

## Bulletin HY14-2702-B1/US

# Series V11 Directional Control Valves

### Features

- Parallel and tandem spools with individual load (reverse flow) checks.
- Available for open center, closed center and power beyond applications.
- Utilizes many common components such as relief valves, spool positioners and handles with Series V10 and V16.
- 4-way, 4-way free flow and 4-way float operation.
- Numerous manual spool positioner options plus remote hydraulic operation.
- Work port relief valves and anti-cavitation check valves available.
- Single handle or dual function mechanical joystick control.
- Enclosed spool ends with handles.

Effective: October 1, 2002  
Supersedes: Cat. No. GPD-1100 dated 4/98

### Description

Parker's Series V11 monoblock-type directional control valves provide parallel circuit operation for open center and closed center systems. They are available in 1-spool, 2-spool, and 3-spool configurations, and offer economy and excellent performance in a compact design.

### Specifications

<b>Nominal Flow Rating</b> ①.....	15 GPM (56,7 liters/min)
<b>Operating Pressure (maximum)</b>	
Continuous Operating.....	3500 PSI (242 bar)
Exhaust Core.....	500 PSI (34,5 bar)
<b>Operating Temperature</b> .....	-40°F (-40°C) to +176°F (+80°C)
<b>Standard Port Sizes</b> ②	
Inlet.....	SAE 10
Outlet.....	SAE 10
Power Beyond.....	SAE 8, SAE 10
Work Ports .....	SAE 8
<b>Fluid Compatibility</b>	
Petroleum Based .....	60-1000 SSU (10-216 cST)
<b>O-Ring Seals</b> .....	Buna-N Standard (Optional Viton)
<b>Filtration Required (minimum)</b> .....	10 micrometer (nominal)
<b>Number of Spools</b> .....	1-, 2-, or 3-Spool
<b>Approximate Shipping Weight</b>	
1-Spool (Housing No. 23146).....	Approx. 12 lbs. (5,5 kg)
2-Spool (Housing No. 23357).....	Approx. 18 lbs. (8,1 kg)
3-Spool (Housing No. 23438).....	Approx. 24 lbs. (11,0 kg)
<b>Mounting Position</b> .....	Not Restricted

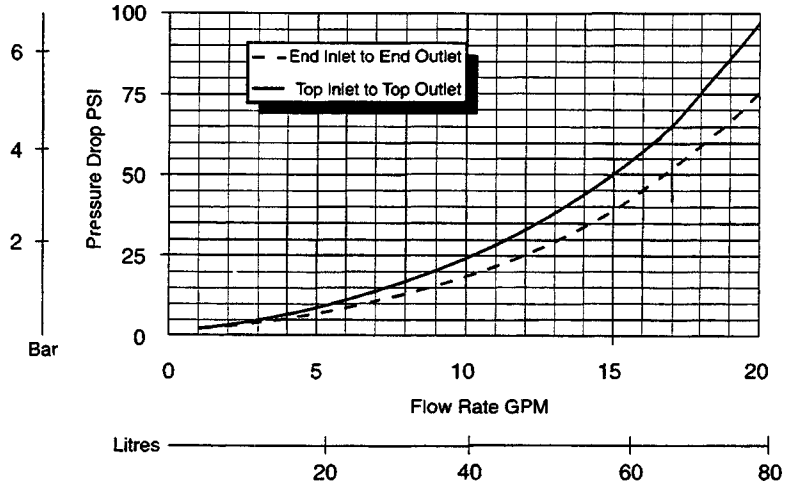
① The maximum flow through a directional control valve assembly is determined by the maximum allowable pressure drop acceptable to the application.

② Contact the factory for other porting options (i.e. BSP)

