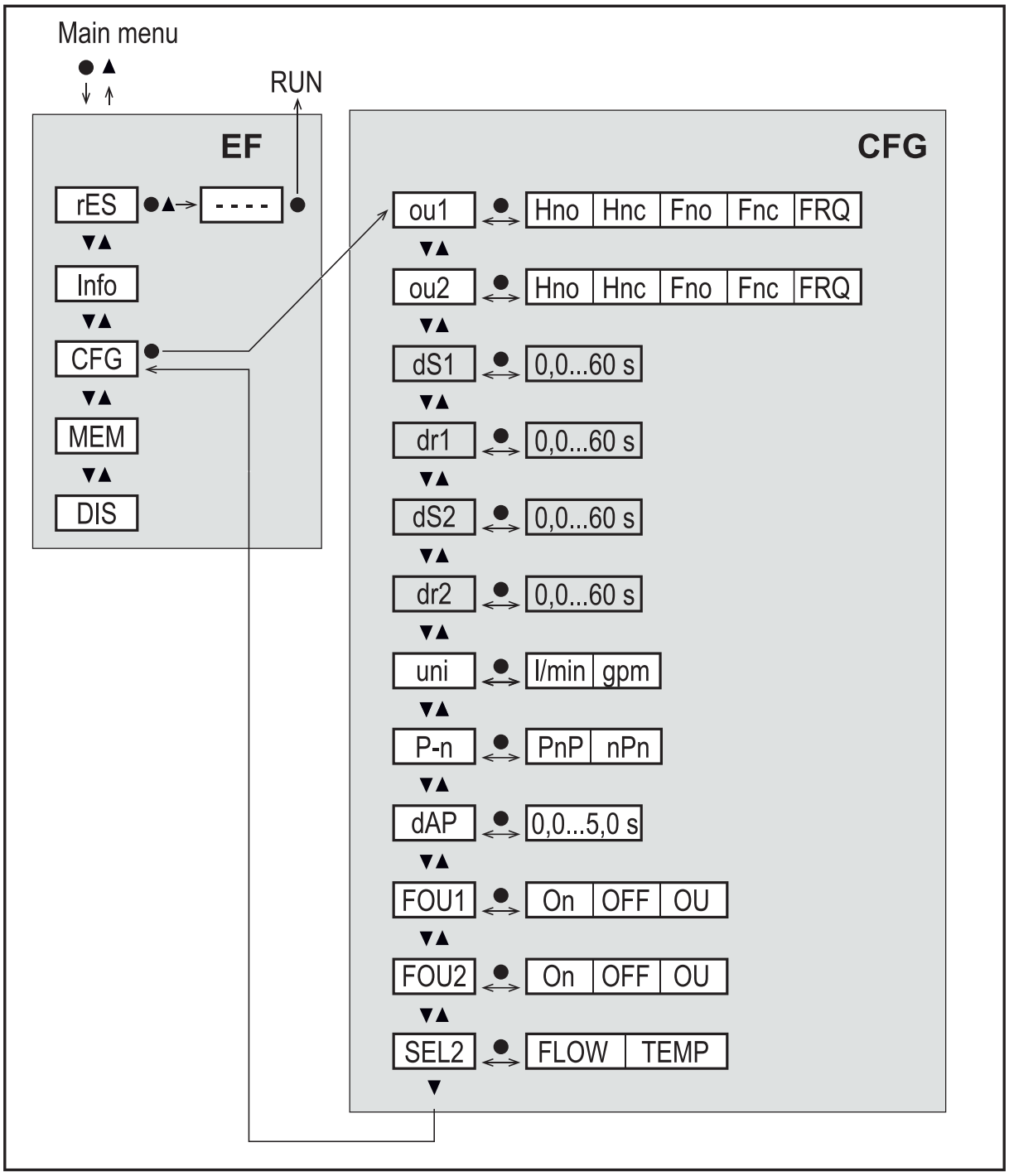
Switching output with hysteresis function	
SP1	Set point 1 = upper limit value at which OUT1 switches.
rP1	Reset point 1 = lower limit value at which OUT1 switches off.
SP2	Set point 2 = upper limit value at which OUT2 switches.
rP2	Reset point 2 = lower limit value at which OUT2 switches off.

Switching output with window function	
FH1	Set point 1 = upper limit value at which OUT1 switches.
FL1	Reset point 1 = lower limit value at which OUT1 switches.
FH2	Set point 2 = upper limit value at which OUT2 switches.
FL2	Reset point 2 = lower limit value at which OUT2 switches.

Frequency output	
FEP1	Process value end point on OUT1.
FrP1	Frequency at process value end point (FEP1) on OUT1.
FSP2	Process value start point on OUT2 (only if SEL2 = TEMP).
FEP2	Process value end point on OUT2.
FrP2	Frequency at process value end point (FEP2) on OUT2.

Extended functions	
EF	Opening of the lower menu level.

7.2 Extended functions – basic settings



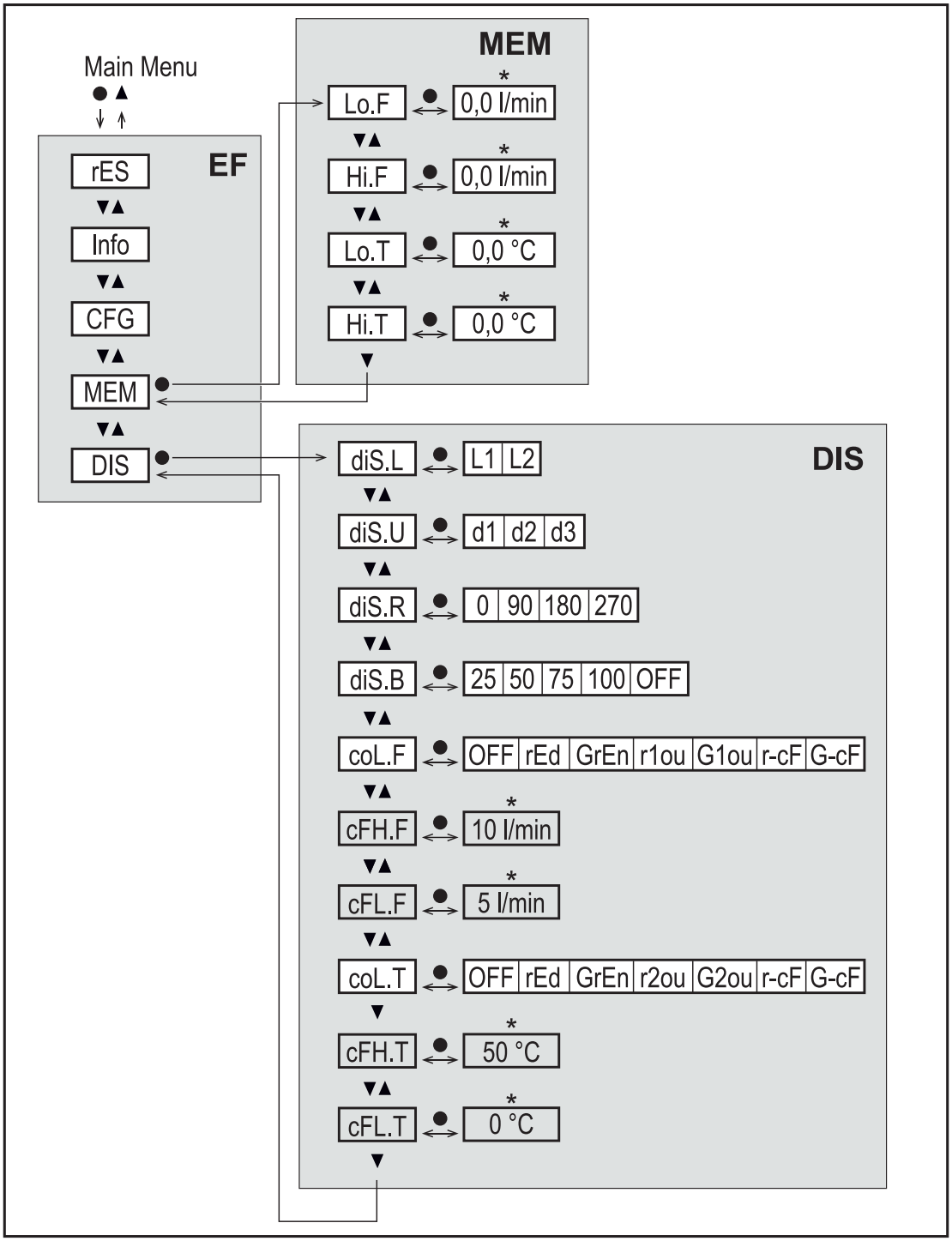
The parameters are only displayed when oux = Hno, Hnc, Fno, Fnc.

rES	Restoring the factory settings
Info	Device information
CFG	Submenu basic settings
MEM	Submenu min/max memory
DIS	Submenu display settings

7.2.1 Explanation basic settings (CFG)

ou1	Output function OUT1 • Flow: Hno, Hnc, Fno, Fnc, FRQ	
ou2	Output function OUT2 • Flow: Hno, Hnc, Fno, Fnc, FRQ • Temperature: Hno, Hnc, Fno, Fnc, FRQ	
Hno	Hysteresis function normally open	
Hnc	Hysteresis function normally closed	
Fno	Window function normally open	
Fnc	Window function normally closed	
FRQ	Frequency output	
dS1	Switching delay on OUT1 in seconds	Only in case of oux = Hno, Hnc, Fno, Fnc
dr1	Switch-off delay on OUT1 in seconds	
dS2	Switching delay on OUT2 in seconds	
dr2	Switch-off delay on OUT2 in seconds	
uni	Standard unit of measurement for volumetric flow If unit is set to gpm then the temperature unit of measurement changes to Fahrenheit.	
P-n	Output logic: pnp / npn	
dAP	Measured value damping in seconds (only for volumetric flow)	
FOU1	Behaviour of output OUT1 in case of an error	
FOU2	Behaviour of output OUT2 in case of an error	
SEL2	Standard measured variable for evaluation by OUT2: Volumetric flow quantity or medium temperature	

7.3 Extended functions – min / max memory – display



* Unit in case of factory setting.

