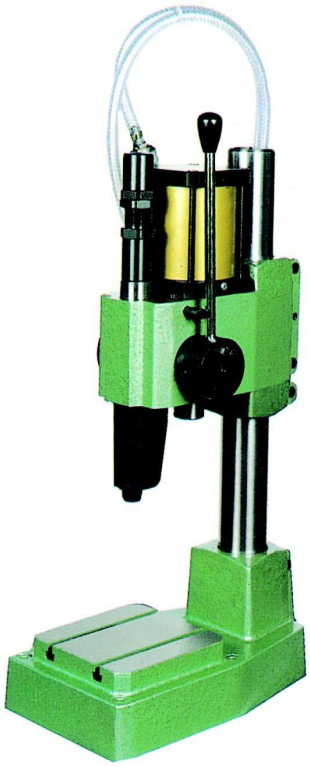
Model MC-21 Impact Press

Operation & Maintenance Instructions



Revised 9/20/07

WARNINGS

1. Safety glasses must always be worn by the machine operator, as well as any co-workers, or any other persons in the area.

2. Never operate this press unless hands and foreign objects are clear of the pinch point area.

3. Never operate a machine in a pneumatic mode without approved dual hand controls that include anti-tie down features. Pneumatic operation requires the use of a filter-regulator-lubricator in the line. Flow controls must be used in the "U" series units.

4. Never remove any safety guards until the air is turned off and secured in the off position.

5. Never do any maintenance work on the press until the air is turned off and locked out with the air lines removed from the cylinder ports.

6. Never make any tooling or set up change until the air is turned off and locked out.

7. Never operate the press until the impact adjustment and the trip travel adjustment if correct. See operation manual for instructions.

8. Never operate the press with tooling (shank) of improper diameter. See machine specifications for proper shank size.

9. Never use hammer blows on any wrench to tighten any nuts on the machine. Hand tightening with a wrench is sufficient.

10. All moving parts must be regularly lubricated with a light grade machine oil. Periodic preventive maintenance scheduling should be established for cleaning, lubricating and inspection of all moving parts.

WARRANTY

All warranties of the products described herein, express or implied, including the warranties of merchantability and fitness for particular purpose are, except if contrary to state law, specifically excluded except the following: We will repair or replace any machine or machine part, which, within ninety (90) days after sale by us or our distributor is found to be defective in material or workmanship.

This is our sole warranty and shall extend to new equipment that we provide, repair or replace.

Except if contrary to state law, we shall not be liable for any injury or consequential, arising out of the use of, or the inability to use, the products described herein.

TO VALIDATE YOUR WARRANTY
PLEASE RETURN THIS PAGE IMMEDIATELY TO:

Fax: 1-630-766-0219

Or

Durable Mecco
521 South County Line Road
Franklin Park, IL 60131

Important Notice:

No person shall operate this equipment without first carefully studiying and understanding the instruction manual. Contact Durable Mecco with any questions relating to the safe operation or limitations of this equipment.

The warranty, as presented in the manual, will become effective immediately upon return of this Disclaimer.

Model No. _____

Serial No. _____

Company _____

Address _____

Signed _____

Title _____

Phone _____

E-mail _____

Date _____

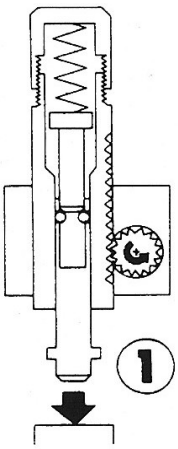
Model MC-21 Impact Press

Operation & Maintenance Instructions

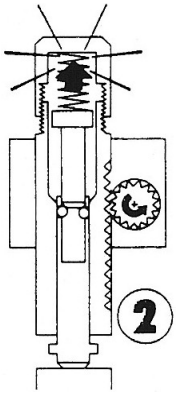
Principle of Operation

The press contains a large spring that is compressed during energy section travel. When release point is reached, the compressed energy is released causing the internal hammer to deliver the powerful impact.

