



HYPRO®

Form L-1479
(11/12)

ARAG® Modular Electric Valve Operating Instructions and Parts Manual

Description

⚠ California Proposition 65 Warning -- This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Hypro/ARAG Electric Modular Controls are designed for agricultural and industrial spraying of a variety

of fluids. These direct-acting valves can be used for pressure control or boom section on/off control. The modular design reduces plumbing and allows easy service of components. These valves work well with roller, diaphragm and centrifugal pumps.

Electric Boom Section Valve

Features:

463 series is 12 gpm with a 7 psi pressure drop.
473 series is 31 gpm with a 7 psi pressure drop.

- Maximum pressure: 290 psi
- 0.6 second cycle time
- Operate in 12 VDC 2-wire or 3-wire systems
- Viton® seals
- Modular design
- Internal parts in Delrin® and stainless steel



Part Number
463001ST with 3/4" hose barb
Dimensions
width = 2.5"
height = 8.5"
length = 4.5"

Electric Boom Section Valve with Metered Bypass

Features:

463 series is 12 gpm with a 7 psi pressure drop.
473 series is 31 gpm with a 7 psi pressure drop.

- Maximum pressure: 290 psi
- 0.6 second cycle time
- Operate in 12 VDC 2-wire or 3-wire systems
- Viton® seals
- Modular design
- Internal parts in Delrin® and stainless steel



Part Number
473011T with 1" hose barb
Dimensions
width = 2.5"
height = 10.3"
length = 4.6"



Part Number
463011ST with 3/4" hose barb
Dimensions
width = 2.5"
height = 9.5"
length = 4.5"

Description (continued)



Proportional Control Valve

The proportional flow control valve is used to control spray boom pressure.

Features:

- 7 or 14 seconds to fully open or close
- Maximum pressure: 580 psi
- Modular design
- Internal parts in Delrin® and stainless steel
- 1/4" FNPT Gauge Port*

* need to drill 3/16" hole

Part Number
463020 with 3/4" hose barb
463020S with 3/4" hose barb
Dimensions
width = 2.5"
height = 8.5"
length = 4.5"

Part Number
473020 with 1-1/4" hose barb
473020S with 1-1/4" hose barb
Dimensions
width = 2.5"
height = 9.5"
length = 4.5"

General Safety Information

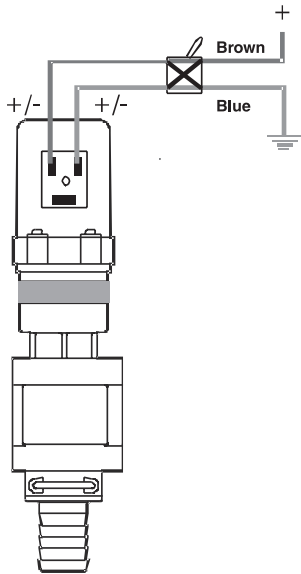
For roller or diaphragm pumps, use a pressure relief device on the discharge side of the pump to prevent damage from pressure buildup when the pump discharge is blocked or otherwise closed, and the power source is still running.

1. **WARNING: Never pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Never use in explosive atmospheres. The valve should be used only with liquids compatible with the valve component materials. Failure to follow this warning can result in personal injury and/or property damage and will void the product warranty.**
2. Never pump at pressures higher than the maximum recommended pressure.
3. Never pump liquids at temperatures higher than the maximum recommended temperatures (140° F / 60° C).
4. Disconnect power before servicing.
5. Release all pressure within the system before servicing any component.
6. Drain all liquids from the system before servicing any component.
7. Check all hoses for weak or worn condition before each use. Make certain that all connections are tight and secure.
8. Periodically inspect the valve and the system components. Perform routine maintenance as required (see Maintenance section).
9. Use only pipe, hose and fittings rated for the maximum psi rating of the valve.

Wiring Instructions for ARAG Motorized Plunger Valves

A unique feature of Hypro/ARAG's motorized plunger valves is that they are adaptable to any 12-volt system, including switch boxes and automatic rate controllers. These systems are generally termed "two wire" or "three wire". Below are simple instructions on how to integrate Hypro/ARAG valves into these systems.

Two Wire



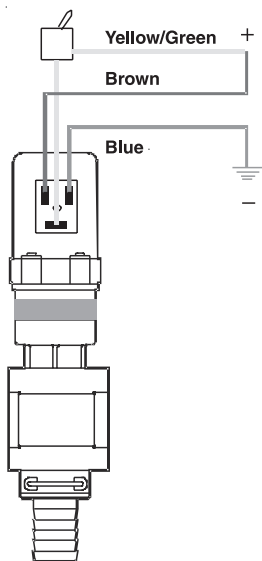
Two wire systems have the ability to reverse the polarity of the circuit that switches the position of the valve.

