

# SB Series Divider Assembly Operation and Testing Guide

## TESTING DIVIDER ASSEMBLIES - IT IS NO BIG DEAL!

For any assembly to do its job, we must rely on the hydraulic integrity of each piston. If a piston fit gets sloppy, part of the designed displacement may leak past the piston and the required volume will not be delivered where it is needed. The only way to verify all the piston fits is through a simple pressure test. Using a test pump and 10 wt oil, each outlet of the divider must be plugged and pressure tested.

### Here is the simple procedure:

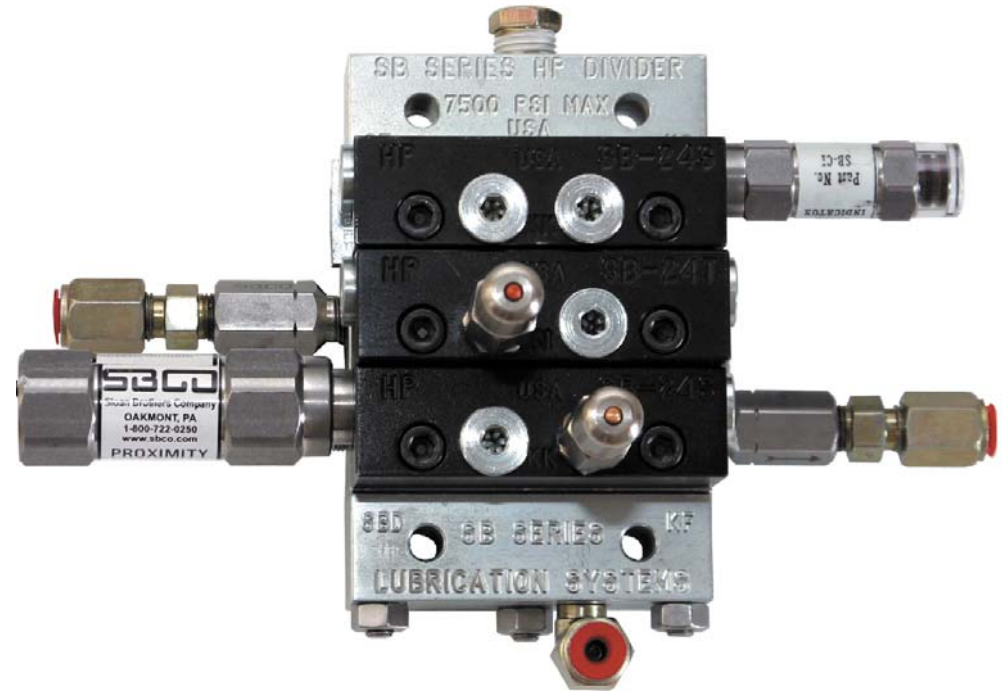
- 1 - Remove all tubing connections from the assembly. You may want to remove the assembly to a clean work area with a drip pan.
- 2 - Hook up a test pump (hand, air or electric with 5000 PSI gauge) to the divider inlet. Operate the pump to verify oil discharge at all outlets.
- 3 - Using a tube cap or pipe plug, close one outlet. Be sure the plug does not leak!
- 4 - Operate the test pump up to 3000 PSI and stop pumping. The divider should not "bypass" for at least 60 seconds. A Bypass is indicated by the pressure gauge dropping rapidly along with visible discharge from all open outlets or a bleed-down of more than 500 PSI over 60 seconds.
- 5 - All active outlets must be tested as above to complete the assembly.
- 6 - During the testing of each outlet, look for external leakage (bad O-rings) and verify that indicators pop at the rated pressure.

## WHAT IF I FIND A BAD DIVIDER IN THE ABOVE TEST?

If one piston has gone bad, the others will not be far behind. **Save yourself a lot of time and effort - replace all the sections in the divider with new.** Some folks like to keep a spare batch of sections for each active divider assembly in operation. They can then replace the sections in the active divider, and test the others at their leisure.

## HOW DO I SPECIFY NEW SB DIVIDERS?

Call us with the old divider specs - we'll tell you what you need. We can replace the whole assembly complete with discharge checks, indicators and fittings. Top or bottom inlets are available, as are Parker or Swagelok fittings in Carbon or Stainless Steel. In some cases where Primary and Secondary Dividers are in use, the entire system can be greatly simplified with fewer dividers. Although some re-tubing may be required, operation and maintenance in the future will be much simpler. Ask us to make a recommendation.