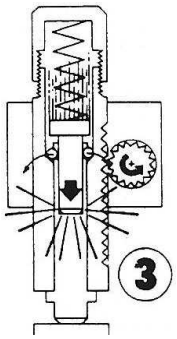
Step 1
Energy section advances toward workpiece by gear rack and pinion, powered by double-acting pneumatic cylinder (pneumatic units) or by operator pulling lever (manual units).



Step 2
After workpiece is contacted, stroke continues. The workpiece is held in place by the pressure from the energy section. The Impact Spring is compression buids as the press continues to maintain contact with the workpiece.



Step 3
When ball bearings reach release point, the powerful impact is released. The Impact Spring delivers force to the hammer, which in turn strikes the plunger (tool holder).



The result is a strong impact from a small press.

Delivery:

Units are shipped in heavy-duty containers to prevent damage in shipment. Should any damage be found, claims should be made immediately against the freight carrier.

Installation:

1. The machines should be cleaned and all anti-rust lubrication should be removed, with special care given to removing this film from the COLUMN (Part #37).
2. All machines are designed with bolt-down holes in the TABLE CASTING (Part #42). The machine should be bolted securely to a rigid bench that is level and located in a safe location.

Impact Adjustment:

1. The press is rated at the maximum force possible.
2. Machines are shipped with three (3) different gauge IMPACT SPRINGS (Part #10).
3. Force can be adjusted by adjusting the IMPACT ADJUST CAP (Part #12)
4. Force can be adjusted by selecting a heavier or lighter gauge IMPACT SPRING (Part #10)
5. When the proper impact force is determined, the IMPACT ADJUST LOCK NUT (Part #15) should be tightened to prevent changes due to vibration or tampering.

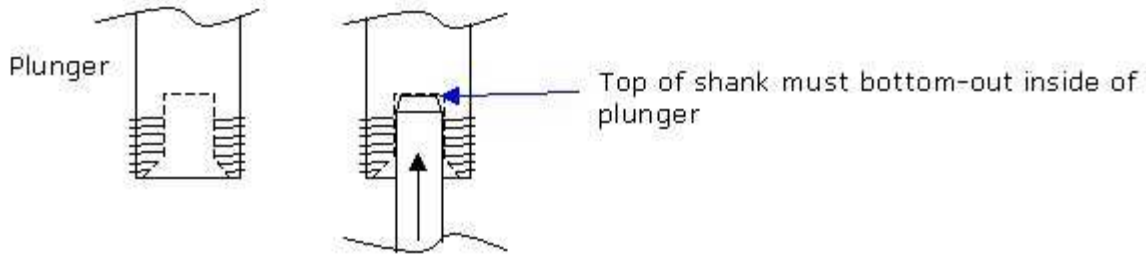
NOTE
IMPACT FORCE IS **NOT** ADJUSTED BY CHANGING THE AIR PRESSURE TO THE MACHINE CYLINDER

Tooling Installation:

CAUTION
ALL AIR SUPPLY TO THE MACHINE MUST BE SECURED IN THE OFF POSITION PRIOR TO TOOLING INSTALLATION.

1. This machine uses a collet arrangement for retaining the tooling in the machine. For proper retention in the collet, the shank size is critical. The following shank size must be used: **10.0mm dia. X 38mm**
2. The COLLET NUT (Part #23) must be loosened and the tool shank inserted through the COLLET (Part #22) until it is bottomed into the PLUNGER (Part #19).
3. Tighten the COLLET NUT (Part #23) securely to prevent tool rotation.

NOTE
DO NOT USE HAMMER BLOWS AGAINST THE WRENCH TO TIGHTEN.