This type of switch is generally termed "double throw, double pole".

Note the positions of the wires on the valve connector.

The circuit should be protected with a 5-amp fuse or circuit breaker.

Three Wire

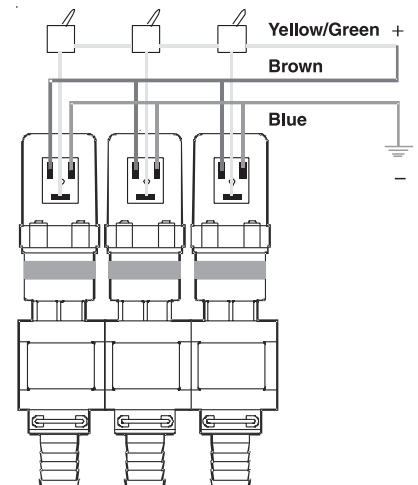


Three wire systems use a positive, negative and an "activator" wire. The "activator" wire is switched by simple "single pole, single throw" switches found in most switch boxes and rate controllers.

Power is fed constantly through the blue wire to create a normally closed position. When power is switched on through the yellow wire, it activates the valve and opens it.

Note the positions of the wires on the valve connector.

The circuit should be protected with a 5-amp fuse or circuit breaker.

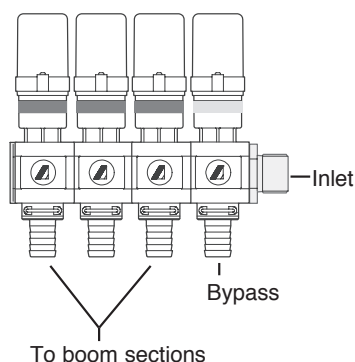


System Installation

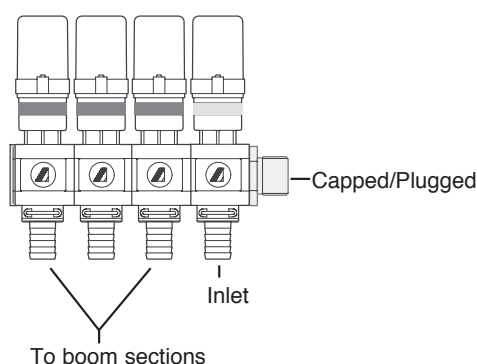
NOTE: Use only pipe, fittings, accessories, hose, etc. rated for the maximum pressure rating of the valve.

1. These valves can be used as either a bypass or throttling system.
2. When used as a throttling system, the polarity of the wires on the flow control valve needs to be reversed.
3. Use the supplied brackets for mounting.
4. Avoid unnecessary restrictions in the line, such as elbows, check valves, and all extraneous curves and bends.
5. Avoid using looped sections of tubing or pipe which might permit air to become trapped.
6. Selection of the right type and size of hose is vital to good performance.
7. Never attach an agitator or any restriction to a bypass line of a pressure relief device because system damage may occur.

Bypass System



Throttling System



Hazardous Substance Alert

1. Always drain and flush valve before servicing or disassembling for any reason.
2. Always drain and flush valve prior to returning unit for repair.
3. Never store valve containing hazardous chemicals.
4. Before returning valve for service/repair, drain out all liquids and flush unit with neutralizing liquid. Then, drain the valve. Attach tag or include written notice certifying that this has been done. Please note that it is illegal to ship or transport any hazardous chemicals without United States Environmental Protection Agency Licensing.

