

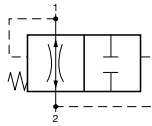
## RB Series Hose Break Valves



**RB...**  
Housing Valves

**RBE...**  
Cartridge Valves

### Hydraulic Symbol



- 1-2 Free Flow
- 2-1 Operating Direction; Valve closes if flow exceeds adjusted flow rate.

### Description

HYDAC Hose Break Valves eliminate uncontrolled movements of the actuator in case of line rupture. They are commonly applied with dead weight cylinders.

These valves are volume limiting flat seat valves.

At normal flow, the poppet is held open by a spring with enough force to counteract the force on the poppet created by the flow.

When the supply line is ruptured, the flow from 2 to 1 exceeds the specified flow rate, the P across the poppet creates a force greater than the spring force and closes the valve. This closing flow rate is adjustable. The valve opens automatically by pressurizing connection 1.

Depending on the pressure P, the leakage rate through the valve is approximately 0 to 6 in<sup>3</sup> / min. If this is excessive, the valve threads can be sealed and made leak-free.

The valves are installed between actuators and possible line breakage points.

A cartridge-type valve can be installed into an actuator port.

A housing-type valve can be installed close to the actuator or even directly into the actuator itself.

### Model Code

**RB E - SAE1-1/16-12 - X - 120L/MIN**

<b>Hose Break Valve</b>	RB
<b>Housing Type</b> Refer to "code" column below	E
<b>Size of Connection</b> Refer to "Size of Connection" below	SAE1-1/16-12
<b>Modification Number</b> X = Latest Revision	X
<b>Closing Flow Rate</b> XXXL/MIN = Standard Max. closing flow rate listed below in L/min XXXGPM = Factory Set Customer specifies closing flow rate in GPM	120L/MIN

### Type and Size Codes

Code	Housing Type	Connection 1	Connection 2	Size of Connections Dependent on Desired Closing Flow Rate (see below)		
E	Cartridge Only	-	-	SAE 9/16-18	SAE 3/4-16	SAE 1 1/16-12
XB	Cartridge Valve in Housings	SAE Straight Thread Port	SAE Straight Thread Stud End	SAE 9/16-18	SAE 3/4-16	SAE 1 1/16-12
XB	Cartridge Valve in Housings	NPT Port	NPT Male Connector	NPT 3/8 or NPT 1/2	-	NPT 1
XX	Cartridge Valve in Housings	SAE Straight Thread Port	SAE Straight Thread Port	-	-	SAE 1 1/16-12
CC	Cartridge Valve in Housings	NPT Male Connector	NPT Male Connector	-	NPT 3/4	-

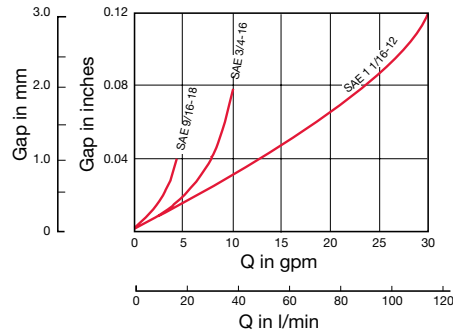
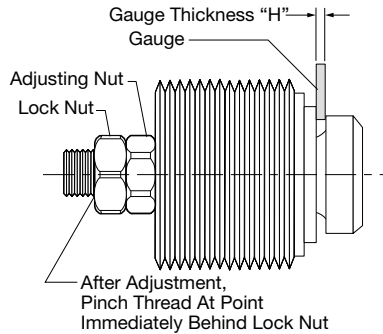
Closing Flow Rate (min - max) (from 2 to 1)	GPM	1-4	1.6-12	6.5-32
L/min	4-15	6-45	25-120	
To avoid the activation of hose break valves on flow surges, the closing flow rate should be at least 20% above the normal flow rate.	Valves are shipped with maximum closing flow setting. Closing flow can be adjusted according to curves on next page. If closing flow must be set by factory, please specify when ordering.			

## Adjustment Curves for Closing Flow Rate

The closing flow rate is dependent on the dimensions "H".

After loosening the lock nut, set the GAP to dimension "H" with a thickness gauge.

The lock nut must be tightened after adjustment.