The parameters are only displayed when selected r-cF oder G-cF.

7.3.1 Explanation min/max memory (MEM)

Lo.F	Minimum value of the flow measured in the process
Hi.F	Maximum value of the flow measured in the process
Lo.T	Minimum value of the temperature measured in the process
Hi.T	Maximum value of the temperature measured in the process

7.3.2 Explanation display function (DIS)

diS.L	Standard layout of the display(L1: flow or L2: flow and temperature)	
diS.U	Update rate of display	
diS.R	Display rotation	
diS.B	Display brightness	
coL.F	Colour configuration volumetric flow	
coL.T	Colour configuration temperature	
OFF	No colour change	
rEd	Process value always red, irrespective of the output function	
GrEn	Process value always green, irrespective of the output function	
r1ou / r2ou	Process value red in case of switched output OUT1 / OUT2	
G1ou / G2ou	Process value green in case of switched output OUT1 / OUT2	
r-cF	Display red if measured value between limit values cFL...cFH, irrespective of the output function	
G-cF	Display green if measured value between limit values cFL...cFH, irrespective of the output function	
cFH.F	Upper limit value for colour change flow	Only if r-cF or G-cF is selected.
cFL.F	Lower limit value for colour change flow	
cFH.T	Upper limit value for colour change temperature	
cFL.T	Lower limit value for colour change temperature	

8 Parameter setting

Parameters can be set before installation and set-up of the unit or during operation.

If you change parameters during operation, this will influence the function of the plant.

▶ Ensure that there will be no malfunctions in your plant.

The parameters can also be set via the IO-Link interface.

8.1 Parameter setting in general

1. Change from RUN mode to the main menu	[•]
2. Selection of the requested parameter	[▲] or [▼]
3. Change to setting mode	[•]
4. Modification of the parameter value	[▲] or [▼] > 1 s
5. Acknowledgement of the set parameter value	[•]
6. Return to the RUN mode	> 30 seconds (timeout) or press [▲] + [▼] simultaneously until the RUN mode is reached.

9 Factory setting

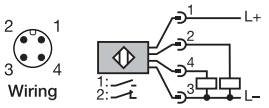
Parameter		Factory setting	User setting
SP1	(FLOW)	20 % *	
rP1	(FLOW)	18.5 % *	
FH1	(FLOW)	20 % *	
FL1	(FLOW)	18.5 % *	
FEP1	(FLOW)	100 % *	
FrP1	(FLOW)	100 Hz	
SP2	(FLOW, TEMP)	40 % *	
rP2	(FLOW, TEMP)	38.5 % *	
FH2	(FLOW, TEMP)	40 % *	
FL2	(FLOW, TEMP)	38.5 % *	
FSP2	(TEMP)	0 % *	
FEP2	(FLOW, TEMP)	100 % *	
FrP2	(FLOW, TEMP)	100 Hz	
ou1	(FLOW)	Hno	
ou2	(FLOW, TEMP)	Hno	

Parameter		Factory setting	User setting
FOU1	(FLOW)	OFF	
FOU2	(FLOW, TEMP)	OFF	
SEL2	(FLOW, TEMP)	FLOW	
col.F	(FLOW)	OFF	
col.T	(TEMP)	OFF	
dS1		0 s	
dR1		0 s	
dS2		0 s	
dR2		0 s	
uni		l/min	
P-n		PnP	
dAP		0.6 s	
diS.L		L2	
diS.U		d2	
diS.R		0	
diS.B		75 %	
cFH.F		MEW	
cFL.F		MAW	
cFH.T		MEW	
cFL.T		MAW	

MEW = final value of the measuring range
MAW = initial value of the measuring range

* The percentage values refer to the final value of the measuring range.

PK6524
Pressure Switch Specifications



Sensor Characteristics	Electronic pressure monitor	
	Quick disconnect	
	Process connection: G ¼ A / M5 I	
	2 switching outputs normally open / closed complementary	
	Measuring range: 0...10 bar / 0...145 psi	
Application	Type of pressure: relative pressure liquids and gases	
	Pressure rating	25 bar (362 psi)
	Bursting pressure min.	300 bar (4350 psi)
	MAWP (for applications according to CRN)	25 bar (362 psi)
	Medium temperature [°C]	-25° to 80°C (-13° to 176°F)
Electrical Data	Electrical design	DC PNP
	Operating voltage [V]	9.6...32 DC
	Current consumption [mA]	< 25
	Insulation resistance [MΩ]	> 100 (500 V DC)
	Protection class	III
	Reverse polarity protection	yes
Outputs	Output 2 switching outputs normally open / closed complementary	
	Output function normally open / closed complementary	
	Current rating [mA] 500	
	Voltage drop [V] < 2	
	Short-circuit protection Yes (non-latching)	
	Overload protection yes	
	Switching frequency [Hz] 100	
Measuring	Setting Range	
	Measuring range	0...10 bar (0...145 psi)
	Setting range Set point, SP	0.5...10 bar (7.5...145 psi)
	Reset point, rP	0.3...9.8 bar (5.0...142 psi)
Accuracy	Deviations	
	Deviations (% of value of measuring range) switch point accuracy	< ± 2.5 *)
	Characteristics deviation	< ± 1.5 (BFSL) / < ± 2.5 (LS) **)
	Repeatability	< ± 0.5
	Temperature drift (/ 10 K)	< ± 0.5
	in the temperature range [°C]	0...80
Programming	Adjustment of the switch point	Setting rings
Environment	Ambient temperature [°C]	-25° to 80°C (-13° to 176°F)
	Storage temperature [°C]	-40° to 100°C (-40° to 212°F)
	Protection	IP 67
Tests	Approvals	
	Pressure equipment directive article 3, section 3 - sound engineering practice	
	EMC DIN EN 61000-6-2 / DIN EN 61000-6-3	
	Shock resistance DIN EN 60068-2-27: 50 g (11 ms)	
	Vibration resistance DIN EN 60068-2-6: 20 g (10...2000 Hz)	
	MTTF [Years] 540	
Mechanical	Data	
	Process connection G ¼ A / M5 I	
	Materials (wetted parts) stainless steel 316L / 1.4404; FPM	
	Housing materials PBT; PC; FPM; stainless steel 316L / 1.4404	
	Switching cycles min. 50 million	
	Tightening torque [Nm] 25	
	Weight [kg] 0.093	
Display	Operating Elements	
	Display Power LED green / Switching status LED yellow	
Notes	*) Setting accuracy	
	**) BFSL = Best Fit Straight Line / LS = Limit Value Setting	

In order to meet your **technical and environment requirements**, Parker Legris designed this range of metal fittings, offering **robustness**, **reliability** and **resistance to industrial fluids** for the most demanding environments.

Product Advantages

High Performance

- Resistant up to +150°C at 30 bar
- Excellent mechanical performance
- Long threads to resist shock and vibration
- Excellent abrasion and corrosion resistance due to high phosphorus chemical nickel plating
- Full flow, minimal pressure drop

Versatility

- Materials conform to FDA standards
- Spring collet gripping system suitable for both metal (grooved) and polymer tubing
- Excellent resistance to high pressure and vacuum
- Excellent chemical compatibility
- More than 250 part numbers
- One fitting for numerous applications: stock optimisation
- Manual connection and disconnection
- Compact and ergonomic

Reliability

- High performance brass for increased lifespan
- 100% leak-tested in production
- Date coding to guarantee quality and traceability



Applications

Hi Light:

In-Plant Automotive

Welding Robots

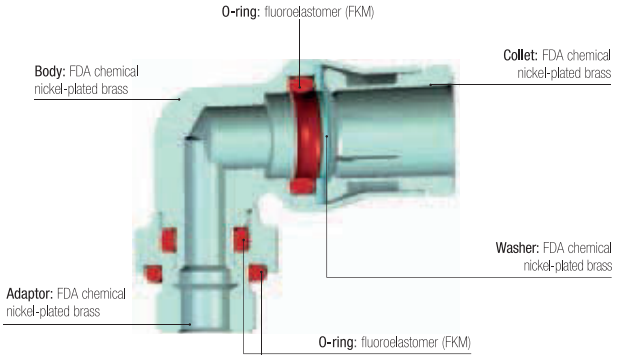
Technical Characteristics

Suitable Fluids	Compressed air, grease, lubricant, water…							
Working Pressure	Vacuum to 30 bar (20 bar: 3699, 3609)							
Working Temperature	-25°C to +150°C							
Maximum Tightening Torque (daN.m)	Thread							
	M5 x0.8	M6 x1	M8 x1	M10 x1	G1/8	G1/4	G3/8	G1/2
	0.16	0.18	0.6	0.8	0.8	1.2	3	3.5

Reliable performance is dependent upon the type of fluid conveyed, component materials and tubing being used.

Use is guaranteed with a vacuum of 755 mm Hg (99% vacuum).

