Tolomatic
EXCELLENCE IN MOTION®

Parts Sheet

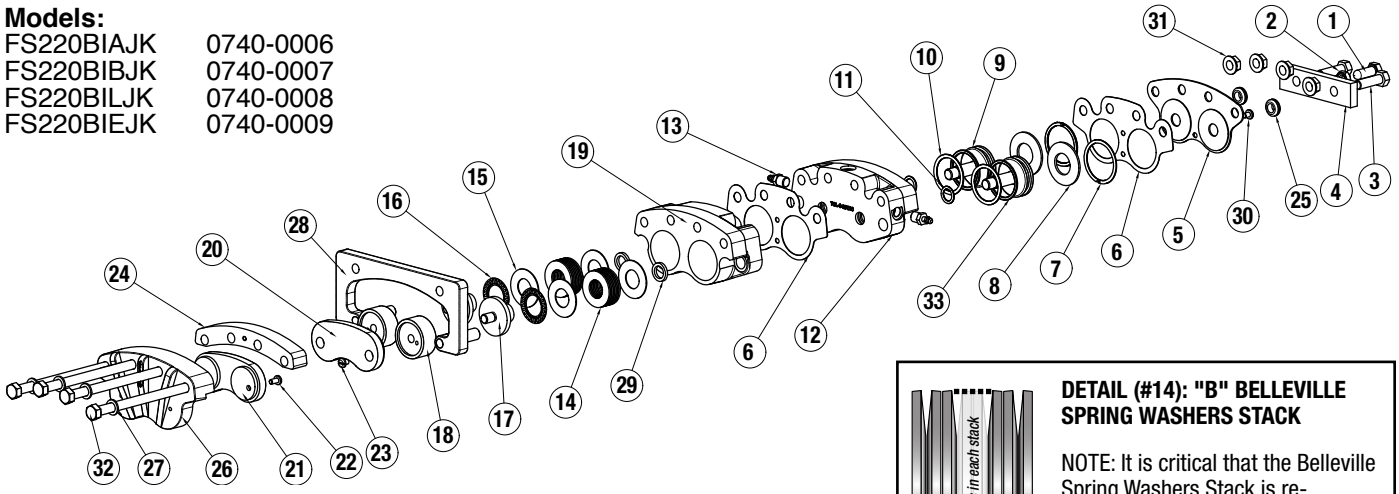
0701-0224_05

SPRING-ACTUATED BRAKE

FS220BIXJK
CAST IRON

Models:

FS220BIAJK	0740-0006
FS220BIBJK	0740-0007
FS220BILJK	0740-0008
FS220BIEJK	0740-0009



DETAIL (#14): "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

Parts List

ITEM	PART NO.	DESCRIPTION	QUANTITY 0740-0006	0740-0007	0740-0008	0740-0009
1.	0740-1020	Retractor Screw	1	1	1	1
2.	0740-1022	Jam Nut	1	1	1	1
3.	0740-1019	Compensator Bolt, Grade 5	2	2	2	2
4.	0740-1021	Retractor Plate	1	1	1	1
5.	0737-1021	Cover Plate	1	1	1	1
6.	0737-1028	Gasket	2	2	2	2
7.	0740-1027	Retaining Ring	2	2	2	2
8.	0740-1028	Belleville Spring Washer	2	2	2	2
9.*	0740-1064	Piston	2	2	2	2
10.	0720-1004	O-Ring, Buna-N	2	2	2	2
11.	0741-1035	O-Ring, Buna-N	2	2	2	2
12.	0737-1003	Live Side Housing	1	1	1	1
13.	0740-1002	Bleeder Valve	2	2	2	2
14.	0740-9008	Belleville Spring Washers Stack	2	2	2	2
15.	0740-1007	Thrust Washer	4	4	4	4
16.	0200-1214	Thrust Bearing	2	2	2	2
17.*	0740-1066	Spring Holder	2	2	2	2
18.	0740-1034	Compensator Plate	2	2	2	2
19.	0738-1003	Housing Spacer	1	1	1	1