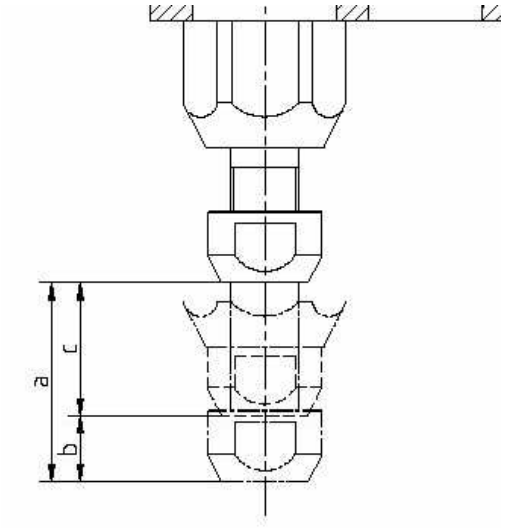
Collet, Collet Nut,Trip Travel Adjust Nut, Trip Travel Lock Nut And Trip Travel Lock Washer are not shown for clarity

**Standard plunger and shank shown. Some systems are specially modified per application.

Operating Height Adjustment:

1. With work piece in place on the machine table, or nested in a suitable fixture, lower the tooling toward the work piece by loosening the CLAMP BOLTS (Part #44) on the upper casting.
2. Secure CLAMP BOLTS (Part #44) before operating the machine.

a	Maximum Total Travel	56.0mm
b	Compression required to realize impact	16.0mm
c	Maximum distance between tool and work piece in rest position (Optimal distance is 6mm or less)	40.0mm



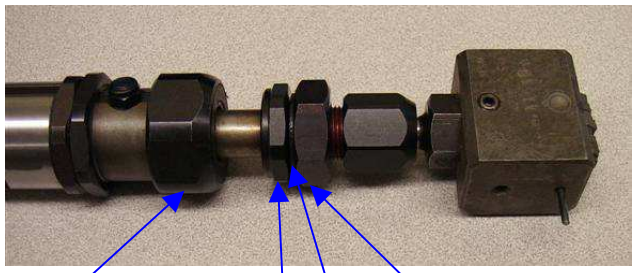
NOTE
THE DISTANCE FROM THE TOOLING TO THE WORKPIECE, WITH MACHINE AT REST, SHOULD BE KEPT TO A MINIMUM (1/4" OR LESS).

CAUTION
THE TRIP TRAVEL ADJUSTMENT MUST BE MADE IN A MANUAL MODE OF OPERATION WITH AIR SUPPLY DISCONNECTED FROM THE MACHINE. BEFORE THE MACHINE IS MANUALLY IMPACTED, CARE MUST BE GIVEN THAT HANDS AND FINGER ARE CLEAR OF THE MACHINE.

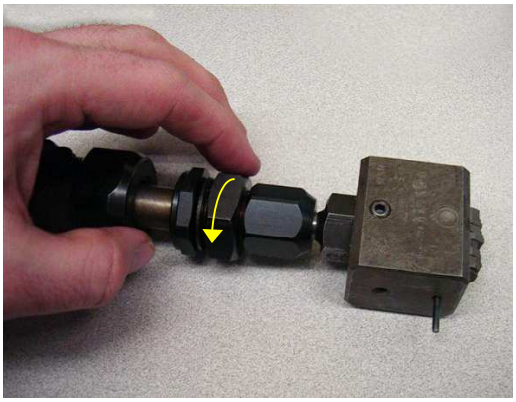
Trip Travel Adjustment:

(Photos below show optional steel type holder installed)

TRIP TRAVEL ADJUSTMENT is a critical adjustment on this press. Improper adjustment can result in chatter at the point of impact, which will shorten the life of the internal parts, or a machine that will fail to impact.

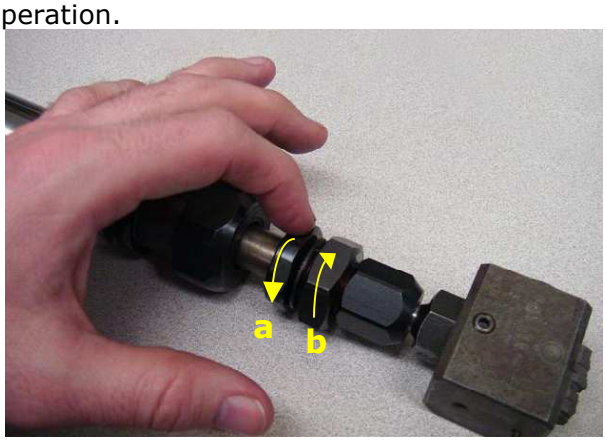


1. Loosen the TRIP TRAVEL LOCK NUT (Part #64) and turn to a location on the threads of the PLUNGER (Part #19) that is out of the way.



