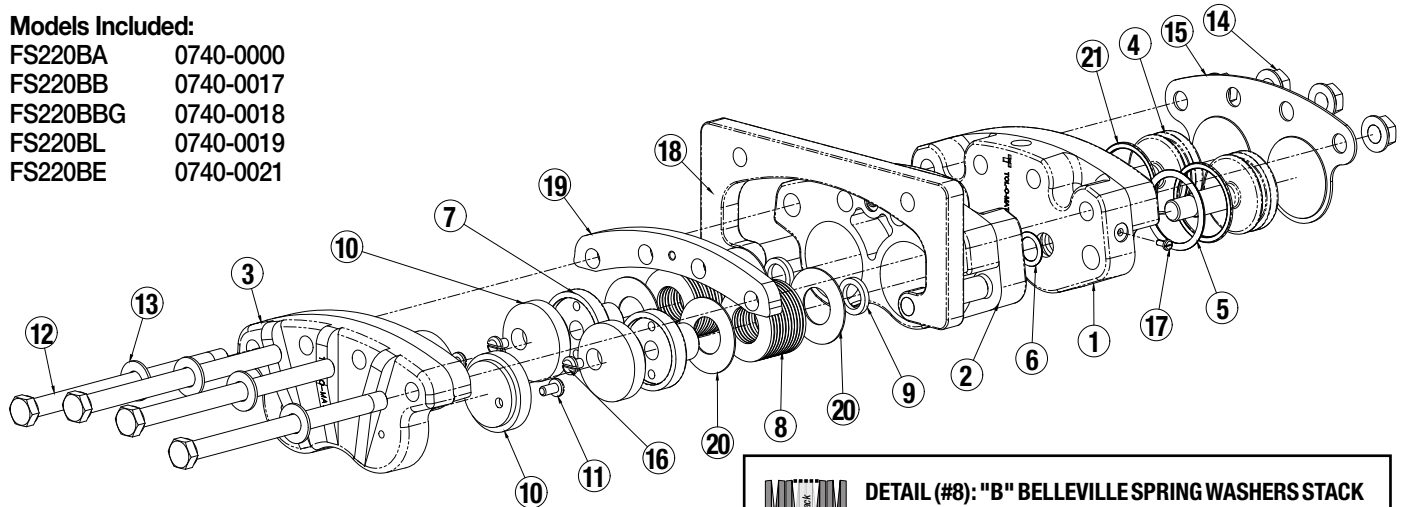



SPRING-APPLIED BRAKE FS220B SERIES DIE CAST ALUMINIUM

Models Included:

FS220BA	0740-0000
FS220BB	0740-0017
FS220BBG	0740-0018
FS220BL	0740-0019
FS220BE	0740-0021





DETAIL (#8): "B" BELLEVILLE SPRING WASHERS STACK
 NOTE: It is critical that the Belleville Spring Washers Stack is re-assembled as shown with washers opposing each other and no "nesting" of washers

Item	Part No.	Description	Quantity				
			0740-0000	0740-0017	0740-0018	0740-0019	0740-0021
1.	0741-1001	Live Side Housing	1	1	1	1	1
2.	0738-1001	Housing Spacer	1	1	1	1	1
3.	0733-1068	Dead Side Housing	1	1	1	1	1
4.*	0740-1062	Piston	2	2	2	2	2
5.	0720-1004	O-Ring, Buna-N	2	2		2	2
	0760-1009	O-Ring, EPR			2		
6.	0741-1035	O-Ring, Buna-N	2	2		2	2
	0740-1069	O-Ring, EPR			2		
7.*	0740-1065	Spring Holder	2	2	2	2	2
8.	0740-9012	Belleville Spring Washers Stack	2	2	2	2	2
9.	0740-1014	Spacer Ring	2	2	2	2	2

