

Table of Contents

	Page
General Description.....	4
STC	
Performance Characteristics.....	5
How to Use	6
Operating Data	7
 HRC1	8
Description and Model Code	8
Dimensional Data	9
 HRC2-P2	10
Description and Model Code	10
Dimensional Data	11
 HRC2-R1	12
Description and Model Code	12
Dimensional Data	13
 HRC2-S	14
Description and Model Code	14
HRC2-S1 Dimensional Data	15
HRC2-S2 Dimensional Data	16
HRC2-S3+ Dimensional Data	17
Control Options	18
 HRC4-J1	20
Description and Model Code	20
Dimensional Data	21
HRC4 Handles	22
Pressure Control Curves	25
Return Spring and Performance Data.....	29

General Description

Of Series 50 HRCs with
STC Direct Port Option

Eaton's HRCs (Hydraulic Remote Controls) offer superior precision, quality and enhanced safety for your mobile and industrial systems. With a robust hydro-mechanical design, maximum reliability born out of years of field experience and long-lasting, trouble-free electrical components, you won't find a more dependable, quality product than Eaton's HRC 50 design.

Description

HRCs are used to activate and control directional valves from a remote and single operating station.

HRCs come in hand, foot and mechanically operated versions, and on vehicles, are typically installed in seat armrests or in a console.

Operation

The 50 design HRCs operate on input flows up to 20 L/min (5.3 USgpm) and pressures up to 100 bar (1450 psi). From the input pressure, an HRC creates reduced output pressures that vary proportionally with lever or pedal stroke. By applying the pressures to main directional control valves speed and direction of hydraulic actuators can be precisely metered.

Supply flow from a dedicated pump

There are various methods of supplying the flow to the Hydraulic Remote Control. The most common and generally recommended is a separate pump. In all applications, filtrations of 10mm nominal (25mm absolute) is recommended on the supply flow to the HRC. Fluctuation of supply pump pressure will not generally cause the HRC output pressure to vary.

Features and Benefits

• Higher productivity.

HRCs require very little operator effort, so you get more from both man and machine.

• Precise control.

Excellent pressure metering capability allows precise control of work functions and less wear and tear on the application.

• Freedom of system design.

Single-station control of widely placed directional valves is readily achieved. For example, in a vehicle, an HRC is easily mountable in the cab (or elsewhere) because it's compact, and eliminates the cumbersome mechanical linkage found in many applications.

• A safer, cleaner operating environment.

Designing an ergonomic workstation is easily achieved by leveraging benefits inherent in a system designed with HRCs. The benefits include lowering noise levels, system oil temperature and the removal of fire hazards for the workstation.

• Optimum piping, quietness and heat dissipation.

HRCs allow main-stage directional valves to be mounted anywhere thereby allowing designers to optimize critical system parameters.

• A wide range of output pressure characteristics.

HRCs can be perfectly matched to the main-stage valve.

• Less noise.

The use of an HRC allows better insulation between the cab and engine because there is no longer a need of holes through the cab wall for linkage to the main valve. Plus low hysteresis provides superior control of the actuator, which reduces vehicle shock and subsequent noise.

• Enhanced operator safety.

The HRC needs only a relatively low working pressure, about 30 bar (435 psi). This lessens the risk to the operator in a situation of pipe failure.

Additional features and benefits of the 50 design

- STC Direct Port Option
- Compact mechanical detents available as an option on most models.
- Wide range of stylish ergonomically designed hand actuators that may include multiple electrical switches.
- All valves have port connections made in durable cast iron. Moreover, all valve bodies except the HRC4 (a two piece design) are completely cast iron.

STC Performance Characteristics

Leak Free Connections in a Snap

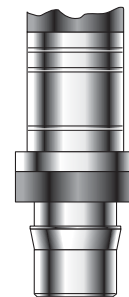
Design Features

- Positive round-wire style latching mechanism
- Swivels for installation, (in absence of pressure)
- Low profile, compact design
- Elastomeric o-ring seal –available in many materials
- Dual purpose dust seal/release sleeve
- Simple stamped release tool for disconnecting
- Zinc plated steel construction

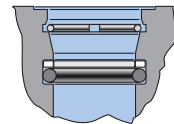
Benefits

- Fast reliable one-hand STC connections requiring no assembly tools
- Easy installation in confined areas
- Eliminates cross-threading, over-or under-torquing, and hose twisting
- Resists loosening when vibration is present
- Zero leak performance per SAE J1176
- Repairable seals for increased useful life
- Direct porting eliminates adapters to maximize cost savings
- Resists external contamination

- Design allows easy disconnection with release tool
- Ease of assembly for HRCs with multiple ports in tight spaces



STC Hose/Connector



STC Port

Operating Characteristics

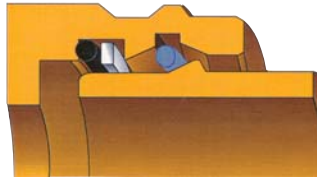
INTERFACE SIZE	MAXIMUM OPERATING PRESSURE		MINIMUM BURST PRESSURE		VACUUM	
	PSI	BAR	PSI	BAR	in/Hg	mm/Hg
3/8"	5,000	345	20,000	1,380	28	711

Technology Comparison

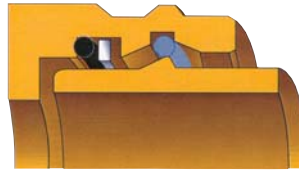
	THREADED FITTINGS	STC FITTINGS
Assembly tools required	•	
Torque sensitive	•	
Limited reusability	•	
Zero leakage		•
Fast, reliable connections		•
Ease of installation in confined areas – improved ergonomics		•
Ease of orienting hose ends		•
Compact design, install and remove in limited access areas		•

How to Use STC

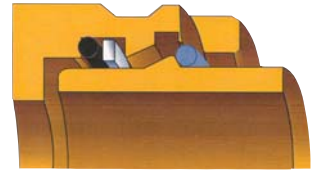
STC Assembly Action



Male connector is inserted into the female connector. The male shoulder spreads the latch ring open.



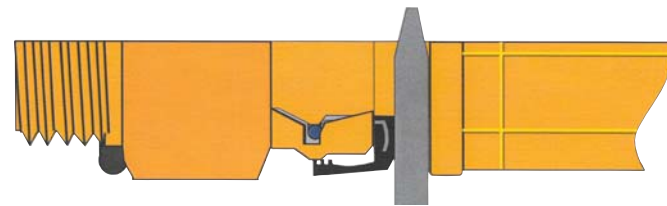
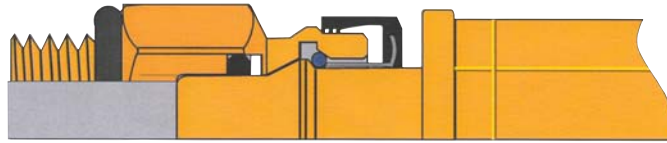
Latch ring is in its open position which allows the male shoulder to slide past the latch ring.



Male and female are locked into place. As fluid pressure is applied, the latch ring is wedged between the male shoulder and the female angle.

Note

Always remember to verify that your STC connection has been made successfully by pulling the connection.



As the STC tool is inserted behind the release sleeve, the steel insert pushes the latching ring forward into a groove in the female half I.D., thus allowing the two halves to be pulled apart. The thickness of the tool moves the sleeve forward far enough to disconnect, so prying sideways with the tool is unnecessary.



HRC with STC Ports

Bulletin JA535C
Supersedes JA535D

Service Bulletin for STC® Fittings

Female Port Connector

Female Components:
A. O-Ring
B. Lock-Up Ring
C. Wire Latch Ring

Male Hose Fitting

Male Components:
D. Release Sleeve

Disconnection

Warning: Release pressure from the system before attempting to disconnect these fittings in order to avoid hazardous ejection of the fitting, which could result in personal injury.

- Some fluid may still be in the system. Minimize fluid loss by draining the fluid from the system components prior to disconnection.
- Prior to disconnection, clean the area around the fitting with a clean cloth. Or using an airgun, blow dirt and debris from the release sleeve area.
- To help avoid release sleeve tearing, create a release tool insertion gap by moving the sleeve in the release direction. (Refer to Figure 1). This can be done either by hand or by using a single prong of the release tool.
- Insert the release tool behind the release sleeve (D) and pull the hose assembly out from the mating STC connector (bearing the release tool handle end and disassembly). Do not pry on the fitting with the release tool. (Refer to Figure 1).
- If a release tool is not available, a flat blade screwdriver may be used. Larger fittings may require two screwdrivers. Follow step 4 above. Use only one - a screwdriver must damage the release sleeve.

Inspection

- STC fittings are designed to be connected and disconnected repeatedly without requiring the O-Ring and Back-Up Ring, unless leakage or damage is observed.
- Inspect mating STC fittings to ensure they are in good condition, clean and free of contaminants, nicks, scratches, foreign, etc.
- Check the Wire Latch Ring (C) to ensure that it is in the proper position in the female STC connector prior to installation or reconnection.
- Check the O-Ring (A) to ensure it is not cut or otherwise damaged prior to installation or reconnection.
- Check the Back-Up Ring (B) to ensure it is not damaged. Verify that it is in the back of the O-Ring groove prior to reconnecting the fitting.

Figure 1 - STC Assembly

Caution: If leakage is observed, and the fittings are in otherwise good condition, a seal replacement kit must be installed on the fitting. If seals are not replaced, a decrease in system performance or damage to the system components may result.

Warning: Release pressure from the system before attempting to disconnect these fittings in order to avoid hazardous ejection of the fitting, which could result in personal injury.

