

## High accuracy synchronizing, flow divider-combiner valve

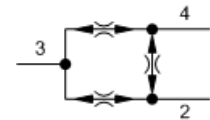
Capacity:  
.6 - 3 gpm (2,5 - 12 L/min.)

Functional Group:  
Products : Cartridges : Flow Divider : Divider/Combiner : Synchronizing - High Accuracy

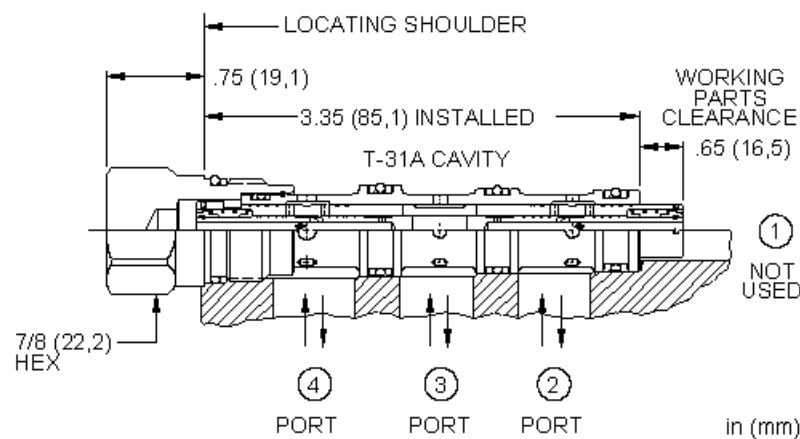
Model:  
FSBS-XAN

### Product Description

Synchronizing flow divider/combiners are sliding-spool, pressure-compensated devices used to split flow in one direction and combine flow in the opposite direction. With a synchronizing feature, these valves can be used to allow two hydraulic cylinders to fully stroke and synchronize at the end of the stroke. When the first cylinder has reached the end of its stroke, a pressure-compensated, reduced flow is metered to or from the second cylinder until it also reaches the end of its stroke.



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### Technical Features

- Divisional and combining accuracy are equal.
- Variations in speed and lock-up can be attributed to differences in motor displacement, motor leakage, wheel diameter variance and friction of wheels on the driving surface.
- Extreme pressure intensification can occur on multiple wheel drive vehicles.
- Synchronization flow is approximately 15% of minimum rated input flow.
- In applications involving rigid mechanisms between multiple actuators, operating inaccuracy will cause the eventual lock-up of the system. If the mechanical structure is not designed to allow for the operating inaccuracy inherent in the valve, damage may occur.
- Below the minimum flow rating there is not enough flow for the valve to modulate. It is effectively a tee. If flow starts at zero and rises, there will be no dividing or combining control until the flow reaches the minimum rating.
- In motor circuits, rigid frames or mechanisms that tie motors together, and/or complete mechanical synchronized motion of the output shaft of the motors, either by wheels to the pavement or sprockets to conveyors, will contribute to cavitation, lock-up and/or pressure intensification.
- The synchronizing feature only comes into play when any one of the 3 ports is blocked. At that time, flow may occur between the other two ports.
- Operating characteristics cause the leg of the circuit with the greatest load to receive the higher percentage of flow in dividing mode. If a rigid mechanism is used to tie actuators together, the lead actuator may pull the lagging actuator and cause it to cavitate.
- The synchronization feature provides bi-directional static error correction.
- In combining mode, compensating characteristics will cause the leg of the circuit with the lowest load to receive the higher percentage of flow. If a synchronization feature is not included, an additive accuracy error will be experienced with each full stroke of the actuator.
- All flow divider and divider/combiner cartridges are physically interchangeable (i.e. same flow path, same cavity for a given frame size).
- Incorporates the Sun floating style construction to minimize the possibility of internal parts binding due to excessive installation torque and/or cavity/cartridge machining variations.

### Technical Data

	U.S. Units	Metric Units
Cavity		T-31A
Capacity	.6 - 3 gpm	2,5 - 12 L/min.
Divisional Accuracy at Max Input Flow	50% ± 2.0%	
Divisional Accuracy at Minimum Input Flow	50% ± 3.0%	
Maximum Operating Pressure	5000 psi	350 bar
Pressure Drop at Maximum Rated Input Flow	350 psi	30 bar
Pressure Drop at Minimum Rated Input Flow	15 psi	1 bar
Series (from Cavity)	Series 1	
Valve Hex Size	7/8 in.	22,2 mm
Valve Installation Torque	30 - 35 lbf ft	40 - 50 Nm
Seal Kits - Cartridge	Buna: 990-031-007	
Seal Kits - Cartridge	Viton: 990-031-006	
Model Weight	0.35 lb.	0.16 kg.

Split	Input Flow		Rated Accuracy	Maximum Possible Flow Variation
	50:50	Max		
Rated		12 L/min	5,8 - 6,2 L/min	
Min		.6 gpm	±3.0%	.28 - .32 gpm
rated		2,5 L/min		1,2 - 1,3 L/min
<b>Synchronizing Flow</b>				.15 - .33 gpm
				0,6 - 1,2 L/min

The maximum possible variation is at 5000 psi (350 bar) differential between legs with the high pressure leg being the higher flow in dividing mode and the lower flow in combining mode.

## FSBS-XAN

Control	Flow Split	Seal Material	Material/Coating Modifier
X Not Adjustable	A 50/50	N Buna-N	/AP Stainless Steel, Passivated Control: X

*Our stainless product line is growing! If you are interested in a stainless option for this model which is not shown please contact Sun.*

When the modifier is /AP, the control must be X