# V11 Performance Curves

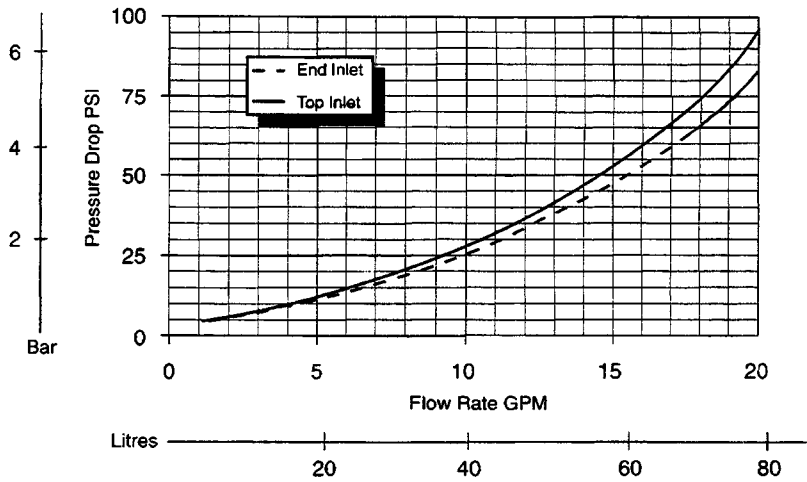
## Open Center

Typical pressure drop from top or end inlet to top or end outlet.



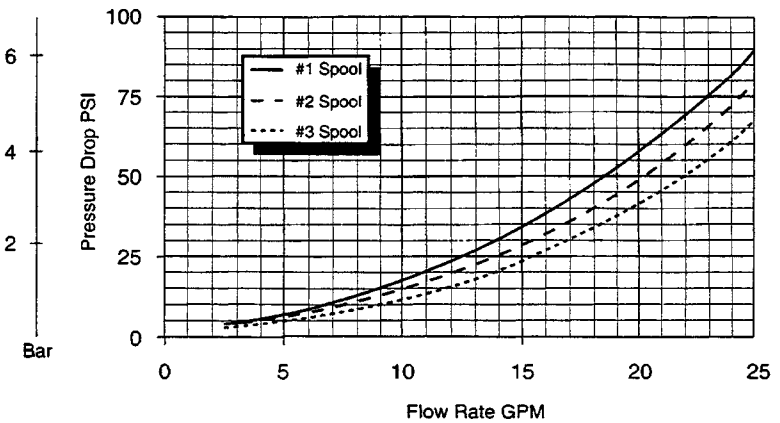
## Inlet to Work Port

Typical pressure drop from top or end inlet to "A" or "B" work port.



## Work Port to Outlet

Typical pressure drop from "A" or "B" work port to top or end outlet.



# V11 Main (Inlet) Relief and Conversion Port Options

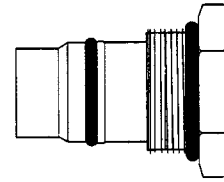
## Main (Inlet) Relief Valves

The primary function of the main (inlet) relief valve is to prevent excessive pressure spikes. Main relief valve cartridges are available in externally-adjustable (Model RCMA), or internal shim adjustable (Model RCM) configurations. Several relief springs are available for pressure settings within the 500 to 3500 PSI (34 to 242 bar) full pressure range.

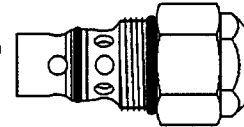
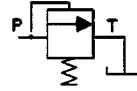
When a main relief valve is not required, the No Relief Plug must be installed in place of the relief valve.

**Model 'RCM'** differential area relief valve is internally shim adjustable within the relief spring range. Several spring and shim options are available.

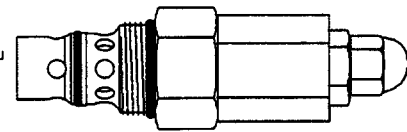
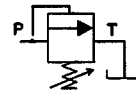
**Model 'RCMA'** differential area relief valve is externally screw adjustable within the spring range. Several spring options are available.



No Relief Cavity Plug



Model 'RCM' Relief Valve



Model 'RCMA' Relief Valve

## Conversion Port Options

### Closed Center Plug (Closed Center Systems)

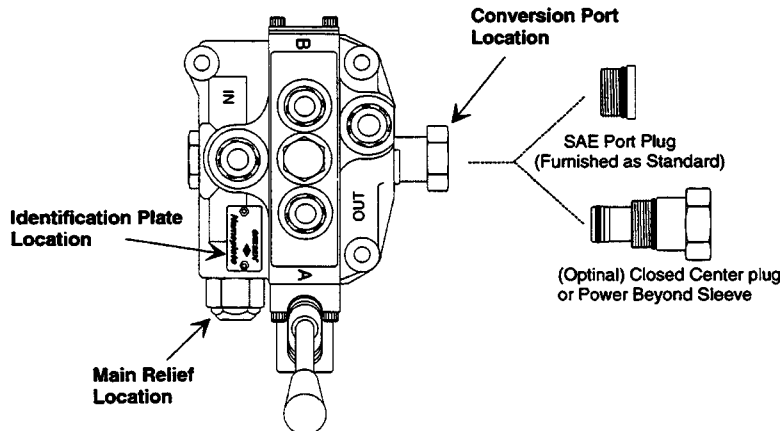
Install the closed center plug into the top conversion port when using a variable displacement pump. The closed center plug will block pump flow when all valve spools are in neutral. High pressure is maintained at the control valve inlet.