2. Use the press in manual mode with the LEVER HANDLE (Part #35) to test and adjust the trip travel setting through trial and error. Gradually adjust the TRIP TRAVEL ADJUST NUT (Part #75) upward on the threads of the PLUNGER (Part #19). Cycle the press using the LEVER HANDLE. Repeat until the press **does not make impact.**

3. a) Turn the TRIP TRAVEL ADJUST NUT (Part #75) back a full turn on the threads to allow impact to occur. b) Lock in place by wrenching the TRIP TRAVEL LOCK NUT (Part #64) against the TRIP TRAVEL ADJUST NUT (Part #75). This adjustment should be checked periodically during operation.



Pneumatic Operation:

CAUTION
PRIOR TO ANY HOOK-UP TO PNEUMATIC VALVING, THE MANUAL OPERATING LEVER (Part #35) MUST BE REMOVED.

CAUTION
DO NOT USE FOOT PEDAL CONTROLS

1. Although the press can be operated in a manual mode, it is equipped with a double acting pneumatic cylinder that will require a four-way valve for pneumatic operation.
2. For safe press operation, only DUAL HAND CONTROLS with ANTI-TIEDOWN features should be used and a FILTER-REGULATOR-LUBRICATOR should be used in every installation.
3. With the MANUAL-OPERATING LEVER (Part #35) removed, connect compressed air to the cylinder and turn the airline regulator to a low setting. Operate the pneumatic press controls to signal the press to travel down against the work piece. With the regulator set at a low-pressure setting, the press should not impact.
4. Increase the air pressure at the regulator until the machine impacts against the work piece. **The line pressure to the machine should not exceed the pressure required to trigger the impact.**
5. Changes to the impact setting will require the line pressure to be adjusted, and visa-versa.

Maintenance:

CAUTION
ALL AIR SUPPLY MUST BE SECURED IN THE OFF POSITION PRIOR TO MAINTENANCE OR TOOLING CHANGE.

1. Depending on the usage and operating conditions, the machine should be regularly lubricated at all wear points. Periodically, the machine should be disassembled for cleaning, inspected for worn parts and lubricated completely.

   Use a lightweight machine oil like 3-In-One™ to lubricate machine thorough the oil fittings (Part #69). Apply general-purpose lithium grease to the Piston Rod (Part #45) and the Lower Tube (Part #2).

2. Care must be given to the pneumatic lubricator oil level to assure proper lubrication of the pneumatic cylinder.

Parts ordering - Information required:

1. Please furnish part number and part name.
2. Please furnish machine model number.
3. Please furnish serial number.
4. Please furnish quantity desired.

For all information and/or correspondence concerning this machine, please state type and serial number.