- Some fluid may still be in the system. Minimize fluid loss by draining the fluid from the system components prior to disconnection.
- Prior to disconnection, clean the area around the fitting with a clean cloth. Or using an airgun, blow dirt and debris from the release sleeve area.
- To help avoid release sleeve tearing, create a release tool insertion gap by moving the sleeve in the release direction. (Refer to Figure 1). This can be done either by hand or by using a single prong of the release tool.
- Insert the release tool behind the release sleeve (D) and pull the hose assembly out from the mating STC connector (bearing the release tool handle end and disassembly). Do not pry on the fitting with the release tool. (Refer to Figure 1).
- If a release tool is not available, a flat blade screwdriver may be used. Larger fittings may require two screwdrivers. Follow step 4 above. Use only one - a screwdriver must damage the release sleeve.

Warning: Release pressure from the system before attempting to disconnect these fittings in order to avoid hazardous ejection of the fitting, which could result in personal injury.

- Some fluid may still be in the system. Minimize fluid loss by draining the fluid from the system components prior to disconnection.
- Prior to disconnection, clean the area around the fitting with a clean cloth. Or using an airgun, blow dirt and debris from the release sleeve area.
- To help avoid release sleeve tearing, create a release tool insertion gap by moving the sleeve in the release direction. (Refer to Figure 1). This can be done either by hand or by using a single prong of the release tool.
- Insert the release tool behind the release sleeve (D) and pull the hose assembly out from the mating STC connector (bearing the release tool handle end and disassembly). Do not pry on the fitting with the release tool. (Refer to Figure 1).
- If a release tool is not available, a flat blade screwdriver may be used. Larger fittings may require two screwdrivers. Follow step 4 above. Use only one - a screwdriver must damage the release sleeve.

The proper connection and disconnection of STC is outlined in Bulletin JA535E.

Operating Data

OPERATING DATA

This catalog shows technical specifications and diagrams measured with mineral oil of 46mm²/s - 46 cSt viscosity at 40°C (104°F) temperature.

Minimum flow		5 L/min	1.3 USgpm
Maximum flow		20 L/min	5.3 USgpm
Minimum feeding pressure	on inlet port P	30 bar	435 psi
Maximum feeding pressure	on inlet port P	100 bar	1450 psi*
Maximum controlled pressure		64 bar	930 psi
Maximum back pressure	on outlet port T	3 bar	43.5 psi
Maximum hysteresis		0,5 bar	7.25 psi
Internal leakage (each curves)	P=30bar, v=46 mm ² /s, T=40°C	from 1.5 to 3 cm ³ /min	from 0.09 to 0.18 in ³ /min
		for each reducing valve	for each reducing valve
Fluid		Mineral oil	
Fluid temperature		-10° to 80°C	14° to 176°F
Ambient temperature		-40° to 60°C	-40° to 140°F
Viscosity		12 - 400 mm ² /s	12 - 400 cSt
Max level of fluid contamination		15/12 - ISO 4406	class 6 - NAS 1638
Tie rod tightening torque	HRC2-S3+ only	30 Nm	22.2 ft lbs
Standard threads and fitting tightening torque			
	BSP G 1/4" (ISO 228/1)	30 Nm	22.1 ft lbs
	M12x1.5 (UNI ISO 6149)	25 Nm	18.4 ft lbs
	M14x1.5 (UNI ISO 6149)	35 Nm	25.8 ft lbs
	7/16–20 UNF–2B (SAE4) (ISO 11926–1)	25 Nm	18.4 ft lbs
	9/16–18 UNF–2B (SAE6) (ISO 11926–1)	30 Nm	22.1 ft lbs
Weight			
	HRC4-J1	3.8 kg	8.4 lb
	HRC2-S1	2.1 kg - 3 kg	4.6 lb - 6.6 lb
	HRC2-S2	4.3 kg	9.5 lb
	HRC2-S3	see table on page 17	
	HRC2-P2	2.8 kg - 3.6 kg	6.2 lb - 7.9 lb
	HRC2-R1	4.2 kg - 5.1 kg	9.3 lb - 11.2 lb
	HRC1-T actuator	1.7 kg	3.7 lb
	HRC1-L,Q actuator	1.3 kg	2.9 lb
Surface finish			
	HRC4-J1 – HRC2-S1 – HRC2-S2 HRC2-S3 – HRC2-P2	Body painted as standard, with one coat of Primer black anti-rust paint	
	HRC1	Phosphated body	
	HRC1-R1	Phosphated body and galvanized pedal	

Note

* Catalog rating. NFPA qualification pending.

For different conditions, please contact Eaton Sales Department.

HRC1

Model Code

Mechanical, pedal, or hand-wheel operated models, half function type



HRC1 Series

This series is the most basic form of HRC. It is typically used to control a diverter valve or power clutch, or similar single acting function.

All HRCs are based upon the pressure reducing valve concept using a constant inlet pressure, and provid-

ing a variable outlet pressure as a direct result of the actuating mechanism.

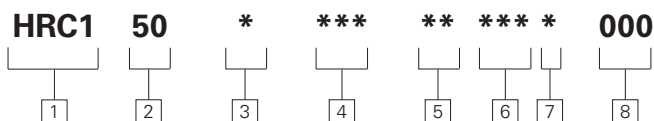
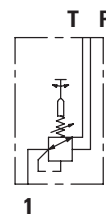
Features

- Lightweight design
- Three actuator options for a variety of applications
- STC direct port availability.

Functional Symbol

Mechanically operated models

One control port, half-function HRC1-S



1 HRC Type HRC1

2 Design Series

50 - Subject to change. Installation dimensions different from 30-49 series design.

3 Port Configuration

T - STC-06 Ports
B - BSP G1/4" Ports
S - SAE6 Ports
M - M14 Ports

4 Actuator Type / Actuator options

T00 - Single pedal
L00 - Hand wheel
Q00 - No actuator

5 Control Options

00 - Spring return to neutral

6 Control Port Pressure Output

Refer to page 25-28 for detailed pressure control curves.

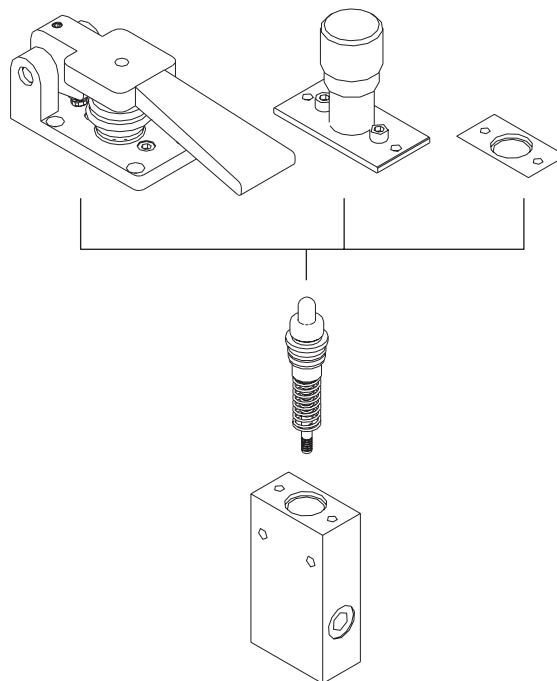
0## - Proportional with forced terminal rise
1## - Proportional without forced terminal rise
2## - Proportional with gain change and forced terminal rise
3## - Proportional with gain change but without forced terminal rise

7 Return Springs

A - Standard (L & Q actuator)
B - Heavy (L & Q actuator)
C - Standard (T actuator)

8 Special Options

000 - None



HRC1

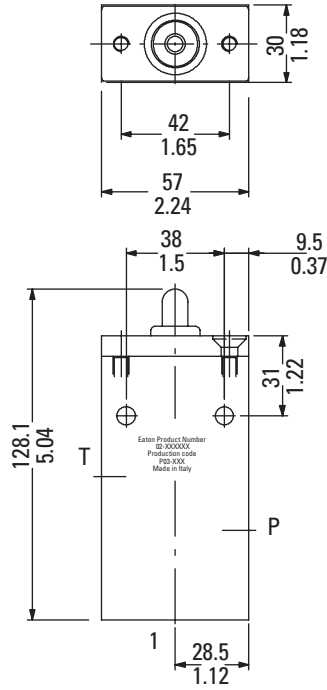
Dimensional data



Q00 Type

Description

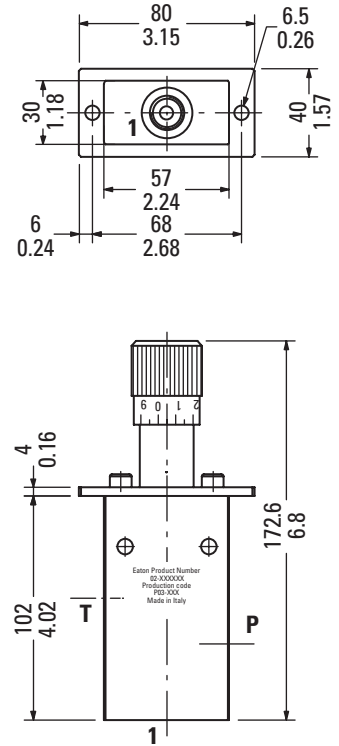
Monoblock, direct actuation, work port with side P and T ports



L00 Type

Description

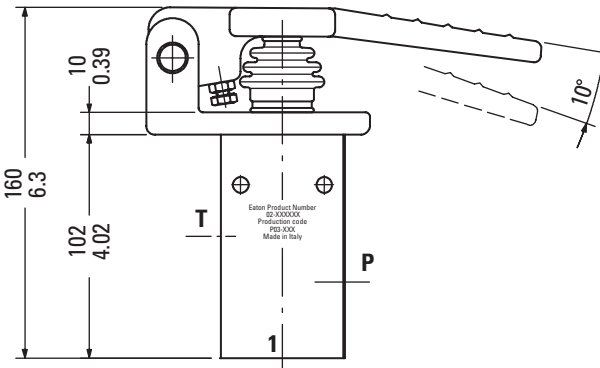
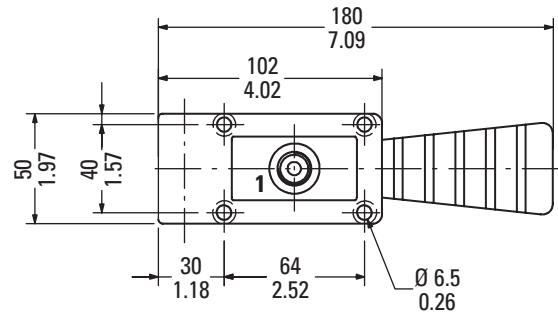
Monoblock, handwheel operated, 1 work port with side P and T ports



T00 Type

Description

Monoblock, pedal operated, 1 work port with side P and T ports



HRC2-P2

Model Code

Foot pedal operated, dual half-function type – with two foot pedals



HRC2-P Series

The “P” series is a single-function, dual pedal valve typically used to control a single double-acting spool. One foot pedal moves the spool in one direction and the other foot pedal reverses the direction of the spool travel.