ITEM	PART NO.	DESCRIPTION	QUANTITY 0740-0006	0740-0007	0740-0008	0740-0009
20.	0740-1081	Puck, Friction	1	1	1	1
21.	0740-1033	Puck, Friction	1	1	1	1
22.	0720-1026	Pan Head Screw, Brass	2	2	2	2
23.	0737-1024	Pan Head Screw, Brass	2	2	2	2
24.	0733-1116	"A" Spacer, .531" thk	1			
	0733-1062	"B" Spacer, .626" thk		1		
	0733-1099	"L" Spacer, .750" thk			1	
	0733-1117	"E" Spacer, .875" thk				1
25.	0740-1026	Grommet	2	2	2	2
26.	0740-1037	Dead Side Housing	1	1	1	1
27.	0720-1007	Washer, Flat	4	4	4	4
28.	0734-9002	Mounting Bracket Assembly	1	1	1	1
29.	0740-1014	Spacer Ring	2	2	2	2
30.	0740-1024	Pan Head Screw, SS	1	1	1	1
31.	0720-1008	Flexloc Hex Nut	4	4	4	4
32.	0740-1009	Hex Head Bolt, Grade 8	4	4		
	0739-1012	Hex Head Bolt, Grade 8			4	4
33.	0740-1050	B-Ring, Buna-N	2	2	2	2

** NOTE: If caliper was manufactured before December 1, 1991, parts 9 and 17 must be replaced as a set.*

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" thick disc.

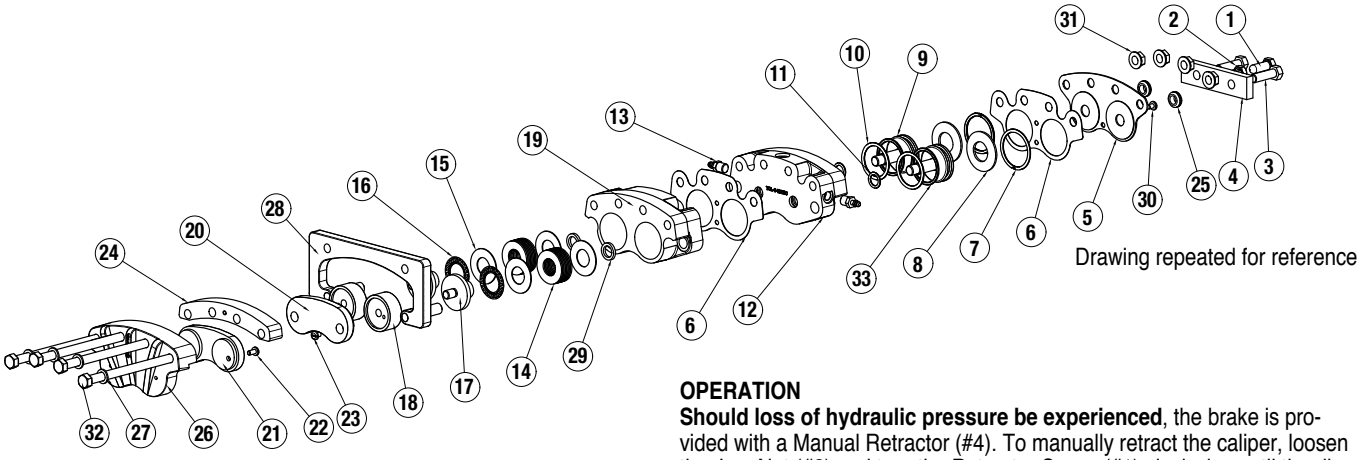
"E" indicates the brake is designed to work with a 1/2" (12.7mm) thick disc.

"I" indicates the brake is built with cast iron housings.

"J" indicates the brake is built with Manual Retractor.

"K" indicates the brake is built with Manual Compensator.

