

**ELECTRONIC
PEDALS**



SENSORS



**AIR CONTROL
VALVES**

- Electronic
- Air & Pnuematic
- Hydraulic

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TECTRAN
Solutions for Transportation Equipment



**WILLIAMS
CONTROLS**

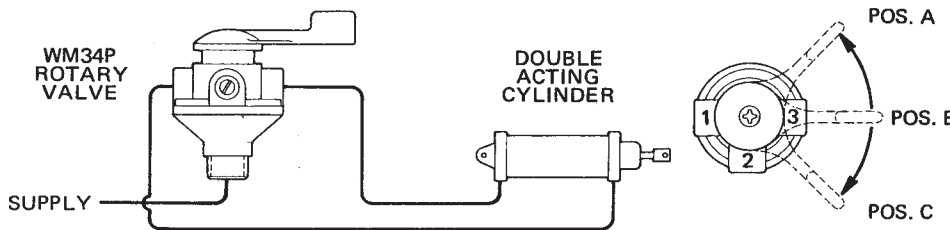
PRODUCT DESCRIPTION

DESCRIPTION The WM34P is a multi-purpose, four-way rotary-action control valve. The handle rotates freely through a 90° arc and passes through three functional positions. The valve inlet port is threaded both internally (1/8-27 NPTF) and externally (3/8-18 NPTF). The valve can be panel-mounted using the four fasteners provided, or it can be mounted with a pipe fitting and the external threads of the supply port.

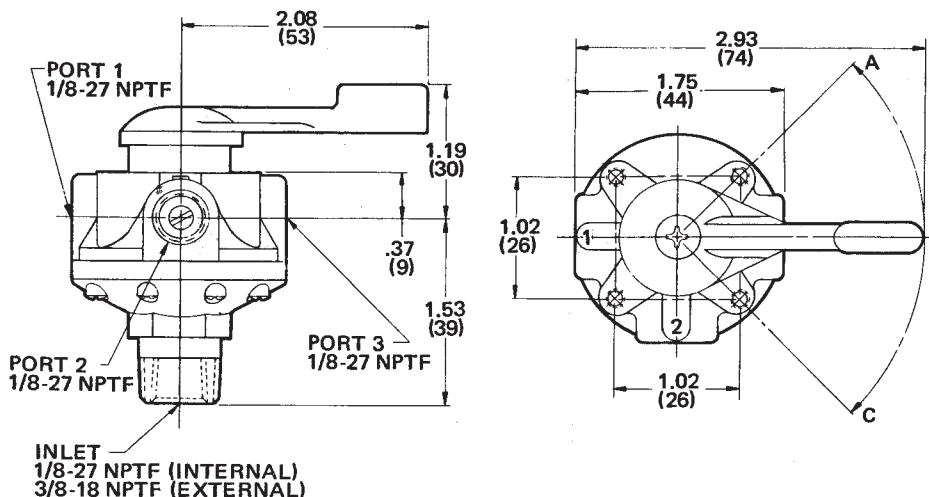
OPERATION As shown in the installation schematic below, the WM34P is normally installed so that Port 2 is used for exhaust and Ports 1 and 3 are used as outlets. With the handle in Position A (fully counter-clockwise), supply pressure is directed to Port 1, and Port 3 exhausts through Port 2. When the handle is rotated to Position B (45° clockwise from Position A), pressure at Ports 1 and 3 is exhausted through Port 2. With the handle in Position C (fully clockwise), supply pressure is directed to Port 3, and Port 1 exhausts through Port 2.

APPLICATION The WM34P is a universal application valve that is ideal for controlling a double-acting cylinder or a pair of single-acting cylinders. Designed for industrial and vehicular pneumatic control systems, this valve is used where cost is an important concern and minor leakage can be tolerated.

TYPICAL INSTALLATION



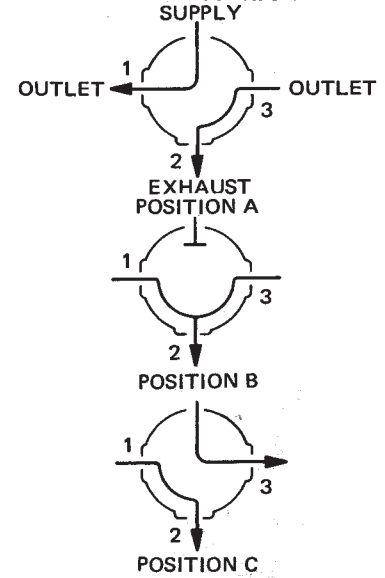
EXTERNAL CONFIGURATION



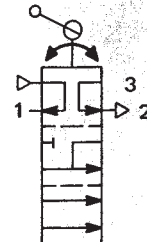
**WM 34
SERIES**

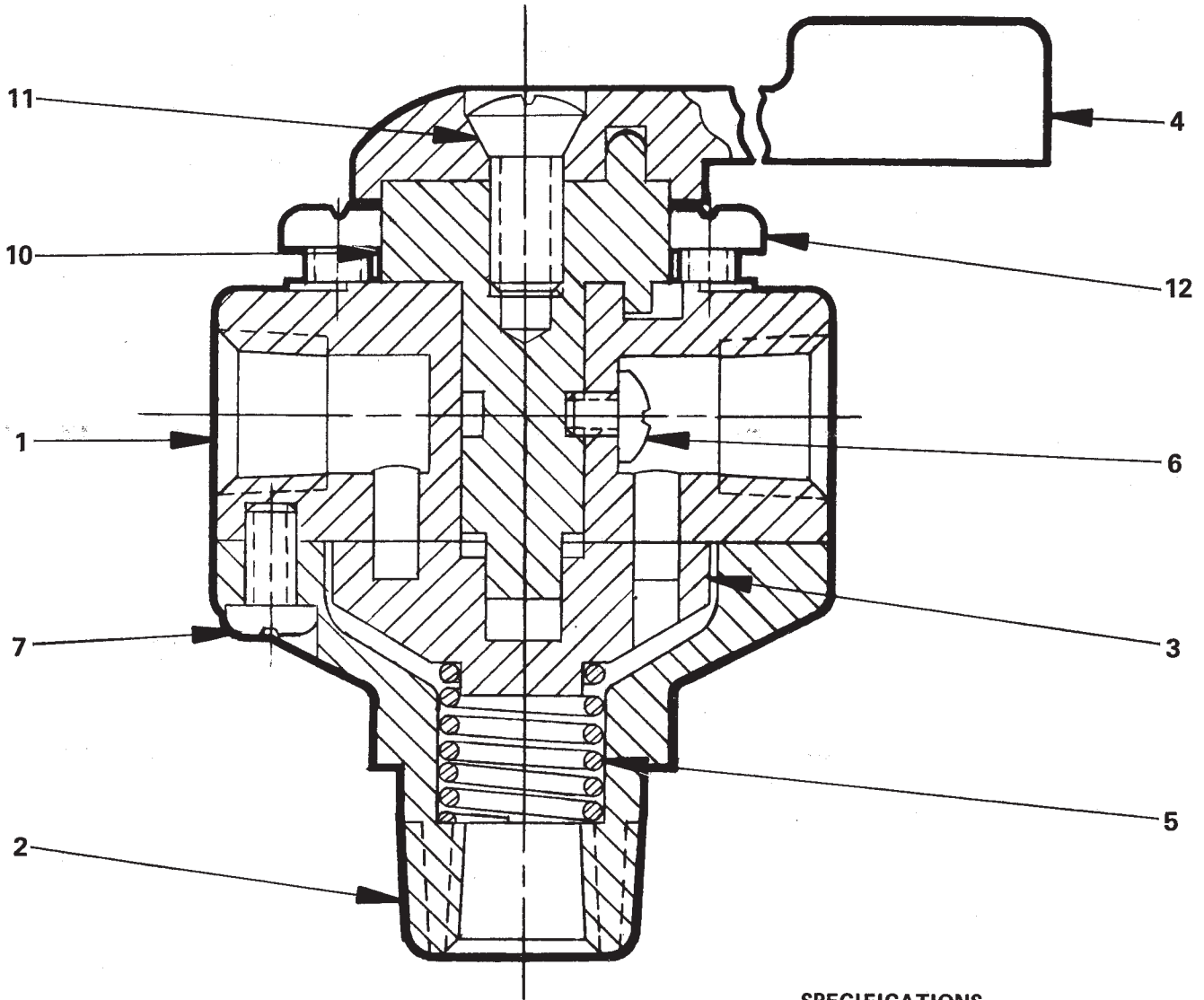
**FOUR-WAY
3-POSITION
ROTARY VALVE**

FUNCTIONAL DIAGRAM



I.S.O. SYMBOL





SPECIFICATIONS

PORT SIZES: Inlet 1/8-27 NPTF or 3/8-18 NPTF
 Outlet 1/8-27 NPTF
 MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)
 OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°C to 93,3°C)
 FLOW RATING 12 SCFM @ 100 PSI (0,3 m³/min @ 690 kPa)
 MOUNTING Pipe or Panel Mounting (Fasteners Included)
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Zinc Alloy
 Handle Chrome-Plated Die Cast Zinc Alloy
 Rotor Plastic
 NET WEIGHT 8.5 oz. (0,2 kg)

*For continuous operation beyond this range, contact factory.

PARTS IDENTIFICATION		
ITEM	DESCRIPTION	QTY.
1	MAIN BODY	1
2	INLET BODY	1
3	ROTOR	1
4	HANDLE	1
5	SPRING	1
6	SCREW	1
7	SCREW	8
10	STEM	1
11	SCREW	1
12	SCREW	4

This component is classified as a non-repairable item.

TO ORDER, SPECIFY
WM34P
 Model Number
PART NUMBER 111118

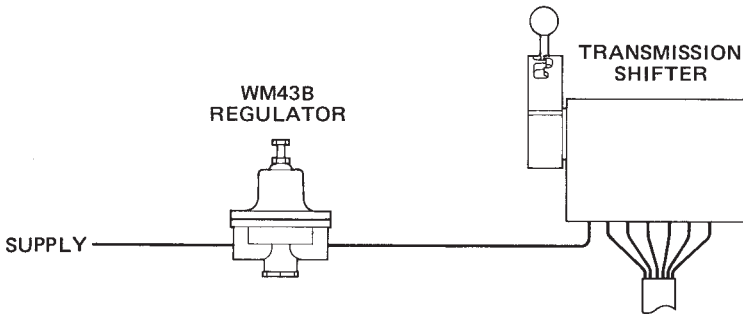
PRODUCT DESCRIPTION

DESCRIPTION The WM43 series is composed of a group of adjustable, non-relieving pressure regulators with varying outlet pressure adjustment ranges and mounting styles. These valves are adjusted by a hex screw, and function to limit and maintain downstream pressure at a preset level.

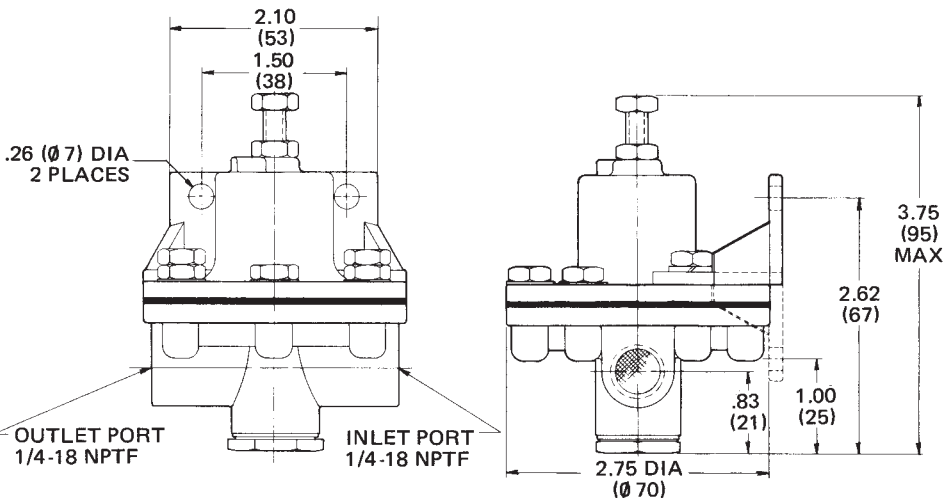
OPERATION The adjustment screw of a WM43 regulator is turned inward to achieve pressure delivery. This causes an internal diaphragm to flex, unseating the poppet and allowing supply pressure to flow to the outlet. When pressure at the regulator's outlet balances against the force of an internal spring, the poppet seats to maintain the balanced condition. If the adjustment screw is loosened, the poppet seats until outlet pressure is reduced to conform to the setting, then the regulator maintains the new output pressure. Since these models are not self-relieving, excess outlet pressure must either be consumed or exhausted through a pressure relief valve.

APPLICATION WM43 regulators are designed to maintain downstream pressure at a desired level. They are used in industrial and vehicular applications which require a non-exhausting pressure regulator, and are commonly used to govern supply pressure to pneumatic accessories and equipment. WM43 valves are ideal for limiting air supply to transmission shifters and other devices which consume air. Non-relieving regulators should not be used in dead headed circuits which do not consume air unless used in conjunction with pressure relief valves.

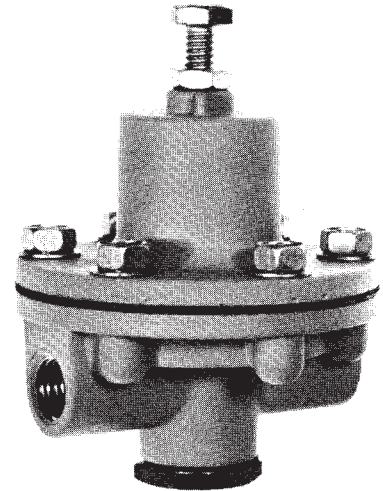
TYPICAL APPLICATION



EXTERNAL CONFIGURATION

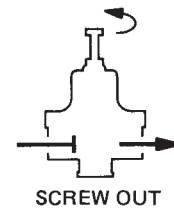
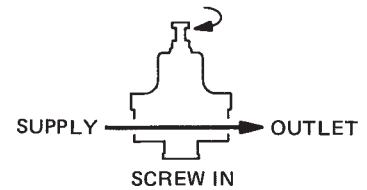


**WM43
SERIES**

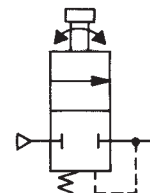


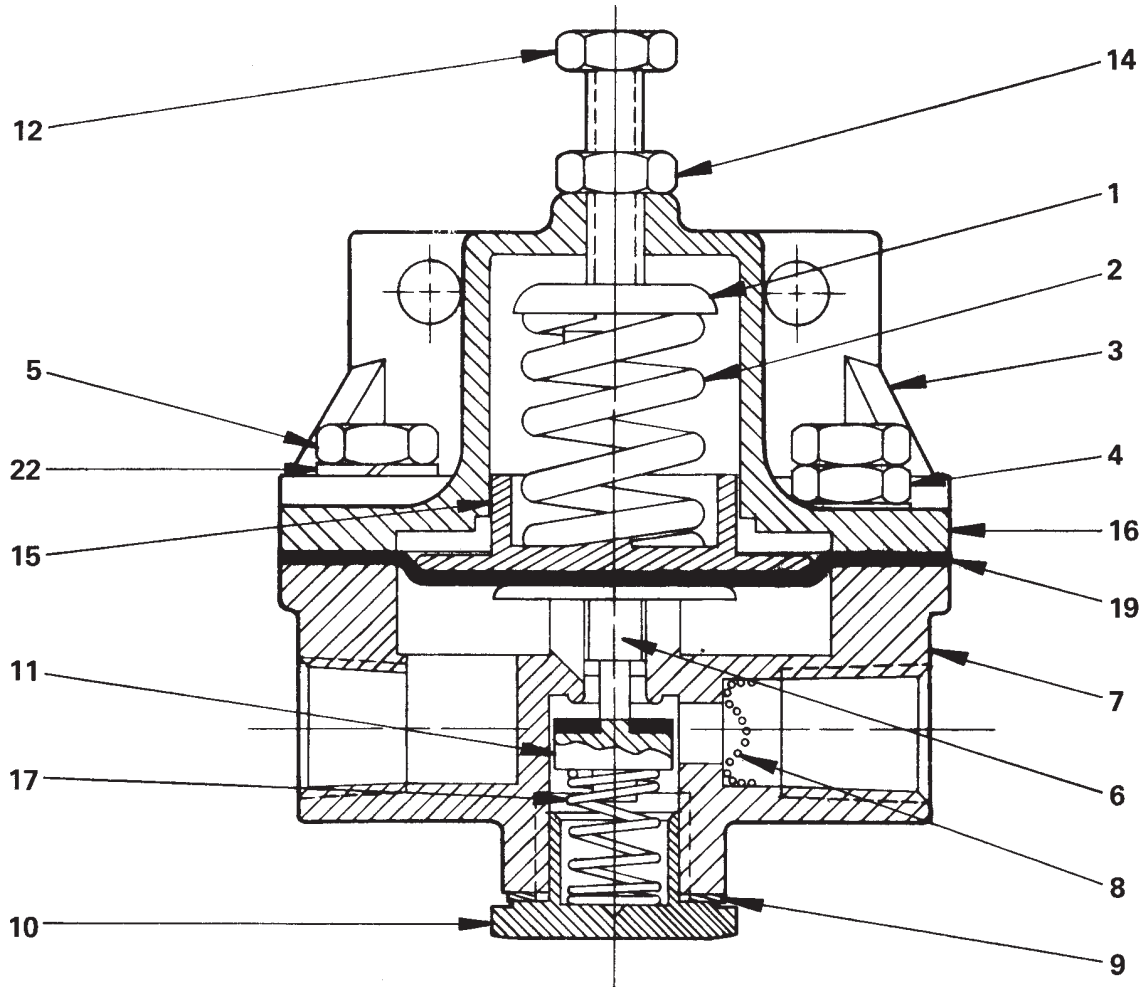
**NON-RELIEVING
PRESSURE
REGULATOR**

FUNCTIONAL DIAGRAM



I.S.O. SYMBOL





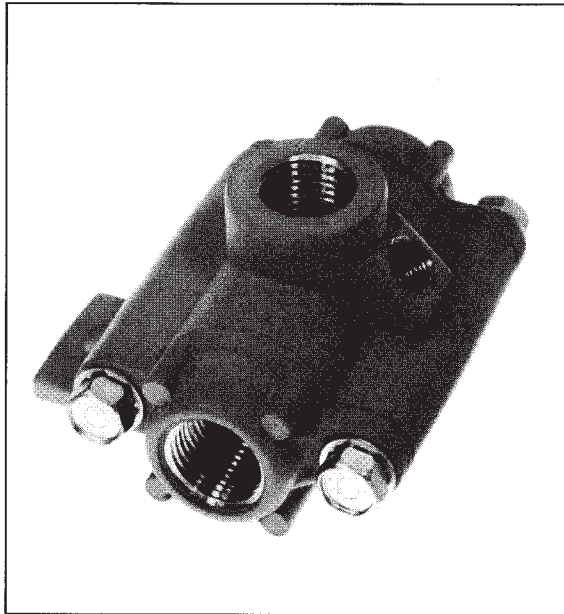
SPECIFICATIONS

PARTS IDENTIFICATION			
ITEM	DESCRIPTION	QUANTITY	
			B1
1	SPRING CAP		1
2	SPRING		1
3	MTG. BRACKET (103960)		1
4	SCREW		3
5	SCREW		3
6	DIAPHRAGM PLATE		1
7	LOWER BODY		1
* 8	SCREEN		1
* 9	GASKET		1
10	END CAP		1
* 11	POPPET		1
12	SCREW (114679)		1
14	NUT (114537)		1
15	SPRING PLATE		1
16	COVER		1
17	SPRING		1
* 19	DIAPHRAGM		1
22	LOCKWASHER		3

Service this unit with repair kit number 114355.
Replaceable items are followed by part numbers.
*Asterisk designates parts included in repair kit number 114355.

PORT SIZE 1/4-18 NPTF
 MAXIMUM OPERATING PRESSURE. 150 PSI (1034, 2 kPa)
 OPERATING TEMPERATURE*. -20°F to 200°F (-28, 9°C to 93, 3°C)
 FLOW RATING 40 SCFM @ 100 PSI (1,08 m³/min @ 690 kPa)
 MOUNTING Refer to Ordering Information Block
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Die Cast Zinc Alloy
 Diaphragm Fabric Reinforced Buna N
 Poppet Aluminum w/Buna N Backing
 NET WEIGHT. 17 ounces (0, 5 kg)
 *For continuous operation beyond this range, contact factory.

TO ORDER, SPECIFY			
WM43 _____			
Model Number		Suffix	
PART NUMBER _____			
SELECT SUFFIX & PART NUMBER BELOW			
SUFFIX	PART NUMBER	ADJUSTABLE OUTPUT RANGE	MOUNTING
WM43 B1	111135	0-80 PSI	BRACKET

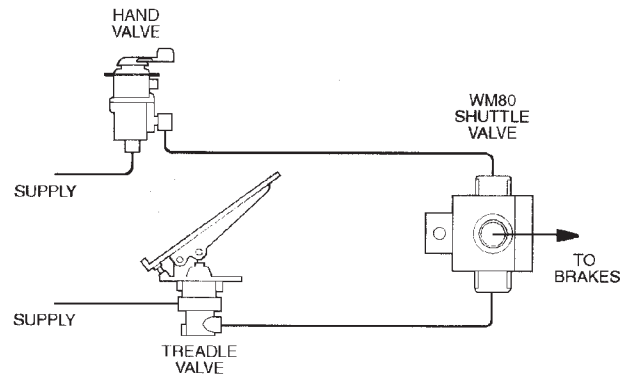


**WM80 Series
3/8 Inch
Shuttle Valves**

200 SCFM @ 100 PSI

DESCRIPTION

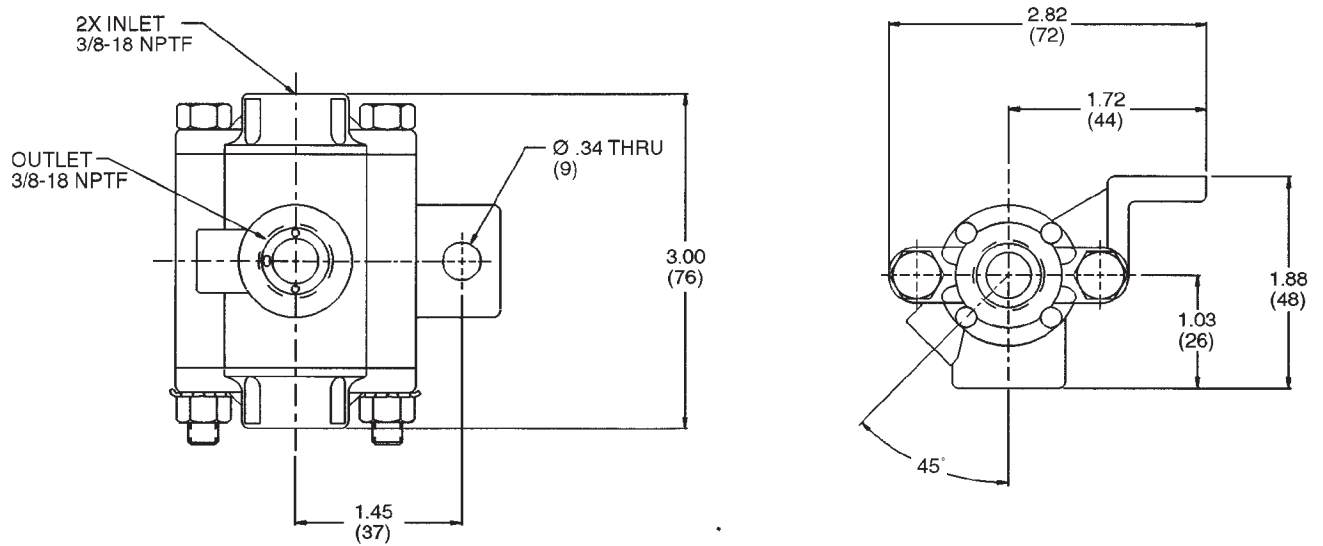
The WM80 is a bracket-mounted shuttle valve engineered for applications which operate with a moderate air flow rate. It functions as a double check valve, allowing two pressure sources to independently supply a single outlet. As long as there is a pressure differential between the two inlets, the shuttle seals off the one with the least pressure. WM80 valves are available with the option of an additional port for installation of a pressure gage or switch. This shuttle valve is commonly used in air brake systems where a hand valve and a treadle are both used to control the same function.



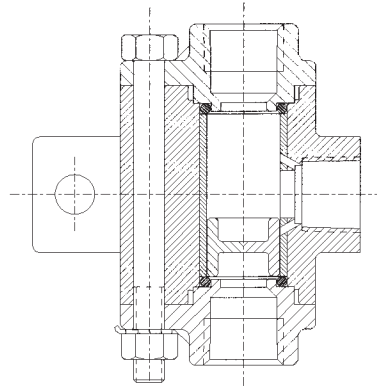
SPECIFICATIONS

Port size	3/8-18 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating	200 SCFM @ 100 PSI (5,4 m ³ /min @ 690 kPa)
Mounting.....	Bracket
Mounting attitude.....	Optional
Materials: Body castings	Iridited die cast zinc alloy
Shuttle	Brass
Shuttle chamber.....	Brass
O-rings	Buna N
Weight	15 oz (0,4 kg)

DIMENSIONAL DATA



CROSS SECTION



ORDERING INFORMATION

To order, specify **WM80** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Description
WM80 No suffix	111231	Shuttle valve without auxiliary port
WM80 A	111232	Shuttle valve with auxiliary port for gage or switch

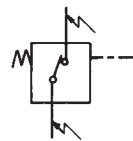
PRODUCT DESCRIPTION

DESCRIPTION The WM 81 series consists of non-grounded switches that respond to a drop of air pressure below a preset level. The WM 81 switches feature an adjustment that allows the actuation setting to be modified. The switches are shipped from the factory with this setting preadjusted to 50-60 PSI (344,7-413,7 kPa). When the pressure drops below the preset value, these switches activate a light or buzzer to indicate that a low pressure condition exists.

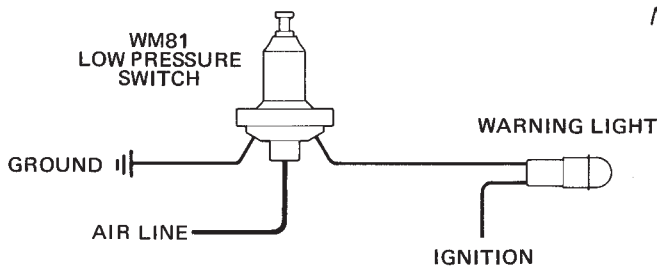
OPERATION When the control pressure exceeds the preset level, a diaphragm in the switch holds the contacts in the open position. If the pressure decreases below this level, the diaphragm is spring-returned and the contacts close. A customer-supplied light or buzzer warns the operator of the low pressure condition.

APPLICATION The WM 81 series single-pole, single-throw switches are commonly installed as signal devices in pneumatic braking systems. Designed for low voltage (6-24 VDC), low amperage applications, these switches are frequently used to activate a warning light or buzzer when a low pressure condition exists in the vehicle's air brake system. The WM 81 series is not UL approved.

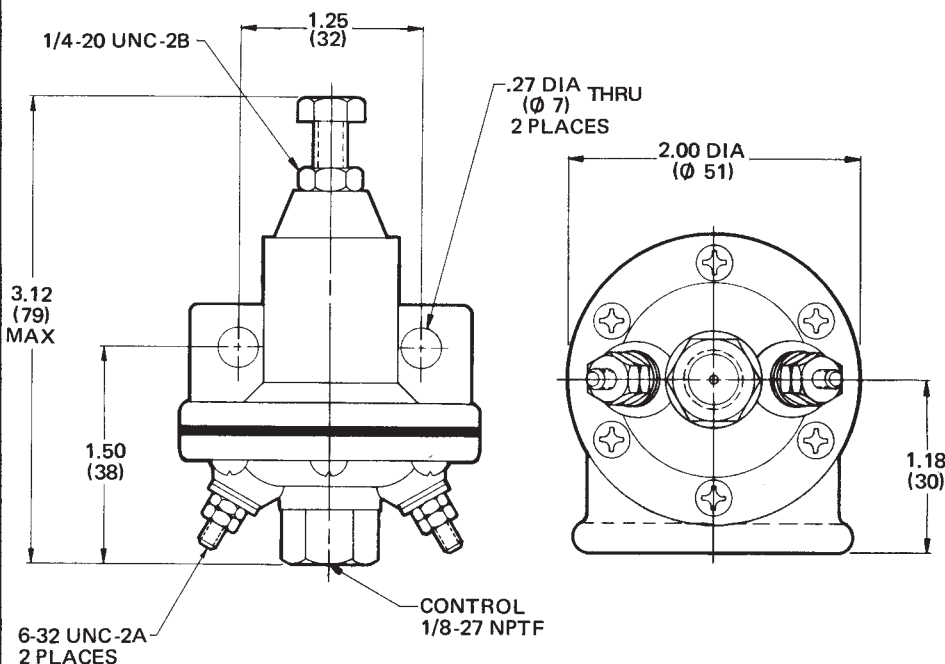
I.S.O. SYMBOL



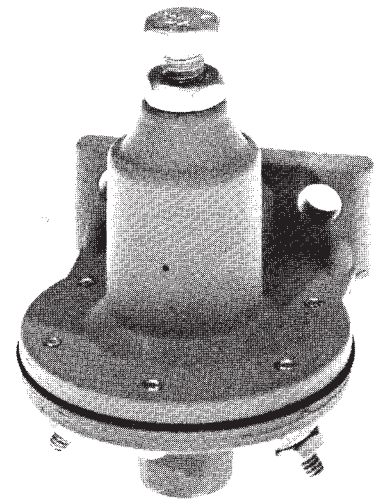
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION



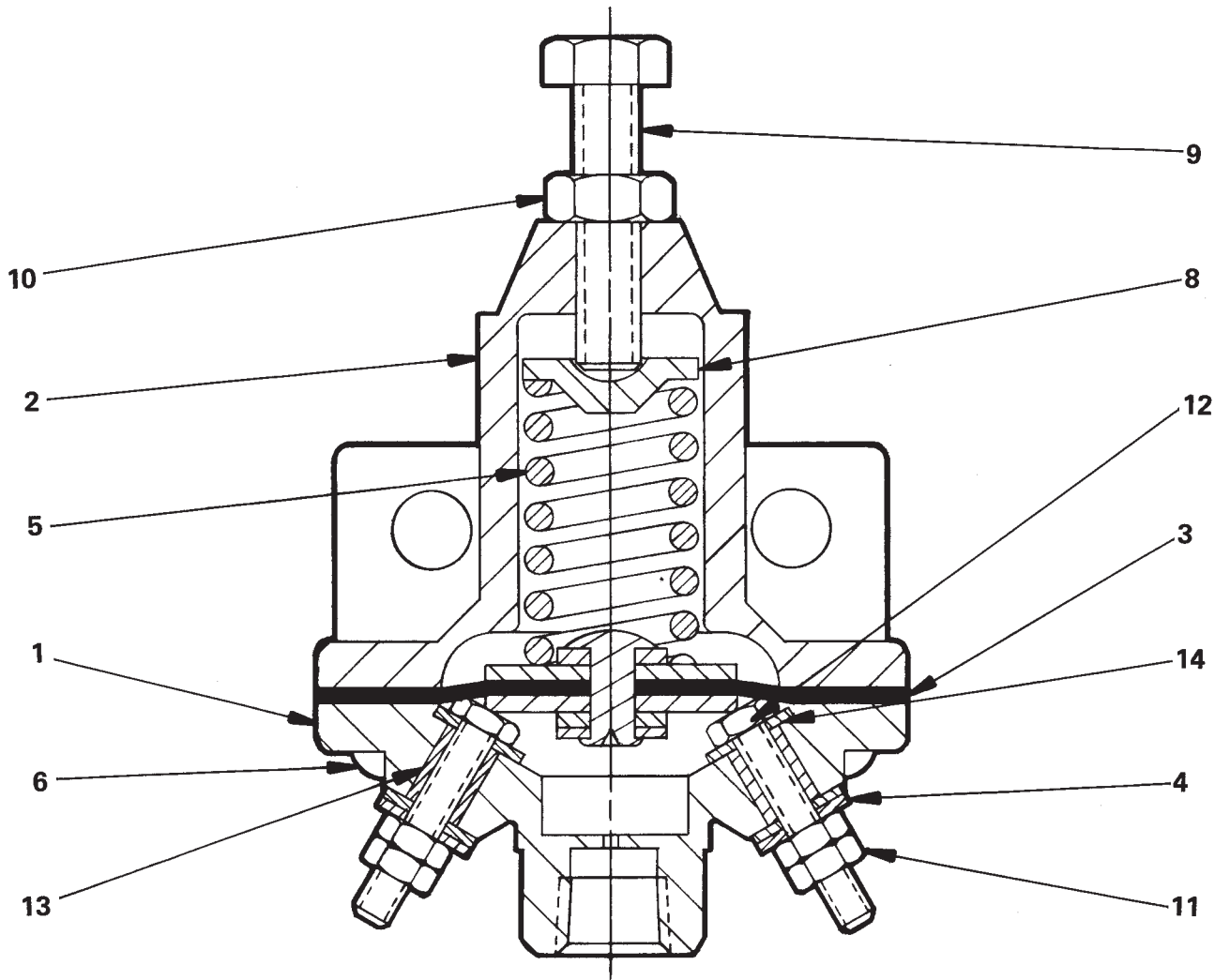
**WM81
SERIES**



**ADJUSTABLE
PRESSURE
SWITCH**

FUNCTIONAL DIAGRAM





SPECIFICATIONS

PORT SIZE 1/8-27 NPTF
 MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)
 OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°C to 93,3°C)
 ADJUSTABLE PRESSURE RANGE 20-30 PSI (137,9-206,8 kPa)
 to 120-130 PSI (827,4-896,3 kPa)
 PRESET PRESSURE TO OPEN CONTACTS . . . 50-60 PSI (344,7-413,7 kPa)
 MOUNTING. . . Pipe Mtg. or Bracket Secured to Frame, Bulkhead, or Bracket
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Die Cast Zinc Alloy
 Terminals, Contacts, & Contact Plate . . . Silver-Plated Brass
 Diaphragm Fabric-Reinforced Buna N
 NET WEIGHT. 8.0 oz. (0,2 kg)
 *For continuous operation beyond this range, contact factory.

PARTS IDENTIFICATION		
ITEM	DESCRIPTION	QTY.
1	BODY	1
2	COVER	1
3	DIAPHRAGM ASSEMBLY	1
4	WASHER	2
5	SPRING	1
6	SCREW	6
8	SPRING SEAT	1
9	SCREW	1
10	NUT	1
11	NUT	4
12	SCREW	2
13	SLEEVE	2
14	INSULATOR	4

This component is classified as a non-repairable item.

TO ORDER, SPECIFY
WM81
 Model Number
PART NUMBER 111237

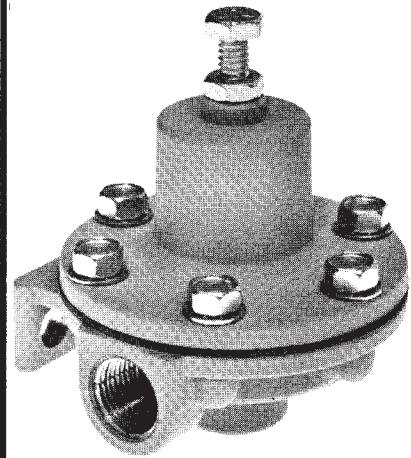
PRODUCT DESCRIPTION

DESCRIPTION The WM87 series valves are normally closed adjustable pressure protection valves. To protect pressure in the main air system, these valves remain closed until adequate pressure is present to supply an auxiliary system. The customer must adjust the valve to select a pressure setting at which the valve will open. Until the supply pressure exceeds this setting, the WM87 series valve remains closed. Several models are available in the WM87 series, and each functions differently when the supply pressure drops below the pressure setting.

OPERATION When adequate supply pressure is present, the WM87 series valve yields and the supply port opens to the outlet port. Each of the three WM87 models operates differently when the supply pressure decreases below the opening pressure. The WM87 traps the pressure at the outlet port, while the WM87A, which has a flexible poppet, permits reverse flow until the supply pressure balances with the outlet pressure. On the WM87C, an exhaust port releases downstream pressure at the outlet port. All of the WM87 valves will reopen if the supply pressure increases above the preset opening pressure.

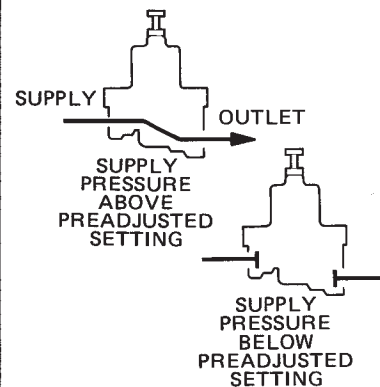
APPLICATION As shown in the installation schematic below, before opening and supplying pressure to a secondary system, the WM87 series valve allows pressure to build in a primary system to a preset level. Thus, a specific pressure is maintained in the primary system. For each application, the customer must adjust the valve to obtain the desired opening pressure.

**WM87
SERIES**

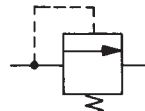


**ADJUSTABLE
PRESSURE
PROTECTION
VALVE**

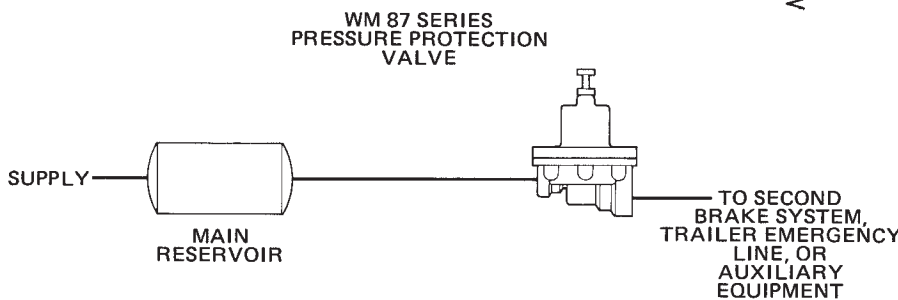
FUNCTIONAL DIAGRAM



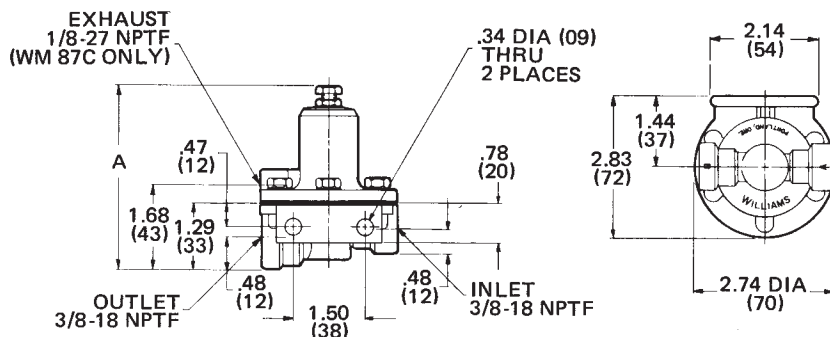
I.S.O. SYMBOL

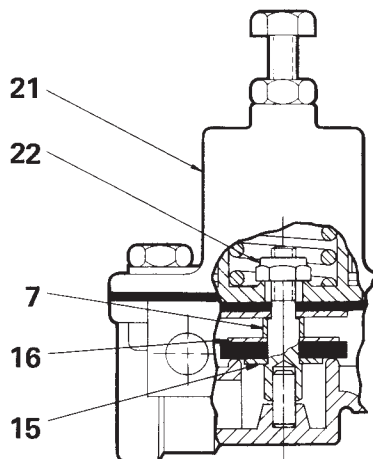
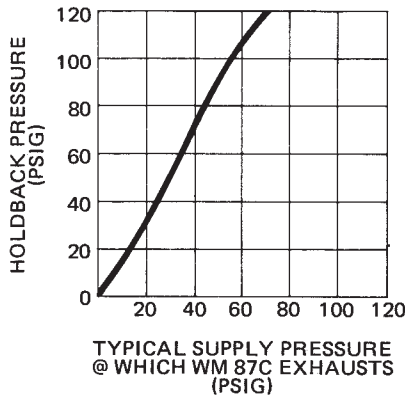


TYPICAL INSTALLATION

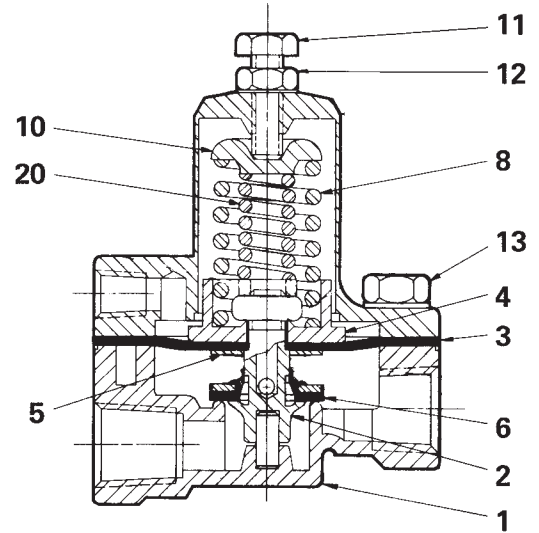


EXTERNAL CONFIGURATION





WM87



PARTS IDENTIFICATION			
ITEM	DESCRIPTION	QUANTITY	
		NO SUFFIX	
1	BODY ASSEMBLY	1	
2	STEM	1	
* 3	DIAPHRAGM	1	
4	SPRING PLATE	1	
5	WASHER	1	
* 6	POPPET	1	
7	SPACER	1	
8	SPRING	1	
9	COVER		
10	SPRING CAP	1	
11	SCREW	1	
12	NUT	1	
13	SCREW	6	
14	NUT		
15	WASHER	1	
16	WASHER	1	
17	SPRING		
19	WASHER		
20	SPRING	1	
21	COVER	1	
22	NUT	1	

Service the WM87 with repair kit number 114094.

*Asterisk designates parts included in repair kit 114094, 114095 or 114097.

SPECIFICATIONS

PORT SIZES: Inlet & Outlet 3/8-18 NPTF

MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)

OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°C to 93,3°C)

FLOW RATING 155 SCFM @ 100 PSI (4,4 m³/min @ 690 kPa)

MOUNTING . . Pipe Mtg. or Mtg. w/ Bracket & Customer-Supplied Fasteners

MOUNTING ATTITUDE. Optional

MATERIALS: Body Castings Die Cast Zinc Alloy

Stems Brass

Diaphragms Fabric-Reinforced Buna N

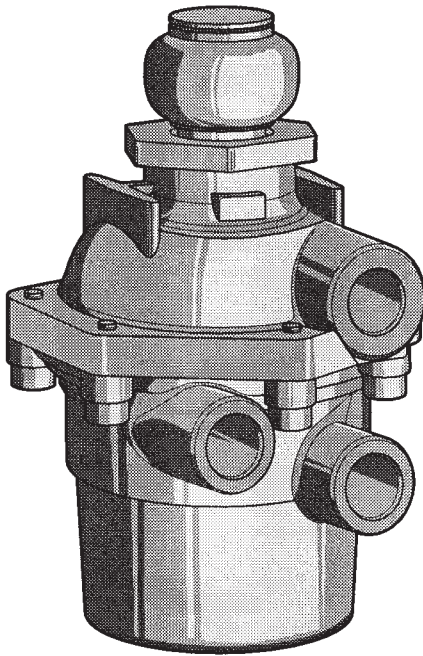
Poppets: WM 87 Buna N

NET WEIGHT: WM 87 16 oz. (0,5 kg)

*For continuous operation beyond this range, contact factory.

TO ORDER, SPECIFY				
WM 87 _____				
		Model Number	Suffix	
PART NUMBER _____				
SELECT SUFFIX & PART NUMBER BELOW				
SUFFIX	PART NUMBER	VALVE FUNCTION WITH SUPPLY PRESSURE DECREASE	ADJUSTABLE HOLDBACK PRESSURE*	MAX. HEIGHT A
WM 87 NO SUFFIX	111257	Valve Traps Pressure at Outlet	0-75/85 PSI (0-517/586 kPa)	3.84 in. (98 mm)

*Customer must adjust valve to desired opening pressure within this range.

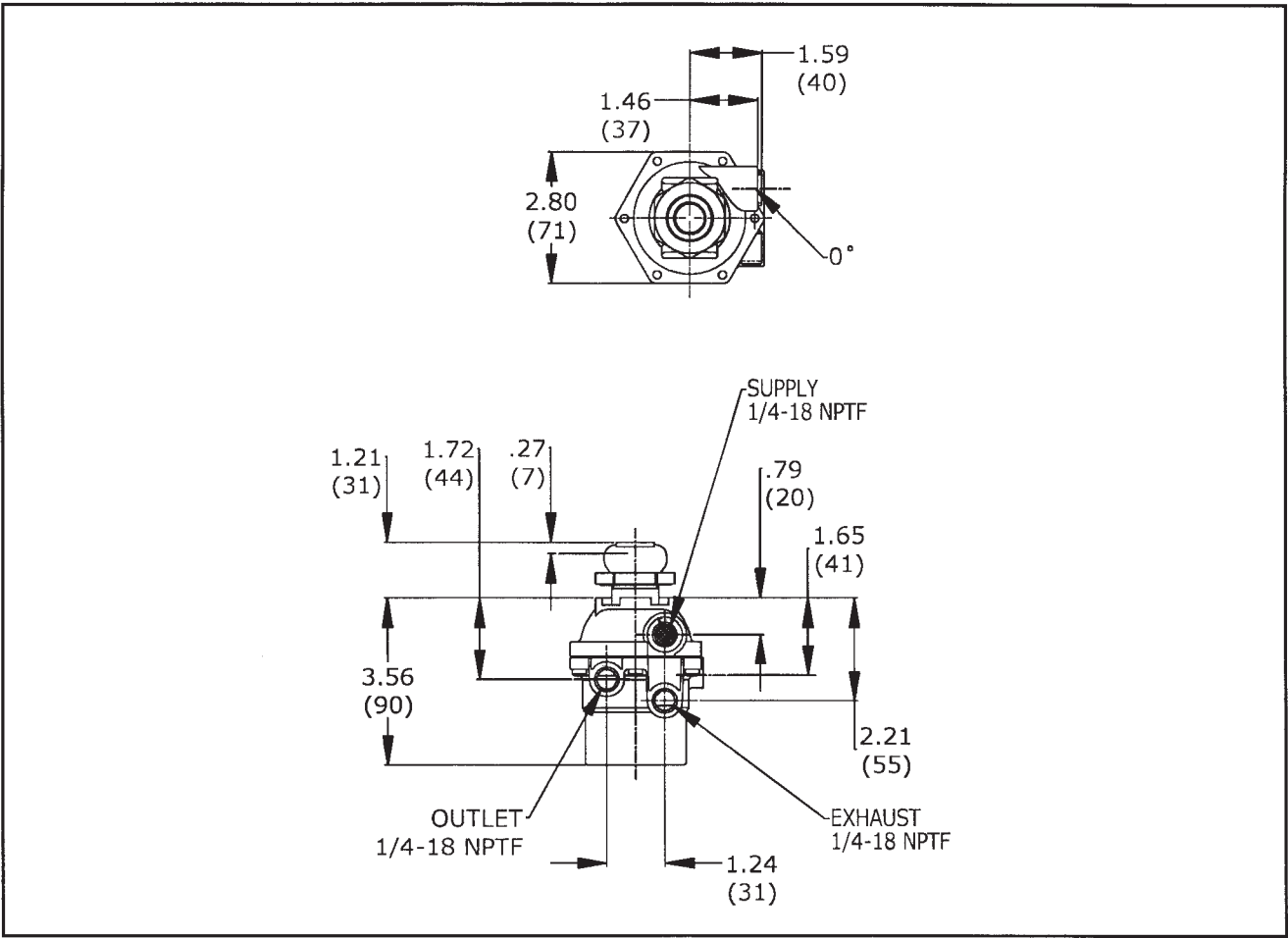


**WM90DX
FAIL-SAFE PNEUMATIC
REGULATING VALVE**

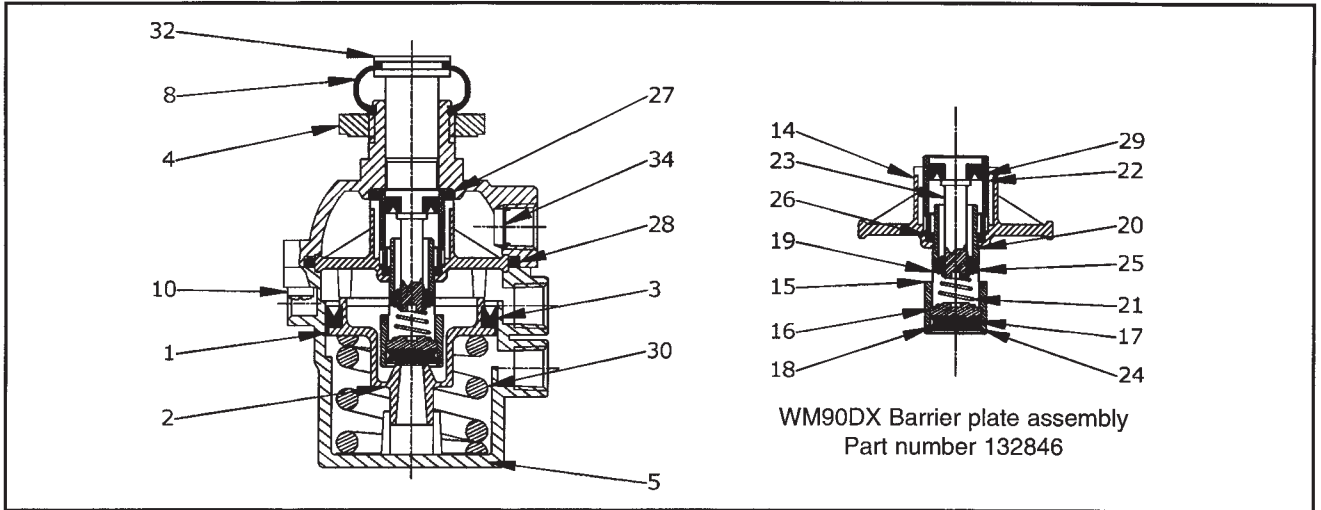
FEATURES AND SPECS

- FMVSS-124 approved.
- Weight: 1 lb, 15 oz (0,9 kg)
- Port size: 1/4-18 NPTF
- Maximum supply pressure: 150 PSI (1034 kPa)
- Operating temperature: -40°F to 200°F (-40°C to 93°C)

DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM90DX	WM90DX2
1	—	Thrust Ring	1	1
2	—	Balance Piston	1	1
3	—	U-Cup	1	1
4	101114	Mounting Nut	1	1
5	—	Washer	2	2
8	103039	Boot	1	1
10	—	Screw	6	6
14	—	Barrier Plate	1	1
15	—	Valve Cage	1	1
16	—	Support Plate	1	1
17	—	Poppet	1	1
18	—	Poppet Ring	1	1
19	—	Support Disc	1	1
20	—	Poppet	1	1
21	—	Spring	1	1
22	—	Cylinder Sleeve	1	1
23	—	Piston	1	1
24	—	Retaining Ring	1	1
25	—	Retaining Ring	1	1
26	—	O-Ring	1	1
27	—	O-Ring	1	1
28	—	O-Ring	1	1
29	—	U-Cup	1	1
30	—	Spring	1	1
32	—	Pushrod Assembly	1	1
34	—	Screen	1	1

Serviceable items are identified above.

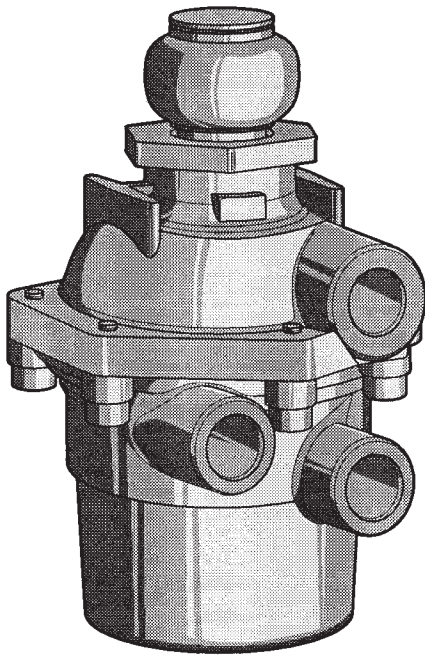
SERVICE KIT INFORMATION

Kit	Service Kit Number	Item Numbers
Repair kit (includes Barrier plate assembly)	117103	Barrier plate assembly plus 3, 8, 10, 27, 28
Spring kit for WM90DX	118044	5, 30
Spring kit for WM90DX2	118036	5, 30

TO ORDER

To order a WM90DX model, select part number from the chart below.

Model	Part Number	Regulated Output Range
WM90DX	116697	0-60/70 PSI (0-414/483 kPa)
WMDX2	117269	0-60/70 PSI (0-414/483 kPa)

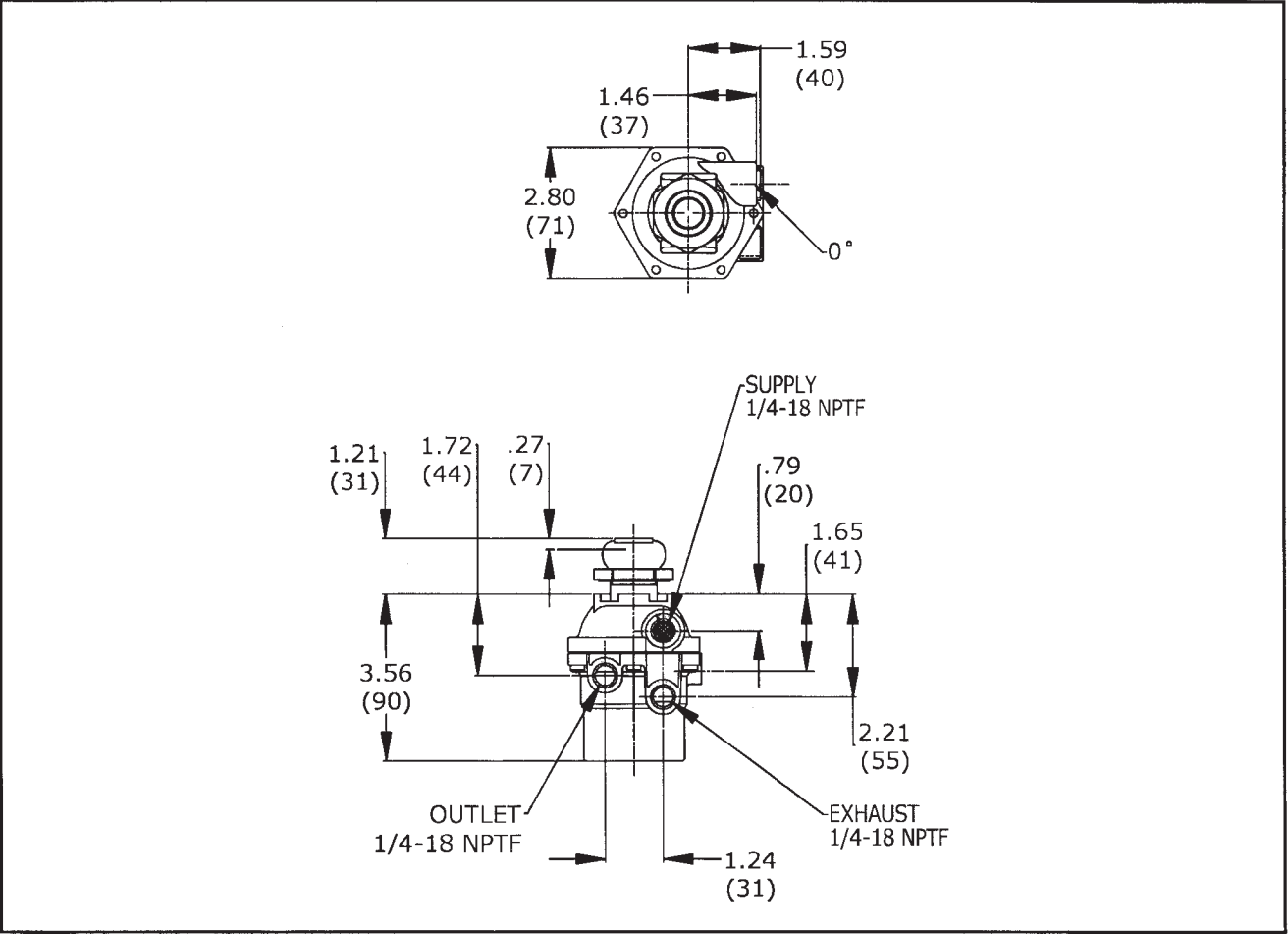


**WM90 SERIES
THREE-WAY
REGULATING VALVE**

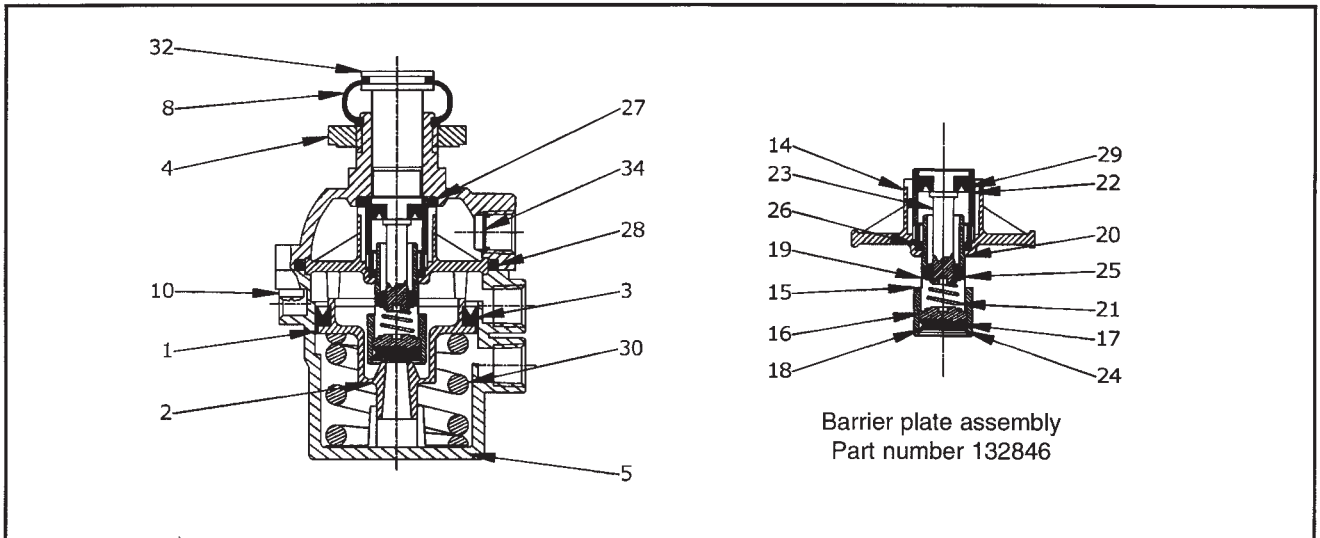
FEATURES AND SPECS

- Weight: 1 lb, 15 oz (0,9 kg)
- Port size: 1/4-18 NPTF
- For off-highway applications only
- Maximum supply pressure: 150 PSI (1034 kPa)
- Operating temperature: -40°F to 200°F (-40°C to 93°C)

DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM90A	WM90B	WM90BM	WM90D	WM90DA	WM90DB	WM90DM	WM90DT
1	—	Thrust Ring	1	1	1	1	1	1	1	1
2	—	Balance Piston	1	1	1	1	1	1	1	1
3	—	U-Cup	1	1	1	1	1	1	1	1
4	101114	Mounting Nut	1	1	1	1	1	1	1	1
5	—	Washer	2	2	2	2	2	2	2	2
8	103039	Boot	1	1	1	1	1	1	1	1
10	—	Screw	6	6	6	6	6	6	6	6
14	—	Barrier Plate	1	1	1	1	1	1	1	1
15	—	Valve Cage	1	1	1	1	1	1	1	1
16	—	Support Plate	1	1	1	1	1	1	1	1
17	—	Poppet	1	1	1	1	1	1	1	1
18	—	Poppet Ring	1	1	1	1	1	1	1	1
19	—	Support Disc	1	1	1	1	1	1	1	1
20	—	Poppet	1	1	1	1	1	1	1	1
21	—	Spring	1	1	1	1	1	1	1	1
22	—	Cylinder Sleeve	1	1	1	1	1	1	1	1
23	—	Piston	1	1	1	1	1	1	1	1
24	—	Retaining Ring	1	1	1	1	1	1	1	1
25	—	Retaining Ring	1	1	1	1	1	1	1	1
26	—	O-Ring	1	1	1	1	1	1	1	1
27	—	O-Ring	1	1	1	1	1	1	1	1
28	—	O-Ring	1	1	1	1	1	1	1	1
29	—	U-Cup	1	1	1	1	1	1	1	1
30	—	Spring	1	1	1	1	1	1	1	1
30	—	Spring				1				
30	—	Spring					1			1
31	—	Inlet Body	1							
32	117812	Pushrod Assembly	1	1	1	1	1	1	1	1
34	—	Screen	1	1	1	1	1	1	1	1

Serviceable items are identified above.

