



HYDRAULIC DUAL BLOCK & STOP VALVES HDBH SERIES

PRODUCT CATALOG



Hydraulic Dual Block & Stop Valve

Product Overview

Dual Block & Stop Safety Function

Blocks the flow of hydraulic fluid in order to stop cylinder motion.



The HDBH Series system is a redundant, dual blocking valve system designed for critical applications where safe stopping is required for hydraulically controlled actuators. This valve system is equipped with inductive position switches for external monitoring by an electrical safety control system. The HDBH valve is designed to be sandwich-style mounted (interposed) between a manifold and a directional valve, or in-line mounted by use of optional mounting kits.

NOTE: Block and Stop functions are intended to momentarily stop an actuator (linear or rotary), but not to hold the actuator in place for an extended period. The HDBH valve is a spool type valve, and normal spool leakage will occur. The valve is intended to be used as a “permissive” safety device. Applications where long-term holding is necessary should also incorporate other components such as PO check, counterbalance, or mechanical locking devices.

NOTE: HDBH valves are intended to be used only for tasks that are routine, repetitive, and integral to production. Maintenance tasks require following full lock-out/tag-out procedures to relieve hazardous energy and prevent unexpected startup.

VALVE SYSTEM FEATURES

External Monitoring	Each single valve in the HDBH Series system is equipped with an inductive position switch. Monitoring of these switches is to be done by an electrical safety control system.
Spool Type Design	Redundant spool type valve system
Tamper Resistant	Special tool required for disassembly
Mounting	Mounts between manifold and directional valve
Flexible Mounting	In applications where installation on a manifold is not practical, the in-line mounting kit can be used to facilitate installation in-line between a directional valve and actuator (typically a cylinder). The kit provides 2 mounting plates with multiple ports for the A, B, and T ports in order to provide for flexibility in piping. At least one of the T ports must be piped back to the tank. Through holes for mounting the assembly are included in the plates. All assembly hardware and plugs are included, but mounting hardware for the assembly must be provided by the customer.
Flow-doubling	In applications where higher flows are needed, there is an option to combine the flow through both the A & B ports to double the flow capacity of the valve. This doubling effect converts the HDBH valve to a single line blocking valve instead of blocking two lines. The kit provides 2 mounting plates with multiple ports for the inlet and outlet for flexibility in piping and two T(DR) ports. At least one of the T(DR) ports must be piped back to the tank to perform a drain function. All assembly hardware and plugs are included, but mounting hardware for the assembly must be provided by the customer.
Spacer Kits	Spacer kits are available to raise the HDBH Series system higher above the manifold surface in order to avoid interference with other devices on the manifold. Kits can be combined as necessary to achieve the desired spacing.

These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

PRODUCT CREDENTIALS

Safety Category	DGUV (German Social Accident Insurance)	Declaration of Conformity	

STANDARD SPECIFICATIONS

GENERAL	Function		Dual Block & Stop - blocks both cylinder lines when sandwich mounted or mounted with the In-line Mounting Kit. Blocks only one line when mounted with the Flow-doubling In-line Mounting Kit.		
	Construction Design		Redundant valve system, Spool		
	Actuation (solenoid - 2 per system)		One solenoid per valve element, both to be operated synchronously		
	Mounting		Direct solenoid-operated, spring return		
			Sandwich-style mounting (interposed) between base/manifold and directional valve		
			In-line mount between directional valve and actuator (in-line mounting kit required)		
			Flow-doubling In-Line mount between directional valve and actuator (In-Line) for single-line blocking only (flow-doubling In-Line mounting kit required)		
Footprint		ISO 4401-03-02-0-05, NFPA D03, NG size 6			
Monitoring		Dynamic, cyclical, external with customer supplied equipment. Monitoring should check state of both valve position switches with any and all changes in state of valve control signals. See Integration Guide.			
Minimum Operation Frequency		Once per month, to ensure proper function			
OPERATING CONDITIONS	Temperature	Ambient	-22° to 158°F (-30° to 70°C)		
		Media	-4° to 140°F (-20° to 60°C)		
	Flow Media	Hydraulic Fluids	Mineral Oil HLP, HL-DIN 51524		
			Vegetable Oil HETG - VDMA 24568		
	Flow		5 gpm (10 gpm with Flow-doubling in-line mounting kit)		
	Max Fluid Contamination Level		ISO 4401 class 21/19/16 NAS 1638 class 10 (filters at 25 µm value with B25 ≥ 75 recommended)		
	Operating Pressure	Ports P, A, B	5000 psi (350 bar)*		
Port T		3000 psi (210 bar)*			
*Operating Pressure for Ports P, A, & B limited to 3000 psi (210 bar) unless T port is used (not blocked)					
ELECTRICAL DATA	Solenoids	Operating Voltage		Power Consumption (each solenoid)	
		24 volts DC		30 watts	
		Rated for continuous duty			
		Design according to VDE 0580			
	Enclosure Rating		DIN EN 60529 IP 65		
	Electrical Connection		DIN EN 175301-803 Form A		
	Inductive Position Switch (2 per system)		PNP (M12, 4-pin, A-coded, male): works with both 4-pin & 5-pin female cord sets		
Maximum Current (each switch)		400mA maximum			
CONSTRUCTION MATERIAL	Valve Body		Cast Steel		
	Spool		Steel		
	Seals		Buna-N		
	End-brackets		Unfilled Nylon 12		
	Side-brackets (label)		304 Stainless Steel		
	In-line Mounting Kit		Ductile Iron		
	Flow-doubling In-line Mounting Kit				