Component Materials



Silicone-free

Regulations

Industrial

ISO 14743: pneumatic transmissions, push-in fittings for thermoplastic tubing

DI: 97/23/EC (PED)
DI : 2002/95/EC (RoHS), 2011/65/EC
RG: 1907/2006 (REACH)

DI: 94/9/EC (ATEX)

UL94 V-0: please consult us

Food

RG: 21CFR (FDA)

RG: 1935/2004/EC (minimum flow 0.02 l/h)

USDA NSF H1: grease

ASTM B733-04: autocatalytic (electroless) nickel-phosphorus coatings

Parker Hannifin Corporation
Parker Canada Division
Milton, ON Canada

Stud Fittings

3675 Stud Fitting, Male BSPT Thread

FDA chemical nickel-plated brass, FKM



ØD	C	Part number
	R1/8	3675 04 10
4	R1/4	3675 04 13
6	R1/8	3675 06 10
	R1/4	3675 06 13
8	R1/8	3675 08 10
	R1/4	3675 08 13
	R3/8	3675 08 17
10	R1/4	3675 10 13
	R3/8	3675 10 17
	R1/2	3675 10 21
12	R1/4	3675 12 13
	R3/8	3675 12 17
	R1/2	3675 12 21
14	R3/8	3675 14 17
	R1/2	3675 14 21

3601 Stud Fitting, Male BSPP and Metric Thread

FDA chemical nickel-plated brass, FKM



ØD	C	Part number
4	M5x0.8	3601 04 19
	M6x1	3601 04 52
	M8x1	3601 04 56
	G1/8	3601 04 10
	G1/4	3601 04 13
6	M5x0.8	3601 06 19
	M10x1	3601 06 60
	G1/8	3601 06 10
	G1/4	3601 06 13
8	G1/8	3601 08 10
	G1/4	3601 08 13
	G3/8	3601 08 17
10	G1/4	3601 10 13
	G3/8	3601 10 17
	G1/2	3601 10 21
12	G1/4	3601 12 13
	G3/8	3601 12 17
	G1/2	3601 12 21
14	G3/8	3601 14 17
	G1/2	3601 14 21

3681 Stud Fitting with Internal Hexagon, Male Metric Thread

FDA chemical nickel-plated brass, FKM



ØD	C	Part number
4	M5x0.8	3681 04 19

3614 Stud Fitting, Female BSPP and Metric Thread

FDA chemical nickel-plated brass, FKM



ØD	C	Part number
4	M5x0.8	3614 04 19
	G1/8	3614 04 10
	G1/4	3614 04 13
6	G1/8	3614 06 10
	G1/4	3614 06 13
8	G1/8	3614 08 10
	G1/4	3614 08 13
10	G3/8	3614 10 17
12	G3/8	3614 12 17
	G1/2	3614 12 21

3621 Stud Standpipe, Male BSPT Thread

FDA chemical nickel-plated brass, FKM



ØD	C	Part number
4	R1/8	3621 04 10
	R1/4	3621 04 13
6	R1/8	3621 06 10
	R1/4	3621 06 13
8	R1/8	3621 08 10
	R1/4	3621 08 13
10	R1/4	3621 10 13
	R3/8	3621 10 17
12	R3/8	3621 12 17
	R1/2	3621 12 21
14	R1/2	3621 14 21

3631 Stud Standpipe, Male BSPB and Male Thread

FDA chemical nickel-plated brass, FKM



ØD	C	Part number
4	M5x0.8	3631 04 19
	G1/8	3631 04 10
	G1/4	3631 04 13
6	G1/8	3631 06 10
	G1/4	3631 06 13
8	G1/8	3631 08 10
	G1/4	3631 08 13
	G3/8	3631 08 17
10	G1/4	3631 10 13
	G3/8	3631 10 17
	G1/2	3631 10 21
12	G3/8	3631 12 17
	G1/2	3631 12 21
14	G1/2	3631 14 21

3600 One-Piece Cartridge

FDA chemical nickel-plated brass, FKM



ØD	Part number
4	3600 04 00
6	3600 06 00
8	3600 08 00
10	3600 10 00
12	3600 12 00
14	3600 14 00

Parker Hannifin Corporation
Parker Canada Division
Milton, ON Canada

3609 Stud Elbow, Male BSPT Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	R1/8	3609 04 10
	R1/4	3609 04 13
6	R1/8	3609 06 10
	R1/4	3609 06 13
8	R1/8	3609 08 10
	R1/4	3609 08 13
	R3/8	3609 08 17
10	R1/4	3609 10 13
	R3/8	3609 10 17
12	R1/4	3609 12 13
	R3/8	3609 12 17
	R1/2	3609 12 21
14	R3/8	3609 14 17
	R1/2	3609 14 21

3629 Extended Stud Elbow, Male BSPT Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	R1/8	3629 04 10
6	R1/8	3629 06 10
	R1/4	3629 06 13
8	R1/8	3629 08 10
	R1/4	3629 08 13
10	R1/4	3629 10 13

3699 Compact Elbow, Male BSPP and Metric Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	M5x0.8	3699 04 19
	M6x1	3699 04 52
	M8x1	3699 04 56
	G1/8	3699 04 10
	G1/4	3699 04 13
6	M10x1	3699 06 60
	G1/8	3699 06 10
	G1/4	3699 06 13
8	G1/8	3699 08 10
	G1/4	3699 08 13
	G3/8	3699 08 17
10	G1/4	3699 10 13
	G3/8	3699 10 17
12	G1/4	3699 12 13
	G3/8	3699 12 17
	G1/2	3699 12 21
14	G3/8	3699 14 17
	G1/2	3699 14 21

3669 Extended Stud Elbow, Male BSPP and Metric Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	M5x0.8	3669 04 19
	G1/8	3669 04 10
6	G1/8	3669 06 10
	G1/4	3669 06 13
8	G1/8	3669 08 10
	G1/4	3669 08 13
10	G1/4	3669 10 13
	G3/8	3669 10 17
12	G1/4	3669 12 13
	G3/8	3669 12 17
14	G1/2	3669 14 21

3608 Stud Branch Tee, Male BSPT Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	R1/8	3608 04 10
6	R1/8	3608 06 10
	R1/4	3608 06 13
8	R1/8	3608 08 10
	R1/4	3608 08 13
10	R1/4	3608 10 13
	R3/8	3608 10 17
12	R3/8	3608 12 17
14	R1/2	3608 14 21

3603 Stud Run Tee, Male BSPT Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	R1/8	3603 04 10
6	R1/8	3603 06 10
	R1/4	3603 06 13
8	R1/8	3603 08 10
	R1/4	3603 08 13
10	R1/4	3603 10 13
	R3/8	3603 10 17
12	R3/8	3603 12 17
14	R1/2	3603 14 21

3698 Stud Run Tee, Male BSPT Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	M5x0.8	3698 04 19
	G1/8	3698 04 10
6	G1/8	3698 06 10
	G1/4	3698 06 13
8	G1/8	3698 08 10
	G1/4	3698 08 13
10	G1/4	3698 10 13
12	G3/8	3698 12 17
14	G1/2	3698 14 21

3693 Stud Run Tee, Male BSPP and Metric Thread

FDA chemical nickel-plated brass, FKM



The body swivels for positioning purposes.

ØD	C	Part number
4	M5x0.8	3693 04 19
	G1/8	3693 04 10
6	G1/8	3693 06 10
	G1/4	3693 06 13
8	G1/8	3693 08 10
	G1/4	3693 08 13
10	G1/4	3693 10 13
12	G3/8	3693 12 17
14	G1/2	3693 14 21

3618 Single Banjo, Male BSPP and Metric Thread

FDA chemical nickel-plated brass, FKM



Maximum temperature: +80°C

ØD	C	Part number
4	M5x0.8	3618 04 19
	G1/8	3618 04 10
6	M5x0.8	3618 06 19
	G1/8	3618 06 10
	G1/4	3618 06 13
8	G1/8	3618 08 10
	G1/4	3618 08 13
10	G3/8	3618 10 17

Parker Hannifin Corporation
Parker Canada Division
Milton, ON Canada

Tube-to-Tube Fittings

3606 Equal Tube-to-Tube Connector

FDA chemical nickel-plated brass, FKM



ØD	Part number
4	3606 04 00
6	3606 06 00
8	3606 08 00
10	3606 10 00
12	3606 12 00
14	3606 14 00

3602 Equal Elbow

FDA chemical nickel-plated brass, FKM



ØD	Part number
4	3602 04 00
6	3602 06 00
8	3602 08 00
10	3602 10 00
12	3602 12 00
14	3602 14 00

3604 Equal Tee

FDA chemical nickel-plated brass, FKM



ØD	Part number
4	3604 04 00
6	3604 06 00
8	3604 08 00
10	3604 10 00
12	3604 12 00
14	3604 14 00

Bulkhead Connector Fittings

3616 Equal Bulkhead Connector

FDA chemical nickel-plated brass, FKM



ØD	Part number
4	3616 04 00
6	3616 06 00
8	3616 08 00
10	3616 10 00
12	3616 12 00
14	3616 14 00

3636 Bulkhead Connector, Female BSPP Thread

FDA chemical nickel-plated brass, FKM



ØD	Part number
4	3636 04 00
6	3636 06 00
8	3636 08 00
10	3636 10 00
12	3636 12 00
14	3636 14 00

3639 Equal Bulkhead Elbow

FDA chemical nickel-plated brass, FKM



ØD	Part number
4	3636 04 00
6	3636 06 00
8	3636 08 00
10	3636 10 00
12	3636 12 00
14	3636 14 00

The body swivels for positioning purposes.

Accessories

3666 Plug-In Reducer

FDA chemical nickel-plated brass, FKM



ØD1	ØD2	Part number
4	6	3666 04 06
	8	3666 04 08
6	8	3666 06 08
	10	3666 06 10
8	10	3666 08 10
	12	3666 08 12
10	12	3666 10 12
12	14	3666 12 14

3667 Plug-In Metric/Inch Adaptor

FDA chemical nickel-plated brass, FKM



ØD1	ØD2	Part number
6	1/4	3667 06 56
10	3/8	3667 10 60
12	1/2	3667 12 62

3668 Plug-In Increaser

FDA chemical nickel-plated brass, FKM



ØD1	ØD2	Part number
6	4	3668 06 04

3622 Plug-In Barb Connector

FDA chemical nickel-plated brass



ØD1	ØD2	Part number
4	3.2	3622 04 53
	5	3622 04 05
6	5	3622 06 05
8	6.3	3622 08 56
	8	3622 08 08
10	6.3	3622 10 56
	8	3622 10 08
12	8	3622 12 08
	10	3622 12 10
	12.5	3622 12 62
14	12.5	3622 14 62
	14	3622 14 14

3620 Male Stem Connector

FDA chemical nickel-plated brass



ØD	Part number
4	3620 04 00
6	3620 06 00
8	3620 08 00
10	3620 10 00
12	3620 12 00
14	3620 14 00

3626 Blanking Plug

FDA chemical nickel-plated brass



ØD	Part number
4	3626 04 00
6	3626 06 00
8	3626 08 00
10	3626 10 00
12	3626 12 00
14	3626 14 00

0605 Fluoropolymer Tape

FKM



Part number
0605 12 12

Can be used for temperatures from -250°C to +260°C.

