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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Parker Canada Division
Milton, ON Canada

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**



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

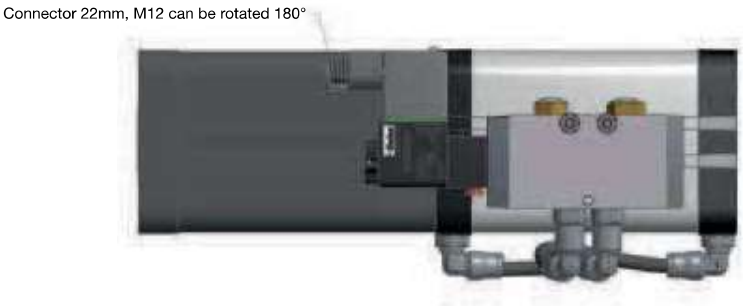
Endcover water side	PA 6G
Actuator tube water side	Brass
Endcovers air side	Aluminum Hard Anodized
Actuator tube air side	Aluminum Hard Anodized
Piston water retract	UHMW-PE
Piston air side	NBR
Control valve WRA	Aluminium
Fitting air side push-in	Nickel-Plated Brass
Air connection tubing	PU, weld resistant

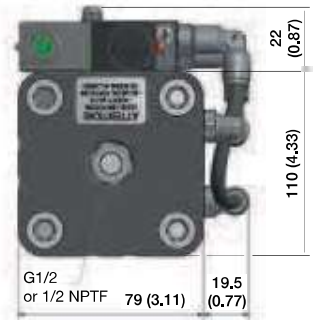
Dimension - No mount



Dimensions

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









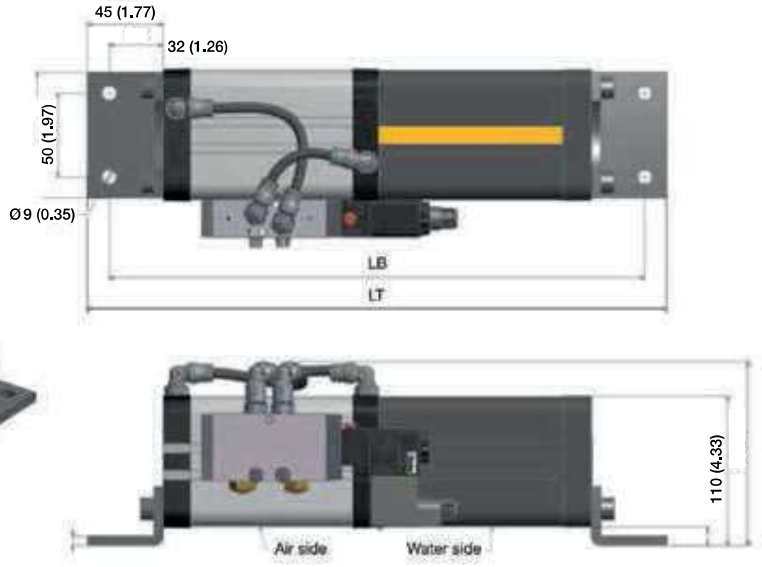
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Dimension - Foot bracket

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

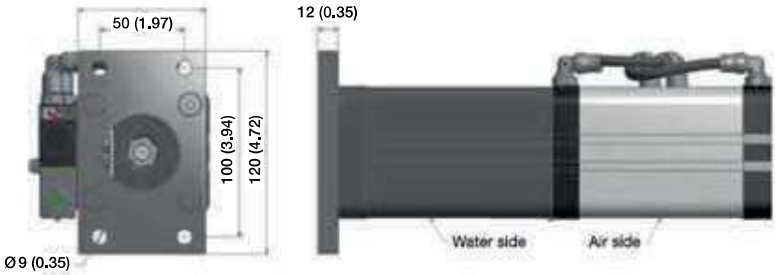
Flange

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









WRA mounting conforms to ISO 15552 standards

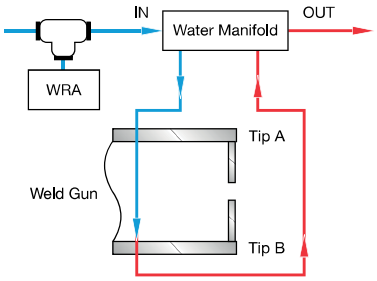
Mounting supplied un-assembled.

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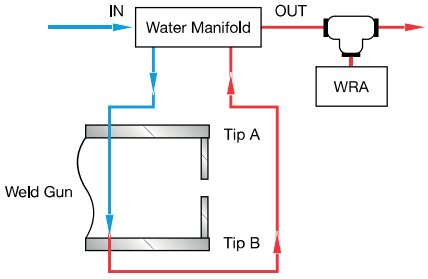
Water Retract Actuator (WRA) Water Schematic

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.

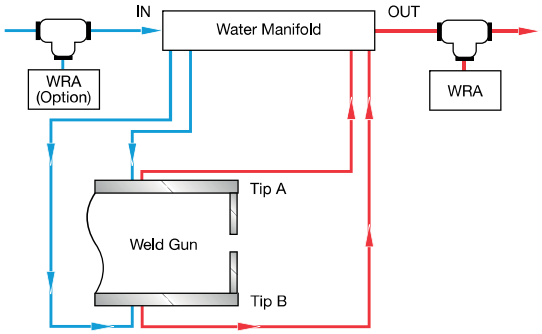


Scenario 2, the WRA can be placed on the **OUT** Line of the water manifold. In this situation, you would engage the unit and remove tip A first, replace it, and then remove tip B.