SERVICE KIT INFORMATION

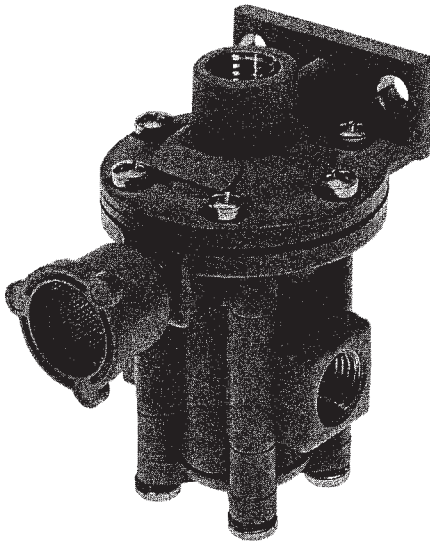
Kit	Service Kit Number	Item Numbers
Repair kit (includes Barrier plate assembly)	117103	Barrier plate assembly plus 3, 8, 10, 27, 28
Spring kit for WM90A, B, BM, DA, DM	118035	5, 30
Spring kit for WM90DB, DT	118036	5, 30
Spring kit for WM90D	118044	5, 30

TO ORDER

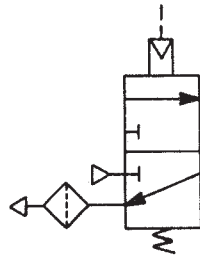
To order a WM90 model, select part number from the chart below.

Model	Part Number	Output Range	Maximum Output	Stroke S	Height H	Balance Spring Replacement Kit
WM90A	111276	0-120 PSI (0-827 kPa)	Tank	0.38 in (10 mm)	1.38 in (35 mm)	118035
WM90B	111285	0-110 PSI (0-759 kPa)	110 PSI (759 kPa)	0.38 in (10 mm)	1.38 in (35 mm)	118035
WM90BM	111292	0-115 PSI (0-794 kPa)	130 PSI (896 kPa)	0.34 in (9 mm)	1.38 in (35 mm)	118035
WM90D	111300	0-55 PSI (0-380 kPa)	65 PSI (449 kPa)	0.34 in (9 mm)	1.19 in (30 mm)	118044
WM90DA	111301	0-110 PSI (0-759 kPa)	Tank	0.38 in (10 mm)	1.38 in (35 mm)	118035
WM90DB	111302	0-75 PSI (0-518 kPa)	80 PSI (587 kPa)	0.34 in (9 mm)	1.25 in (32 mm)	118036
WM90DM	111303	0-120 PSI (0-828 kPa)	140 PSI (966 kPa)	0.34 in (9 mm)	1.19 in (30 mm)	118035
WM90DT	111304	0-85 PSI (0-587 kPa)	95 PSI (656 kPa)	0.34 in (9 mm)	1.19 in (30 mm)	118036

NOTES



I.S.O. SYMBOL

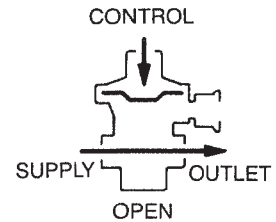
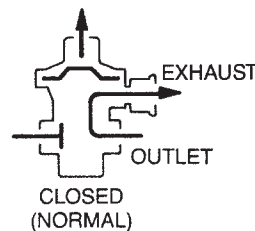


**WM147BC
NORMALLY CLOSED
HIGH PILOT PRESSURE
RELAY VALVE**

**35 SCFM
65-85 PSI TO OPEN**

DESCRIPTION

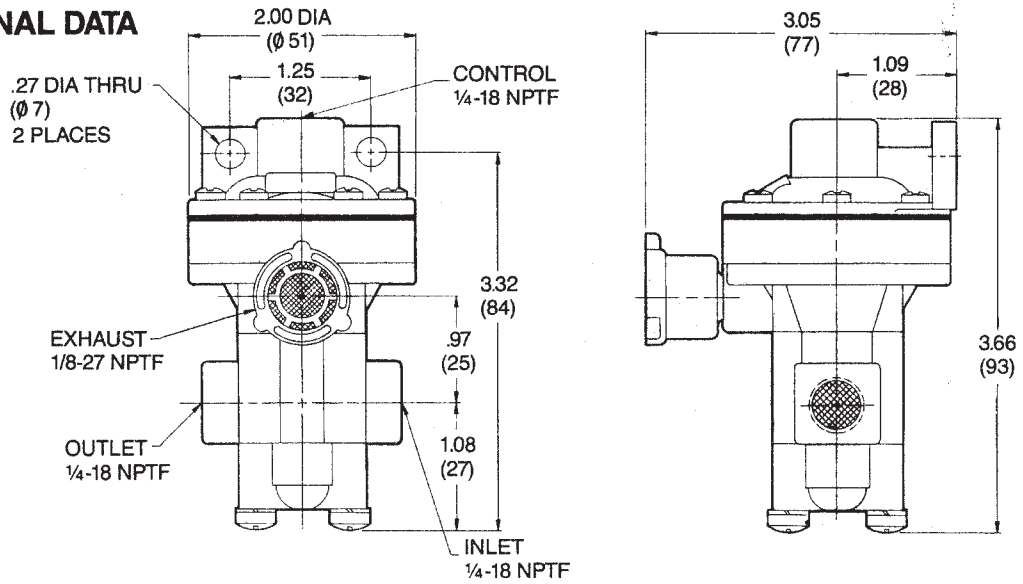
WM147BC is a normally closed, three-way directional relay valve. A pilot pressure of 65-85 PSI must be applied to the WM147BC's control port before the valve will open to allow supply pressure to flow to its outlet. The WM147BC will close and exhaust downstream pressure to atmosphere when pressure at its control port descends to 65-50 PSI.



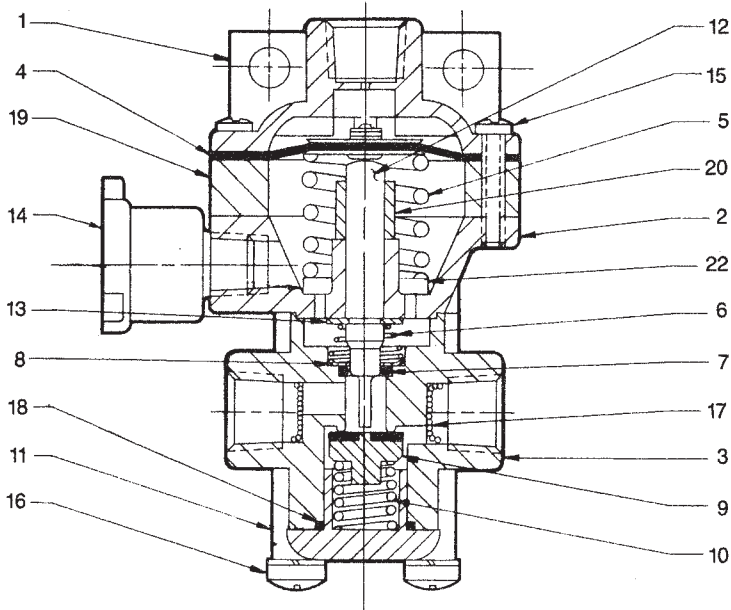
SPECIFICATIONS

PORT SIZES: Inlet, Outlet & Control	1/4-18 NPTF
Exhaust	1/8-27 NPTF
MAXIMUM SUPPLY PRESSURE	150 PSI (1034 kPa)
CONTROL PRESSURE (ASCENDING) TO OPEN	65-85 PSI (448-586 kPa)
CONTROL PRESSURE (DESCENDING) TO RECLOSE	65-50 PSI (448-345 kPa)
OPERATING TEMPERATURE	-20°F to 200°F (-29°C to 93°C)
FLOW RATING	35 SCFM @ 100 PSI (1,0 m ³ /min @ 690 kPa)
MOUNTING	Integral Bracket and Two 1/4" Fasteners
MOUNTING ATTITUDE	Optional
MATERIALS: Body Castings	Die Cast Zinc Alloy
Stem	Aluminum
Diaphragm	Fabric-Reinforced Buna N
Poppet	Buna N with Aluminum Backing
O-Rings	Buna N
WEIGHT	15 oz. (0,4 kg)

DIMENSIONAL DATA



SECTIONAL VIEW



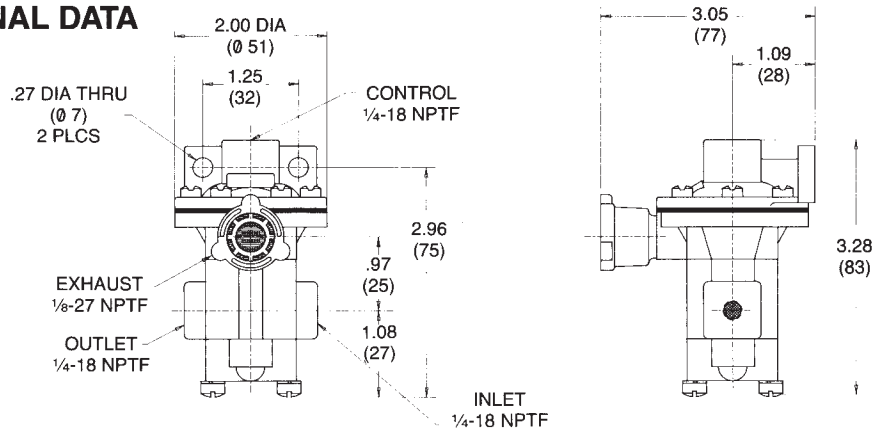
ITEM	DESCRIPTION	PART NUMBER	QTY
1	Inlet Body	103119	1
2	Center Body	103242	1
3	Lower Body	103121	1
4	Diaphragm Assembly	119479	1
5	Spring	101631	1
6	Spring	101629	1
* 7	O-Ring	116299	1
* 8	Retaining Ring	116189	1
* 9	Poppet	103879	1
10	Spring	101021	1
11	End Cap	118132	1
12	Stem	101632	1
13	Retaining Ring	116183	1
14	WM111B	111412	1
15	Screw	119225	6
16	Screw	118770	4
17	Screen	116456	2
* 18	O-Ring	116380	1
19	Spacer	101633	1
20	Support Tube	101634	1
22	Washer	115093	1

Service these units with repair kit 119480.
*Item is included in repair kit.

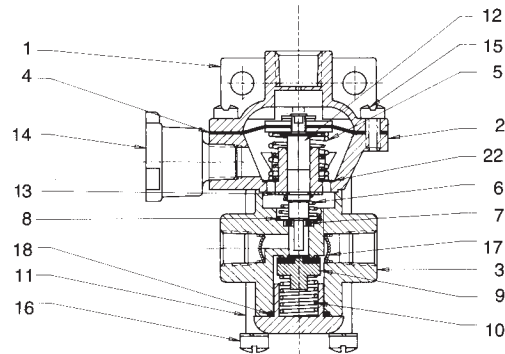
ORDERING INFORMATION

TO ORDER, SPECIFY **WM147BC**
PART NUMBER 111526

DIMENSIONAL DATA



SECTIONAL VIEW

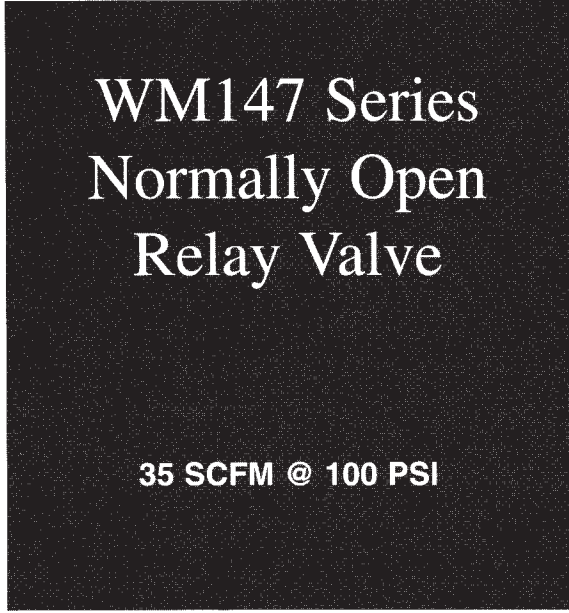
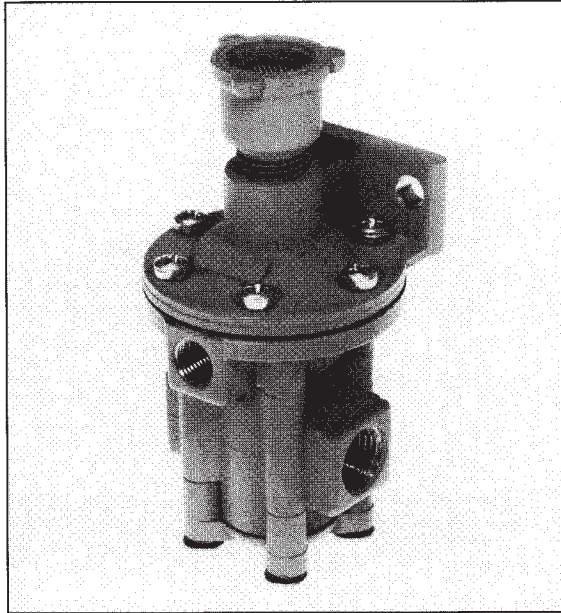


ITEM	DESCRIPTION	PART NUMBER	QTY.	ITEM	DESCRIPTION	PART NUMBER	QTY.
1	Inlet Body	103119	1	11	End Cap	118132	1
2	Center Body	103242	1	12	Stem	101630	1
3	Lower Body	103121	1	13	Snap Ring	116183	1
*4	Diaphragm Assembly	119479	1	14	WM111B Breather	111412	1
5	Spring	103597	1	15	Screw	119223	6
6	Spring	101629	1	16	Screw	118770	4
*7	O-Ring	116299	1	17	Screen	116456	2
*8	Snap Ring	116189	1	18	O-Ring	116380	1
*9	Poppet	103879	1	22	Washer	115093	1
10	Spring	101021	1				

Service these units with repair kit R147BC, C, part number 119480.
*Item is included in repair kit.

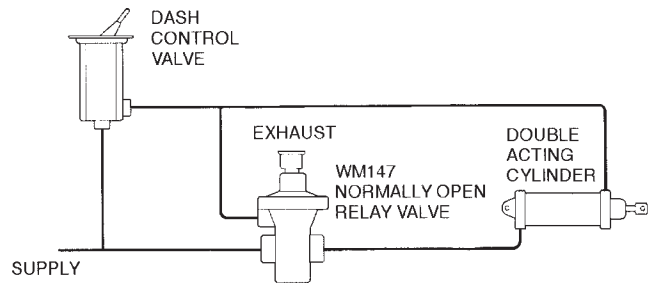
ORDERING INFORMATION

TO ORDER, SPECIFY WM147C
PART NUMBER 111527



DESCRIPTION

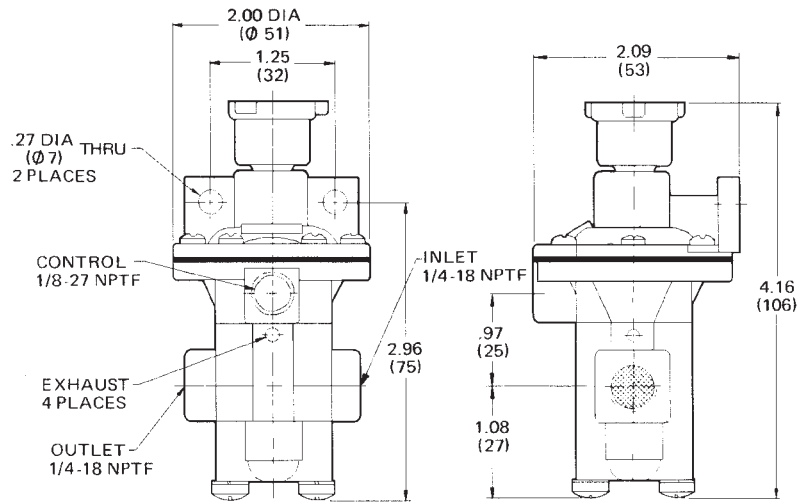
A variety of normally open, non-compensating relay valves are available in the WM147 series. Control pressure is used to close these normally open valves; the required control pressure signal differs with each model. These relays are available either as a two-way valve without an exhaust mode or as a three-way valve if the exhaust mode is desired. As shown in the installation drawing, these models are used with a two-position control valve in applications where a four-way function is desired.



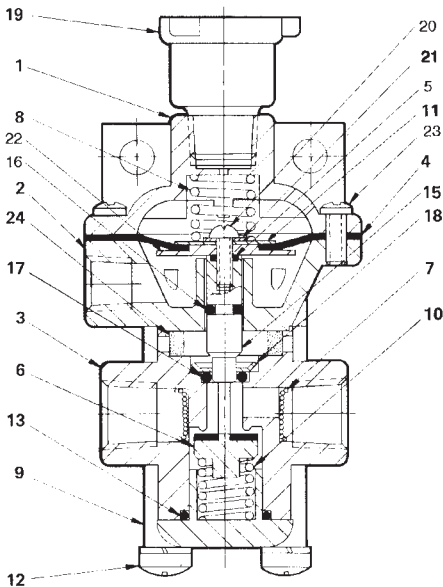
SPECIFICATIONS

Port sizes: Inlet and outlet.....	1/4-18 NPTF
Control.....	1/8-27 NPTF
Exhaust.....	Unthreaded
Maximum supply pressure.....	150 PSI (1034 kPa)
Operating temperature.....	-20°F to 200°F (-29°C to 93°C)
Flow rating.....	35 SCFM @ 100 PSI (1,0 m ³ /min @ 690 kPa)
Mounting.....	Integral bracket on cover and two 1/4" fasteners
Mounting attitude.....	Optional
Materials: Body castings.....	Iridited die cast zinc alloy
Stem.....	Aluminum
Diaphragm.....	Fabric-reinforced buna N
Poppet.....	Buna N with aluminum backing
O-rings.....	Buna N
Weight.....	15 oz (0,4 kg)

DIMENSIONAL DATA



CROSS SECTION & PARTS INFORMATION



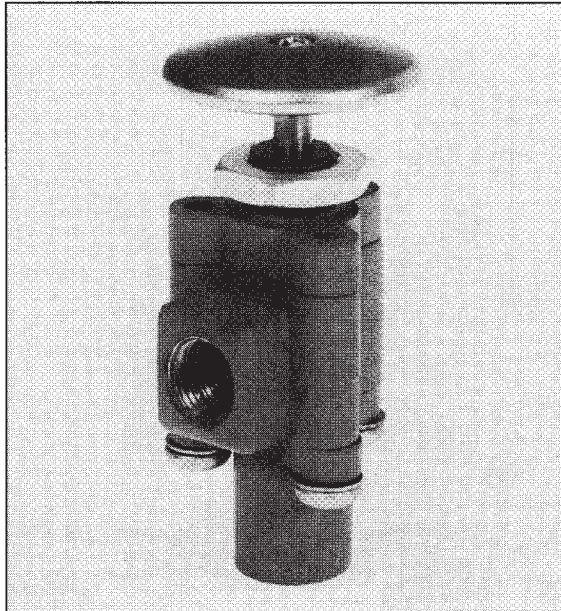
ITEM	DESCRIPTION	WM147F	WM147P	QTY
1	Inlet Body	103119	103119	1
2	Center Body	103243	103243	1
3	Lower Body	103290	103290	1
*4	Diaphragm/Assy.	101292	101292	1
*5	O-Ring	116442	116442	1
*6	Poppet	103879	103879	1
7	Screen	116456	116456	2
8	Spring	103292	101685	1
9	End Cap	118132	118132	1
10	Spring	101021	101021	1
*11	Washer	115048	115048	1
12	Screw	118770	118770	4
*13	O-Ring	116380	116380	1
*15	Stem	103361	103361	1
*16	O-Ring	110495	110495	1
*17	O-Ring	116299	116299	1
*18	Snap Ring	116189	116189	1
19	WM111A Breather	111411	111411	1
*20	Screw	114723	114723	1
*21	Washer	115132	115132	1
*22	Diaphragm Plate	104254	104254	1
23	Screw	119223	119223	6
24	Filter	104077	104077	1

*Item is included in repair kit. Service these units with repair kit 114161. Highlighted items may be purchased separately.

ORDERING INFORMATION

To order, specify **WM147** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Model	Control Pressure	
			To Close	To Open
WM147 F	111531	3 way	30-50 PSI (207-345 kPa)	15-30 PSI (103-207 kPa)
WM147 P	111542	3 way	10-30 PSI (69-207 kPa)	5-10 PSI (35-69 kPa)

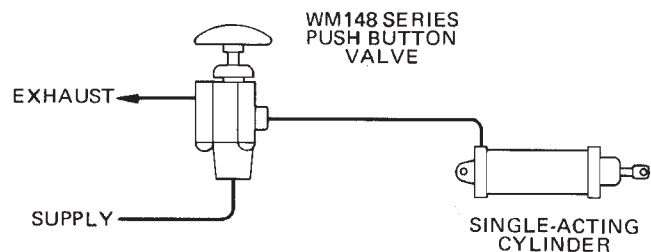


**WM148 Series
Three-Way
Push Button Valve**

15 SCFM @ 100 PSI

DESCRIPTION

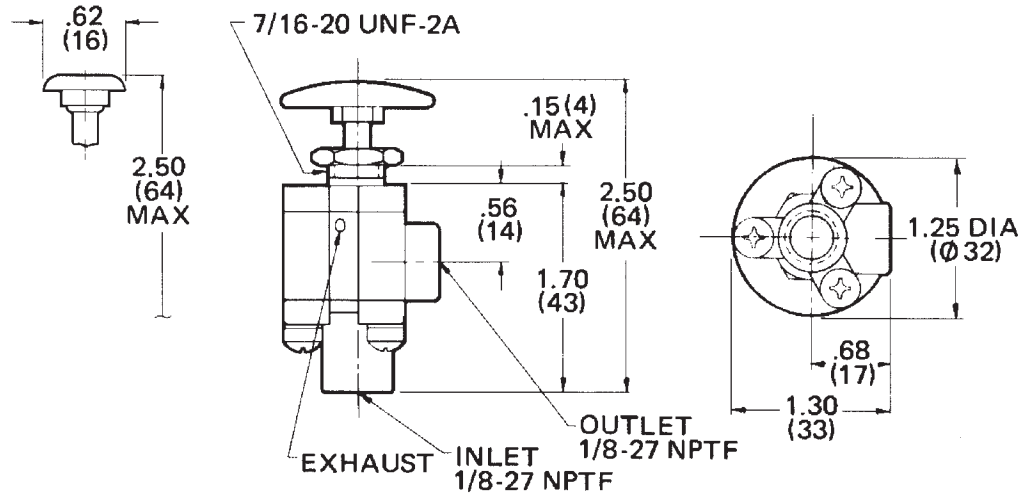
The WM148 series are a variety of spring-returned, three-way push button valves. These valves are available with two different button designs. These valves are operated manually by a button device mounted to an actuating push stem. The WM148 is actuated by depressing the button and stem. The stem closes the exhaust vent, opens the supply port and allows supply pressure to flow to the outlet port. When the button and stem are released, the supply port closes to block pressure delivery and outlet pressure is released through the exhaust vent.



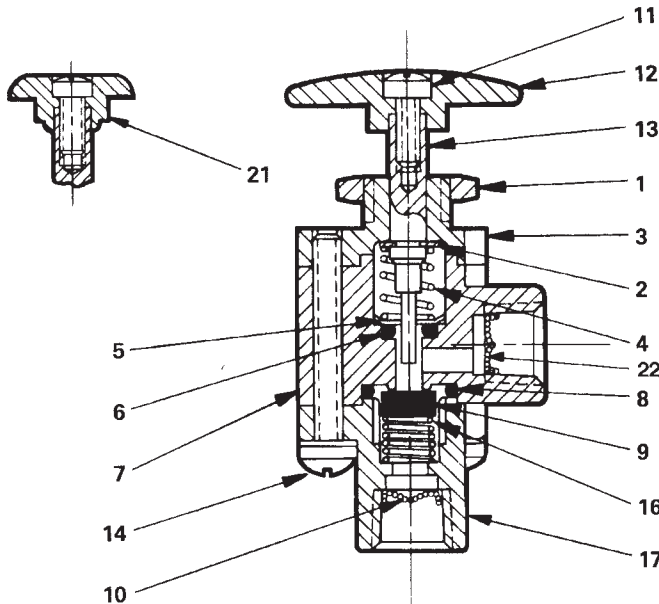
SPECIFICATIONS

Port size	1/8-27 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating	15 SCFM @ 100 PSI (0,4 m ³ /min @ 690 kPa)
Mounting	Secured to instrument panel or bracket
Mounting attitude.....	Optional
Materials: Body castings	Iridited die cast zinc alloy
Stems	Stainless steel
Button actuators	Chrome finished zinc alloy
Weight	3 oz (0,1 kg)

DIMENSIONAL DATA



CROSS SECTION & PARTS INFORMATION

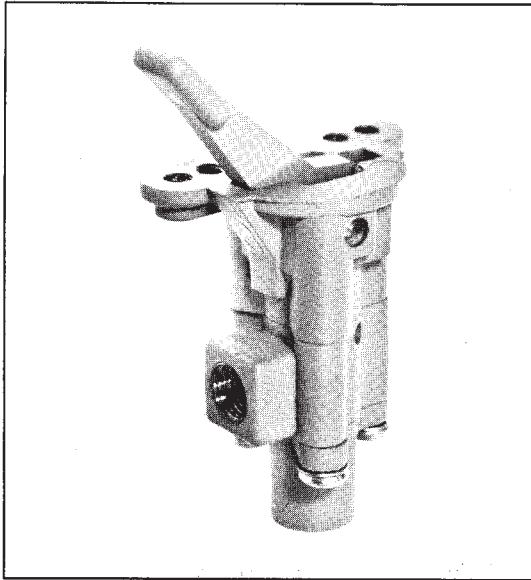


ITEM	DESCRIPTION	WM148A	WM148W	Qty
1	Jam Nut	114603	114603	1
2	Snap Ring	116182	116182	1
3	Mounting Body	102881	102881	1
4	Spring	130430	130430	1
5	Snap Ring	117927	117921	1
6	O-Ring	116296	116296	1
7	Body	101519	101519	1
8	O Ring	116303	116303	1
9	Poppet	119141	119141	1
10	Screen	116455	116455	1
11	Screw	114651	114651	1
12	Button	--	101173	1
13	Stem	101636	101636	1
14	Screw	117095	117095	3
16	Spring	101467	101467	1
17	Inlet Body	101470	101470	1
21	Button	101635	--	1
22	Screen	116455	116455	1

These units are classified as non-repairable items. Highlighted items may be purchased separately.

To order, specify **WM148** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Actuator Description
WM148 A	111549	Small Knob
WM148 W	111561	Large Button

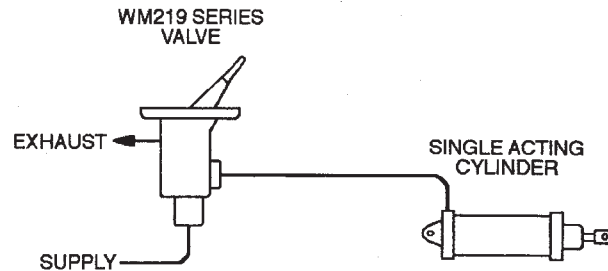


**WM219 Series
Three-Way
Two Position
Toggle Valve**

150 PSI MAXIMUM

DESCRIPTION

The WM219 series are two position, three-way toggle valves, which are equipped with heavy duty metal control levers. Designed for panel mounting, these valves are available with various porting configurations. The WM219 toggle valves are universal application valves that are commonly used to control air pressure-operated relay valves, cylinders, PTOs and fifth wheels.

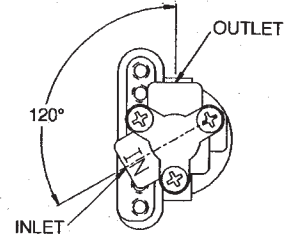
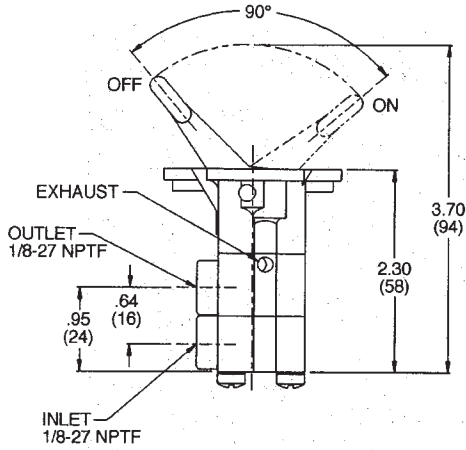


SPECIFICATIONS

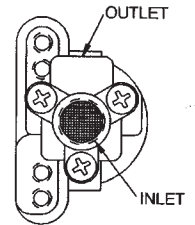
Port size	1/8-27 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature*	-20°F to 200°F (-29°C to 93°C)
Flow rating	15 SCFM @ 100 PSI (0,4 m ³ /min @ 690 kPa)
Mounting	Secured to control panel with two 10-24 fasteners
Mounting attitude	Optional
Materials: Body castings & lever	Iridited die cast zinc alloy
Poppet and O-rings	Buna N
Weight	5 oz (0,1 kg)

* For continuous operation beyond this range, contact factory.

DIMENSIONAL DATA

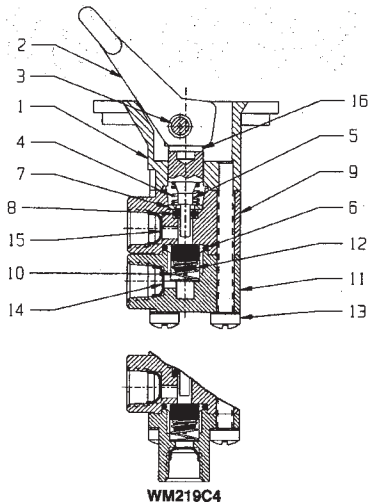


WM219C3



WM219C4

CROSS SECTION & PARTS INFORMATION



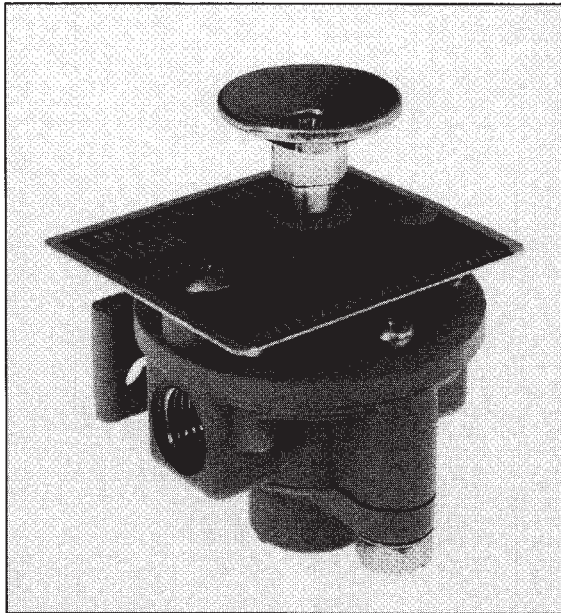
ITEM	DESCRIPTION	WM219C3	WM219C4	QTY
1	Bracket body	101791	101791	1
2	Lever	118363	118363	1
3	Groove pin	118057	118057	1
4	Spring	101526	101526	1
5	Stem guide	118806	118806	1
6	O-ring	116303	116303	1
7	Snap ring	117927	117927	1
8	O-ring	116296	116296	1
9	Body	101519	101519	1
10	Spring	101467	101467	1
11	Inlet body	103743	101470	1
12	Inlet poppet	119141	119141	1
13	Screw	119573	119573	3
14	Screen	116455	116455	1
15	Screen	101410	101410	1
16	Cap	104765	104765	1

These valves are non-repairable items.

To order, specify **WM219** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Inlet Port Location (see drawing above)
WM219 C3	111816	Inlet "C3"
WM219 C4	111817	Inlet "C4"

An escutcheon plate (part number 103642), is not supplied with valve, but may be ordered separately.

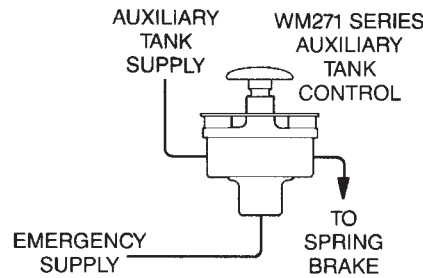


WM271A Auxiliary Tank Control Valve

DESCRIPTION

The WM271A valve is designed to selectively direct supply pressure from two sources to a single outlet. One of the WM271A's inlets is supplied from an auxiliary air tank and the other is connected to the emergency line. When the WM271A control button is in the normal released position, air flows between the emergency supply and the outlet. Reverse flow is permitted. When the control button is depressed, the emergency inlet is closed and supply pressure flows to the WM271's outlet from the auxiliary tank. The control button will stay pushed in until

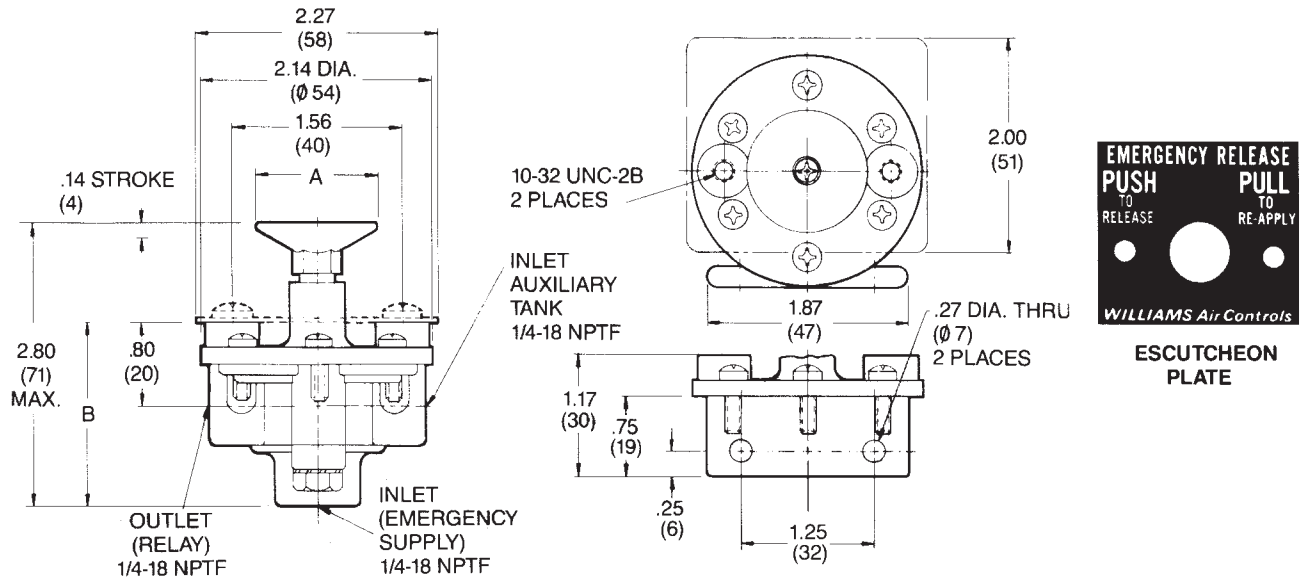
(1) it is manually returned or (2) pressure at the emergency inlet exceeds outlet pressure.



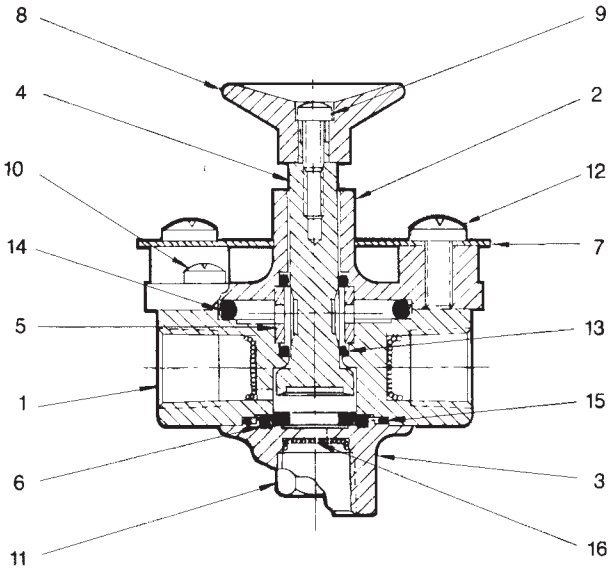
SPECIFICATIONS

Port size	1/4-18 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating: From emergency supply	25 SCFM @ 100 PSI (0,7 m ³ /min @ 690 kPa)
From auxiliary tank	10 SCFM @ 100 PSI (0,3 m ³ /min @ 690 kPa)
Mounting	Integral bracket
Mounting attitude	Optional
Materials: Body castings	Iridited die cast zinc alloy
Stem	Brass
Poppet & O-rings	Buna N
Button	Chrome plated zinc
Weight	12 oz (0,3 kg)

DIMENSIONAL DATA



CROSS SECTION



Item	Description	WM271A	Qty
1	Body	101905	1
2	Cover	103282	1
* 3	End Cap	101907	1
4	Stem	101908	1
5	Sleeve	101909	1
6	Poppet	101910	1
7	Escutcheon Plate	103540	1
8	Button	102769	1
9	Screw	114651	1
10	Screw	119223	6
11	Screw	118899	2
12	Screw	116892	2
* 13	O-Ring	116302	2
* 14	O-Ring	116323	1
* 15	O-Ring	116367	1
* 16	Screen	116456	3

*Item is included in repair kit. Service this unit with repair kit 114267. Highlighted items may be purchased separately.

To order, specify **WM271A**, part number 111913.

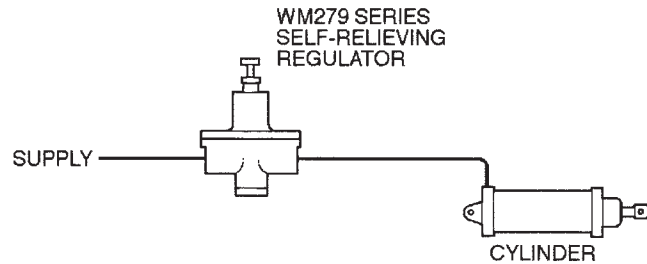


**WM279 Series
Self-Relieving
Pressure
Regulator**

**MAXIMUM OUTPUT
85 PSI**

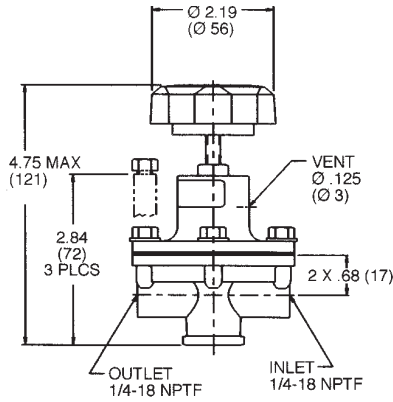
DESCRIPTION

The WM279 series valves are self-relieving pressure regulators that are available with either hex screw or knob for output adjustment. The operator regulates the output level by manually changing the position of the knob or screw. All models maintain a constant output within the regulator's pressure range.



SPECIFICATIONS

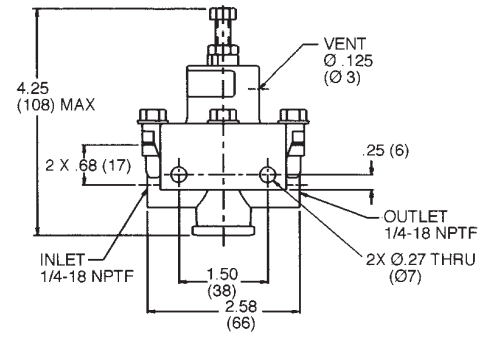
Port size	1/4-18 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating	70 SCFM @ 100 PSI (2,0 m ³ /min @ 690 kPa)
Mounting	Refer to ordering information
Mounting attitude	Optional
Materials: Body castings	Iridited die cast zinc alloy
End cap	Brass
Poppet stem	Aluminum with buna N backing
Diaphragm	Fabric-reinforced buna N
Gasket	Fiber
Knob	ABS plastic
Weight	1 lb, 2 oz (0,5 kg)



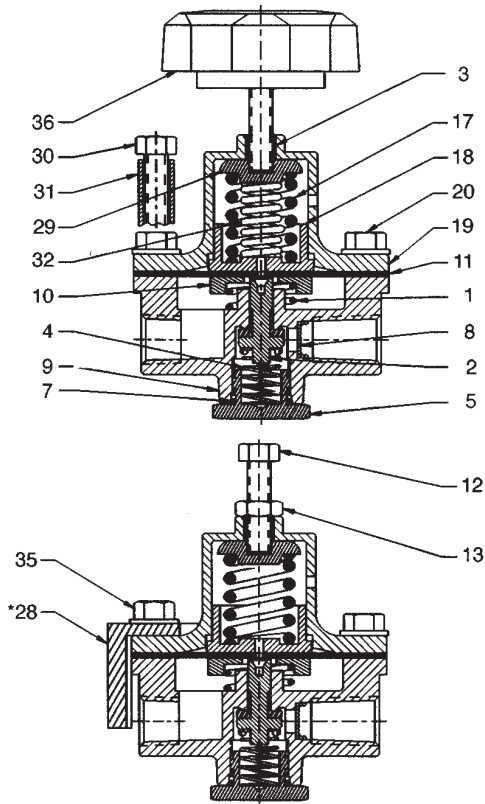
WM279R, R2



TOP VIEW



WM279E1



* BRACKET ROTATED 90° INTO VIEWING PLANE

Item	Description	WM279E1	WM279R	WM279R2	Qty
1	Spring	101229	101229	101229	1
*2	Poppet stem	104196	104196	104196	1
3	Thread insert	106760	106760	106760	1
4	Spring	101021	101021	101021	1
5	Cap plug	101081	101081	101081	1
*7	O-ring	116380	116380	116380	1
8	Screen	116456	116456	116456	1
9	Lower body	101080	101080	101080	1
10	Spring plate	101916	101916	101916	1
*11	Diaphragm	101917	101917	101917	1
12	Screw	100303	-	-	1
13	Jam nut	114537	-	-	1
17	Spring	101079	101079	101079	1
18	Spring plate	103694	103694	103694	1
19	Cover	103693	103693	103693	1
20	Screw	118708	118708	118708	6 (3 for E1, R, R2)
28	Mounting bracket	103960	-	-	1
29	Spring cap	101078	101078	101078	1
30	Screw	-	-	118666	3
31	Spacer	-	-	101202	3
32	Spring	-	104714	104714	1
35	Screw	118769	-	-	3
36	Knob	-	119503	119503	1

*Item is included in repair kit. Service these units with repair kit 114224. Highlighted items may be purchased separately.

ORDERING INFORMATION

To order, specify **WM279** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Adjustable Output Range	Maximum Output	Regulation Method	Screw (item 20) Locations	Mounting Provisions
WM279 E1	111940	0-80/85 PSI (0-552/586 kPa)	85 PSI (586 kPa)	Hex screw with nut	Positions 1-6	Bracket included
WM279 R	111949	0-80/85 PSI (0-552/586 kPa)	85 PSI (586 kPa)	Knob	Positions 1, 3, 5	Panel mounting (items 30,31 not included)
WM279 R2	117599	0-80/85 PSI (0-552/586 kPa)	85 PSI (586 kPa)	Knob	Positions 1, 3, 5	Panel mounting

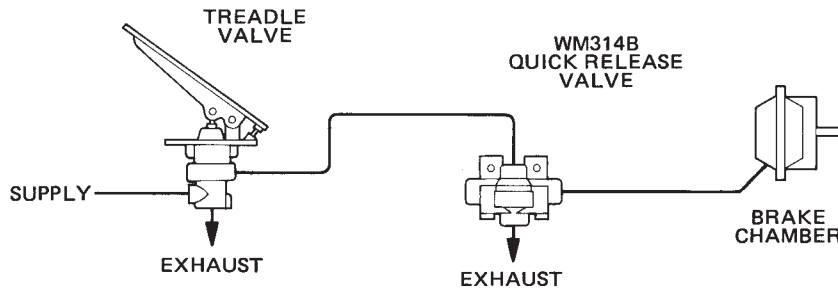
PRODUCT DESCRIPTION

DESCRIPTION In vehicular applications, the WM314B is used to release pressure from the brake chambers to the atmosphere. Because the WM314B features diaphragm construction, pressure is quickly exhausted through the WM314B rather than through the treadle valve. The WM314B is a self-relieving, three-way, normally closed valve that is suitable for single axle applications. This quick release valve has a supply-to-outlet flow rate of 163 SCFM (4,6 m³/min) with a 100 PSI (689,5 kPa) supply.

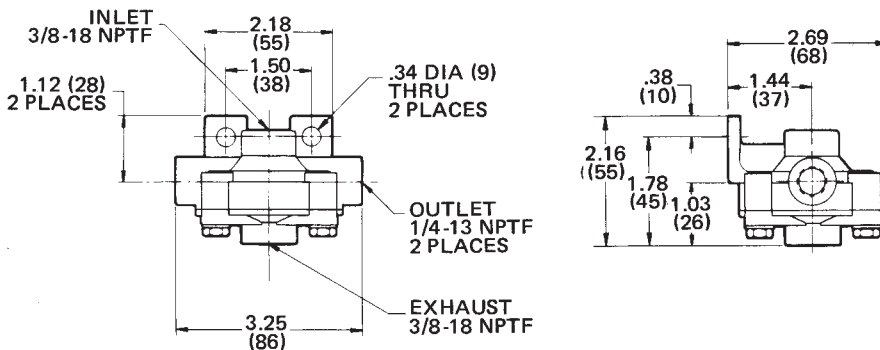
OPERATION Supply pressure acts against the diaphragm, which flexes to permit pressure delivery. The valve's output is approximately the same as the supply pressure applied. If the supply pressure decreases, the valve compensates and exhausts outlet pressure until the outlet pressure balances with the supply pressure.

APPLICATION As shown in the installation schematic, the WM314B is used to direct pressure between the treadle and the brake chambers. The valve is equipped with two outlet ports for single axle installations. The unit can be easily repaired without removal from the vehicle.

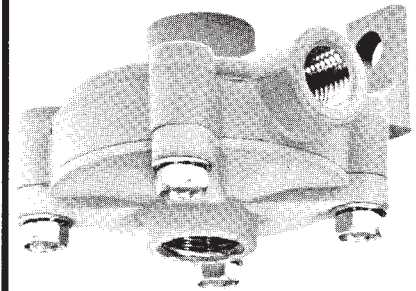
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

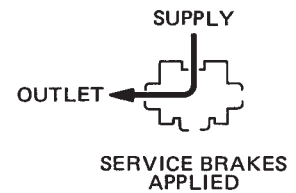


**WM314
SERIES**

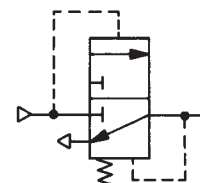


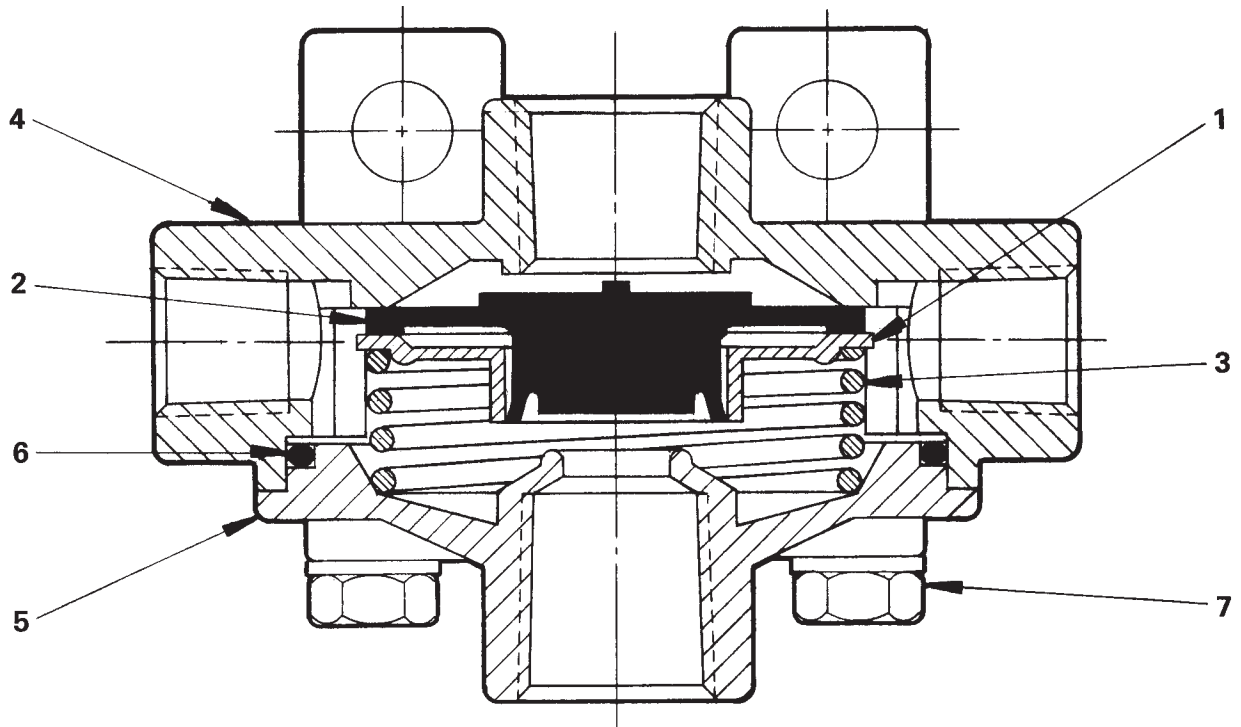
**QUICK
RELEASE
VALVE**

FUNCTIONAL DIAGRAM



I. S. O. SYMBOL





PARTS IDENTIFICATION		
ITEM	DESCRIPTION	QTY.
1	DIAPHRAGM PLATE	1
* 2	DIAPHRAGM	1
3	SPRING	1
4	BRACKET BODY	1
5	COVER	1
* 6	O-RING	1
7	SCREW	4
Service this unit with repair kit number 114258.		
*Asterisk designates parts included in repair kit number 114258.		

SPECIFICATIONS

PORT SIZES: Inlet & Exhaust 3/8-18 NPTF
 Outlet 1/4-18 NPTF
 MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)
 OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°C to 93,3°C)
 FLOW RATING:
 Supply-to-Outlet . . . 163 SCFM @ 100 PSI (4,6 m³/min @ 690 kPa)
 Outlet-to-Exhaust . . . 150 SCFM @ 100 PSI (4,2 m³/min @ 690 kPa)
 MOUNTING With Integral Bracket and Two 5/16" Fasteners
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Die Cast Zinc Alloy
 Diaphragm & O-Ring Buna N
 NET WEIGHT 13 oz. (0,4 kg)
 *For continuous operation beyond this range, contact factory.

TO ORDER, SPECIFY
WM314B
 Model Number
 PART NUMBER 112173

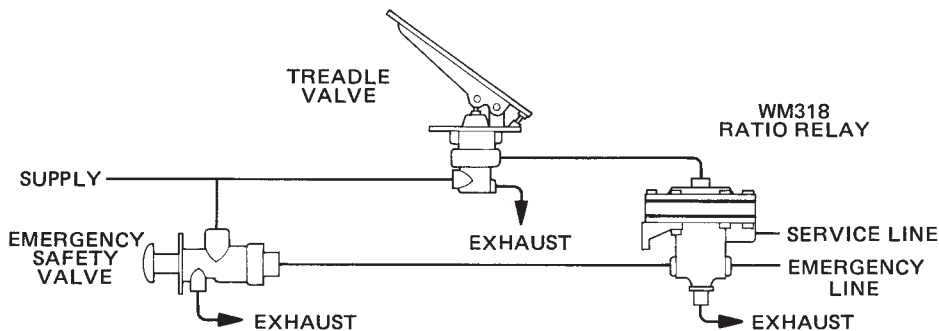
PRODUCT DESCRIPTION

DESCRIPTION Used primarily in vehicular air brake systems, the WM318 series valves are three-way, compensating, pilot pressure-operated relay valves. These valves deliver an output pressure that is proportional to the amount of control pressure applied. Some models in the WM318 series feature an adjustment which allows the output/control pressure ratio to be changed. On other models, this ratio is fixed.

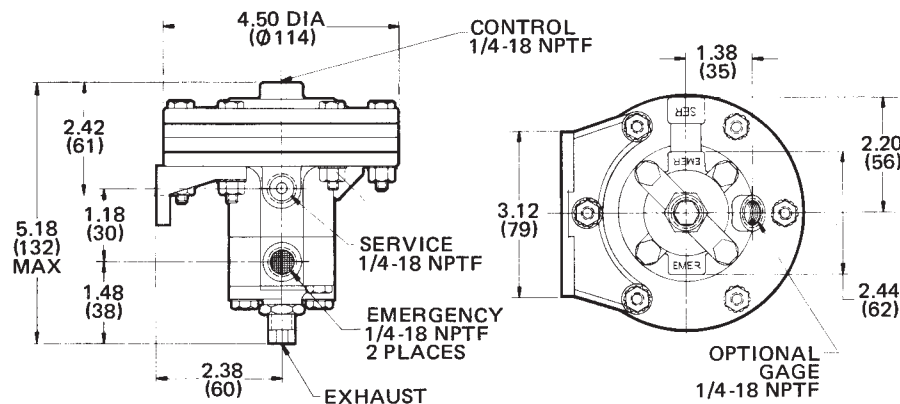
OPERATION To actuate a WM318 series relay valve, a maximum control pressure of 1.5 PSI (10,3 kPa) is required against a 100 PSI (690 kPa) supply. When control pressure is applied, two internal diaphragms expand, closing the exhaust port and opening the outlet port. Air flows from the supply port to the outlet port. As service line pressure increases and the trailer brakes are applied, pressure builds on one side of each diaphragm until a balanced condition is achieved. When this condition occurs, the supply port closes. With no control pressure applied, the valve releases any pressure at the outlet port through the exhaust.

APPLICATION The WM318 relay valves are commonly used as tractor protection valves in tractor-trailer braking systems. These relays protect brake system pressure because the control signal is exhausted through the service treadle and cannot escape downstream through an open service line. When models with the adjustable output/control pressure ratio are installed on trucks or tractors, the trailer brake pressure may be balanced with the tractor brake pressure. Other WM318 models are used in applications where a nonadjustable, factory-preset output/control pressure ratio is desired. The WM318 relays are also used in WM346 fast brake kits to activate the trailer brakes.

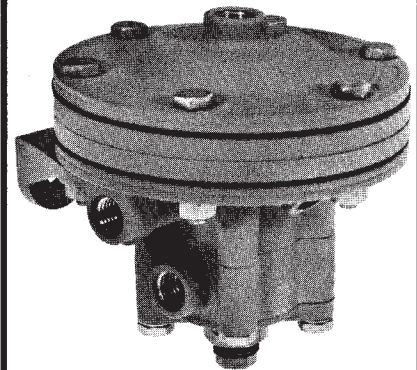
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

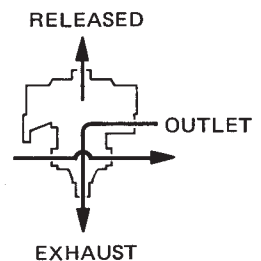
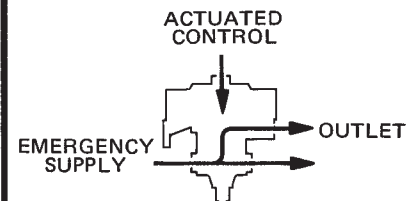


**WM318
SERIES**

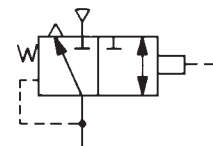


**RATIO RELAY
VALVES**

FUNCTIONAL DIAGRAM

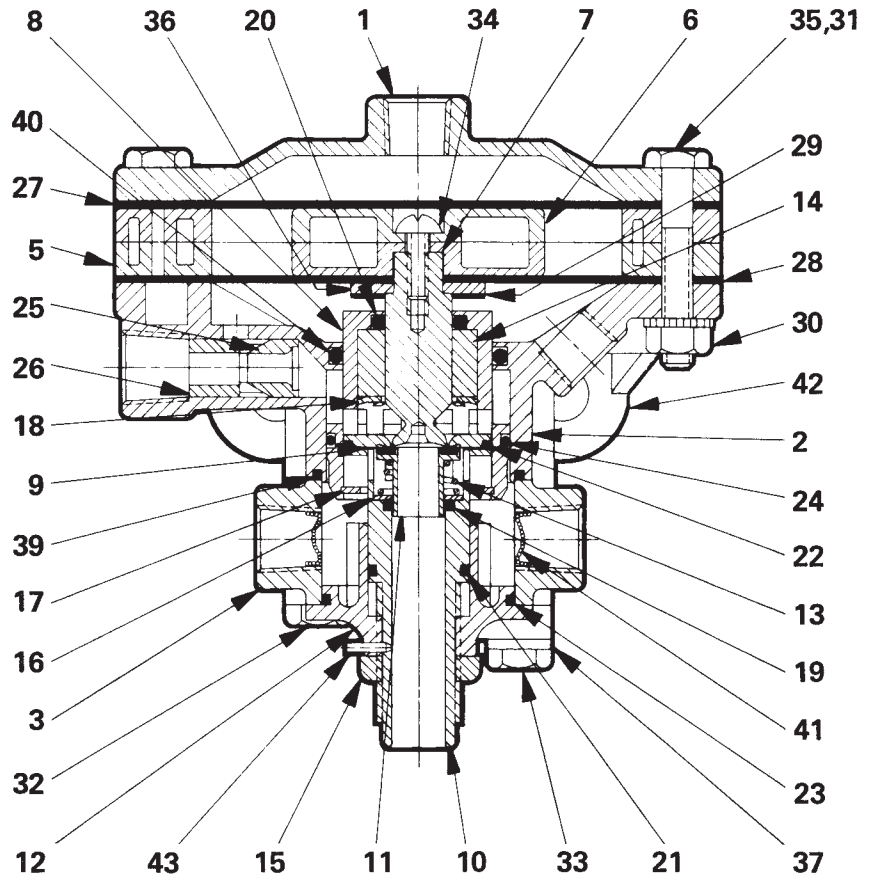


I.S.O. SYMBOL



PARTS IDENTIFICATION			
ITEM	DESCRIPTION	QUANTITY	
		A	B
1	COVER	1	1
2	BODY	1	1
3	EMERGENCY BODY	1	1
5	DIAPHRAGM SPACER	2	2
6	DIAPHRAGM PLATE	2	2
7	EXHAUST STEM	1	1
8	INLET CAGE	1	1
9	INLET SEAT	1	1
10	STEM	1	1
*11	POPPET	1	1
12	CARTRIDGE BODY	1	1
13	SPRING	1	1
14	STEM GUIDE	1	1
15	NUT (114590)	1	1
16	WASHER	1	1
17	RETAINING RING	1	1
*18	RETAINING RING	1	1
*19	O-RING (116303)	1	1
*20	O-RING	1	1
*21	O-RING	1	1
*22	O-RING	1	1
*23	O-RING	1	1
*24	O-RING	1	1
25	ORIFICE	1	1
26	EXPANSION TUBE	1	1
*27	UPPER DIAPHRAGM	1	1
*28	DIAPHRAGM	1	1
*29	BUMPER	1	1
30	LOCKNUT	6	6
31	SCREW	3	3
32	SCREW	2	2
33	SCREW	2	2
34	SCREW	1	1
35	SCREW	3	3
36	WASHER	1	1
37	LOCKWASHER	2	2
*39	O-RING	1	1
*40	O-RING	1	1
41	SCREEN (116456)	2	2
42	BRACKET (105182)	1	1
43	ROLL PIN	1	1

Service this unit with repair kit number 114262. Repair kit includes parts to service the cartridge assembly. To replace the cartridge assembly in the WM318A, order part number 102047. To replace the cartridge assembly in the WM318B, order part number 105343. Other replaceable items are followed by part numbers.
*Asterisk designates parts included in repair kit 114262.



SPECIFICATIONS

PORT SIZE 1/4-18 NPTF
 MAXIMUM OPERATING PRESSURE 150 PSI (1034, 2 kPa)
 OPERATING TEMPERATURE -20°F (-28,9°C) to 200°F (93,3°C)
 FLOW RATING 50 SCFM @ 100 PSI (1, 0 m³/min @ 690 kPa)
 CRACKING PRESSURE ...1.5 PSI (10,3 kPa) w/100 PSI (690 kPa) Supply
 OUTPUT ADJUSTABILITY 20% less than control pressure
 to 30% greater than control pressure

MATERIALS: Body Castings Iridated Die Cast Aluminum
 Diaphragms Fabric-Reinforced Buna N
 Poppet Chrome-Plated Brass w/ Buna N Insert
 Bumper & O-Rings Buna N

NET WEIGHT 4 lb. (1,8 kg)
 *For continuous operation beyond this range, contact factory.

TO ORDER, SPECIFY
WM318
 Model Number Suffix

PART NUMBER _____
 SELECT SUFFIX & PART NUMBER BELOW

SUFFIX	PART NUMBER	OUTPUT/CONTROL PRESSURE RATIO	GAGE PORT
WM318 A	112201	Adjustable	1/4-18 NPTF

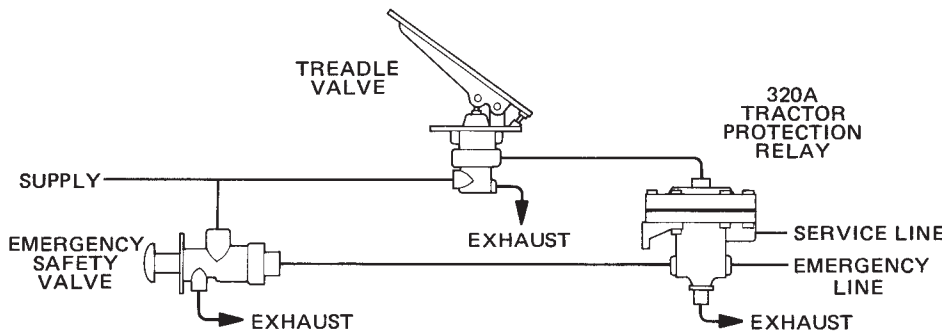
PRODUCT DESCRIPTION

DESCRIPTION Engineered for tractor-trailer braking systems, the WM320A is a pilot pressure-operated tractor protection relay valve. This three-way, compensating relay delivers an output that is proportional to the control signal applied. The output/control pressure ratio is fixed on the WM320A at 1 to 1. To order a ratio relay valve with an adjustable rather than a fixed ratio, review the information on the WM318A catalog page.