SB Series divider assemblies are used in lubrication systems to deliver and monitor precise volumes of oil to lube points on engines, compressors and other critical equipment.

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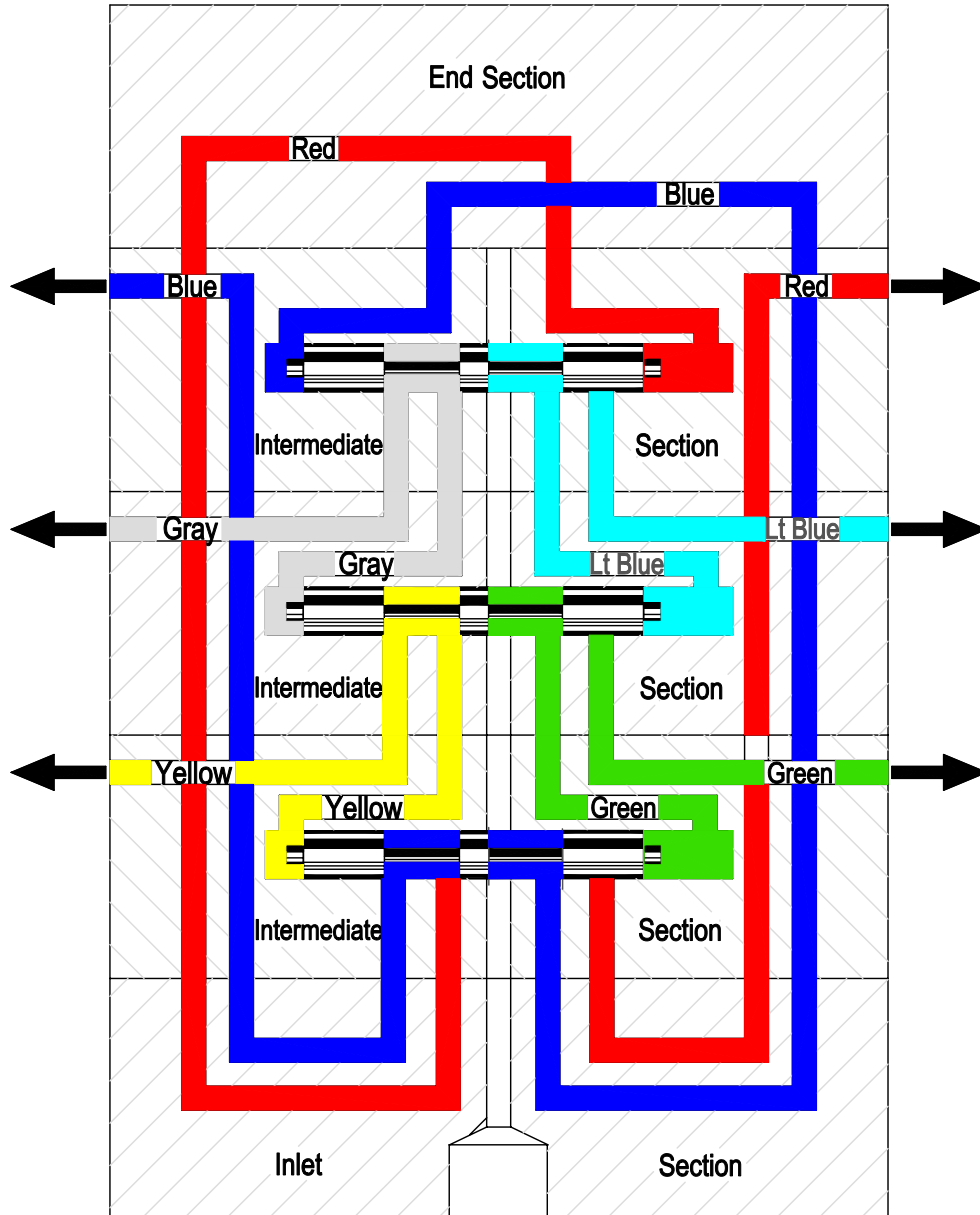


## Why DO we Test Divider Assemblies?

Each divider assembly is designed to deliver specific proportions of oil to various lubrication points. Its various piston sizes and internal porting are specific to the application, and every divider assembly may be different in design. The numbers and letters on the face of each individual divider section denote that sections displacement per cycle and internal porting arrangement.