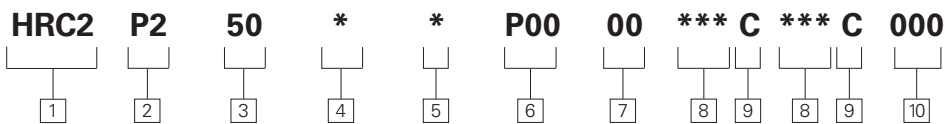
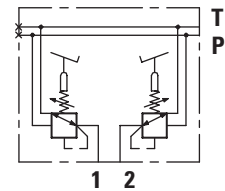
As with all HRC models, this valve operates on the pressure reducing concept, using a constant inlet pressure, and providing a variable outlet pressure as a direct result of the actuating mechanism.

Features

- Modular output pressure capsules allow quick and simple changes to be made to the valve output characteristics.
- Strong ergonomically designed foot pedal controls.
- STC direct port availability.

Functional Symbols

Two control ports, dual half-function HRC2-P2, two independent pedals.



1 HRC Type

HRC2

2 HRC2 Type

P2

3 Design Series

50 - Subject to change. Installation dimensions different from 30-49 series design.

4 Port Locations (P & T Ports)

- 1** - Side Ported (Standard)
- 2** - Bottom Ported

5 Port Configuration

- T** - STC-06 Ports*
- B** - BSP G1/4" Ports
- S** - SAE6 Ports
- M** - M14 Ports

6 Actuator Type / Actuator options

P00 - Dual pedals

7 Control Options

00 - Spring return to neutral – no options

8 Control Port Pressure Output

Refer to page 25-28 for detailed pressure control curves.

- 0##** - Proportional with forced terminal rise
- 1##** - Proportional without forced terminal rise
- 2##** - Proportional with gain change and forced terminal rise
- 3##** - Proportional with gain change but without forced terminal rise

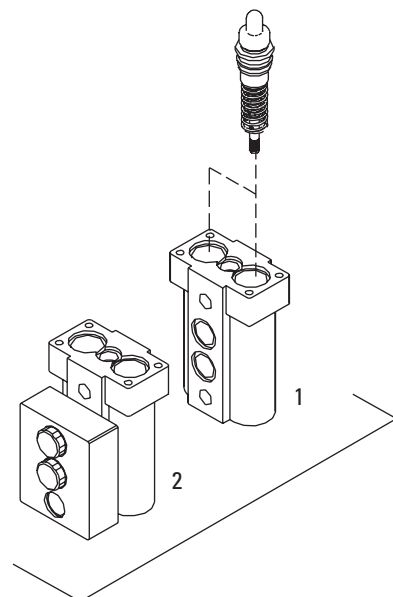
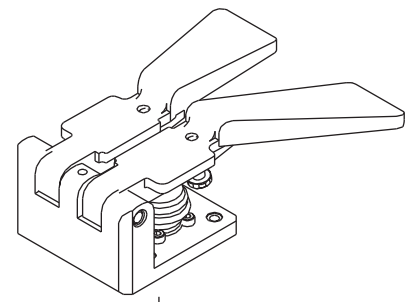
9 Return Springs

C - Standard

10 Special Options

000 - None

*STC direct ports are available only on bottom ported valve (option 2)



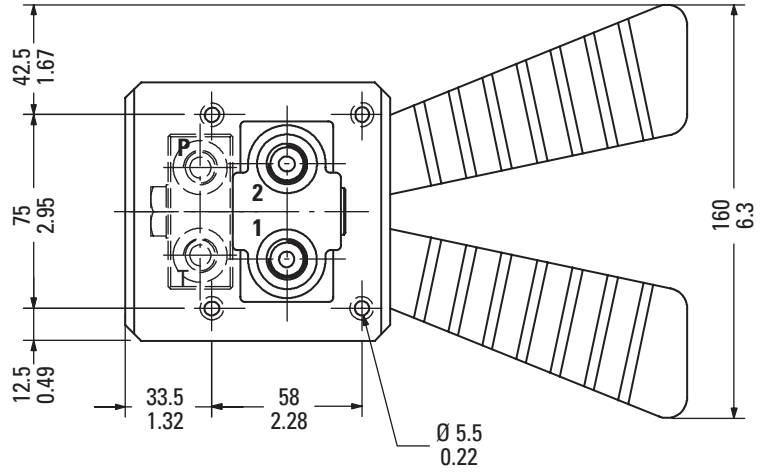
HRC2-P2

Dimensional data



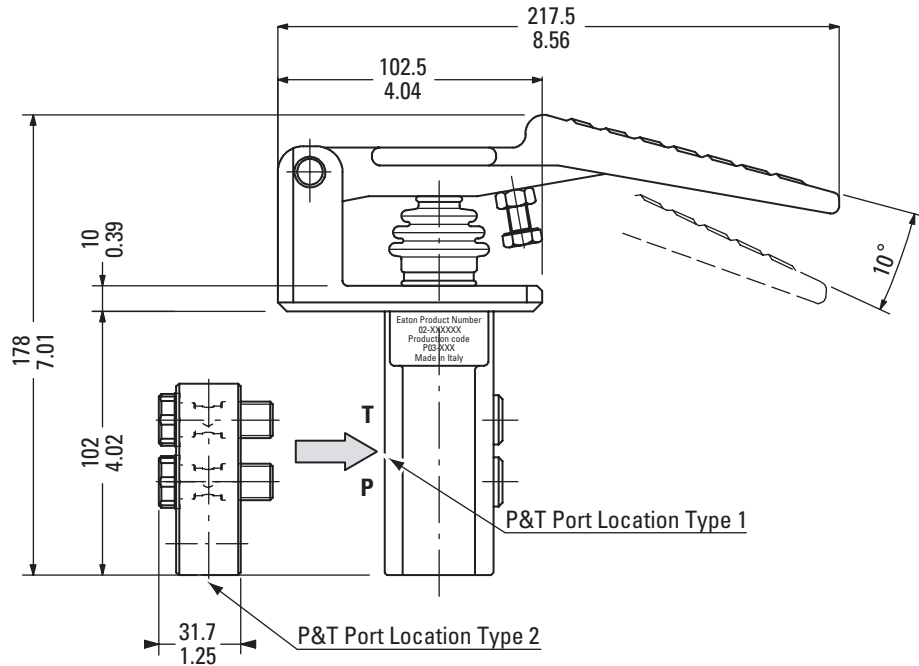
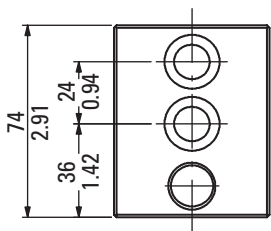
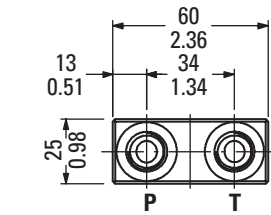
Description

Monoblock, two pedals and two work ports.



Type 2 Port Locations

In this type, pressure and tank lines are bottomed by means of a manifold block.



HRC2-R1

Model Code

Foot pedal operated, single-function models – Rocker pedal



HRC2-R Series

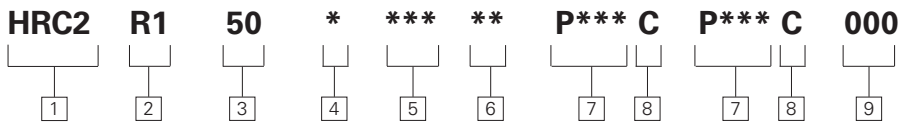
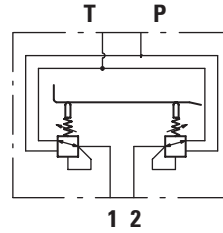
The “R” series is a single-function valve that is fitted with either a standard straight foot pedal or, as an option, may be fitted with a more ergonomic dual slope pedal. Typical application is for use as a control for a single double-acting spool, or as a travel pedal on a tracked vehicle.

Features

- STC Direct port availability.
- Durable pedals with protective gaiter around pedal joint and spring capsules.