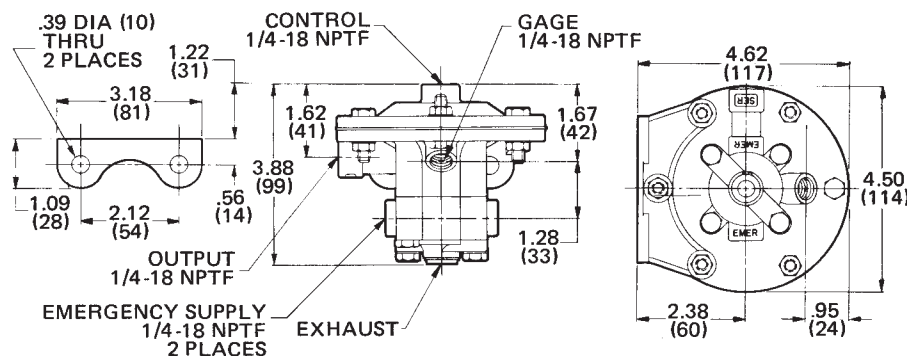
OPERATION When pilot pressure is applied to the WM320A, an internal diaphragm expands. The stem poppet blocks the exhaust vent, and the supply poppet unseats to allow pressure delivery. The outlet pressure increases and balances against the control pressure on the other side of the diaphragm. When a balanced condition is achieved, the supply poppet seats. To maintain this balanced condition, the valve compensates for any increase in control pressure or decrease in downstream pressure. As the control pressure decreases, the valve exhausts the outlet pressure to the atmosphere.

APPLICATION In tractor-trailer braking systems, the WM320A relay is used as a tractor protection valve. Because the control pressure cannot escape through the open service line, the relay valve protects pressure in the brake system when the service brakes are applied. Used in applications that require a relay valve with a fixed 1:1 output/control pressure ratio, this valve is furnished with an integral mounting bracket for installation on the truck or tractor.

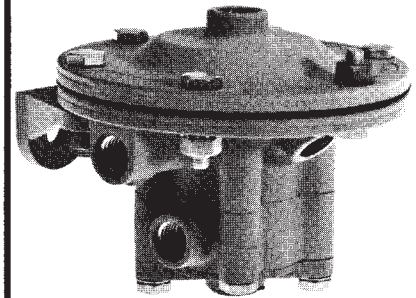
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

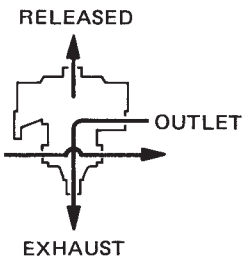
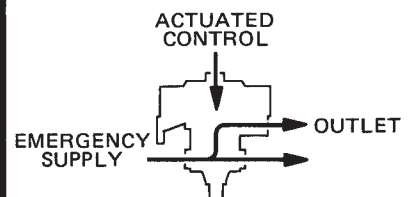


**WM320
SERIES**

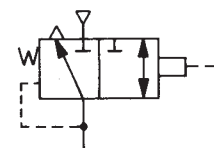


**TRACTOR
PROTECTION
VALVE**

FUNCTIONAL DIAGRAM



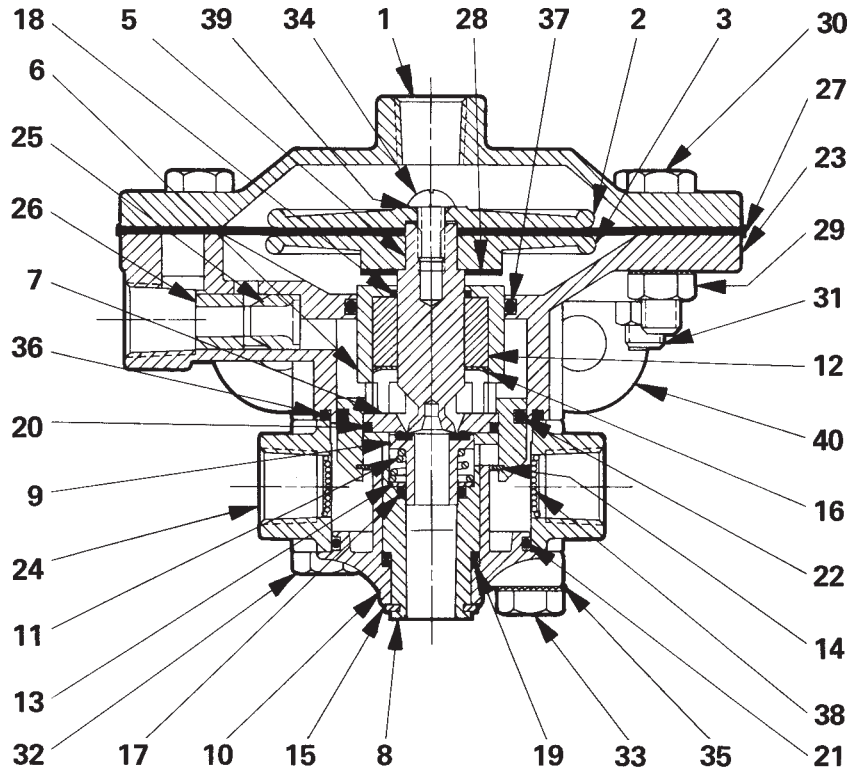
I.S.O. SYMBOL



PARTS IDENTIFICATION

ITEM	DESCRIPTION	QTY.
1	COVER	1
2	UPPER PLATE	1
3	LOWER PLATE	1
5	EXHAUST STEM	1
6	INLET CAGE	1
7	INLET SEAT	1
8	STEM	1
* 9	POPPET	1
10	CARTRIDGE BODY	1
11	SPRING	1
12	STEM GUIDE	1
13	WASHER	1
* 14	RETAINING RING	1
* 15	RETAINING RING	1
* 16	RETAINING RING	1
* 17	O-RING	1
* 18	O-RING	1
* 19	O-RING	2
* 20	O-RING	1
* 21	O-RING	1
* 22	O-RING	1
23	BODY	1
24	EMERGENCY BODY	1
25	EJECTOR TUBE	1
26	EXPANSION TUBE	1
* 27	DIAPHRAGM	1
* 28	BUMPER	1
29	LOCKNUT	6
30	SCREW	3
31	SCREW	3
32	SCREW	2
33	SCREW	2
34	SCREW	1
35	LOCKWASHER	2
* 36	O-RING	1
* 37	O-RING	1
* 38	SCREEN	2
* 39	WASHER SEAL	1
40	BRACKET (105182)	1

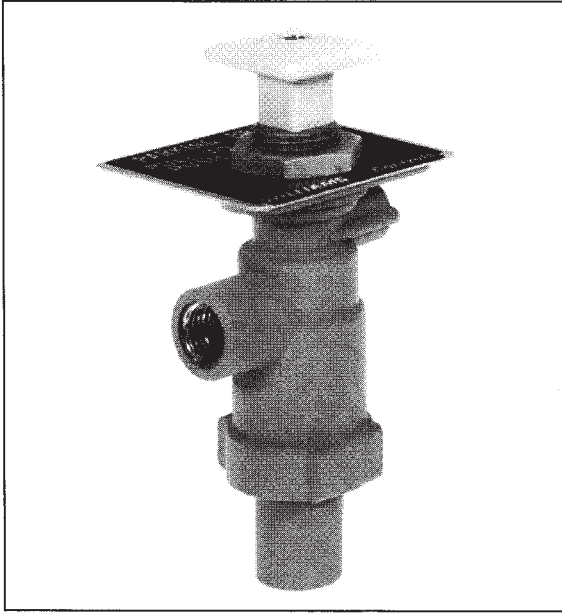
Service this unit with repair kit number 114264. Repair kit includes parts to service the cartridge assembly. To replace the cartridge assembly, order part number 102067. Other replaceable items are followed by part numbers.
*Asterisk designates parts included in repair kit 114264.



SPECIFICATIONS

PORT SIZE 1/4-18 NPTF
 MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)
 OPERATING TEMPERATURE* . . -20°F to 200°F (-28,9°C to 93,3°C)
 FLOW RATING 50 SCFM @ 100 PSI (1,5 m³/min @ 690 kPa)
 CRACKING PRESSURE . . . 1.5 PSI (10.3 kPa) w/100 PSI (690 kPa) Supply
 OUTPUT/CONTROL PRESSURE RATIO Fixed @ 1:1
 MOUNTING . . With Integral Bracket & Two Customer-Supplied Fasteners
 MOUNTING ATTITUDE Control Port Up Recommended
 MATERIALS: Body Castings Die Cast Zinc Alloy
 Diaphragm Fabric-Reinforced Buna N
 Poppet Chrome-Plated Brass w/ Buna N Insert
 Bumper & O-Rings Buna N
 NET WEIGHT 3.25 lb. (1,5 kg)
 *For continuous operation beyond this range, contact factory.

TO ORDER, SPECIFY
WM320A
 Model Number
PART NUMBER 112211



**WM325 Series
Parking Brake
Control Valve**

**PULL TO RELEASE
PUSH TO APPLY**

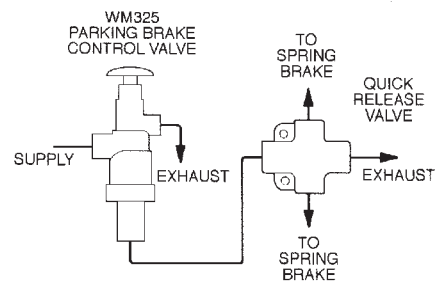
PRE-FMVSS-121 APPLICATIONS

DESCRIPTION

WM325 panel mounted valves are used as parking brake controls in pre-FMVSS-121 air brake systems in both on and off highway applications. They are normally closed, three-way valves with pull-to-open, push-to-close knob action.

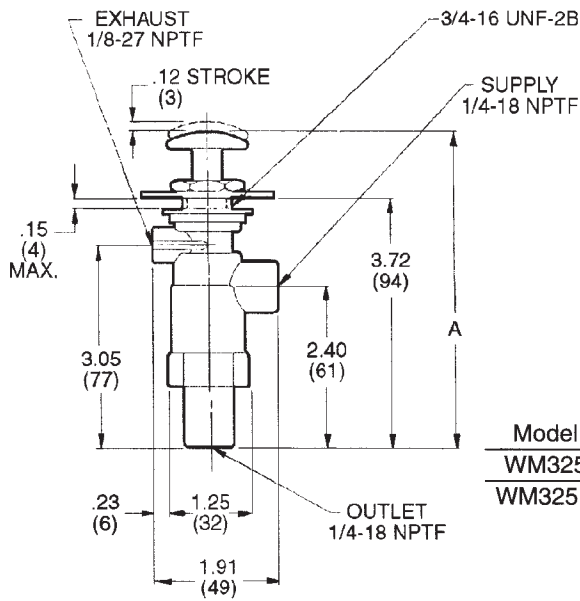
A minimum supply pressure of 35 PSI is required before the WM325 can be manually operated. As long as pressure at the WM325's inlet exceeds 35 PSI and the valve is actuated, an integral check valve maintains outlet pressure at peak supply level. If inlet pressure falls below 35

PSI, the WM325 automatically deactivates and exhausts downstream pressure to apply the spring brakes.



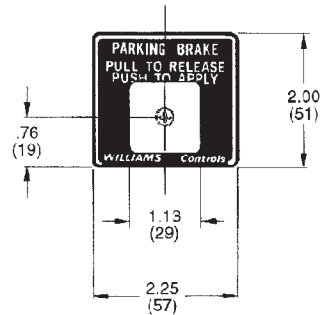
SPECIFICATIONS

Port sizes: Inlet and outlet.....	1/4-18 NPTF
Exhaust	1/8-27 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature.....	-20°F to 150°F (-29°C to 66°C)
Flow rating: Inlet to outlet	20SCFM @ 100 PSI (0,6 m ³ /min @ 690 kPa)
Outlet to exhaust	25 SCFM @ 100 PSI (0,7 m ³ /min @ 690 kPa)
Automatic application pressure	25-40 PSI (172-275 kPa)
Mounting.....	Panel mounted
Mounting attitude.....	Optional
Materials: Body castings.....	Iridited die cast zinc alloy
O-rings.....	Buna N
Knob: WM325	Yellow plastic
WM325D	Red plastic
Weight.....	12 oz (340 grams)



Model	A (in.)
WM325	4.68
WM325D	5.18

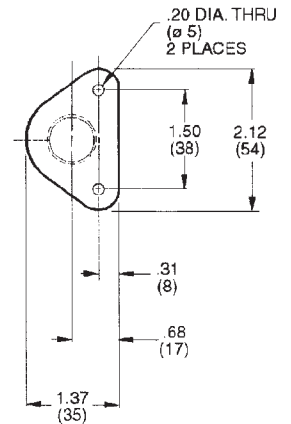
WM325 KNOB



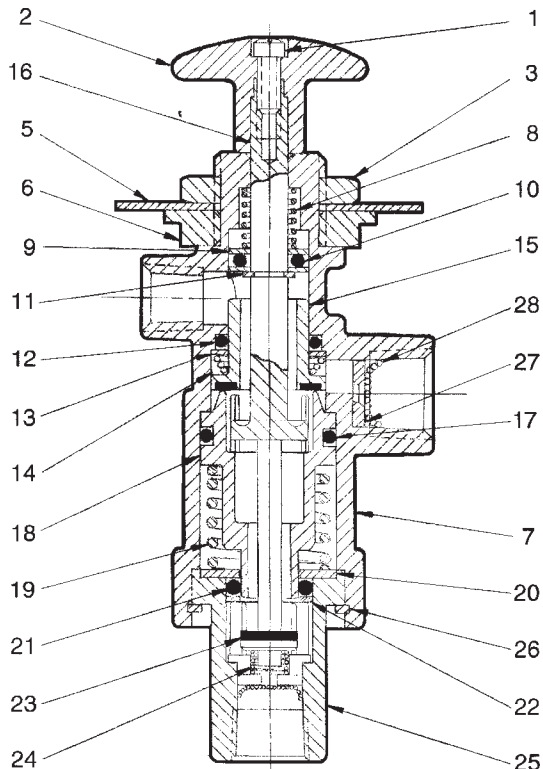
WM325 KNOB



BACKUP PLATE



CROSS SECTION & PARTS INFORMATION



Item	Description	WM325	WM325D	Qty
1	Screw	114988	114989	1
2	Button	105375	105374	1
3	Nut	114589	114589	1
5	Escutcheon Plate	103268	103268	1
6	Mounting Collar	102082	102082	1
7	Valve Body	102070	102070	1
8	Spring	105369	105369	1
9	Washer	115090	115090	2
*10	O-Ring	116300	116300	1
11	Snap Ring	116217	116217	1
*12	O-Ring	116306	116306	1
13	Washer	115089	115089	1
14	Spring	105368	105368	1
*15	Exhaust Tube	102073	102073	1
16	Stem	102094	102094	1
*17	O-Ring	116315	116315	1
18	Piston	102088	102088	1
19	Spring	118916	118916	1
20	Washer	102089	102089	1
*21	O-Ring	116304	116304	1
22	Washer	115092	115092	1
*23	Poppet	102090	102090	1
24	Spring	102092	102092	1
25	End Cap	102087	102087	1
26	Retaining Ring	116236	116236	1
27	Restrictor	102085	102085	1
*28	Screen	116456	116456	2

*Item is included in repair kit. Service these units with repair kit 114267. Highlighted items may be purchased separately.

To order, specify **WM325** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Knob
WM325	112229	Yellow Square
WM325 D	118279	Red Octagon

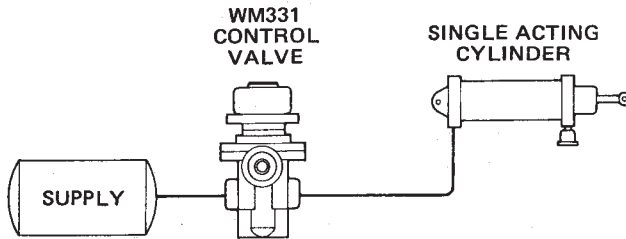
PRODUCT DESCRIPTION

DESCRIPTION The WM331 is a spring-returned, normally closed, non-compensating valve designed for floor mounting. It is actuated by a plunger which is intended for foot pressure operation.

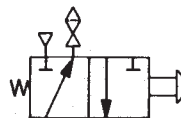
OPERATION The WM331 is actuated by depressing the plunger. This closes the exhaust port and opens the supply port to allow supply pressure to flow to the outlet. When the plunger is released, the valve returns to the normally closed position. The supply port is closed and the exhaust port is opened to allow pressure at the outlet port to be released to atmosphere.

APPLICATION The WM331 is a heavy duty universal application valve which is ideal for controlling pneumatic cylinders or relay valves in industrial air systems.

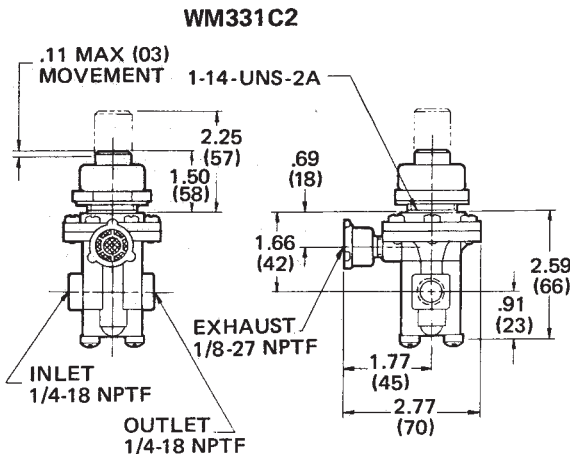
TYPICAL APPLICATION



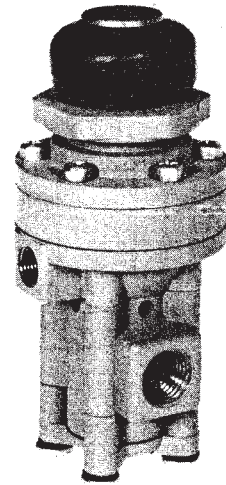
I.S.O. SYMBOL



EXTERNAL CONFIGURATION

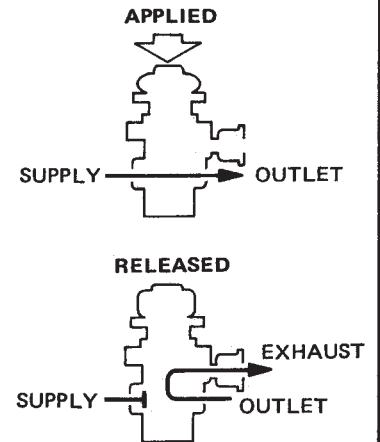


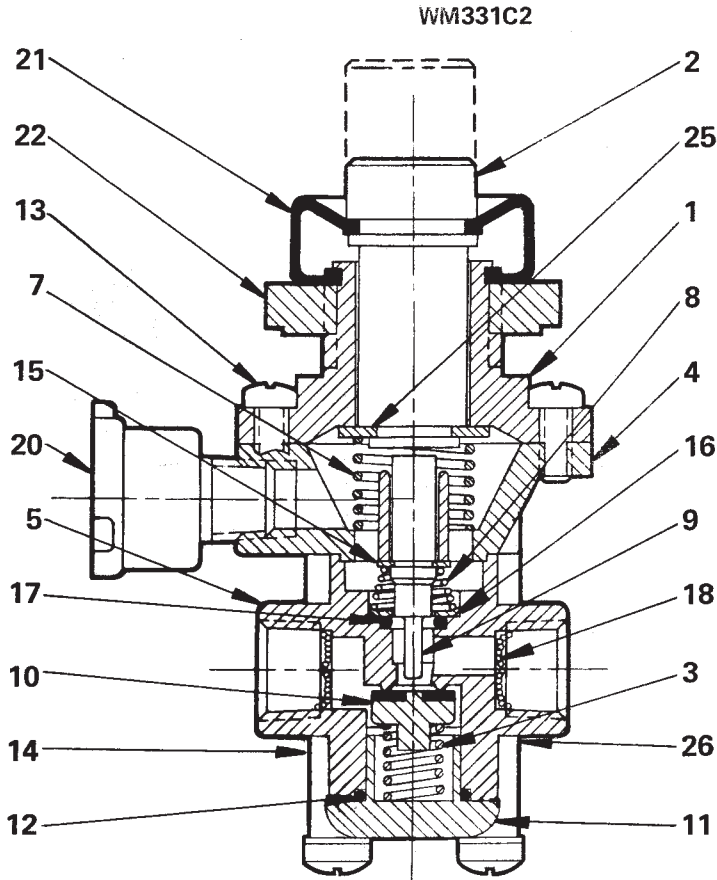
**WM331
SERIES**



**THREE-WAY
FOOT
CONTROL
VALVE**

FUNCTIONAL DIAGRAM





PARTS IDENTIFICATION		
ITEM	DESCRIPTION	QTY.
1	ROD GUIDE & MOUNT	1
2	PUSH ROD	1
3	SPRING	1
4	CENTER BODY	1
5	LOWER BODY	1
7	SPRING	1
8	SPRING	1
9	STEM	1
* 10	POPPET	1
11	END CAP	1
* 12	O-RING	1
13	SCREW	6
14	SCREW	4
15	RETAINING RING	1
16	RETAINING RING	1
* 17	O-RING	1
* 18	SCREEN	2
20	BREATHER (WM111A)	1
* 21	DUST BOOT	1
22	NUT (101114)	1
23	SPACER	1
24	WASHER	1
25	RETAINING RING	1
26	WASHER	1

Service this unit with repair kit number 114279.
*Asterisk designates parts included in repair kit.

SPECIFICATIONS

PORT SIZE 1/4-18 NPTF
 MAXIMUM OPERATING PRESSURE. 150 PSI (1034, 2 kPa)
 FLOW RATING. 45 scfm @ 100 PSI (1,2 m³/min @ 690 kPa)
 TEMPERATURE RANGE* -20°F to 200°F (-28, 9°C to 93, 3°C)
 MOUNTING. Floor Mounted
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Die Cast Zinc Alloy
 Poppet Buna N
 O-Rings. Buna N
 NET WEIGHT. 1 Pound (0,5 kg)
 *For continuous operation beyond this range, contact factory.

TO ORDER, SPECIFY				
WM331 _____				
Model Number Suffix				
PART NUMBER _____				
SELECT SUFFIX & PART NUMBER BELOW				
SUFFIX	PART NUMBER	BUTTON HEIGHT	BUTTON STROKE	PUSH ROD
WM331 C2	110227	1,24 in. (31,5 mm)	.11 in. (2,8 mm)	110226

WM338 SERIES

PRODUCT DESCRIPTION

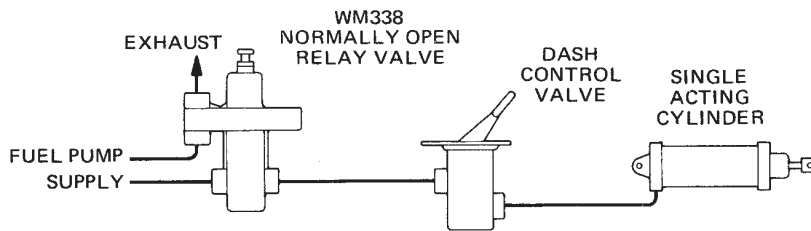
DESCRIPTION The WM338 series valves are normally open, three-way relay valves that close and exhaust with sufficient control pressure. The WM338 series includes non-compensating relay valves and compensating pressure-limiting valves. The compensating models deliver an output pressure proportional to the control signal received.

The control pressure required to close the WM338 valves varies with the different models in the series. Some models are equipped with an adjustment that changes the control pressure at which the valve closes; these models are factory pre-adjusted to close at a specific value. The non-adjustable models will close at a fixed control pressure.

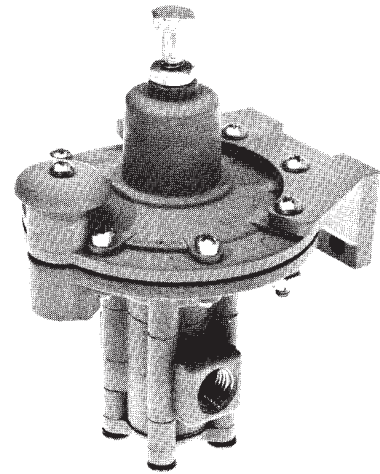
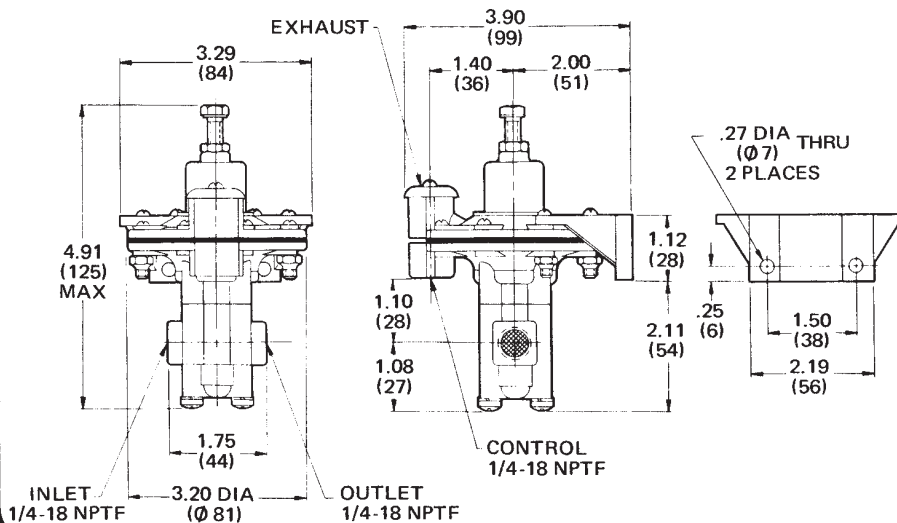
OPERATION When the WM338 valve is in the normally open position, air flows from the supply port to the outlet port. In response to a sufficient control signal, the supply poppet seats and the valve closes. Pressure at the outlet port is exhausted to the atmosphere. The valve reopens when the control pressure drops below the necessary level. If the valve is a compensating model, its output will increase in proportion to the decreasing control pressure.

APPLICATION Commonly used in industrial and vehicular applications, these normally open inversion valves close with sufficient hydraulic or pneumatic control pressure. The WM338 relay and pressure-limiting valves are often used because they feature adjustable and preset control pressures.

TYPICAL INSTALLATION

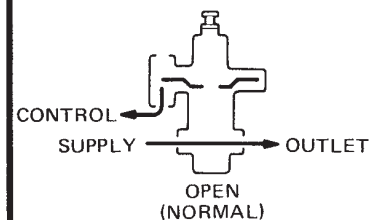
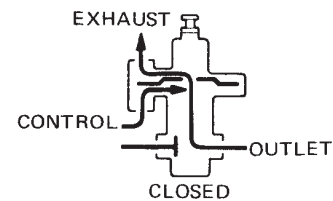


EXTERNAL CONFIGURATION

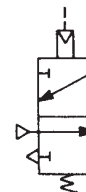


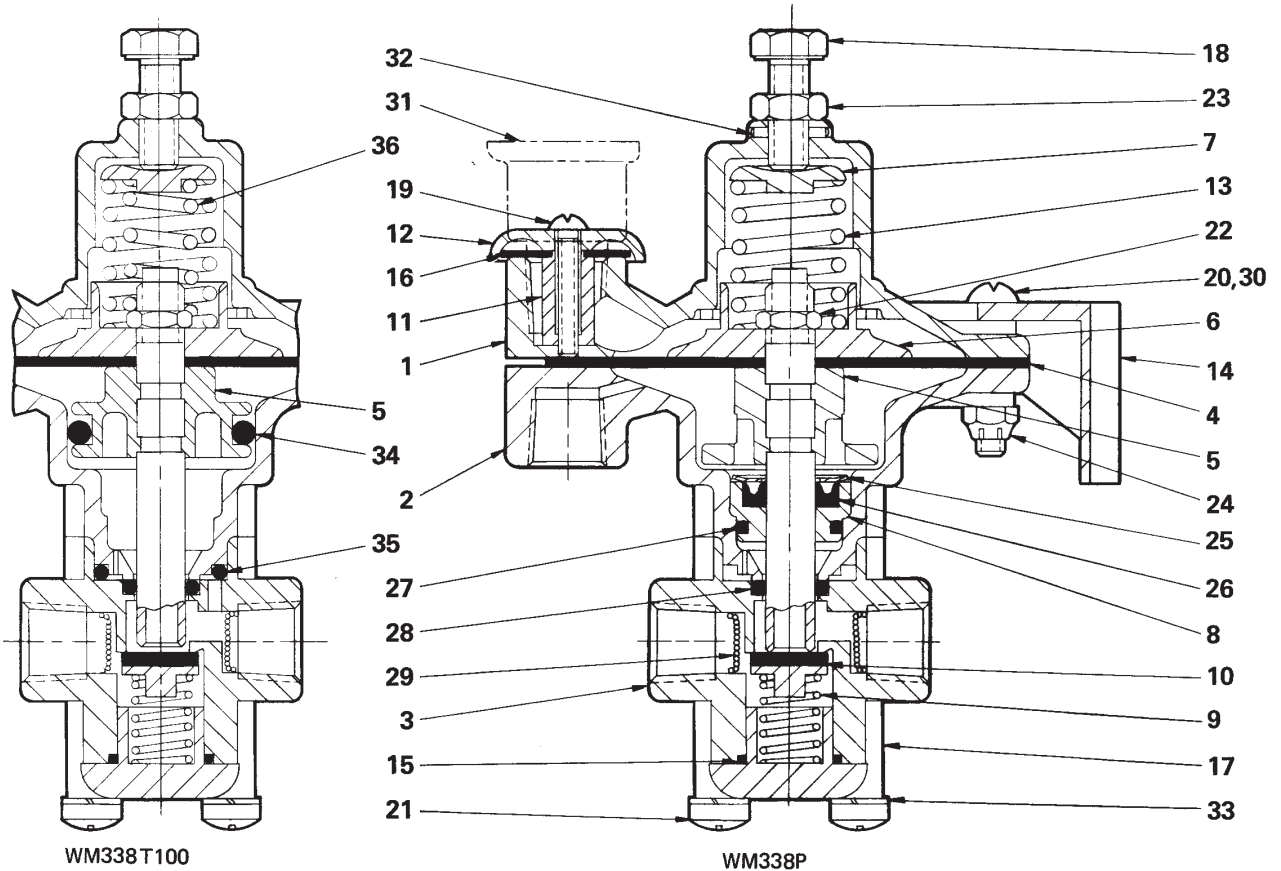
NORMALLY OPEN RELAY VALVE

FUNCTIONAL DIAGRAM



I.S.O. SYMBOL





WM338T100

WM338P

SPECIFICATIONS

PORT SIZES:

Inlet, Outlet, & Control 1/4-18 NPTF
Exhaust: WM338P ,T100 Equipped with Cap and Check Disc

MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)
OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°C to 93,3°C)
FLOW RATING 60 SCFM @ 100 PSI (1,7 m³/min @ 690 kPa)
CONTROL PRESSURE TO CLOSE:

WM338P ,T100 Adjusts from 2 to 120 PSI (13,8 to 827,4 kPa)

CONTROL PRESSURE MEDIA Hydraulic or Pneumatic
MOUNTING Bracket Secured to Frame, Bulkhead, or Bracket
MOUNTING ATTITUDE Adjusting Screw Up Recommended
MATERIALS: Body Castings Die Cast Zinc Alloy
Diaphragm Fabric-Reinforced Buna N
Poppet EPT Rubber w/ Aluminum Backing
O-Rings Buna N

NET WEIGHT 1 lb.8 oz. (0,7 kg)

*For continuous operation beyond this range, contact factory.

PARTS IDENTIFICATION

ITEM	DESCRIPTION	QTY.		ITEM	DESCRIPTION	QTY.	
		P	T100			P	T100
1	UPPER BODY	1	1	19	SCREW	1	1
2	CONTROL BODY	1	1	20	SCREW	4	4
3	LOWER BODY	1	1	21	SCREW	4	4
* 4 †	DIAPHRAGM	1	1	22	NUT	1	1
5	PISTON ASSEMBLY	1	1	23	NUT	1	1
6	DIAPHRAGM PLATE	1	1	24	LOCKNUT	4	4
7	SPRING CAP	1	1	*25	RETAINING RING	1	1
8	BUSHING	1	1	*26	U-CUP	1	1
9	SPRING	1	1	*27	O-RING	1	1
* 10 †	POPPET	1	1	*28 †	O-RING	1	1
11	EXHAUST SPACER	1	1	29	SCREEN	2	2
12	EXHAUST CAP	1	1	30	SCREW	4	4
13	SPRING	1	1	31	BREATHER		
14	BRACKET	1	1	32	ROLL PIN		
* 15 †	O-RING	1	1	33	LOCKWASHER	4	4
* 16 †	EXHAUST CHECK	1	1	34 †	O-RING		1
17	END CAP	1	1	35 †	O-RING		1
18	SCREW	1	1	36	SPRING		

Service the WM338P with repair kit number 114293. Service the WM338T100 with repair kit 114289.
To replace the WM111A exhaust breather (Item 31), order part number 111411.
*Asterisk designates parts included in repair kit 114293. †Dagger designates parts included in repair kit 114289.

TO ORDER, SPECIFY **WM338** _____ PART NUMBER _____ SELECT SUFFIX & PART NUMBER BELOW

Model Number Suffix

SUFFIX	PART NUMBER	DESCRIPTION	CONTROL PRESSURE TO REOPEN
WM338 P	112371	Normally Open, Non-Compensating, Adjustable Relay Valve	Preset @ 20/25 PSI (138/172 kPa) w/ 55/65 PSI (379/448 kPa) Supplv.
WM338 T100	112381	Normally Open, Compensating, Adjustable Pressure-Limiting Valve	Preset @ 50/60 PSI (345/414 kPa) w/ 110/130 PSI (758/896 kPa) Supply

PRODUCT DESCRIPTION

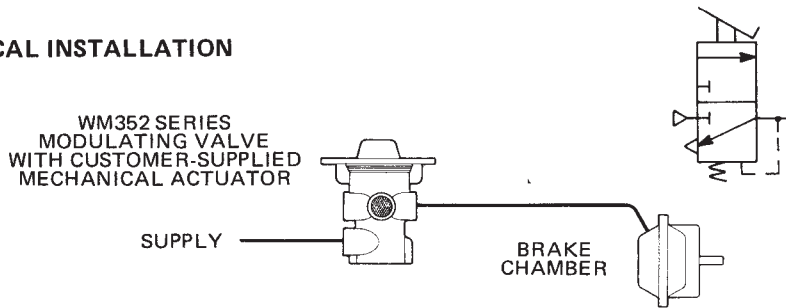
DESCRIPTION The WM352 series valves are three-way pressure modulators that frequently serve as sub-assemblies in other Williams Air Controls products. A spring and push rod assembly (not included) are required to actuate the valve and to provide output compensation. The WM352 series is specifically designed for pneumatic braking systems that incorporate relay valves.

OPERATION When the mechanical actuator depresses the valve's balance piston, the piston seats to prevent pressure from escaping through the exhaust port. Further movement against the piston causes a path to open from the supply port to the outlet port. The outlet pressure balances against the spring in the actuating assembly. The valve achieves a balanced condition and the piston closes the supply port to maintain this condition. Additional piston movement or a change in downstream pressure will cause a new balance point to be established. When the mechanical actuator is released, the piston unseats and outlet pressure is discharged through the exhaust port.

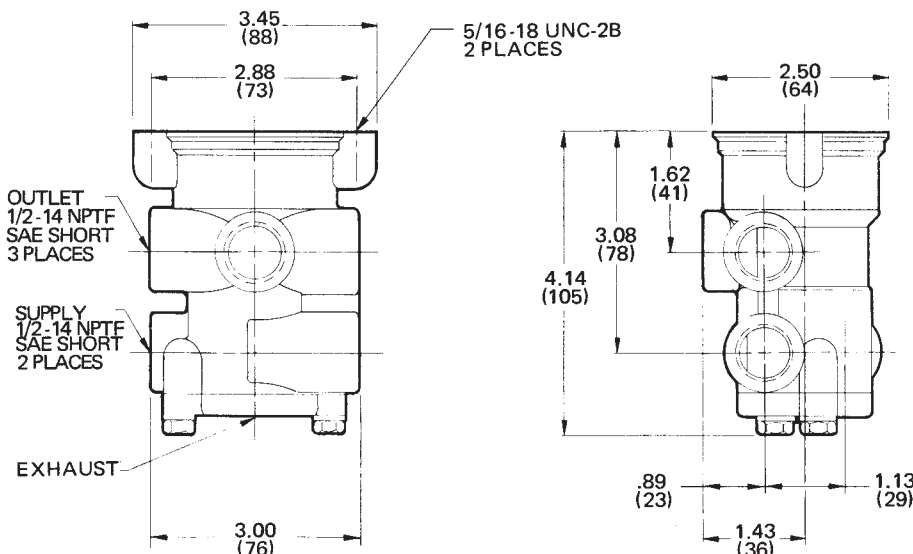
APPLICATION The WM352 is used in several Williams Air Controls treadle valves to modulate pressure delivery to industrial or vehicular braking systems. These valves also serve as sub-assemblies for the WM400 and WM401 pressure regulators. As a treadle valve or regulator component, the WM352 valve is supplied with an actuating assembly. However, when the WM352 valve is purchased separately, the customer must supply a spring-actuator.

I.S.O. SYMBOL

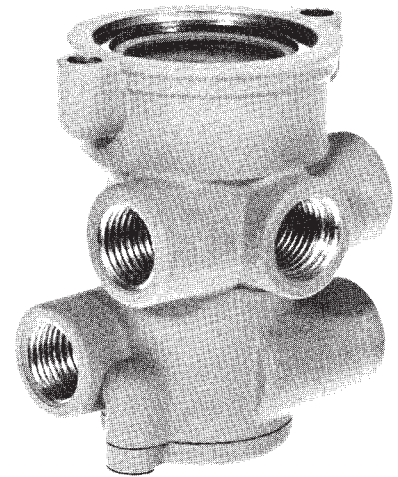
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

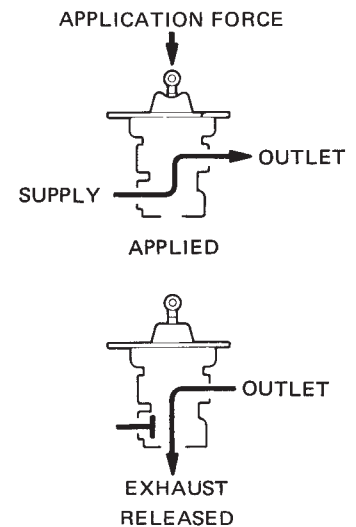


**WM352
SERIES**



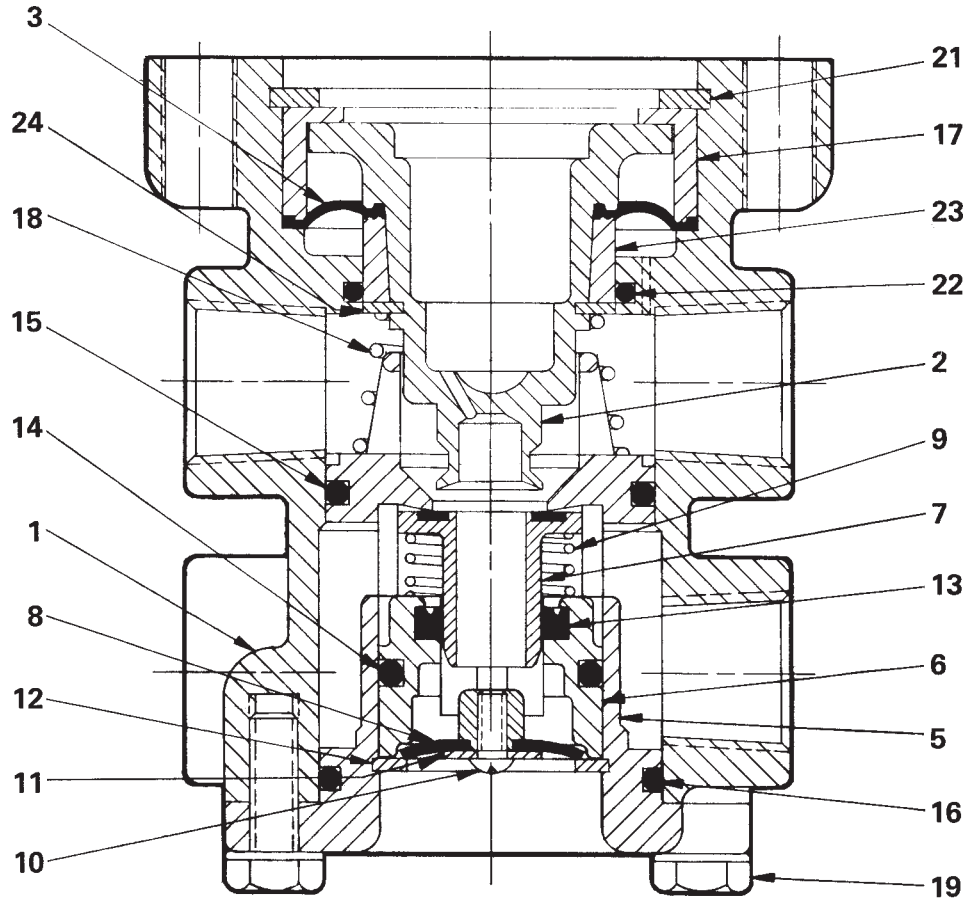
**HIGH FLOW
MODULATING
VALVE**

FUNCTIONAL DIAGRAM



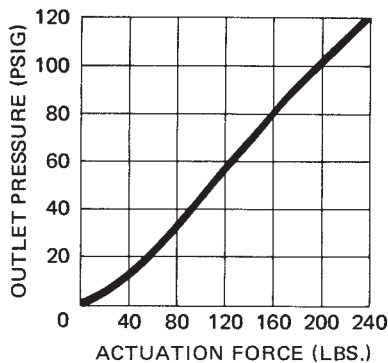
PARTS IDENTIFICATION		
ITEM	DESCRIPTION	QTY.
		A
1	VALVE BODY	1
2	PISTON	1
* 3	DIAPHRAGM	1
5	CARTRIDGE BODY	1
6	GUIDE TUBE	1
* 7	SEAT TUBE	1
* 8	CHECK DISC	1
9	SPRING	1
10	SCREW	1
11	WASHER	1
12	RETAINING RING	1
* 13	U-CUP	1
* 14	O-RING	1
* 15	O-RING	1
* 16	O-RING	1
17	CLAMP RING	1
18	SPRING	1
19	SCREW	2
21	RETAINING RING	1
* 22	O-RING	1
23	CLAMP RING	1
24	RETAINING RING	1

Service this unit with repair kit number 114299. This repair kit also contains parts to service the cartridge assembly. To replace only the cartridge assembly (Items 5-16), order part number 101979. *Asterisk designates parts included in repair kit 114299.



SPECIFICATIONS

PORT SIZE 1/2-14 NPTF
 MAXIMUM OPERATING PRESSURE 200 PSI (1379,0 kPa)
 OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°C to 93,3°C)
 FLOW RATING 160 SCFM @ 100 PSI (4,5 m³/min @ 690 kPa)
 ACTUATION FORCE Refer to Graph of Force vs. Output Pressure
 MOUNTING With Two 5/16-18 Fasteners
 MOUNTING ATTITUDE Optional
 MATERIALS: Valve Body Die Cast Aluminum Alloy
 Cartridge Body & Piston Die Cast Zinc Alloy
 Diaphragm Fabric-Reinforced Buna N
 Seals Buna N
 NET WEIGHT 1 lb. 8 oz. (0,7 kg)
 *For continuous operation beyond this range, contact factory.



TO ORDER, SPECIFY		
WM352 _____		
Model Number		Suffix
PART NUMBER _____		
SELECT SUFFIX & PART NUMBER BELOW		
SUFFIX	PART NUMBER	SUB-ASSEMBLY APPLICATIONS
WM352 A	112468	WM353A,B,C,D,E & F; WM392,WM392A & D; WM399A & J; WM400A & C; WM401A,B,C & D

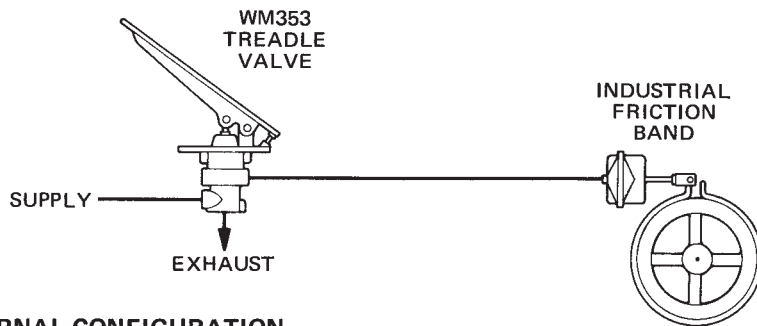
PRODUCT DESCRIPTION

DESCRIPTION The WM353 series consists of several treadle valves engineered for industrial applications. Each unit incorporates a three-way, compensating WM352A pressure regulator that features diaphragm construction and precise response to pedal movement. The WM353 treadle valves are available with various compensating output ranges and treadle angles. Certain models are equipped with an adjustable treadle stop which lets the customer limit the valve's output pressure.

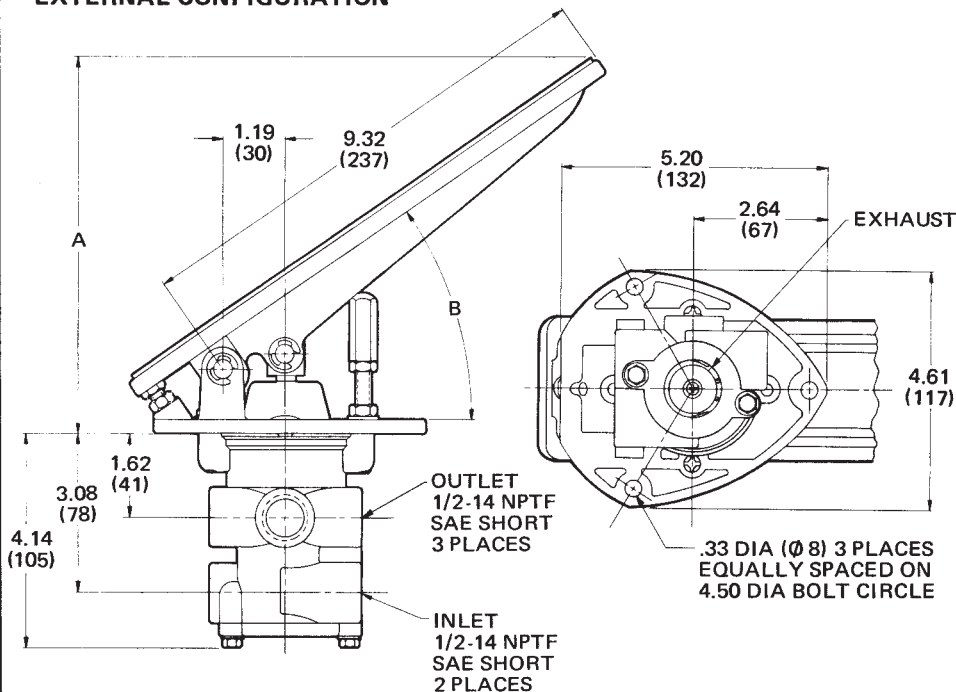
OPERATION When the pedal is applied, the balance piston closes the exhaust port and opens the supply port. In relation to the amount that the pedal is depressed, the regulator valve modulates the air pressure to the outlet port. If the WM353 treadle valve is equipped with an adjustable treadle stop, the valve will achieve its preset maximum output pressure when the pedal contacts the stop. As the pedal returns to the rest position, the valve exhausts the outlet pressure to the atmosphere.

APPLICATION The WM353 three-way, compensating treadle valves are commonly installed in industrial applications. Typical uses include the operation of drum friction bands, industrial clutches, and other sensitive machinery.

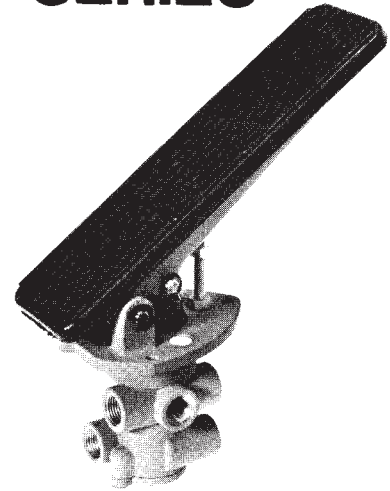
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

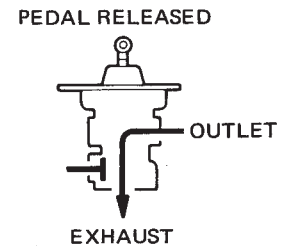
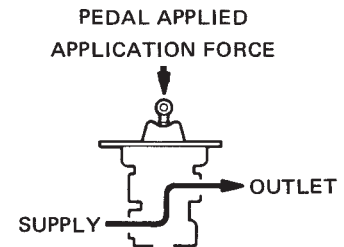


**WM353
SERIES**

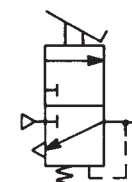


**INDUSTRIAL
TREADLE
VALVE**

FUNCTIONAL DIAGRAM

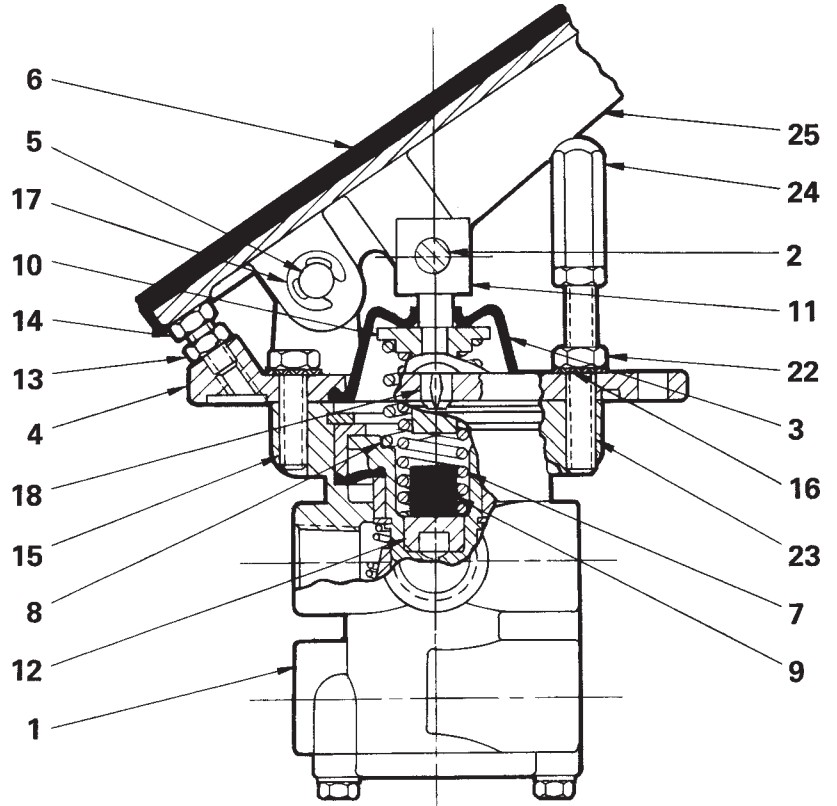


I.S.O. SYMBOL



PARTS IDENTIFICATION			
ITEM	DESCRIPTION	QTY.	
		E	
1	VALVE (WM352A)	1	
2	PIN	1	
* 3	DUST BOOT	1	
4	MOUNTING PLATE	1	
5	TREADLE PIN	1	
6	TREADLE COVER	1	
7	SPRING	1	
8	SPRING	1	
* 9	RUBBER SPRING	1	
10	SPRING CUP	1	
11	PUSH ROD	1	
12	SPACER	1	
13	NUT		
14	SCREW	1	
15	SCREW	1	
16	LOCKWASHER	2	
17	RETAINING RING	4	
18	HOLE PLUG	2	
22	NUT	2	
23	TIE ROD	1	
24	ADJUSTING NUT	1	
25	TREADLE	1	

Service these units with repair kit number 114306. Repair kit includes parts to service the WM352A valve and cartridge assemblies. To replace only the WM352A valve, order part number 112468. To replace only the cartridge in the WM352A, order part number 101979. To replace only the treadle cover, order part number 102376.
*Asterisk designates parts included in repair kit 114306.



SPECIFICATIONS

PORT SIZE 1/2-14 NPTF
 MAXIMUM OPERATING PRESSURE 200 PSI (1379,0 kPa)
 OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°C to 93,3°C)
 FLOW RATING 160 SCFM @ 100 PSI (4,5 m³/min @ 690 kPa)
 VALVE POSITION IN BRACKET . . . Rotatability on 90° Increments
 MOUNTING Integral Bracket Secured to Floor
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Die Cast Aluminum Alloy
 Treadle Die Cast Aluminum Alloy
 Treadle Cover Fiber-Reinforced Rubber
 Dust Boot & Rubber Spring Chloroprene Rubber
 Diaphragm Fabric-Reinforced Buna N
 O-Ring & U-Cup Seals Buna N
 NET WEIGHT 3 lbs. 8 oz. (1,6 kg)
 *For continuous operation beyond this range, contact factory.

<p>TO ORDER, SPECIFY</p> <p>WM353_____</p> <p>Model Number Suffix</p> <p>PART NUMBER _____</p> <p>SELECT SUFFIX & PART NUMBER BELOW</p>						
SUFFIX	PART NUMBER	HEIGHT A	ANGLE B	COMPENSATING RANGE	MAXIMUM OUTPUT	TREADLE STOP
WM353 E	112479	8.5 in. (216 mm)	45°	0-110/130 PSI (0-758/896 kPa)	Equal to Supply	YES

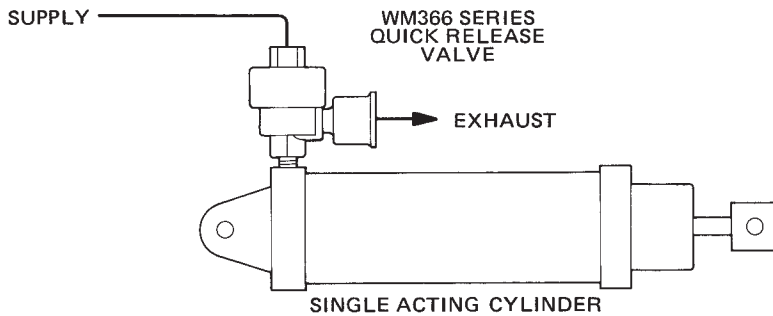
PRODUCT DESCRIPTION

DESCRIPTION The WM366 series quick release valves incorporate a durable poppet that acts like a diaphragm and flexes to control the direction of flow. These self-relieving three-way valves are available with or without a WM111B exhaust breather. The breather prevents dirt and particles from entering the valve; the supply and outlet ports are also equipped with screening for this purpose.

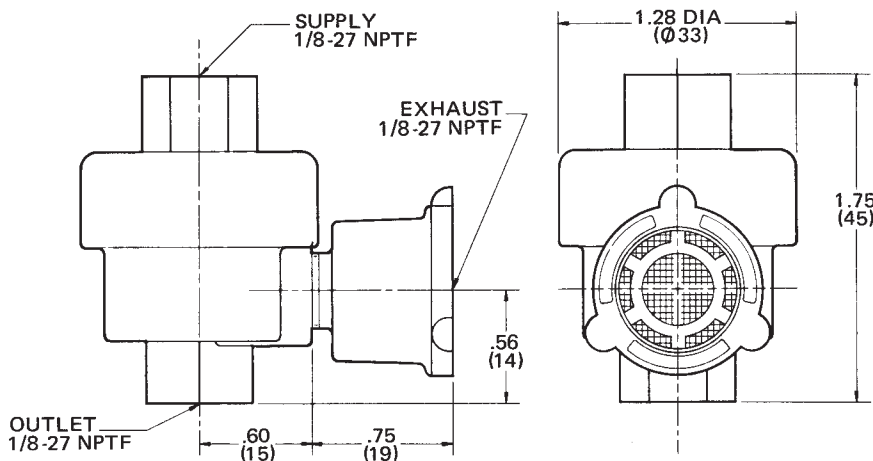
OPERATION As long as a supply signal is applied to the valve, it will deliver pressure at the outlet port. The flexible poppet seals the passage to the exhaust port and permits air flow to the outlet port at a rate of 75 SCFM (2,0 m³/min) with a 100 PSI (689,5 kPa) supply. If the supply signal decreases, then the poppet flexes and outlet pressure is released through the exhaust.

APPLICATION The WM366 series valves are typically used to exhaust pressure from single or double-acting cylinders in a variety of quick release applications. In these applications, pressure is quickly transmitted from the control device to the cylinders because of the high flow rate. The WM366 series quick release valves are not recommended for safety-related applications.

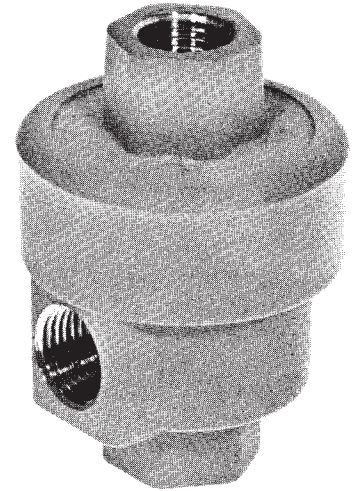
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

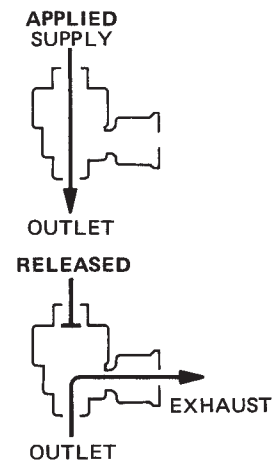


**WM 366
SERIES**

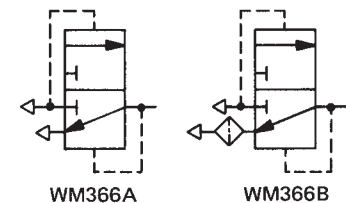


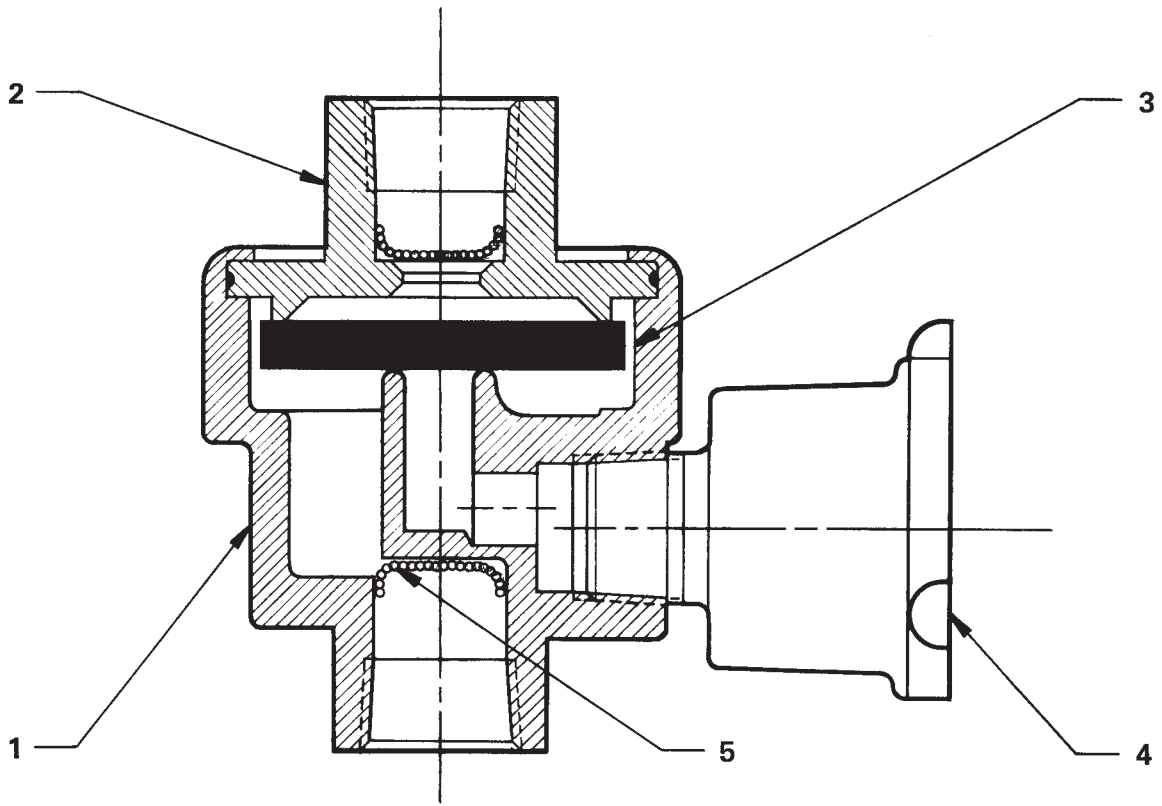
**QUICK
RELEASE
VALVE**

FUNCTIONAL DIAGRAM



I.S.O. SYMBOL





SPECIFICATIONS

PARTS IDENTIFICATION			
ITEM	DESCRIPTION	QUANTITY	
		A	B
1	BODY	1	1
2	CAP	1	1
3	POPPET	1	1
4	WM111B BREATHER (111412)		1
5	SCREEN	2	2

This component is classified as a non-repairable item. Replaceable items are followed by part numbers.