Item	Part No.	Description	Quantity				
			0740-0000	0740-0017	0740-0018	0740-0019	0740-0021
10.	0720-1024	Puck, Friction	4	4	4	4	4
11.	0720-1026	Pan Head Screw, Brass	2	2	2	2	2
12.	0720-1012	Hex Head Bolt, Grade 8	4	4	4		
	0740-1009	Hex Head Bolt, Grade 8				4	4
13.	0720-1011	Washer, Flat	4	4	4	4	4
14.	0720-1008	Spiralock Flange Nut	4	4	4	4	4
15.	0737-1022	Cover Plate	1	1	1	1	1
16.	0737-1024	Pan Head Screw, Brass	2	2	2	2	2
17.	0701-1023	Bleeder Screw, Buna-N	2	2		2	2
	0701-1033	Bleeder Screw, EPR			2		
18.	0734-9002	Mounting Bracket Assy.	1	1	1	1	1
19.	0733-1022	"B" Spacer		1	1		
	0733-1023	"E" Spacer					1
	0733-1042	"L" Spacer				1	
20.	0740-1007	Thrust Washer	4	4	4	4	4
21.	0740-1050	Back-up Ring, Buna-N	2	2		2	2
	0784-1008	Back-up Ring, EPR			2		

*Items #4 and #7 must be replaced in pairs on calipers manufactured prior to 12-1-1991

NOTE: Model number letter suffixes have the following meanings:

"A" indicates the brake is designed to work with a 5/32" (3.97mm) thick disc.

"B" FIRST LETTER: indicates the brake has a release pressure of 750 PSI (51.7 bar).

"B" SECOND LETTER: indicates the brake is designed to work with a 1/4" (6.35mm) thick disc.

"E" indicates the brake is designed to work with a 1/2" (12.7mm) thick disc.

"G" indicates the brake is built with EPR Seals and is DESIGNED TO BE OPERATED WITH AUTOMOTIVE BRAKE FLUID ONLY. (In brakes without the "G" suffix, most petroleum-based, hydraulic fluids may be used).

"L" indicates the brake is designed to work with a 3/8" (9.53mm) thick disc.

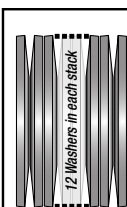
INSTALLATION

WARNING: This caliper disc brake housing is under spring tension. DO NOT REMOVE bolts without first pressurizing the cylinders to retract the pistons. After disassembly, release pressure slowly.

- When mounting the brake caliper, connect the fluid pressure source to the External Fluid Port of the Live Side Brake Housing (#1). Bleed the brake by loosening the Bleeder Valve Screws. DO NOT PRESSURE BLEED AT MORE THAN 5 PSI (0.34 bar) to prevent O-Ring extrusion. Then gradually increase brake pressure to 750 PSI (51.7 bar). At this pressure, the brake pucks retract into the housing, creating the necessary gap for the brake disc.
- Slip the brake over the disc and align it so that the puck faces are parallel with the disc. The proper clearance between the disc and pucks is a minimum of 0.010-inch per side to maximum of 0.031-inch per side when new.
- Fasten the brake mounting bracket with 3/8-inch diameter screws to a fixed member. See the diagram below for the proper dimensions.
- To prevent excessive wear, be certain that the disc does not rub against the pucks in the "retracted" position or against the housing.
- The disc must be free of dirt and grease to insure maximum life and brake performance.
- A brake with the letter suffix "G" in its model number is designed to be operated with Automotive Brake Fluid and is supplied with special EPR seals. Otherwise, all seals are made of Buna-N rubber and are suitable for Petroleum-based hydraulic fluids.
- When plumbing the fluid system, use a minimum amount of pipe thread sealant on joints to prevent the sealant from entering the fluid system and damaging the brake.