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



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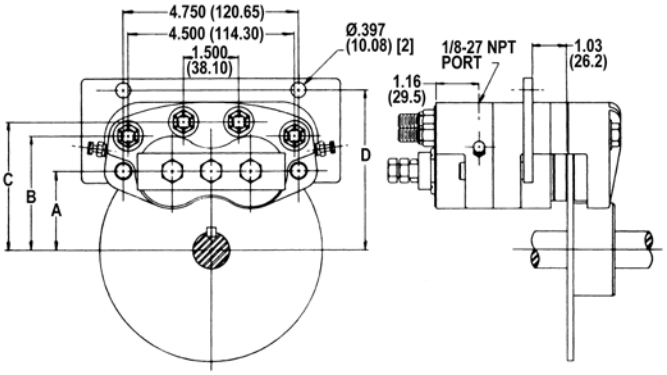
MOUNTING

1. When mounting the brake, connect the hydraulic fluid system to the External Fluid Port on the Live Side Housing (#12). Bleed the brake by loosening the Bleeder Valve screws (#13) and pressurizing the brake to 5 PSI (0.35 Bar). Then, pressurize the brake gradually up to 750 PSI (51.7 Bar). At this pressure, the brake pucks retract to create the correct gap for the brake disc.

2. To insure maximum life and braking action, make sure the brake disc is free of dirt and grease. Slip the brake over the disc and align it so the pucks are parallel with the disc. Proper clearance between the pucks and the disc is 0.010 inch (0.25mm) per side to a maximum of 0.031 inch (0.79mm) per side when new.

3. To prevent excessive wear, be certain the disc does not rub against the housing or the pucks when they are in the retracted position.

Mounting Dimensions – FS220BIXJK



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

WARNING: THIS CALIPER DISC BRAKE IS UNDER SPRING TENSION. DO NOT REMOVE BOLTS WITHOUT FIRST PRESSURIZING THE BRAKE TO RETRACT THE BRAKE PISTONS. AFTER DISASSEMBLY, RELEASE THE PRESSURE **SLOWLY. DO NOT ATTEMPT TO RETRACT THE PISTONS BY TIGHTENING BOLTS ON REASSEMBLY. USE HYDRAULIC PRESSURE INSTEAD.**

NOTE: Do not pressurize this brake above 2,000 PSI (137.9 Bar).

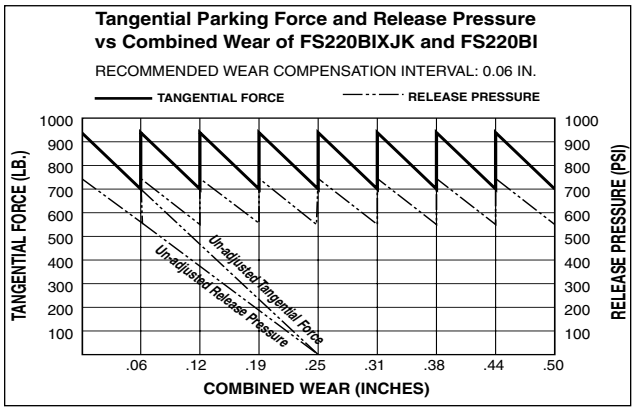
When plumbing the fluid system, use a minimum amount of pipe thread sealant on joints to prevent sealant from entering the hydraulic system.

OPERATION

Should loss of hydraulic pressure be experienced, the brake is provided with a Manual Retractor (#4). To manually retract the caliper, loosen the Jam Nut (#2) and turn the Retractor Screw (#1) clockwise until the disc is free.

The retractor mechanism should only be used when the pressure is not available to the vehicle and the vehicle must be moved by an external source. Be certain the retractor is disengaged, the Nut (#2) is tightened and the brake is set before operating the vehicle in the normal fashion.