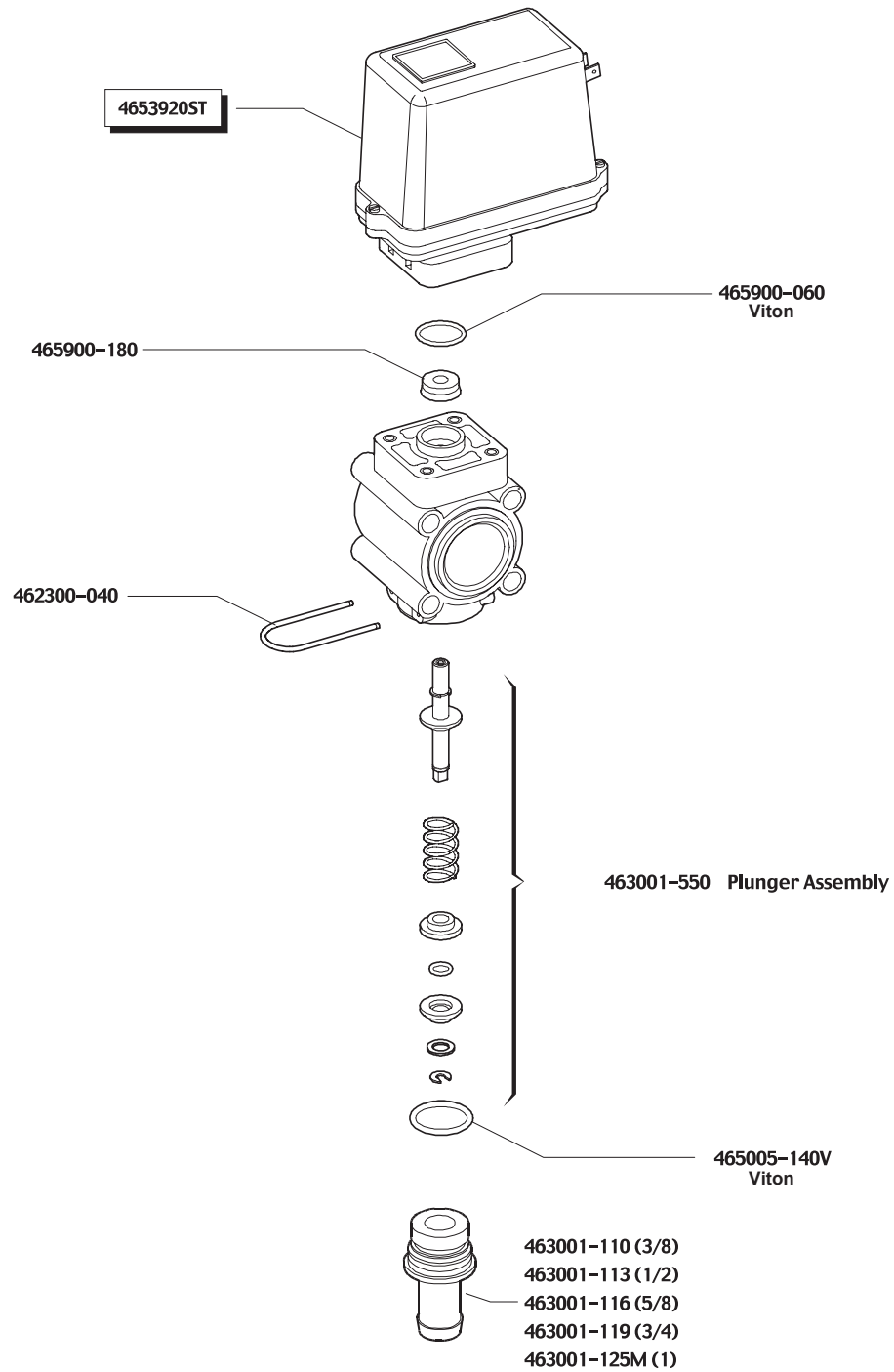
Maintenance

1. Flush system with clean water after chemical use.
2. In climates where freezing occurs, drain fluids after use to avoid damage, or store with antifreeze.
3. Periodically check valve assembly for leaks. Replace parts as needed.
4. Lubricate o-rings before assembly.