Chemically inert and resistant to gases, acids, solvents, hydrocarbons, oils, alkalines, steam etc.

Non-toxic, waterproof, self-lubricating.

In accordance with CFR21.

Can be used on all materials.

Used to facilitate the preparation of leak-free threaded joints.

Supplied on a reel, length = 12 m, width = 12.7 mm, thickness 0.08 mm.

3000 70 Dismounting Tool

Treated steel



Part number
3000 70 00

For dismounting LF 3000® tubing/fittings where access is difficult, we recommend the use of this dismounting tool.

3610 Colored Release Button Covers

Anodised aluminum



ØD	○	●
6	3610 06 00	3610 06 04
8	3610 08 00	3610 08 04
10	3610 10 00	3610 10 04
12	3610 12 00	3610 12 04
14	3610 14 00	3610 14 04

Red and green colors are available upon request.

Colored release buttons covers help the identification of circuits and will protect your connections against spark projections.

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Weld Spatter Resistant Tubing

HUFR MicroWeld Tubing

Weld Spatter Resistant Polyurethane tubing

Available Colors - Enter color in place of XXX

BLK	BLU	GRN	WHT



Part number	I.D. inch	O.D. inch	Working pressure PSI	Bend radius inch
HUFR-4-045-XXX	0.16	1/4"	175	0.5
HUFR-6-062-XXX	0.251	3/8"	150	0.75
HUFR-8-090-XXX	0.32	1/2"	160	1

1100U..K Ether Tubing

Single Layer Anti-Spark Polyurethane (PU) Ether tubing

Available Colors - Enter color code number in place of X

1 = BLK	2 = GRN	3 = RED	4 = BLU

Tubepack ® 100m



Part number	I.D. mm	O.D. mm	kg	Bend Radius mm
1100U04K0X	2.5	4.0	0.900	12
1100U06K0X	4.0	6.0	2.3200	15
1100U08K0X	5.5	8.0	3.030	20
1100U10K0X	7.0	10.0	5.100	25
1100U12K0X	8.0	12.0	8.600	35
1100U14K0X 95 *	10.0	14.0	10.676	45

* Not available in black or blue

Multi Purpose Hose

821FR PUSH-LOK - Fire Resistant

Multipurpose - Fire Resistant fiber braid cover, PKR inner tube

Available Colors - Enter color in place of XXX

BLK	BLU	GRN	WHT	BRN



Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
821FR-4-XXX	1/4"	0.50	350	82
821FR-6-XXX	3/8"	0.63	300	82
821FR-8-XXX	1/2"	0.78	300	82
821FR-12-XXX	3/4"	1.03	250	82

83FR DuraGard - Weld Spatter Resistant

Multipurpose - Weld Spatter Resistant Urethane cover and Urethane inner tube

Available Colors - Enter color in place of XXX

BLU	GRN	BLK	GRA	BRN	RED



Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
83FR-4-XXX	1/4"	0.47	300	82
83FR-6-XXX	3/8"	0.59	300	82
83FR-8-XXX	1/2"	0.75	300	82
83FR-12-XXX	3/4"	1.03	300	82

801 PUSH-LOK PLUS

Multipurpose - Synthetic rubber cover and inner tube

Available Colors - Enter color in place of XXX

GRA	RED	YEL	BLU	GRN	BLK



Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
801-4-XXX	1/4"	0.50	350	82
801-6-XXX	3/8"	0.63	350	82
801-8-XXX	1/2"	0.78	300	82
801-10-XXX	5/8"	0.91	300	82
801-12-XXX	3/4"	1.03	300	82
801-16-XXX	1"	1.28	200	82

837PU HYBRID PUSH-LOK

Multipurpose - Synthetic rubber inner tube, Polyurethane cover for high abrasion resistance. Free of wetting disturbing substances.

Available Colors - Enter color in place of XXX

GRA	RED	BLU	GRN	BLK



Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
837PU-4-XXX	1/4"	0.50	235	82
837PU-6-XXX	3/8"	0.63	235	82
837PU-8-XXX	1/2"	0.78	235	82
837PU-10-XXX	5/8"	0.91	235	82
837PU-12-XXX	3/4"	1.03	235	82

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Multi Purpose Hose

837BM PUSH-LOK

Multipurpose - Synthetic rubber cover and inner tube
Free of wetting disturbing substances

Available Colors - Enter color in place of XXX

GRA	RED	BLU	GRN	BLK



Part number	I.D. Inch	O.D. Inch	Working Pressure PSI	Fitting Series
837BM-4-XXX	1/4"	0.5	235	82
837BM-6-XXX	3/8"	0.63	235	82
837BM-8-XXX	1/2"	0.78	235	82
837BM-10-XXX	5/8"	0.91	235	82
837BM-12-XXX	3/4"	1.03	235	82

Multi Purpose PUSH-LOK Hose Barbs

82 Series Push-on Fittings

For use with PUSH-LOK and 83FR Hoses

Male NPTF Pipe - Rigid



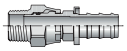
Part number	Thread	Hose I.D.
30182-2-4	1/8 x 27	1/4"
30182-4-4	1/4 x 18	1/4"
30182-6-4	3/8 x 18	1/4"
30182-4-6	1/4 x 18	3/8"
30182-6-6	3/8 x 18	3/8"
30182-8-6	1/2 x 14	3/8"
30182-8-8	1/2 x 14	1/2"
30182-8-10	1/2 x 14	5/8"
30182-8-12	1/2 x 14	3/4"
30182-12-12	3/4 x 14	3/4"
30182-16-16	1 x 1-1/2	1"

Female JIC 37 - Swivel



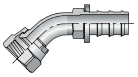
Part number	Thread	Hose I.D.
30682-4-4	1/4 x 18	1/4"
30682-6-4	3/8 x 18	1/4"
30682-6-6	3/8 x 18	3/8"
30682-8-6	1/2 x 14	3/8"
30682-8-8	1/2 x 14	1/2"
30682-10-10	7/8 x 14	5/8"
30682-12-12	3/4 x 14	3/4"
30682-16-16	1 x 1-1/2	1"

Male NPTF Pipe - Swivel



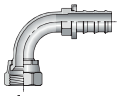
Part number	Thread	Hose I.D.
31382-4-4	1/4 x 18	1/4"
31382-6-6	3/8 x 18	3/8"
31382-8-8	1/2 x 14	1/2"
31382-8-10	1/2 x 14	5/8"
31382-12-12	3/4 x 14	3/4"

Female JIC 37 - Swivel - 90 Elbow



Part number	Thread	Hose I.D.
33782-4-4	1/4 x 18	1/4"
33782-6-6	3/8 x 18	3/8"
33782-8-8	1/2 x 14	1/2"
33782-10-10	7/8 x 14	5/8"
33782-12-12	3/4 x 14	3/4"

Female JIC 37 - Swivel - 45 Elbow



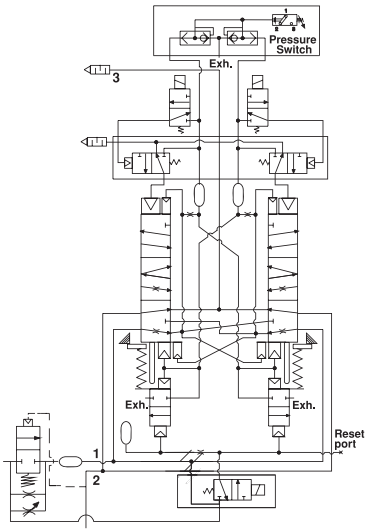
Part number	Thread	Hose I.D.
33982-4-4	1/4 x 18	1/4"
33982-6-6	3/8 x 18	3/8"
33982-8-8	1/2 x 14	1/2"
33982-10-10	7/8 x 14	5/8"

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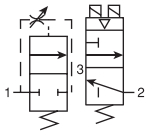
Redundant Safety Exhaust Valve



P33T Schematic



Symbol



- Proven control reliable technology with integrated soft start
- Soft start application of air to the system when energized; can be adjusted for slower or faster buildup of system pressure
- Rapid exhaust of downstream air when de-energized to remove stored energy and allow safe access
- Memory, monitoring, and air flow control functions are integrated into two identical valve elements. Valves lock-out if asynchronous movement of valve elements occurs during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply.
- Reset can only be accomplished by the integrated electrical (solenoid) reset. Cannot be reset by removing and re-applying supply pressure.
- Basic 3/2 normally closed valve function: Dirt tolerant, wear compensating poppet design for quick response and high flow capacity.
- LED indicators of main solenoid operation, reset solenoid operation, and status indicator condition.
- Optional transducer for monitoring of downstream pressure in the system.
- Dual exhaust silencers included.
- Not for use with clutch / brake applications.
- For use in conjunction with a safety relay or safety PLC.