Functional Symbol

Two control ports, single-Function HRC2-R1, rocker pedal



1 HRC Type
HRC2

2 HRC2 Type
R1

3 Design Series
50 - Subject to change. Installation dimensions different from 30-49 series design.

4 Port Configuration
T - STC-06 Ports
B - BSP G1/4" Ports
S - SAE6 Ports
M - M14 Ports

5 Actuator Type / Actuator options
F00 - Flat foot pedal
H00 - Obtuse angle foot pedal

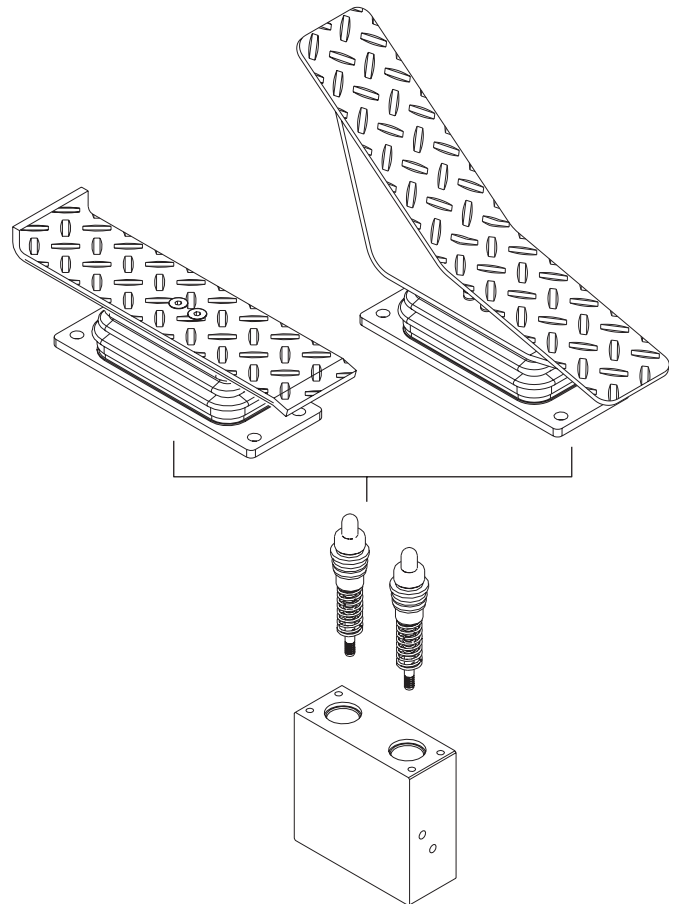
6 Control Options
00 - Spring return to neutral - no options

7 Control Port Pressure Output
Refer to page 25-28 for detailed pressure control curves.

P0## - Proportional with forced terminal rise
P1## - Proportional without forced terminal rise
P2## - Proportional with gain change and forced terminal rise
P3## - Proportional with gain change but without forced terminal rise

8 Return Springs
C - Standard

9 Special Options
000 - None



HRC2-R1

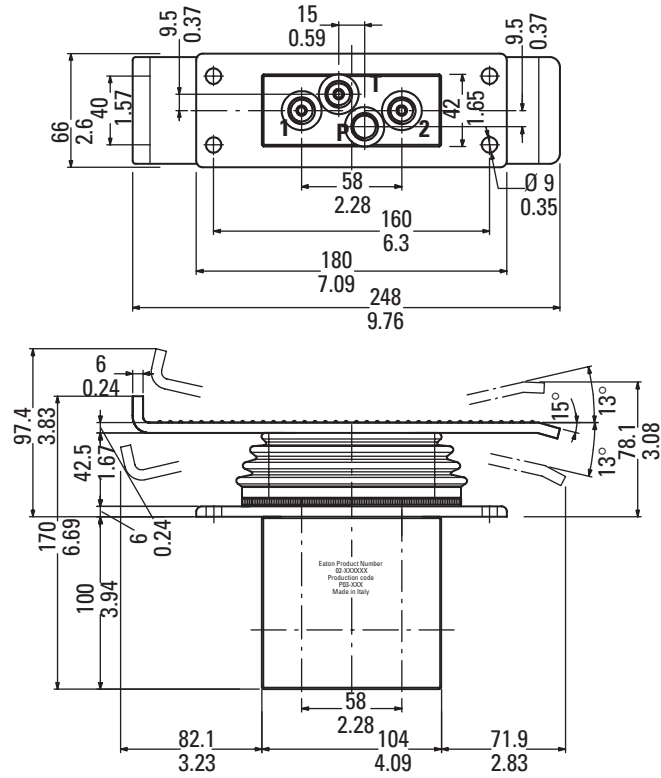
Dimensional data



F00 Type

Description

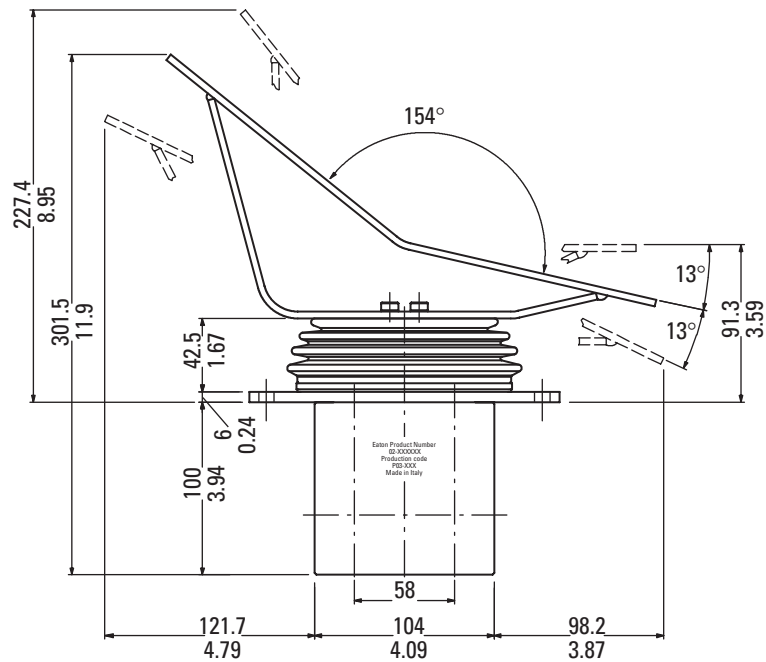
Monoblock flat rocker pedal with bottom P and T ports.



H00 Type

Description

Monoblock angled rocker pedal with bottom P and T ports.



HRC2-S

Model Code

Hand operated, single-function bankable models



HRC2-S Series

The "S" series is a single-function valve that may be fitted with many different styles of hand operated levers. This unit may be used as a single valve or assembled into a bank of HRC2-S valves where more than one valve spool needs to be controlled. The valve's design allows a single pump supply and tank return line to be used in a bank of valves, and may be connected at either end of the assembly. The valves may be assembled into banks of up to 10.

Features

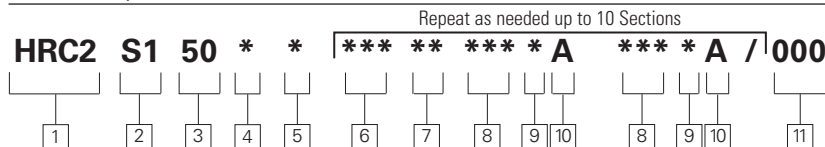
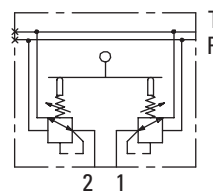
Many optional features are available for this product series, such as:

- Three-position Mechanical Detent – allowing the control actuator to be held in the neutral and fully shifted positions.
- STC direct port availability.

- A Frictional Lock Device - to allow continuous holding of the control actuator at every position of the stroke.
- A Pull-to-release Safety Device - to ensure actuator is not accidentally operated. Lever may only be operated after lifting the security collar on the actuating lever.

Functional Symbol

Two control ports, single-function.
Single section example.



1 HRC Type
HRC2

2 Number of Valves in Stack
1 - 10 sections (2-ports per section)

3 Design Series
50 - Subject to change. Installation dimensions different from 30-49 series design.

4 Port Locations (P & T Ports)
1 - Bottom Ported (standard on valve stacks greater than 1)
2 - Side Ported (standard on single valves)

5 Port Configuration
T - STC-06 Ports*
B - BSP G1/4" Ports
S - SAE6 Ports
M - M14 Ports

6 Actuator Type / Actuator options
S00 - Straight lever with conical plastic handle
G00 - Bent lever with spherical handle**
B00 - Straight lever with spherical handle
Q00 - No Actuator
W00 - Anatomic handle***
W01 - With momentary pushbutton***

7 Control Options
Refer to page 18 for pictorial views.
00 - Spring return to neutral - no options
08 - Detent in position 1
10 - Detent in position 2
12 - Detent in position 1 and 2
16 - Frictional position hold with neutral sensing
32 - Pull to release neutral detent+****
48 - Frictional position hold with pull to release neutral detent+****
56 - Detent in position 1 and 2, pull to release neutral detent+****

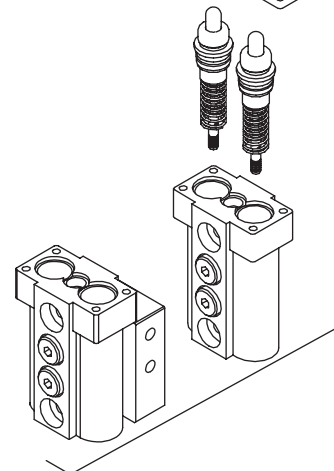
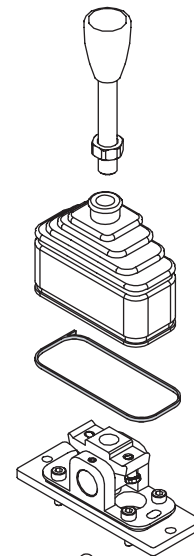
8 Control Port Pressure Output
Refer to page 25-28 for detailed pressure control curves.
0## - Proportional with forced terminal rise
1## - Proportional without forced terminal rise
2## - Proportional with gain change and forced terminal rise
3## - Proportional with gain change but without forced terminal rise

9 Return Springs
A - Standard
C - Heavy

10 Control Port Options
A - No Options

11 Special Options
000 - None

*STC direct ports are available only on bottom ported valve (option 1).
**Available with HRC2-S2 only.
*** Available with HRC2-S1 only, see pg 15.
****Available with S00 type actuator only.