PORT SIZE 1/8-27 NPTF
 MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)
 OPERATING TEMPERATURE* . . . -20°F to 200°F (-28,9°F to 93,3°C)
 FLOW RATING:
 Supply-to-Outlet . . . 75 SCFM @ 100 PSI (2,0 m³/min @ 690 kPa)
 Outlet-to-Exhaust . . . 55 SCFM @ 100 PSI (1,6 m³/min @ 690 kPa)
 MOUNTING . . . Designed for Pipe Mounting Using Inlet & Outlet Ports
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Die Cast Zinc Alloy
 Poppet Buna N
 NET WEIGHT 2.5 oz. (0,1 kg)
 *For continuous operation beyond this range, contact factory.

TO ORDER, SPECIFY

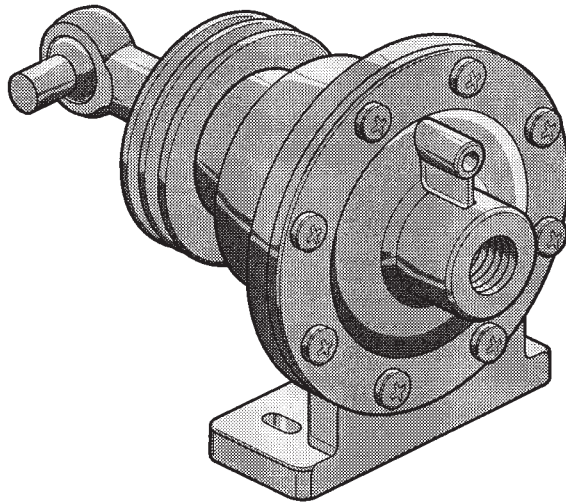
WM366 _____
 Model Number Suffix

PART NUMBER _____

SELECT SUFFIX & PART NUMBER BELOW

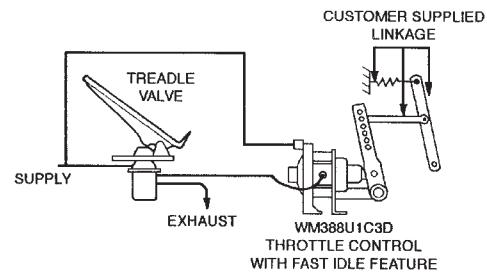
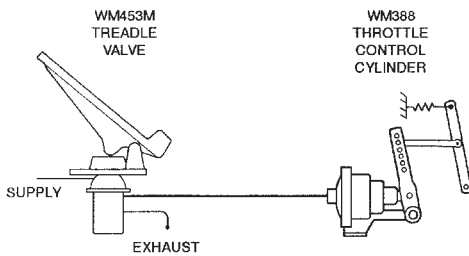
SUFFIX	PART NUMBER	EQUIPPED WITH WM111B BREATHER
WM366 A	112534	No
WM366 B	112536	Yes

**WM388 & WM642 SERIES
PNEUMATIC THROTTLE
CONTROL CYLINDERS**

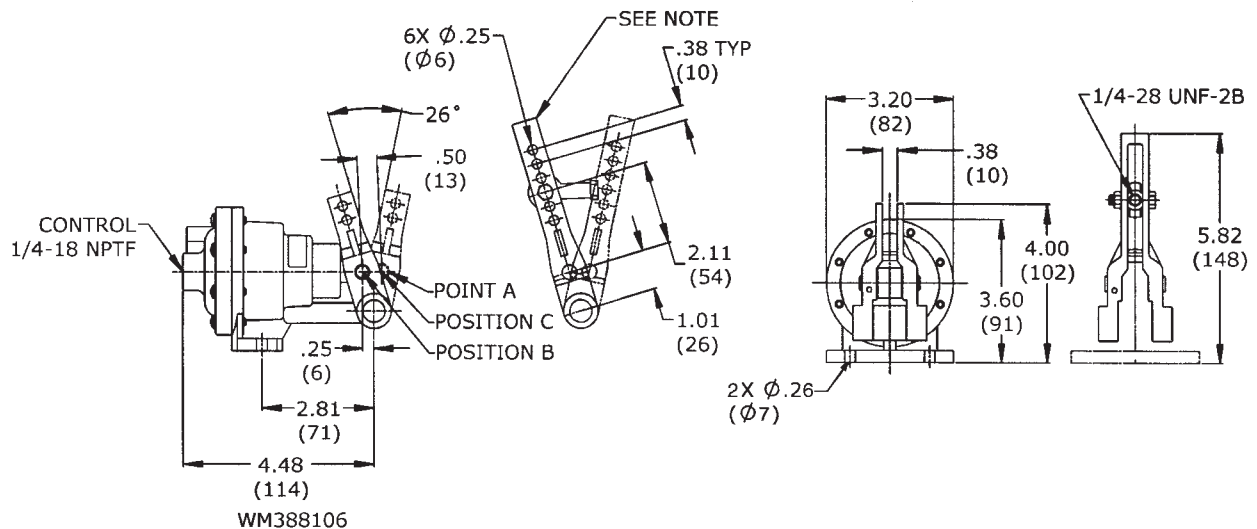


FEATURES AND SPECS

- Models for on and off-highway
- Weight: WM388U1A1A: 1 lb, 5 oz (0,6 kg)
WM388105, U1C1D & U1C2B: 1 lb, 12 oz (0,8 kg)
WM388U1C3D: 2 lb, 12 oz (1,2 kg)
WM642F5: 2 lb, 8 oz (1,1 kg)
- Port size: 1/4-18 NPTF (control)
1/8-27 NPTF (fast idle) (WM388U1C3D only)
- Maximum supply pressure: 150 PSI (1034 kPa)
- Operating temperature: -40°F to 200°F (-40°C to 93°C)
WM388U1C2B only: -20°F to 200°F (-29°C to 93°C)



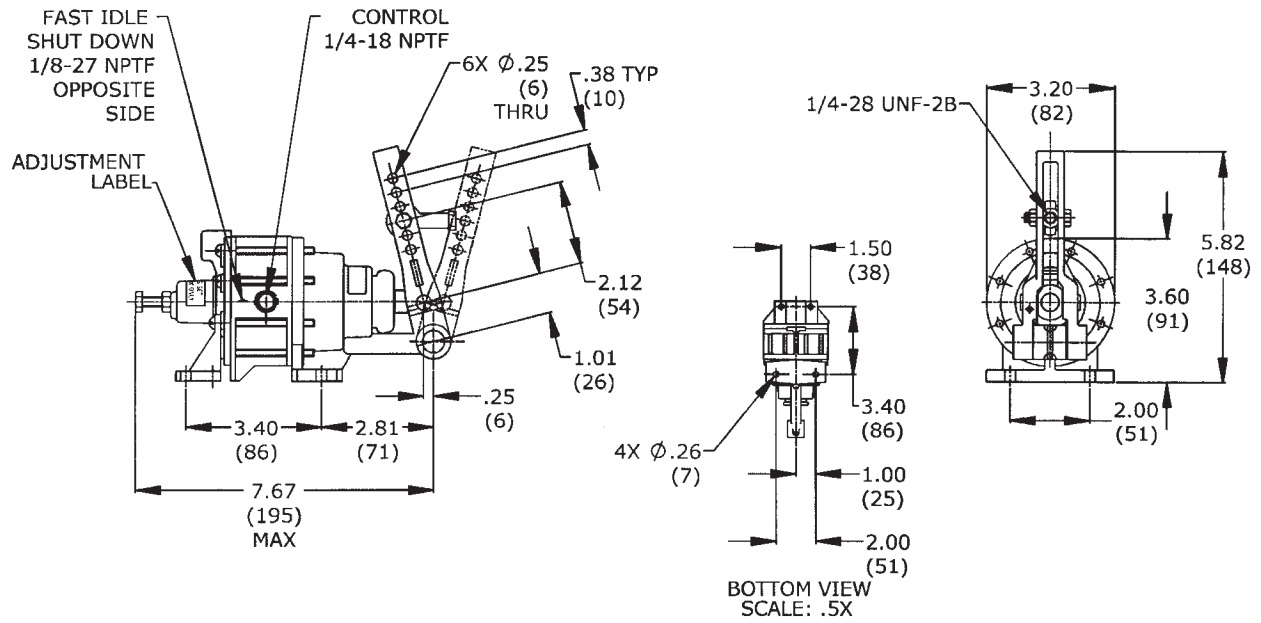
DIMENSIONAL DATA



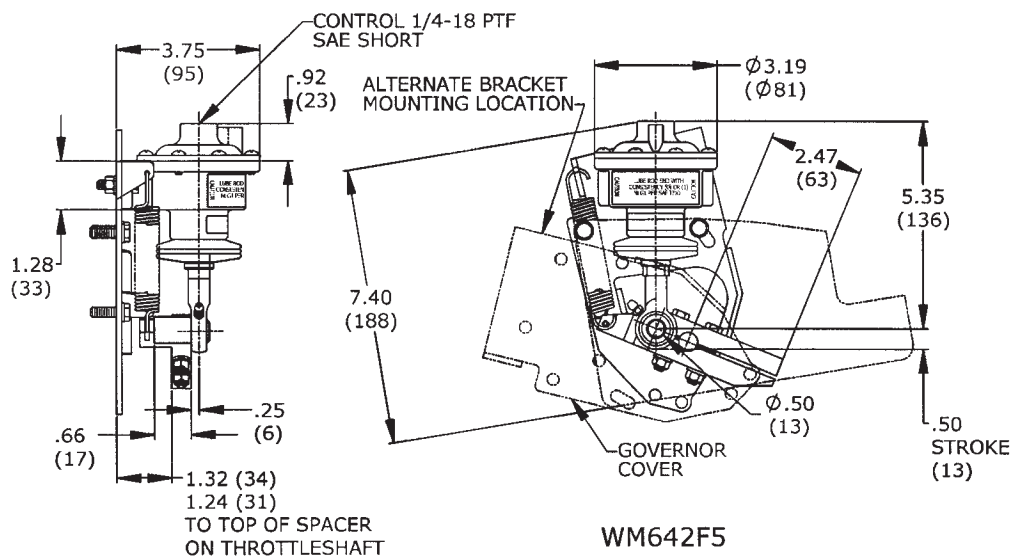
NOTE:
LONGER LEVER USED ON WM388105, WM388U1CID & U1C2B MODELS

WM388U1C1D, WM388U1C2B, WM388105

DIMENSIONAL DATA (CONTINUED)

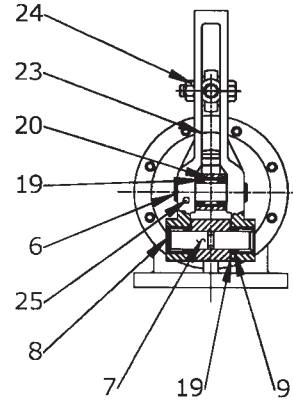
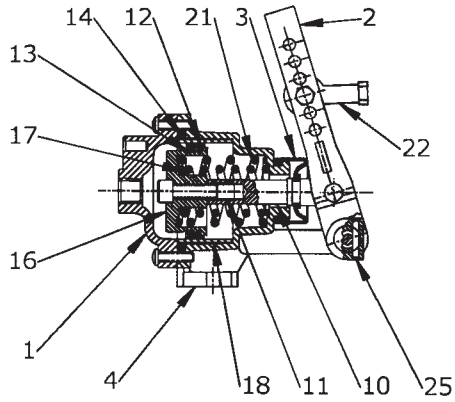


WM388U1C3D

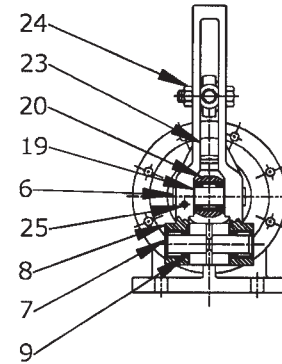
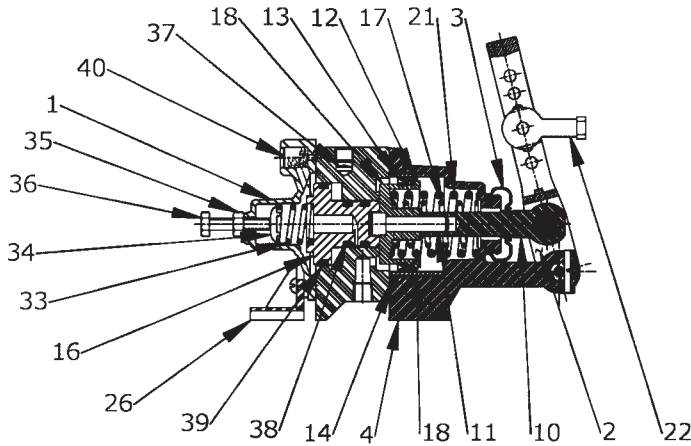


WM388U1A1A & WM642F5

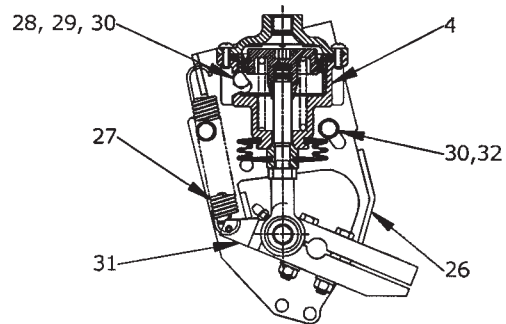
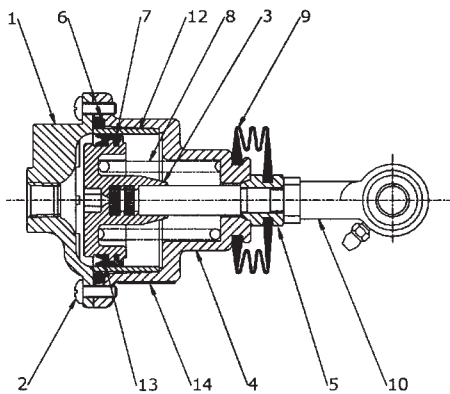
CROSS SECTION & PARTS



WM388U1C1D, WM388U1C2B, WM388105



WM388U1C3D



WM388U1A1A, WM642F5

CROSS SECTION & PARTS (CONTINUED)

Item	Part No.	Description	WM388U1C1D	WM388U1C2B	WM388105	WM388U1C3D	WM388U1A1A	WM642F5
1	118510	Cylinder Cover	1	1	1		1	1
1	119669	Cylinder Cover				1		
2	118198	Lever	1	1	1	1		
3	103214	Boot	1	1	1	1		
3	117204	Boot					1	1
4	—	Body	1	1	1	1		
4	—	Body					1	1
6	—	Pin	1	1	1	1		
7	—	Pin	1	1	1	1		
8	—	Needle Bearing	2	2	2	2		
9	—	O-ring	4	4	4	4		
10	118506	Rod End	1	1	1	1		
10	117456	Rod End					1	1
11	118508	Screw	1	1	1	1		
12	—	Wear Ring	1	1	1	1	1	1
13	—	U-Cup	1	1	1	1	1	1
14	—	O-Ring	1	1	1	1	1	1
16	—	Piston	1	1	1	1		
16	—	Piston					1	1
17	117885	Spring	1		1	1		
17	117877	Spring		1				
17	118572	Spring					1	1
18	—	Shell	1	1	1	1		
18	—	Shell					1	1
19	—	Washer	4	4	4	4		
20	—	Needle Bearing	1	1	1	1		
21	117883	Spring	1	1	1	1		
22	117855	Rod End	1	1		1		
23	114836	Screw	1	1		1		
24	114592	Nut	1	1		1		
25	118114	Pin	2	2	2	2		
26	105181	Bracket				1		
26	119050	Bracket						1
27	117404	Spring						1
28	114833	Screw						2
29	114535	Nut						2
30	—	Washer						5
31	—	Lever Assembly						1
32	114722	Screw						3
33	101631	Spring				1		
34	101700	Spring Cap				1		
35	114535	Nut				1		
36	114683	Screw				?		
37	—	Retaining Ring				1		
38	—	O-Ring				2		
39	—	O-Ring				1		
40	—	Filter Element				1		

Serviceable items are identified above.

SERVICE KIT INFORMATION

Service Kit	Part Number	Item Numbers
Repair kit for WM388U1C1D & WM388U1C2B	117775	3, 12, 13, 14, 18
Repair kit for WM388U1A1A, WM642F5	117612	3, 10, 12, 13, 14, 17, 18
Repair kit for WM388U1C3D	130203	3, 12, 13, 14, 18, 37, 38, 39, 40
Lever & body assembly kit for WM388U1C1D, WM388U1C2B, WM388105, WM388U1C3D	119153	2, 4, 7, 8, 9, 10, 19, 20, 25

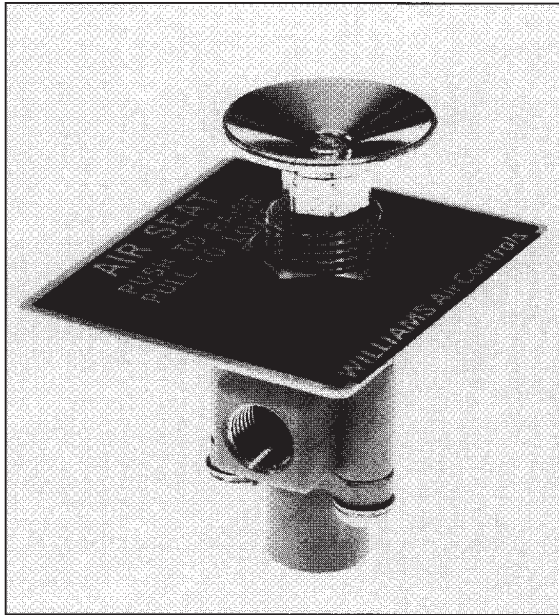
TO ORDER

To order a WM388 or WM642 model, select part number from the chart below.

Model	Part Number	Pressure Range	FMVSS-124 Compliance	Special Features
WM388U1C1D	117888	0-25/35 PSI (w/o external spring)*	Yes, with customer supplied external spring*	Long lever w/rod end
WM388U1C2B	117886	0-55/60PSI	No	Long lever w/rod end
WM388105	117985	0-25/35 PSI (w/o external spring)*	Yes, with customer supplied external spring*	Long lever w/o rod end
WM388U1C3D	119667	0-25/35 PSI (w/o external spring)*	Yes, with customer supplied external spring*	Integral fast idle cylinder
WM388U1A1A	117402	0-25/35 PSI (w/o external spring)	Yes, when used in WM642 kit	
WM642F5	119151	0-55/60 PSI (w/spring supplied in kit)	Yes	Kit for Detroit Diesel V-71 & V-92TT

*Customer supplied external spring must be installed so it acts on centerline of cylinder rod.
Required external spring forces: 10 lbs at idle, 72 lbs at full throttle.

NOTES

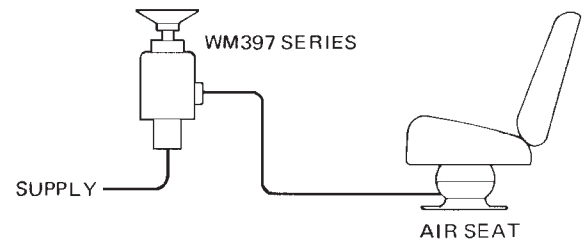


WM397J Three-Way Holding Valve

.9 SCFM @ 100 PSI

DESCRIPTION

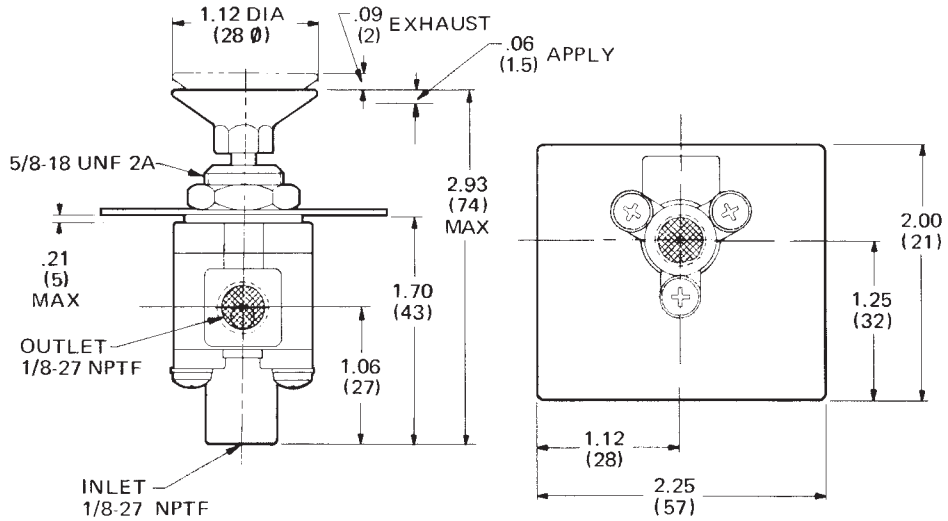
The WM397J control valve is a manually operated, three-way pneumatic valve that is actuated by a push button. This valve has three operating positions - apply, exhaust and hold. In its normal holding position, all ports are closed and the pressure at the outlet port is held. When the push button is depressed, a path opens from the supply port to the outlet port. Pulling the button out to the exhaust position allows pressure at the outlet port to escape through the exhaust port. When released, the valve returns to the normal holding position.



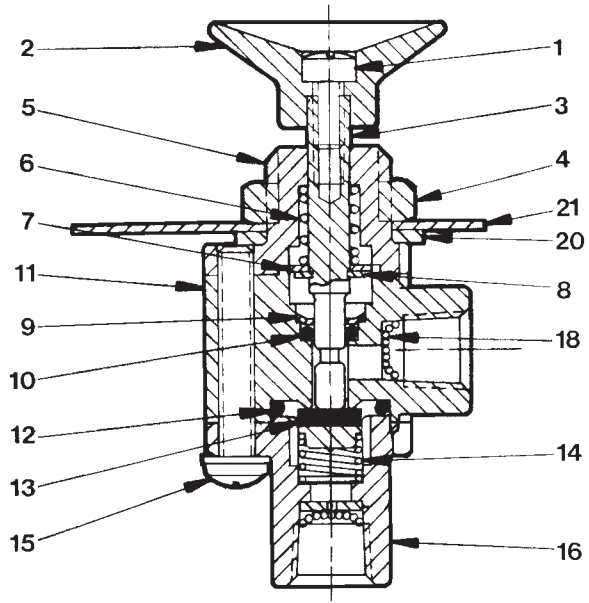
SPECIFICATIONS

Port size	1/8-27 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating: Supply	0.9 SCFM @ 100 PSI (0,03 m ³ /min @ 690 kPa)
Exhaust	3.8 SCFM @ 100 PSI (0,1 m ³ /min @ 690 kPa)
Mounting	On control panel or console
Mounting attitude	Optional
Materials: Body castings	Iridited die cast zinc alloy
Poppet and O-rings	Buna N
Weight	6 oz (0,2 kg)

DIMENSIONAL DATA



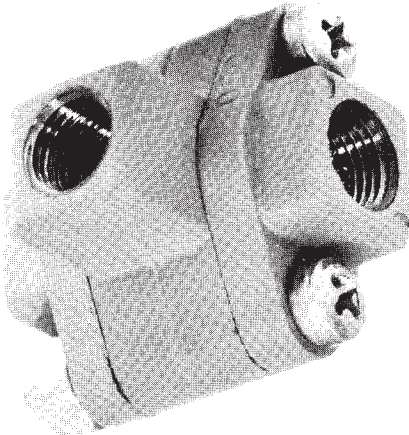
CROSS SECTION & PARTS INFORMATION



ITEM	DESCRIPTION	WM397J	QTY
1	Screw	114723	1
2	Button	118817	1
3	Stem	118616	1
4	Nut	114590	1
5	Mounting Body	102771	1
6	Spring	102772	1
7	Washer	102773	1
8	Snap Ring	116182	1
9	Snap Ring	117927	1
10	O Ring	116296	1
11	Body	101519	1
12	O Ring	116303	1
13	Poppet	119141	1
14	Spring	103826	1
15	Screw	117095	3
16	Inlet Body	118792	1
18	Screen	116455	1
20	Washer	115135	1
22	Screen	116455	1

This unit is classified as a non-repairable item. Highlighted items may be purchased separately.

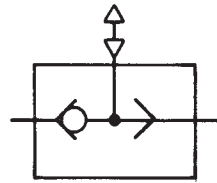
To order, specify **WM397J**, part number 100708.



**WM412A
1/8 INCH
SHUTTLE VALVE**

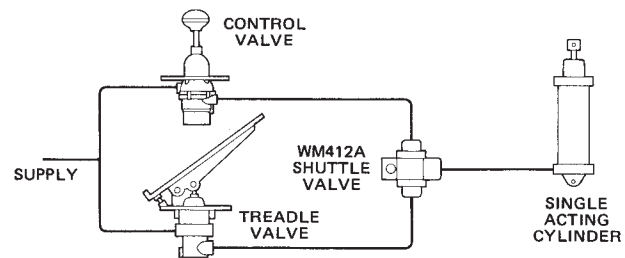
34 SCFM @ 100 PSI

I.S.O. SYMBOL



DESCRIPTION

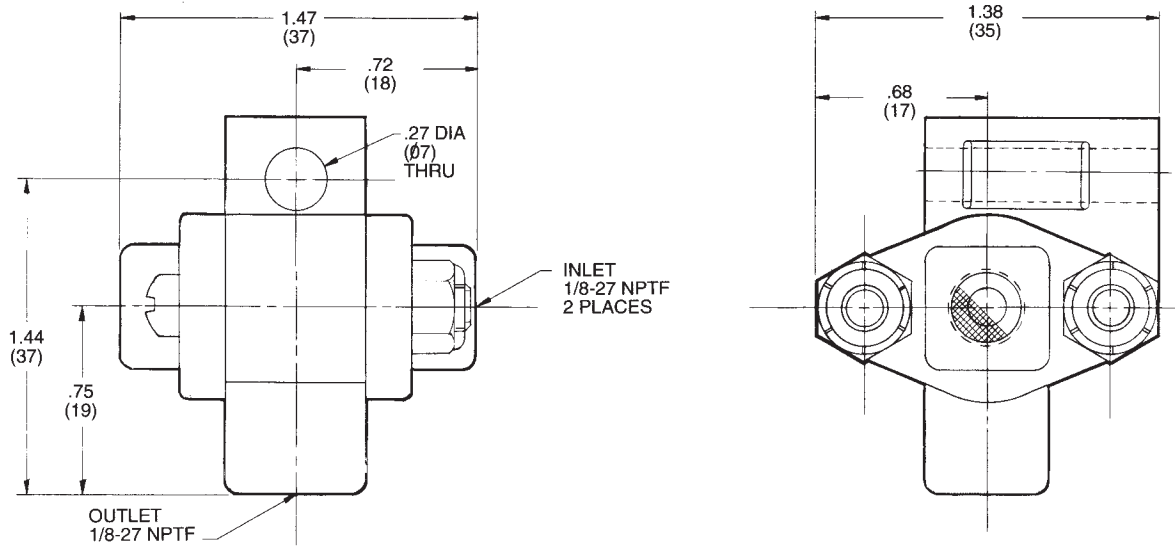
The WM412A is a bracket-mounted shuttle valve with a 34 SCFM flow capacity. It functions as a double check valve, allowing two pressure sources to independently supply a single outlet. The WM412A is equipped with an elastomer shuttle which moves freely back and forth in an internal chamber connecting the valve's two inlet ports. As long as there is a pressure differential between the two inlets, the shuttle seals off the one with the lesser supply pressure. This allows air flow and backflow between the inlet with the greater supply pressure and the outlet, but prevents air from flowing between the valve's two inlet ports.



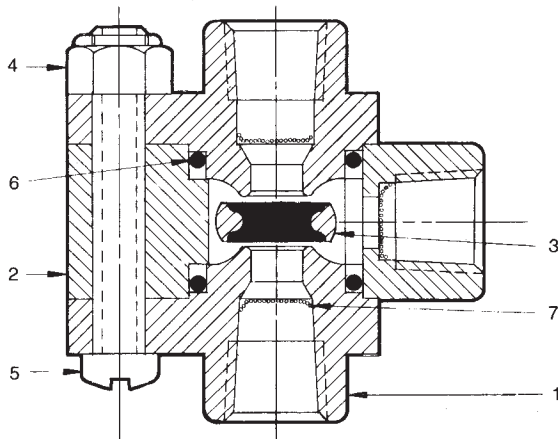
SPECIFICATIONS

PORT SIZE.....	1/8-27 NPTF
MAXIMUM OPERATING PRESSURE.....	150 PSI (1034 kPa)
FLOW RATING.....	34 SCFM @ 100 PSI (1 m ³ /min @ 690 kPa)
OPERATING TEMPERATURE	-20°F to 200°F (-29°C to 93°C)
MOUNTING	Bracket
MOUNTING ATTITUDE.....	Optional
MATERIALS: Body Castings.....	Die Cast Zinc Alloy
Shuttle	Buna N
O-Rings	Buna N
WEIGHT.....	4 oz. (1,0 kg)

DIMENSIONAL DATA



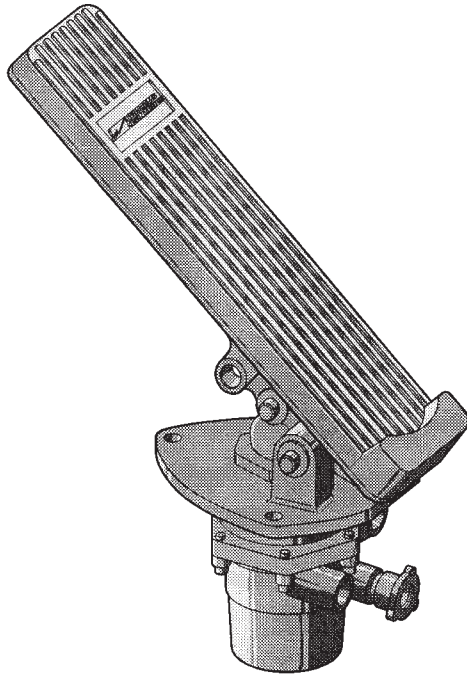
SECTIONAL VIEW



ITEM	DESCRIPTION	PART NUMBER	QTY.
1	End Cap	102923	2
2	Bracket Body	102924	1
3	Poppet	102925	1
4	Nut	114564	2
5	Screw	114707	2
6	O-Ring	116345	2
7	Screen	116455	3

ORDERING INFORMATION

TO ORDER, SPECIFY **WM412A**
PART NUMBER 112841

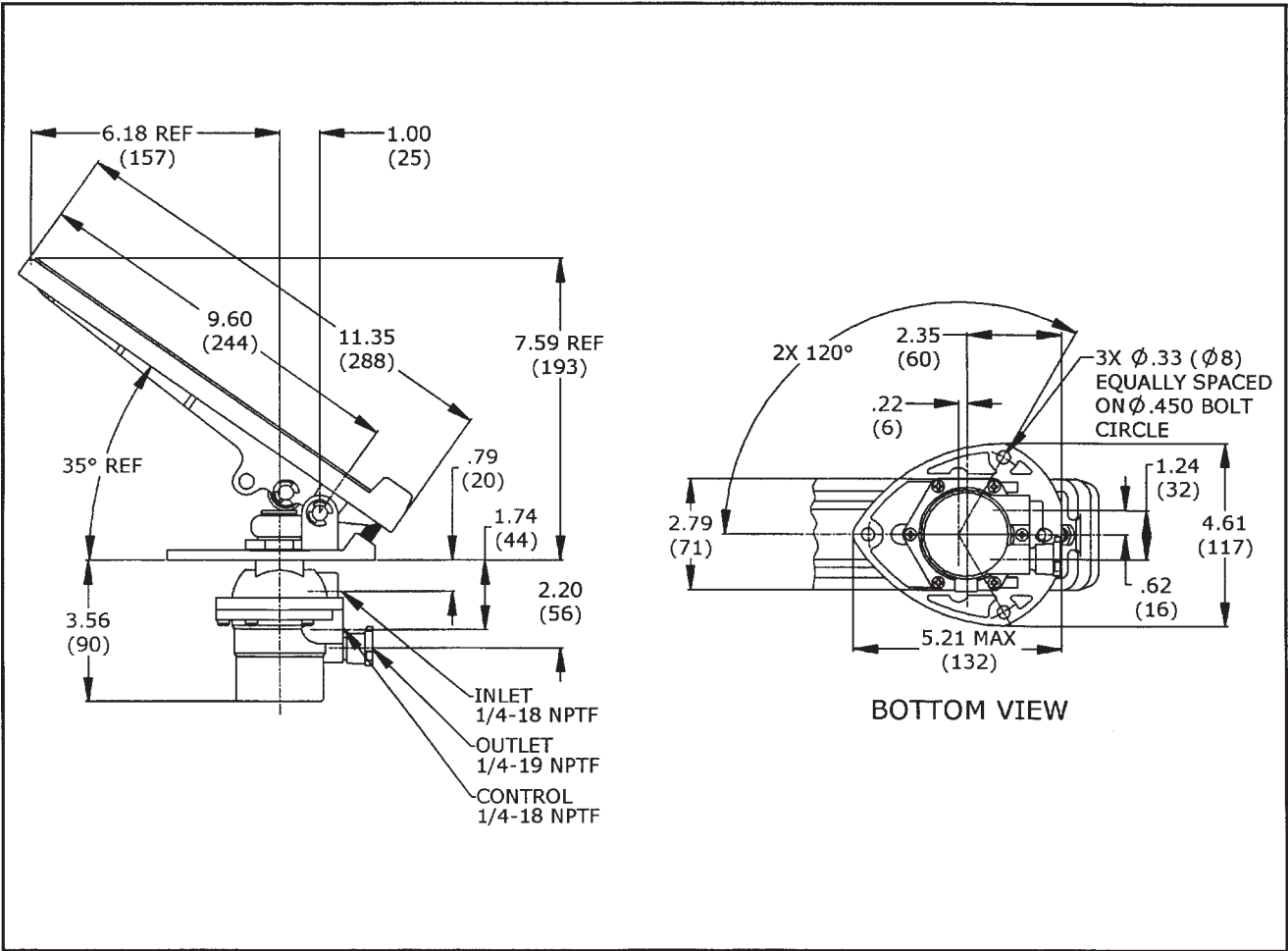


**WM453B & C SERIES
PNEUMATIC
THROTTLE PEDAL**

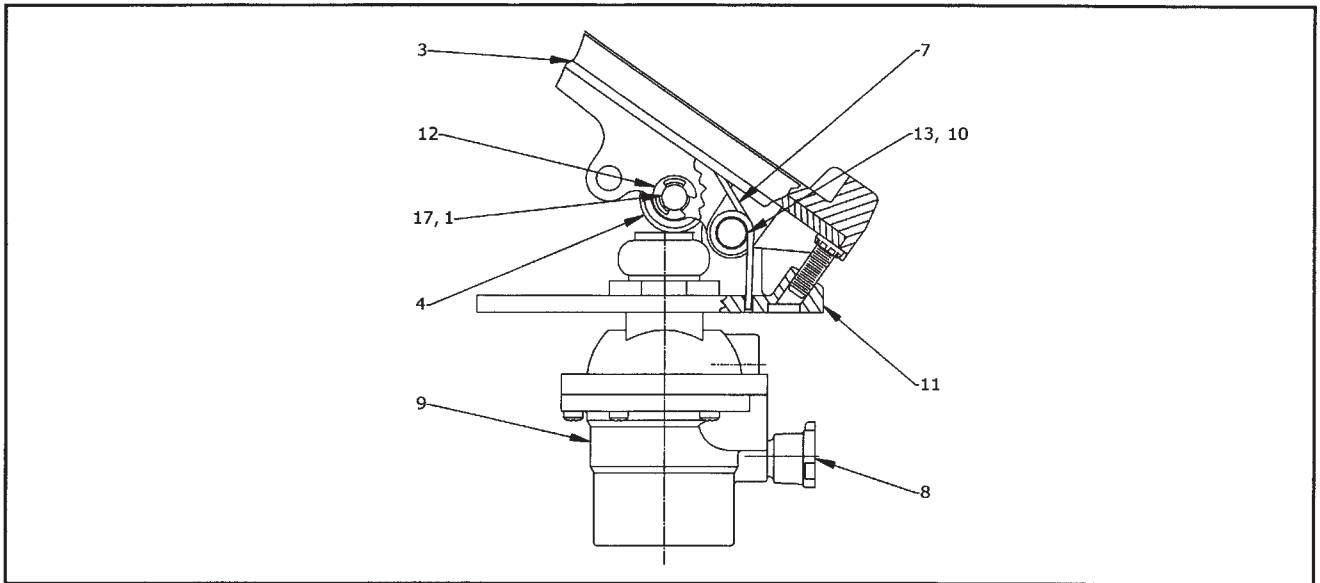
FEATURES AND SPECS

- Weight: 4 lb, 2 oz (1,9 kg)
- Port size: 1/4-18 NPTF
- For off-highway applications only
- Maximum supply pressure: 150 PSI (1034 kPa)
- Operating temperature: -40°F to 200°F (-40°C to 93°C)

DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM453B	WM453C
1	102371	Treadle Pin	1	1
3	118775	Treadle Assembly	1	1
4	103113	Roller	1	1
7	103704	Spring	1	1
8	111411	WM111A Breather	1	1
9	111303	Control Valve		1
9	111304	Control Valve	1	
10	102374	Treadle Pin	1	1
11	116721	Mounting Plate	1	1
12	106857	Retaining Ring	4	4
13	110370	Bushing	2	2
17	118388	Bushing	2	2

Serviceable items are identified above.

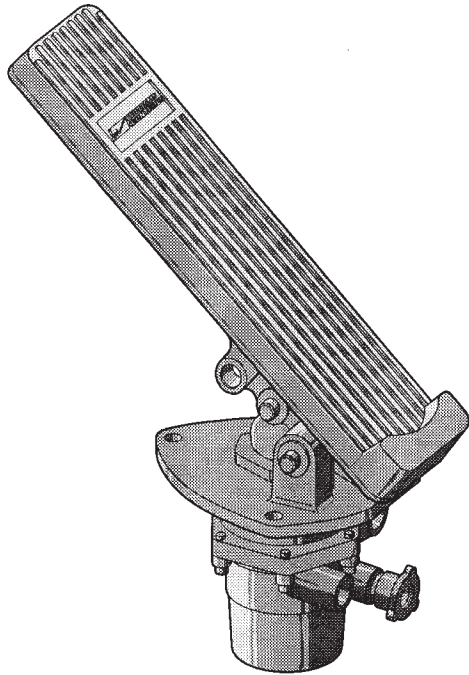
SERVICE KIT INFORMATION

Kit	Service Kit Number	Item Numbers
Repair kit	117103	Barrier plate assembly plus 3, 8, 10, 27, 28
Control Valve (WM90DT for WM453B)	111304	9
Control Valve (WM90DM for WM453C)	111303	9

TO ORDER

To order a WM453B or C model, select part number from the chart below.

Model	Part Number	Regulated Output Range	Maximum Output
WM453B	113073	0-85/95 PSI (0-586/655 kPa)	95 PSI (655 kPa)
WM453C	117903	0-120-140 PSI (0-827-966 kPa)	140 PSI (966 kPa)

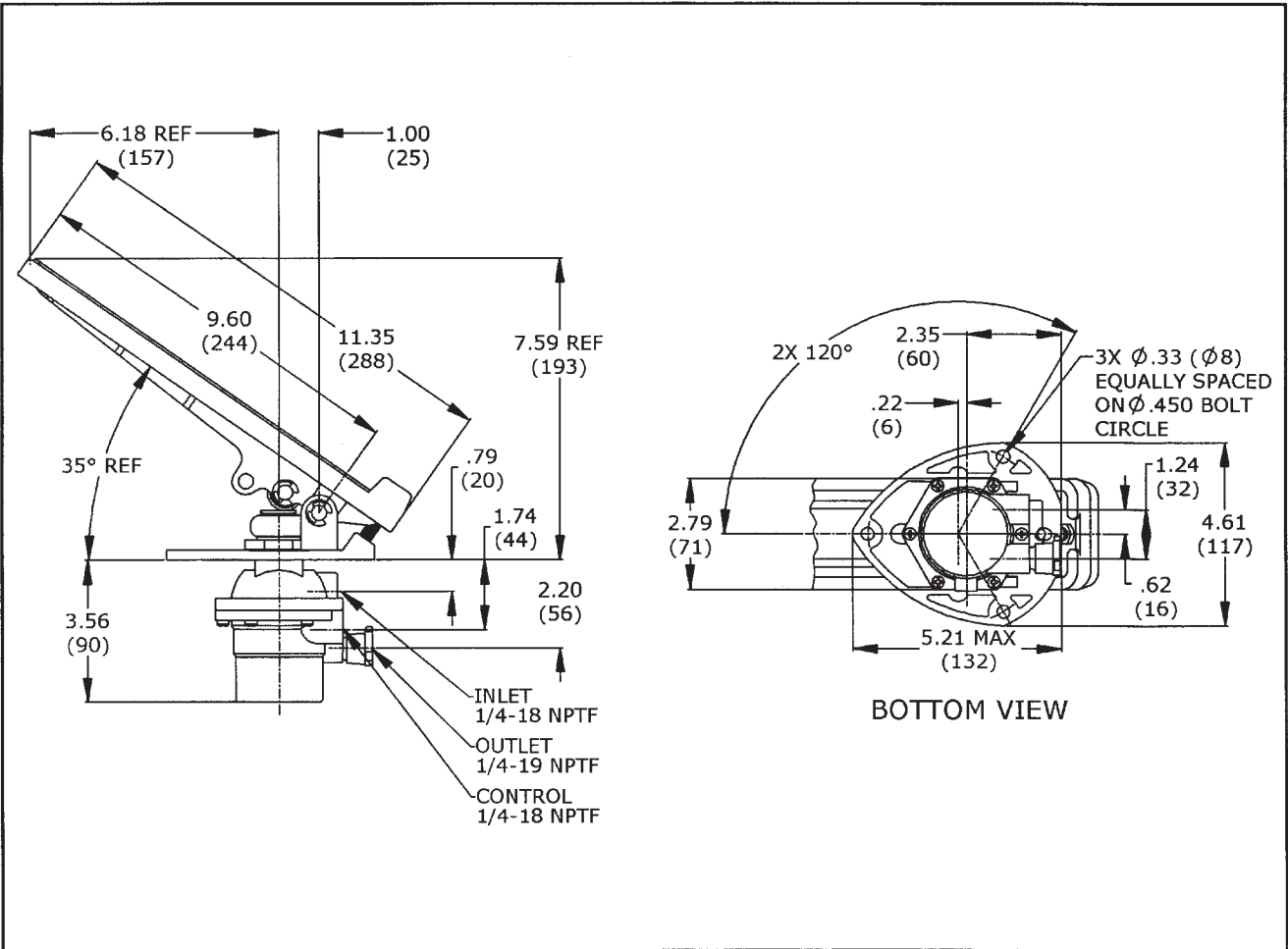


**WM453M & N SERIES
PNEUMATIC
THROTTLE PEDAL**

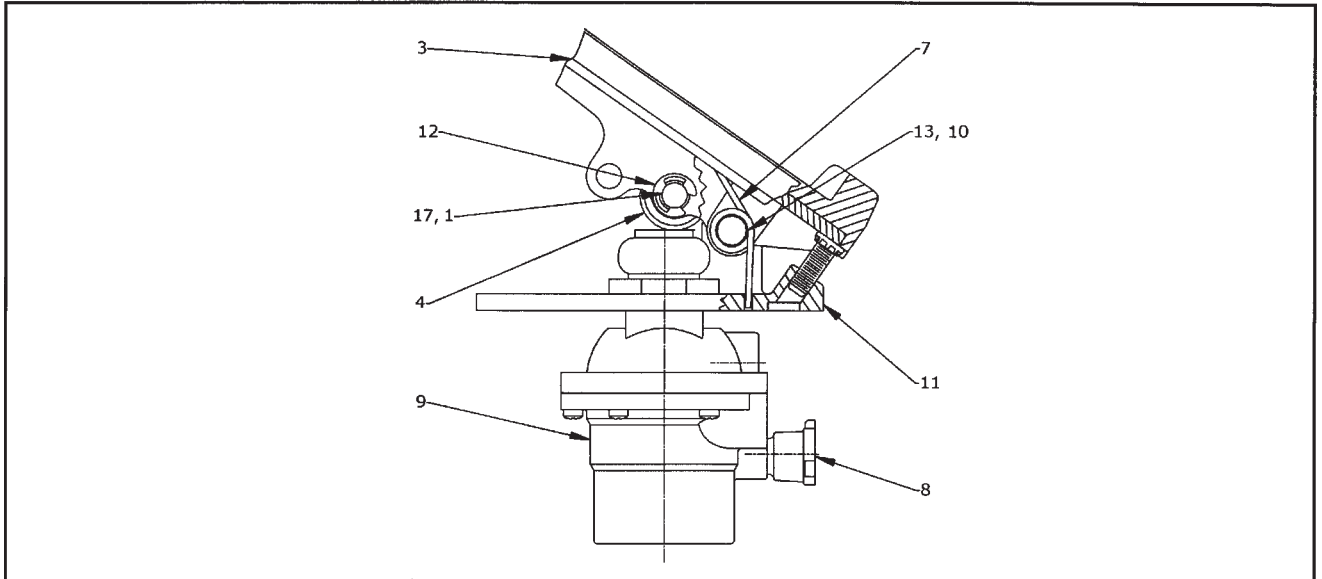
FEATURES AND SPECS

- FMVSS-124 approved
- Weight: 4 lb, 2 oz (1,9 kg)
- Port size: 1/4-18 NPTF
- Maximum supply pressure: 150 PSI (1034 kPa)
- Operating temperature: -40°F to 200°F (-40°C to 93°C)

DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM453M	WM453M2	WM453M3	WM453N
1	102371	Treadle Pin	1	1	1	1
3	118775	Treadle Assembly	1	1	1	1
4	103113	Roller	1	1	1	1
7	103704	Spring	1	1	1	1
8	116714	Breather	1	1	1	1
9	116697	Control Valve	1	1	1	1
10	102374	Treadle Pin	1	1	1	1
11	116721	Mounting Plate	1	1	1	1
12	106857	Retaining Ring	4	4	4	4
13	110370	Bushing	2	2	2	2
17	118388	Bushing	2	2	2	2

Serviceable items are identified above.

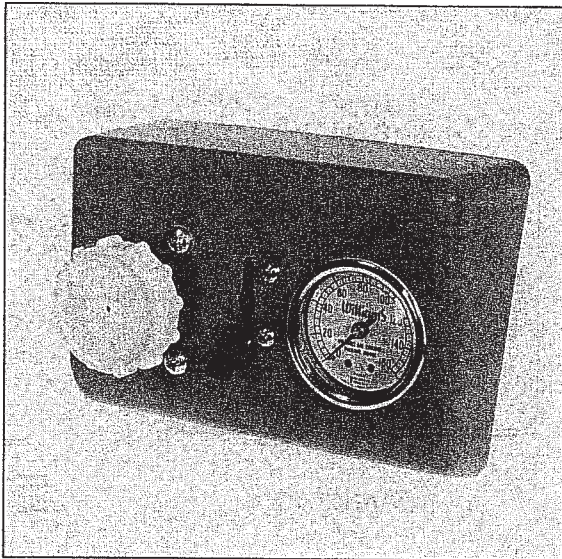
SERVICE KIT INFORMATION

Kit	Service Kit Number	Item Numbers
Repair kit	117582	1, 4, 7, 10, 12, 13, 17
Control Valve (WM90DX)	116697	9

TO ORDER

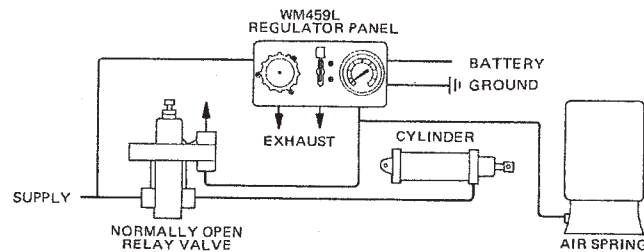
To order a WM453M/N model, select part number from the chart below.

Model	Part Number	Regulated Output Range	Maximum Output	Treadle Length	Port Orientation
WM453M	116731	0-60/70 PSI (0-414/483 kPa)	70 PSI (483 kPa)	11.35 in (288 mm)	Toward Heel
WM453M2	117903	0-60/70 PSI (0-414/483 kPa)	70 PSI (483 kPa)	10.0 in (254 mm)	Toward Heel
WM453M3	118117	0-60/70 PSI (0-414/483 kPa)	70 PSI (483 kPa)	11.35 in (288 mm)	Toward Toe
WM453N	117270	0-85/95 PSI (0-586/655 kPa)	95 PSI (655 kPa)	11.35 in (288 mm)	Toward Heel



DESCRIPTION

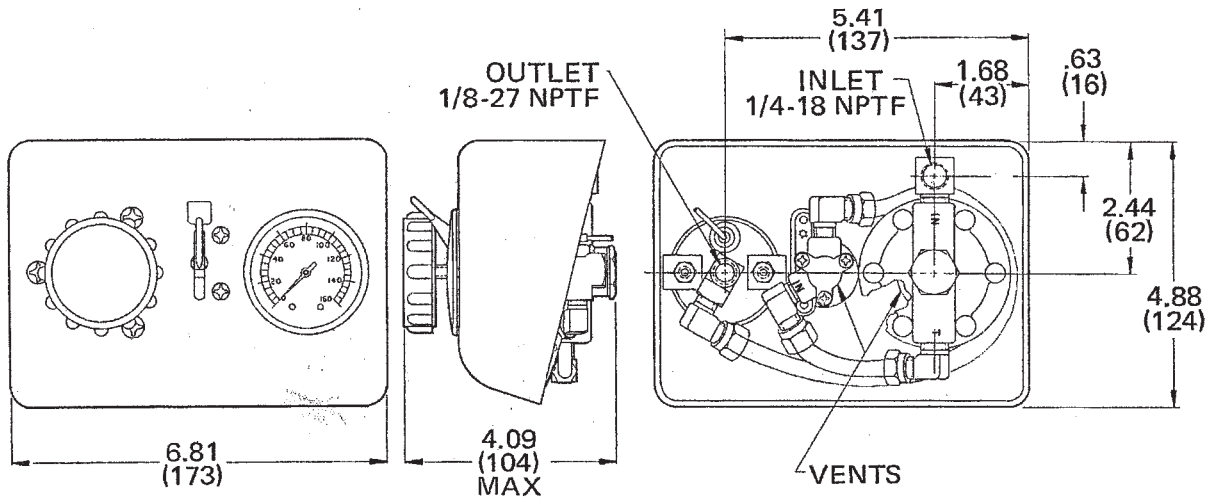
The WM459L regulator panel is a complete preplumbed unit designed for easy installation in industrial and vehicular applications. Each panel has an illuminated gage, a WM219C3 toggle valve and a self-relieving, knob actuated WM279 pressure regulator. The pressure delivery is regulated with two manual controls, a knob and a toggle switch. The toggle switch opens the WM279 regulator and allows delivery. The gage registers the pressure delivered and the output level may be adjusted with the knob. The toggle valve exhausts outlet pressure when the switch is in the off position.



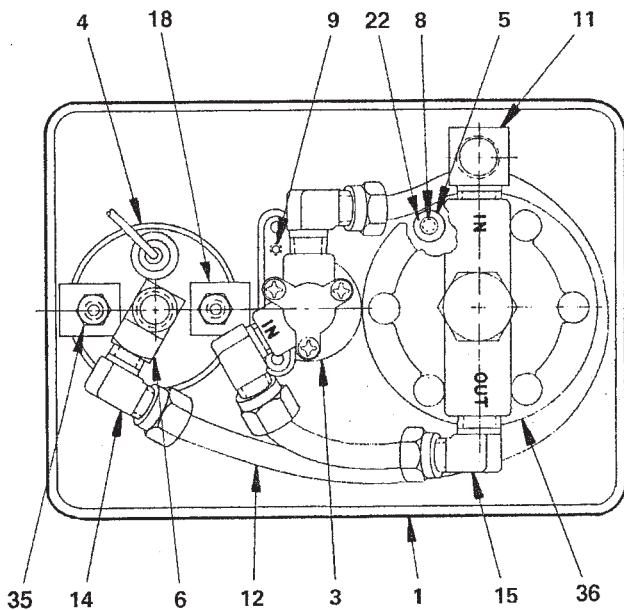
SPECIFICATIONS

Port sizes: (excluding preplumbed ports)	
Inlet.....	1/4-18 NPTF
Outlet.....	1/8-27 NPTF
Maximum supply pressure.....	150 PSI (1034 kPa)
Operating temperature.....	-20°F to 200°F (-29°C to 93°C)
Flow rating.....	15 SCFM @ 100 PSI (0,4 m ³ /min @ 690 kPa)
Gage scale.....	160 PSI
Lamp voltage.....	12 VDC
Mounting.....	Panel secured to console or bracket
Mounting attitude.....	Optional
Materials: Valve bodies.....	Iridited die cast zinc alloy
Diaphragm.....	Fabric reinforced Buna N
Panel.....	Gray ABS plastic
Knob.....	White ABS plastic
Hose.....	Extruded nylon
Weight.....	2 lbs, 6 oz (1,1 kg)

DIMENSIONAL DATA



CROSS SECTION & PARTS INFORMATION



ITEM	DESCRIPTION	WM459L	QTY
1	Panel	104738	1
3	WM219C3 Toggle Valve	111816	1
4	Gage Assembly	119400	1
5	Spacer	101202	3
6	Pipe Tee	115190	1
8	Screw	1118666	3
9	Screw	114757	2
11	Pipe Ell	115223	1
12	Hose	115555	1
14	Elbow	115941	1
15	Elbow	116025	1
18	Mounting Bracket	131709	1
22	Washer	115016	3
35	Nut	131799	2
36	WM279R Regulator	111949	1

Service this unit with repair kit number 114399. Repair kit includes parts to service the WM279 series regulator and WM219C3 toggle valve. To replace only the WM219C3 toggle valve, order part number 111816. Highlighted items may be purchased separately.

To order, specify **WM459L**, part number 113129.

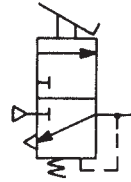
PRODUCT DESCRIPTION

DESCRIPTION Commonly used in pneumatic braking systems, the WM472 series treadle valves are three-way, compensating pressure regulators. Each unit consists of a valve subassembly that responds to movement of the pedal. The WM472 models are designed with various treadle-to-mounting surface angles. The WM472E model is a valve subassembly without the mounting bracket or pedal.

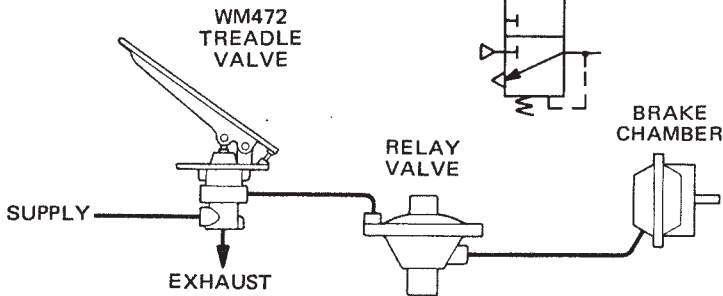
OPERATION As the operator depresses the pedal, the exhaust port closes and the supply port opens to allow delivery. The valve subassembly modulates the output in relation to the position of the pedal. When the pedal is released, the outlet pressure is discharged through an exhaust port located in the valve bottom.

APPLICATION The WM472 series valves are used in industrial and vehicular applications where a three-way, compensating treadle valve is required. These treadle valves are primarily installed in relay-type brake systems. Mounted through the floor of the operator's compartment, the valve subassembly can be rotated on 90° increments for plumbing convenience.

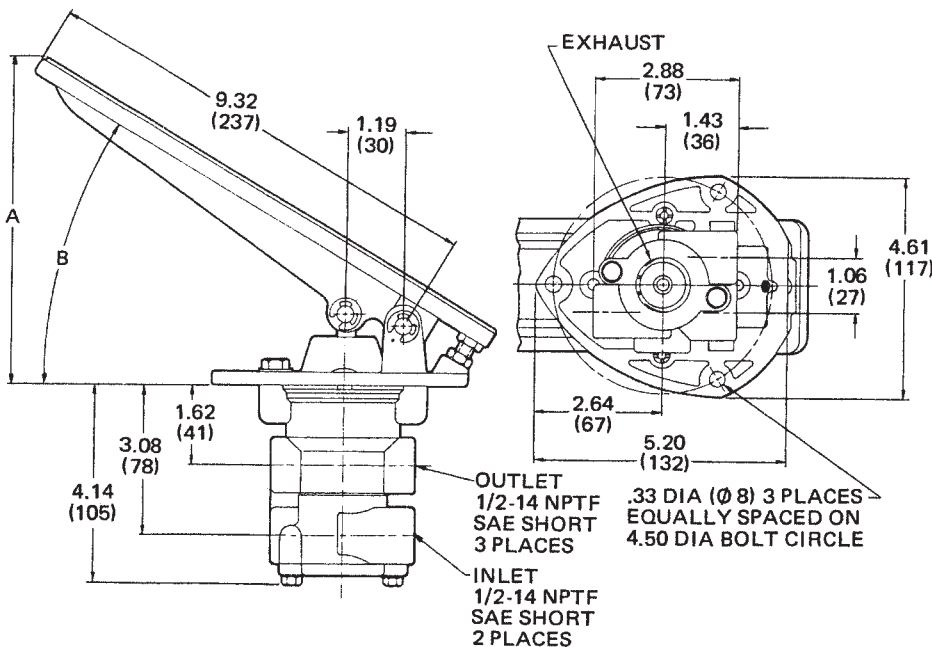
I.S.O. SYMBOL



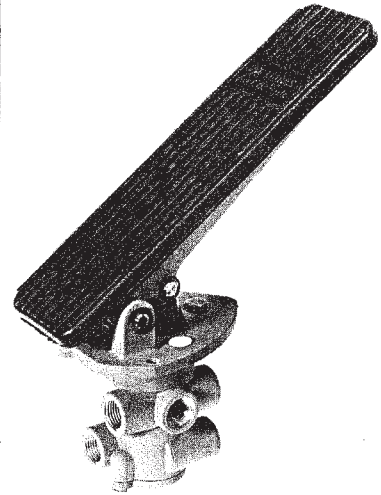
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

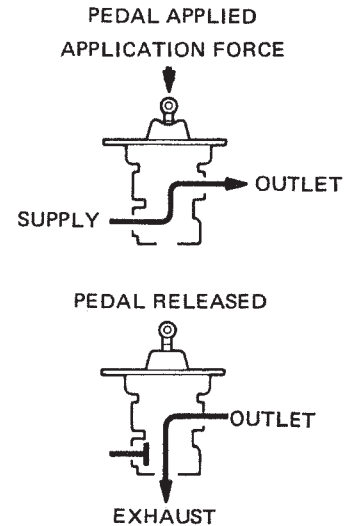


**WM472
SERIES**



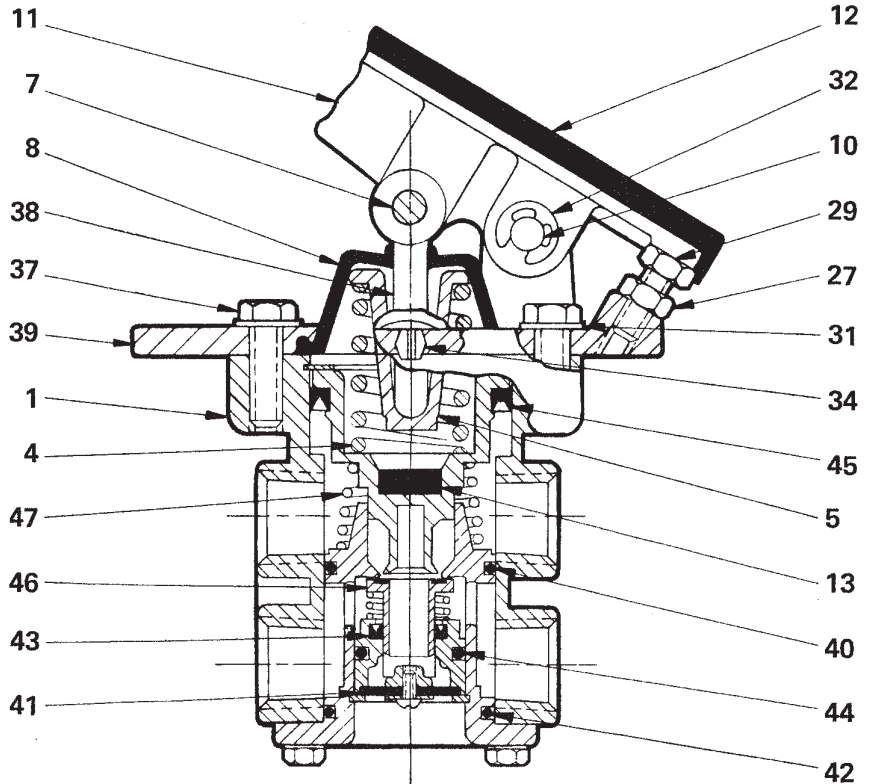
**TREADLE
VALVE**

FUNCTIONAL DIAGRAM



PARTS IDENTIFICATION				
ITEM	DESCRIPTION	QTY.		
		A	D	E
1	VALVE SUBASSY.	1	1	1
4	BALANCE SPRING	1	1	1
5	SPRING CUP	1	1	1
7	PIN	1	1	
* 8	DUST BOOT	1	1	1
10	TREADLE PIN	1	1	
11	TREADLE	1	1	
12	TREADLE COVER	1	1	
* 13	SPRING CUP STOP	1	1	1
27	NUT	1		
29	SCREW	1	1	
31	LOCKWASHER	2	2	
32	RETAINING RING	4	4	
34	HOLE PLUG	2	2	
37	SCREW	2	2	2
38	PUSH ROD	1	1	1
39	MOUNTING PLATE	1	1	
* 40	O-RING	1	1	1
* 41	CHECK DISC	1	1	1
* 42	O-RING	1	1	1
* 43	U-CUP	1	1	1
* 44	O-RING	1	1	1
* 45	U-CUP	1	1	1
* 46	SEAT TUBE	1	1	1
47	SPRING	1	1	1

Service this unit with repair kit number 114417. Repair kit includes parts to service the valve subassembly. To replace only the valve subassembly, order part number 103541. To replace only the cartridge in the valve subassembly, order number 101979. To replace the treadle cover (Item 12), order part number 102376.
*Asterisk designates parts included in repair kit 114417.