Options:

P33TA | 9 | 6 | R | G | 4 | F | 2CN

Body size		Port size		Operator		Solenoid		Voltage	
Standard	P33T	3/4"	6	15mm Solenoid	G	Dual M12 connector without transducer	F	24VDC with manual override	2CN
						Triple M12 connector with transducer	G		

Thread type		Type		Mounting	
BSPP	1	Solenoid pilot + gauge	R	Cat 4 w/bracket	4
NPT	9				

Port size			Cv		Height	Width	Depth	Weight	
Inlet	Outlet	Transducer	1 to 2	2 to 3	mm (inches)	mm (inches)	mm (inches)	kg (lb)	Part number*
3/4	3/4	w/o transducer	3.7	8.5	273.8 (10.78)	136.0 (5.35)	147.6 (5.81)	7.3 (16.1)	**P33TA96RG4F2CN**
3/4	3/4	w/ transducer	3.7	8.5	273.8 (10.78)	136.0 (5.35)	147.6 (5.81)	7.4 (16.3)	**P33TA96RG4G2CN**

* NPT port threads. For BSPP threads, replace "9" in the part number with a "1".

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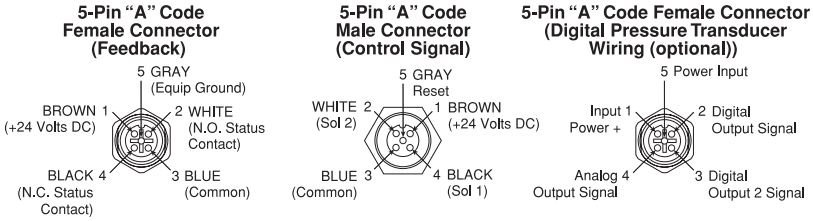
Technical Information

Pilot Solenoids:	According to VDE 0580
Enclosure rating:	According to DIN 400 50 IP65
Connector socket:	According to DIN 43650 Form A
	Three solenoids, rated for continuous duty
Standard voltages:	24VDC
Power consumption (each solenoid): for primary and reset solenoids:	1.2 Watts on DC
Enclosure rating:	IP65, IEC 60529
Electrical connection:	M12, 5-pin
Ambient temperature:	15°F to 122°F (-10°C to 50°C)
Media temperature:	40°F to 175°F (4°C to 80°C)
Flow media: Compressed	Air, Filtered to Minimum 40 Micron
Inlet pressure:	30 to 150 PSIG (2 to 10 bar)
Pressure switch rating (Status indicator):	5 Amps at 30 Volts DC.
Monitoring:	Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Mounting orientation:	Vertically with pilot solenoids on top
Port threads:	3/4 NPT, 3/4 BSPP
Control reliable:	Category 4 (Cat 4); performance Level e (PLe) in accordance with Machine directive - EN ISO 13849-1 (Certification pending)

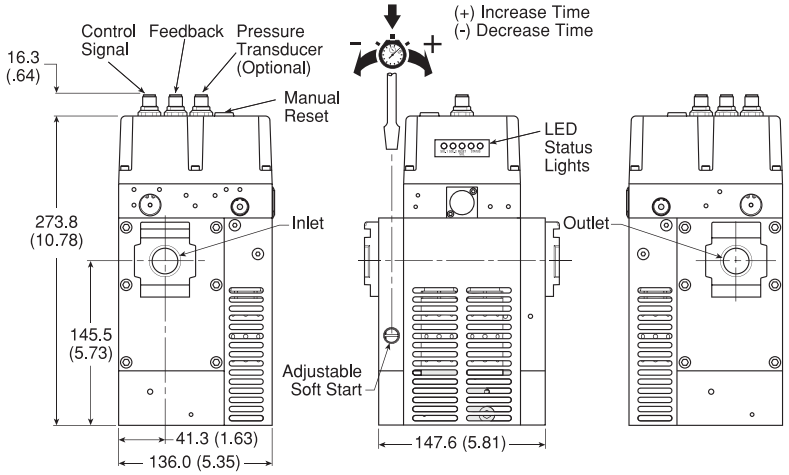
Repair and Service Kits

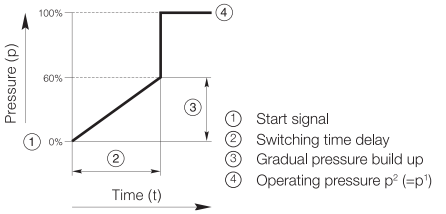
Description	Part number
Black grill	**1834C05-001**
Body connector	**P32KA00CB**
Cables	
M12, 5-pin female to flying lead cable, TPE; 2 m (6.6 ft)	**RKC 4.5T-2/S1587**
M12, 5-pin male to flying lead cable, TPE; 2 m (6.6 ft)	**RSC 4.5T-2/S1587**
Port block kit	
1/2 NPT	**P32KA94CP**
3/4 NPT	**P32KA96CP**
1/2 BSPP	**P32KA14CP**
3/4 BSPP	**P32KA16CP**
1/2 BSPT	**P32KA24CP**
3/4 BSPT	**P32KA26CP**
Pressure switch	**1227A30-001**
Pressure transducer (Optional)	**1232H30-001**
T-bracket w/ body connector	**P32KA00MT**
T-bracket (Fits to body connector or port block)	**P32KA00MB**
Silencer(s) 3/4"	**5500A5013**
Solenoid (Main & reset)	**1527B7916-001**
Square flush mounting gauge kit, 0-160 psig	**K4511SCR160**

Valve Wiring

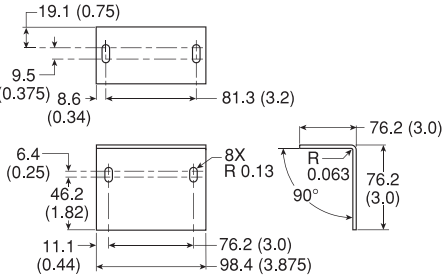


Dimensions mm (inches)





Angle Mounting Bracket



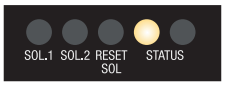
Note: Mounting bracket and installation screws included and required to install unit in the system.

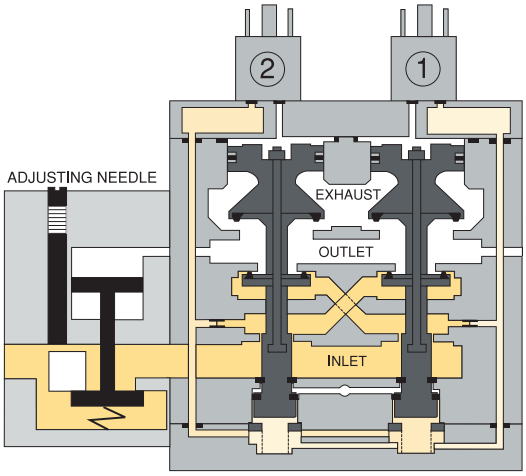
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Valve de-actuated (ready-to-run):

The flow of inlet air pressure to the inlet chamber of the main valve internals is restricted by a fixed orifice and an adjustable flow control as well as an air piloted 2-way normally closed poppet valve. The flow of inlet air pressure into the crossover passages is restricted by the size of the passage between the stem and the valve body opening. Flow is sufficient to quickly pressurize pilot supply / timing chambers 1 and 2. The inlet poppets prevent air flow from crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the closed position. (Reset adapter omitted for clarity.)

The green “Status” LED will be illuminated indicating the valve is operational.



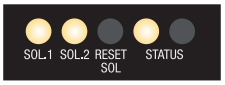


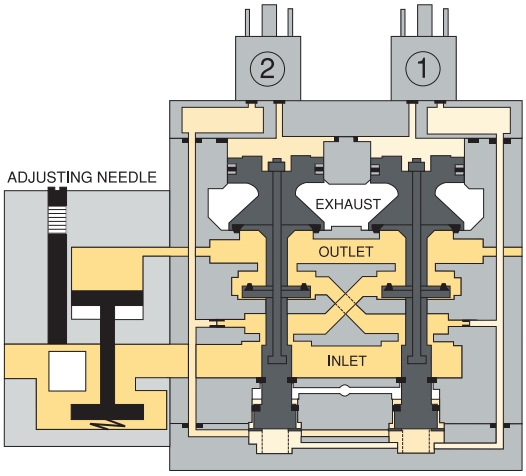
Valve actuated:

Energizing the pilot valves simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated (open) position, where inlet air flow to crossover passages is fully open, inlet poppets are fully open and exhaust poppets are fully closed. The outlet is then pressurized at a rate allowed by the fixed orifice and the adjusted flow control. Once the air pressure in the outlet chamber reaches approximately 60% of inlet pressure, the air piloted 2-way normally closed poppet valve opens fully and the pressure in the inlet, crossovers, outlet, and timing chambers are quickly equalized. The adjustable flow control will control the time it takes for the outlet air pressure to reach approximately 60% of inlet pressure.

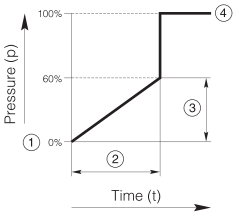
De-energizing the pilots quickly causes the valve elements to return to the ready-to-run position.

Solenoid 1, Solenoid 2 and the green “Status” LED’s will be illuminated indicating the valve is operating properly.





Soft start function:



① Start signal
② Switching time delay
③ Gradual pressure build up
④ Operating pressure p ² (=p¹)

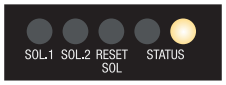
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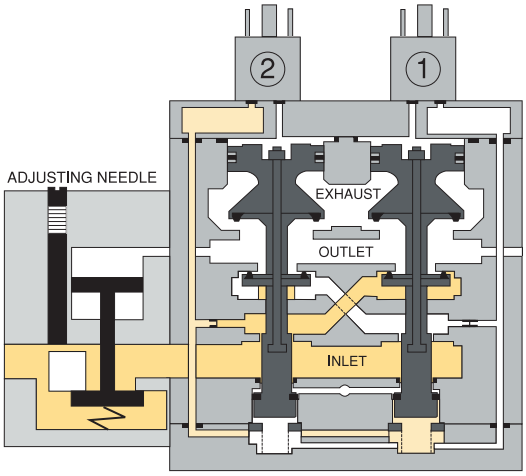
Valve fault and lock-out:

Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized. The valve element (side 2) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element.