Serial Number: _____

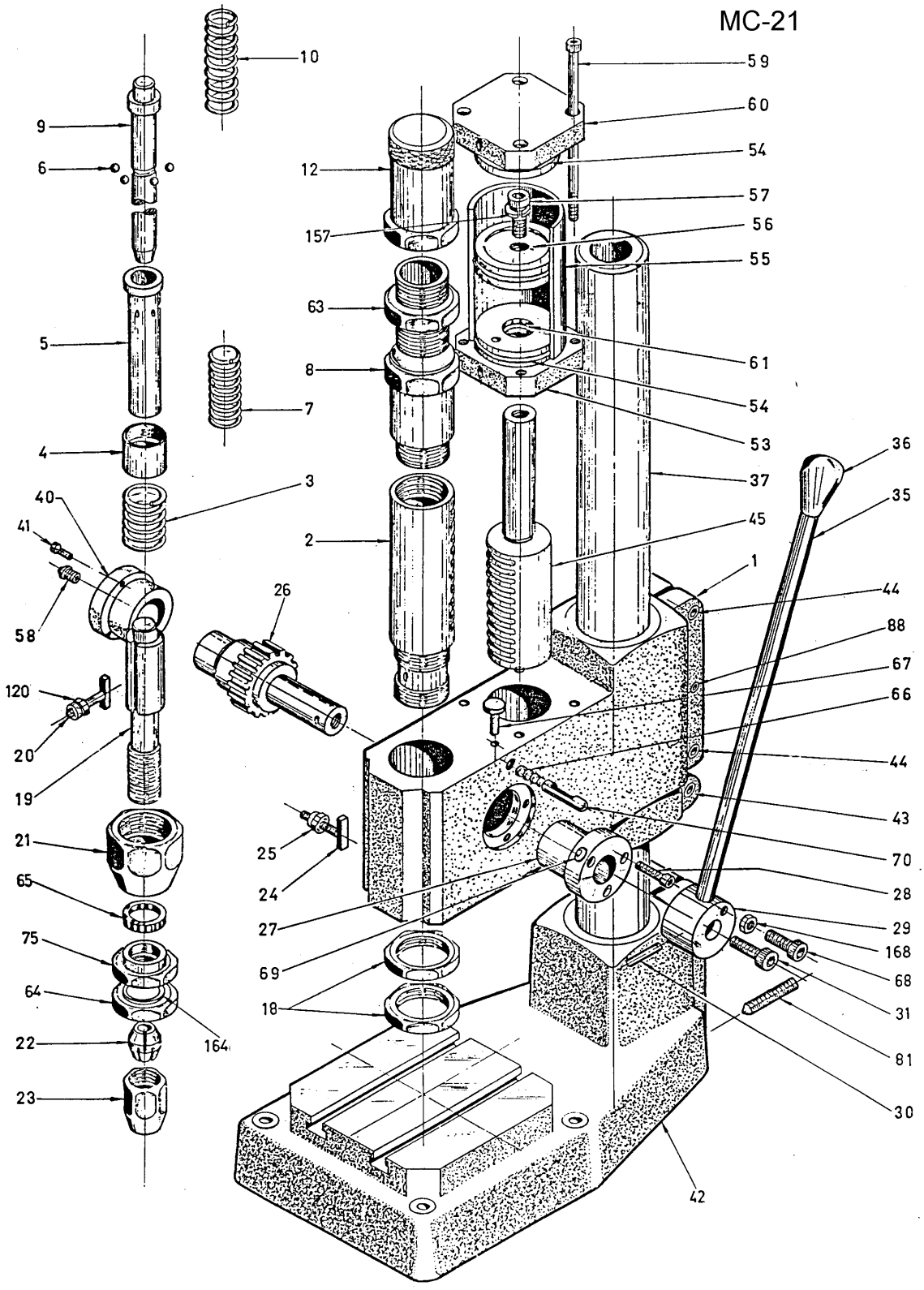
Date: _____

Signature: _____

Spare Parts List
Model MC-21

Mark	Part #	Old Part #	Description 1	Description 2
1	20-112001	20-MC2101U	Main Casting	HOUSING BLOCK
2	20-102102	20-MC2102	Lower Tube	RACK
3	20-102103	20-MC2103	Sleeve Return Spring	SLIDING-BUSH SPRING
4	20-102104	20-MC2104	Bearing Sleeve	SLIDING-BUSH
5	20-102105	20-MC2105	Tube Guide	GUIDE SLEEVE
6	20-102106	20-MC2106	Ball Bearings	BALLS Ø3,5
7	20-102107	20-MC2107	Tube Guide Return Spring	GUIDE-SLEEVE SPRING
8	20-102108	20-MC2108	Upper Tube	COUPLING SLEEVE
9	20-102109	20-MC2109	Hammer	HAMMER
10	20-102110-XL	20-MC2110	Impact Spring-2.5mm Wire Diameter	PENETRATION SPRING DE 2.5 mm
10	20-102110-L	20-MC2110	Impact Spring-2.9mm Wire Diameter	PENETRATION SPRING DE 2.9 mm
10	20-102110-M	20-MC2110	Impact Spring-3.5mm Wire Diameter	PENETRATION SPRING DE 3.5 mm
10	20-102110-H	20-MC2110	Impact Spring-3.8mm Wire Diameter	PENETRATION SPRING DE 3.8 mm
12	20-112112	20-MC2112	Impact Adjust Nut	CAP
18	20-102118	20-MC2118	Lower Tube Nut	RACK NUT
19	20-102119	20-MC2119	Plunger	TOOL-HOLDER
20	20-102120	20-MC2120	Plunger Key	TOOL-HOLDER KEY
21	20-102121	20-MC2121	Plunger Retaining Nut	RETAINING NUT
22	20-102122	20-MC2122	Collet	COLLET
23	20-102123	20-MC2123	Collet Nut	COLLET NUT
24	20-112024	20-MC2124	Lower Tube Key	RACK KEY
25	20-103025	20-MC2125	Lower Tube Key Nut	
26	20-112026	20-MC2126	Pinion	PINION
27	20-112027	20-MC2127	Pinion Shaft Bushing	PIN GUIDE
28	20-102028	20-MC2128	Pinion Shaft Bush Screw	ALLEN SCREW M6X20
29	20-112029	20-MC2129	Lever Housing	LEVER COUPLING
30	20-102030	20-MC2130	Pinion Drive Pin	ELASTIC BOLT D8X30