HRC2-S1

Dimensional data



Description

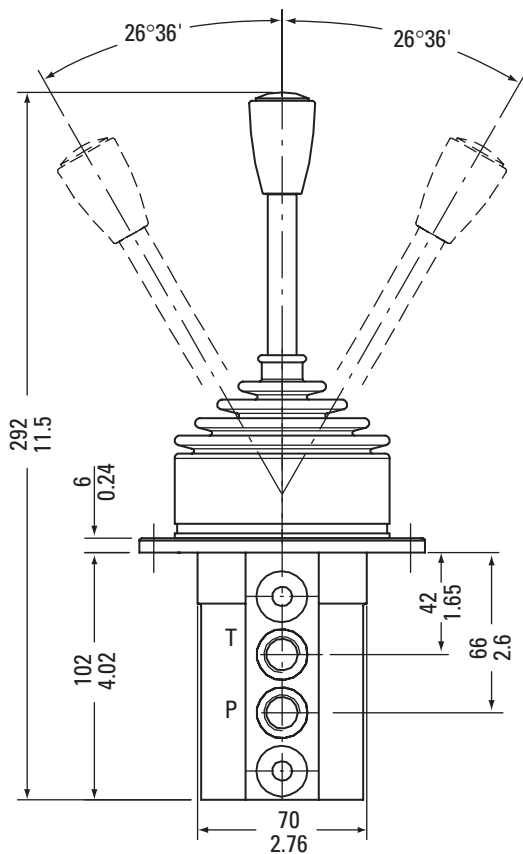
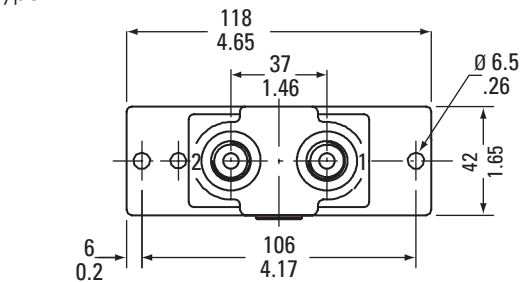
Monoblock with one lever and two work ports. Side P and T ports

Bottom Port Option

In this type, feeding and tank lines are bottomed by means of a manifold block.

Note

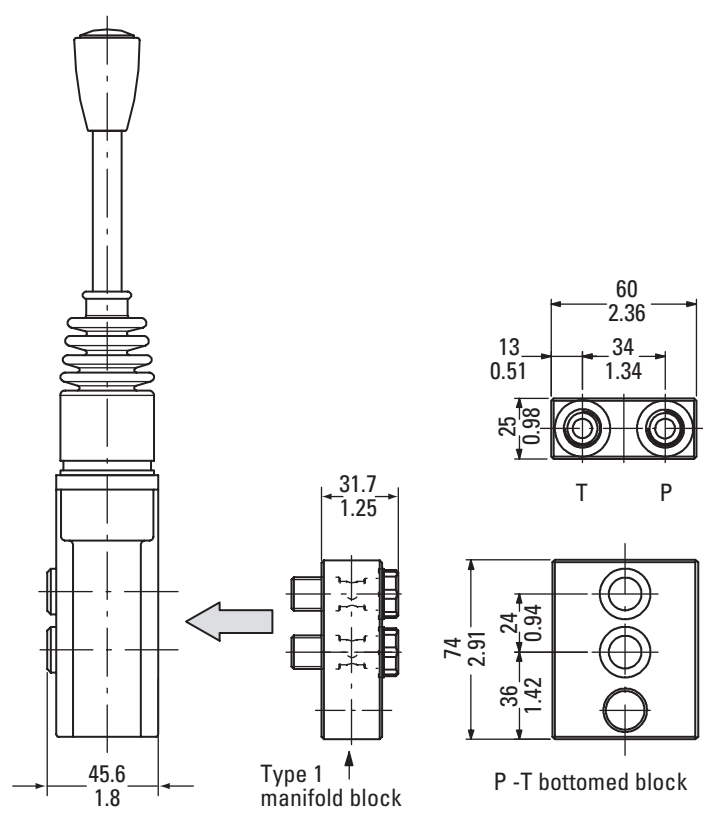
HRC2-S1 shown with S00 Actuator type.



Options for Anatomic Handles

W Type Handle

Push-button	
Resistive load	0.6A/125 Vdc
Inductive load	16A/250 Vac



HRC2-S2

Dimensional data

Note

This replaces HRC4-H2.



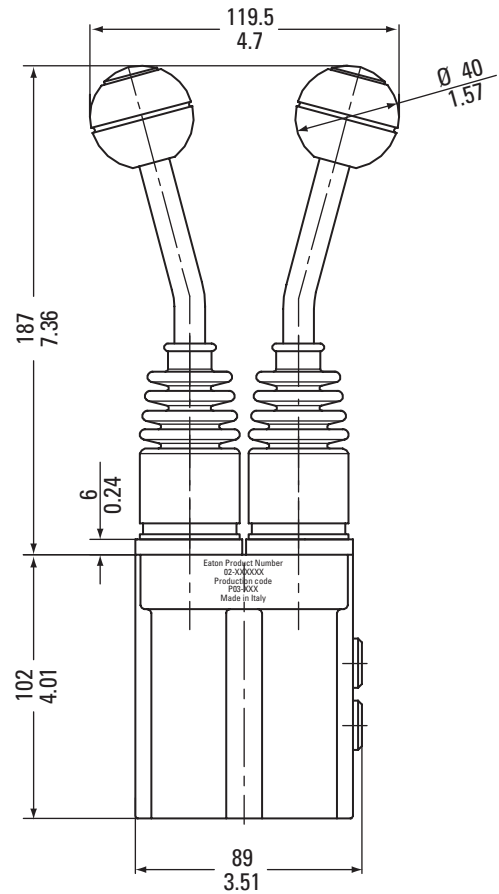
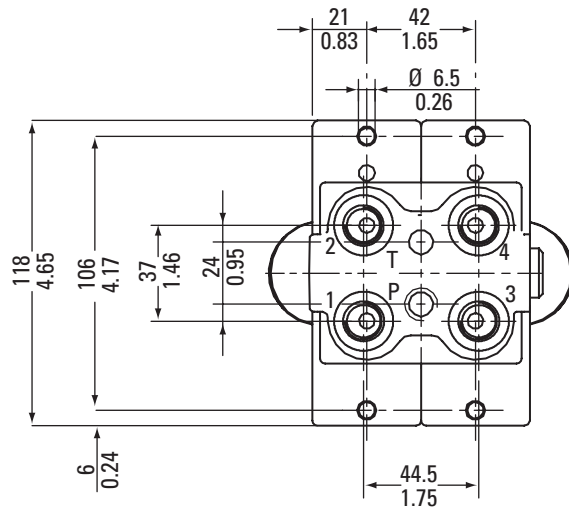
Description

Monoblock with two levers and four work ports.

Bottom P and T ports.

Note

HRC2-S2 shown with optional G00 actuator type.



HRC2-S3+

Dimensional data

Description

Monoblock with up to ten levers and 20 workports.

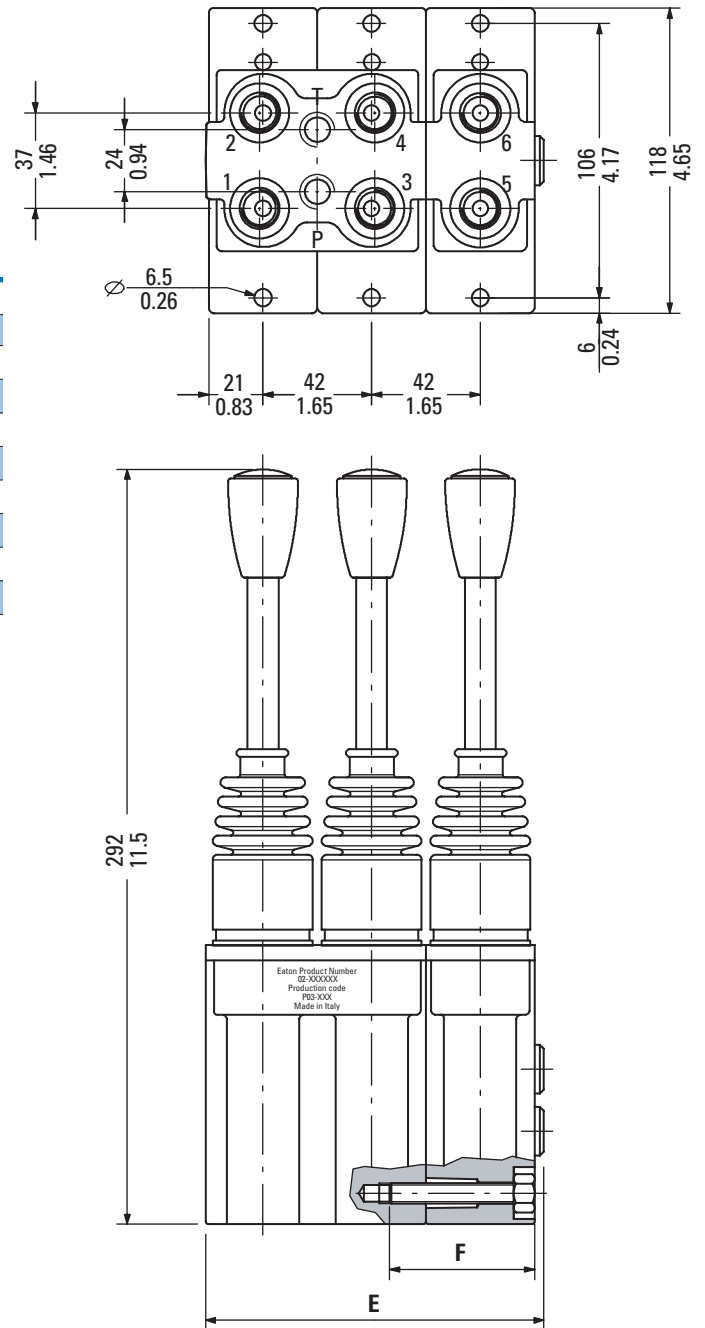
Bottom P and T ports.