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Ordering Information & System Technical Data

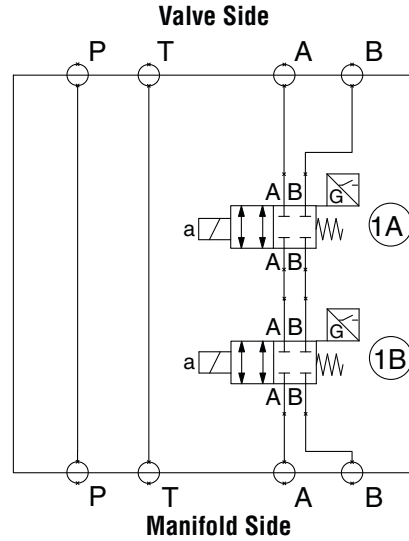
MODEL NUMBER

HDBHDC3BAEXA

Weight lb (kg)

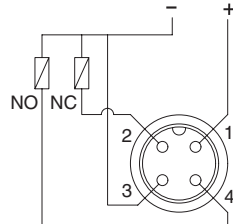
15.0 (6.80)

Valve System Schematic



Wiring Diagram

Inductive Position Switch Connector



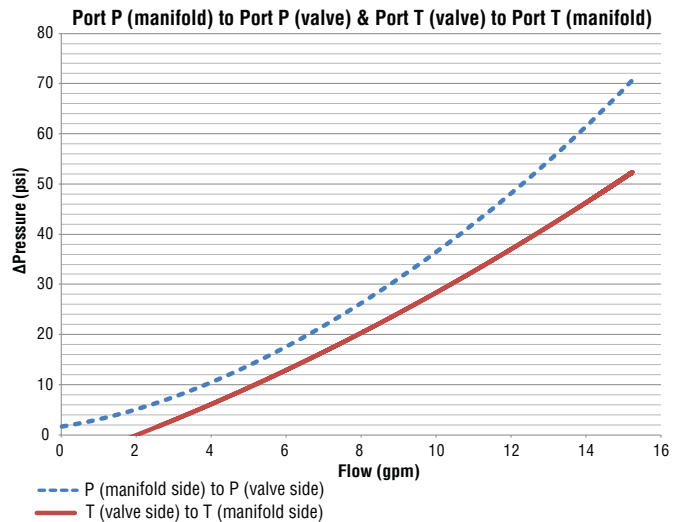
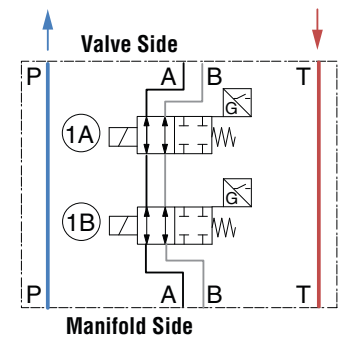
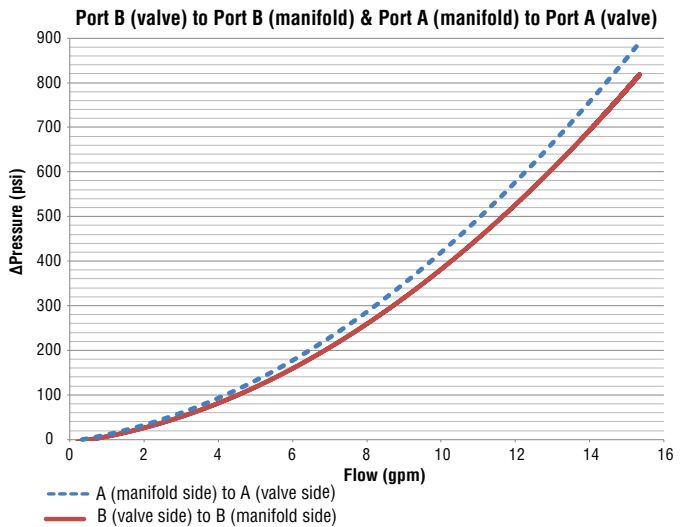
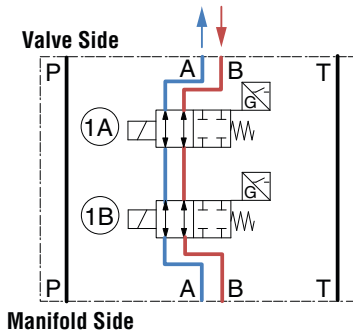
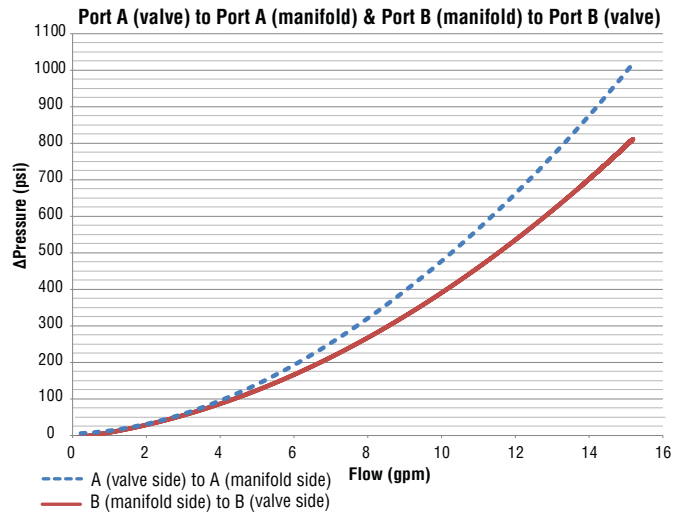
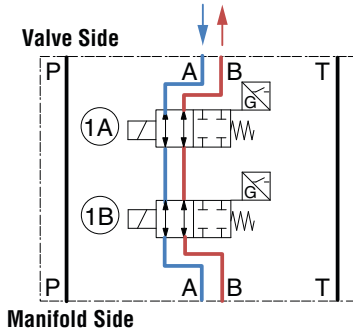
- 1 = Supply +24 volts DC
- 2 = Output Signal NC
- 3 = Ground
- 4 = Output Signal NO