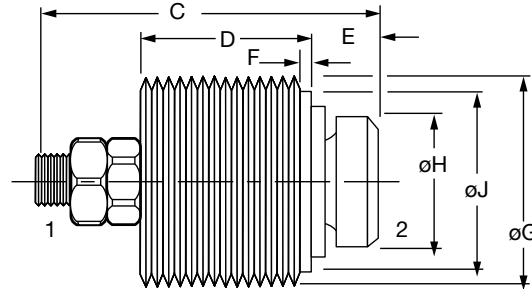
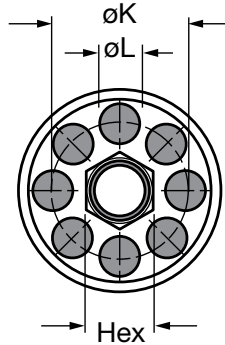


The adjustment curves are valid for cartridge RBE...and for all housing valves RB... in accordance with "Type and Size Codes" charts on previous page. For model RB... the cartridge must be removed from the housing for adjustment.

See special tool for installation and removal on page 60.

## Dimensions

### Cartridges

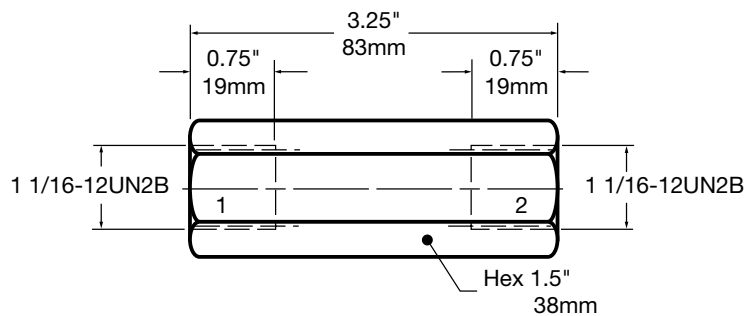


Valve Type	C	D	E	F	øG	øH	øJ	øK	øL	Hex
RBE-SAE 9/16	0.866 (22)	0.453 (11.5)	0.138 (3.5)	0.13 (3)	9/16-18UNF-2B	0.374 (9.5)	0.460 (11.7)	0.315 (8)	0.098 (2.5)	0.197 (5)
RBE-SAE 3/4	1.063 (27)	0.531 (13.5)	0.197 (5)	0.14 (3.5)	3/4-16UNF-2B	0.472 (12)	0.640 (16.3)	0.394 (10)	0.138 (3.5)	0.217 (5.5)
RBE-SAE 1 1/16	1.614 (41)	0.925 (23.5)	0.256 (6.5)	0.17 (4)	1 1/16-12UNF-2B	0.709 (18)	0.930 (23.6)	0.630 (16)	0.256 (6.5)	0.276 (7)

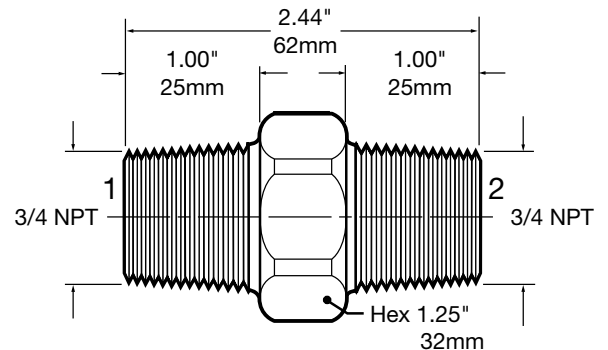
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Dimensions are in inches/(mm) and lbs./(kg.)