Parts Breakdown

BOOM SECTION VALVE

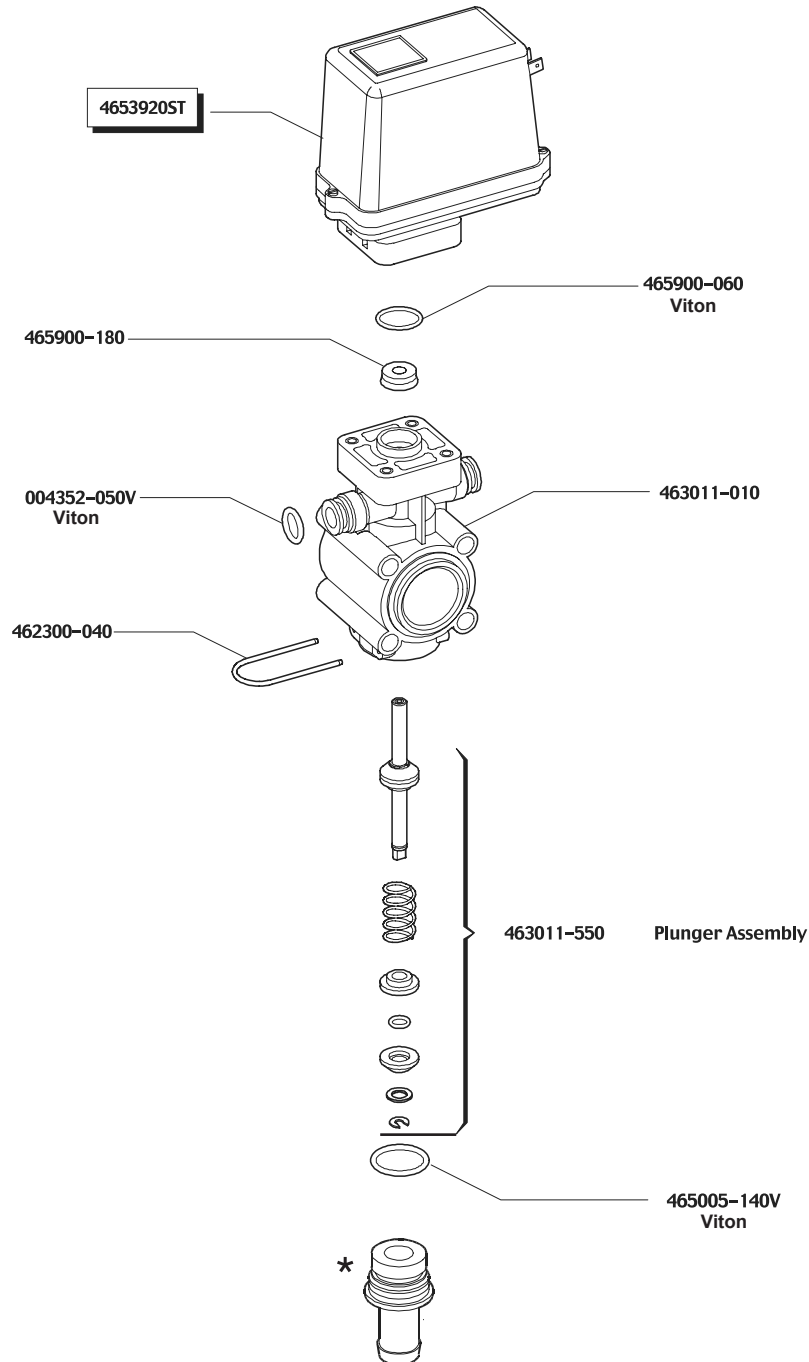
PART NUMBER 463001ST



Parts Breakdown

BOOM SECTION VALVE

PART NUMBER 463011ST



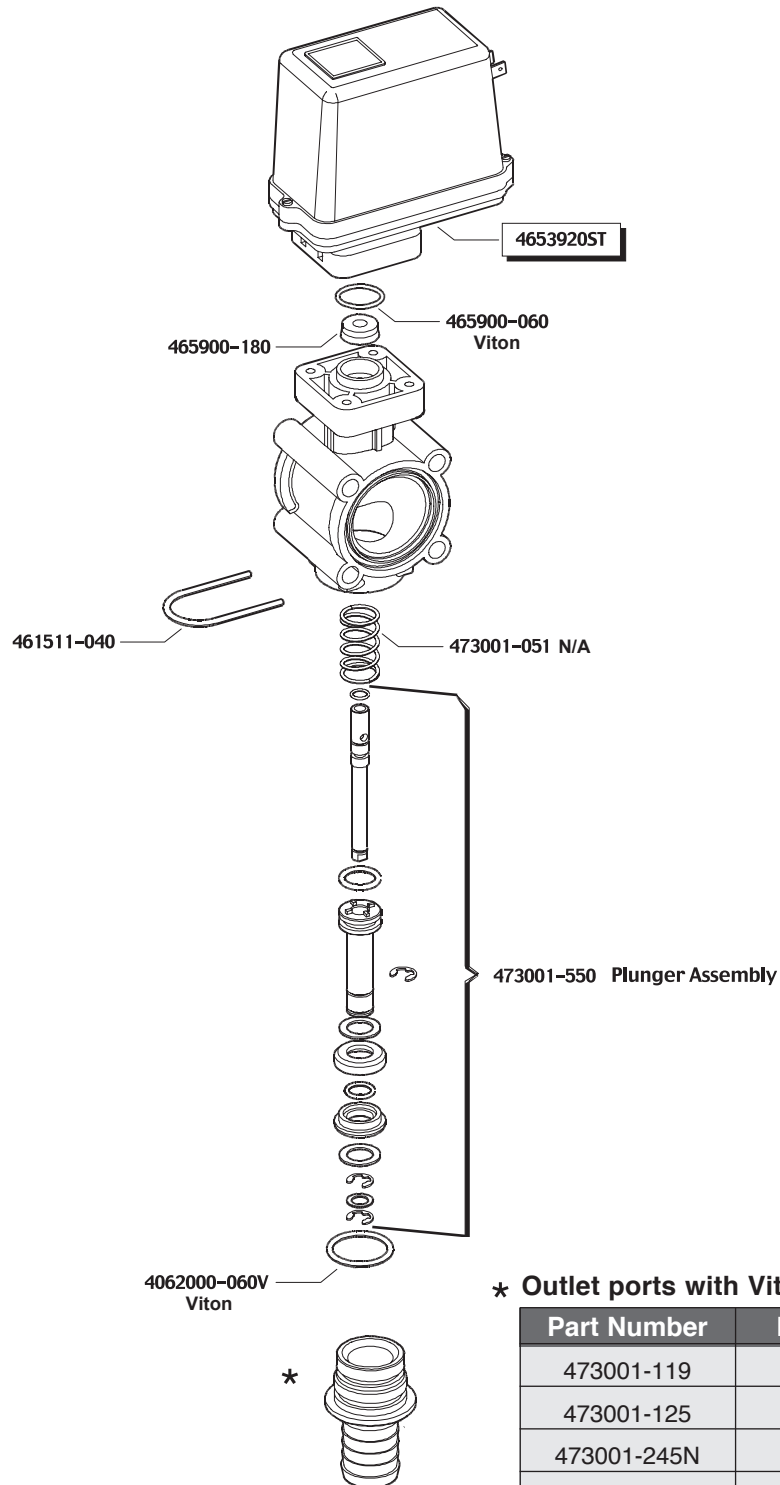
* Outlet ports with Viton O-Rings

Part Number	Hose Barb	FNPT
463001-110	3/8"	—
463001-113	1/2"	—
463001-119	3/4"	—
463001-275N	—	3/4"