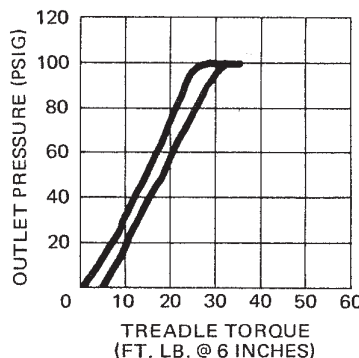


SPECIFICATIONS

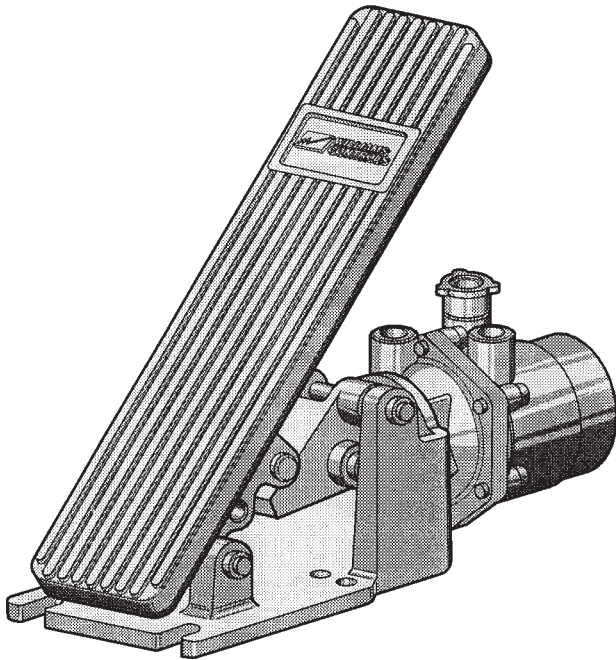
PORT SIZE 1/2-14 NPTF
 MAXIMUM OPERATING PRESSURE 150 PSI (1034,2 kPa)
 OPERATING TEMPERATURE * . . . -20°F to 200°F (-28,9°C to 93,3°C)
 FLOW RATING 160 SCFM @ 100 PSI (4,5 m³/min @ 690 kPa)
 COMPENSATING RANGE† 0-92/102 PSI (0-634,3/703,3 kPa)
 VALVE POSITION IN BRACKET Rotatability on 90° Increments
 MOUNTING Integral Bracket Secured to Floor
 MOUNTING ATTITUDE Optional
 MATERIALS: Body Castings Die Cast Aluminum Alloy
 Treadle Die Cast Aluminum Alloy
 Treadle Cover Fiber-Reinforced Rubber
 Dust Boot & Spring Stop Cup Chloroprene Rubber
 O-Ring & U-Cup Seals Buna N
 NET WEIGHT: WM472A,D. 3 lbs. 11 oz. (1,7 kg)
 WM472E 1 lb. 13 oz. (0,8 kg)

*For continuous operation beyond this range, contact factory.

†If unit is to be frequently operated with output in excess of 60 PSI contact factory.



TO ORDER, SPECIFY			
WM472 _____			
Model Number		Suffix	
PART NUMBER _____			
SELECT SUFFIX & PART NUMBER BELOW			
SUFFIX	PART NUMBER	HEIGHT A	ANGLE B
WM472 A	113218	7.5 in. (191 mm)	35°
WM472 D	113222	8.5 in. (216 mm)	45°
WM472 E	113224	NO TREADLE	

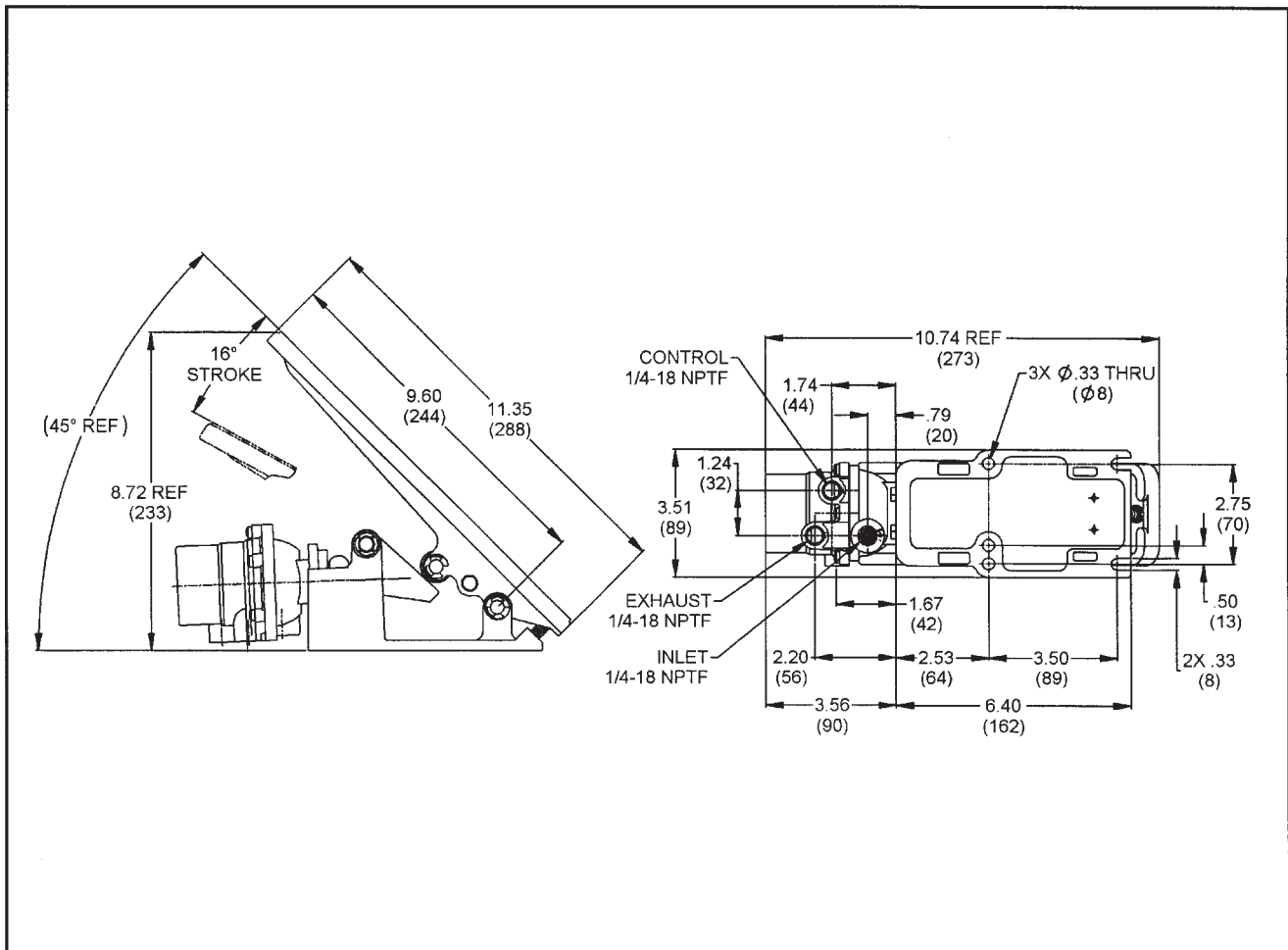


**WM476B & C SERIES
PNEUMATIC
THROTTLE PEDAL**

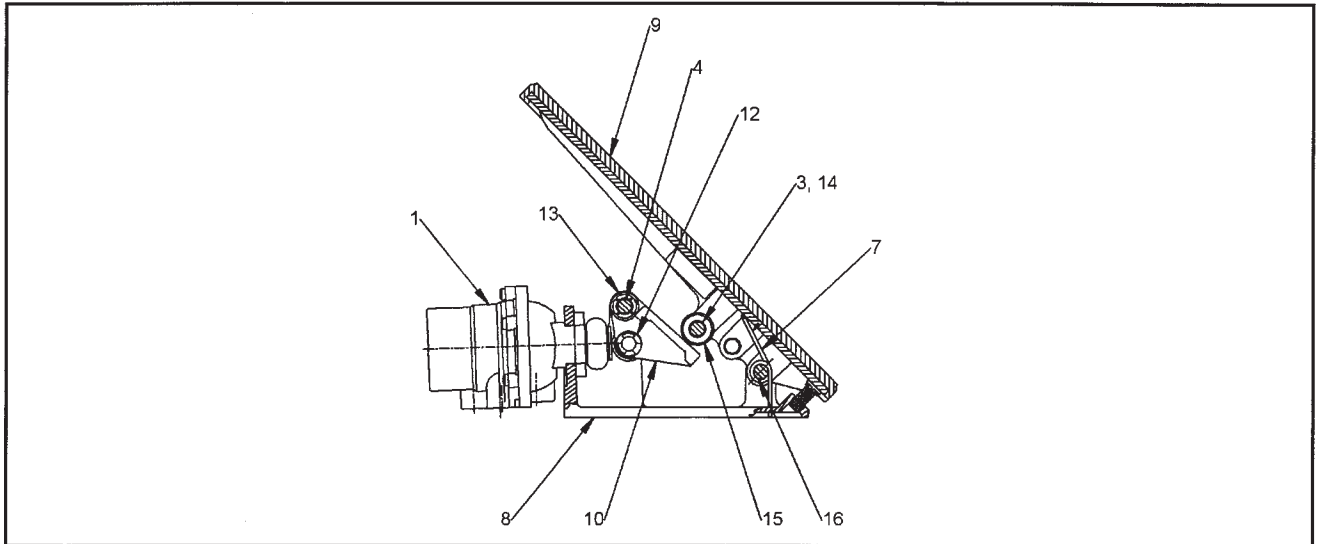
FEATURES AND SPECS

- Weight: 4 lb, 13 oz (2,2 kg)
- Port size: 1/4-18 NPTF
- For off-highway applications only
- Maximum supply pressure: 150 PSI (1034 kPa)
- Operating temperature: -40°F to 200°F (-40°C to 93°C)

DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM476B	WM476C
1	111304	Control Valve	1	
1	111301	Control Valve		1
3	102371	Treadle Pin	2	2
4	117216	Treadle Pin	1	1
7	103704	Spring	1	1
8	119049	Treadle Base	1	1
9	118775	Treadle Assembly	1	1
10	117259	Transfer Lever	1	1
12	106857	Retaining Ring	8	8
13	110370	Bushing	4	4
14	118388	Bushing	4	4
15	103113	Roller	2	2
16	119162	Treadle Pin	1	1

Serviceable items are identified above.

SERVICE KIT INFORMATION

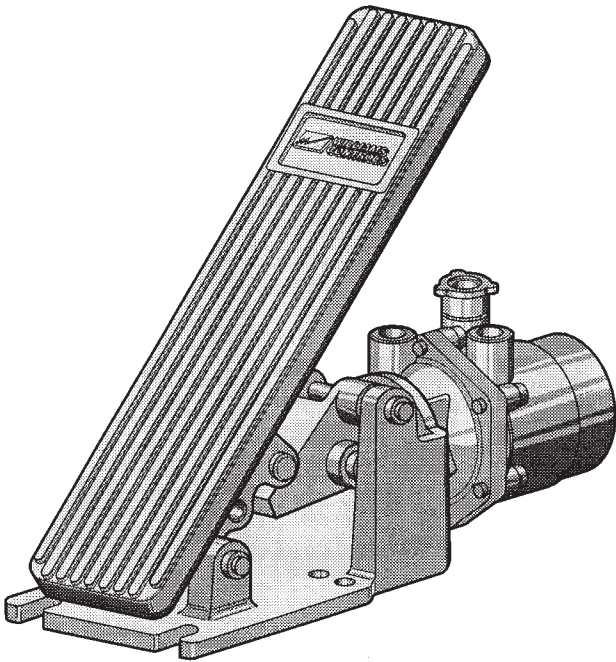
Kit	Service Kit Number	Item Numbers
Repair kit	117103	Barrier plate assembly plus 3, 8, 10, 27, 28
Control Valve (WM90DT for WM476B)	111304	9
Control Valve (WM90DA for WM476C)	111301	9

TO ORDER

To order a WM476A, B or C model, select part number from the chart below.

Model	Part Number	Regulated Output Range	Maximum Output
WM476B	113259	0-85/95 PSI (0-586/655 kPa)	95 PSI (655 kPa)
WM476C	113260	0-110/130 PSI (0-758/896 kPa)	Equal to supply

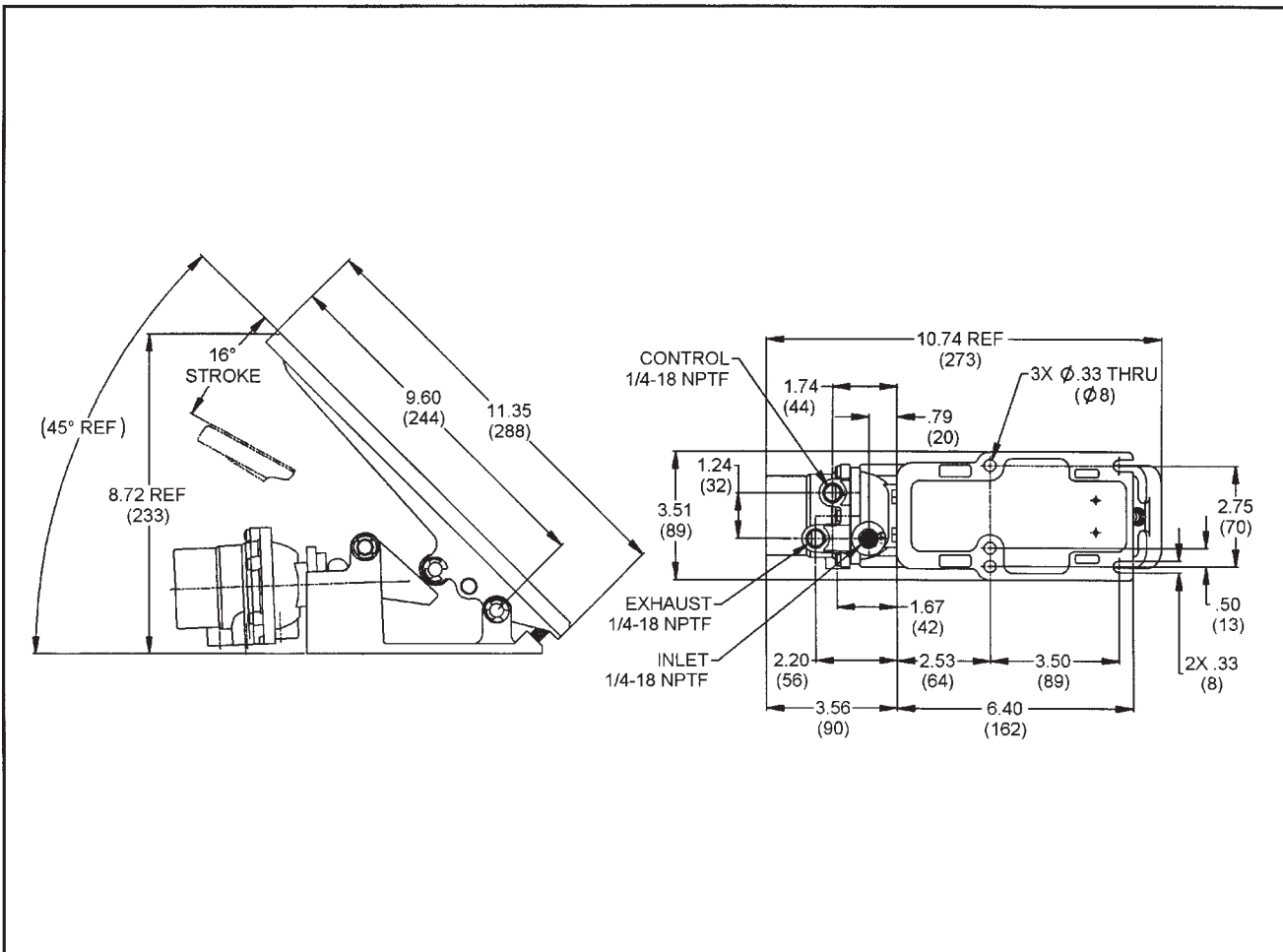
**WM476F SERIES
PNEUMATIC
THROTTLE PEDAL**



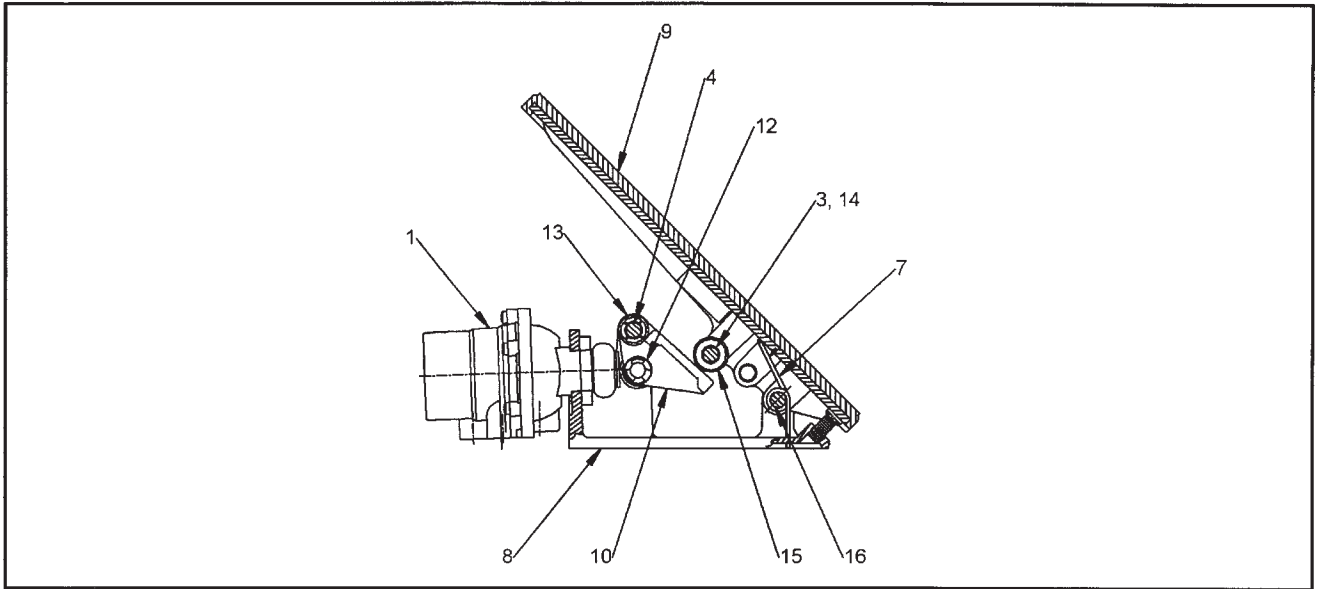
FEATURES AND SPECS

- FMVSS-124 approved
- Weight: 4 lb, 13 oz (2,2 kg)
- Port size: 1/4-18 NPTF
- Maximum supply pressure: 150 PSI (1034 kPa)
- Operating temperature: -40°F to 200°F (-40°C to 93°C)

DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM476F4A	WM476F5A1	WM476F5A2
1	116697	Control Valve	1	1	1
3	102371	Treadle Pin	2	2	2
4	117216	Treadle Pin	1	1	1
7	103704	Spring	1	1	1
8	119049	Treadle Base	1	1	1
9	118774	Treadle Assembly	1	1	1
10	117259	Transfer Lever	1	1	1
12	106857	Retaining Ring	8	8	8
13	110370	Bushing	4	4	4
14	118388	Bushing	4	4	4
15	104636	Roller	2	2	2
16	119162	Treadle Pin	1	1	1

Serviceable items are identified above.

SERVICE KIT INFORMATION

Kit	Service Kit Number	Item Numbers
Repair kit	117538	3, 4, 7, 12, 13, 14, 15, 16
Control valve (WM90DX)	116697	1

TO ORDER

To order a WM476F model, select part number from the chart below.

Model	Part Number	Control Valve	Regulated Output Range	Port Orientation
WM476F4A	117360	WM90DX	0-60/70 PSI	Toward Top
		116697	(0-414/483 kPa)	
WM476F5A1	117209	WM90DX	0-60/70 PSI	Toward Bottom
		116697	(0-414/483 kPa)	
WM476F5A2	130634	WM90DX2	0-85/95 PSI	Toward Side
		117269	(0-586/655 kPa)	

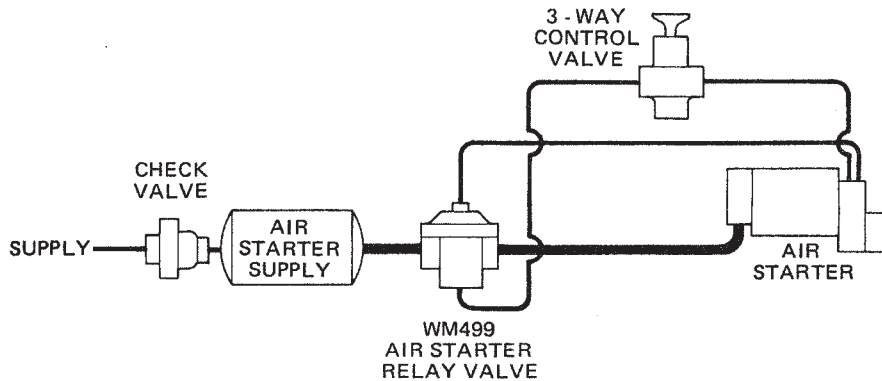
PRODUCT DESCRIPTION

DESCRIPTION The WM499 air starter relay valves are normally closed, non-compensating, two-way relay valves engineered specifically for use with air starters. Suitable for large tubing, the WM499 relay valves are capable of high air flow capacity.

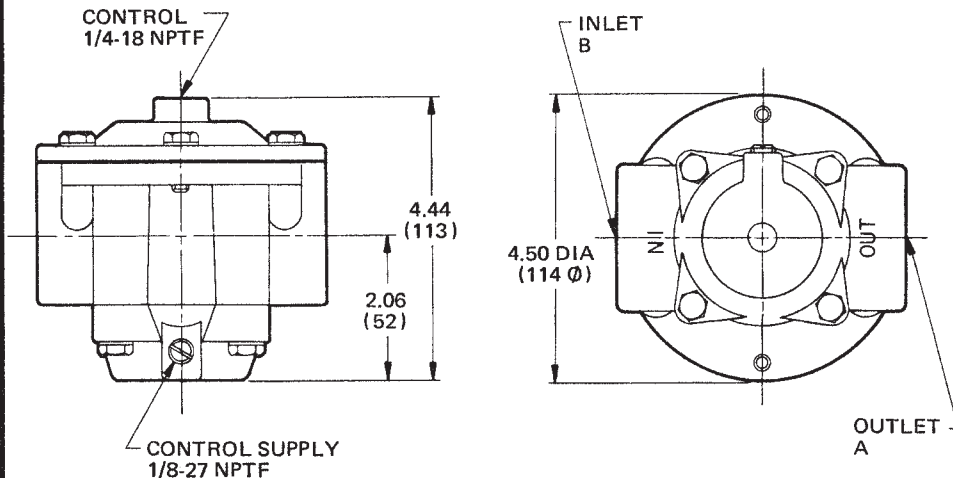
OPERATION To open the valve and allow delivery, the WM499 relay valve is actuated by pressure from a control. With a control pressure of only 30%-35% of the supply pressure, the WM499 valve will open to permit large capacity delivery. A control pressure of approximately 30 PSI (207 kPa), for example, will open the valve against a supply of 100 PSI (690 kPa). When open, the relay valve allows a maximum output pressure equal to the supply pressure. When the control pressure is removed, an internal spring causes the valve to return to its normally closed position.

APPLICATION WM499 relay valves are engineered for use with air starters in industrial and vehicular applications. WM499 air starter relay valves are especially suited for other applications requiring high flow capacity. **MARINE APPLICATIONS:** This device meets the pressure test requirements specified in "Marine Engineering Regulations" (CG-115). Documentation is available upon request.

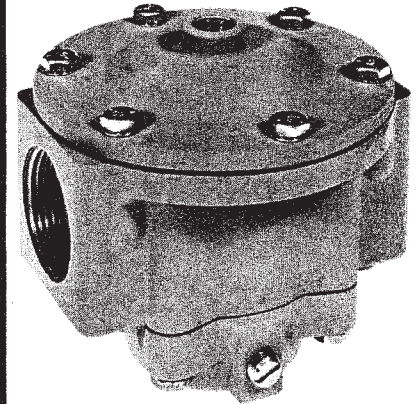
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

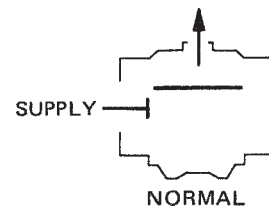
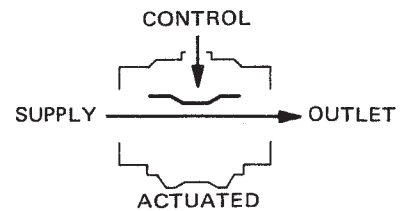


**WM 499
SERIES**

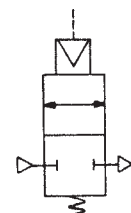


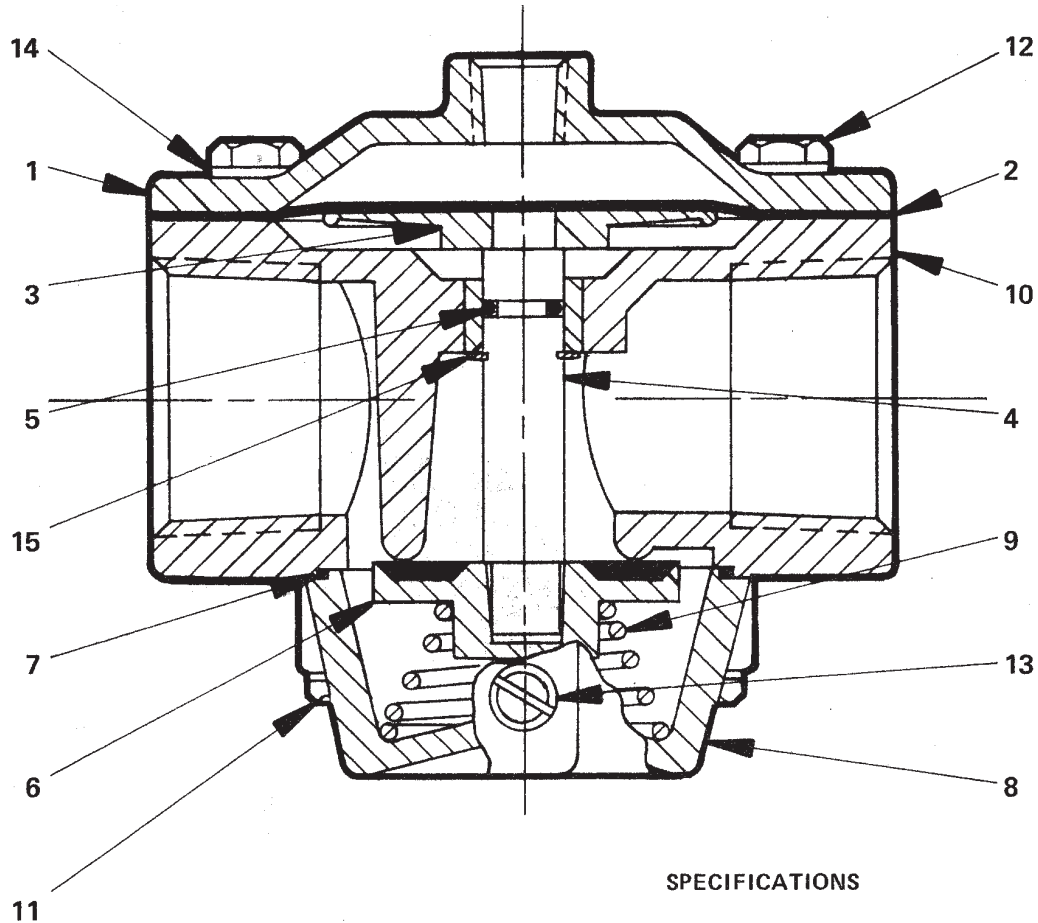
**AIR
STARTER
RELAY**

FUNCTIONAL DIAGRAM



I.S.O. SYMBOL





SPECIFICATIONS

PORT SIZES: Inlet and Outlet: WM499C. 1-1/4" NPTF

Control. 1/4" NPTF

Control Supply 1/8" NPTF

MAXIMUM OPERATING PRESSURE. 150 PSI (1034,2 kPa)

OPERATING TEMPERATURE* -20°F to 200°F (-28,9°C to 93,3°C)

FLOW RATING. . . . 1400 SCFM @ 100 PSI (39,7 m³/min @ 690 kPa)

PRESSURE REQUIRED TO OPEN VALVE 30%-35% of Supply

MOUNTING. By Inlet and/or Outlet Ports

MOUNTING ATTITUDE Control Port Up Recommended

MATERIALS: Body Castings Die Cast Aluminum Alloy

Diaphragm. Fabric-Reinforced Buna N

O-Rings. Buna N

Poppet Molded Buna N with Aluminum Backing

NET WEIGHT. 3 lbs. 5 oz. (1,5 kg)

*For continuous operation beyond this range, contact factory.

PARTS IDENTIFICATION		
ITEM	DESCRIPTION	QTY
1	COVER (102064)	1
* 2	DIAPHRAGM	1
3	DIA. PLATE (102066)	1
4	SHAFT	1
* 5	O-RING	1
* 6	POPPET	1
* 7	O-RING	1
8	COVER	1
9	SPRING	1
10	BODY	1
11	SCREW	4
12	SCREW	6
13	FITTING	1
14	WASHER	10
* 15	RETAINING RING	1

Service this unit with repair kit number 114461.
*Asterisk designates parts included in repair kit.

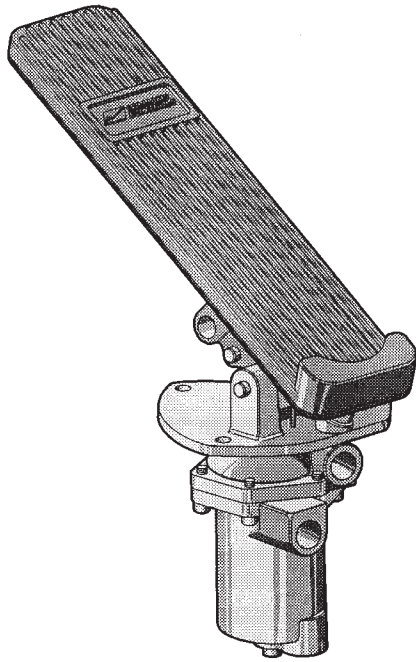
TO ORDER, SPECIFY

WM499 _____
Model Number Suffix

PART NUMBER _____

SELECT SUFFIX & PART NUMBER BELOW

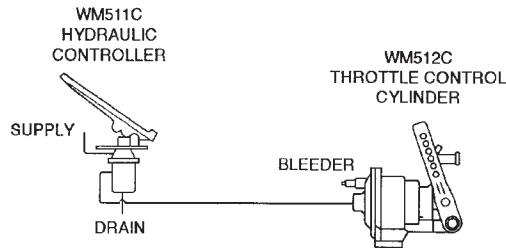
SUFFIX	PART NUMBER	PORT SIZE	
		OUTLET A	INLET B
WM499 C	113470	1½" NPTF	1¼" NPTF



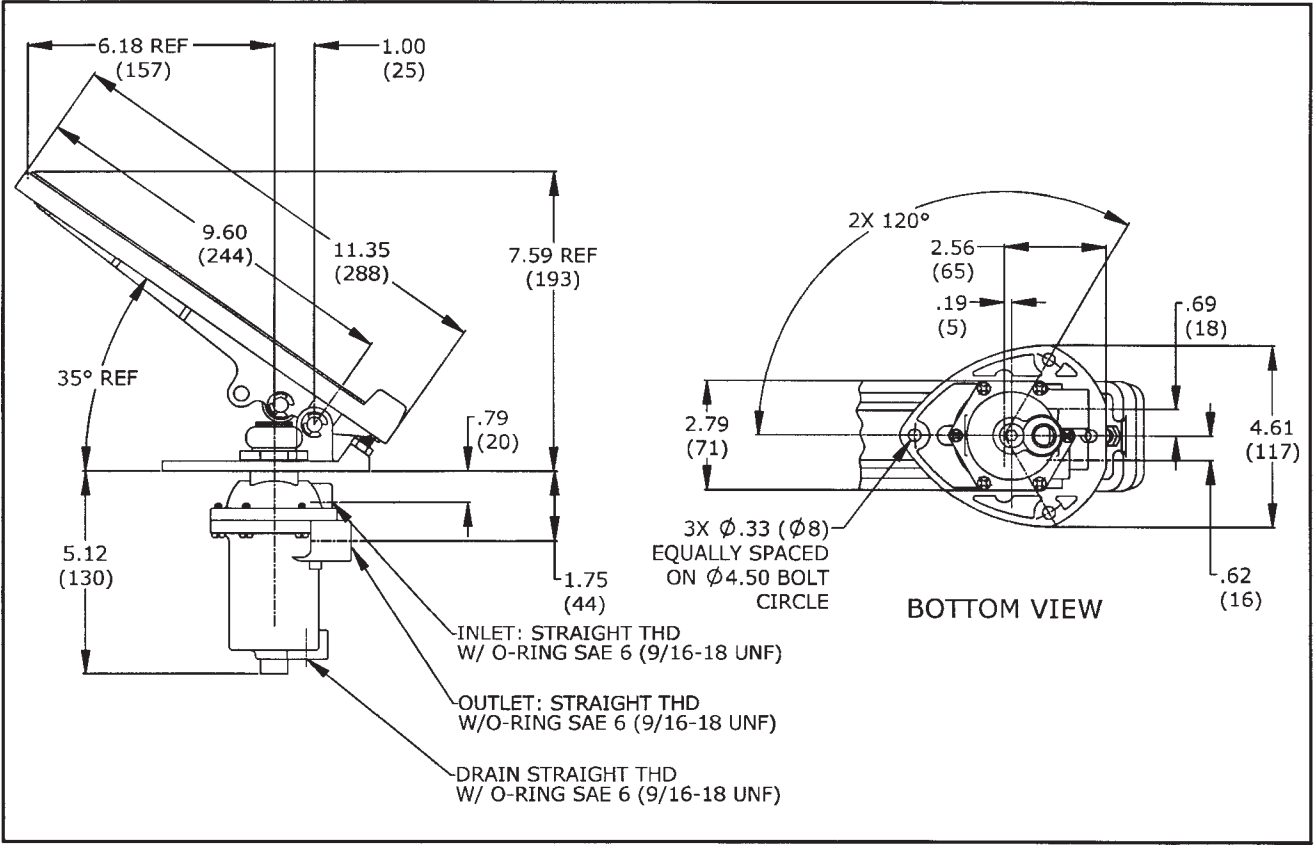
**WM511 SERIES
HYDRAULIC
PROPORTIONAL PEDAL**

FEATURES AND SPECS

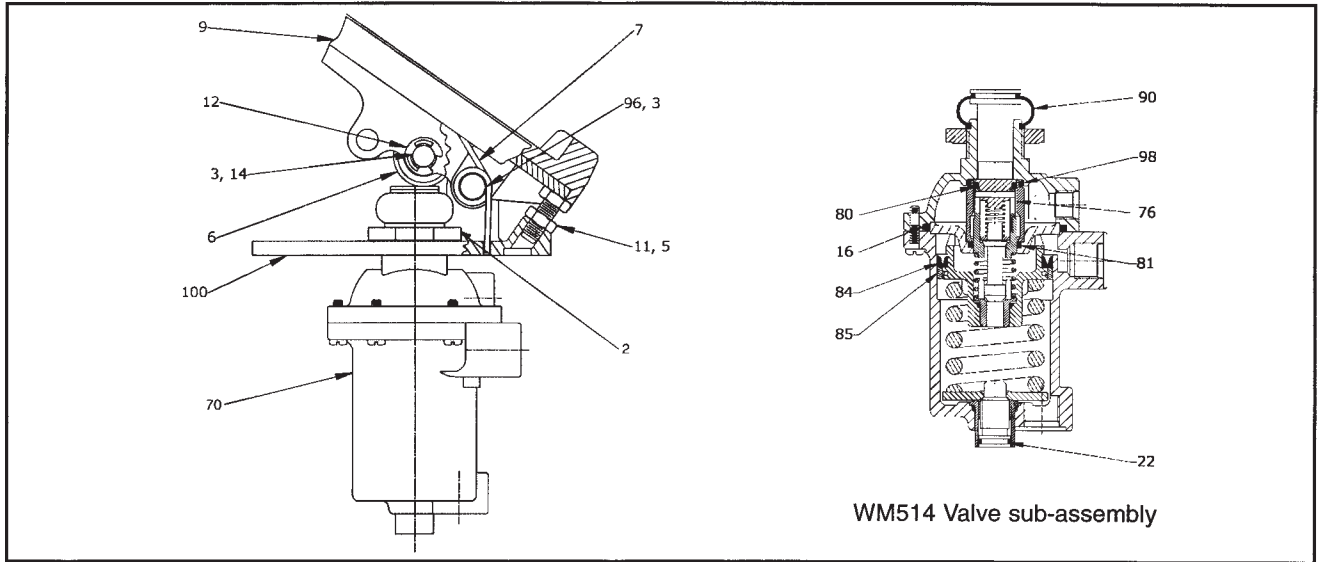
- Port size: SAE 6 (9/16-18 UNF) straight thread with o-ring
- For off-highway applications only
- Weight: 4 lb, 3 oz (1,9 kg)
- Maximum operating pressure: 300 PSI (2068 kPa)
- Operating temperature: -20°F to 200°F (-29°C to 93°C)



DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM511C	WM511H
2	101114	Nut	1	1
3	102371	Treadle Pin	2	2
5	—	Jam Nut	1	1
6	103113	Roller	1	1
7	103704	Spring	1	1
9	118775	Treadle Assembly	1	1
11	—	Screw	1	1
12	106857	Snap Ring	4	4
13	110370	Bushing	2	2
14	118388	Bushing	2	2
16	—	O-Ring	1	1
22	—	O-Ring	1	1
70	119128	WM514C Valve sub-assembly	1	—
70	131635	WM514H Valve sub-assembly	—	1
76	—	O-Ring	1	1
80	—	Backup Ring	1	1
81	—	O-Ring	1	1
84	—	U-Cup	1	1
85	—	Wear Ring	1	1
96	102374	Treadle Pin	1	1
98	—	O-Ring	1	1
99	103039	Boot	1	1
100	116721	Mounting Plate	1	1

Serviceable items are identified above.

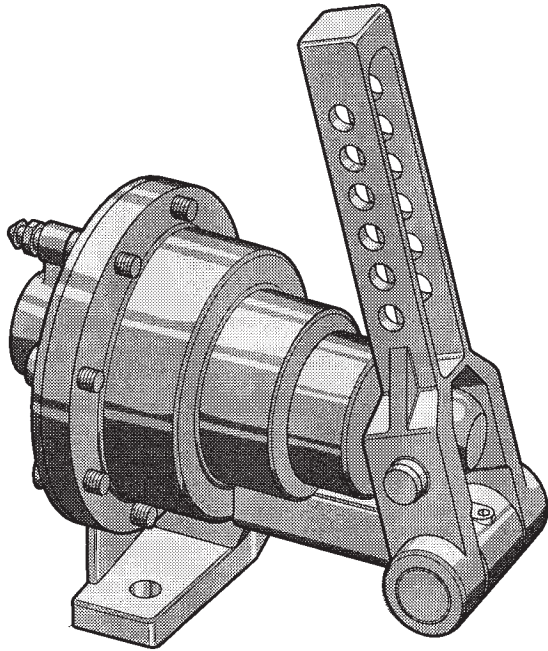
TO ORDER

To order a WM511 model, select part number from the chart below.

Model	Part Number	Output Range
WM511C	119130	30-100 PSI (276-690 kPa)
WM511H	131635	50-250 PSI (345-1725 kPa)

SERVICE KIT INFORMATION

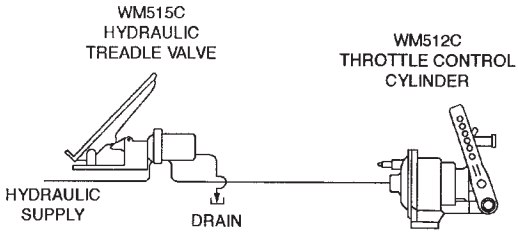
Kit	Service Kit Number	Item Numbers
Repair kit	119305	16, 22, 76, 80, 81, 84, 85, 90, 98
WM514C Valve sub-assembly	119128	Includes all components below mounting plate
WM514H Valve sub-assembly	119131	Includes all components below mounting plate



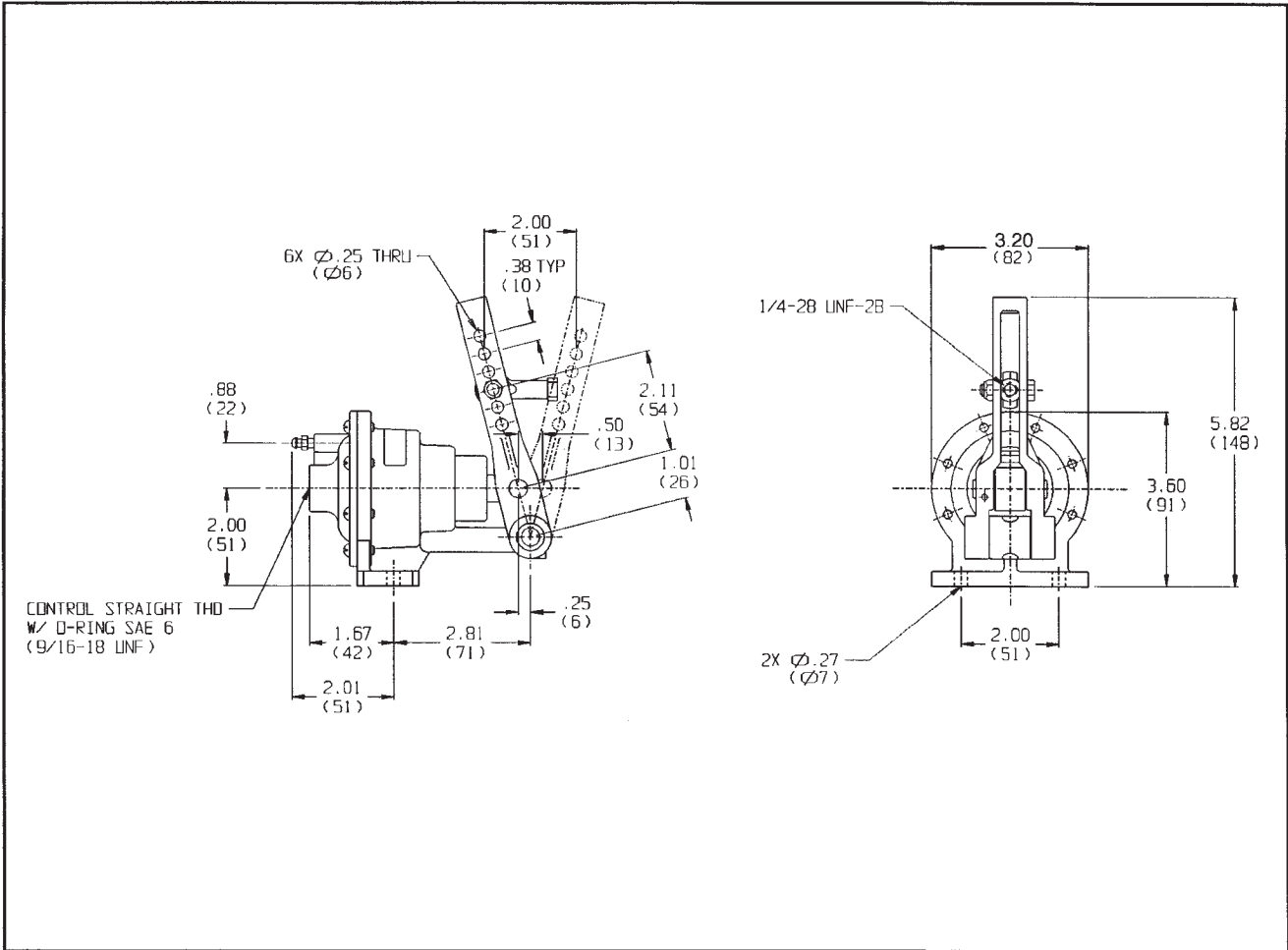
**WM512C
HYDRAULIC
THROTTLE CYLINDER**

FEATURES AND SPECS

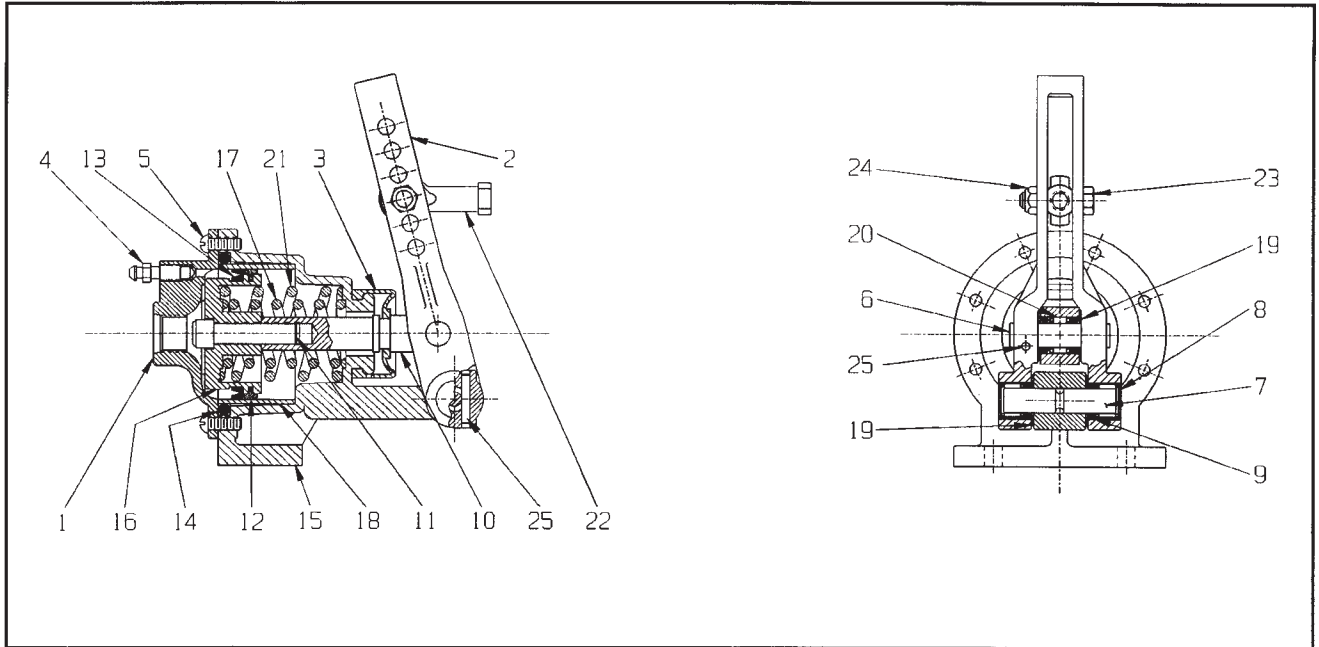
- Port size: SAE 6 (9/16-18 UNF) straight thread with o-ring
- For off-highway applications only
- Weight: 1 lb, 13 oz (0,8 kg)
- Maximum operating pressure: 300 PSI (2068 kPa)
- Operating temperature: -20°F to 200°F (-29°C to 93°C)



DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM512C
2	—	Lever	1
3	103214	Boot	1
6	—	Pin	1
7	—	Pin	1
8	—	Needle Bearing	2
9	—	O-ring	4
10	—	Rod End	1
11	—	Screw	1
12	—	Wear Ring	1
13	—	U-Cup	1
14	—	O-Ring	1
15	—	Body	1
16	—	Piston	1
17	117877	Spring	1
19	—	Washer	4
20	—	Needle Bearing	1
21	119435	Spring	1
22	117855	Rod End	1
23	—	Screw	1
24	—	Nut	1
25	—	Pin	2

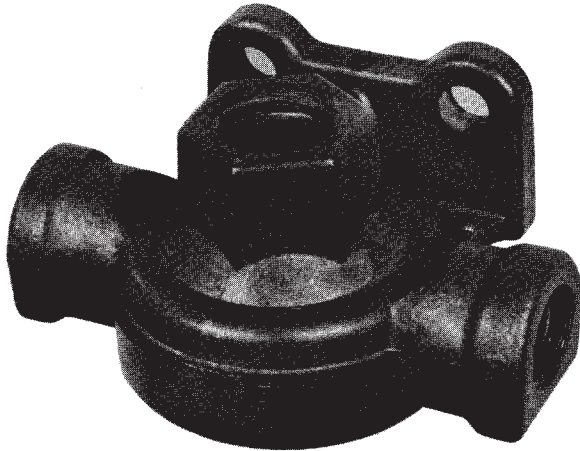
Serviceable items are identified above.

SERVICE KIT INFORMATION

Kit	Service Kit Number	Item Numbers
Repair kit	119280	3, 12, 13, 14
Lever body assembly kit	119153	2, 7, 8, 9, 10, 15, 19, 20, 25

TO ORDER

To order model WM512C, specify part number 119436.

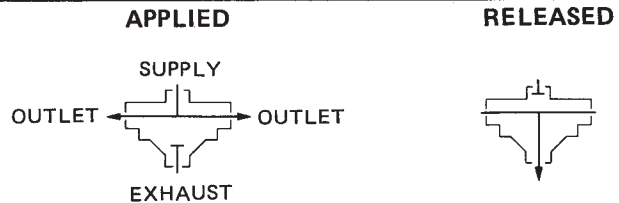


**WM513A
QUICK RELEASE
VALVE**

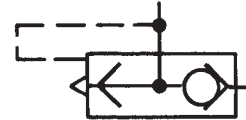
150 PSI
350 SCFM @ 100 PSI
(Outlets to Exhaust)

DESCRIPTION

The WM513A quick release valve is used to reduce the time required to deactuate an air-operated device. It rapidly releases downstream pressure in response to decay in the valve's supply. The WM513A has two outlet ports so it can simultaneously exhaust two brake chambers or air bags. This low cost, high flow quick release valve can be used as a replacement for most competitive units.



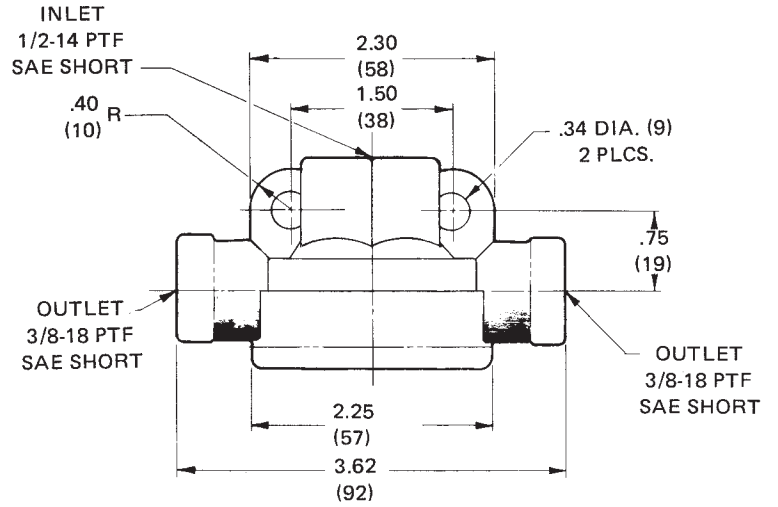
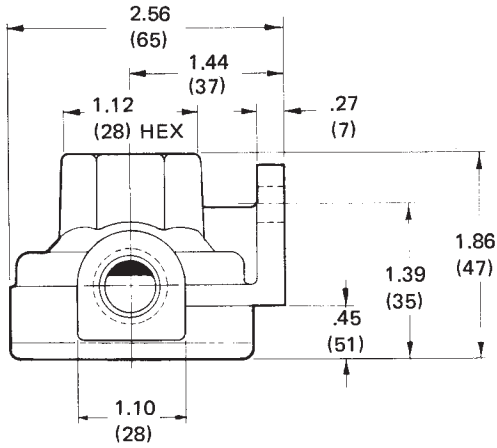
I.S.O. SYMBOL



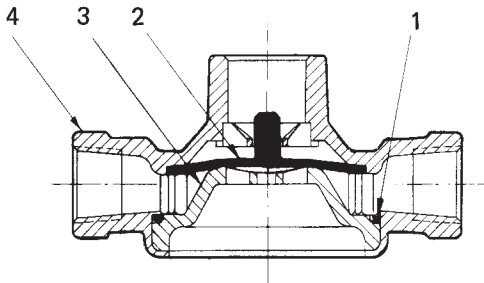
SPECIFICATIONS

PORT SIZE:	Inlet	1/2-14 NPTF SAE Short
	Outlets	3/8-18 NPTF
MAXIMUM OPERATING PRESSURE		150 PSI (1034,2 kPa)
OPERATING TEMPERATURE		-40°F to 200°F (-40°C to 93,3°C)
FLOW RATING: Inlet to Outlets	380 SCFM @ 100 PSI (11,4 m ³ /min @ 690 kPa)	
	Outlets to Exhaust	350 SCFM @ 100 PSI (10,5 m ³ /min @ 690 kPa)
CRACKING PRESSURE		Less than 1 PSI (6,9 kPa)
MOUNTING.		Integral Bracket for 5/16" Fasteners
MOUNTING ATTITUDE		Exhaust Port Down Recommended
MATERIALS:	Body.	Die Cast Zinc Alloy
	Cover	Die Cast Zinc Alloy
	Diaphragm.Buna N
	SealBuna N
WEIGHT		14 oz. (0,39 kg)

DIMENSIONAL DATA



SECTIONAL VIEW

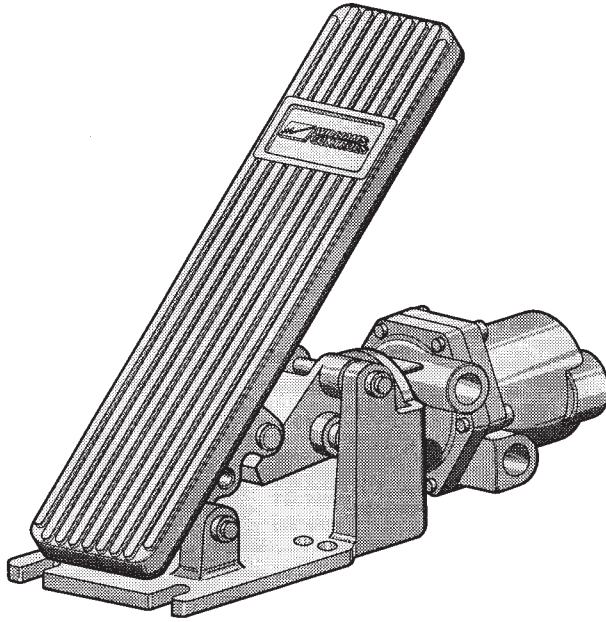


ITEM	DESCRIPTION	PART NUMBER	QTY.
1	Seal	119135	1
2	Diaphragm	119323	1
3	Cover	119140	1
4	Valve Body	119138	1

The WM513A valve is not repairable

ORDERING INFORMATION

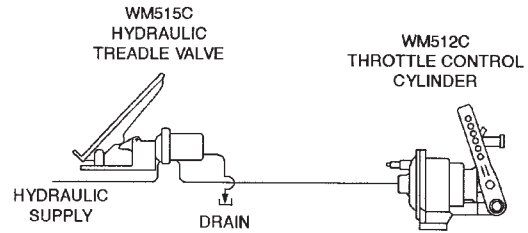
TO ORDER, SPECIFY **WM513A**
PART NUMBER 119136



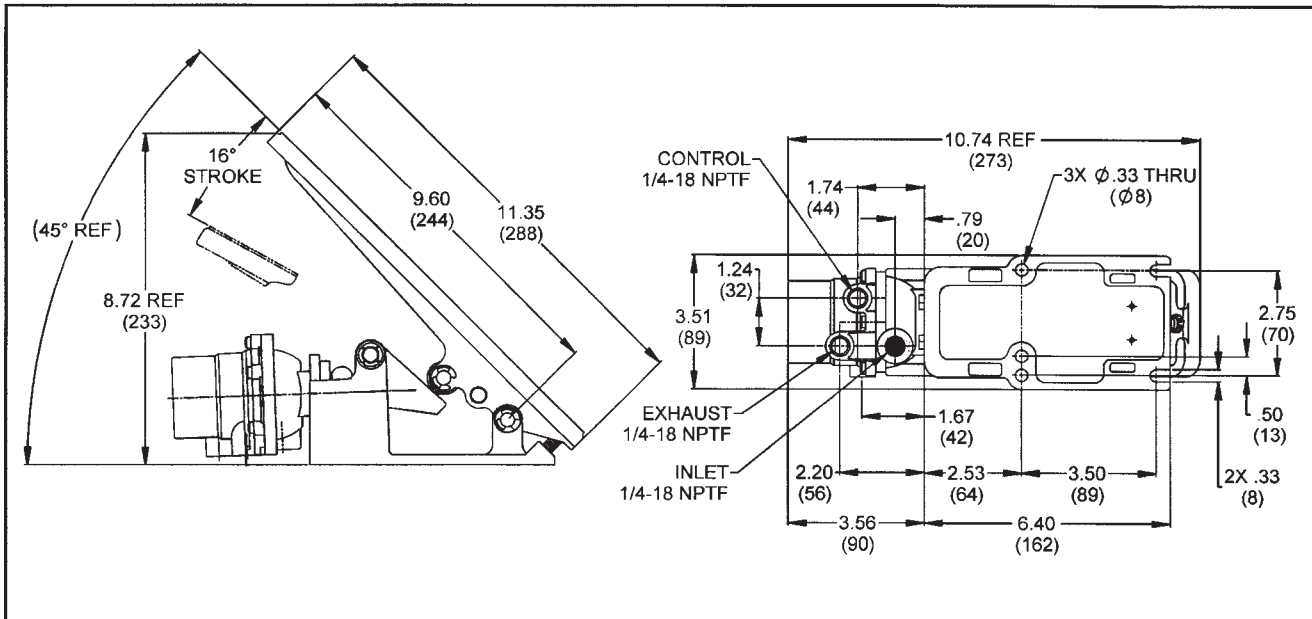
**WM515 SERIES
HYDRAULIC
PROPORTIONAL PEDAL**

FEATURES AND SPECS

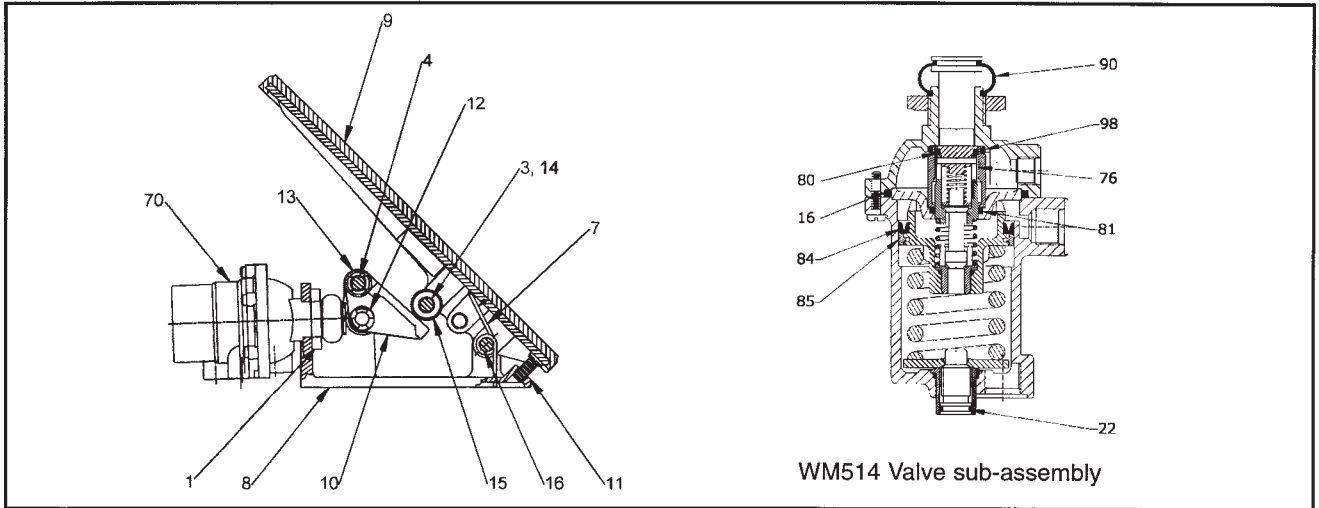
- Port size: SAE 6 (9/16-18 UNF) straight thread with o-ring
- For off-highway applications only
- Weight: 4 lb, 15 oz (2,3 kg)
- Maximum operating pressure: 300 PSI (2068 kPa)
- Operating temperature: -20°F to 200°F (-29°C to 93°C)



DIMENSIONAL DATA



CROSS SECTION & PARTS



Item	Part No.	Description	WM515C	WM515H
1	101114	Jam Nut	1	1
3	102371	Pin	2	2
4	117216	Pin	1	1
6	104636	Roller	2	2
7	103704	Spring	1	1
8	119049	Treadle Base	1	1
9	118774	Treadle Assembly	1	1
10	117259	Transfer Lever	1	1
11	—	Screw	1	1
12	106857	Snap Ring	8	8
13	110370	Bushing	4	4
14	118388	Bushing	4	4
16	—	O-Ring	1	1
22	—	O-Ring	1	1
70	119128	WM514C Valve Sub-assembly	1	—
70	119131	WM514H Valve Sub-assembly	—	1
76	—	O-Ring	1	1
80	—	Backup Ring	1	1
81	—	O-Ring	1	1
84	—	U-Cup	1	1
85	—	Wear Ring	1	1
96	—	Pin	1	1
98	—	O-Ring	1	1
99	103090	Boot	1	1

Serviceable items are identified above.