The maximum system pressure is set with the compensator adjustment on the variable output pump.

### Power Beyond Sleeve (Also referred to as High Pressure Carry Over)

By installing the power beyond sleeve into the top conversion port, hydraulic oil under pressure will be carried thru the valve making it available to a second control valve. In a power beyond circuit, the upstream valve will always have priority. Hydraulic oil will only be available to the downstream valve when all valve spools in the upstream valve are in neutral.

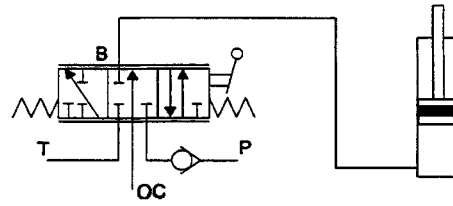
Each control valve may have its own main relief valve set at different pressures, but the highest pressure setting must be in the upstream valve.



# V11 Spool Options

## 4-Way Cylinder Spool (O4)

For control of double acting cylinders or reversible hydraulic motors where floating a cylinder or motor free-wheeling is not required. Both work ports are blocked in the neutral position.

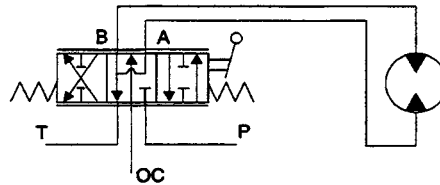


Typical 4-Way (O4) Application

## 4-Way Free Flow Motor Spool (F4)

For control of double acting cylinders or reversible hydraulic motors. Because both work ports are open to tank in the neutral position, free flow spools will allow a motor to coast.

**Caution:** If using this spool configuration in cylinder lift applications, it must be used in conjunction with a load holding device to prevent the load from free falling when the spool is in the neutral position.

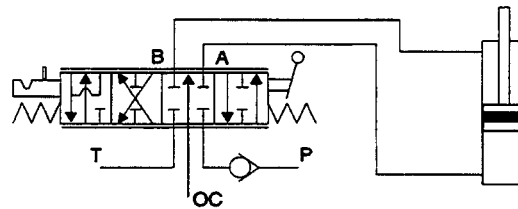


Typical 4-Way Free Flow (F4) Application

## 4-Way 4-Position Float Spool (K4)

This spool is the same as the 4-Way Cylinder spool, with the addition of a fourth 'Float' position. It is spring-centered to neutral from the 'A' and 'B' power positions.

The fourth position is the detented 'Float' position which allows a cylinder to float or a hydraulic motor to free wheel.



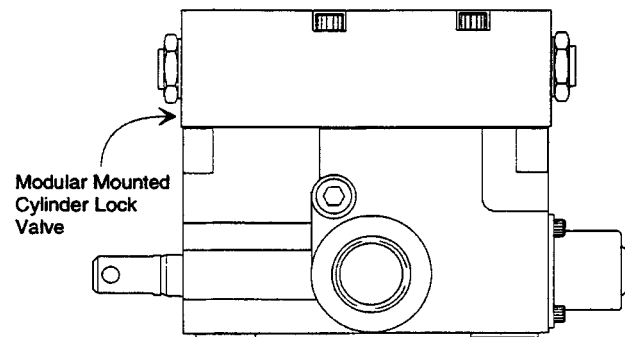
Typical 4-Way Free Float (K4) Application

## (Optional) Modular Valve Machining

The *Model V11* body is available with (optional) surface machining to accept a modular mounted cylinder lock valve.

An 'F4' free flow spool must be used to prevent any pressure build up between the valve spool and the pilot operated cylinder lock valve when the valve is in the neutral position.

Pilot operated checks are used in application such as clamps, outriggers, and elevated work platforms where internal fluid leakage could affect the operation of the system.