To compensate for friction puck wear, the brake is also equipped with a Manual Wear Compensator which enables adjustment of the Belleville Spring stacks. To use the Compensator, release the pressure from the brake and adjust the Compensator Bolts (#3) clockwise in equal increments, preferably in half turns. Consult the chart below for proper wear compensation intervals. Then, pressurize the brake and check the disc clearances as listed in step two under mounting.



TO REASSEMBLE:

1. Insert Friction Puck (#21) into Dead Side Housing (#26). Insert and tighten Brass Screws (#22) through the Friction Puck and into the Dead Side Housing.

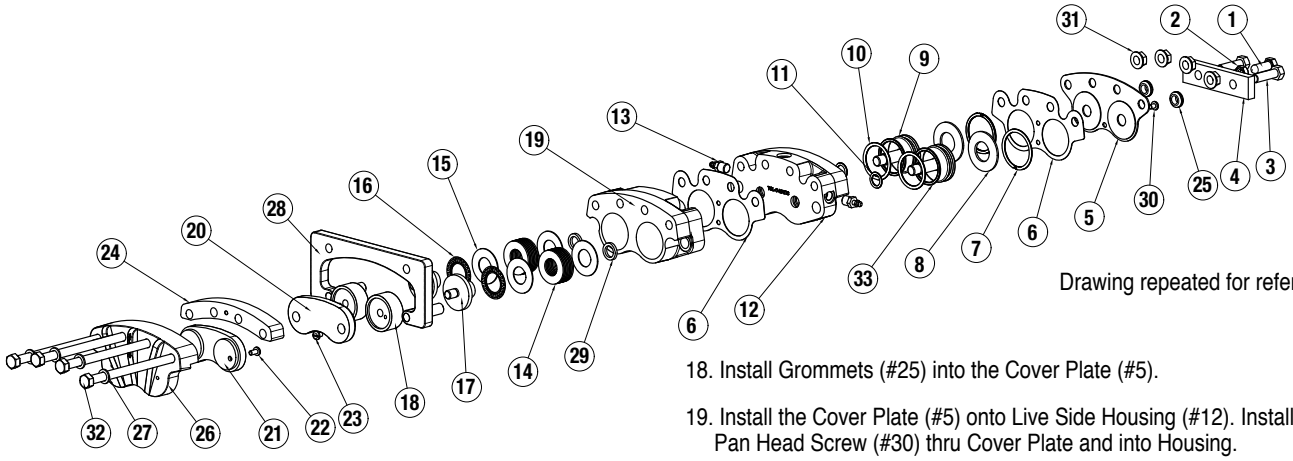
2. Insert Bolts (#32) and Washers (#27) into the Dead Side Housing (#26). When completed, lay the Dead Side Housing onto the work surface with the threaded bolts pointing upward.

3. Slide Spacer (#24) over the threads of the bolts on the dead side housing.

4. Lubricate O-Rings (#11) with a good O-Ring grease, such as Lubriplate 105, and place into the grooves in the Live Side Housing (#12).

5. Lubricate O-Rings (#10) and Backup Rings (#33) along with the internal diameters of the bores on the Live Side Housing (#12). Place O-Rings and Backup Rings onto the Pistons (#9). *****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.*****

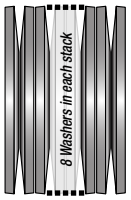
6. Insert Pistons (#9) into the piston bores of the Live Side Housing (#12),



Drawing repeated for reference

being careful not to damage O-Rings (#10 & #11).

7. Slide over the Spring Holder (#17); a Thrust Bearing (#16), Thrust Washer (#15), Belleville Spring Washer Stack (#14), Spacer Ring (#29) and second Thrust Washer (#15).



DETAIL (#14): "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

8. Apply Thread Locker (Blue 242) to the piston threads and screw the entire assembly together, with the Piston (#9) into the Spring Holder (#17). Use a spanner tool on Spring Holder and torque to 150 in-lbs (203.4 Nm).