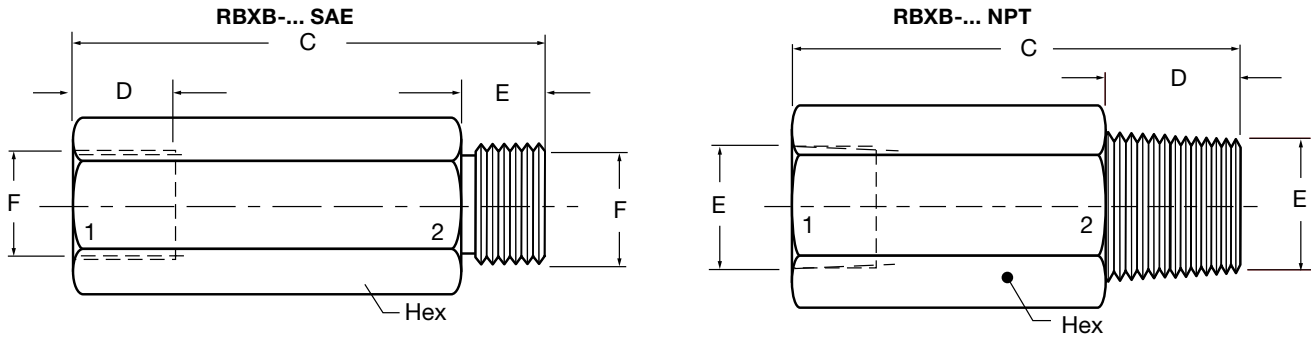
### RBXX-SAE 1-1/16-12



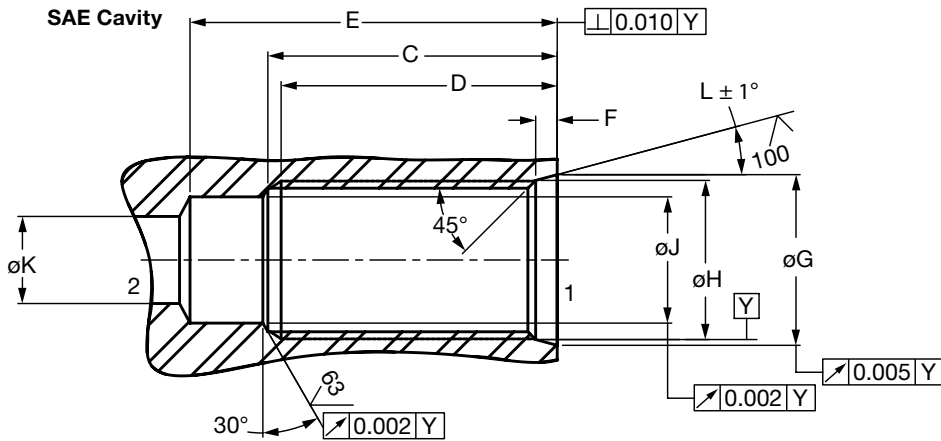
### RBCC-NPT 3/4 Housing Valve



## Dimensions



Housing Type	C	D	E	F	Hex
RBXB-SAE 9/16-18	2.13 (54)	0.50 (13)	0.39 (10)	9/16-18UNF-2B	0.75 (19)
RBXB-SAE 3/4-16	2.38 (60)	0.56 (14)	0.44 (11)	3/4-16UNF-2B	1.00 (25)
RBXB-SAE 1 1/16-12	3.25 (83)	0.75 (19)	0.59 (15)	1 1/16-12UNF-2B	1.50 (38)
RBXB-NPT 3/8	2.09 (53)	0.59 (15)	3/8 NPT		0.88 (22)
RBXB-NPT 1/2	2.75 (70)	0.78 (20)	1/2 NPT		1.00 (25)
RBXB-NPT 1	3.31 (84)	0.98 (25)	1 NPT		1.75 (44)



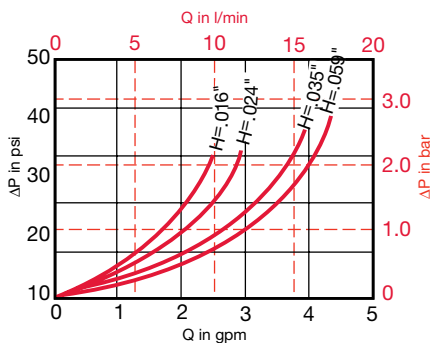
Housing Type	C	D	E	F	øG	øH	øJ	øK Min	L
RBE-SAE 9/16	1.250	1.188	1.56	0.106	0.618	9/16"-18UNF-2B	0.435	0.297	12°
RBE-SAE 3/4	1.375	1.312	1.69	0.106	0.813	3/4"-16UNF-2B	0.600	0.422	15°
RBE-SAE 1 1/16	2.000	1.938	2.44	0.138	1.150	1-1/16"-12UN-2B	0.890	0.609	15°

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches. Port dimensions per SAE J1926/1 unless noted otherwise.

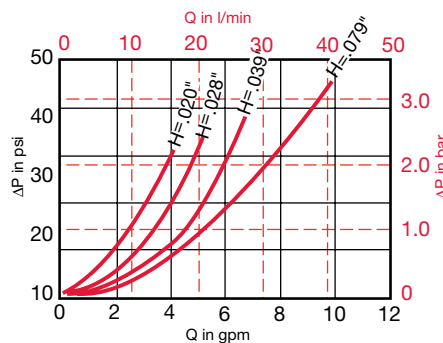
## Nominal Flow Curves

Flow rate is dependent on operating setting "H". See "Adjusting Curves for Closing Flow Rates - Settings". Curves are valid for Cartridges RBE and Housing RB... in accordance with charts on previous page. Limit Lines indicate the maximum closing flow rates. These rates cannot be exceeded. Curves were established at 150 SUS.