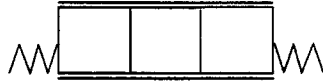


(Optional) Modular Valve Machining

# V11 Spool Positioners and Actuators

## Spring Return Spool Positioner

The spring return spool positioner 'spring returns' the valve spool to neutral from the 'A' and 'B' power positions when the handle is released.



Spring Return Spool Positioner

## 'D' Detent Spool Positioner

The 'D' detent spool positioner 'detents' the valve spool in neutral and the 'A' and 'B' power positions. The valve spool will remain in the position in which it was manually placed when the handle is released.

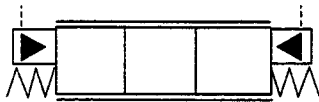
This option is NOT intended for use as a positive spool locking device against excessive external forces or machine vibration.



'D' Detent Spool Positioner

## 'K4' 4-Position Float Spool Positioner

The 'K4' float positioner spring returns the valve spool to neutral from the 'A' and 'B' power positions. The fourth position is the detented - float position.



'K4' 4-Position Float Spool Positioner

## 'HR' Hydraulic Remote Spool Actuators

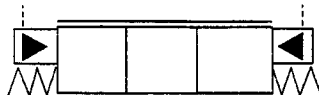
'HR' hydraulic remote spool actuators provide for remote hydraulic operation of two and three position V11 spools.

A customer-supplied hydraulic controller (Parker Model HCJ, HCS or equivalent), and a 300 to 500 PSI (20 to 33 bar) pilot source, will provide infinite spool positioning for metering workport flow.

All hydraulic remote actuator pilot ports are SAE 6 straight thread. Pilot ports may be located at the top (std), bottom, or end.

### Hydraulic Remote Actuator Specifications

Max. Pressure Rating . . . . .750 PSI (34.5 bar)  
 Pilot Press to Initiate Flow . . . . .60 PSI (4.2 bar)  
 Pilot Pressure at Full Stroke . . . . .220 PSI (15.2 bar)  
 Pilot Flow . . . . .2 to 4 GPM (7.5 to 15 liters/min)



'HR' Remote Spool Actuators

## Work Port Relief Valves

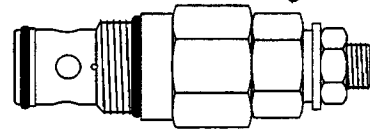
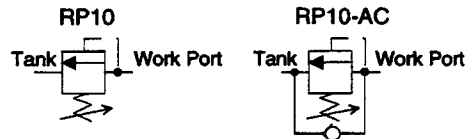
The primary function of a work port relief valve is to limit a part of a circuit to a pressure less than the main relief setting. Port relief valves will also provide spike protection while the valve is in neutral. The relief setting at 'crack' or 'full flow' must be specified when ordering.

### Model RP10 Work Port Relief Valves

Work port relief valves are available in adjustable (RP10-A) and tamper resistant (RP10-N) configurations, offering a pressure range from 500 to 3500 PSI (34 to 242 bar).

Adjustable and tamper resistant combination relief/anti-cavitation check cartridges (Model RP10-AAC and RP10-NAC) are also available.

The 'NR' no relief cavity plug must be installed in this cavity when a work port option is not required.

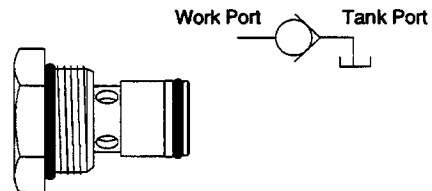


RP10-A Relief Valve Cartridge

### Anti-Cavitation Checks

Anti-cavitation (also referred to as anti-void) check valves are available for use in the work port option cavity to prevent cylinder or motor cavitation. It allows the cavitating work port to refill from the exhaust core.

Anti-cavitation check valves are non-adjustable and will open whenever the work port pressure is lower than the exhaust core pressure.