It is imperative that when an assembly or individual component is replaced, or if any individual section in an assembly is replaced, it has the EXACT same number and letter designation on every section, and that every outlet in the baseplate below are in exactly the same location as the original. If different number designations are used, or if singled or crossported sections are used in place of twins, the assembly may not cycle, or it may deliver improper proportions.

Yearly pressure testing of dividers is highly recommended. This ensures the continued accuracy of oil delivery. Should piston wear go undetected, the divider block may fail to deliver oil to one or more points. This risks damage to the compressor or machine being lubricated.



# Divider Assembly Components

## ① SB Divider Sections

SB-6T	Divider Section 6T
SB-6S	Divider Section 6S
SB-9T	Divider Section 9T
SB-9S	Divider Section 9S
SB-12T	Divider Section 12T
SB-12S	Divider Section 12S
SB-18T	Divider Section 18T
SB-18S	Divider Section 18S
SB-24T	Divider Section 24T
SB-24S	Divider Section 24S
SB-30T	Divider Section 30T
SB-30S	Divider Section 30S

## WHAT DO THE NUMBERS ON THE BLOCKS MEAN?

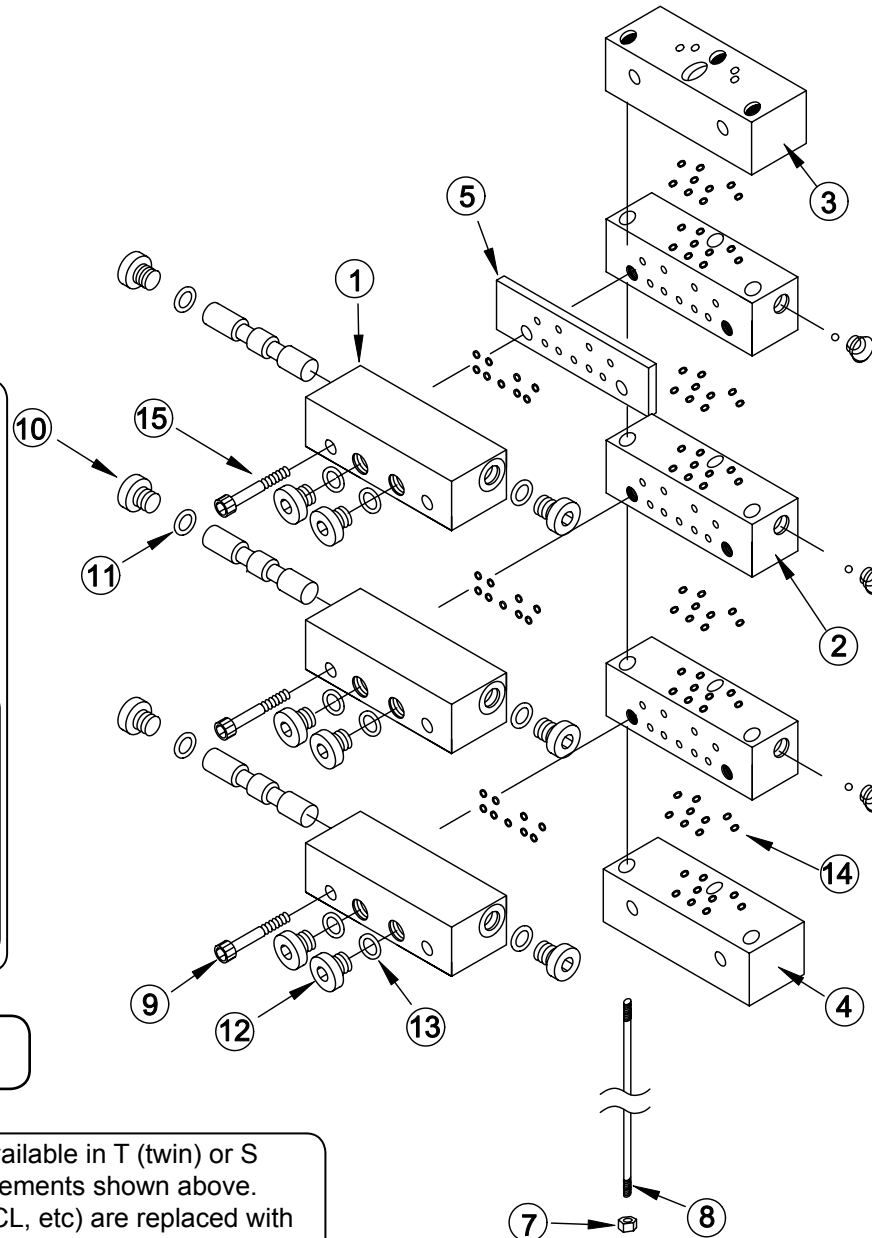
The numbers represent the cubic inch displacement of 1 outlet, in thousandths. There are two outlets per section. The letter or last digit corresponds to the internal porting arrangement. Each piston discharge can be internally valved to combine with its opposite end (singled).