Hydraulic pilot control valve dimensions

TYPE	E		F		WEIGHT	
	mm	in	mm	in	kg	lb
HRC2-S2	89	3.5	—	—	4.2	9.3
HRC2-S3	131	5.16	56	2.2	6.3	13.9
HRC2-S4	173	6.81	98	3.86	8.4	18.5
HRC2-S5	215	8.46	140	5.51	10.4	22.9
HRC2-S6	257	10.12	182	7.17	12.5	27.6
HRC2-S7	299	11.77	224	8.82	14.6	32.2
HRC2-S8	341	13.43	266	10.47	16.7	36.8
HRC2-S9	383	15.08	308	12.13	18.8	41.4
HRC2-S10	425	16.73	350	13.78	20.9	46.1

Note

HRC2-S3 shown with S00 Actuator type.



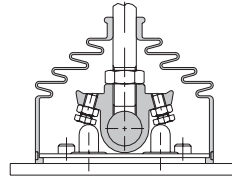
Control Options

HRC2-S

00 Control

Spring centered to neutral position.

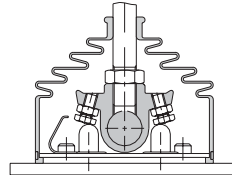
Available with all types of knobs.



08 Control with detent

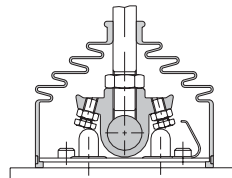
Detent in position 1, spring centered to neutral position.

Available with all types of knobs.



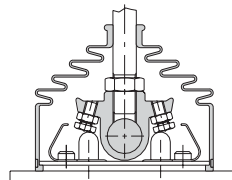
10 Control with detent

Detent in position 2, spring centered to neutral position.



12 Control with detent

Detent in position 1 and 2, spring centered to neutral position.



Control Options Continued

HRC2-S

16 Control

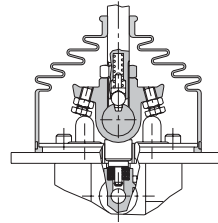
With friction (stop in any position) and neutral sensing.

Available with knobs:

HRC2-S1: S (standard), B, W

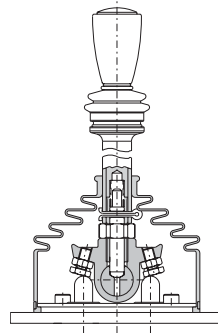
HRC2-S2: G (standard), B, S

HRC2-S3+: S (standard), B



32 Control with neutral detent

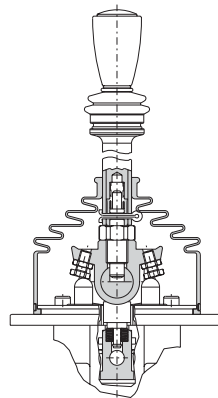
Control available only with S knob.



48 Control with neutral detent

With friction (stop in any position).

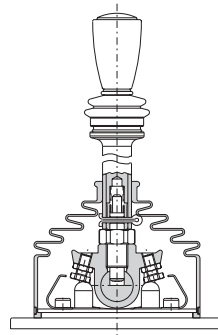
Control available only with S knob.



56 Control with neutral detent

Detent in position one and two.

Control available only with S knob.



HRC4-J1

Model Code

Hand operated double function models, joystick actuator



HRC4-J Series

The "J" series is a double function valve that may be fitted with many different styles of hand-operated levers. This unit is typically used to control two double acting spools using a single joystick-style actuator. This provides a single-handed, highly facile device to control two separate actuators.

Features

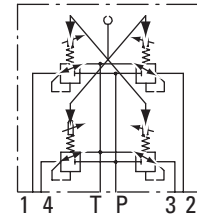
Many optional features are available for this product series, such as:

- Progressive or ergonomic handles with or without electrical switches.
- New ergonomic handle package is a very user-friendly and stylish handle fitted with a square gaiter that covers the entire mounting flange.

- A maximum of seven electrical switches may be fitted to the ergonomic style handle in various configurations, for a multitude of machine functions.
- STC direct port availability.
- All actuators with electrical switches carry a minimum IP44 environmental protection rating.*

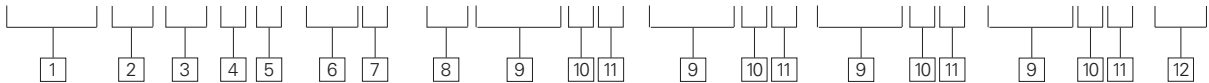
Functional Symbol

Four control ports, double-function HRC4-J1, joystick actuator



*Note - other ratings available

HRC4 J1 50 * * * S ** M*** * A M*** * A M*** * A M*** * A 000**



1 HRC Type - HRC4

2 HRC4 Type - J1

3 Design Series

50 - Subject to change. Installation dimensions different from 30-49 series design.

4 Mount Type

- 1** - Mount with slot
- 2** - Mount with M8 holes

5 Port Configuration

- T** - STC-06 Ports
- B** - BSP G1/4" Ports
- S** - SAE4 Ports
- M** - M12 x 1.5 Ports

6 Actuator Type / Actuator options

Refer to pages 22-24 for pictorial views

- V00** - Progressive handle without switches
- V01** - Spring return push button on top
- V02** - Three position non-detented rocker switch
- X00** - Ergonomic handle with dead man's switch
- X01** - Single push button
- X02** - Two push buttons
- X03** - Three push buttons
- X04** - Four push buttons
- X05** - Five push buttons

X06 - Six push buttons

X07 - Dead man's switch and 6 spring return push buttons

K00 - Ergonomic handle without dead man's switch

K01 - Single push button

K02 - Two push buttons

K03 - Three push buttons

K04 - Four push buttons

K05 - Five push buttons

K06 - Six push buttons

K07 - 2-position, non-detented rocker switch

K08 - 2 push button switches and 2-position, non-detented rocker switch

J01 - Ergonomic Handle with dead man's switch, One flush dome button

J02 - Two flush dome buttons

J03 - Three flush dome buttons

J04 - Four flush dome buttons

M01 - Ergonomic Handle without dead man's switch, One flush dome button

M02 - Two flush dome buttons

M03 - Three flush dome buttons

M04 - Four flush dome buttons

Q00 - No Actuator

7 Actuator Orientation

- S** - Straight lever (Standard)

8 Control Options

- 00** - Spring return to neutral - no options

9 Control Port Pressure Output

Refer to page 25-28 for detailed pressure control curves.

M0## - Proportional with forced terminal rise

M1## - Proportional without forced terminal rise

M2## - Proportional with gain change and forced terminal rise

M3## - Proportional with gain change but without forced terminal rise

10 Return Springs

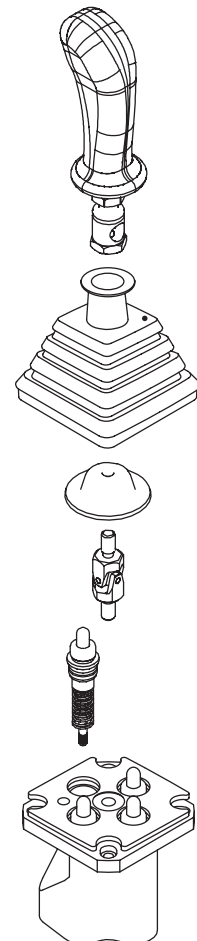
- A** - Standard
- C** - Heavy

11 Control Port Options

- A** - No options

12 Special Options

- 000** - None



HRC4-J1

Dimensional data



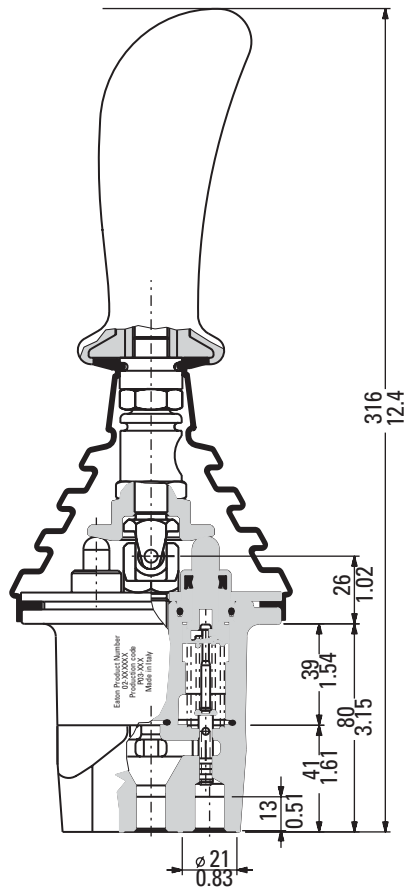
Description

Monoblock one lever, four workports.

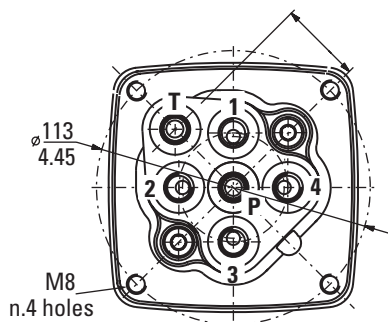
Bottom P and T ports.