NOTE: PNP (M12, 4-pin, A-coded, male); works with both 4-pin & 5-pin female cord sets.

NOTE: The switches must be wired with 24 volt (+) and 0 volt (-) connections in parallel with each other.

An Integration Guide for HDBH Series valve system is available from ROSS to provide information such as operation, monitoring, and integration into users control circuits. Please visit www.rosscontrols.com.

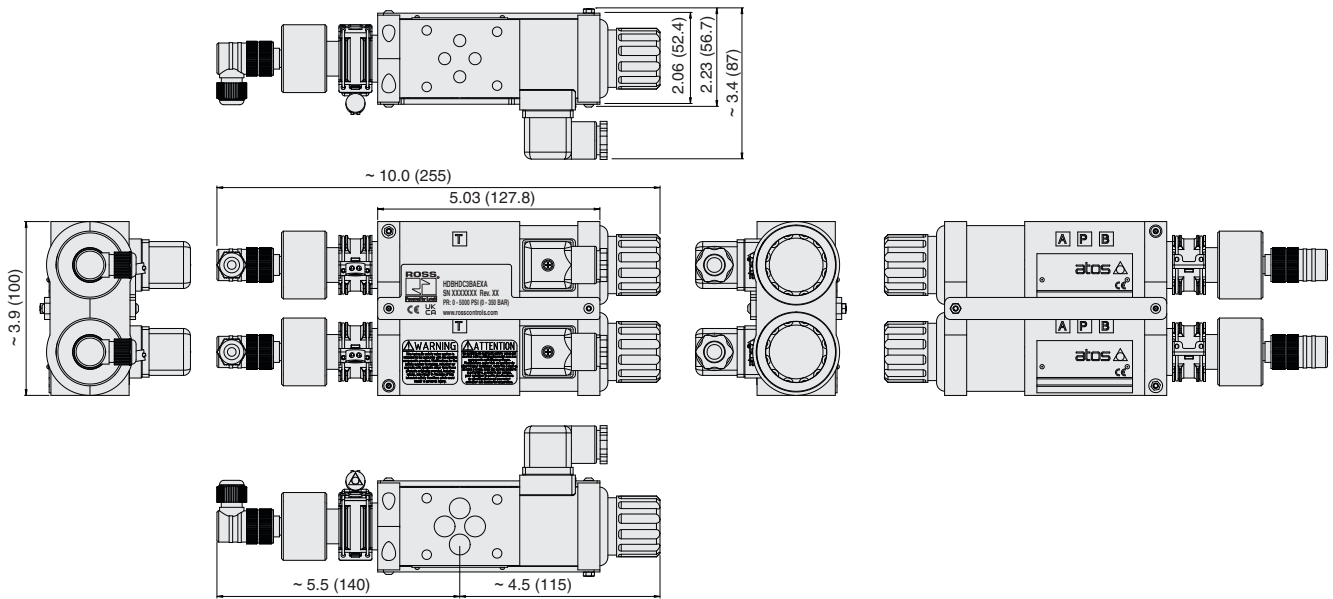
PRESSURE DROP CURVES



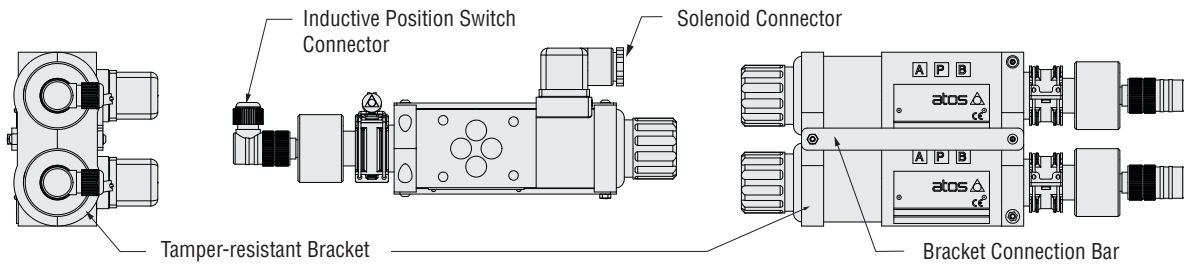
System Technical Data

DIMENSIONS

Inches (mm)



For additional information, and to assist you with piping and connectivity designs, our products are available in downloadable 2D drawings and 3D CAD models in a wide range of options including native formats. Please visit www.rosscontrols.com.



MOUNTING ACCESSORIES

Spacer Kits	Height	Kit Number	Weight lb (kg)
	0.75 in (19.1 mm)	2548B25	1.0 (0.45)
	1.75 in (44.5 mm)	2549B25	2.0 (0.90)

Mounting Kits	Kit Type	Kit Number	Weight lb (kg)
	In-line (Blocks 2 lines)	2790B77	17.0 (7.71)
	In-line Flow-doubling (Blocks 1 line)	2819B77	

DIMENSIONS – TECHNICAL DATA Inches (mm)

Spacer Kit

0.75 in (19.1 mm)

1.75 in (44.5 mm)

In-line Mounting Kit

A	SAE # 6
B	SAE # 6
T	SAE # 6

In-line Flow-doubling Mounting Kit

P	SAE # 10
A	SAE # 10
T(DR)	SAE # 6

For additional information, and to assist you with piping and connectivity designs, our products are available in downloadable 2D drawings and 3D CAD models in a wide range of options including native formats. Please visit www.rosscontrols.com.