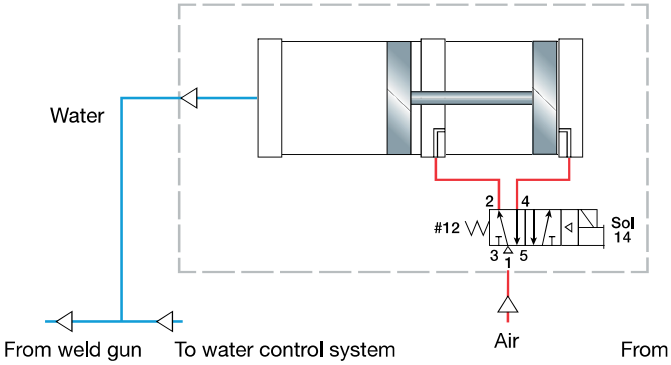
Parallel Connection

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.

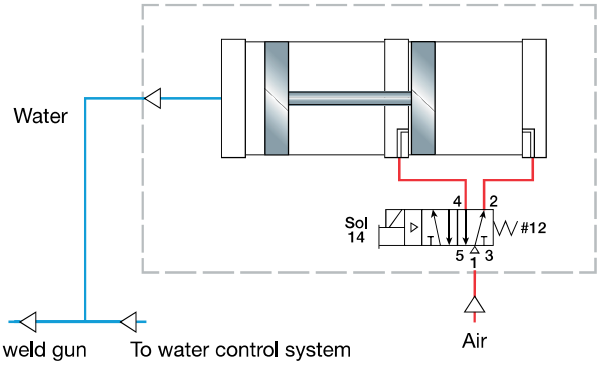


Pneumatic Control

C 24VDC, Unit retracted in rest position



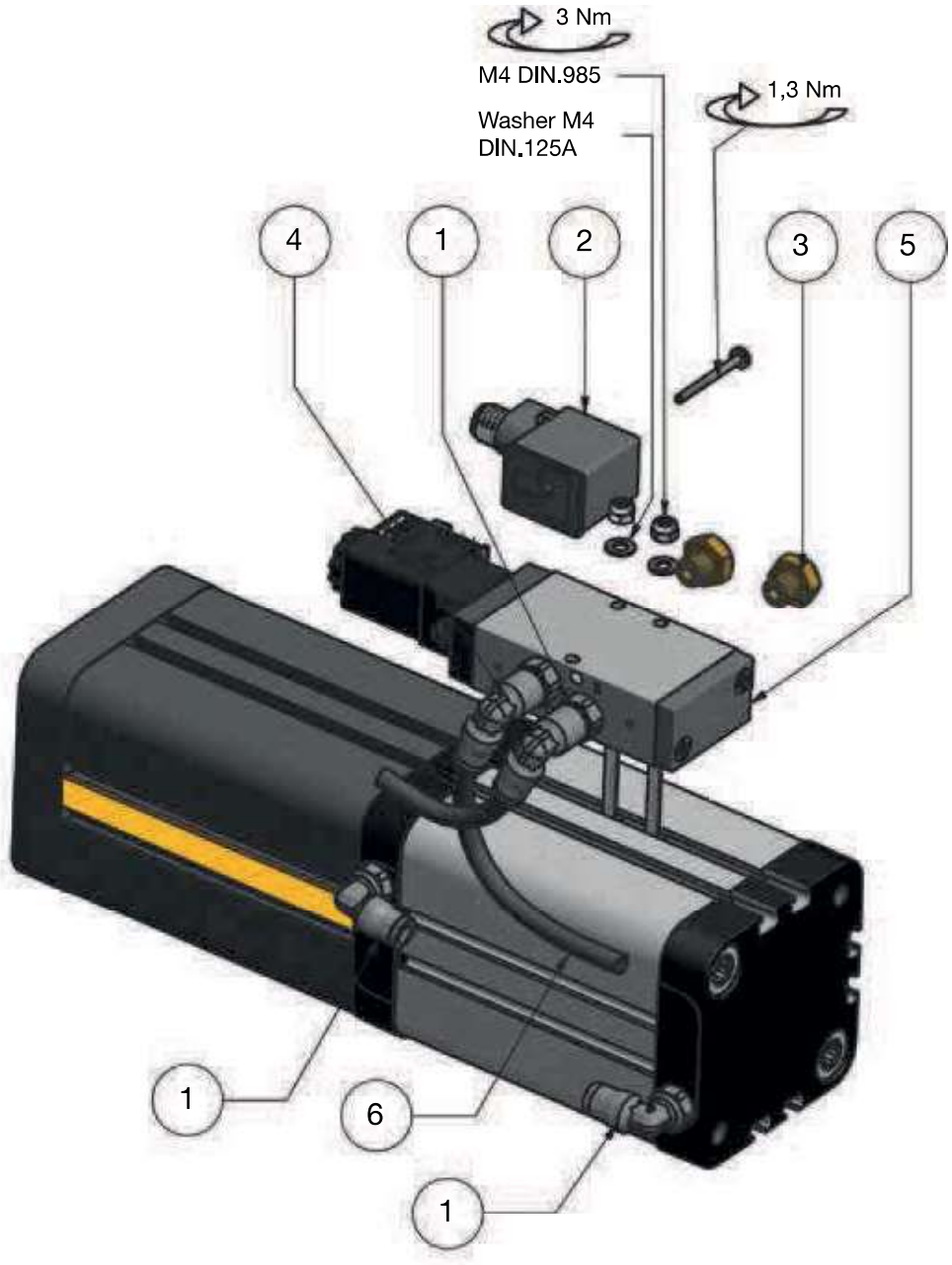
D 24VDC, Unit extended in rest position



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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