Note

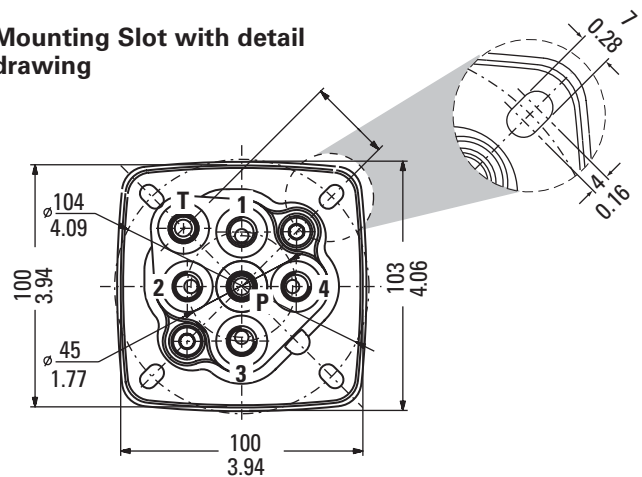
HRC4-J1 shown with V00 type handle.



Execution with M8 mounting holes



Mounting Slot with detail drawing



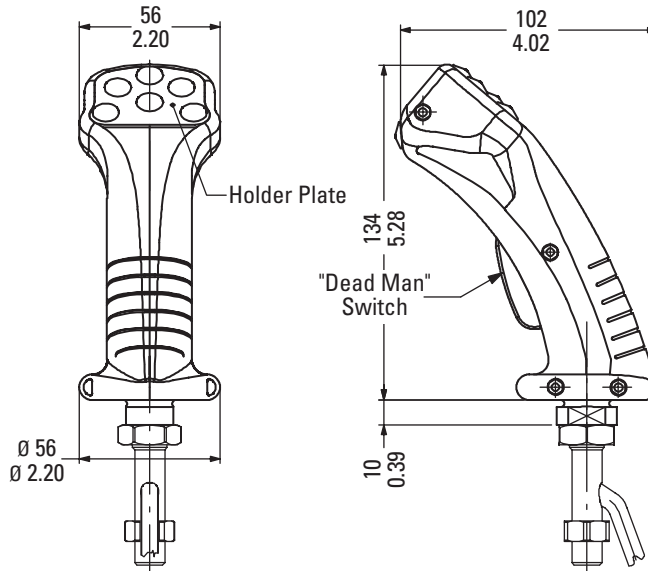
HRC4 Handles

Options for Ergonomic Handles

X type handle shown. For K and M type, omit Dead Man's Switch.

Note

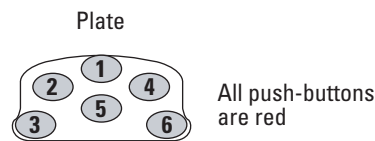
Standard lead lengths are 350 mm (13.8 in) for push buttons; 400 mm (15.7 in) for rocker switches.



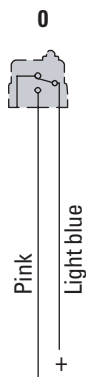
SWITCH CONFIGURATION	HANDLE TYPE
	X00, K00
	X01, K01
	X02, K02
	X03, K03
	X04, K04
	X05, K05
	X06, K06
	K07
	K08
	J01, M01
	J02, M02
	J03, M03
	J04, M04

Wiring Diagram

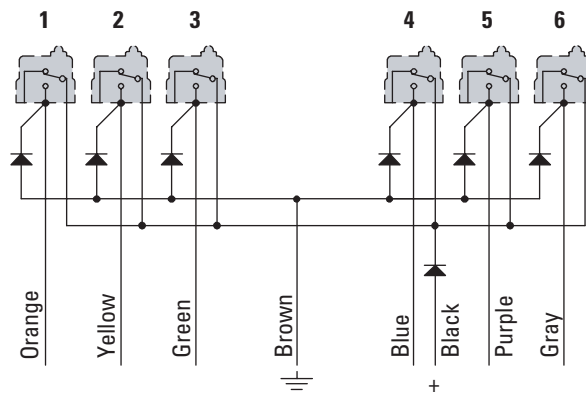
Electrical Specifications
X and K type handles



Dead Man's Switch



Switch Connections



Push-button

Resistive load 7A/28 Vdc

Inductive load 5A/28 Vac

Rocker-switch

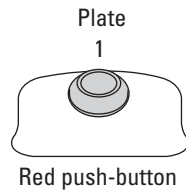
Resistive load 10A/28 Vdc

Inductive load 10A/115 Vac

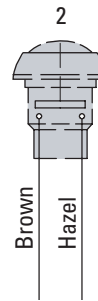
HRC4 Handles

Wiring Diagram

Electrical Specifications
J and M type handles



Switches connection

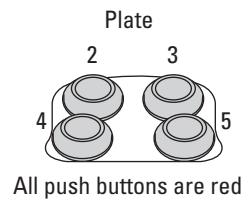


Push-button

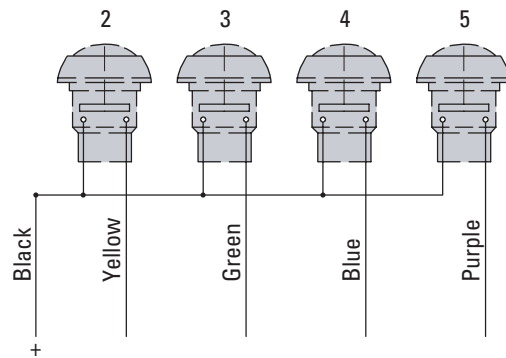
Resistive load	100mA/50 Vdc
Inductive load	400mA/32 Vac
	12mA/125 Vac

Note

For applications requiring a high power switch, consult Eaton sales department.






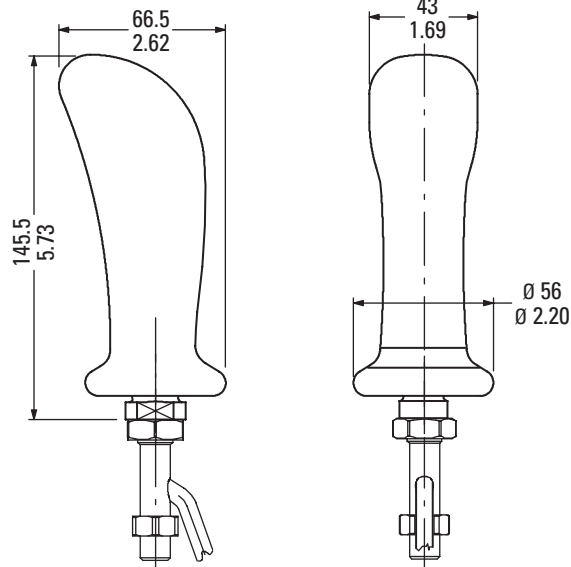
Switches connection



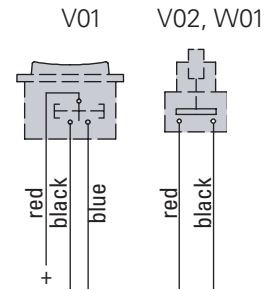
HRC4 Handles

Options for Progressive Handles

SWITCH CONFIGURATION	HANDLE TYPE
	V00
	V01
	V02



Wiring Diagrams



Push-button

Resistive load	4A/24 Vdc
Inductive load	2A/250Vac

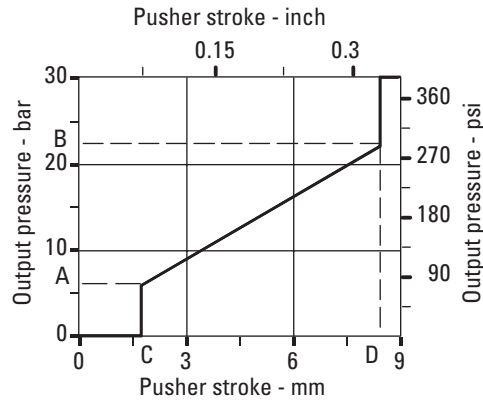
Rocker-switch

Inductive load	16A/250 Vac
	20A/125 Vac

Pressure Control Curves

Proportional with forced terminal rise

Terminal pressure value is the inlet pressure.



TYPE	PRESSURE		B		STROKE		D	
	A bar	psi	bar	psi	C mm	in	mm	in
001	5.8	84	22	319	1.8	0.07	8.5	0.33
002	6	87	22.5	326	2	0.08	6.5	0.26
003	5.5	80	28.5	413	1	0.04	8.5	0.33
004	4.9	71	18.9	274	1	0.04	8.5	0.33
005	15.1	219	27.4	397	1.2	0.05	6.5	0.26
007	6	87	37	537	1	0.04	8.5	0.33
008	9.8	142	26	377	1.8	0.07	8.5	0.33
010	3.25	47	15.4	223	1	0.04	8.5	0.33
012	14	203	29	421	1	0.04	8.5	0.33
013	3	44	10	145	1	0.04	8.5	0.33
014	3.2	46	17.2	247	2	0.08	8.5	0.33
016	6	87	21.7	315	2	0.08	6.3	0.25
017	5	73	12	174	1	0.04	8.5	0.33
018	5.9	86	12.9	187	1	0.04	8.5	0.33
019	0.5	7	11.4	165	1.8	0.07	8.5	0.33
020	4.3	62	15.2	220	1	0.04	8.5	0.33
021	6	87	16.3	236	1.6	0.06	7.2	0.28
022	1	15	8	116	1	0.04	8.5	0.33
023	2	29	11.5	167	1	0.04	8.5	0.33
024	5.8	84	19	276	1.8	0.07	7.2	0.28
025	5.8	84	19	276	0.9	0.04	6.5	0.25
026	6.5	94	14	203	1	0.04	8.5	0.33
027	3	44	9	131	2	0.08	8.5	0.33
028	5	73	21	305	1.1	0.04	8.7	0.34
029	2	29	11.5	167	2	0.08	8.5	0.33
030	0	0	13	189	0.5	0.02	8.5	0.33
031	5.8	84	19	276	1.6	0.06	7.2	0.28
032	3.4	49	29.4	426	1	0.04	8.5	0.33
033	5.8	84	19	276	1	0.04	8.5	0.33
037	5	73	21	305	1.2	0.05	6.5	0.26
038	22	319	37	537	1	0.04	8.5	0.33

Pressure Control Curves

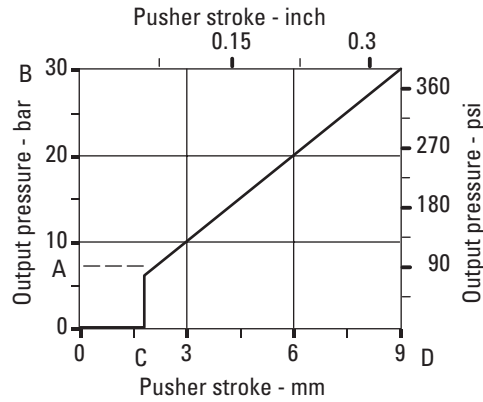
Proportional with forced terminal rise

Terminal pressure value is the inlet pressure.