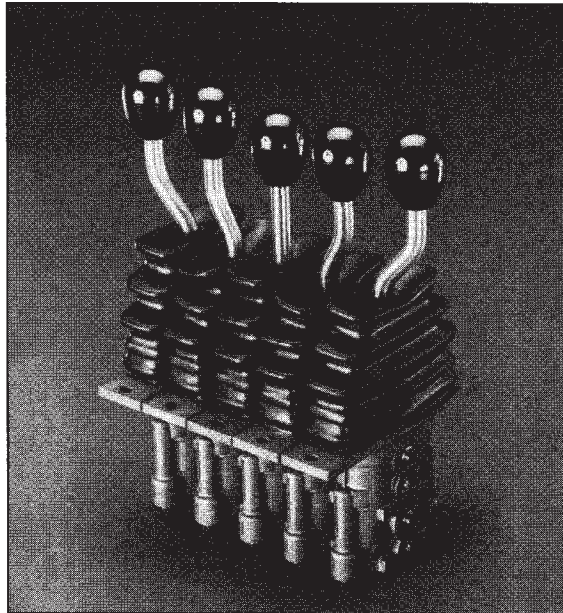
SERVICE KIT INFORMATION

Kit	Service Kit Number	Item Numbers
Repair kit	119305	16, 22, 76, 80, 81, 84, 85, 90, 98
WM514C Valve sub-assembly for WM515C	119128	Includes all components below mounting plate
WM514H Valve sub-assembly for WM515H	119131	Includes all components below mounting plate

TO ORDER

To order a WM515 model, select part number from the chart below.

Model	Part Number	Output Range
WM515C	119129	30-100 PSI (276-690 kPa)
WM515H	119132	50-250 PSI (345-1725 kPa)

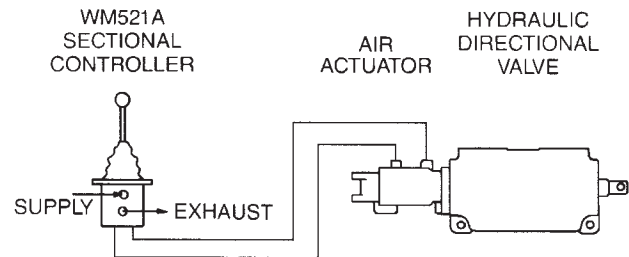


**WM521 Series
Activair
Controllers**

**1-5 SECTIONS
20-85 PSI REGULATED OUTPUT
PUSH-TO-CONNECT FITTINGS**

DESCRIPTION

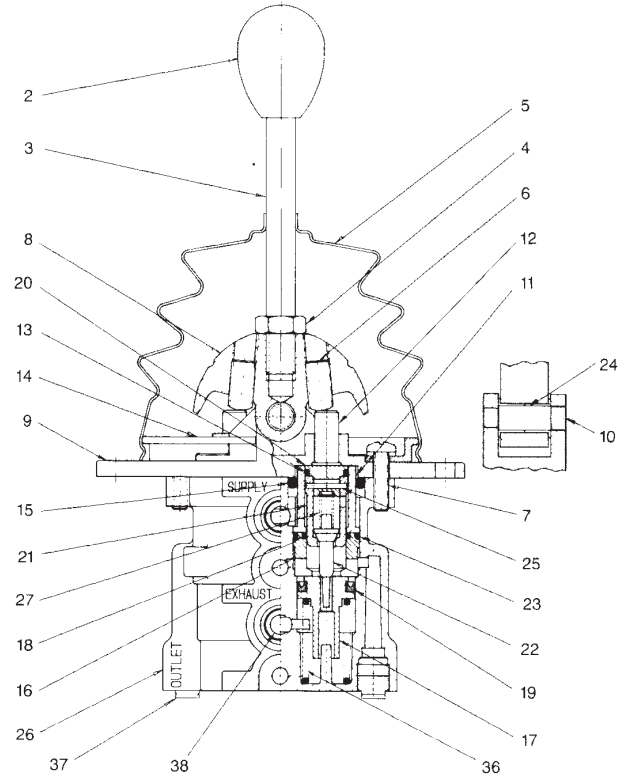
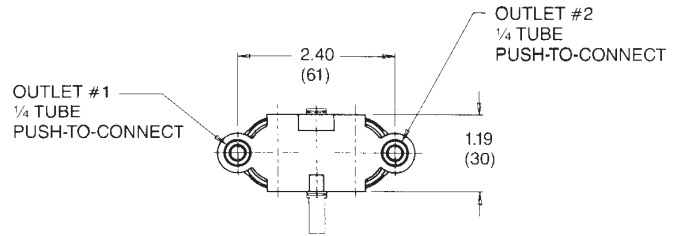
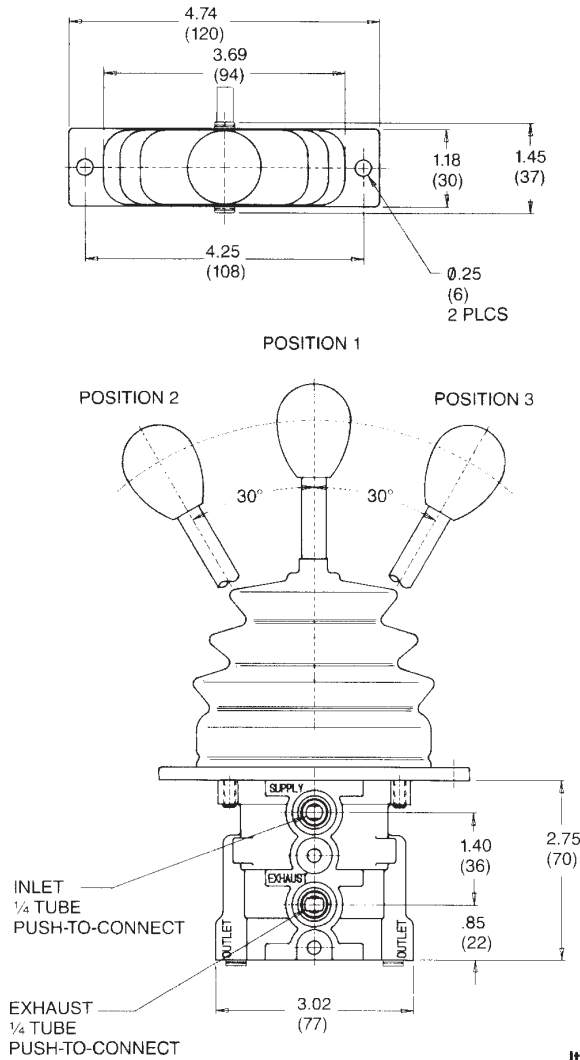
WM521 series Activair controllers are 4 way precision regulating valves which are factory assembled into banks of up to 5 units. For plumbing convenience, WM521 models with two or more valve units have a single inlet and a common exhaust port. WM521 control levers spring return to the neutral position when released and are designed with push-to-connect port fittings.



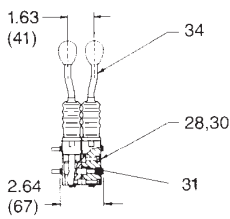
SPECIFICATIONS

Port size	1/4" push-to-connect and 1/8-27 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Output range	20-85 PSI (138-586.5 kPa)
Operating temperature	-20°F to 160°F (-29°C to 74°C)
Flow rating	15 SCFM @ 100 PSI (0.5 m ³ /min @ 690 kPa)
Mounting	Panel mounted
Mounting attitude	Optional
Materials: Valve assembly	Chromate treated die cast aluminum
O-rings	Buna N
Handle stem	Stainless steel
Knob	Black plastic
Boot	Neoprene
Weight:	
WM521B1	2 lbs., 2 oz. (4,7 kg)

DIMENSIONAL DATA



HANDLE POSITION	PORT PRESSURIZED	
	PORT 1	PORT 2
1		
2	X	
3		X



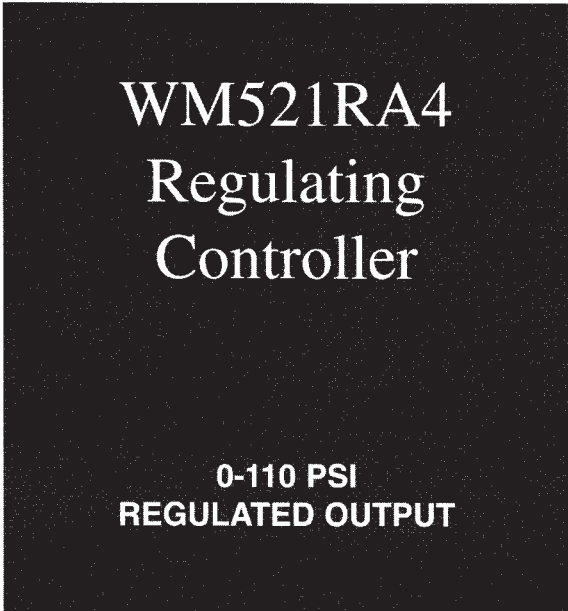
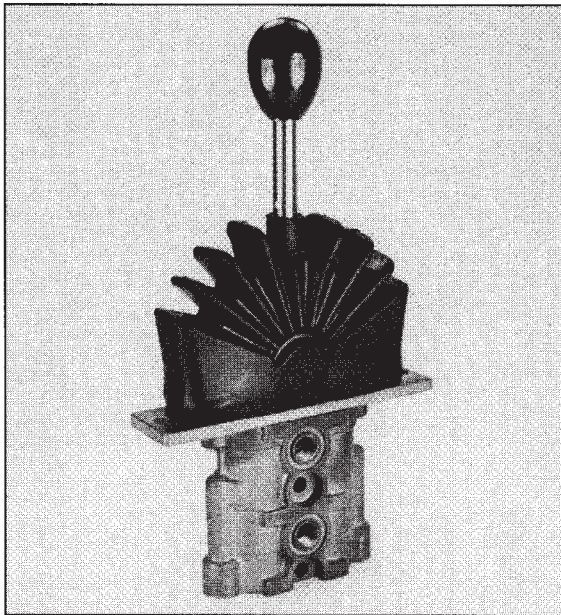
WM521B1

Item	Description	WM521 B1	Qty	Item	Description	WM521 B1	Qty
2	Knob	130311	2	21	Cartridge Body	130253	4
3	Lever	--	-	*22	Poppet	130151	4
4	Nut	114602	2	*23	O-Ring	117074	4
5	Boot	119501	2	*24	Bearing	130305	4
6	Screw	130113	4	25	Pin	130368	4
7	Screw	118768	4	26	Body	130227	2
8	Rocker	130257	2	*27	Spring	130369	4
9	Lever Body	130228	2	28	Nut	114564	4
10	Pin	130304	2	30	Tie Rod	130382	2
11	Sleeve	130248	4	31	O-Ring	116380	2
12	Stem	130256	4	32	Lever	--	-
*13	O-Ring	116344	4	33	Lever	--	-
14	Boot Retainer	130262	4	34	Lever	130361	2
*15	O-Ring	116318	4	35	Lever	--	-
16	Barrier Sleeve	130249	4	36	Spring	130374	4
17	Piston	130250	4	37	Fitting	130436	8
*18	O-Ring	116345	4	38	Plug	130522	2
*19	U-Cup	116338	4				
20	Cartridge Cap	130255	4				

* Item is included in repair kit 130463. Multiple valve assemblies require multiple repair kits. Highlighted items may be purchased separately.

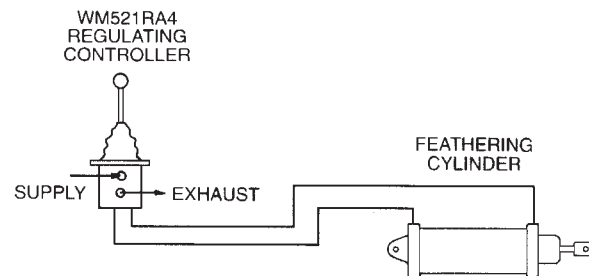
To order, specify **WM521** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Number of Valve Units	Ports	Replaces WM501 Model
WM521 B1	130424	2	1/4 Tube Push-to-Connect	No



DESCRIPTION

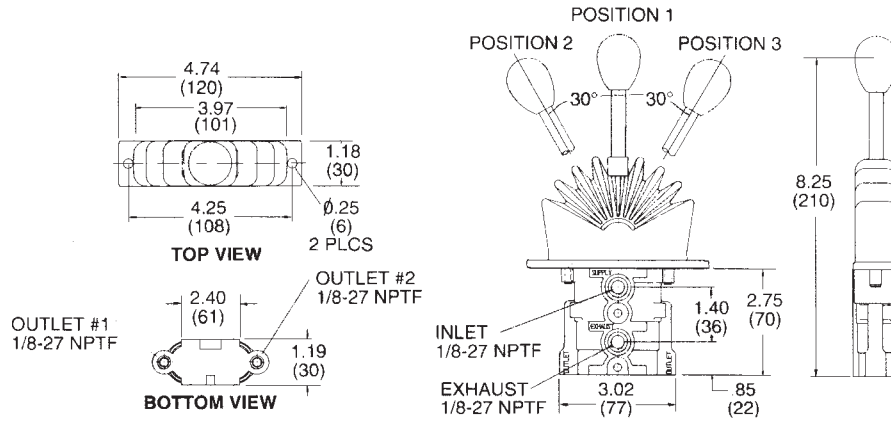
The WM521RA4 dual control valve is a three position, four way pressure regulator. The handle of the WM521RA4 pivots in two directions from the center rest position. When the handle is released from the applied position, it returns to the center position and the valve exhausts any outlet pressure to atmosphere.



SPECIFICATIONS

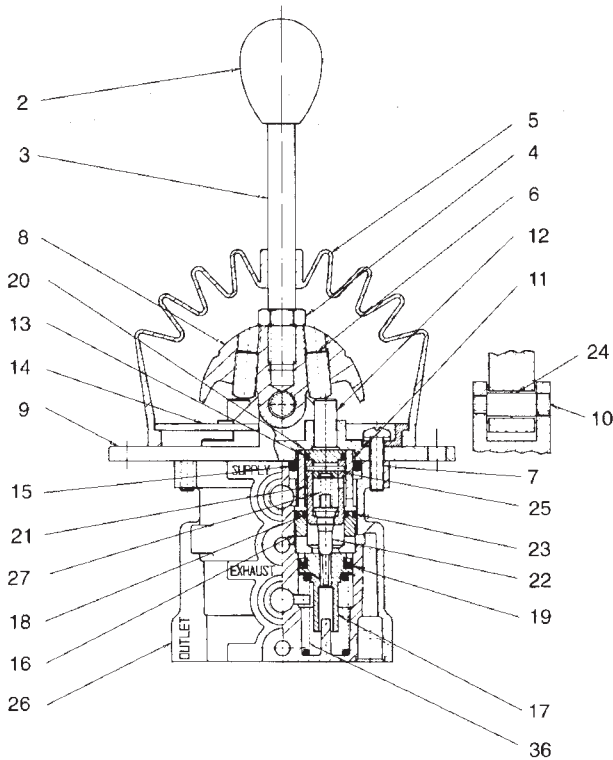
Port size	1/8-27 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 160°F (-29°C to 74°C)
Output range	0-110 PSI (0-758 kPa)
Flow rating	15 SCFM @ 100 PSI (0.5 m ³ /min @ 690 kPa)
Mounting	Panel mounted
Mounting attitude	Optional
Materials: Valve assembly	Chromate treated die cast aluminum
Handle stem	Stainless steel
Knob	Black plastic
Boot	Neoprene
O-rings	Buna N
Weight	1 lb. (2,3 kg)

DIMENSIONAL DATA



HANDLE POSITION	PORT PRESSURIZED	
	PORT 1	PORT 2
1		
2	X	
3		X

CROSS SECTION & PARTS IDENTIFICATION



Item	Description	Part Number	Qty
2	Knob	130311	1
3	Lever	130360	1
4	Nut	114602	1
5	Dust Boot	130501	1
6	Screw	130113	2
7	Screw	118768	2
8	Rocker	130257	1
9	Lever Body	130228	1
10	Lever Pin	130304	1
11	Sleeve	130633	2
12	Stem	130256	2
*13	Bushing	115089	2
14	Boot Retainer	130262	2
*15	O-Ring	116318	2
16	Barrier Sleeve	130249	2
17	Piston	130250	2
*18	O-Ring	116345	2
*19	U-Cup	116338	2
20	Cartridge Cap	130255	2
21	Cartridge Body	130253	2
*22	Poppet	130151	2
*23	O-Ring	117074	2
*24	Bearing	130305	2
25	Pin	130368	2
26	Body	130481	1
*27	Spring	130369	2
36	Spring	130939	2

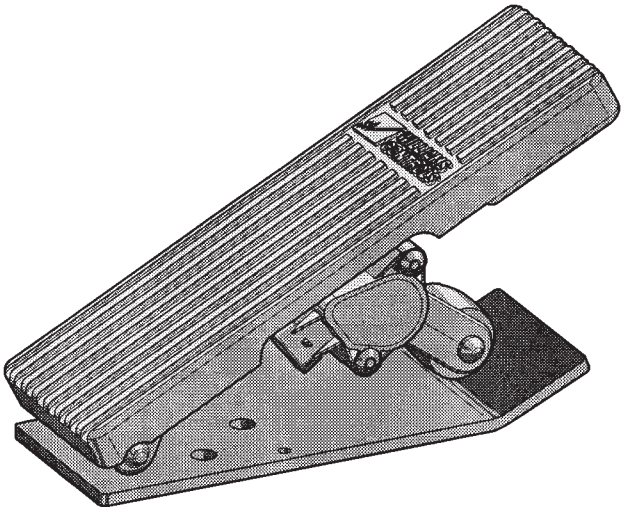
*Item is included in repair kit. Service this unit with repair kit 130463. Highlighted items may be purchased separately.

To order, specify **WM521RA4**, part number 130940.

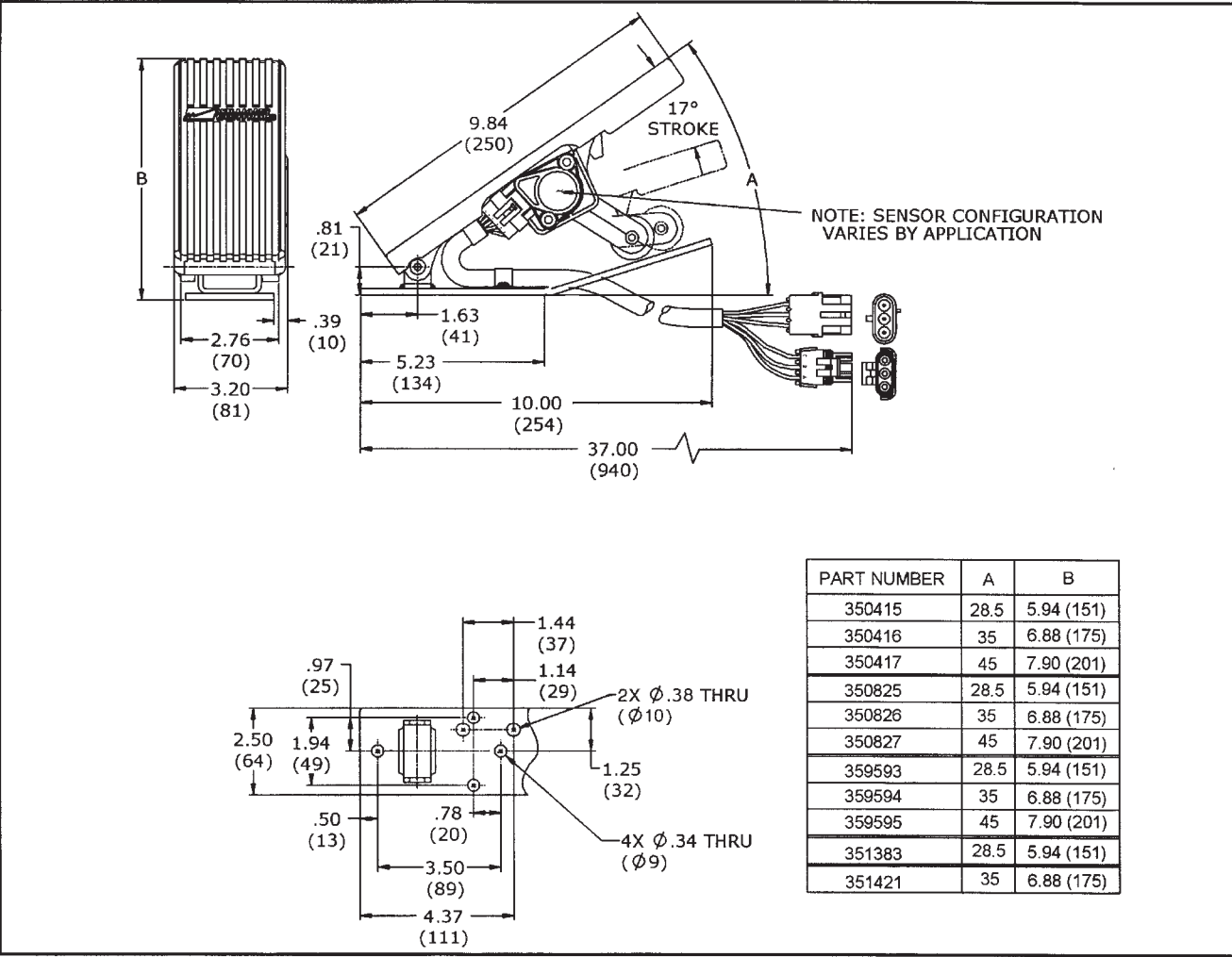
**WM526
ELECTRONIC ACCELERATOR
PEDAL**

FEATURES AND SPECS

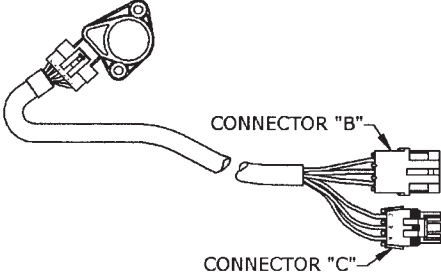


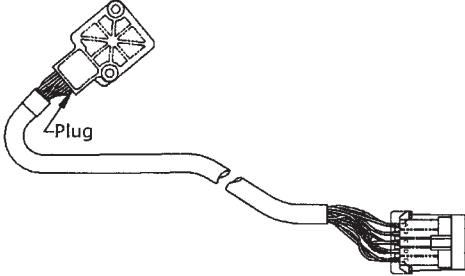

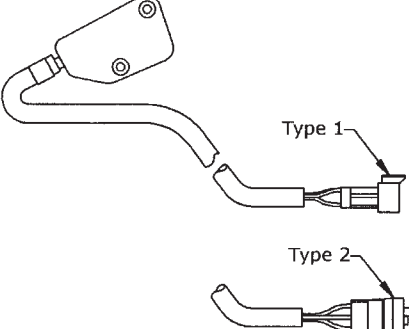


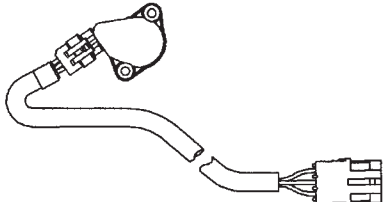

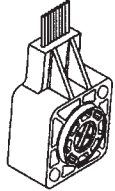
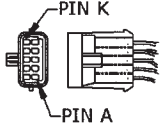
- FMVSS-124 approved
- Weight: 3 lb, 12 oz (1,70 kg)
- Sensor outputs conform to engine manufacturer specifications



DIMENSIONAL DATA

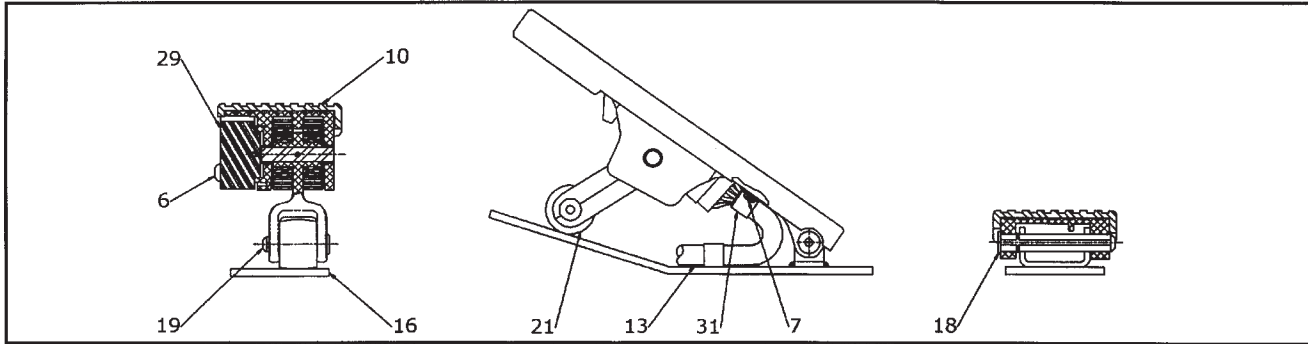


SENSOR & CONNECTOR INFORMATION

PEDAL PART NUMBER	SENSOR*	CONNECTOR	PIN LEGEND
CUMMINS: 350825 350826 350827		Connector "B": PACKARD ELECTRIC "WEATHER PACK" CONNECTOR  Connector "C": PACKARD ELECTRIC "WEATHER PACK" CONNECTOR 	PIN A---WHITE----APS GROUND PIN B---BLACK----APS SIGNAL PIN C---RED-----APS SUPPLY (5V) PIN C---GREEN----THROTTLE ACTIVE PIN B---BLUE-----IDLE ACTIVE PIN A---ORANGE--IVS SUPPLY (5V)
JOHN DEERE: (DIESEL) 351422		PACKARD ELECTRIC "METRI-PACK 150 SERIES", 10 WAY SEALED CONNECTOR 	PIN A--- WHITE---- FP1 GROUND PIN B---BROWN--- FPP1 SIGNAL (H-GAIN) PIN C---BLUE-----FPP1 SUPPLY PIN D---VIOLET--- SWITCH (N-CLOSED) PIN E---YELLOW-- SWITCH SUPPLY PIN F--- ORANGE-- SWITCH (N-OPEN) PIN G---N/A----- PLUG PIN H---RED----- FPP2 SUPPLY PIN J--- GREEN---- FPP2 SIGNAL (L-GAIN) PIN K---BLACK---- GROUND
Type 1: CATERPILLAR: 350415 350416 350417 Type 2: CATERPILLAR: 345415 345416 345417		Type 1: DEUTSCH "DT" CONNECTOR  Type 2: DEUTSCH 3-PIN ROUND CONNECTOR - (PRE 1994) 	PIN A---RED-----SUPPLY PIN B---BLACK---GROUND PIN C---WHITE---SIGNAL RED-----B+ WHITE---SIGNAL BLACK---GROUND
DDEC II: 345593 345594 345595 DDECIII: 359593 359594 359595		PACKARD ELECTRIC "WEATHER PACK" CONNECTOR 	PIN A---WHITE---GROUND PIN B---BLACK---APS SIGNAL PIN C---RED-----SUPPLY
JOHN DEERE: (CNG) 351383		PACKARD ELECTRIC "METRI PACK" CONNECTOR 	PIN A--- WHITE---- FP1 GROUND PIN B---BROWN--- FPP1 SIGNAL (H-GAIN) PIN C---BLUE-----FPP1 SUPPLY PIN D---VIOLET--- SWITCH (N-CLOSED) PIN E---YELLOW-- SWITCH SUPPLY PIN F--- ORANGE-- SWITCH (N-OPEN) PIN G---N/A----- PLUG PIN H---RED----- FPP2 SUPPLY PIN J--- GREEN---- FPP2 SIGNAL (L-GAIN) PIN K---BLACK---- GROUND

*SENSOR HOUSING MAY VARY

CROSS SECTION & PARTS



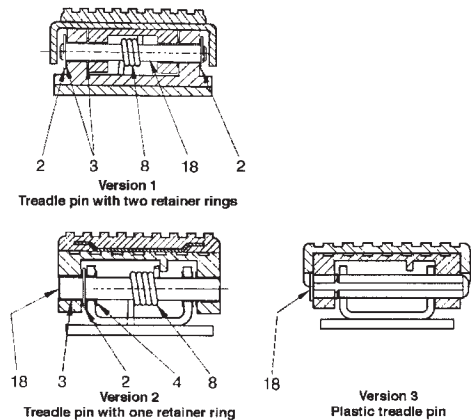
Item	Part No.	Description	Caterpillar						Cummins/Mercedes		
			345415	345416	345417	350415	350416	350417	350825	350826	350827
6	132252	Screw	2	2	2	2	2	2	2	2	2
7	130446	Screw	2	2	2	2	2	2	2	2	2
10	131386	Treadle Cover	1	1	1	1	1	1	1	1	1
13	131165	Int Sens Harness						1	1	1	
16	131426	28.5° Baseplate	1			1		1			
16	131427	35° Baseplate		1			1		1		
16	131428	45° Baseplate			1			1			1
18	132100	Treadle Pin	1	1	1	1	1	1	1	1	1
19	132099	Roller Shaft	1	1	1	1	1	1	1	1	1
21	132098	Roller	1	1	1	1	1	1	1	1	1
29	132160	Cat Sensor, round	1	1	1						
29	132446	Cat Sensor				1	1	1			
29	132354	Int Sensor							1	1	1
31	130996	Wire Clamp	2	2	2	2	2	2	2	2	2

Item	Part No.	Description	DDEC II			DDEC III & IV			Deere (Diesel)	Deere (CNG)
			345593	345594	345595	359593	359594	359595	351422	351383
6	132252	Screw	2	2	2	2	2	2	2	2
7	130446	Screw	2	2	2	2	2	2	2	2
10	131386	Treadle Cover	1	1	1	1	1	1	1	1
13	131970	Harness						1		
13	130063	Wire Harness	1	1	1	1	1	1		
16	131426	28.5° Baseplate	1			1				
16	131427	35° Baseplate		1			1			
16	131428	45° Baseplate			1					1
18	132100	Treadle Pin	1	1	1	1	1	1	1	1
19	132099	Roller Shaft	1	1	1	1	1	1	1	1
21	132098	Roller	1	1	1	1	1	1	1	1
29	130656	DDEC Sensor	1	1	1					
29	119454	DDEC Sensor				1	1	1		
29	131779	5k Sensor Diesel						1		
29	132445	CNG Sensor								1
31	130996	Wire Clamp	2	2	2	2	2	2	2	2

Serviceable items are identified above.

SERVICE KIT INFORMATION

Service Kit	Service Kit Number	Item Numbers
Roller kit - All models	131139	19, 21
Treadle pin kit - All models	130553	2, 3, 4, 8, 18
Sensor kit - Caterpillar 8 VDC	132484	6, 7, 29
Sensor kit - Caterpillar 12 VDC	131138	6, 7, 29
Sensor kit - Cummins/Mercedes North America	132034	6, 7, 13, 29
Sensor kit - early DDEC I	130303	6, 29
Sensor kit - DDEC II	131140	6, 7, 13, 29, 31
Sensor kit - DDEC III & IV	132035	6, 7, 13, 29, 31
Sensor kit - J Deere CNG	132739	6, 29
Sensor kit - J Deere Diesel	132736	6, 7, 13, 29, 31

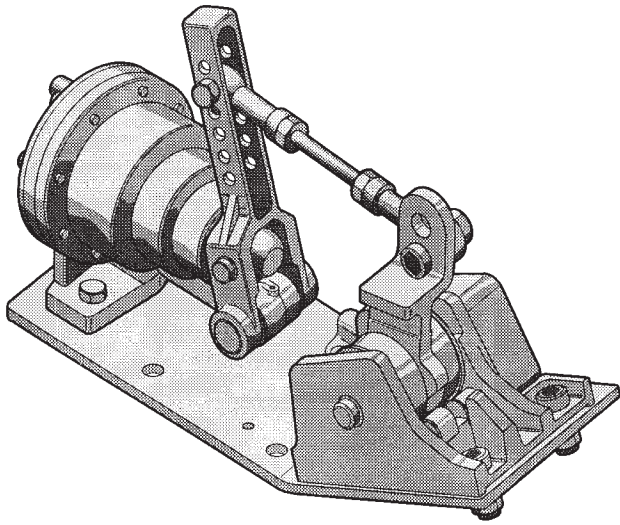


TO ORDER

To order a WM526 model, select part number from the chart below.

Engine Application	Part Number	Pedal Angle	Connector Type	Vehicle Toeboard Angle
Caterpillar	345415	28.5°	Round - pre 1994 Deutsch 3 pin 12V	16° - 25°
Caterpillar	345416	35°	Round - pre 1994 Deutsch 3 pin 12V	6° - 15°
Caterpillar	345417	45°	Round - pre 1994 Deutsch 3 pin 12V	0° - 5°
Caterpillar	350415	28.5°	Triangular Deutsch DT 8V	16° - 25°
Caterpillar	350416	35°	Triangular Deutsch DT 8V	6° - 15°
Caterpillar	350417	45°	Triangular Deutsch DT 8V	0° - 5°
Cummins Mercedes North America	350825	28.5°	Packard WeatherPack	16° - 25°
Cummins Mercedes North America	350826	35°	Packard WeatherPack	6° - 15°
Cummins Mercedes North America	350827	45°	Packard WeatherPack	0° - 5°
DDEC II	345593	28.5°	Packard WeatherPack	16° - 25°
DDEC II	345594	35°	Packard WeatherPack	6° - 15°
DDEC II	345595	45°	Packard WeatherPack	0° - 5°
DDEC III & IV w/o IVS	359593	28.5°	Packard WeatherPack	16° - 25°
DDEC III & IV w/o IVS	359594	35°	Packard WeatherPack	6° - 15°
DDEC III & IV w/o IVS	359595	45°	Packard WeatherPack	0° - 5°
John Deere Diesel	351422	35°	Packard WeatherPack	6° - 15°
John Deere CNG	351383	45°	Flying leads	0° - 5°

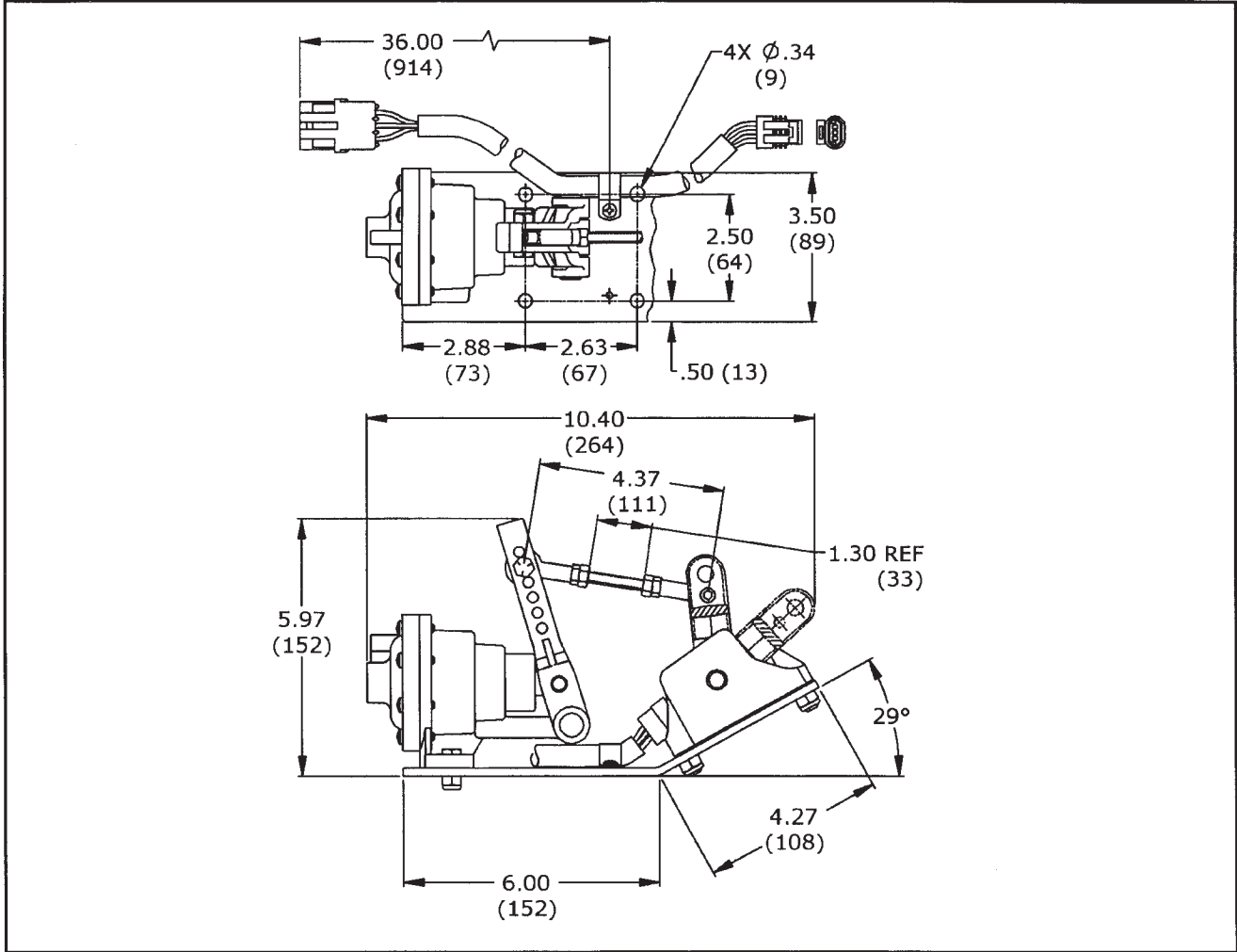
**WM526
AIR/ELECTRONIC REMOTE
SENSOR ASSEMBLY**



FEATURES AND SPECS

- Allows pneumatic signal to control electronic engine
- FMVSS-124 approved
- Weight: 4 lb (1,82 kg)
- Sensor outputs conform to engine manufacturer specifications

DIMENSIONAL DATA

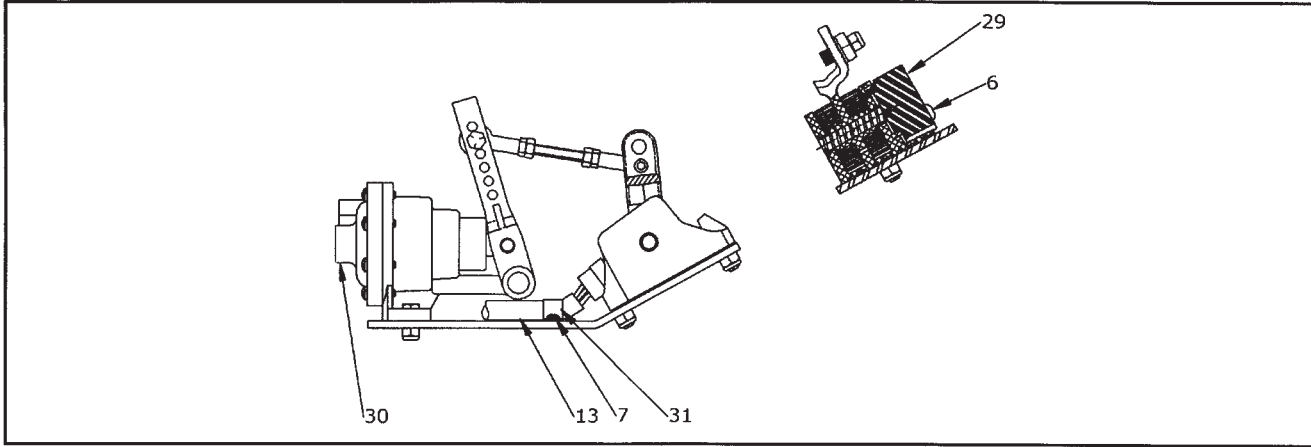


SENSOR & CONNECTOR INFORMATION

PART NUMBER	SENSOR HOUSING*	CONNECTOR	PIN LEGEND
DDECII: 345997		PACKARD ELECTRIC "WEATHER PACK" CONNECTOR 	PIN A---WHITE---GROUND PIN B---BLACK---APS SIGNAL PIN C---RED-----SUPPLY
CATERPILLAR: 351311		Category 1: DEUTSCH "DT" CONNECTOR 	PIN A---RED-----SUPPLY PIN B---BLACK---GROUND PIN C---WHITE---SIGNAL
NAVISTAR: 351312	CONNECTOR A: PACKARD ELECTRIC "METRI PACK" PIN A PIN A--BLACK---APS SIGNAL PIN B--WHITE---GROUND PIN C--RED-----APS SUPPLY (5 VOLTS) PIN D--GREEN---IVS THROTTLE ACTIVE PIN E--BLUE-----IVS IDLE ACTIVE PIN F--ORANGE--IVS SUPPLY (5 VOLTS)	Connector "B": PACKARD ELECTRIC "WEATHER PACK" CONNECTOR 	PIN A--WHITE---GROUND PIN B--BLACK---APS SIGNAL PIN C--RED-----APS SUPPLY (5V) PIN D--GREEN---THROTTLE ACTIVE PIN E--BLUE-----IDLE ACTIVE PIN F--ORANGE---IVS SUPPLY
DDEC III: 351313**		Connector "B": PACKARD ELECTRIC "WEATHER PACK" CONNECTOR 	PIN A---WHITE---APS GROUND PIN B---BLACK---APS SIGNAL PIN C---RED-----APS SUPPLY (5V)
DDEC III: 351314**		Connector "C": PACKARD ELECTRIC "WEATHER PACK" CONNECTOR 	PIN C---GREEN---THROTTLE ACTIVE PIN B---BLUE-----IDLE ACTIVE PIN A---ORANGE--IVS SUPPLY (5V)

*SENSOR HOUSING MAY VARY
**IDLE VALIDATION IS AN OPTION FOR DDEC III APPLICATIONS

CROSS SECTION & PARTS



Item	Part No.	Description	DDEC II 345997	Caterpillar 351311	DDEC III & IV 351313	DDEC/Cummins/Mercedes 351314	International 351379
6	132252	Screw	2	2	2	2	2
7	130446	Screw	1	1	1	1	1
13	130063	Wire Harness	1	N/A*	1		
13	131165	Wire Harness				1	1
29	130656	Sensor	1				
29	119454	Sensor			1		
29	131040	Sensor					1
29	131856	Sensor				1	
29	132446	Sensor		1			
30	131302	Air Cylinder	1	1	1	1	1
31	130996	Wire Clamp	1	1	1	1	1

* Sensor has integral harness. Serviceable items are identified above.

SERVICE KIT INFORMATION

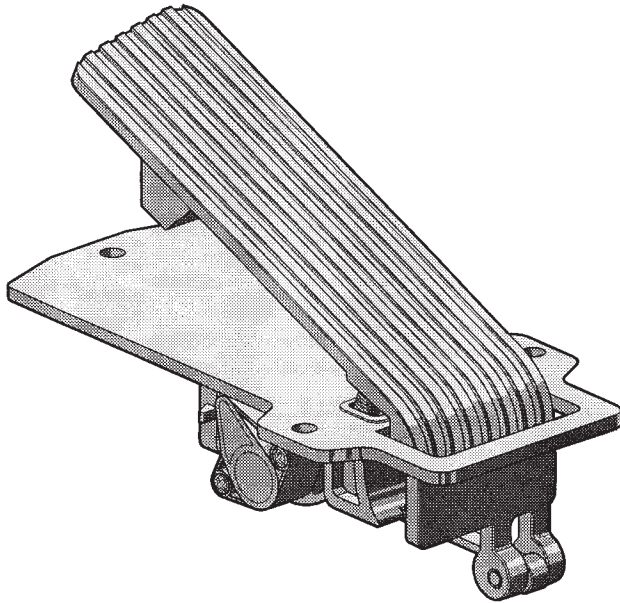
Part Number	Service Kit	Item Numbers
345997 DDEC II	Sensor kit 131140	6, 7, 13, 29, 31
351311 Caterpillar 8v	Sensor kit 132484	6, 7, 29, 31
351313 DDEC III & IV, w/o IVS	Sensor kit 132035	6, 7, 13, 29, 31
351314 Cummins, DDEC III & IV, w/IVS Mercedes North America	Sensor kit 132034	6, 7, 13, 29, 31
351379 International	Sensor kit 340000	6, 7, 13, 29, 31
All models	Air Cylinder kit 131618	Soft parts only

TO ORDER

To order a WM526 model, select part number from the chart below.

Engine Application	Part Number
DDEC II	345997
Caterpillar 8v	351311
DDEC III & IV, w/o IVS	351313
Cummins, DDEC III & IV, w/IVS Mercedes North America	351314
International	351379

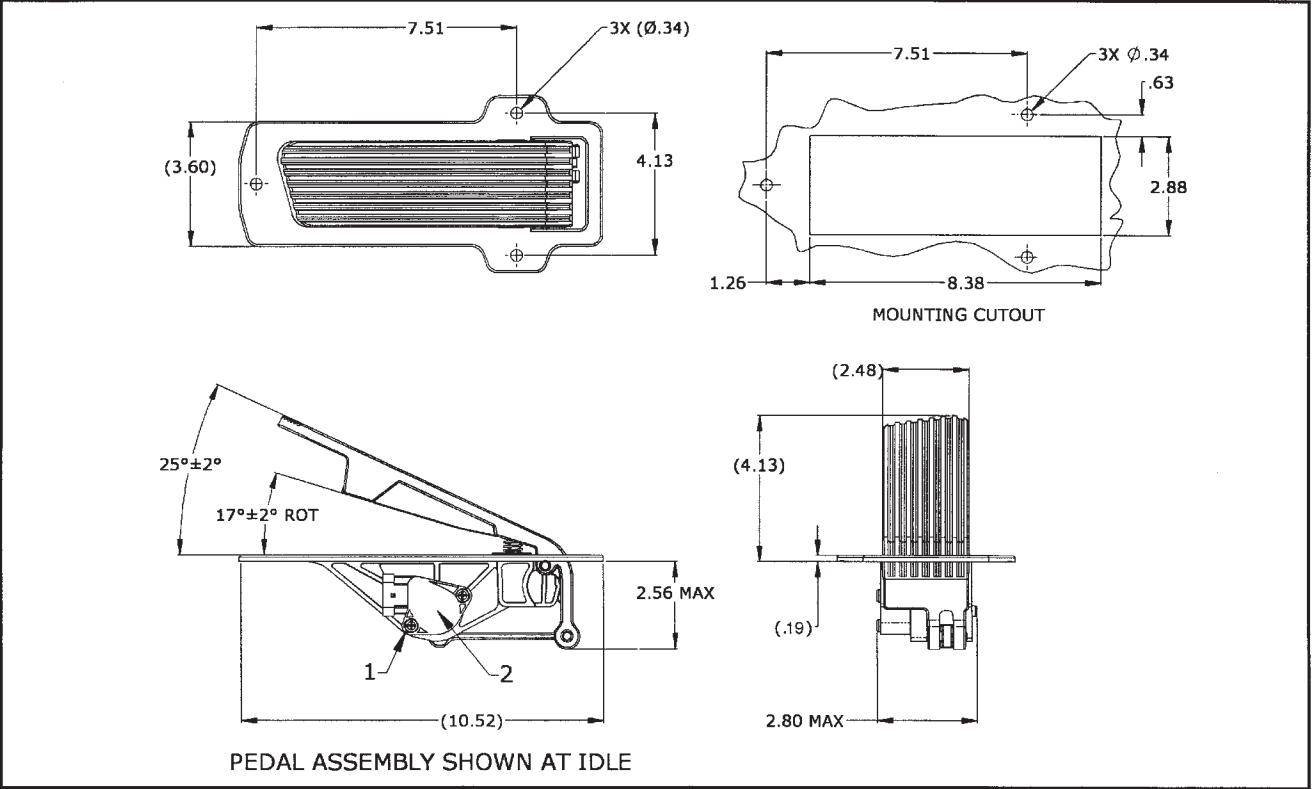
**WM528
ELECTRONIC ACCELERATOR
PEDAL**



FEATURES AND SPECS

- For applications that require a very low profile
- FMVSS-124 approved
- Weight: 1.63 lb (0,74 kg)
- Sensor outputs conform to engine manufacturer specifications

DIMENSIONAL DATA



SERVICE KIT INFORMATION

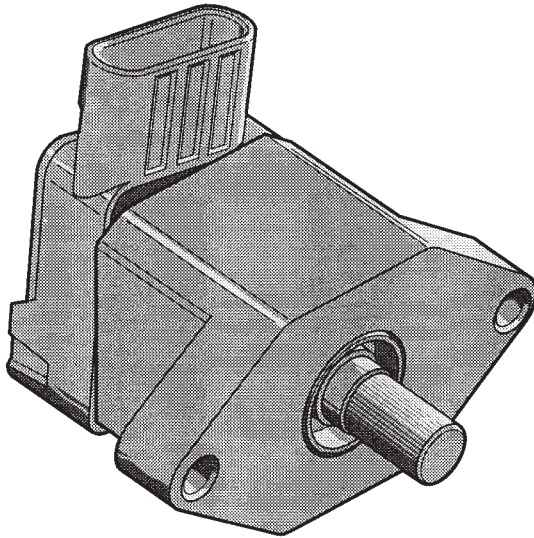
Part Number	Sensor Service Kit	Item Numbers
351363	132381	1, 2
351361	132382	1, 2

TO ORDER

To order a WM528 model, select part number from the chart below.

Part Number	Engine Application
351363	DDEC III & IV
351364	Cummins, Mercedes North America

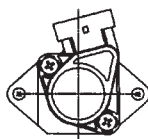
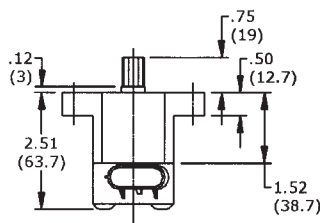
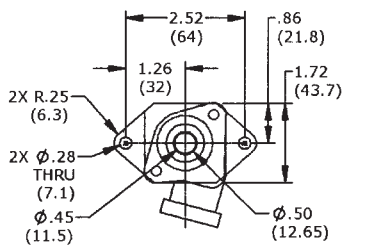
**WM531
REMOTE SENSOR
ASSEMBLY**



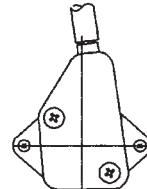
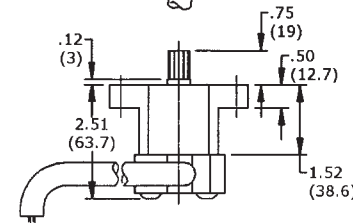
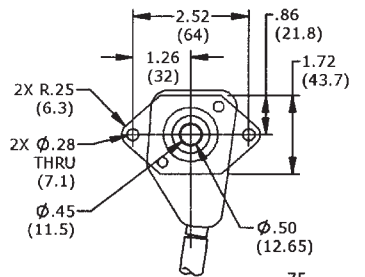
FEATURES AND SPECS

- Mechanical over electronic control
- Weight: 1 lb (0,46 kg)
- Sensor outputs conform to engine manufacturer specifications

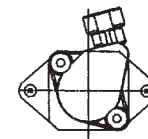
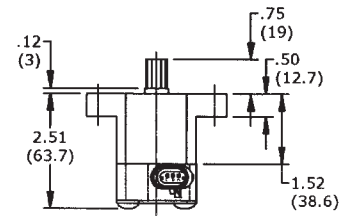
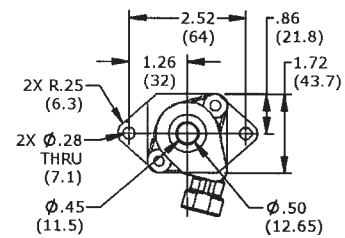
DIMENSIONAL DATA



131032


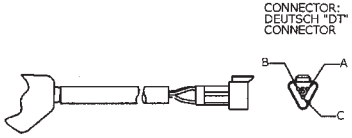

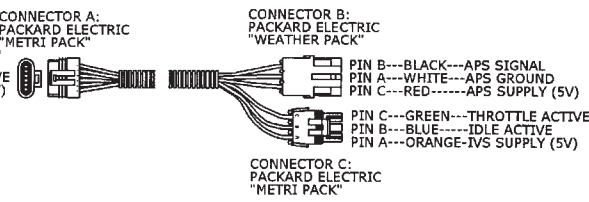

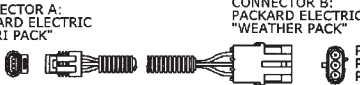




131520



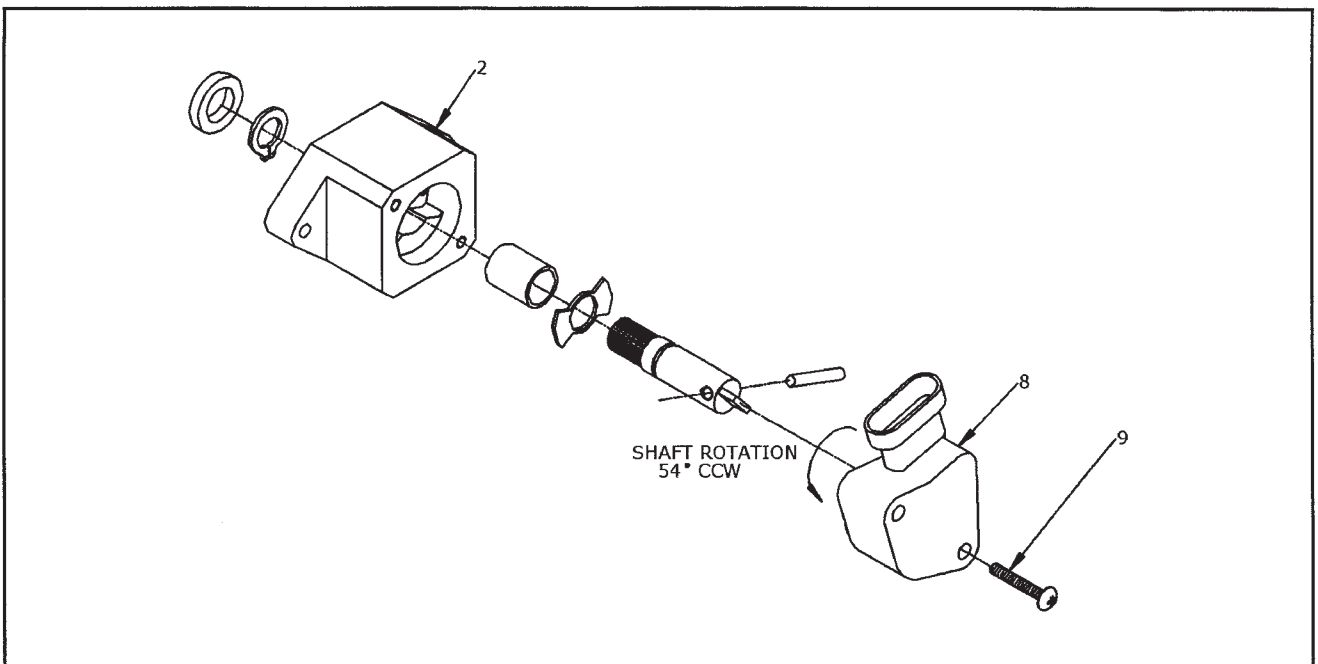
131521

SENSOR & CONNECTOR INFORMATION

ENGINE / P/N	SENSOR	WIRING HARNESS / CONNECTORS
CATERPILLAR 131520		 <p>CONNECTOR: DEUTSCH "DT" CONNECTOR</p> <p>PIN A---RED---SUPPLY PIN B---BLACK---GROUND PIN C---WHITE---SIGNAL</p>
CUMMINS NAVISTAR, DDEC III (W/ IDLE VALIDATION SWITCH*) 131032		<p>P/N 131165**</p> <p>PIN F---ORANGE---IVS SUPPLY (5V) PIN E---BLUE---IDLE ACTIVE PIN D---GREEN---THROTTLE ACTIVE PIN C---RED---APS SUPPLY (5V) PIN B---WHITE---APS GROUND PIN A---BLACK---APS SIGNAL</p>  <p>CONNECTOR A: PACKARD ELECTRIC "METRI PACK"</p> <p>CONNECTOR B: PACKARD ELECTRIC "WEATHER PACK"</p> <p>PIN B---BLACK---APS SIGNAL PIN A---WHITE---APS GROUND PIN C---RED---APS SUPPLY (5V)</p> <p>PIN C---GREEN---THROTTLE ACTIVE PIN B---BLUE---IDLE ACTIVE PIN A---ORANGE---IVS SUPPLY (5V)</p> <p>CONNECTOR C: PACKARD ELECTRIC "METRI PACK"</p>
DDEC II 131521		<p>P/N 130063**</p>  <p>CONNECTOR A: PACKARD ELECTRIC "METRI PACK"</p> <p>CONNECTOR B: PACKARD ELECTRIC "WEATHER PACK"</p>
DDEC III (W/O IDLE VALIDATION SWITCH*) 131522		 <p>PIN C---WHITE---GROUND PIN B---BLACK---APS SIGNAL PIN A---RED---SUPPLY</p> <p>PIN A---WHITE---GROUND PIN B---BLACK---APS SIGNAL PIN C---RED---SUPPLY</p>

* Idle validation is an option for DDEC III applications
**Wiring harness for remote sensor assemblies must be ordered separately

EXPLODED VIEW & PARTS



EXPLODED VIEW & PARTS (CONTINUED)

Item	Part No.	Description	Cummins/Mercedes 131032	Navistar 132330	Caterpillar 132052	Caterpillar 131520	DDEC II 131521	DDEC III & IV 131522	Caterpillar 132056	DDEC II, III, IV 132114
2	132144	Housing	1	1	1	1	1	1	1	1
8	131856	Sensor	1							
8	131040	Sensor		1						
8	132446	Sensor				1				
8	130656	Sensor					1			
8	119454	Sensor						1		
9	131308	Screw	2	2	2	2	2	2	2	2

Serviceable items are identified above.

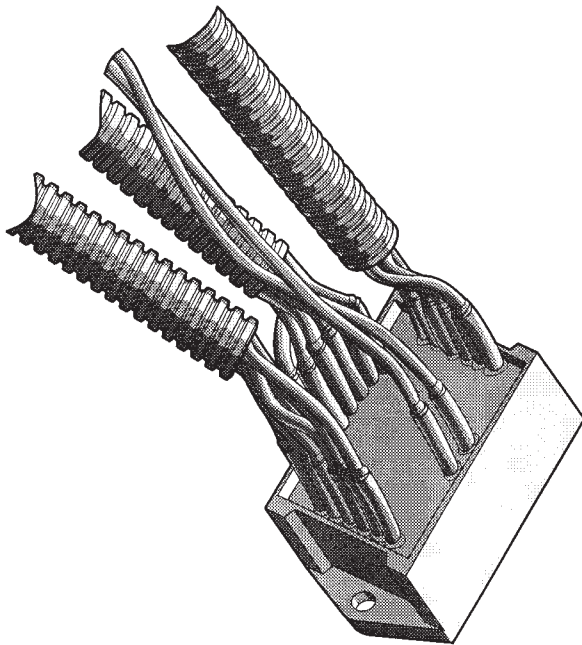
SERVICE KIT INFORMATION

Part Number	Sensor Service Kit	Item Numbers
131032 Cummins/Mercedes North America	131973	8, 9
132330 Navistar	131490	8, 9
131520 Caterpillar	132484	8, 9
131521 DDEC II	131167	8, 9
131522 DDEC III & IV	130800	8, 9

TO ORDER

To order a WM531 model, select part number from the chart below.

Engine Application	Part Number	Wiring Harness (must be purchased separately)
Cummins w/132354 Sensor Mercedes North America	131032	131165
International w/131040 Sensor	132330	131166
Caterpillar 54°, No Sensor	132052	None
Caterpillar 54° w/8v Sensor	131520	None
Caterpillar Adjustable, No Sensor	132056	None
DDEC II w/o IVS, w/130656 Sensor	131521	130063
DDEC III & IV w/o IVS, w/119454 Sensor	131522	130063
DDEC II, III, IV No Sensor	132144	None

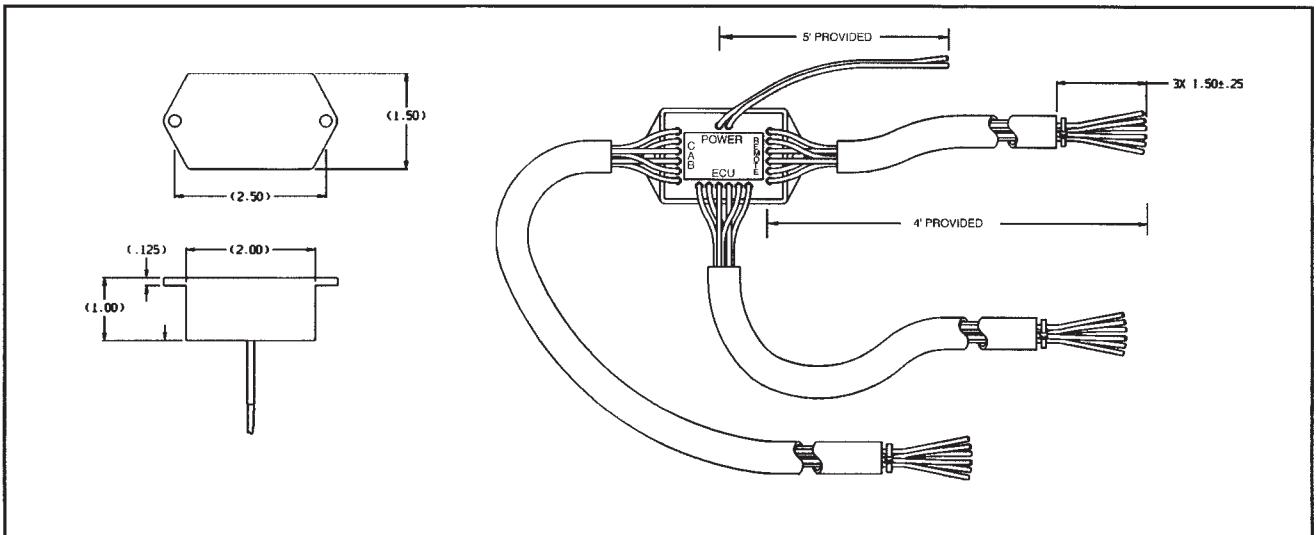


**WM534
REMOTE THROTTLE
SWITCH MODULE**

FEATURES AND SPECS

- Six pole, double throw switch allows an operator to select between two independent stations
- Operating temperature: -40°F to 185°F (-40°C to 85°C)
- Operating voltage: 12.6 VDC
- Maximum load voltage/ current: 28 volts/1 amp
- Maximum distance (unit to remote controller): 300 feet using 18 gauge wire
- Weight: 1 lb (0,45 kg)

DIMENSIONAL DATA

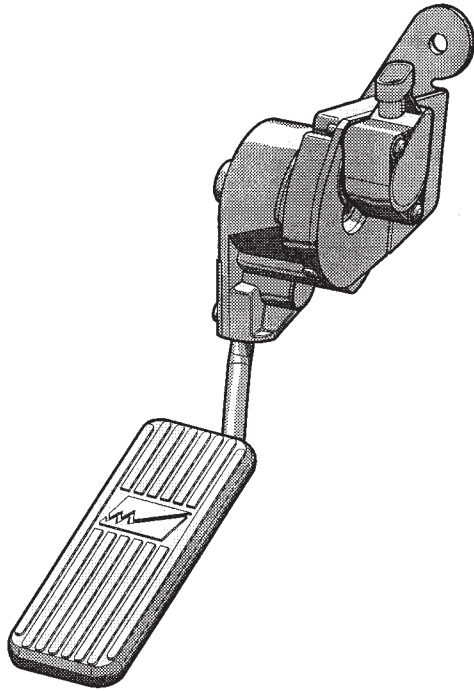


TO ORDER

To order model WM534, specify part number 131755.