Air pressure in the crossover acts on the differential of side 2 stem diameters creating a latching force. Side 1 is in a fully closed position, and has no pilot air available to actuate, but has full pressure on the inlet poppet and return piston to hold the element in the fully closed position. Inlet air flow on side 1 into its crossover is restricted, and flows through the open inlet poppet on side 2, through the outlet into the exhaust port, and from the exhaust port to atmosphere. Residual pressure in the outlet is less than 1% of inlet pressure. The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully closed position.

The red “Status” LED will be illuminated indicating the valve in fault and lock-out must be reset





Valve reset (electrical or manual):

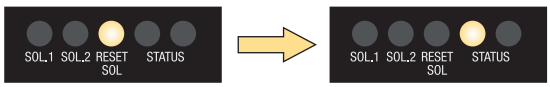
The reset procedure is as follows:

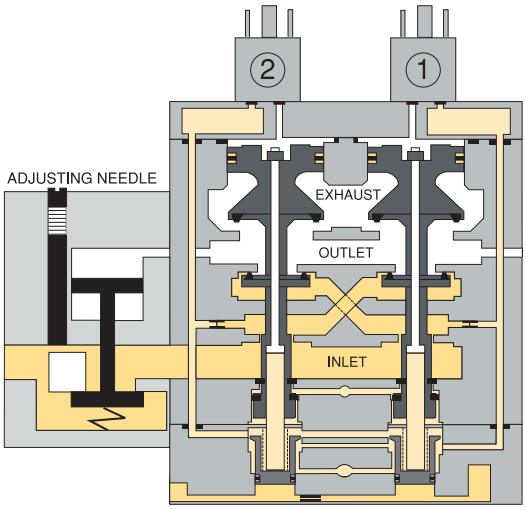
- Remove the electrical signals to the main coils
- Ensure there is air supplied to the valve
- Energize the reset solenoid for a minimum of 200 ms
- Allow a 200 ms delay after de-energizing the reset solenoid and re-energizing the main solenoids

The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied.

A remote reset signal must be applied to reset the valve. A momentary, remote electrical signal must be applied to the reset solenoid to apply pressure to the reset pistons in the valve. Actuation of the reset piston physically pushes the main valve elements to their closed position. Inlet air fully pressurizes the crossovers and holds the inlet poppets on seat. Actuation of the reset piston opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset (Reset adapter added to illustration.). De-actuation of reset pistons causes the reset poppets to close and pilot supply to fully pressurize. Reset air pressure is applied by a 3/2 normally closed solenoid, or a manual push button mounted on the reset adapter in the top valve cover.

The green “Status” LED will be illuminated once the valve is reset.





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Compressed air quality standards – ISO 8573

ISO 8573 is the group of International standards relating to the quality of compressed air and consists of nine separate parts. Part 1 specifies the quality requirements of the compressed air and parts 2 - 9 specify the methods of testing for a range of contaminants.

ISO 8573.1 : 2010 is the primary document used from the ISO 8573 series and it is this document which allows the user to specify the air quality or purity required at key points in a compressed air system.

ISO8573-1 lists the main contaminants as Solid Particulate, Water and oil. The purity levels for each contaminant are shown in separate tables, however for ease of use, this document combines all three contaminants into one easy to use table.

ISO8573-1:2010 Class	Solid Particulate				Water		Oil
	Maximum number of particles per m^3			Concentration	Vapor	Liquid	Total oil (aerosol, liquid and vapor)
	0.1 - 0.5 micron	0.5 - 1 micron	1 - 5 micron	mg/m^3	Pressure Dewpoint	g/m^3	ppm (mg/m^3)
0	As specified by the equipment user or supplier and more stringent than Class 1						
1	≤ 20,000	≤ 400	≤ 10	—	≤ -94°F (-70°C)	—	0.008 (0.01)
2	≤ 400,000	≤ 6,000	≤ 100	—	≤ -40°F (-40°C)	—	0.08 (0.1)
3	—	≤ 90,000	≤ 1,000	—	≤ -4°F (-20°C)	—	0.83 (1)
4	—	—	≤ 10,000	—	≤ 37°F (3°C)	—	4.2 (5)
5	—	—	≤ 100,000	—	≤ 45°F (7°C)	—	—
6	—	—	—	≤ 5	≤ 50F (10°C)	—	—
7	—	—	—	5 - 10	—	≤ 0.5	—
8	—	—	—	—	—	0.5 - 5	—
9	—	—	—	—	—	5 - 10	—
X	—	—	—	≤ 10	—	≤ 10	≤ 10

Specifying air purity in accordance with ISO 8573-1:2010

When specifying the purity of air required, the standard must always be referenced, followed by the purity class selected for each contaminant (a different purity class can be selected for each contaminant if required). An example of how to write an air quality specification is shown below:

Example:

ISO 8573-1:2010 Class 1.2.1

ISO8573-1:2010 refers to the standard document and its revision, the three digits refer to the purity classifications selected for solid particulate, water and total oil. Selecting an air purity class of 1.2.1 would specify the following air quality when operating at the standard's reference conditions:

Class 1, Particulate
In each cubic meter of compressed air, the particulate count should not exceed 20,000 particles in the 0.1 - 0.5 micron size range, 400 particles in the 0.5 - 1 micron size range and 10 particles in the 1 - 5 micron size range.

Class 2, Water
A pressure dewpoint (PDP) of -40°F (-40°C) or better is required and no liquid water is allowed.

Class 2, Oil
In each cubic meter of compressed air, not more than 0.01mg of oil is allowed. This is a total level for liquid oil, oil aerosol and oil vapor.

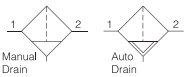
Cost effective system design

To achieve the stringent air quality levels required for today's modern production facilities, a careful approach to system design, commissioning and operation must be employed.

Treatment at one point alone is not enough and it is highly recommended that the compressed air is treated in the compressor room to a level that will provide general purpose air to the site and also protect the distribution piping.

Point of use purification should also be employed,not only to remove any contamination remaining in the distribution system, but also with specific attention on the quality of air required by each application. This approach to system design ensures that air is not "over treated" and provides the most cost effective solution to high quality compressed air.

Particulate Filters





Port size	Bowl type	Drain type	Element type	Part number P31	P32	P33
1/4"	Poly	Manual	5 micron	**P31FB92EGMN**	**P32FB92EGMN**	
3/8"	Poly	Manual	5 micron		**P32FB93EGMN**	
1/2"	Poly	Manual	5 micron		**P32FB94EGMN**	**P33FA94EGMN**
3/4"	Poly	Manual	5 micron			**P33FA96EGMN**

Coalescing Filters



(1 micron and absorber elements available)



Port size	Bowl type	Drain type	Element type	Part number P31	P32	P33
1/4"	Poly	Manual	0.01 micron	**P31FB92CGMN**	**P32FB92DGMN**	
1/4"	Poly	Manual	1 micron		**P32FB92QGMN**	
3/8"	Poly	Manual	0.01 micron		**P32FB93DGMN**	
3/8"	Poly	Manual	1 micron		**P32FB93QGMN**	
1/2"	Poly	Manual	0.01 micron		**P32FB94DGMN**	**P33FA94DGMN**
3/4"	Poly	Manual	0.01 micron			**P33FA96DGMN**

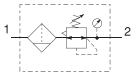
Regulators





Port size	Pressure (relieving)	Gauge	Part number P31	P32	P33
1/4"	8 bar (125 PSIG)	—	**P31RB92BNNP**	**P32RB92BNNP**	
3/8"	8 bar (125 PSIG)	—		**P32RB93BNNP**	
1/2"	8 bar (125 PSIG)	—		**P32RB94BNNP**	**P33RA94BNNP**
3/4"	8 bar (125 PSIG)	—			**P33RA96BNNP**

Filter / Regulator





Port size	Pressure (relieving)	Bowl type	Drain type	Part number P31	P32	P33
1/4"	8 bar (125 PSIG)	Poly	Manual	**P31EB92EGMBNNP**	**P32EB92EGMBNNP**	
3/8"	8 bar (125 PSIG)	Poly	Manual		**P32EB93EGMBNNP**	
1/2"	8 bar (125 PSIG)	Poly	Manual		**P32EB94EGMBNNP**	**P33EA94EGMBNNP**
3/4"	8 bar (125 PSIG)	Poly	Manual			**P33EA96EGMBNNP**
3/4"	8 bar (125 PSIG)	Metal	Auto			**P33EA96ESABNNP**

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Lubricators





Port size	Bowl type	Type	Part number P31	P32	P33
1/4"	Poly / no drain	Mist	**P31LB92LGNN**	**P32LB92LGNN**	
3/8"	Poly / no drain	Mist		**P32LB93LGNN**	
1/2"	Poly / no drain	Mist		**P32LB94LGNN**	**P33LA94LGNN**
3/4"	Poly / no drain	Mist			**P33LA96LGNN**

Combined Soft Start / Dump Valves  (P31T / P32T)



Port size	Description	Part number
1/4"	24VDC Solenoid & cable plug	**P31TA92SGNC2CN**
1/2"	24VDC 30mm coil & cable plug included	**P32TA94SCNA2CN**

Note: Includes exhaust silencer. Flow with 6.3 bar (91.3) PSIG) inlet and 1 bar (14.5 PSIG) pressure drop.