Parts Breakdown

BOOM SECTION VALVE

PART NUMBER 473001T



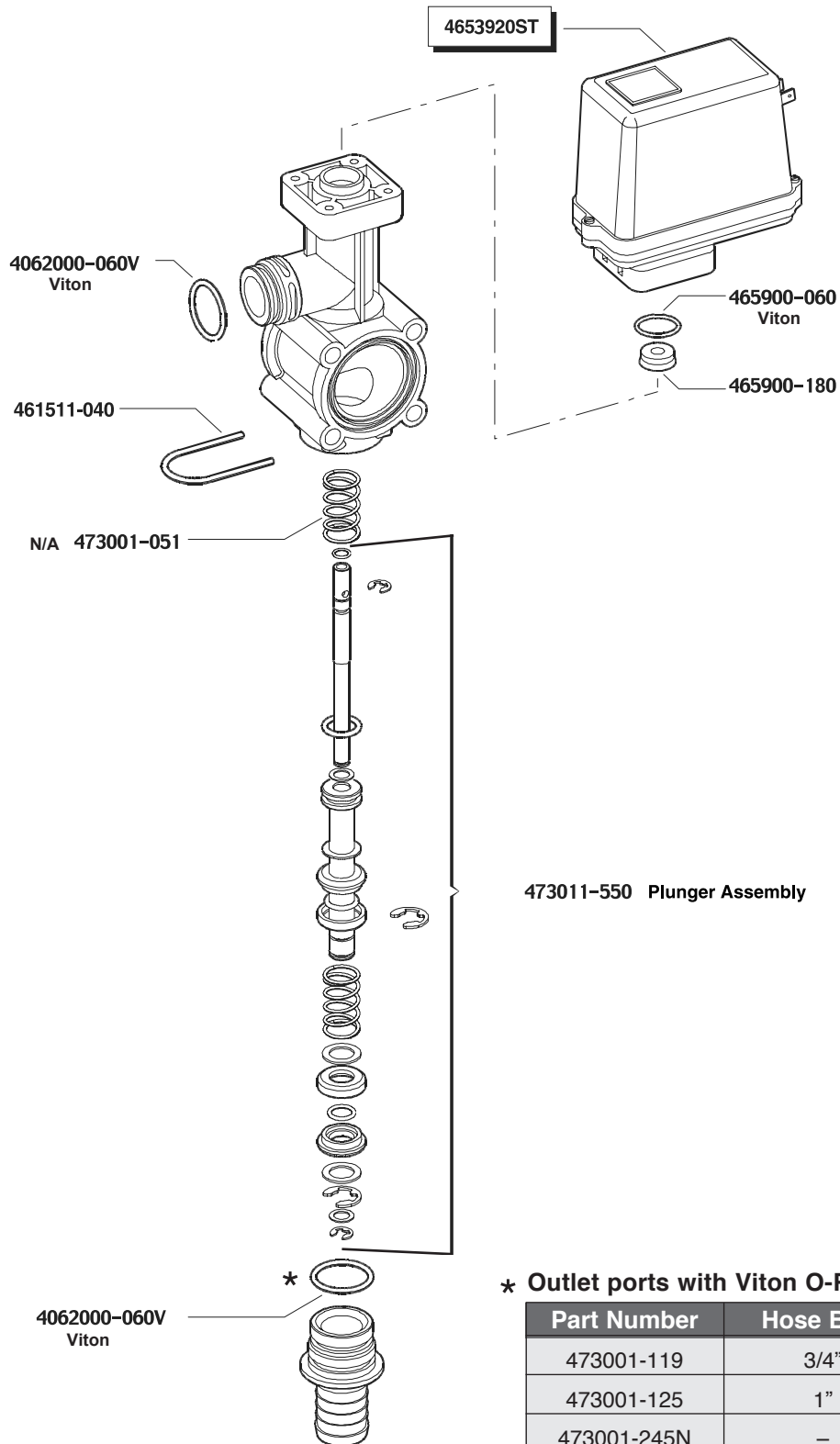
* Outlet ports with Viton O-Rings

Part Number	Hose Barb	FNPT
473001-119	3/4"	—
473001-125	1"	—
473001-245N	—	1"
473001-132	1-1/4"	