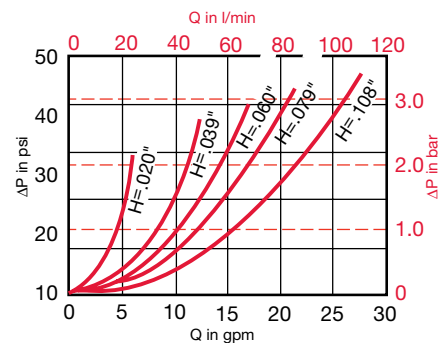
RBE-SAE 9/16 - 18



RBE-SAE 3/4 - 16



RBE-SAE 1-1/16 - 12



## Engineering Data

<b>Design</b>	Flat Seat Valve	
<b>Mounting Method</b>	RBE	Cartridge
	RB..	Housing Valve for In-line Installation
<b>Connection</b>	Refer to charts on page 37	
<b>Mounting Position</b>	Optional	
<b>Direction of Flow</b>	1 to 2	Free Flow
	2 to 1	Free Flow; valve automatically closes if flow exceeds preset level
<b>Fluid</b>	General purpose hydraulic oil. Consult HYDAC for other media	
<b>Operating Pressure Ratings</b>	P Max:	5000 psi (350 bar)
	P Min:	145 psi / 10 bar
<b>Fluid Temperature Range</b>	-4° to 176°F (-20° to 80°C)	

## Weights

<b>RBE</b>	<b>lbs.</b>
SAE 9/16-18	0.02
SAE 3/4-16	0.04
SAE 1 1/16-12	0.13
<b>RBXB</b>	<b>lbs.</b>
SAE 9/16-18 3/8 NPTF	0.17
SAE 3/4-16 1/2 NPTF	0.24
SAE 1 1/16-12 1 NPTF	0.88
<b>RBXX</b>	<b>lbs.</b>
SAE 1 1/16-12	0.92
<b>RBCC</b>	<b>lbs.</b>
3/4 NPTF	0.37

## Recommendations

Hose break valves, type RBE must only be used to safeguard users in the event of hose breaks. They must not be used as switching valves for repeated closing actions.

If closing actions occur during normal operation, the setting of the hose break valve is not suitable for the operating parameters of the system. The hose break valve must be replaced by a new one with a modified setting.

In order to prevent hose break valves reacting to flow rate fluctuations inherent in the system, e.g. due to switching of directional valves, the actuating flow rate should be at least 20% above the normal maximum system flow rate. If high viscosity fluctuations occur, the valves must be set to a higher actuating flow rate to ensure trouble-free operation at high viscosity. However, the valves must still react at a low viscosity. Since this range depends largely on the system, whose operational flow rate fluctuations can also depend on viscosity, the appropriate setting for the valve is best determined on site.

## Sizing Hose Break Valves

In order for a hose break valve to work properly there must be a difference between the normal operating flow rate (from pump) and the emergency flow rate created by a hose or line break. The emergency flow rate must be significantly higher than the normal operating flow. Why?

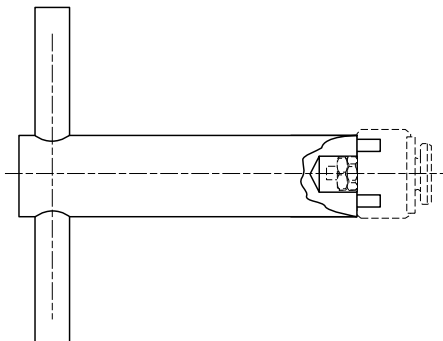
The hose break valve is designed to only be closed in an emergency situation. These valves should not be cycled (opened and closed) with the system. Cycling the valve and/or excessive vibrations will lead to premature failure of the valve components.

How do you determine the emergency flow rate? You must perform a test with the actual system in a hose break simulation. This test should be run with the minimum load on the cylinder/lift to determine the minimum emergency flow rate for the system. To test, break the line open or open a directional valve and allow gravity to pull down the cylinder/lift. The flow rate measured during this test is the emergency flow rate.

The hose break closing flow rate setting is adjustable and should be set to close at a flow rate between the normal flow rate and the emergency flow rate. The closing flow rate should be set at least 20% higher than the normal flow rate, and should be set at least 20% below the emergency flow rate.

How do you set the closing flow rate for the valve? The gap between the poppet and the valve body is adjustable by means of the lock nut and adjustment nut on the end of the poppet. The larger the gap, the higher the closing flow rate for the valve.

## Installation Tools



Cartridge Size	Part Number
9/16-18	00161421
3/4-16	00160561
1-1/16-12	00164180

*Model Codes containing selections listed in RED are non-standard items –  
Minimum quantities will apply –  
Contact HYDAC for information and availability  
Not all combinations are available*