TYPE	PRESSURE A		B		STROKE C		D	
	bar	psi	bar	psi	mm	in	mm	in
039	2	29	8	116	0.8	0.03	6.8	0.27
040	6.6	96	20.7	300	1	0.04	8.5	0.33
041	8	116	20.7	300	1.8	0.07	8.5	0.33
042	2	29	13	189	1	0.04	8.5	0.33
043	3.2	47	11.7	170	1.8	0.07	8.5	0.33
044	5.8	84	22.5	326	1.6	0.06	7.2	0.28
048	7	102	22.1	321	1.2	0.05	7.5	0.29
049	6	87	21.6	313	1	0.04	7.5	0.29
053	8	116	22.3	323	1	0.04	8.5	0.33
056	3.2	47	17.2	250	1	0.04	8.5	0.33
057	1	15	13	189	1.8	0.07	8.5	0.33
061	1.5	22	8.5	124	1	0.04	8.5	0.33
064	0.5	7	18.4	267	1	0.04	8.5	0.33
065	2	29	20.5	297	1	0.04	8.5	0.33
068	2	29	27.5	399	1	0.04	8.5	0.33
069	3	44	10.5	152	0.5	0.02	8.5	0.33
070	5.8	84	22.4	325	1	0.04	8.5	0.33
073	4	58	18	261	1	0.04	8.5	0.33
074	5	73	25	363	2	0.08	7.8	0.31
075	5	73	15	218	1	0.04	8.5	0.33
077	5	73	26.9	390	1.2	0.05	8.5	0.33
080	4	58	11	160	1	0.04	8.5	0.33
081	8	116	14.5	210	1	0.04	7.5	0.29
082	8	116	22.2	322	1	0.04	8.5	0.33
083	0	0	64	928	1.5	0.06	8.5	0.33
084	5.7	83	24.2	351	1	0.04	8.5	0.33
085	6	87	25	363	0.9	0.04	8.5	0.33
086	4	58	16.5	239	0.8	0.03	7.5	0.29
088	5.8	84	17	247	1	0.04	8.5	0.33

Pressure Control Curves

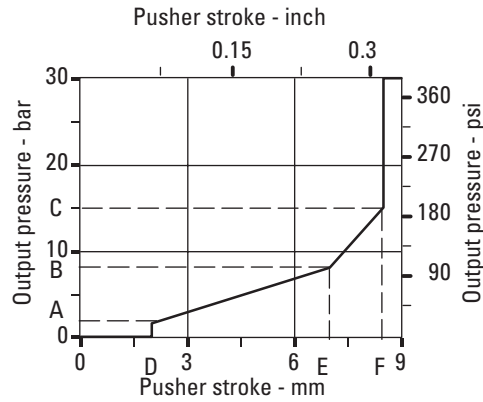
Proportional without forced terminal rise



TYPE	PRESSURE		B		STROKE		D	
	A bar	psi	bar	psi	C mm	in	mm	in
101	4.4	64	19.8	287	0.4	0.02	9	0.35
103	6	87	30	435	2	0.08	9	0.35
104	8.2	119	55	798	1	0.04	9	0.35
105	2	29	8	116	2	0.08	9	0.35
106	6	87	40	580	0.9	0.03	9	0.35
107	4	58	19.4	281	0.4	0.02	9	0.35
111	5.5	80	25.5	370	0.9	0.03	9	0.35
113	5	73	21.7	315	1.2	0.05	9	0.35
114	4	58	10	145	2	0.08	9	0.35
128	0	0	64	928	2	0.08	9	0.35
134	5.8	84	23	334	1.6	0.06	9	0.35
135	5.8	84	23	334	0.9	0.03	9	0.35
136	5.8	84	23	334	1.8	0.07	9	0.35
150	8	116	15	217	2	0.08	9	0.35
151	0	0	40	580	1	0.04	5.4	0.21
152	3	44	23	334	0.9	0.03	9	0.35
154	2	29	15	217	0.9	0.03	9	0.35
162	0.7	10	30	435	1	0.04	9	0.35
163	1.4	20	11.5	167	1	0.04	9	0.35
166	4.3	62	15	217	1.6	0.06	9	0.35
167	5	73	18	261	2	0.08	9	0.35
169	9.8	142	21	305	1.1	0.05	7.4	0.29
175	5	73	16	232	1	0.04	9	0.35
178	6.5	94	17.8	258	1.1	0.05	7	0.27
179	6.5	94	17	246	1.1	0.05	9	0.35

Pressure Control Curves

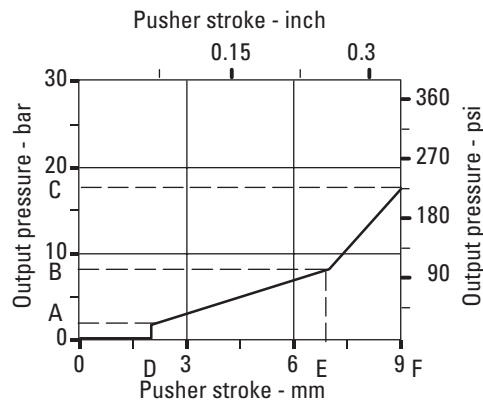
Proportional with gain change and forced terminal rise



TYPE	PRESSURE A		B	C		STROKE D		E	F			
	bar	psi		bar	psi	mm	in		mm	in		
201	1.5	22	8	116	15	218	2	0.08	7	0.28	8.5	0.33
211	2	29	7	102	20	290	1	0.04	5	0.20	8.5	0.33
215	4	58	7	102	10	145	1	0.04	7	0.28	8.5	0.33

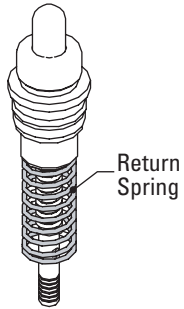
Pressure Control Curves

Proportional with gain change but without forced terminal rise



TYPE	PRESSURE A		B	C		STROKE D		E	F			
	bar	psi		bar	psi	mm	in		mm	in		
301	1.5	22	8	116	17.3	251	2	0.08	7	0.28	9	0.35

Return Springs



RETURN SPRINGS HRC1, HRC2-P2, HRC2-R1, HRC2-S

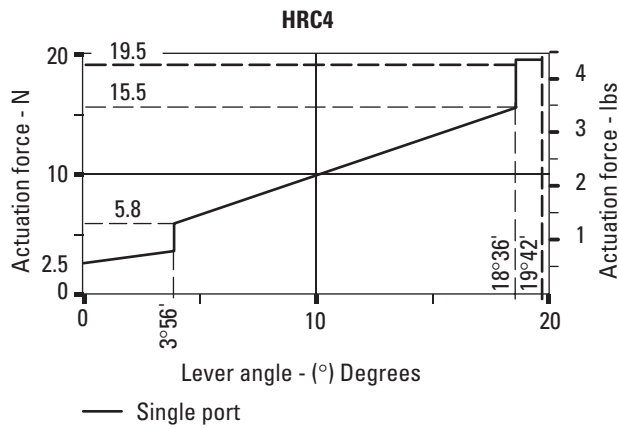
Type	Adjustable Range lb	N
A	from 3.08 to 6.16	from 13.7 to 27.4
B	from 6.62 to 9.92	from 29.4 to 44.1
C	from 16.5 to 34.2	from 73.5 to 135.2

RETURN SPRINGS HRC4

Type	Adjustable Range lb	N
A	from 5.17 to 7.91	from 23 to 35.2
B	from 19.78 to 39.57	from 88 to 176

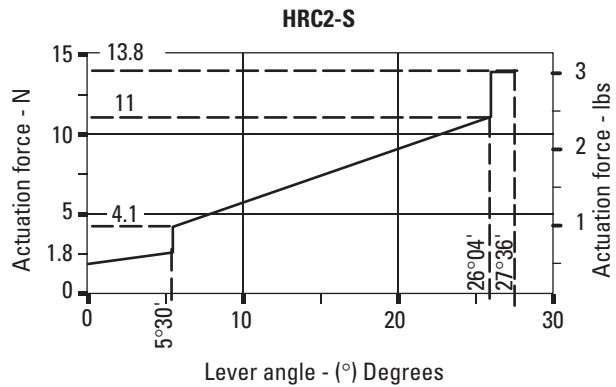
Performance Data

Actuation force



Note

Actuator forces are measured on valves using a 001 spring capsule with standard return springs.



Eaton
14615 Lone Oak Road
Eden Prairie, MN 55344
USA
Tel: 952 937-9800
Fax: 952 974-7722
www.hydraulics.eaton.com

Eaton
20 Rosamond Road
Footscray
Victoria 3011
Australia
Tel: (61) 3 9319 8222
Fax: (61) 3 9318 5714

Eaton
Dr.-Reckeweg-Str. 1
D-76532 Baden-Baden,
Germany
Tel: +49 (0) 7221 682-0
Fax: +49 (0) 7221 682-788



Hydraulics

© 2003 Eaton Corporation
All Rights Reserved
Printed in USA
Document No. E-VLDI-MC001-E
September 2003