473001-425	90° Elbow	

Parts Breakdown

BOOM SECTION VALVE

PART NUMBER 473011T

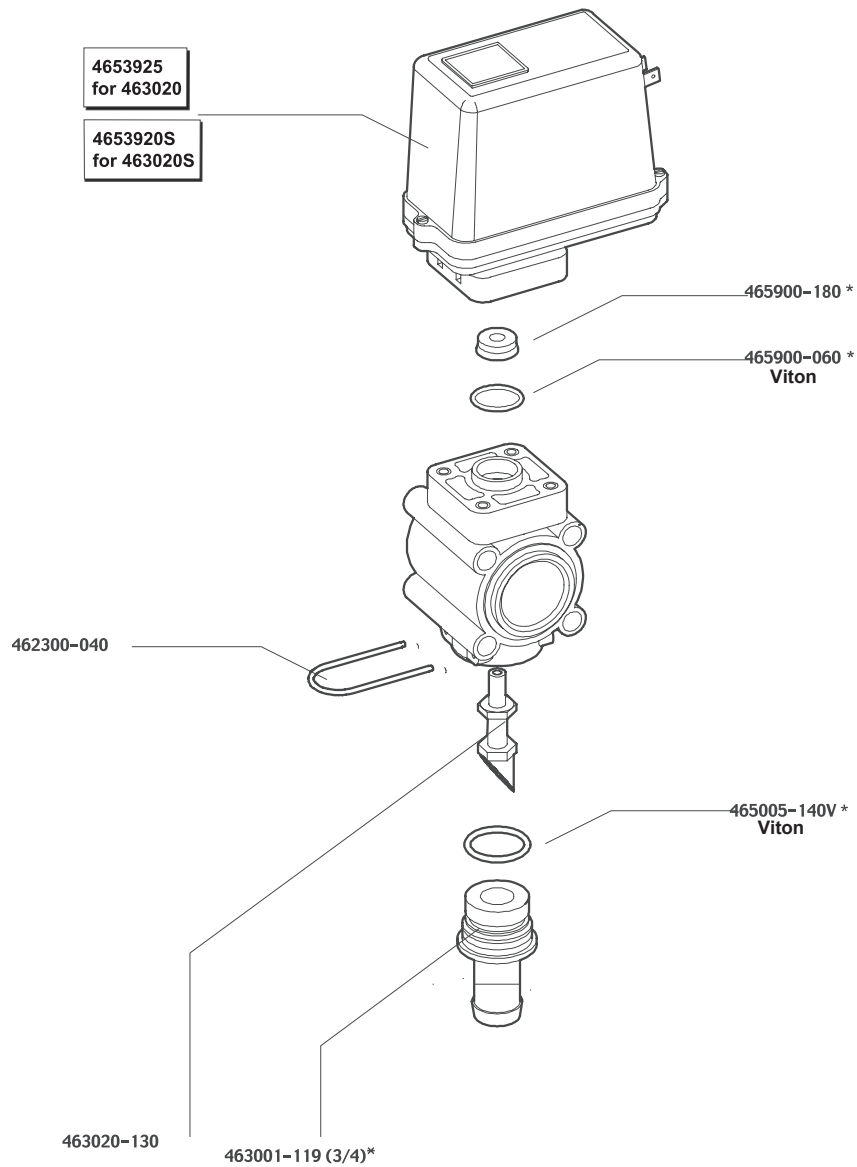


Part Number	Hose Barb	FNPT
473001-119	3/4"	—
473001-125	1"	—
473001-245N	—	1"
473001-132	1-1/4"	
473001-425	90° Elbow	