Anti-Cavitation Check Valve

# V11 Handle Options

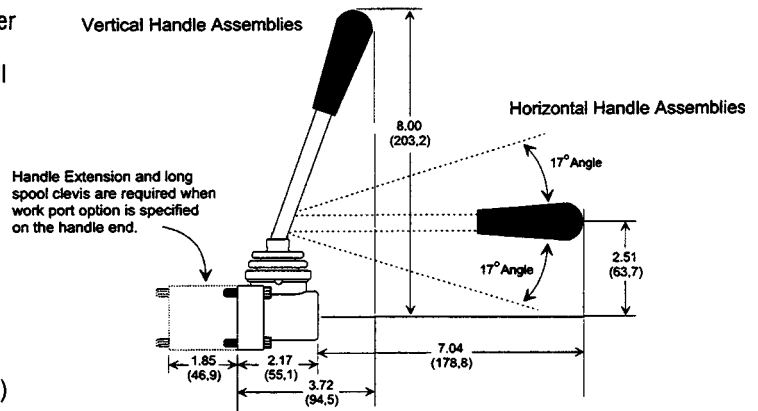
## Handle End Options

The clevis (handle end) of the spool may be located at either the 'A' or 'B' port end of the valve. Unless otherwise specified, the handle end will be located at the 'A' port end for all valve assemblies.

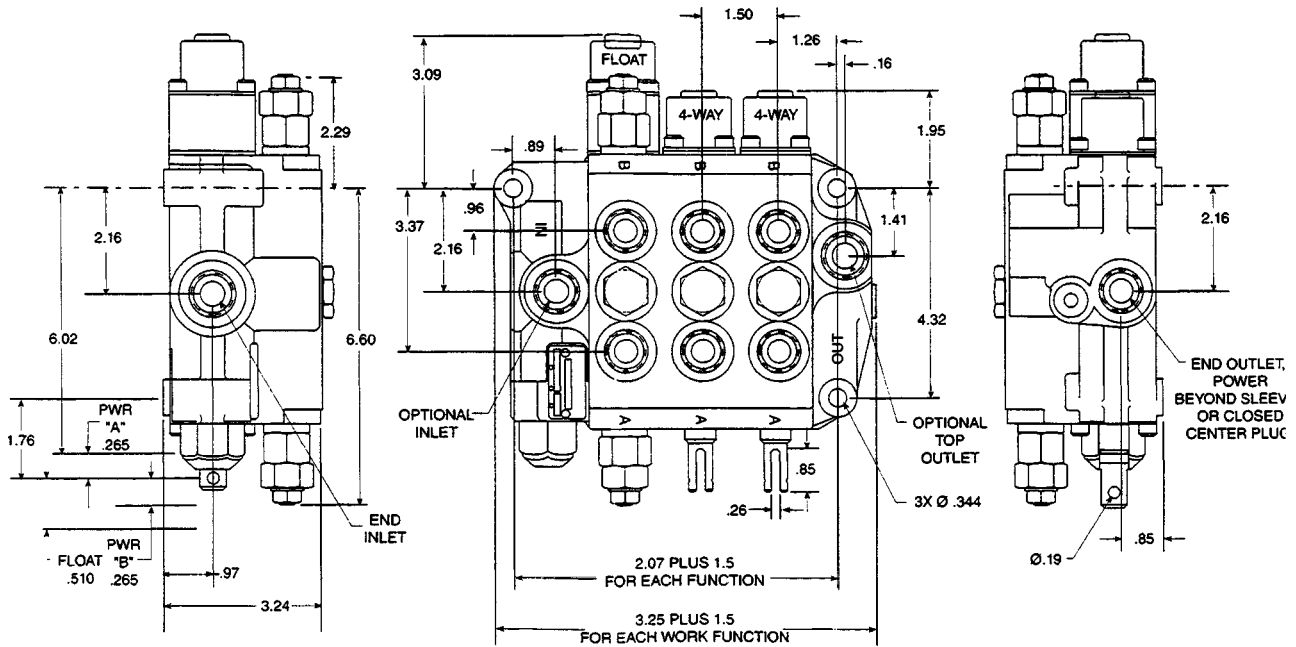
The V11 Valve spools may be reversed in the housing to offer 'B' port handle.