TO REASSEMBLE:

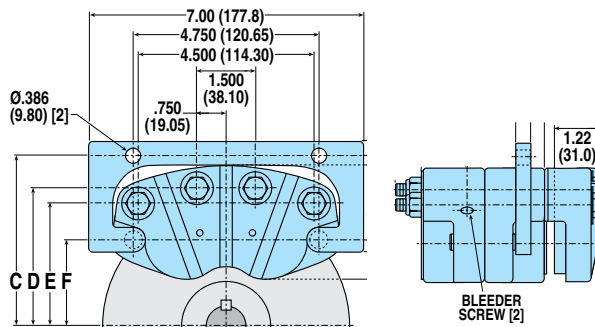
- Place two new O-Rings (#6) into the grooves in the Live Side Housing (#1).
- Place new O-Rings (#5) and Back-up Rings (#21) onto Pistons (#4). ***NOTE the Back-up Ring must be on the non-pressure side of the piston with the concave surface of the Back-up Ring mating with the O-Ring.***
- Lubricate O-Rings (#5 and 6) and Back-up Rings (#21) along with the internal diameters of the bores on the Live Side Housing (#1).
- Insert Pistons (#4) into the piston bores, being careful not to damage O-Rings (#5 and #6).
- Place Spacer Rings (#9) over the stems of Pistons (#4).
- Place the Thrust Washers (#20) over the Piston Stem extending from the Live Side Housing (#1).
- Place a stack of 12 Belleville Spring Washers (#8) over the Piston Stems making certain that the stacks follow the diagram.



DETAIL (#8): "B" BELLEVILLE SPRING WASHERS STACK
 NOTE: It is critical that the Belleville Spring Washers Stack is re-assembled as shown with washers opposing each other and no "nesting" of washers

- Place Thrust Washers (#20) on top of the spring stacks.
 - Apply Loctite® 242 to the threads of the Piston Stems (#4).
 - Thread the Spring Holders (#7) onto the Piston Stems (#4) and torque to 20 in-lbs (2.26 Nm)
 - Mount the Friction Pucks (#10) onto the Spring Holders (#7) with the Pan Head Screws (#16), applying Loctite® 242 to the Pan Head Screws and torque to 20 in-lbs (2.26 Nm).
 - Mount two Friction Pucks (#10) to the Dead Side Housing (#3) with Pan Head Screws (#11) and torque to 20 in-lbs (2.26 Nm).
 - Align the spring stacks.
 - Open the Bleeders (#17) on the Live Side Housing (#1).
 - Apply low pressure [no more than 5 PSI (0.34 bar)] to the port on the Live Side Housing (#1) to bleed the brake. Tighten the bleeders, being careful not to damage the O-Rings in the bleeder seats.
- NOTE:** Do not pressure bleed with more than 5 PSI (0.34 bar). Excessive pressure will cause the O-Rings on the bleeders to extrude and when tightened they may be sheared. Make certain the O-Rings are properly seated before tightening the bleeder valves.
- Pressurize the brake to 750 PSI (51.7 bar). At this pressure, the spring stacks will fully retract.
 - While the brake is pressurized, place the Housing Spacer (#2) over the spring stacks.
 - Place the Bracket (#18) into pin holes on the Live Side Housing (#1) and the Housing Spacer (#2).
 - Place the Spacer (#19) and the Dead Side Housing (#3) on the Housing Spacer (#2) and fasten together with Bolts (#12), Washers (#13) and Spirallock Flange Nuts (#14) and torque to 480 in-lbs (54.2 Nm).
 - Place the brake over the disc, or insert a spacer between the Friction Pucks (#10) before releasing the pressure. DO NOT RELEASE THE PRESSURE WITHOUT A DISC OR SPACER IN PLACE. If the pressure is released without disc or spacer, the spring stacks may need to be realigned.

MOUNTING DIMENSIONS: FS220B



Disc Dia.	C		D		E		F		
	in	mm	in	mm	in	mm	in	mm	
6.313	160.4	4.30	109.2	3.45	87.6	3.07	78.0	2.13	54.1
8	203.2	5.17	131.3	4.32	109.7	3.94	100.1	3.00	76.2
10	254.0	6.17	156.7	5.32	135.1	4.94	125.5	4.00	101.6
12	304.8	7.17	182.1	6.32	160.5	5.94	150.9	5.00	127.0
16	406.4	9.26	235.2	8.41	213.6	8.03	204.0	7.09	180.1

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