Parts Breakdown

PROPORTIONAL CONTROL VALVE

PART NUMBER 463020
463020S

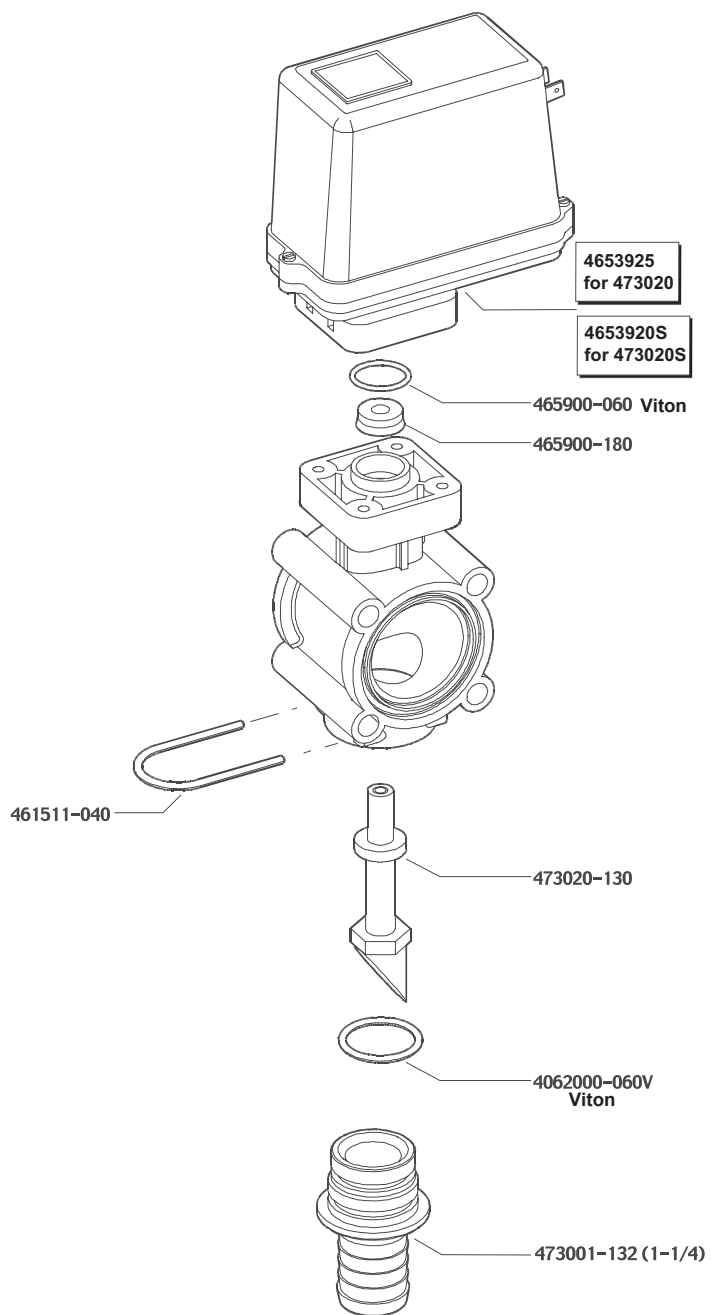


* = 463020-500 Gasket set

Parts Breakdown

PROPORTIONAL CONTROL VALVE

PART NUMBER 473020
473020S



Manifold Assemblies



Part Number

EV-463001ST-1

EV-473001T-1



Part Number

EV-463001ST-3

EV-473001T-3



Part Number

EV-463001ST-5

EV-473001T-5

463 Series — inlet 1" FNPT, outlet 3/4" FNPT, 1/4" FNPT Gauge Port

473 Series — inlet 1-1/4" MNPT, outlet 1" FNPT, 1/4" FNPT Gauge Port

Manifold Assemblies with Proportional Control Valve



Part Number

EV-463001ST3EFC

EV-473001T3EFC



Part Number

EV-463001ST5EFC

EV-473001T5EFC

463 with flow control valve 3/4" hose barb, 473 with flow control valve 1-1/4" hose barb, 1/4" FNPT Gauge Port