Modular Ball Valve



Port size	Exhaust port	Thread type	Flow dm^3/s (SCFM)	Part number Flow from *left to right*
1/4"	1/4"	NPT	20 (42.4)	**P31VB92LBNN**
3/8"	1/4"	NPT	90 (190.7)	**P32VB93LBNN**
1/2"	1/4"	NPT	122 (258.5)	**P32VB94LBNN**
1/2"	1/2"	NPT	265 (561.5)	**P33VB94LBNN**
3/4"	1/2"	NPT	320 (678)	**P33VB96LBNN**

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Manifold Blocks



In / Out port size	Auxiliary port size top	Auxiliary port size bottom	Thread type	Part number
1/4"	1/4"	1/4"	NPT	**P31MA92022N**
1/2"	1/4"	1/2"	NPT	**P32MA94024N**
3/4"	1/4"	1/2"	NPT	**P33MA96024N**

P31 Series Accessories

	Description	Port size	Part number
	T-bracket w/ body connector		**P31KA00MT**
	Body connector		**P31KA00CB**
	Port block kit with T-bracket	1/4 BSPP	**P31KA12CN**
	Angle bracket (Fits to regulator and filter / regulator body)		**P31KB00MR**

P32 & P33 Series Accessories

	Description	Port size	Part number
	T-bracket with body connector		**P32KA00MT**
	Body connector		**P32KA00CB**
	Port block kit	1/4 BSPP	**P32KA12CP**
		3/8 BSPP	**P32KA13CP**
		1/2 BSPP	**P32KA14CP**
		3/4 BSPP	**P32KA16CP**

P32 Series Accessories

	Description	Part number
	Angle bracket (Fits to regulator and filter / regulator body)	**P32KB00MR**
	L-bracket (Fits to filter and lubricator body)	**P32KA00ML**

P33 Series Accessories

	Description	Part number
	Angle bracket (Fits to regulator and filter / regulator body)	**P33KA00MR**
	L-bracket (Fits to filter and lubricator body)	**P33KA00ML**

PPS1 Pressure Switch



Thread size	Part number
1/4" NPT	**PPS1-1C3-RHM**
1/8" NPT	**PPS1-2C3-RHM**
1/4" NPT	**PPS1-1C3-RWL**
1/8" NPT	**PPS1-2C3-RWL**

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Service Kits

	Description		P31	P32	P33
	Panel mount nut (aluminum)		**P31KA00MM**	**P32KA00MM**	**P33KA00MM**
	5µ element kit		**P31KA00ESE**	**P32KA00ESE**	**P33KA00ESE**
	1µ element kit		**P31KA00ES9**	**P32KA00ES9**	**P33KA00ES9**
	0.01µ element kit		**P31KA00ESC**	**P32KA00ESC**	**P33KA00ESC**
	Adsorber element kit		**P31KA00ESA**	**P32KA00ESA**	**P33KA00ESA**
	Auto drain kit			**P32KA00DA**	**P32KA00DA**
	Differential pressure indicator kit		**P31KB00RQ**	**P32KA00RQ**	**P32KA00RQ**
	Plastic bowl w/ bowl guard	manual drain	**P31KB00BGM**	**P32KB00BGM**	**P33KA00BGM**
		pulse drain	**P31KB00BGB**		
		auto drain		**P32KB00BGA**	**P33KA00BGA**
	Metal bowl w/o sight gauge	manual drain	**P31KB00BMM**	**P32KB00BMM**	**P33KA00BMM**
		pulse drain	**P31KB00BMB**		
		auto drain		**P32KB00BMA**	**P33KA00BMA**
	Metal bowl w/ sight gauge	manual drain		**P32KB00BSM**	**P33KA00BSM**
		auto drain		**P32KB00BSA**	**P33KA00BSA**
	Lubricator - Metal Bowl w/o Sight Gauge No Drain		**P31KB00BMN**	**P32KB00BMN**	**P33KA00BMN**
Regulator kits	Relieving repair kit		**P31KB00RB**	**P32KB00RB**	**P33KA00RB**
	Non relieving repair kit		**P31KB00RC**	**P32KB00RC**	**P33KA00RC**
	Main adjusting spring 0-2 bar (0-30 PSIG) kit		**P31KB00PR**	**P32KB00PR**	**P33KA00PR**
	Main adjusting spring 0-4.1 bar (0-60 PSIG) kit		**P31KB00PS**	**P32KB00PS**	**P33KA00PS**
	Main adjusting spring 0-8.6 bar (0-125 PSIG) kit		**P31KB00PT**	**P32KB00PT**	**P33KA00PT**
	Main adjusting spring 0-17 bar (0-250 PSIG) kit			**P32KB00PV**	**P33KA00PV**
	1/8" Square flush mount gauge kit	0-4 bar	**K4511SCR04B**		
		0-11 bar	**K4511SCR11B**		
		0-60 PSIG	**K4511SCR060**		
		0-160 PSIG	**K4511SCR160**		
	Square mounting gauge with adapter kit	0-4 bar	**P6G-PR10040**	**P6G-PR10040**	
		0-11 bar	**P6G-PR10110**	**P6G-PR10110**	
		0-60 PSIG	**P6G-PR90060**	**P6G-PR90060**	
		0-160 PSIG	**P6G-PR90160**	**P6G-PR90160**	
	1/8" 40mm round gauge (Not for use with common port regulators)	0-30 PSIG / 0-2 bar	**K4515N18030**		
		0-60 PSIG / 0-4.1 bar	**K4515N18060**		
		0-160 PSIG / 0-10 bar	**K4515N18160**		
	1/4" 50mm round gauge	0-30 PSIG / 0-2 bar		**K4520N14030**	**K4520N14030**
		0-60 PSIG / 0-4.1 bar		**K4520N14060**	**K4520N14060**
		0-160 PSIG / 0-10 bar		**K4520N14160**	**K4520N14160**
		0-300 PSIG / 0-20 bar		**K4520N14300**	**K4520N14300**

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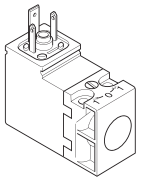
Solenoid Operators for P31T and P32T Soft Start / Dump Valves

Technical data - Solenoid operators, coil combinations

	NC Normal Operator with 22 x 30 standard coil	NC Normal Operator with 30 x 30 standard coil
Working pressure	0 to 10 bar	0 to 10 bar
Ambient temperature	-10°C to 60°C *	-10°C to 60°C *
Power (DC)	4.8W	2.7W
Power (AC)	8.5VA	4.9VA
Voltage tolerance	+/-10%	+/-10%
Duty cycle	100%	100%
Insulation class	F	F
Electric connection	B Industrial	DIN 43650A
Protection	IP65	IP65
Approval		UL/CSA
Working media	All neutral media such as compressed air	

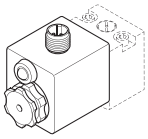
* Limited to 50°C if use with 100% duty cycle

P31 Series only - Solenoid coils 15mm NC



Voltage	Order code Override, blue, non-locking flush	Weight (Kg)
24VDC	**PS2982B49P**	0.038
115VAC 50Hz / 120VAC 60Hz	**PS2982B53P**	0.038

Solenoid Coils with M12 Connection



Voltage	Part number	Weight (Kg)
Direct current		
24VDC	**P2FC6449**	0.065

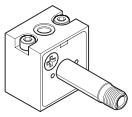
Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavorable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the Maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All connectors/cable plugs EN175301-803 with LED's include this type of circuit protection.

Materials

Pilot Valve	
Body:	Polyamide
Armature tube:	Brass
Plunger & core:	Corrosion resistant Cr-Ni steel
Seals:	Fluorocarbon
Screws:	Stainless steel
Coil	
Encapsualtion material:	Thermoplastic as standard Duroplast for M12 connection

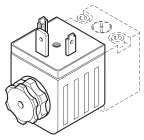
Spare Base Solenoid Pilot Operator CNOMO NC



Description	Part number non-lock manual override	Weight (Kg)
Standard Duty	**P2FP23N4B**	0.065
No Override	**P2FP23N4A**	0.065

Note: Solenoid pilot operators are fitted to the Global range. Order the above part numbers for spares. The operators are supplied with mounting screws and interface 'O' rings. Coils and connectors must be ordered separately.

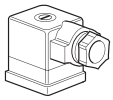
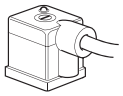
Solenoid Coils with DIN A or Industrial B Connection



Voltage	22mm x 30mm Part number B industrial standard	Weight (Kg)	30mm x 30mm Part number DIN 43650A standard	Weight (Kg)
Direct current				
24VDC	**P2FCB449**	0.093	**P2FCA449**	0.105
Alternative current				
110V 50Hz, 120V 60Hz	**P2FCB453**	0.093	**P2FCA453**	0.105

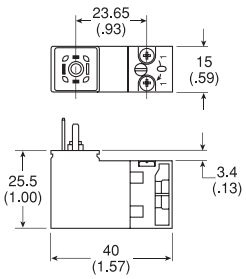
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Solenoid Connectors / Cable Plugs EN175301-803

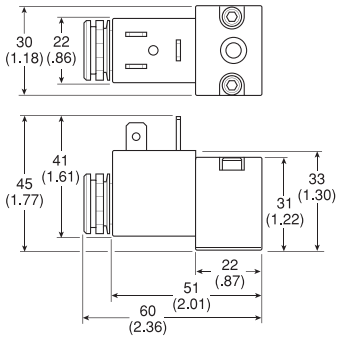
	Description	Part number 22mm Form B Industrial	Part number 30mm Form A DIN 43650A
With standard screw 	Standard IP65 without flying lead	**PS2429BP**	**PS2028BP**
	With LED and protection 24VAC/DC	**PS243079BP**	**PS203279BP**
	With LED and protection 110VAC	**PS243083BP**	**PS203283BP**
With cable 	Standard with 2m cable IP65	**PS2429JBP**	**PS2028JCP**
	24VAC/DC, 2m cable LED and protection IP65	**PS2430J79BP**	**PS2032J79CP**
	110VAC/DC, 2m cable LED and protection IP65	**PS2430J83BP**	**PS2032J83CP**

Solenoid coil dimensions mm (inches)