31	20-102031	20-MC2131	Lever Housing	RETAINING SCREW
35	20-102035	20-MC2135	Lever Handle	DRIVING LEVER
36	20-102036	20-MC2136	Lever Handle Ball	ROUND KNOB BALL
37	20-112037	20-MC2137	Column	COLUMN

40	20-112040	20-MC2140	Pinion Shaft Bearing	PINION BUSH
42	20-112042	20-MC2142	Table	TABLE
43	20-112043	20-MC2143	Collar	RING
44	20-102044	20-MC2144	Clamp Bolt	ALLEN SCREW M8X25
45	20-112045	20-MC2145	Piston Rod	PISTON RACK
53	20-112053	20-MC2153	Lower Cylinder End	LOWER BEARING
54	20-112054	20-MC2154	Cylinder Seal	O-RING AN 41
55	20-112055	20-MC2155	Cylinder	CYLINDER
56	20-112256	20-MC2156	Piston	COMPLETE PISTON
57	20-112057	20-MC2157	Piston Rod Bolt	SCREW
58	20-112058	20-MC2158	Oil Fitting	GREASER
59	20-112059	20-MC2159	Cylinder Tie Bolts	CYLINDER SCREW
60	20-112060	20-MC2160	Top Cylinder End	UPPER BEARING
61	20-112061	20-MC2161	Piston Rod Seal	O-RING AN 16
63	20-102163	20-MC2163	Upper Tube Lock Nut	CAP LOCKNUT
64	20-102164	20-MC2164	Trip Travel Lock Nut	REGULATION LOCKNUT
65	20-102165	20-MC2165	Shock Absorber	STOP RING
66	20-112066	20-MC2166	Safety Plunger Bolt	SPRING
67	20-112067	20-MC2167	Safety Plunger Bolt	BOLT PIVOT
68	20-102068	20-MC2168	Lever Set Screw	
69		20-MC2169	Oil Fitting	
70	20-112070	20-MC2170	Safety Plunger	SAFETY BOLT
75	20-102175	20-MC2175	Trip Travel Adjust Nut	SETTING NUT
81	20-102081	20-MC2181	Table Set Screw	CONICAL STUD M8X30
88	20-102088	20-MC2188	Main Casting Bolt	CYLINDRICAL STUD M10X20
120	20-102220	20-MC2120T	Plunger Key Nut	
126	20-112080	20-MC21126	PINION SHAFT	PIN
157	20-112157	20-MC2157a	PISTON ROD BOLT WASHER	WASHER
164	20-102264	20-MC2164a	Trip Travel Lock Washer	
168		20-MC2168t	Lock Nut	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