Manifold Assemblies with Metered Bypass



Part Number

EV-463011ST-1

EV-473011T-1



Part Number

EV-463011ST-3

EV-473011T-3



Part Number

EV-463011ST-5

EV-473011T-5

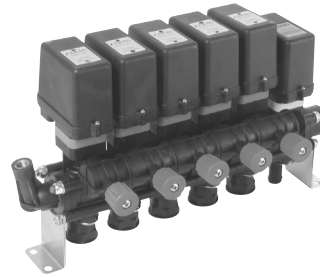
463 Series — inlet 1" FNPT, outlet 3/4" FNPT, 1/4" FNPT Gauge Port

473 Series — inlet 1-1/4" MNPT, outlet 1" FNPT, 1/4" FNPT Gauge Port

Meter Bypass Manifold Assemblies with Proportional Control Valve



Part Number
EV-463011ST3EFC
EV-473011T3EFC



Part Number
EV-463011ST5EFC
EV-473011T5EFC

463 with flow control valve 3/4" hose barb, 473 with flow control valve 1-1/4" hose barb, 1/4" FNPT Gauge Port

Mounting Kits



Boom Manifold Mounting Kits

Brackets can be rotated into any 90° position. Kit includes two mounting brackets, four proper length bolts, washers, lock nuts, and Viton® o-rings as required.

Galvanized Part Number	Stainless Steel Part Number	Boom Sections
463000-910	463900-910 473900-910	1
463000-920	463900-920 473900-920	2
463000-930	463900-930 473900-930	3
463000-940	463900-940 473900-940	4
463000-950	463900-950 473900-950	5
463000-960	463900-960 473900-960	6
463000-970	463900-970 473900-970	7
463000-980	463900-980 473900-980	8
463000-990	463900-990 473900-990	9

Service Parts

Description	Part Number
Stainless Steel Bracket	463911-100
Galvanized Bracket	463011-100
Stainless Steel Nut	B12251
Galvanized Nut	B12151
Stainless Steel Washer	B202H0
Galvanized Washer	B201H1
463 Viton O-Ring	G10071V
473 Viton O-Ring	454236-080V

– NOTES –

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Limited Warranty on Hypro Products

Hypro warrants to the original purchaser of its products (the "Purchaser") that such products will be free from defects in material and workmanship under normal use for the period of one (1) year for all Arag controls, which includes all consoles, wiring, manual and electrical valves. "Normal use" does not include use in excess of recommended maximum speeds, pressures, vacuums and temperatures, or use requiring handling of fluids not compatible with component materials, as noted in Hypro product catalogs, technical literature, and instructions. This warranty does not cover freight damage, freezing damage, normal wear and tear, or damage caused by misapplication, fault, negligence, alterations, or repair that affects the performance or reliability of the product.

THIS WARRANTY IS EXCLUSIVE. HYPRO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Hypro's obligation under this warranty is, at Hypro's option, to either repair or replace the product upon return of the entire product to the Hypro factory in accordance with the return procedures set forth below. **THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.**

IN NO EVENT SHALL HYPRO BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF ANY WARRANTY, FOR NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, OR OTHERWISE.

Return Procedures

All products *must* be flushed of any chemical (ref. OSHA Section 0910.1200 (d)(e)(f)(g)(h)) and hazardous chemicals *must* be labeled before being shipped* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data sheet from the Purchaser for any pump or product Hypro deems necessary. Hypro reserves the right to "disposition as scrap" pumps or products returned which contain unknown substances, or to charge for any and all costs incurred for chemical testing and proper disposal of components containing unknown substances. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown substances.

For technical or application assistance, call the **Hypro Technical/Application number: 1-800-445-8360.**

To obtain service or warranty assistance, call the Hypro Service and Warranty number: 1-800-468-3428; or call the Hypro Service and Warranty FAX: (651) 766-6618.

Be prepared to give Hypro full details of the problem, including the following information:

1. Model number and the date and from whom you purchased your product.
2. A brief description of the product problem.

Hypro may request additional information, and may require a sketch to illustrate the problem. Contact the factory to receive a return material authorization before sending the product. All products returned for warranty work should be sent shipping charges prepaid to:

HYPRO
Attention: Service Department
375 Fifth Avenue NW
New Brighton, Minnesota 55112

* Carriers, including U.S.P.S., airlines, UPS, ground freight, etc., require specific identification of any hazardous materials being shipped. Failure to do so may result in a substantial fine and/or prison term. Check with your shipping company for specific instructions.



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