The following handle end options are available:

- **CVHA** (Complete Vertical Handle Assembly)
- **XCVHA** (Extended Complete Vertical Handle Assembly)
- **CHHA** (Complete Horizontal Handle Assembly)
- **XCHHA** (Extended Complete Horizontal Handle Assembly)
- **LCHA** (Less Complete Handle Assembly)

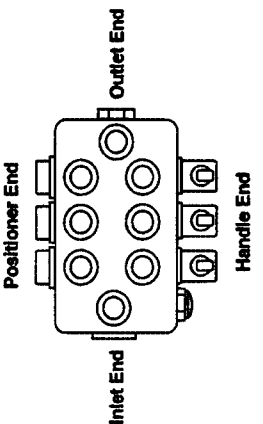


# V11 Dimensions



# Monoblock Control Valve Order Form

## Monoblock Control Valve Order Form

Inlet Information		Valve Model No.				Outlet Information	
Inlet Location	Port Size	Spool Location	#1	#2	#3	Outlet Location	Outlet Port Size
		3-Way 4-Way 4-Way Free Flow (Motor Spool) 4-Way Float	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Power Beyond <input type="checkbox"/> Closed Center <input type="checkbox"/> SAE 6 Gauge Port (Model V11 Only)	Power Beyond Port Size
<b>System Operates At:</b> GPM Max: _____ PSI Max: _____							
<b>Main Relief Information</b> Relief Model _____ (PSI) Set at _____ (PSI) <input type="checkbox"/> Crack, or <input type="checkbox"/> Full Flow @ _____ (GPM) <input type="checkbox"/> No Relief Plug (NR)							
<b>Handle End Information</b> A Port End <input type="checkbox"/> Handle Location _____ (Model V11 Only) B Port End <input type="checkbox"/> Handle P/N _____ Bracket P/N _____ Spool Boots (V11 Only) <input type="checkbox"/>							
<b>Work Port Sizes</b> (V11 or V17) 'B' Relief and/or A/C PSI Setting @ Crack or Full Flow _____ (V11 or V17) 'A' Relief and/or A/C PSI Setting @ Crack or Full Flow _____							
Function of Spool _____ Remarks: _____							
							
Application _____ Customer Part No. _____							
<b>Customer</b>							
<b>Order Design Number</b>							
B/M Number _____							

# V11 Ordering Information

Options	Code Symbol	Options	Code Symbol
<b>Valve Housing Options</b>		<b>Spool Variations</b>	
No. 23146 Housing	(1-Spool Version)	4-Way, 3-Position	04
No. 23357 Housing	(2-Spool Version)	4-Way, 3-Position Free Flow	F4
No. 23438 Housing	(3-Spool Version)	4-Way, 4-Position Float	K4
<b>Port Locations</b>		<b>Spool Action Options</b>	
Inlet Port	Top or End	Spring Return To Neutral	(Standard)
Outlet Port <sup>Ⓢ</sup>	Top or End	1- or 2- Position Detent with Spring Return	RI, RO, or RIO
Work Ports	Top	3-Position Detent	D
<sup>Ⓢ</sup> Top outlet port must be used when valve is converted to closed center or power beyond.		4-Position Float with Detent	K4
<b>Main Relief Options</b>		Hydraulic Remote Actuator	HR
Differential Area, Internal Shim Adjustable	RCM	<b>Port Reliefs and Anti-Cavitation Checks</b>	
Differential Area, External Screw Adjustable	RCMA	Relief Cavity Plug (No Relief)	K-10-NR-WP
Relief Cavity Plug (No Relief)	K-10-NR	Anti-Cavitation Check Valve	K-10-AC
<b>Outlet Conversion Port Options</b>		Pilot Operated Relief Valve (Ext. Adj.)	RP10-A
Conversion Plug	(Furnished as Standard)	Relief Valve (Tamper Resistant)	RP10-N
Closed Center Plug	K-10-C	Combination Relief & Anti-Cav (Ext. Adj.)	RP10-AAC
SAE 8 Power Beyond Sleeve	K-10-8-Y	Combination Relief & A/C (Tamper Resistant)	RP10-NAC
SAE 10 Power Beyond Sleeve	K-10-10-Y	<b>Handle End Options</b>	
		Complete Standard Vertical Handle Assembly	CVHA
		<sup>Ⓢ</sup> Complete Extended Vertical Handle Assembly	XCVHA
		Complete Standard Horizontal Handle Assembly	CHHA
		<sup>Ⓢ</sup> Complete Extended Horizontal Handle Assembly	XCHHA
		Less Complete Handle Assembly	LCHA
		Protective Spool Boots	-
		<sup>Ⓢ</sup> Extended Handle Bracket - Use when RP10 port relief is used on the handle end of work section.	

## ! WARNING

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