Accessories

PREWIRED ELECTRICAL CONNECTORS

Prewired Connector Kits	Cable						Kit Number
	End 1	End 2	Length meters (feet)	Connection	Quantity Included	Cord Diameter mm	Without Light
	Connector	Cord /Connector					
DIN EN 175301-803 Form A	Flying leads	5 (16.4)	Solenoid	2	6	2243H77	
		10 (32.8)	Solenoid	2	6	2244H77	
M12 5-pin, Female	Flying leads	5 (16.4)	Sensor	2	6	2644B77	
		10 (32.8)	Sensor	2	6	2370B77	
	M12 5-pin, Male	5 (16.4)	Sensor	2	6	2645B77	
		10 (32.8)	Sensor	2	6	2371B77	

Prewired Connectors	Cable						Model Number	
	End 1	End 2	Connection	Quantity Included	Length meters (feet)	Cord Diameter mm	Without Light	Lighted Connector
	Connector	Cord						24 V DC
DIN EN 175301-803 Form A	Flying leads	Solenoid	1	2 (6.5)	6	721K77	720K77-W	
					10	371K77	383K77-W	

ELECTRICAL CONNECTORS

Connectors	Connector					Model Number	
	Type	Connection	Fitting Connection	Quantity Included	Cord Diameter mm	Without Light	Lighted Connector
							24 V DC
DIN EN 175301-803 Form A	Solenoid		Cable grip	1	8 to 10	937K87	936K87-W
			1/2" NPT conduit	1	-	723K77	724K77-W

CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

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CAUTIONS, WARNINGS

Additional technical documentation, cautions and warnings information is available at www.rosscontrols.com, Support and Downloads.

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Other literature is available for engineering, maintenance, and service requirements.

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