Note: One connector kit needed for each WM534 installation. Connector kit must be purchased separately.

Engine Type	Connector Kit Number
Caterpillar with round connector	131771
Caterpillar with triangular connector	131772
Cummins & DDEC III with IVS	131773
DDEC II & III without IVS	131774
International with 6 pin connector	131775

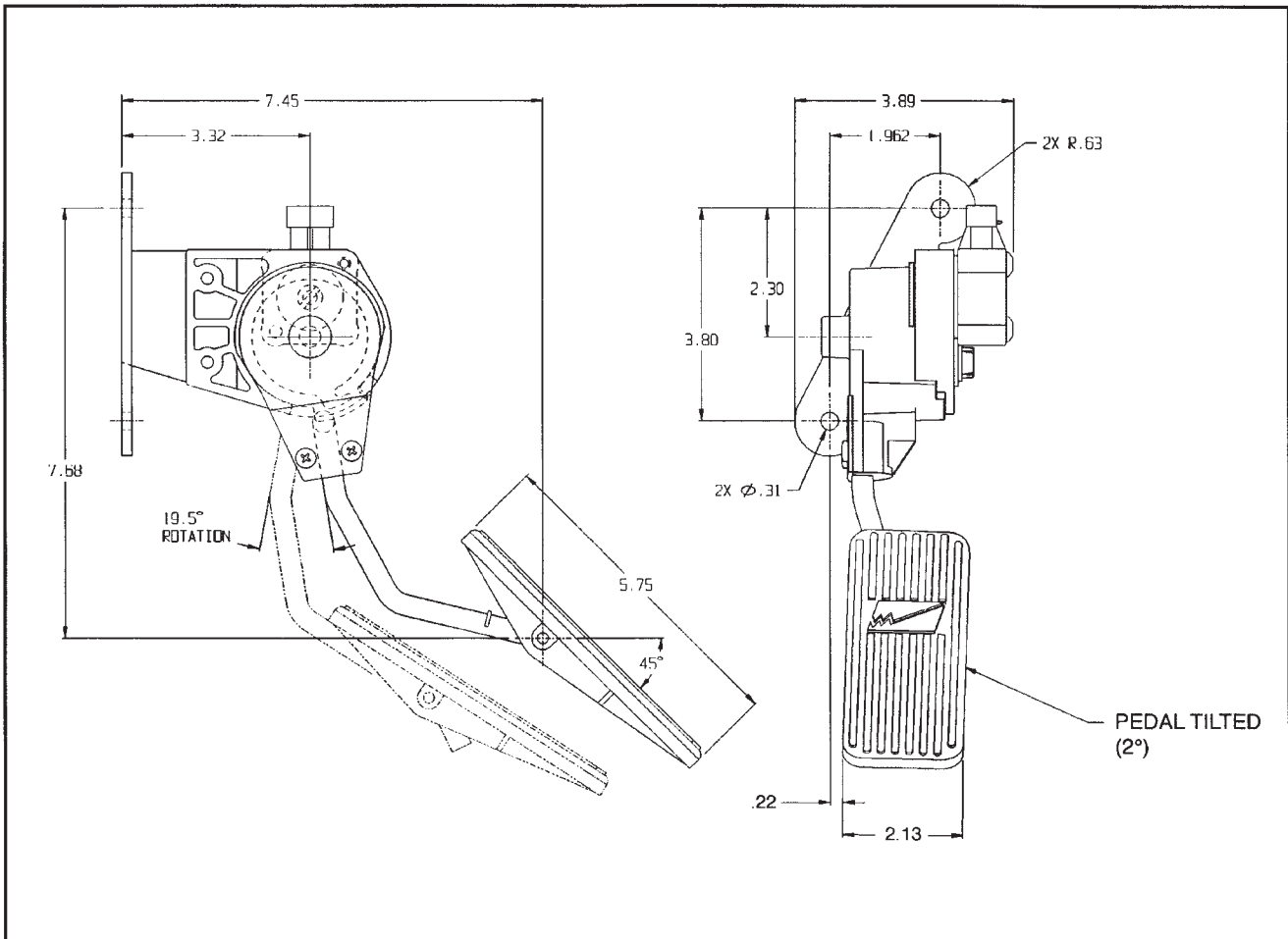


**WM540
SUSPENDED ELECTRONIC
ACCELERATOR PEDAL**


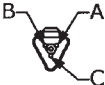





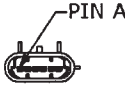

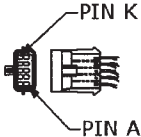
FEATURES AND SPECS

- FMVSS-124 approved
- Weight: 3 lb (1,36 kg)
- Sensor outputs conform to engine manufacturer specifications

DIMENSIONAL DATA



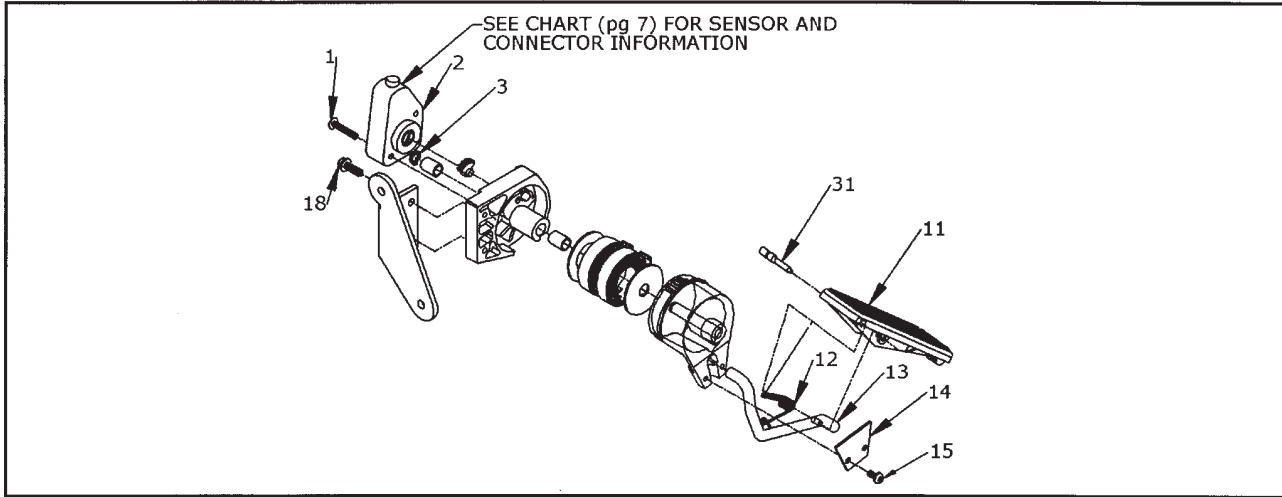
SENSOR & CONNECTOR INFORMATION

PEDAL PART NUMBER	SENSOR HOUSING*	CONNECTOR	PIN LEGEND
CATERPILLAR: 131508		DEUTSCH "DT" CONNECTOR 	PIN A---RED-----VS PIN B---BLACK---GROUND PIN C---WHITE---SIGNAL
CUMMINS, DDEC III** 131507		PACKARD ELECTRIC 	PIN A--APS SIGNAL PIN B--GROUND PIN C--APS SUPPLY (5 VOLTS) PIN D--IVS THROTTLE ACTIVE PIN E--IVS IDLE ACTIVE PIN F--IVS SUPPLY (5 VOLTS)
DDEC II: 131506 DDEC III: 131549		PACKARD ELECTRIC "METRI PACK" 	PIN C--WHITE--GROUND PIN B--BLACK--APS SIGNAL PIN A--RED-----SUPPLY
JOHN DEERE DIESEL: 131814		PACKARD ELECTRIC 	PIN A--APS SIGNAL PIN B--GROUND PIN C--APS SUPPLY (5 VOLTS) PIN D--DO NOT CONNECT PIN E--DO NOT CONNECT PIN F--DO NOT CONNECT
JOHN DEERE CNG: 132430		PACKARD ELECTRIC "METRI PACK" 	PIN A--WHITE---FPP1 GROUND PIN B--BROWN--FPP1 SIGNAL (HIGH) PIN C--BLUE-----FPP1 SUPPLY PIN D--VIOLET---SWITCH (NO) PIN E--YELLOW--SWITCH SUPPLY PIN F--ORANGE--SWITCH (NC) PIN G--N/A-----CAVITY PLUG PIN H--RED-----FPP2 SUPPLY PIN J--GREEN----FPP2 SIGNAL (LOW) PIN K--BLACK----FPP2 GROUND

*Sensor housing may vary

**Idle validation is an option for DDEC III applications

EXPLODED VIEW & PARTS



Item	Part No.	Description	Caterpillar 131508	Cummins/Mercedes 131507	DDEC III & IV 131549	John Deere Diesel 131814	John Deere CNG 132430
1	132252	Screw	1	1	1	1	1
2	119454	Sensor			1		
2	131779	Diesel Sensor				1	
2	132354	Int Sensor		1			
2	132445	CNG Sensor					1
2	132446	Cat Sensor	1				
3	130567	Retaining Ring	1	1	1	1	1
11	131921	Pedal Pad	1	1	1	1	1
12	131510	Spring	1	1	1	1	1
13	131509	Pedal Arm	1	1	1	1	
13	132359	Pedal Arm					1
14	131358	Clamp	1	1	1	1	1
15	100110	Screw	2	2	2	2	2
18	118708	Screw	2	2	2	2	2
31	131512	Pedal Pin	1	1	1	1	1

Serviceable items are identified above.

SERVICE KIT INFORMATION

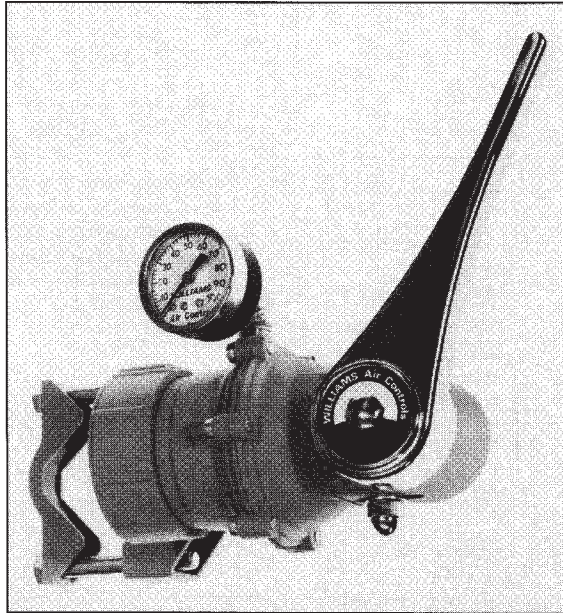
Part Number	Sensor Service Kit	Item Numbers
131508 Caterpillar	132484 8v	1, 2
131507 Cummins/Mercedes North America	131973	1, 2
131549 DDEC III & IV	130800	1, 2
131814 John Deere Diesel	132737	1, 2
132430 John Deere CNG	132739	1, 2

TO ORDER

To order a WM540 model, select part number from the chart below.

Engine Application	Part Number	Idle Validation Switch
Caterpillar	131508	No
Cummins/Mercedes North America	131507	Yes
DDEC III & IV w/o IVS	131549	No
John Deere Diesel	131814	Yes
John Deere CNG	132430	Yes

NOTES



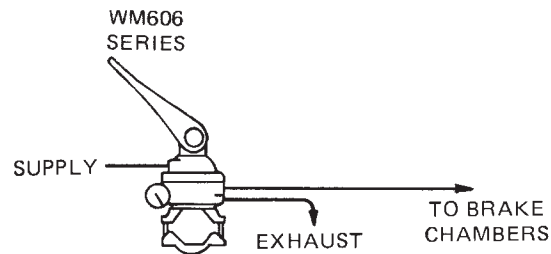
WM606 Series Column Mounted Regulating Valve

35 SCFM @ 100 PSI

DESCRIPTION

WM606 series three-way regulating valves are designed for column mounting. When a WM606 valve's control handle is applied, the valve opens to regulate pressure delivery to the outlet in proportion to the handle's position. As the handle is returned to neutral, air pressure at the valve's outlet is released through the exhaust. The WM606 features a friction adjustment which restricts or allows free movement of the handle.

Important: When friction adjustment screws are loosened to provide minimum handle friction, the operator must hold the handle in the applied position or it will automatically return to neutral. Some WM606 models are equipped with adjustable stops which allow the operator to limit the valve's output range by restricting the handle

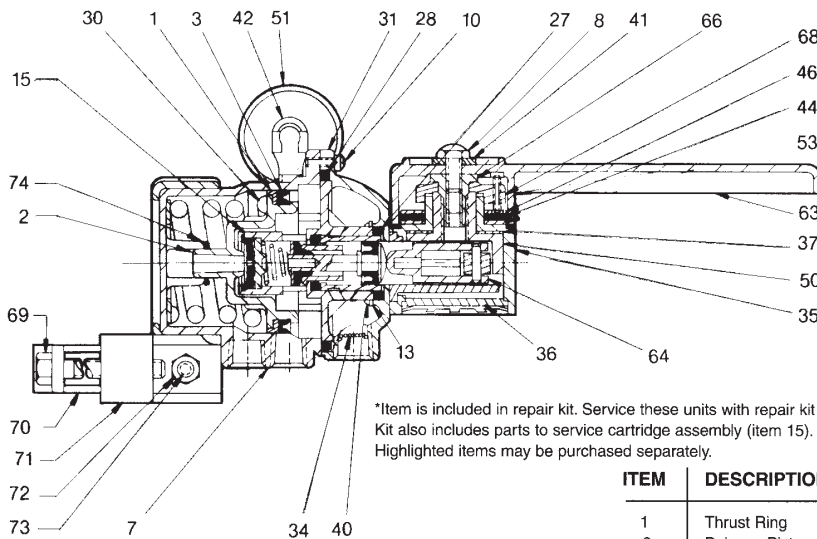


movement to a selected portion of its full range. WM606 series valves are commonly used to provide hand control of vehicular spring brakes. They are also used as marine throttle controls. This device meets the pressure test requirements specified in "Marine Engineering Regulations" (CG-115).

SPECIFICATIONS

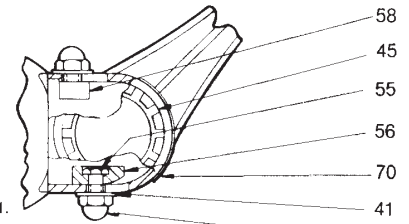
Port sizes: Inlet/Outlet/Exhaust.....	1/4-18 NPTF
Gage.....	1/8-27 NPTF
Maximum supply pressure.....	200 PSI (1379 kPa)
Operating temperature.....	-20°F to 200°F (-29°C to 93°C)
Flow rating.....	35 SCFM @ 100 PSI (1,0 m ³ /min @ 690 kPa)
Handle movement.....	90° maximum
Mounting.....	Bracket clamps to 2.25 in. (57 mm) maximum diameter column
Mounting attitude.....	Optional
Materials: Body castings.....	Iridited die cast zinc alloy
Piston.....	Die cast aluminum alloy
Poppets and O-rings.....	Buna N
Weight.....	3 lb, 12 oz (1,7 kg)

CROSS SECTION & PARTS INFORMATION

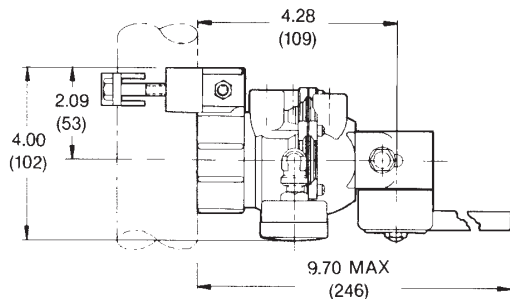
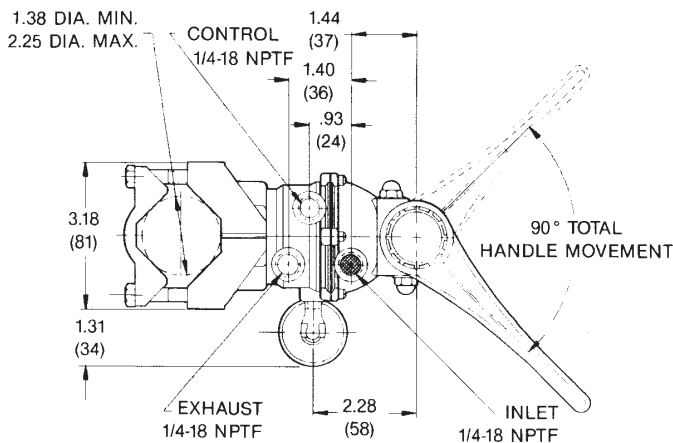


CAUTION
Handle may return to released position unless manually held open-if friction adjustment is not adequate.

ITEM 75, LABEL



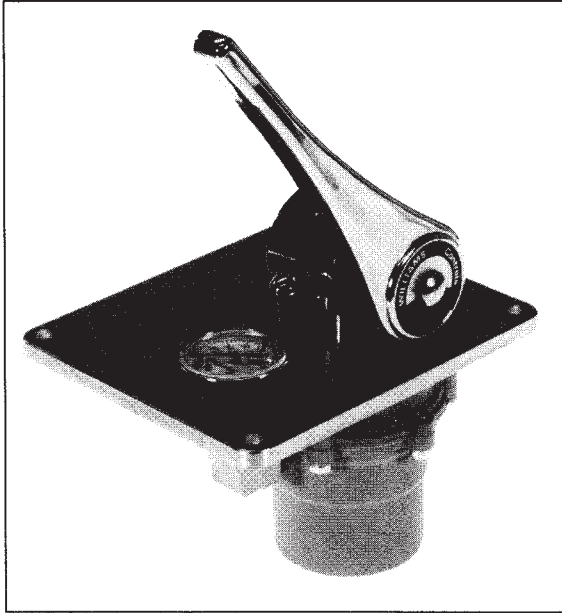
*Item is included in repair kit. Service these units with repair kit 114471. Kit also includes parts to service cartridge assembly (item 15). Highlighted items may be purchased separately.



ITEM	DESCRIPTION	WM606C1	WM606C2	WM606C2C	QTY
1	Thrust Ring	101369	101369	101369	1
2	Balance Piston	116801	116801	116801	1
*3	U-Cup	116335	116335	116335	1
7	Outlet Body	100055	100055	100055	1
8	Screw	118453	118453	118453	1
10	Screw	118445	118445	118445	6
12	Cap Nut	-	-	114618	2
*13	Seal Washer	116488	116488	116488	4
15	Cartridge Assembly	101355	101355	101355	1
*27	O-Ring	116318	116318	116318	1
*28	O-Ring	118269	118269	118269	1
30	Spring	101367	101367	101367	1
31	Inlet Body	118795	118795	118795	1
34	Screen	116456	116456	116456	1
35	Cam Housing	101340	101340	101309	1
36	Closure Plate	101354	101354	101354	1
*37	Friction Disc	101347	101347	101347	1
40	Screw	114667	114667	114667	4
41	Washer	115079	115079	115079	3 for C1C & C2C, 1 for others
42	Pipe Ell	115217	-	-	1
44	Friction Disc	103224	103224	103224	1
45	Retaining Ring	116218	116218	116218	1
46	Friction Ring	101345	101345	101345	1
50	Actuating Cam	101341	101341	101341	1
51	Gage	103225	-	-	1
*53	Friction Disc	101346	101346	101346	1
55	Insert	-	-	103351	1
56	Minimum Stop	-	-	103352	1
58	Maximum Stop	-	-	103350	1
63	Handle	101349	101349	101349	1
64	Cam Follower	104770	104770	104770	1
66	Screw	101348	101348	101348	1
68	Retainer Assembly	104980	104980	104980	1
69	Screw	114695	114695	114695	2
70	Column Clamp	101062	101062	101062	1
71	Mounting Bracket	101370	101370	101370	1
72	Nut	114547	114547	114547	1
73	Screw	114951	114951	114951	1
74	Spacer	118511	118511	118511	1
75	Label	118351	118351	118351	1

To order, specify **WM606** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Output Range	Maximum Output	Handle Stops	Adjustable Gage
WM606 C1	113724	0-120 PSI (0-827 kPa)	0-120 PSI Tank	None	Yes
WM606 C2	113727	0-120 PSI (0-827 kPa)	Tank	None	No
WM606 C2C	113730	0-120 PSI (0-827 kPa)	Tank	Minimum & Maximum	No



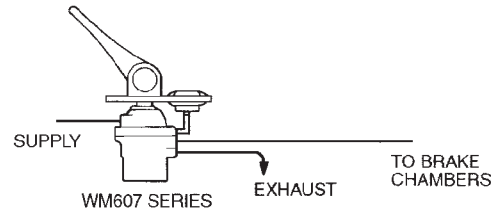
WM607 Series Panel Mounted Regulating Valve

35 SCFM @ 100 PSI

DESCRIPTION

The WM607 series consists of three-way, panel-mounted regulating valves with a variety of output ranges. When a WM607 valve's control handle is applied, the valve opens to regulate pressure delivery to the outlet in proportion to the handle's position. As the handle is returned to neutral, air pressure at the valve's outlet is released through the exhaust port. The WM607 features a friction adjustment which restricts or allows free movement of the handle.

Important: When friction adjustment screws are loosened to provide minimum handle friction, the operator must hold the handle in the applied position or it will automatically return to neutral.

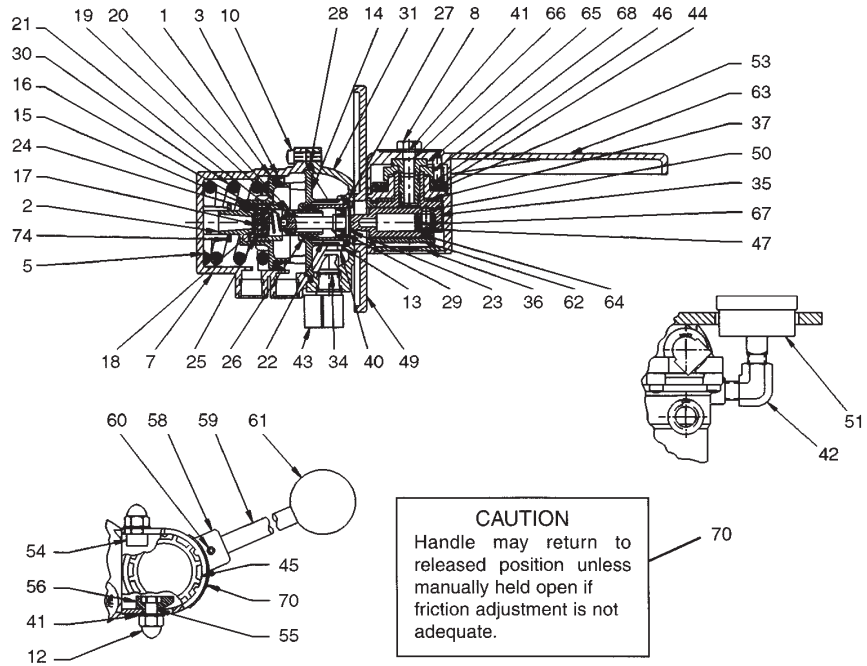
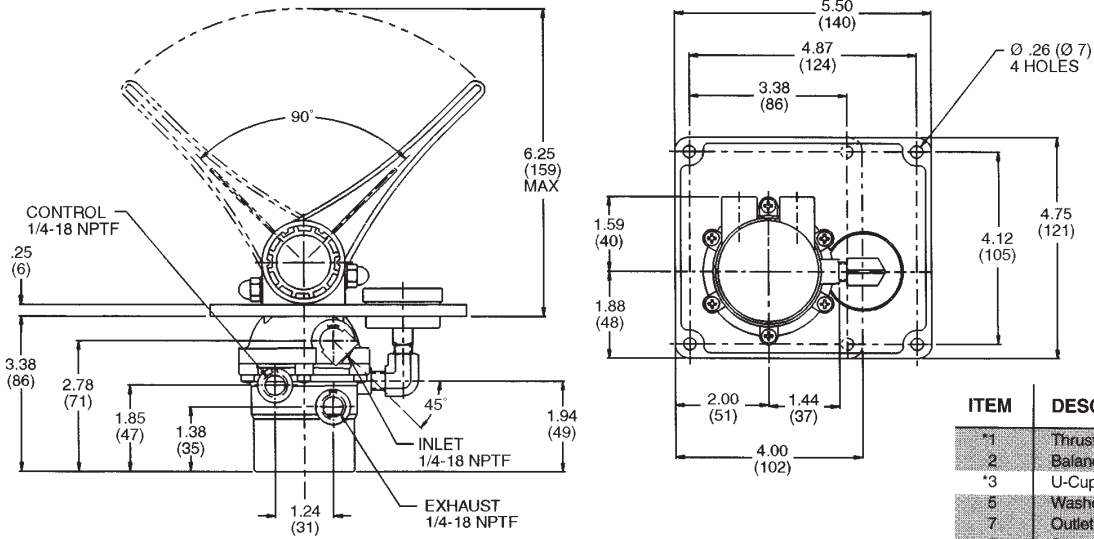


WM607 series valves are commonly used to provide hand control of vehicular spring brakes. They are also used as marine throttle controls. This device meets the pressure test requirements specified in "Marine Engineering Regulations" (CG-115).

SPECIFICATIONS

Port sizes: Inlet/Outlet/Exhaust.....	1/4-18 NPTF
Gage.....	1/8-27 NPTF
Maximum supply pressure.....	200 PSI (1379 kPa)
Operating temperature.....	-20°F to 200°F (-29°C to 93°C)
Flow rating.....	35 SCFM @ 100 PSI (1,0 m ³ /min @ 690 kPa)
Handle movement.....	90° maximum
Mounting.....	Panel mounted
Mounting attitude.....	Optional
Materials: Body castings.....	Iridited die cast zinc alloy
Piston.....	Die cast aluminum alloy
Poppets and O-rings.....	Buna N
Mounting plates.....	Aluminum
Weight.....	3 lb, 6 oz (1,5 kg)

CROSS SECTION & PARTS INFORMATION

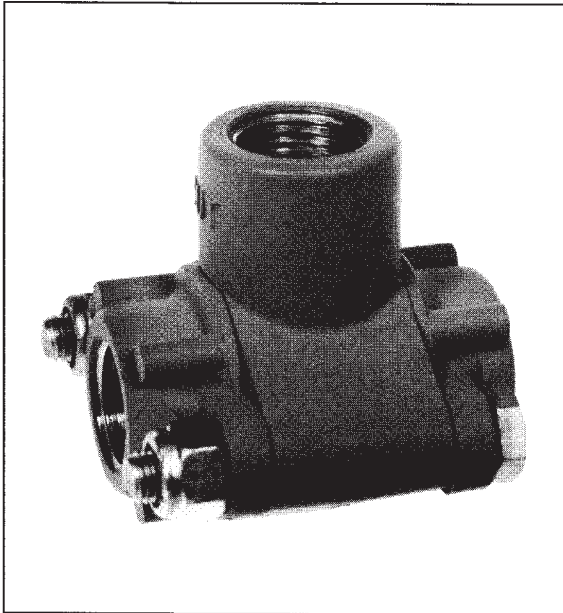


ITEM	DESCRIPTION	WM607 B1, C1
*1	Thrust Ring	101369
2	Balance Piston	116801
*3	U-Cup	116335
5	Washer	116803
7	Outlet Body	100055
8	Screw	118453
10	Screw	118445
*13	Seal Washer	118488
22	Cartridge Assembly	101355
*27	O-Ring	116318
*28	O-Ring	118269
30	Spring	103104 for A1 101692 for B1 101367 for C1
31	Inlet Body	119110
34	Screen	116456
35	Cam Housing	103222
36	Closure Plate	103223
*37	Disc	103224
40	Screw	114857
41	Washer	115079
42	Pipe Elbow	-
43	Pipe Ell	115223
*44	Friction Disc	101347
*45	Retaining Ring	116218
46	Friction Ring	101345
47	Roller Pin	101353
48	Grommet	118078
49	Mounting Plate	103218
50	Cam	101690 for A1 101690 for B1 101341 for C1
51	Gage	103006 for A1 103008 for B1 103225 for C1
*53	Friction Disc	101346
54	Maximum Stop	-
55	Insert	-
56	Minimum Stop	-
59	Handle Assembly	-
62	Follower Guide	101343
63	Handle	101349
64	Cam Follower	103219
65	Screw	115508
66	Screw	101348
67	Roller	101352
68	Cam Retainer	101344
69	Pipe Nipple	115192
70	Label	118351
71	Spacer	-

*Item is included in repair kit. Service these units with repair kit 114471. Kit also includes parts to service cartridge assembly (item 22). Highlighted items may be purchased separately.

To order, specify **WM607** _____ (suffix) _____ (part number). Select suffix and part number below.

Suffix	Part Number	Output Range	Maximum Output	Handle	Adjustable Handle Stops	Gage
WM607 B1	113754	0-90 PSI (0-621 kPa)	90 PSI (621 kPa)	Standard	None	No
WM607 C1	113762	0-120 PSI (0-827 kPa)	Tank	Standard	None	Yes

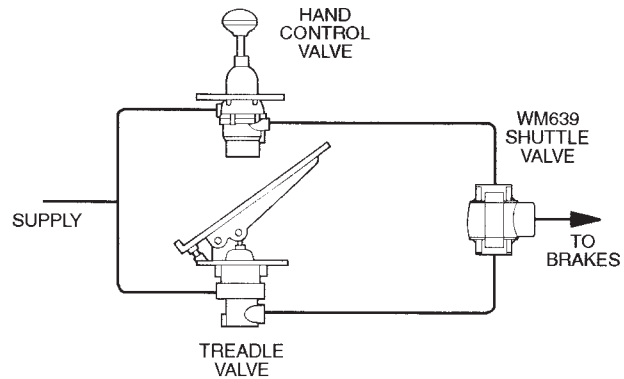


**WM639 Series
3/8 Inch
Shuttle Valve**

130 SCFM @ 100 PSI

DESCRIPTION

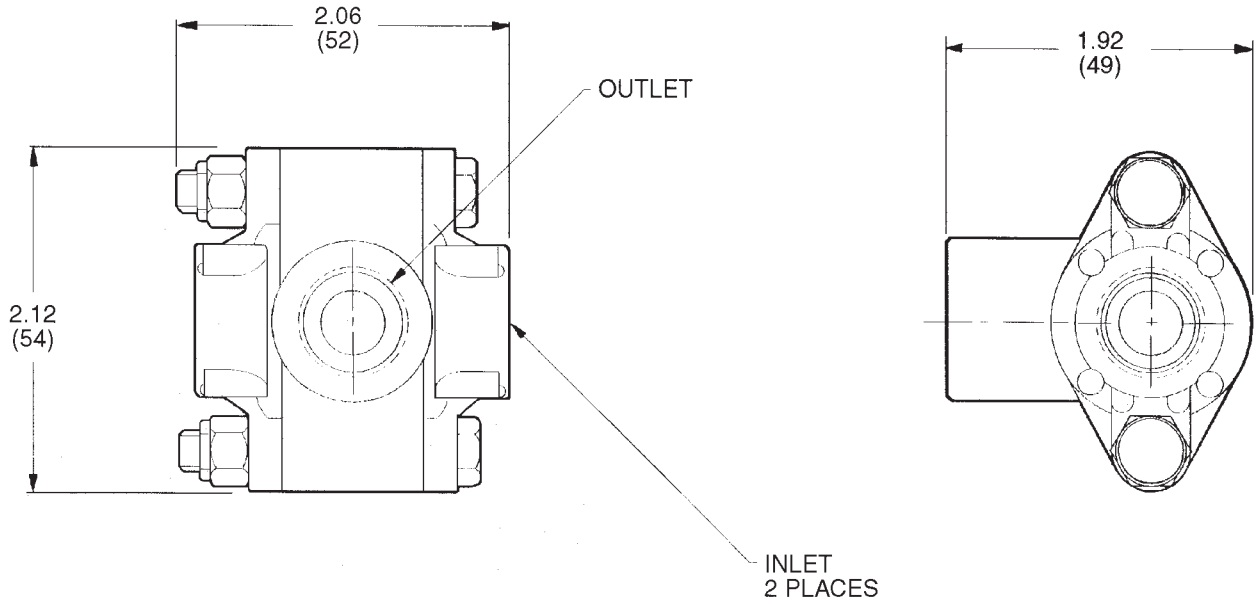
The WM639 is an in-line shuttle valve engineered for applications with a low to moderate air flow rate. It functions as a double check valve, allowing two pressure sources to independently supply a single outlet. The WM639 is equipped with a die cast zinc shuttle which moves freely back and forth in a chamber connecting the valve's two inlet ports. As long as there is a pressure differential between the inlets, the shuttle seals off the one with the least supply pressure. This valve is commonly used in air brake systems in which a hand valve and a treadle are both used to control the same function.



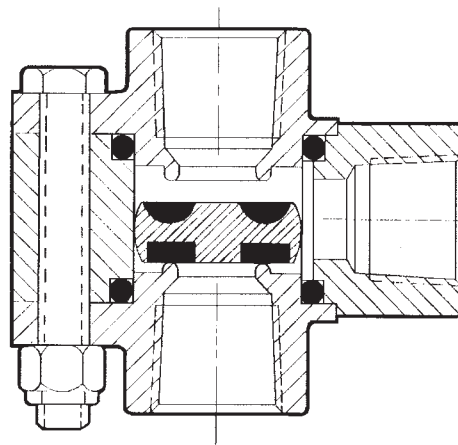
SPECIFICATIONS

Port size	3/8-18 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating	130 SCFM @ 100 PSI (3,5 m ³ /min @ 690 kPa)
Mounting	In-line
Mounting attitude	Optional
Materials: Body castings	Iridited die cast zinc alloy
Shuttle	Buna N bonded to zinc alloy
O-rings	Buna N
Weight	7 oz (0,2 kg)

DIMENSIONAL DATA

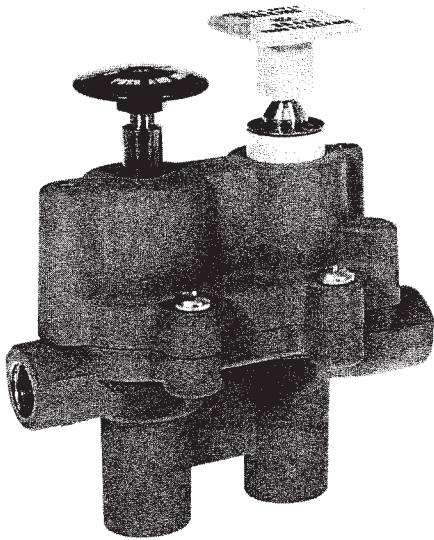


CROSS SECTION

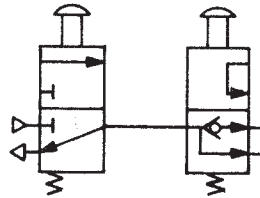


ORDERING INFORMATION

To order, specify **WM639A**, part number 113934.



I.S.O. SYMBOL

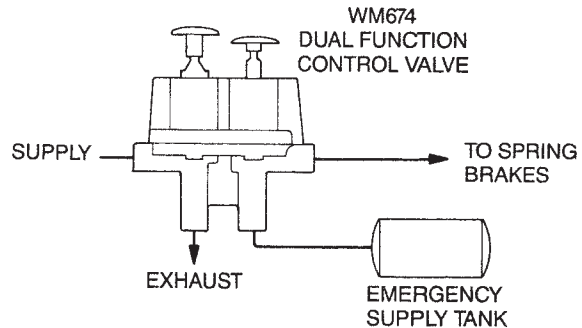


**WM674 SERIES
DUAL FUNCTION
PARKING BRAKE
CONTROL**

DESCRIPTION

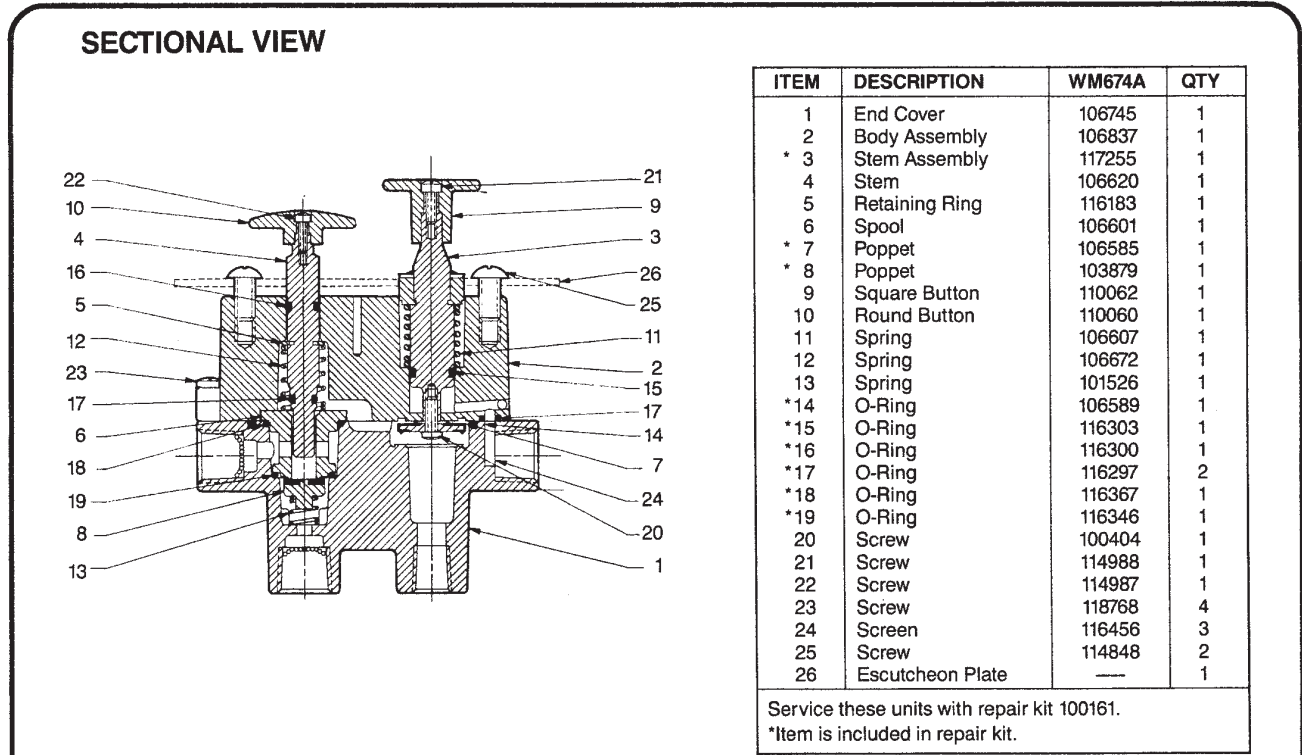
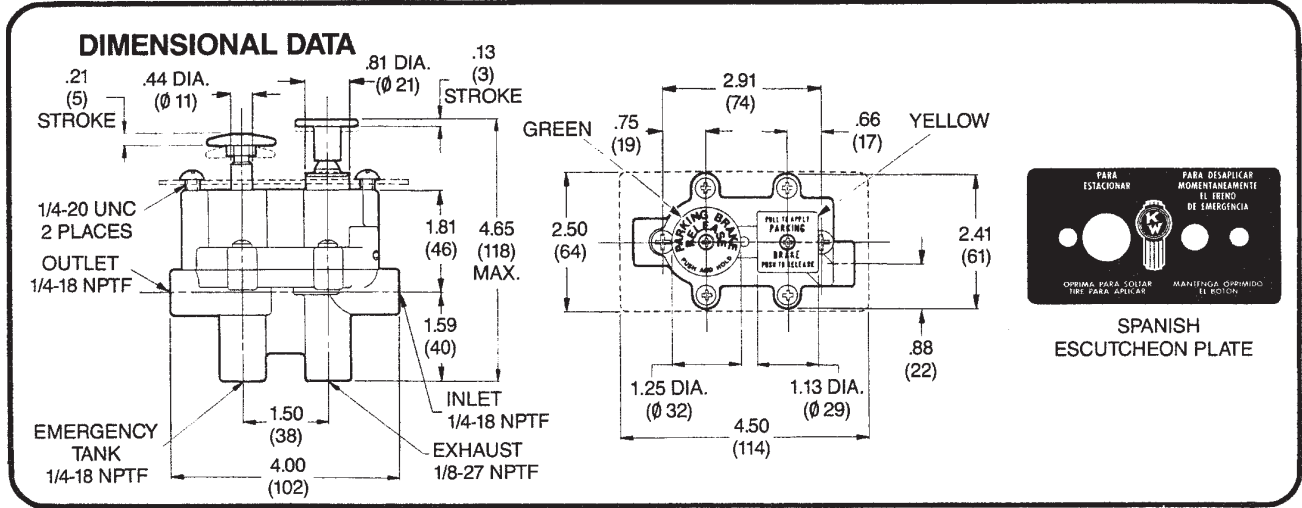
The WM674 is a dual function valve used to control spring brakes under normal and emergency conditions. Each WM674 unit consists of two manually operated three-way valves housed in a common body. When pressure at its inlet exceeds 45 PSI (310 kPa), the first valve (square button) can be manually operated to control the parking brakes. From the first valve, air flows to the second valve (round button) which is spring-loaded so supply pressure can flow through it to release the spring brakes and charge the emergency supply tank. If supply pressure falls between 20-35 PSI, the first valve automatically closes and exhausts downstream pressure to cause emergency application of the spring brakes. An integral check valve in the second valve protects pressure in the emergency supply tank. The second valve can be applied to allow air to flow from the tank so the spring brakes so

the vehicle can be moved. Since the second valve's function is for temporary emergency use, the round button must be manually held down. As soon as the button is released, pressure at the outlet is exhausted to atmosphere and the spring brakes are reapplied.



SPECIFICATIONS

PORT SIZES: Inlets and Outlet	1/4-18 NPTF
Exhaust	1/8-27 NPTF
MAXIMUM SUPPLY PRESSURE	150 PSI (1034 kPa)
OPERATING TEMPERATURE	-20°F to 150°F (-29°C to 66°C)
FLOW RATING: Inlet to Outlet	20 SCFM @ 100 PSI (0,6 m³/min @ 690 kPa)
Outlet to Exhaust	25 SCFM @ 100 PSI (0,7 m³/min @ 690 kPa)
Tank to Outlet	35 SCFM @ 100 PSI (1,0 m³/min @ 690 kPa)
AUTOMATIC APPLICATION PRESSURE	20-35 PSI (138-241 kPa)
MOUNTING	Panel Mounted
MOUNTING ATTITUDE	Optional
MATERIALS: Body Castings	Die Cast Aluminum Alloy
Hardware	Cadmium Plated Steel
Seals & O-Rings	Buna N
WEIGHT	17 oz. (0,5 kg)



ORDERING INFORMATION

TO ORDER, SPECIFY

WM674 _____

Model Number Suffix

PART NUMBER _____

SELECT SUFFIX & PART NUMBER BELOW

SUFFIX	PART NUMBER	KNOB IDENTIFICATION	ESCUTCHEON PLATE
WM674 A	106841	Knobs Lettered Per D.O.T. & R.C.C.C.	Not Included

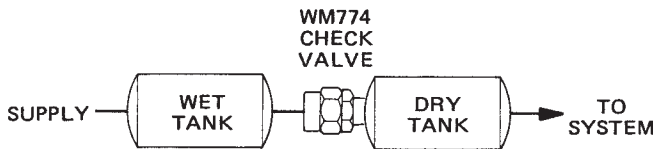
PRODUCT DESCRIPTION

DESCRIPTION The WM774A is a lightweight aluminum check valve engineered for industrial and vehicular applications which operate with a moderate air flow rate. WM774A valves can be installed directly into air reservoirs or mounted in-line.

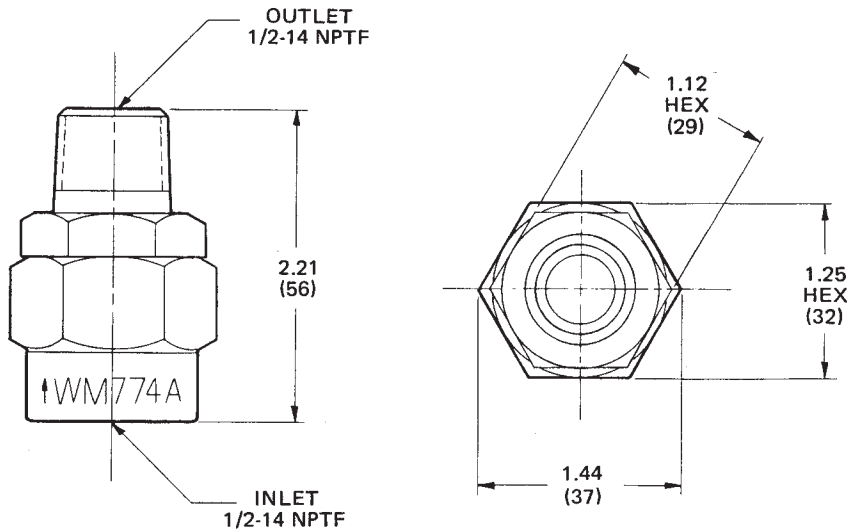
OPERATION The WM774A check valve allows air flow from the inlet to the outlet, with minimum restriction, as long as air pressure is greater at the inlet than at the outlet. When inlet pressure falls below outlet pressure, a spring-loaded stainless steel poppet seats on an elastomer-bonded metal ring to seal off the inlet port and prevent reverse flow.

APPLICATION WM774A series check valves are used to protect downstream pneumatic circuits from pressure loss due to upstream pressure depletion. The male threading on the WM774A outlet port makes this check valve ideal for installation directly into air reservoir inlets to maintain pressure in the event of negative fluctuations in supply pressure. Note: A check valve should not be installed directly downstream from a compressor without the use of a pulse-isolating reservoir.

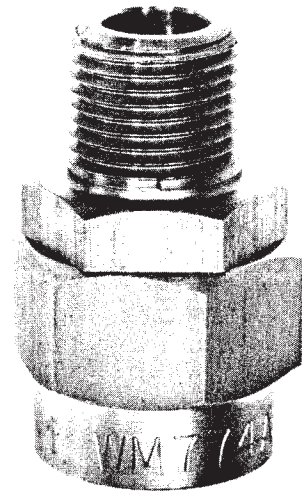
TYPICAL INSTALLATION



EXTERNAL CONFIGURATION

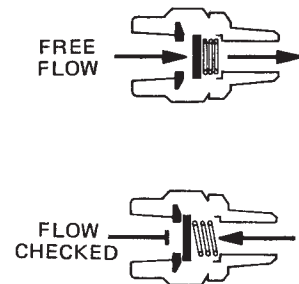


**WM774
SERIES**

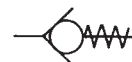


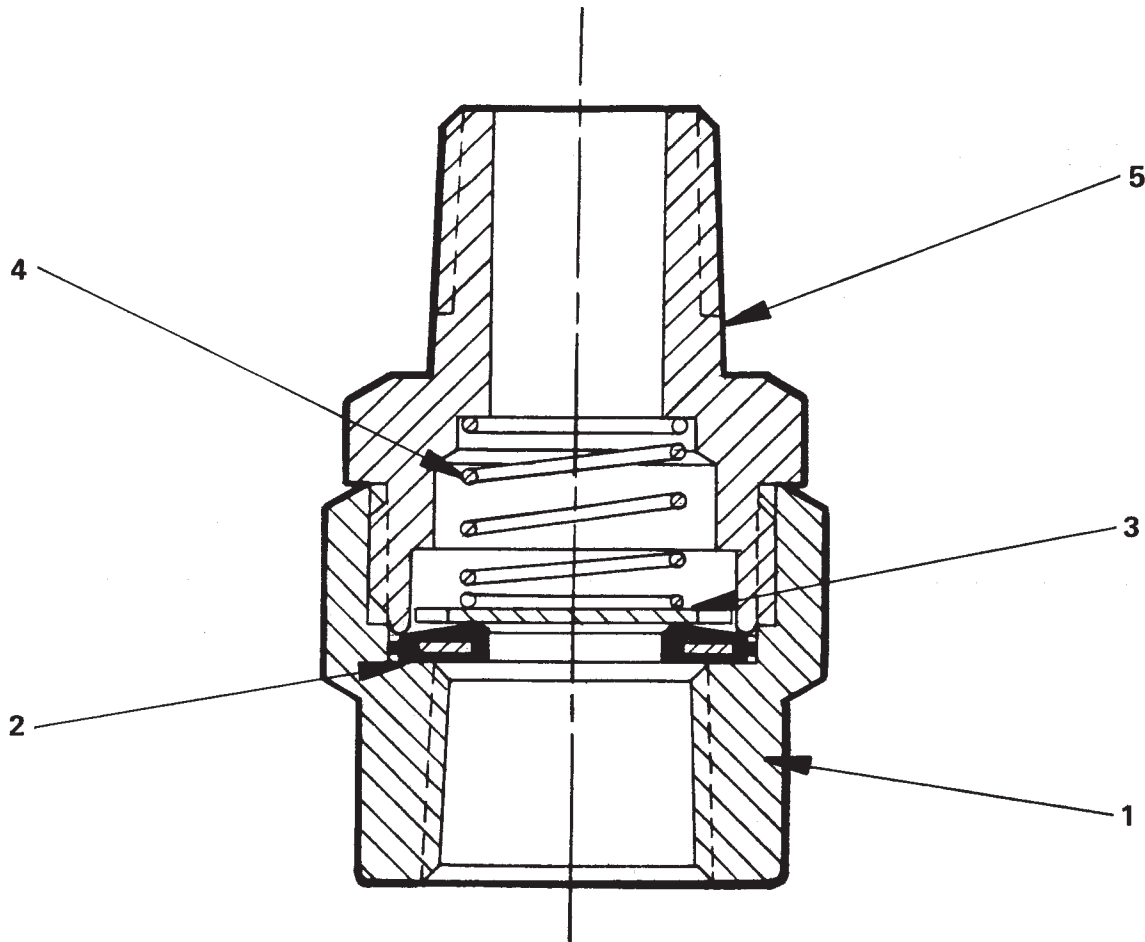
**1/2 INCH
CHECK
VALVE**

FUNCTIONAL DIAGRAM



I.S.O. SYMBOL





SPECIFICATIONS

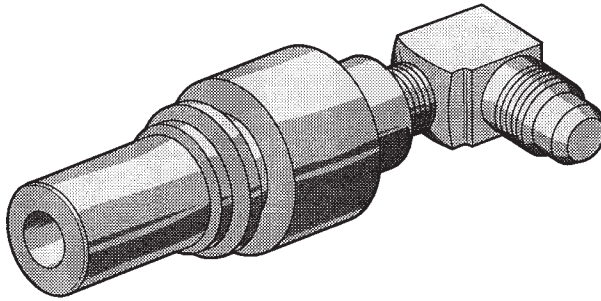
PORT SIZE: Inlet 1/2-14 NPTF (female)
 Outlet 1/2-14 NPTF (male)
 MAXIMUM OPERATING PRESSURE. 150 PSI (1034, 2 kPa)
 FLOW RATING. 180 scfm @ 100 PSI (4,9 m³ min @ 690 kPa)
 OPERATING TEMPERATURE. . . -40°F to 250°F (-40,0°C to 121,1°C)
 MOUNTING. In-line
 MOUNTING ATTITUDE Optional
 MATERIALS: Valve Body Aluminum
 Poppet Stainless Steel
 Poppet Seat Buna N Bonded To Aluminum
 NET WEIGHT. 2 Ounces (0,06 kg)
 *For continuous operation beyond this range, contact factory.

PARTS IDENTIFICATION		
ITEM	DESCRIPTION	QTY.
1	INLET BODY	1
2	POPPET SEAT	1
3	POPPET	1
4	SPRING	1
5	OUTLET BODY	1

This item is classified as a non-repairable unit.

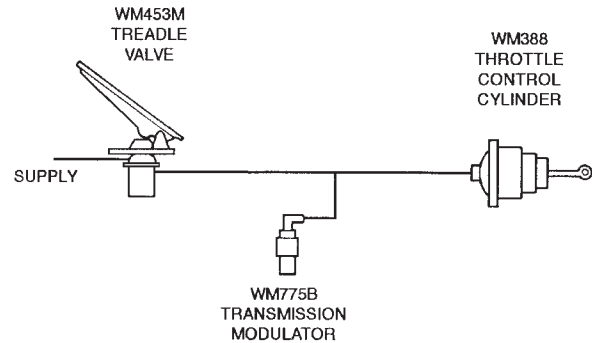
TO ORDER, SPECIFY
WM774A
 Model Number
 PART NUMBER 117005

**WM775B
PNEUMATIC
TRANSMISSION MODULATOR**

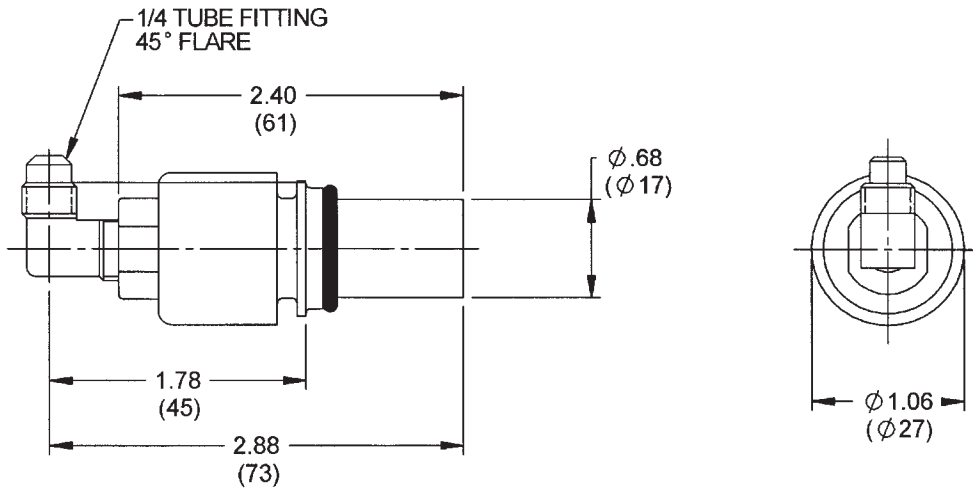


FEATURES AND SPECS

- FMVSS-124 approved
- Weight: 6 oz (0,18 kg)
- Port size: Accepts 1/4" I D hose with 45° SAE (37°JIC) fitting
- Maximum supply pressure: 75 PSI (517 kPa)
- Operating temperature: -20°F to 250°F (-29°C to 121°C)



DIMENSIONAL DATA

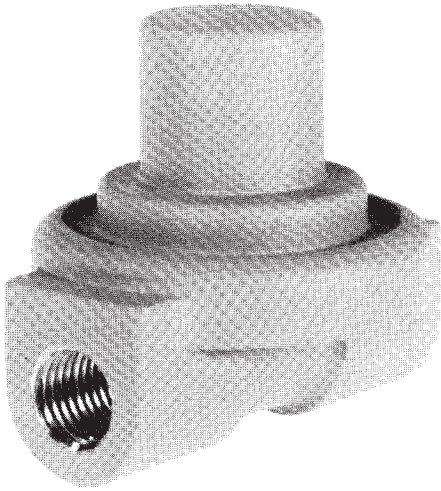


WM775B valves are low cost, non-serviceable items. No repair kit is available for these units.

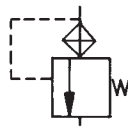
TO ORDER

To order model WM775B, specify part number 117830.

NOTES



I.S.O. SYMBOL

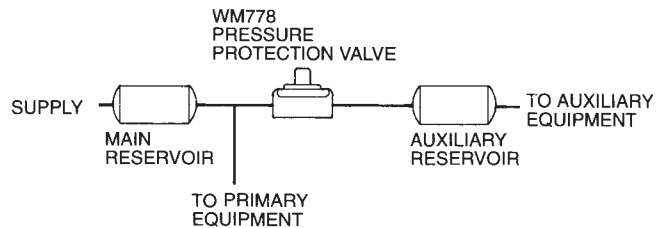


WM778 SERIES PRESSURE PROTECTION VALVE

70 PSI HOLDBACK

DESCRIPTION

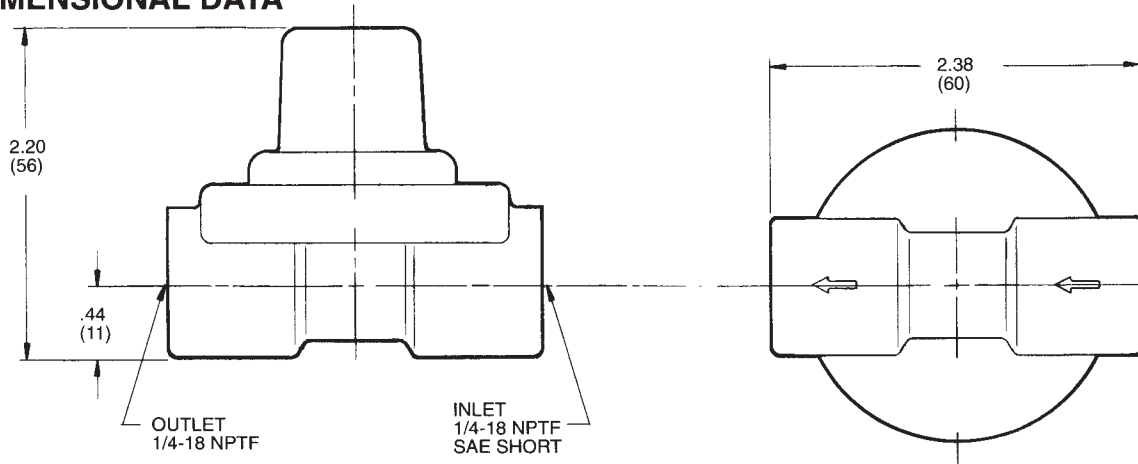
The WM778 series are normally closed pressure protection valves often used when an auxiliary system is supplied off a primary system. The valve will protect primary system air pressure by reclosing automatically at 70 PSI (482 kPa). The WM778 is available with or without a filter installed in its inlet port. The filter will reduce ingestion of contaminants.