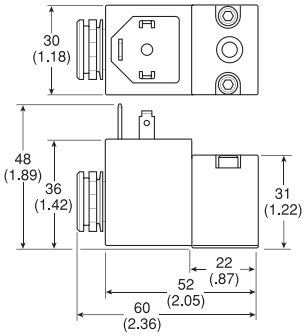
15mm



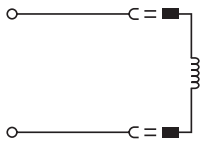
22 x 30mm

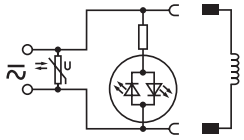


30 x 30mm



Electrical schematics



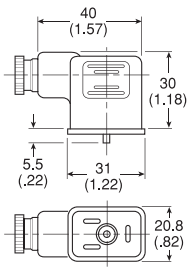


PS2028BP	**PS243079BP**	**PS203279BP**
PS2028JBP	**PS2430J79BP**	**PS2032J79CP**
PS2429BP	**PS243083BP**	**PS203283BP**
PS2429JBP	**PS2430J83BP**	**PS2032J83CP**
PS2932BP	**PS294679BP**	**PS294683BP**
PS2932JBP	**PS2946J79BP**	**PS2946J83BP**

Cable plug dimensions mm (inches)

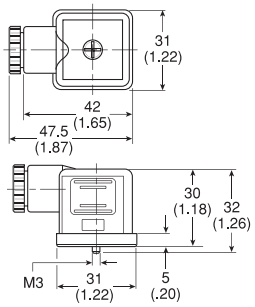
22mm Form B Industrial
Cable plugs

PS2429BP



30mm DIN 43650A
Cable plugs

PS2028BP



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Filter



Port size	Description	Flow dm^3/s	Part number
1"	Combined manual / semi auto drain	119	**P3YFA98GSCN**

Coalescing Filter



Port size	Description	Flow dm^3/s	Part number
1"	Coalescing filter 0.01µm, combined manual / semi auto drain	59	**P3YFA98DSCN**

Regulator



Port size	Description	Flow dm^3/s	Part number
1"	12 bar relieving + pressure gauge	321	**P3YRA98BNFN**

Lubricator



Port size	Description	Flow dm^3/s	Part number
1"	Oil mist, fill under pressure	321	**P3YLA98LSNN**

Filter-Regulator



Port size	Description	Flow dm^3/s	Part number
1"	12 bar, relieving, gauge combined manual / semi auto drain	237	**P3YEA98GSCBNFN**

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Combined Soft Start Dump Valve



Port size	Description	Flow dm^3/s	Part number
1"	24VDC 22mm coil	200	**P3YTA98SCND2N**

Modular Ball Valve



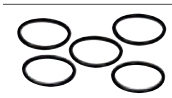
Port size	Description	Part number
1"	Modular ball valve	**P3YVA98LBN**

Modular Manifold



Thread type	Description	Part number
NPT	Modular manifold	**P3YMA9V0N**

P3Y Series Accessories

	Description		Part number
	Optional port block kits	NPT 1-1/4"	**P3YKA9ACP**
		NPT 1-1/2"	**P3YKA9BCP**
	Neck mounting bracket kit	3.75 (kg)	**P3YKA00MS**
	Wall mounting brackets	0.2 (kg)	**P3YKA00CW**
	P3Y connecting kit	0.05 (kg)	**P3YKA00CB**
	Pressure gauge 0 to 16 bar	0.06 (kg)	**KG8013-00**
		1/4" port	
	Connector o-ring kit	Qty. 5	**P3YKA08CY**

P3Y Service Kits

Description	Part number
5 micron element kit	**P3YKA00ESE**
40 micron element kit	**P3YKA00ESG**
0.01 micron coalescing element kit	**P3YKA00ESC**
Bowl kit with auto drain	**P3YKA00BSA**

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Filter



Port size	Description	Flow dm^3/s	Part number
–	40 micron, auto drain	>666	**P3ZFA00HMAN**

Coalescing Filter



Port size	Description	Flow dm^3/s	Part number
–	Coalescing filter 0.01µm, auto drain	>167	**P3ZFA00DMAN**

Regulator



Port size	Description	Flow dm^3/s	Part number
–	16 bar relieving	>666	**P3ZRA00BNHN**

Lubricator



Port size	Description	Flow dm^3/s	Part number
–	Lubricator	>666	**P3ZLA00LSMN**

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Modular Manifold



Inlet port	Top	Bottom	Front and back	Thread type	Part number
–	1/8"	1"	1/4"	NPT	**P3ZMA9V0N**

Connection Flange Kits



Port size	Thread type	Part number
1-1/2"	NPT	**P3ZKA9BCP**
2"	NPT	**P3ZKA9CCP**

P3Z Series Accessories

	Description		Part number
	Modular wall mounting kit	0.2 (kg)	**P3ZKA00MW**
	Modular coupling kit	0.8 (kg)	**P3ZKA00CB**
	Pressure gauge 0 to 60 bar	0.06 (kg) 1/4" port	**KG8013-00**

P3Z Service Kits

Description	Part number
40 micron element kit	**P3ZKA00ESG**
0.01 micron coalescing element kit	**P3ZKA00ESC**

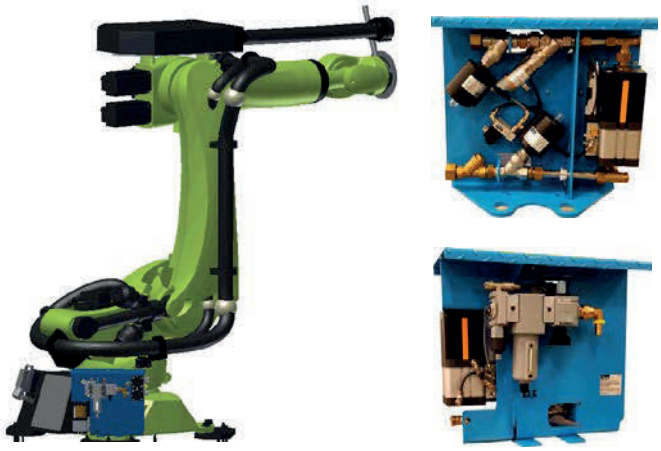
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Parker offers many weld water solutions

Air water retrofit kit for already existing weld installations



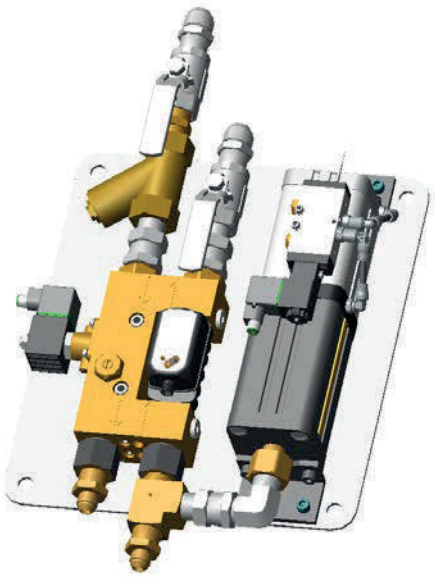
RIS – Robot Install integrated air and water package



All Electric integrated solution for when no air supply is present



On the weld fence applications with complete water metering, shut off and safety **WRA** – Water Retract Actuator



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Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

⚠ WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

1.1. Scope: This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

1.2. Fail-Safe: Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.

1.3 Relevant International Standards: For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

1.4. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

1.5. User Responsibility: Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

1.6. Safety Devices: Safety devices should not be removed, or defeated.

1.7. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.

1.8. Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

2.1. Flow Rate: The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

2.2. Pressure Rating: Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

2.3. Temperature Rating: Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

2.5. Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:
- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

Offer of Sale

The goods, services or work (referred to as the "Products") offered by **Parker-Hannifin Corporation**, its subsidiaries, groups, divisions, and authorized distributors ("Seller") are offered for sale at prices indicated in the offer, or as may be established by Seller. The offer to sell the Products and acceptance of Seller's offer by any customer ("Buyer") is contingent upon, and will be governed by all of the terms and conditions contained in this Offer of Sale. Buyer's order for any Products specified in Buyer's purchase document or Seller's offer, proposal or quote ("Quote") attached to the purchase order, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions. Seller's willingness to offer Products for sale or accept an order for Products is subject to the terms and conditions contained in this Offer of Sale or any newer version of the same, published by Seller electronically at www.parker.com/saleterms/. Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document or other communication issued by Buyer.

2. Price; Payment. Prices stated on Seller's Quote are valid for thirty (30) days, except as explicitly otherwise stated therein, and do not include any sales, use, or other taxes or duties unless specifically stated. Seller reserves the right to modify prices to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified by Seller's Credit Department). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

3. Shipment; Delivery; Title and Risk of Loss. All delivery dates are approximate. Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

4. Warranty. Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of normal use, whichever occurs first. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. No other claims against Seller will be allowed unless asserted in writing within thirty (30) days after delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the defect is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

6. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE WITHIN A REASONABLE PERIOD OF TIME. **IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

7. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

8. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the items manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

10. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller retains a security interest in all Products delivered to Buyer and this agreement is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. Improper Use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Products; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

12. Cancellations and Changes. Buyer may not cancel or modify or cancel any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change Product features, specifications, designs and availability.

13. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

14. Force Majeure. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

15. Waiver and Severability. Failure to enforce any provision of this agreement will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

16. Termination. Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate this agreement, in writing, if Buyer: (a) breaches any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

17. Governing Law. This agreement and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

18. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and refund the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller is not liable for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

19. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged. The terms contained herein may not be modified unless in writing and signed by an authorized representative of Seller.

20. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards of care, including those of the United Kingdom, the United States of America, and the country or countries in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act") and the U.S. Food Drug and Cosmetic Act ("FDCA"),each as currently amended, and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that it is familiar with the provisions of the U. K. Bribery Act, the FCPA, the FDA, and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller.

05/14

Parker Hannifin Corporation
Parker Canada Division
Milton, ON Canada

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Parker Canada Division
160 Chisholm Drive
Milton, ON Canada
Tel: 905 693 3000
Fax: 905 876 1958
www.parker.com/weld