9. Screw Compensator Plates (#18) onto the Spring Holders (#17); hand tight only. NO THREADLOCKER ON THIS JOINT! **Note: Left hand threads.**

10. Install Gasket (#6) and Housing Spacer (#19) over the spring stack assembly onto the Live Side Housing (#12). (See drawing for orientation.)

11. Check height of spring stack assemblies with flat piece of material over the top of Compensator Plates (#18). Adjust if needed by turning the Compensator Plate.

12. Align holes in Compensator Plates (#18) to Friction Puck (#20) and attach with Brass Screws (#23) into Compensator Plates.

13. Apply small amount of Thread Locker (Blue 242) into the threads of the Live Side Housing (#12) and not on the threads of the brass portion of Bleeder (#13). Install Bleeders into the housing. Do not apply any thread locker to the small steel portion of the Bleeder.

14. Lay the dead side and live side assemblies on the bench and install the live side over the Bolts (#32) of the Dead Side Housing (#26).

15. Place Belleville Spring Washers (#8) into the Live Side Housing (#12) oriented so the center of the Washer will contact the Piston (#9) and the outside of the Washer will contact the Retaining Ring (#7).

16. Install Retaining Rings (#7).

17. Install Gasket (#6) over the Bolts (#32).

18. Install Grommets (#25) into the Cover Plate (#5).

19. Install the Cover Plate (#5) onto Live Side Housing (#12). Install the Pan Head Screw (#30) thru Cover Plate and into Housing.

20. Install the Lock Nuts (#31). Torque nuts to 480 in-lbs (54.2 Nm).

21. Apply Never-Seize to the pins on the Mounting Bracket Assembly (#28).

22. Slide the Mounting Bracket Assembly (#28) into the Housing Spacer (#19). (See drawing for orientation.)

23. Insert a spacer between the Friction Pucks (#20 & #21) before releasing the pressure. **DO NOT RELEASE THE PRESSURE WITHOUT A SPACER IN PLACE.** If the pressure is released without a spacer, the spring stacks may need to be realigned, and the pucks may be damaged.

24. Energize the unit again while holding the test spacer. Pull on the test spacer while the pressure builds. At the time the spacer can be removed by hand is considered the “Release Pressure”. Verify the pressure at that point falls within 1500-1800 PSI. If it does, move on to step 26. If the reading is below 1500 PSI perform the instructions in step 25.

25. Release the pressure without the test spacer between the Pucks (#20 & #21). Install two (minimum 2” long) 3/8-24 bolts thru the Grommets (#25) into the Piston (#9) until they bottom out. Turn both bolts in equal turn increments. Re-pressurize and install test spacer. Verify release pressure is within 1500-1800 PSI with the spacer. If not repeat these steps until the unit meets specification.

26. Keep the unit pressurized for 1-2 minutes and observe for any reduction in pressure or leaks. None is permitted. Place the brake over the disc, or insert a spacer between the Brake Pucks before releasing the pressure. DO NOT RELEASE THE PRESSURE WITHOUT A DISC OR SPACER IN PLACE. If the pressure is released without a disc or spacer, the spring stacks may need to be realigned.

27. Install Compensator Bolts (#3) thru the Retractor Plate (#4) and thru the Grommets (#25) in the Cover Plate (#5) into the Pistons (#9).

28. Install Jam Nut (#2) onto Retractor Screw (#1) and thread into the Retractor Plate (#4) until it contacts the Cover Plate (#5). Jam the nut against the Retractor Plate and ensure the Retractor Plate is not loose. Follow mounting instructions to re-install.

NOTE: DO NOT PRESSURE BLEED THIS BRAKE WITH MORE THAN 5 PSI (0.35 Bar). EXCESSIVE PRESSURE WILL CAUSE THE O-RINGS ON THE BLEEDERS TO EXTRUDE, WITH THE POSSIBILITY THAT THEY MAY BE SHEARED WHEN TIGHTENED. MAKE CERTAIN THE O-RINGS ARE PROPERLY SEATED BEFORE TIGHTENING THE BLEEDER VALVES.

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