Section Number		Displ/cycle each side
061	6T	.006 cu.in.
091	9T	.009 cu.in.
121	12T	.012 cu.in.
181	18T	.018 cu.in.
241	24T	.024 cu.in.
301	30T	.030 cu.in.

### Porting Reference



**NOTE:** New SB Divider Sections are available in T (twin) or S (singled) sections only, in piston displacements shown above. Crossported sections (6SCR, 066, 12TCL, etc) are replaced with T or S sections and a crossporting bar mounted between the Divider section and the baseplate beneath it. Thus a 9SCL section (singled & crossed left) is replaced by a 9S section p/n SB-9S, and a crossport left p/n SB-CPL.



## Divider Block Parts Breakdown

2	Intermediate Base Plate	SB-BP
3	Top End Section w/ vent	SB-ST
4	Bottom Inlet Section	SB-SBD
5	Crossport Plate - Right	SB-CPR
	Crossport Plate - Left	SB-CPL
	Crossport Plate - Both	SB-CPB
7	Tie Rod Nut Only	SB-N
8	Tie Rod - 3 Section	SB-T3
	Tie Rod - 4 Section	SB-T4
	Tie Rod - 5 Section	SB-5T
	Tie Rod - 6 Section	SB-6T
	Tie Rod - 7 Section	SB-7T
	Tie Rod - 8 Section	SB-8T
9	Plunger Section Screw (2/ Sect)	SB-BB
10	Side Section Plug	SB-SSP
11	Side Section Plug O-ring	SB-SSP-OR
12	Front Section Plug	SB-FSP
13	Front Section Plug O-ring	SB-FSP-OR
14	Intermediate O-ring (Viton)	SB-I-OR
15	Cross Port Section Screw	SB-BBCP

## Lincoln Bolt Centers Available

SB-LT	Lincoln Top Section
SB-LB	Lincoln Bottom Section

## Reset Fault Indicators

500#	Reset Indicator (blue)	SBI-500
1000#	Reset Indicator (yellow)	SBI-1000
1500#	Reset Indicator (red)	SBI-1500
2000#	Reset Indicator (orange)	SBI-2000
2500#	Reset Indicator (purple)	SBI-2500
3000#	Reset Indicator (brown)	SBI-3000
3500#	Reset Indicator (grey/black)	SBI-3500