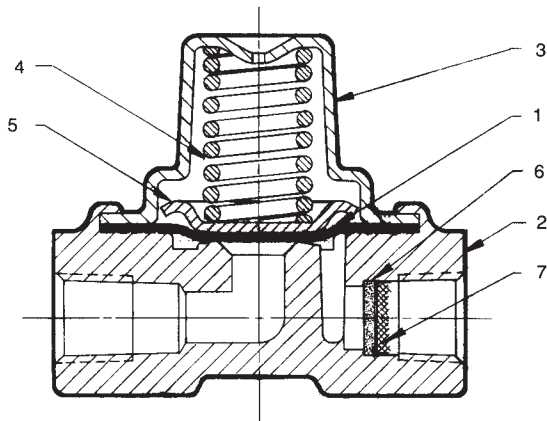
SPECIFICATIONS

PORT SIZE	1/4-18 NPTF
MAXIMUM OPERATING PRESSURE	150 PSI (1034 kPa)
OPERATING TEMPERATURE.....	-40°F to 180°F (-40°C to 82°C)
MOUNTING	By Inlet and Outlet Ports
MOUNTING ATTITUDE	Optional
MATERIALS: Body	Die Cast Zinc Alloy
Cover	Zinc-Plated Steel
Diaphragm	Fabric-Reinforced Buna N
WEIGHT	9.5 oz. (0,3 kg)

DIMENSIONAL DATA



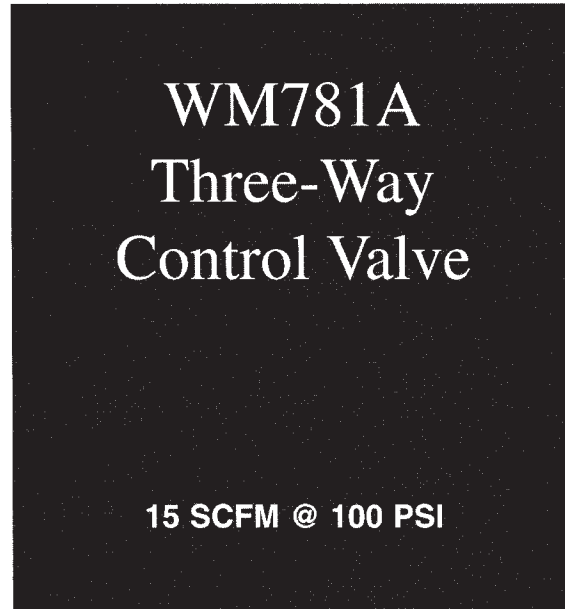
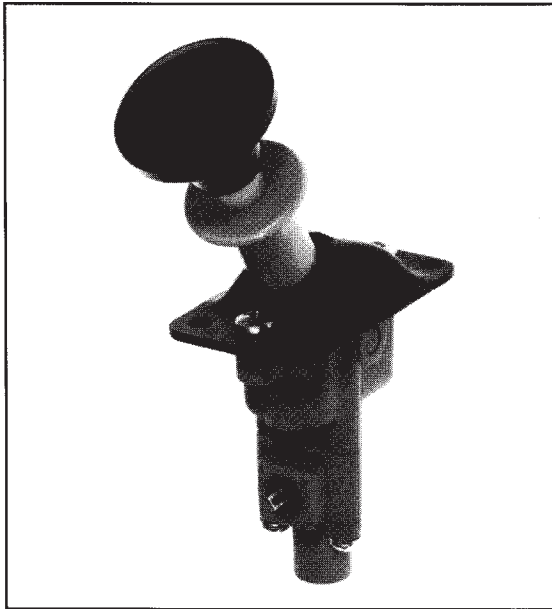
SECTIONAL VIEW



ITEM	DESCRIPTION	WM778A	WM778A1	QTY.
1	Diaphragm	118186	118186	1
2	Body	118183	118183	1
3	Cover	118184	118184	1
4	Spring	131367	131367	1
5	Diaphragm Plate	118185	118185	1
6	Filter Disc	—	118587	1
7	Screen	—	116456	1

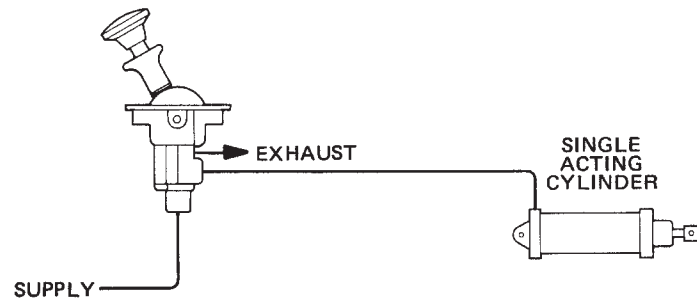
ORDERING INFORMATION

<p>TO ORDER, SPECIFY WM778 Model Number Suffix PART NUMBER _____ SELECT SUFFIX & PART NUMBER BELOW</p>		
MODEL	PART NUMBER	WITH FILTER
WM778 A	118181	NO
WM778 A1	118588	YES



DESCRIPTION

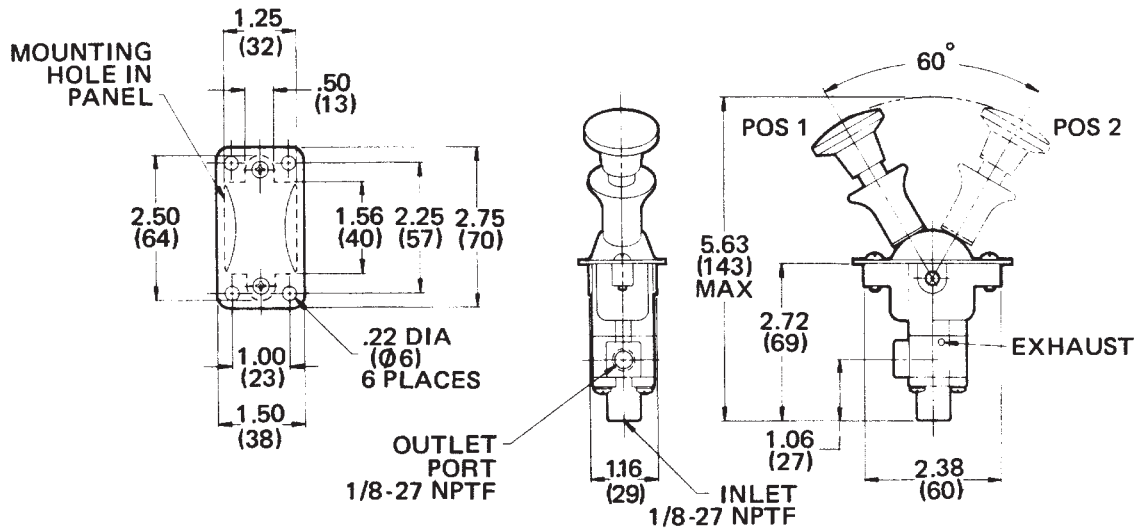
The WM781A series valve is a non-compensating three-way control valve which is normally closed. The WM781A features a spring-loaded lockout safety device which locks the control lever in the applied and released positions to prevent unintentional lever movement.



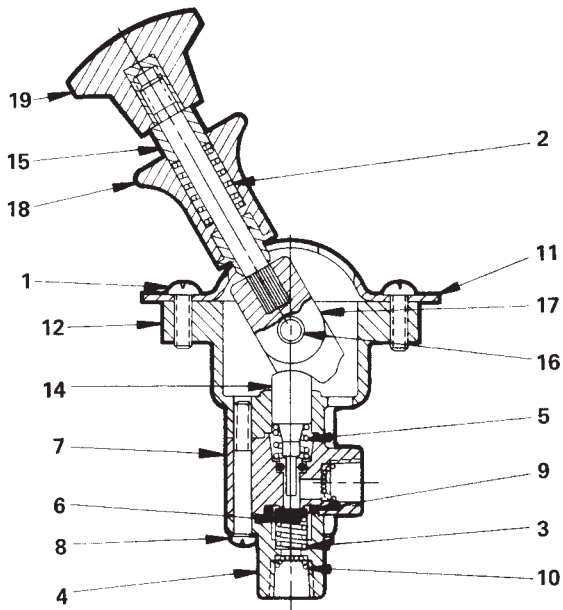
SPECIFICATIONS

Port size	1/8-27 NPTF
Maximum supply pressure	150 PSI (1034, kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating	15 SCFM @ 100 PSI (0,4 m ³ /min @ 690 kPa)
Mounting	Panel mounted
Mounting attitude	Optional
Materials: Body castings	Die cast zinc alloy
Poppet	Buna N
O-rings	Buna N
Actuating lever shaft	Steel
Knob	Black plastic
Safety lockout	Steel
Actuating lever shaft	Yellow plastic
Weight	9 oz (0, 2 kg)

DIMENSIONAL DATA



CROSS SECTION

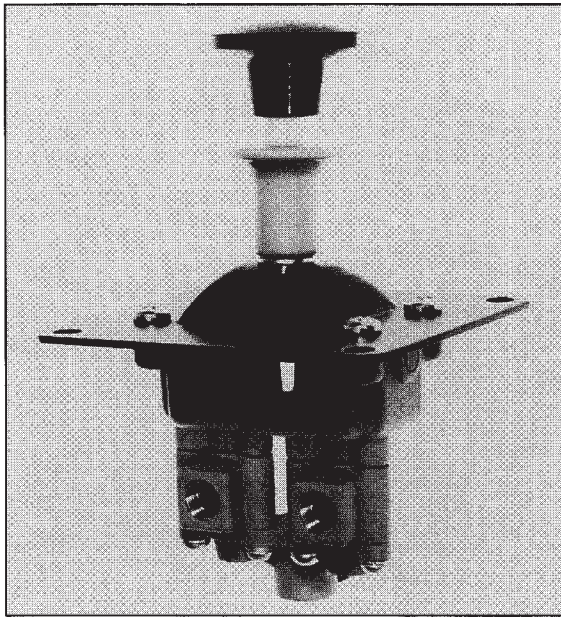


Item	Description	WM781A	Qty
1	Screw	100110	2
2	Spring	101082	1
3	Spring	101467	1
4	Inlet Body	101470	1
5	Spring	118854	1
6	Poppet	119141	1
7	Body	101519	1
8	Screw	119456	3
9	O-Ring	116303	1
10	Screen	116455	1
11	Valve Cover	116296	1
12	Upper Body	119656	1
13	Handle Stem	118439	1
14	Valve Stem	118853	1
15	Handle Bushing	118295	1
16	Lever Pin	101524	1
17	Cam Valve	118443	1
18	Latch Assy	118303	1
19	Knob	118305	1
25	O-Ring	116296	1
27	Screen	116455	1

* Item is included in repair kit. Service this unit with repair kit 114112.

Highlighted parts may be purchased separately.

To order, specify **WM781A**, part number 118315.

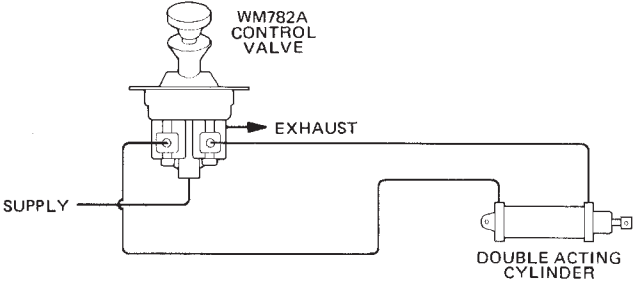


WM782A
Two Position
Four-Way
Control Valve

15 SCFM @ 100 PSI

DESCRIPTION

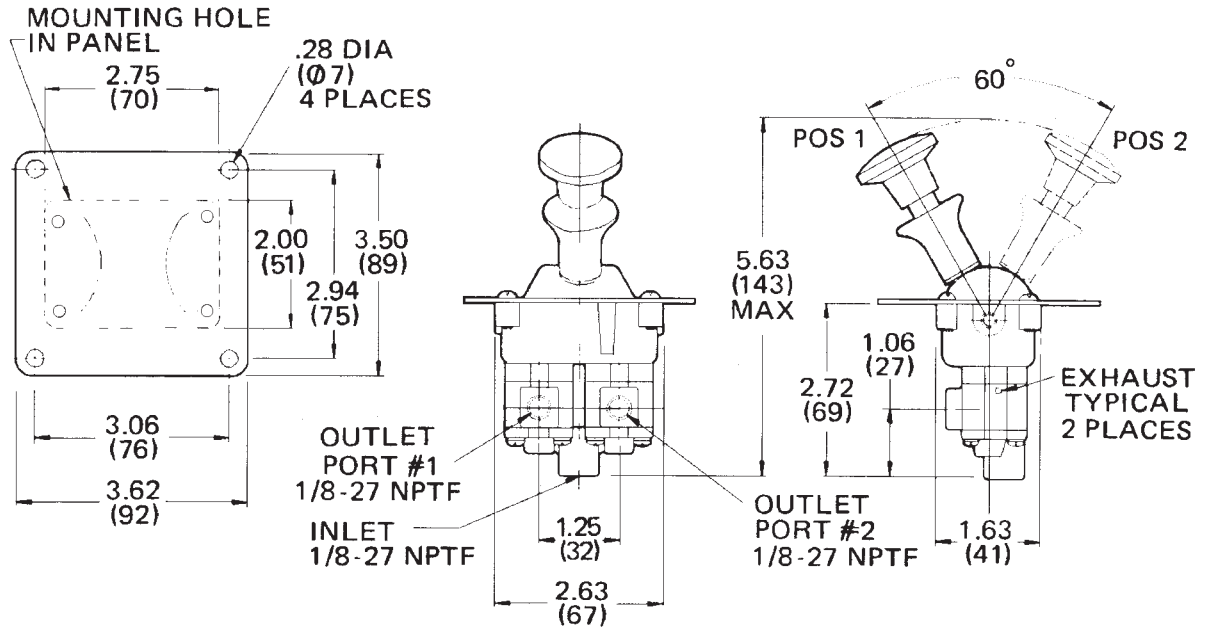
The WM782A is a non-compensating, four way control valve with two functional positions. The valve is equipped with a spring loaded lockout safety device which locks the control lever in both positions to prevent unintentional movement. When the WM782's control lever is in position 1 (refer to dimensional data), outlet port 2 receives supply pressure and outlet 1 is exhausted. When the control lever is moved 60° to position 2, outlet port 1 receives supply pressure and outlet 2 is exhausted. The WM782A valve is designed to control double acting cylinders and the actuation of power take off systems.



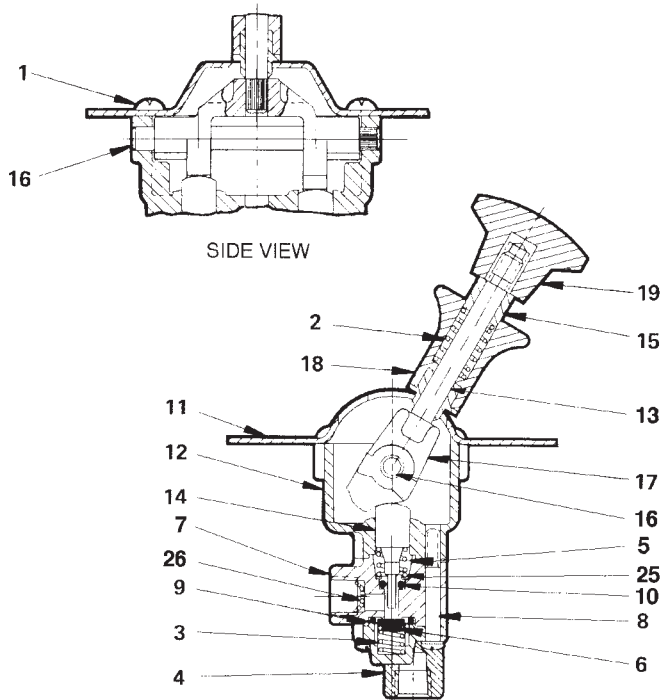
SPECIFICATIONS

Port size	1/8-27 NPTF
Maximum supply pressure	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating	15 SCFM @ 100 PSI (0,4 m ³ /min @ 690 kPa) each side
Mounting	Panel mounted
Mounting attitude	Optional
Materials: Body castings	Iridited die cast zinc alloy
Actuating cam	Iridited die cast zinc alloy
Poppet and O-rings	Buna N
Actuating lever shaft	Steel
Knob	Black plastic
Weight	1 lb, 1 oz (0,5 kg)

DIMENSIONAL DATA



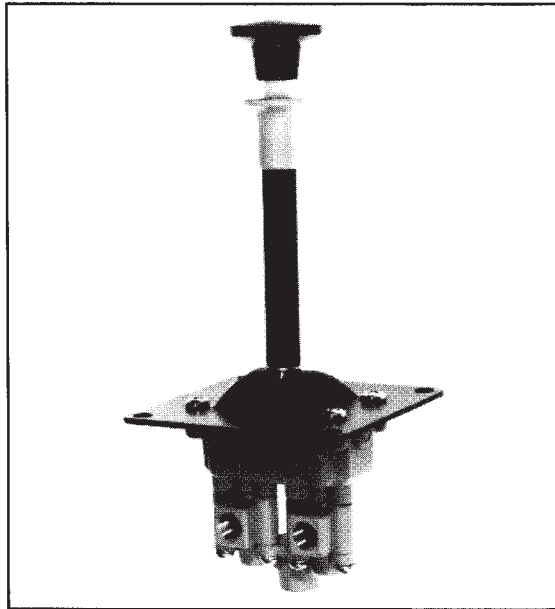
CROSS SECTION & PARTS INFORMATION



ITEM	DESCRIPTION	WM782A	QTY
1	Screw	100110	4
2	Spring	101082	1
*3	Spring	101467	2
4	Inlet Body	118309	1
*5	Spring	118854	2
*6	Poppet	119141	2
*7	Body	101519	2
8	Screw	119573	6
9	O Ring	116303	2
*10	O Ring	116296	2
11	Valve Cover	118288	1
12	Upper Body	119658	1
13	Handle Stem	118439	1
*14	Valve Stem	118853	2
15	Handle Bushing	118295	1
16	Lever Pin	118299	1
17	Cam Valve	118442	1
18	Latch Assembly	118303	1
19	Knob	118305	1
*25	Snap Ring	117927	2
26	Screen	116455	1

* Part is included in repair kit. Service this unit with two repair kits, part number 118400.
Highlighted items may be purchased separately.

To order, specify **WM782A**, part number 118316.

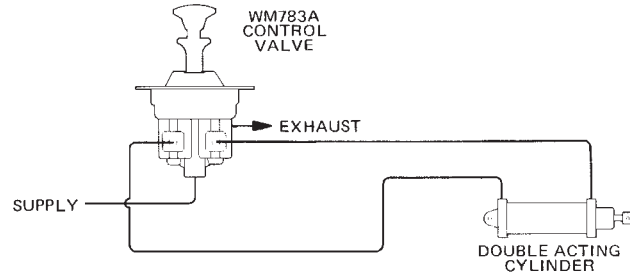


WM783A
Three-Position
Four-Way
Control Valve

15 SCFM @ 100 PSI

DESCRIPTION

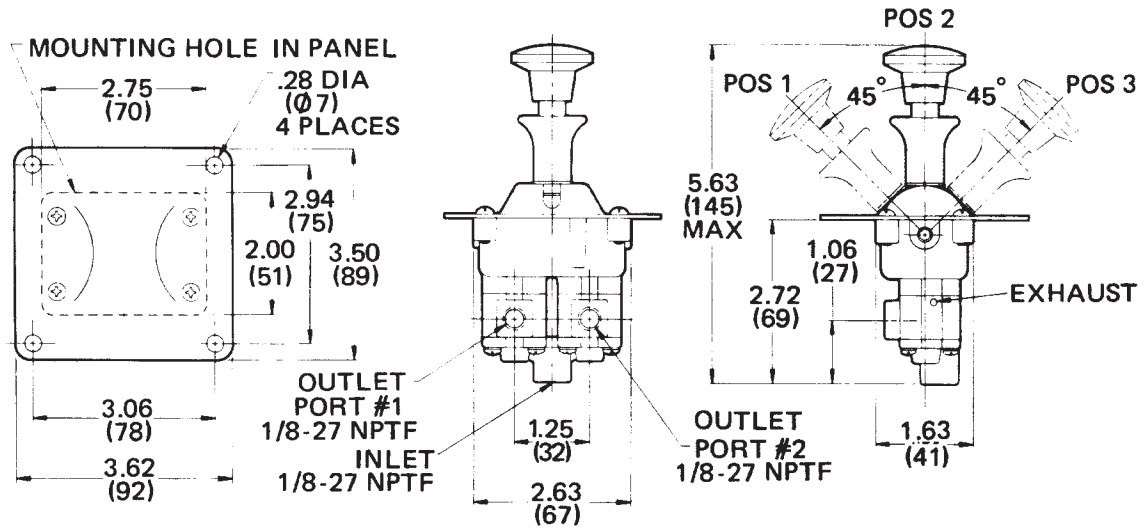
The WM783A valve is a non-compensating four-way control valve with three functional positions. WM781A models are equipped with a spring-loaded lockout safety device which locks the control lever in each of the three positions to prevent unintentional movement.



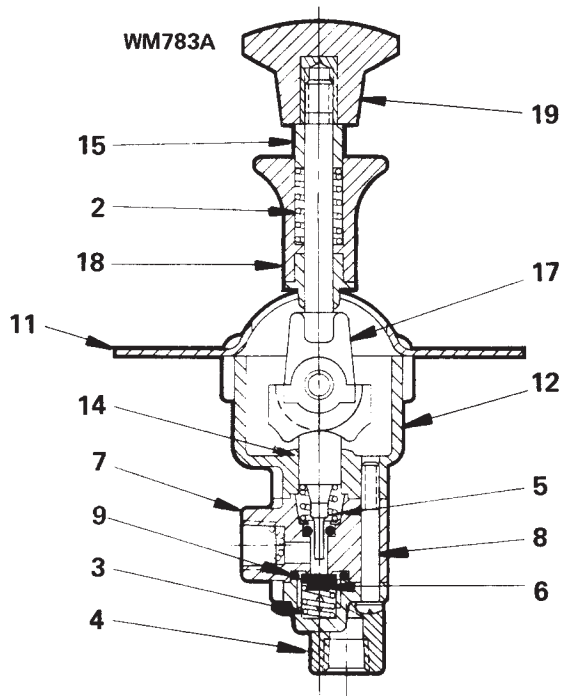
SPECIFICATIONS

Port size	1/8-27 NPTF
Maximum operating pressure.....	150 PSI (1034 kPa)
Operating temperature	-20°F to 200°F (-29°C to 93°C)
Flow rating	15 SCFM @ 100 PSI (0,4 m ³ /min @ 690 kPa)
Mounting.....	Panel mounted
Mounting attitude.....	Optional
Materials: Body castings	Die cast zinc alloy
Actuating cam	Die cast zinc alloy
Poppets	Buna N
O-rings	Buna N
Actuating lever shaft	Steel
Knob	Black plastic
Safety lockout.....	Yellow plastic
Weight.....	1 lb, 1 oz (0, 5 kg)

DIMENSIONAL DATA



CROSS SECTION



Item	Description	WM781A	Qty
1	Screw	100110	4
2	Spring	101082	1
*3	Spring	101467	2
4	Inlet Body	118309	1
*5	Spring	118854	2
*6	Poppet	119141	2
*7	Body	101519	2
8	Screw	119579	6
*9	O-Ring	116303	2
10	O-Ring	116296	2
11	Valve Cover	118286	1
12	Upper Body	119658	1
13	Handle Stem	118439	1
*14	Valve Stem	118853	2
15	Handle Bushing	118295	1
16	Lever Pin	118299	1
17	Cam Valve	118441	1
18	Latch Assy.	118903	1
19	Knob	118305	1
25	Snap Ring	117927	2
26	Screen	116455	1

* Item is included in repair kit. Service this unit with two repair kits 118400.

Highlighted parts may be purchased separately.

To order, specify **WM783A**, part number 118317.

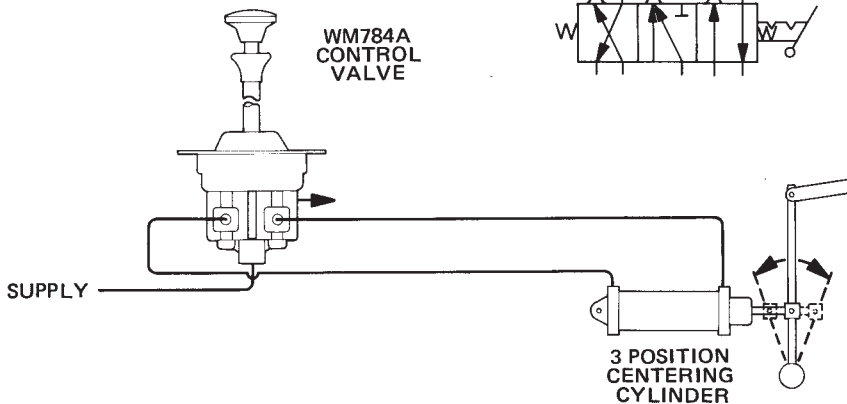
PRODUCT DESCRIPTION

DESCRIPTION The WM784 series is composed of non-compensating, four-way control valves with three functional positions. These valves are actuated by control levers which spring return to the neutral position when they are not manually held in an applied position. WM784B1 models have a detent in the neutral position and WM784A and B models are equipped with a spring-loaded lockout safety device that locks the control lever in the neutral position to prevent unintentional movement.

OPERATION When a WM784 valve's control lever is held in Position 1 (Refer to External Configuration.), outlet port 2 receives supply pressure and outlet 1 is exhausted. In Position 2 ("neutral") both outlet ports are exhausted; and outlet port 1 receives supply pressure while outlet 2 is exhausted if the lever is held in Position 3. Whenever the operator releases his hold on the control lever, it will spring-return to the neutral position.

APPLICATION The WM784A is a versatile control valve with a variety of industrial and vehicular applications. WM784A valves are frequently used to control air operated relay valves, cylinders and power take off systems.

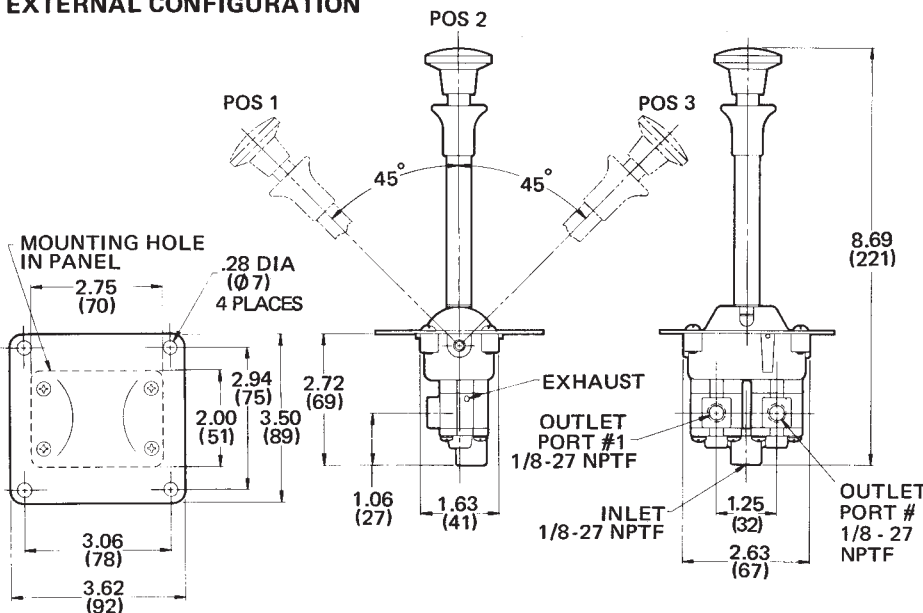
TYPICAL INSTALLATION



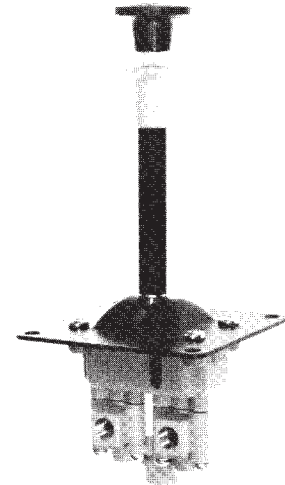
I. S. O. SYMBOL



EXTERNAL CONFIGURATION

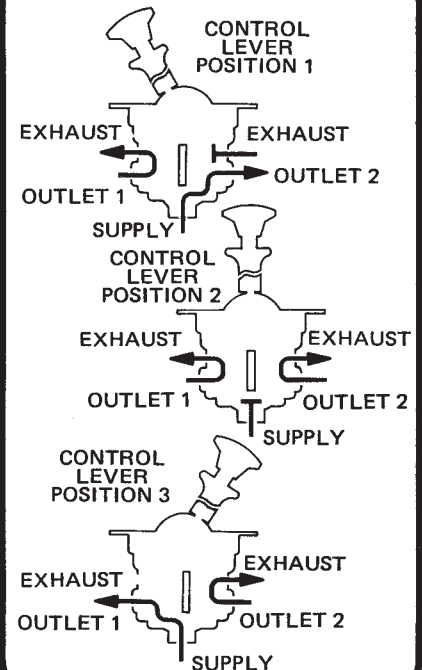


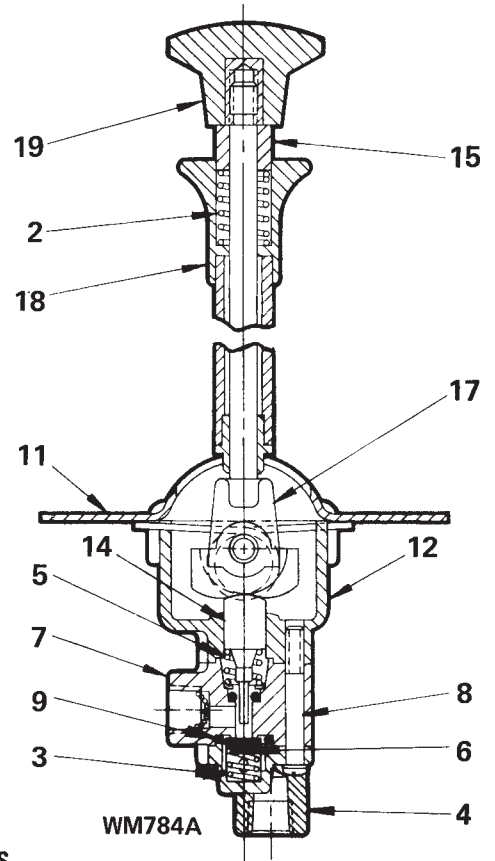
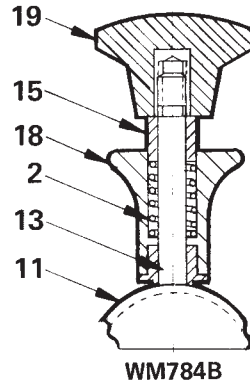
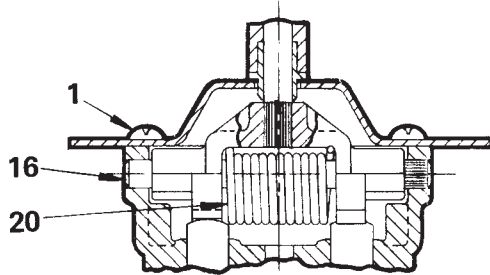
**WM784
SERIES**



**THREE POSITION
SPRING RETURN
FOUR-WAY
CONTROL
VALVE**

FUNCTIONAL DIAGRAM





PARTS IDENTIFICATION			
ITEM	DESCRIPTION	QTY	
		WM784A	WM784B
1	SCREW (100110)	4	4
2	SPRING (101082)	1	1
*3	SPRING	2	2
4	INLET BODY	1	1
*5	SPRING	2	2
*6	POPPET	2	2
7	BODY ASSY.	2	2
8	SCREW	6	6
*9	O-RING	2	2
11	VALVE COVER (118333)	1	1
12	UPPER BODY	1	1
*14	VALVE STEM	2	2
15	HANDLE BUSHING (118295)	1	1
16	LEVER PIN	1	1
17	CAM ASSY. (118496 FOR WM784A, 118495 FOR WM784B MODELS)	1	1
18	LATCH ASSY. (118304 FOR WM784A, 118303 FOR WM784B)	1	1
19	KNOB (118305)	1	1
20	SPRING	1	1

Service these units with two 118400 repair kits. *Asterisk designates items included in repair kit.

TO ORDER, SPECIFY
WM784A _____

Model Number Suffix

PART NUMBER _____

SELECT SUFFIX & PART NUMBER BELOW

SUFFIX	PART NUMBER	LEVER FEATURES	1/8 to 1/4 NPTF FITTINGS	INTERCHANGES W/ WABCO P/N
WM784 A	118318	6" LEVER SAFETY LOCKOUT	NO	
WM784 B	118437	3" LEVER SAFETY LOCKOUT	NO	2-HA-2Z (P59339)

SPECIFICATIONS

PORT SIZE 1/8-27 NPTF

MAXIMUM OPERATING PRESSURE. 150 PSI (1034, 2 kPa)

OPERATING TEMPERATURE* . . -20° F to 200° F (-28, 9° C to 93, 3° C)

FLOW RATING. . 15 SCFM @ 100 PSI (0,4 m³/min @ 690 kPa) each side

MOUNTING. Panel Mounted

MOUNTING ATTITUDE Optional

MATERIALS: Body Castings Die Cast Zinc Alloy

Actuating Cam Die Cast Zinc Alloy

Poppets. Buna N

O-Rings. Buna N

Actuating Lever Shaft Steel

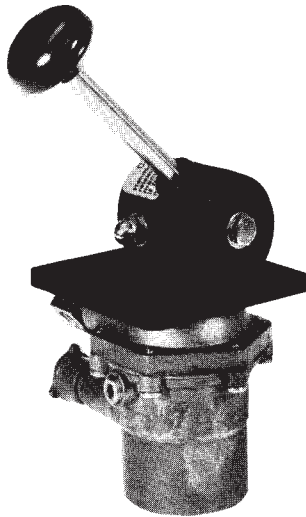
Knob Black Plastic

Safety Lockout (WM784A & B only) . Yellow Plastic

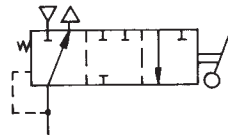
NET WEIGHT: WM784A. 1 lb.,3 oz.(0,5 kg)

WM784B. 1 lb.,1 oz.(0,5 kg)

*For continuous operation beyond this range, contact factory.



I.S.O SYMBOL



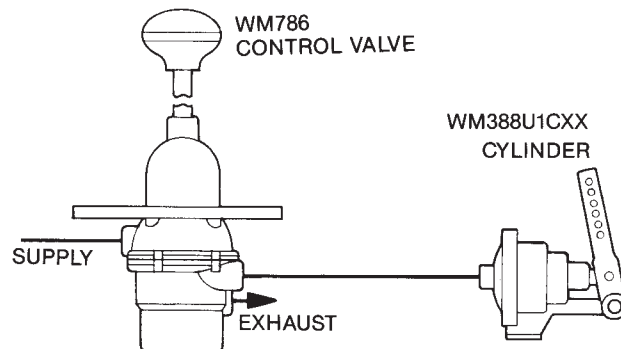
WM786 SERIES PANEL MOUNTED REGULATING VALVE

35 SCFM @ 100 PSI

DESCRIPTION

The WM786 is a panel-mounted, three-way regulating control valve. It is actuated by a handle which is equipped with adjustable-stops so the operator can establish minimum and maximum pressure limits within a particular model's output range. When the stops are adjusted to allow maximum handle movement, the valve modulates through its entire output range and the handle has a rotation of 90°. The WM786 series also features a friction adjustment which restricts or allows free movement of the handle. **IMPORTANT: WHEN FRICTION ADJUSTMENT SCREWS ARE LOOSENED TO PROVIDE MINIMUM HANDLE FRICTION, THE OPERATOR MUST HOLD THE HANDLE IN THE APPLIED POSITION OR IT WILL AUTOMATICALLY RETURN TO NEUTRAL.**

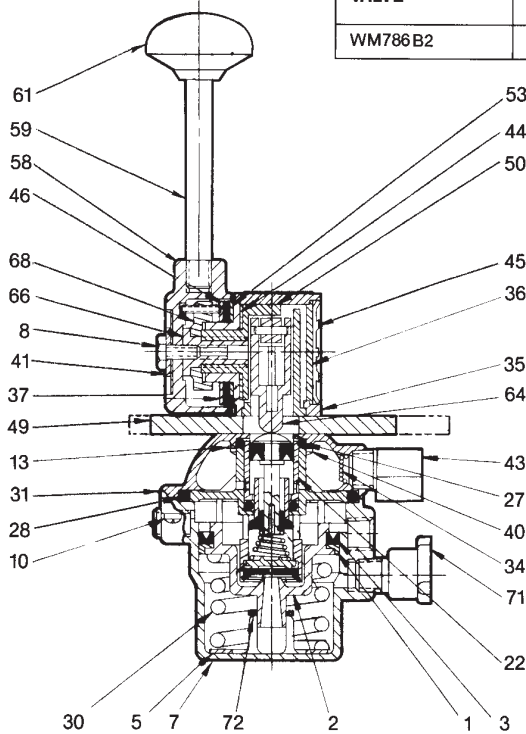
WM786 series valves interchange in both mounting and function with WABCO's M (B models) and H (A models) series.



SPECIFICATIONS

PORT SIZES	1/4-18 NPTF
MAXIMUM SUPPLY PRESSURE	200 PSI (1378,0 kPa)
OPERATING TEMPERATURE	-20°F to 200°F (-28,9°C to 93,3°C)
FLOW RATING	35 SCFM @ 100 PSI (1 m ³ /min @ 690 kPa)
HANDLE MOVEMENT	90° Maximum
MOUNTING	Panel Mounted
MOUNTING ATTITUDE	Optional
MATERIALS: Body Castings	Die Cast Zinc Alloy
Poppets and Seals	Buna N
Knob	Black Plastic
Mounting Plate	Irridited Aluminum
WEIGHT	3.4 lbs. (1,5 kg)

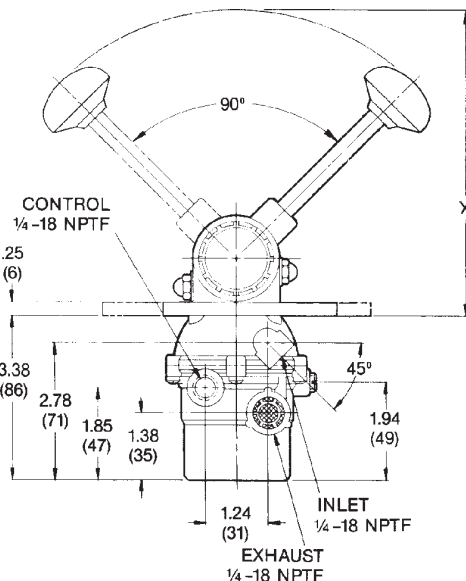
SECTIONAL VIEW



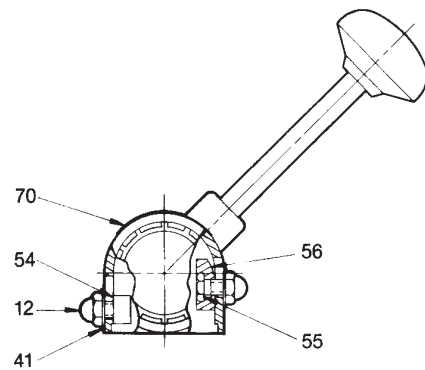
VALVE	SPRING REPLACEMENT KIT
WM786B2	118036

PARTS IDENTIFICATION			
ITEM	DESCRIPTION	WM786B2	QTY
*1	Thrust Ring	101369	1
2	Balance Piston	116801	1
*3	U-Cup	116335	1
5	Washer	116803	1
7	Outlet Body	119144	1
8	Screw	101350	1
10	Screw	118445	6
12	Cap Nut	114618	2
*13	Seal Washer	116488	4
22	Cartridge Assy	101355	1
*27	O-Ring	116318	1
*28	O-Ring	118269	1
30	Spring	101692	1
31	Inlet Body	118795	1
34	Screen	116456	1
35	Cam Housing	103609	1
36	Closure Plate	101354	1
*37	Disc	103224	1
40	Screw	114857	4
41	Washer	115079	3
43	Pipe Ell	115223	1
*44	Inner Friction Disc	101347	1
*45	Retaining Ring	116218	1
46	Friction Ring	101345	1
49	Mounting Plate	118570	1
50	Cam	101690	1
*53	Outer Friction Disc	101346	1
54	Maximum Stop	103350	1
55	Insert	103351	1
56	Minimum Stop	103352	1
58	Handle Base	119044	1
59	Handle Stem	118346	1
61	Knob	118345	1
64	Cam Follower Assy	104774	1
66	Screw	101348	1
68	Cam Retainer Assy	104980	1
70	Label	118351	1
71	WM111D	116714	1
72	Spacer	—	1

Service these units with repair kit 114471. *Item is included in repair kit. Repair kit also includes parts to service cartridge assembly (item 22).

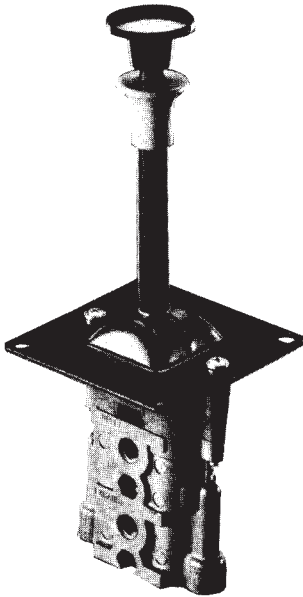


MODEL	X
WM786B Series	6.25 (159)



ORDERING INFORMATION

TO ORDER, SPECIFY WM786 _____		PART NUMBER _____			
Model Number Suffix		SELECT SUFFIX AND PART NUMBER BELOW			
SUFFIX	PART NUMBER	OUTPUT RANGE	MAXIMUM OUTPUT	KNOB & MNTG PLATE SIZE	CLOSURE PLATE & CAM HOUSING FINISH
WM786 B2	118341	0-90 PSI	95 PSI	Small	Flat Black Paint



I.S.O. SYMBOL

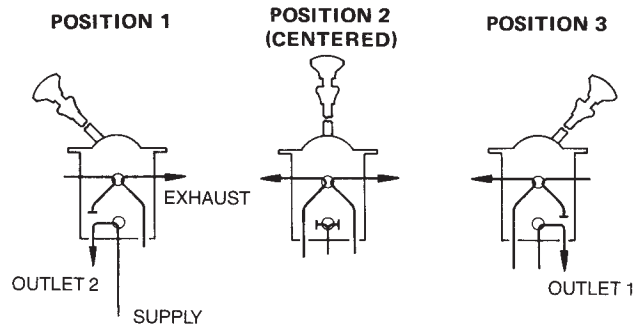


**WM787F
THREE POSITION
FOUR-WAY
REGULATING
CONTROLLER**

**15 SCFM @ 100 PSI
1/8-27 NPTF**

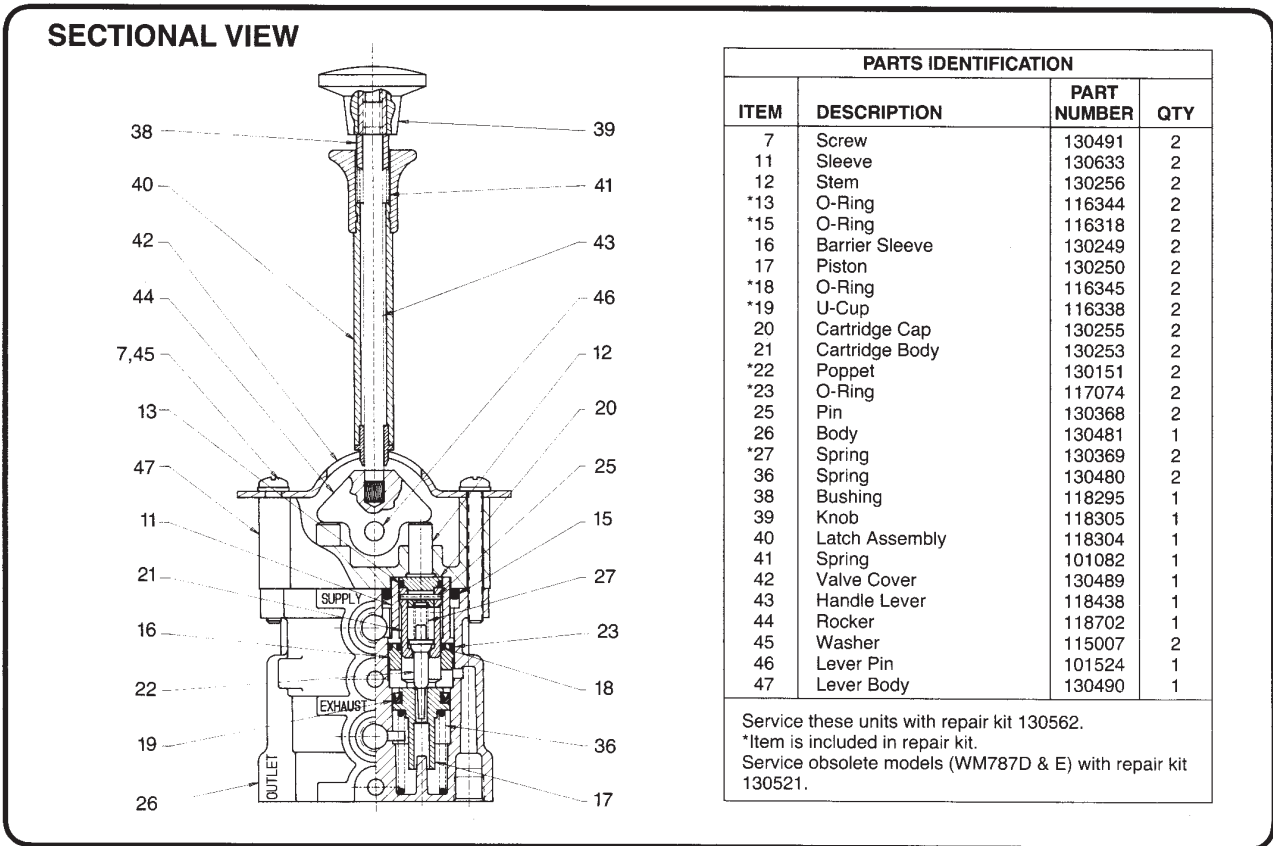
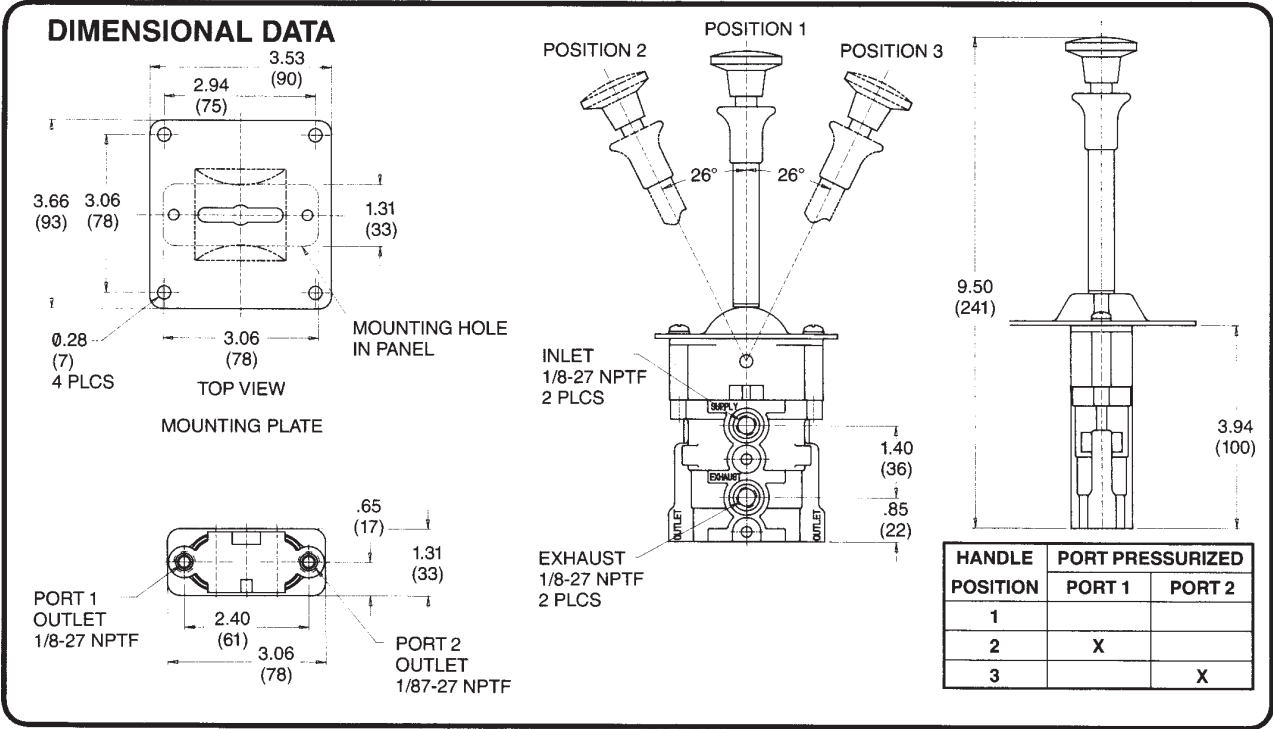
DESCRIPTION

The WM787F dual control valve is a three-position, four-way pressure regulator. It features a control lever equipped with a safety lockout device to prevent unintentional lever movement. The lever locks in the "off" position. To actuate the valve, the operator must pull up on the lockout device and move the lever. The WM787F is a mounting & functional replacement for the WM787D.



SPECIFICATIONS

PORT SIZE	1/8-27 NPTF
MAXIMUM SUPPLY PRESSURE	150 PSI (1034 kPa)
OPERATING TEMPERATURE	-20°F to 160°F (-29°C to 74°C)
FLOW RATING	15 SCFM @ 100 PSI (0,4 m³/min @ 690 kPa)
OUTPUT RANGE	0-90 PSI (0-621 kPa)
MOUNTING	Panel Mounted
MOUNTING ATTITUDE	Optional
MATERIALS: Valve Body	Chromate Treated Aluminum
O-Rings	Buna N
Actuating Lever	Steel and Aluminum Components
Knob	Black Plastic
Mounting Plate	Steel with Black Oxide Finish
WEIGHT	1 lb., 4 oz. (0,6 kg)



ORDERING INFORMATION

TO ORDER, SPECIFY **WM787F**
PART NUMBER 130492

APPLICATION INFORMATION FOR ELECTRONIC ACCELERATOR PEDAL SENSOR KITS

	Engine	Sensor Kit Part Number	
Freightliner 1E Class 8	Caterpillar	132484	
	Cummins	132034	
	DDEC III	132035	
	Treadle pin kit	130553	
	Century Class	Caterpillar	132486
		Cummins	131973
		DDC/Cummins	131973
		DDEC III	130800
		Treadle pin kit	130553
	Business Class	Caterpillar	132484
		Cummins	131973
		DDC/Cummins	131973
		DDEC III	130800
		Treadle pin kit	130553
	School Bus Chassis	Caterpillar	132484
		Cummins	131973
		Treadle pin kit	130553
	FCCC/Motor-home & Step-van Chassis	Caterpillar	132484
		Cummins	132034
		DDC/Cummins	131973
Treadle pin kit		130553	
American LaFrance	Cummins	132034	
	DDEC III	132035	
	Treadle pin kit	130553	
Sterling HN80	Caterpillar	132486	
	DDC/Cummins	131973	
	Treadle pin kit	130553	
Sterling Cargo	Cummins	131973	
	Treadle pin kit	130553	
	Peterbilt	Caterpillar	132486
Cummins/DDEC		131973	
Treadle pin kit		130553	
Western Star	Caterpillar	132484	
	Cummins	132034	
	Cummins/DDEC	340000	
	DDEC	132035	
	Treadle pin kit	130553	
Navistar	8 volt Caterpillar Sensor	132484	
	526 Cummins	340001	
	540 Cummins	131490	
	510/540 DDEC II Sensor Kit	131167	
	526 DDEC II	131140	
	Treadle pin kit	130553	
Volvo	Suspended Pedal	Caterpillar	132484
		Cummins	131856
		Treadle pin kit	130553
	Floor Pedal	Caterpillar	131284
		Cummins	132034
		DDEC III	132035
		Treadle pin kit	130553

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TECTRAN PART NUMBER	P O P	PAGE NO.	DESCRIPTION
WM101349	D	103	HANDLE-WM606 SERIES,
WM101370	C	103	MOUNTING PLATE-WM606 SERIES,
WM102371	D	71	TREADLE PIN, FOR WM476F
WM102374	C	63	TREADLE PIN, FOR WM453
WM103209	D	67	BALANCE SPRING, FOR WM472 SERIES
WM103704	B	63	SPRING, FOR WM453M & N
WM106857	C	71	SNAP RING, FOR WM476F
WM110062	D	109	SQ.BUTTON (YELLOW), FOR WM674
WM110370	B	71	BUSHING, FOR WM476F
WM114329	D	n/a	REPAIR KIT-WM388,
WM114378	D	n/a	REPAIR KIT-WM453,
WM114417	D	67	REPAIR KIT-WM472,
WM114471	D	103	REPAIR KIT-WM606/607,
WM116721	C	75	MOUNTING PLATE, FOR WM511 SERIES
WM117216	D	81	TREADLE PIN, FOR WM515 SERIES
WM117582	D	63	REPAIR KIT-WM453M,
WM117775	D	54	REPAIR KIT-WM388U1C1D, AND FOR WM388I1C2B
WM118388	C	81	BUSHING, FOR WM515 SERIES
WM118774	D	81	TREADLE ASSY., FOR WM515 SERIES
WM118775	C	61	TREADLE ASSY., FOR WM453B,C & WM511 SERIES
WM119049	B	69	TREADLE BASE, FOR WM476B & C
WM119305	D	75	REPAIR KIT, FOR WM511
WM130063	D	92	WIRE HARNESS, FOR DDEC2 & 3 & IV W/IVS
WM130303	D	88	SENSOR & HARNESS molded together -WM526, Early DDEC1
WM130553	D	88	TREADLE PIN KIT - 526SERIES , KIT HAS EXTRA PARTS, FOR 3 VERSIONS
WM130800	D	96	SENSOR & 2 SCREWS KIT, contains SENSOR 119454
WM131032	B	94	REMOTE ACTUATOR, FOR WM531
WM131139	D	88	ROLLER KIT-WM526 SERIES, UNIVERSAL KIT WM526
WM131140	D	88	SENSOR & HARNESS, contains SENSOR 130656
WM131165	B	92	INTERGRATED HARNESS, FOR CUMMINS & INTERNATIONAL
WM131166	D	n/a	INTERGRATED HARNESS, NAVISTAR HARNESS SENSOR
WM131167	D	96	SENSOR & 2 SCREWS KIT, contains SENSOR 130656
WM131507	D	100	ELECT.PEDAL,SUSPENDED, WM540-CUMMINS/DDEC3 W/IDLE VAL
WM131517	A	n/a	SENSOR & 2 SCREWS KIT, contains SENSOR 131040
WM131755	D	97	REMOTE THROTTLE SWITCH, FOR WM534A, INTERNATIONAL WITH 6 PIN
WM131771	D	97	CONNECTOR KIT, cat round, 12V CATERPILLAR, FOR WM534, must PURCHASE SEPARATELY
WM131772	D	97	CAT TRIANGLE CONNECTOR, FOR WM534, must PURCHASE SEPARATELY
WM131773	D	97	DDEC3 WITH IVS, FOR WM534, must PURCHASE SEPARATELY
WM131774	D	97	DDEC2 &3 WITHOUT IVS, FOR WM534, must PURCHASE SEPARATELY
WM131973	D	96	SENSOR & 2 SCREWS KIT, contains SENSOR 131856
WM132034	D	88	SENSOR KIT, contains SENSOR 131856 OR 132354
WM132035	D	88	SENSOR KIT, contains SENSOR 119495
WM132381	D	93	SENSOR & 2 SCREWS KIT, contains SENSOR 119454
WM132382	D	93	SENSOR & 2 SCREWS KIT, contains SENSOR 131856
WM132484	B	100	SENSOR & 2 SCREWS KIT, contains SENSOR 131272
WM132736	D	88	SENSOR & HARNESS, contains SENSOR 131779
WM132737	D	100	SENSOR & 2 SCREWS KIT, contains SENSOR 131779
WM132739	D	100	SENSOR & 2 SCREWS KIT, contains SENSOR 132445
WM147BC	D	18	RELAY VLV-H.P.-N.C., #WM111526
WM147C	A	20	RELAY VLV-N.C., #WM111527
WM147F	A	22	RELAY VALVE-N.O., #WM111531
WM147P	A	22	RELAY VALVE-N.O., #WM111542
WM148A	C	24	PUSH BUT. VLV-3 WAY, SMALL KNOB
WM148W	D	24	PUSH BUT. VLV-3 WAY, LARGE BUTTON

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TECTRAN PART NUMBER	P O P	PAGE NO.	DESCRIPTION
WM219C3	A	26	TOGGLE VALVE-3 WAY-2 POS, WM111816 SIDE INLET 1/8 PORTS"
WM219C4	A	26	TOGGLE VALVE-3 WAY-2 POS, WM111817 INLET BOTTOM 1/8 PORT
WM271A	D	28	TANK CONTROL VLV., #WM111913
WM279E1	B	30	PRESS. REG.-SELF RELIEVING, #WM111940
WM279R	C	30	PRESS. REG.-SELF RELIEVING, #WM111949
WM279R2	D	30	PRESS. REG.-SELF RELIEVING, #WM117599
WM314B	A	32	QUICK REL. VLV., #WM112173
WM318A	A	34	RATIO RELAY VLV, #WM112201 PROPORTIONING VALVE
WM320A	D	36	T.P.RELAY VALVE, #WM112211
WM325	D	38	PARKING BRAKE VALVE, #WM112229
WM331C2	C	40	FOOT CONTROL VLV-3W, #WM110227
WM338P	A	42	RELAY VLV-N.O., NON COMPENSATING
WM338T100	D	42	RELAY VALVE-N.O., COMPENSATING
WM340000	D	92	SENSOR & HARNESS, contains SENSOR 131040
WM345415	D	89	TREADLE-ELECT.(WM526), 28.5 DEG. FOR CATERPILLAR ENGINE
WM345416	D	89	TREADLE-ELECT.(WM526), 35 DEG. FOR CATERPILLAR ENGINE
WM345417	D	89	TREADLE-ELECT.(WM526), 45 DEG. FOR CATERPILLAR ENGINE
WM345593	C	89	TREADLE-ELECT.(WM526), 28.5 DEG. FOR DDEC ENGINES
WM345594	D	89	TREADLE-ELEC.(WM526), 35 DEG. FOR DDEC2 ENGINE
WM345595	B	89	TREADLE-ELECT.(WM526), 45 DEG. FOR DDEC ENGINES
WM34P	B	2	ROTARY VALVE-4 WAY 3-POS, #WM111118
WM350415	C	86	TREADLE-ELECT.(WM526), 28.5 DEG. CATERPILLAR ENGINES
WM350416	D	86	TREADLE-ELECT.(WM526), 35 DEG. CATERPILLAR ENGINES
WM350417	B	86	TREADLE-ELECT.(WM526), 45 DEG CATERPILLAR ENGINES
WM350825	C	86	TREADLE-ELECT.(WM526), 28.5 DEG CUMMINS AFTER 1994
WM350826	D	86	TREADLE-ELECT.(WM526), 35 DEG CUMMINS AFTER 1994
WM350827	A	86	TREADLE-ELECT.(WM526), 45 DEG CUMMINS AFTER 1994
WM351311	D	92	AIR REMOTE TREADLE (WM526), CATERPILLAR
WM351312	D	91	REMOTE SENSOR ASSY., AIR OVER ELECTRONIC (NAVISTAR)
WM351314	B	92	ELECTRONIC CONTROL (WM526), CUMMINS,DDEC 3 W/IDLE VAL/SWTC
WM351375	D	n/a	TREADLE-ELECT.(WM526), CUMMINS BEFORE 1994
WM351376	D	n/a	TREADLE-ELECT.(WM526), CUMMINS BEFORE 1994
WM351377	D	n/a	TREADLE-ELECT.(WM526), CUMMINS BEFORE 1994
WM351383	D	86	TREADLE-ELECT.(WM526), 45 DEG. FOR JOHN DEERE CNG
WM351422	D	87	TREADLE-ELECT.(WM526), 35 DEG. FOR JOHN DEERE 5K DIESEL
WM352A	D	44	HI-FLOW MODULATING VALVE, #WM112468
WM353E	D	46	TREADLE VLV-INDUSTRIAL 45 DEG., #WM112479
WM359593	B	86	TREADLE-ELECT.(WM526), 28 DEG DETROIT DDC3 &4
WM359594	D	86	TREADLE-ELECT.(WM526), 35 DEG DETROIT DDC3 &4
WM359595	B	86	TREADLE-ELECT.(WM526), 45 DEG DETROIT DDC3 &4
WM366A	D	48	Q.R.VLV.W/O BREATHER, #WM112534
WM388U1A1A	D	50	PNEUMATIC THROTTLE CNTRL.CYL., #WM117402
WM388U1C1D	A	50	PNEUMATIC THROTTLE CNTRL.CYL., #WM117888
WM388U1C2B	B	50	PNEUMATIC THROTTLE CNTRL.CYL., #WM117886
WM388U1C3D	D	50	PNEUMATIC THROTTLE CNTRL.CYL., #WM119667
WM397J	A	56	HOLDING VALVE-3 WAY, #WM100708
WM412A	A	58	SHUTTLE VALVE-1/8", #WM112841
WM43B1	B	4	PRESS.REGULATOR, NON RELIEVING
WM453B	D	60	PNEUMATIC THROTTLE PEDAL, #WM113073
WM453C	C	60	PNEUMATIC THROTTLE PEDAL, #WM113074
WM453M	A	62	PNEUMATIC THROTTLE PEDAL, #WM116731
WM453N	C	62	PNEUMATIC THROTTLE PEDAL, #WM117270
WM459L	B	64	REGULATOR PANEL, #WM113129
WM472A	C	66	TREADLE VALVE-35 DEG., #WM113218

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WM472D	B	66	TREADLE VALVE-45 DEG., WM113222
WM472E	C	66	TREADLE VALVE-NO TREADLE, #WM113224
WM476C	D	68	PNEUMATIC THROTTLE PEDAL, Alternate substitution WM476F5A2
WM476F5A1	B	70	PNEUMATIC THROTTLE PEDAL, #WM117209
WM476F5A2	D	70	PNEUMATIC THROTTLE PEDAL, #WM130634
WM499C	D	72	RELAY-AIR START, #WM113470
WM511C	C	74	HYD.PROPORTIONAL PEDAL, #WM119130
WM512C	C	76	HYD THROTTLE CYLINDER, #WM119436
WM513A	B	78	Q.R. VALVE, #WM119136
WM515C	D	80	HYD.PROPORTIONAL PEDAL, #WM119129
WM521B1	D	82	ACTIVAIR CONTROLLER, #WM130424
WM521RA4	D	84	REGULATING CONTROLLER, #WM130940
WM606C1	B	102	HAND REGULATING VALVE, COLUMN-MOUNTED-W/GAUGE
WM606C2	B	102	HAND REGULATING VALVE, COLUMN-MOUNTED-NO GAUGE
WM606C2C	A	102	HAND REGULATING VALVE, COLUMN-MOUNTED-NO GAUGE
WM607B1	D	104	MODULATOR VALVE, PANEL-MOUNTED-NO GAUGE
WM607C1	D	104	MODULATOR VALVE, PANEL-MOUNTED-W/GAUGE
WM639A	B	106	SHUTTLE VLV-3/8", #WM113934
WM674A	D	108	DUAL PARKING BRAKE VALVE, #WM106841
WM774A	D	110	CHECK VALVE-1/2", #WM117005
WM775B	A	112	PNEUMATIC TRANS.MODULATOR, #WM117830



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