## Other replacement parts

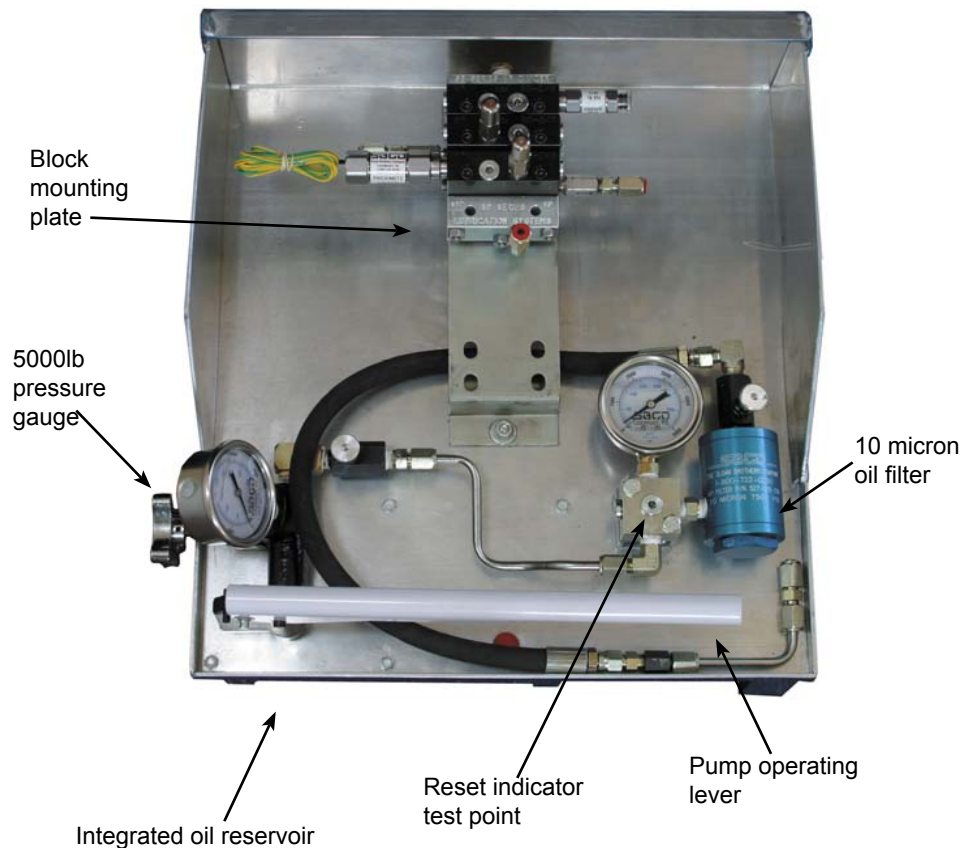
Proximity Switch	SB-PRX, SB-PS
Cycle Indicator	SB-CI
Outlet check valve	SB-OCV
Divider Test Stand	SB-TEST-STAND
(See next page)	

**Call Us!!**  
We build it - any way you want it.

## SB Divider Block Testing Stand

Our portable test stand is now available for field or shop testing of our SB block assemblies. This compact unit includes a quick-mount plate for the block, an integrated oil reservoir, hand pump, oil filter, and 5000 psi pressure gauge.

An optional resettable indicator tester (left hand gauge below) can be used to test individual pressure indicators.



## HOW DO THESE THINGS WORK, ANYWAY?

The inlet from the pump may be at the top or bottom of the divider and the inlet passage is ported to the center of each piston. Note the “lands” or reduced diameter portions in each piston. The operating principle is based on the fact that at any time, only one land is in the proper position to flow oil to move the piston below. All others are at one end or the other of their travel and cannot be moved. When the pump flow moves that piston to its opposite end, its displacement is made down one line, and its land moves to the opposite position, valving oil to move the next piston below into position and so on. At the bottom of the assembly, reversing passages start the piston movements down the other side. One cycle is completed when all pistons move over and back one time. The total oil displaced is the total of all the piston displacements. Each oil line must receive its oil to permit the piston to move and set up the flow to the next line. If one line is plugged up, the divider assembly will stop on that piston and the divider will not cycle.

## HOW DO WE MONITOR THE OIL DELIVERY?

Since each piston must move over and back, we need to watch only one piston to “see” a complete cycle. This is done with a magnetic “Proximity Switch”. Each divider cycle is converted to one switch impulse which is monitored with the Wizard Monitor. Remember that the total divider displacement is fixed - it is the total of all the piston displacements. If you pump more oil to it, the divider cycles faster - less oil and it slows down. The rate at which the divider cycles (seconds per cycle) determines how much oil is actually being delivered. For example, a divider block of .036 cu.in. cycling once every 15 seconds is delivering 7.2 Pints per 24 Hours. The Wizard Monitor is field-programmed with the “displacement per cycle” and a “lube failure alarm limit”. The Wizard uses the cycle time of the proximity switch to display the actual “Pints/24 Hours” being delivered. It also compares that current delivery to the lube failure limit, and maintains fault relay contacts open or closed accordingly.