

09200/09200A PRECISION FROG GRINDER

The Pandrol "PRECISION FROG GRINDER" is a hydraulic powered, track mounted machine that provides a precision guide frame with multiple axis adjustment enabling the operator to make consistent refinishing grinds.



Accessories 00499 - 8 x 1 x 5/8 GRINDING STONE
09299 - 4 x 3 x 5/8-11 CUP STONE
09295 - 2' RAIL KIT

Weight Base: 38 lbs (17.25 kg)
Grinder: 84 lbs (38 kg)
Overall: 122 lbs (55.5 kg)

PATENT PENDING

PANDROL

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Pandrol reserves the right to change parts, features, or specifications without notice.

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GENERAL SAFETY PRECAUTIONS:

TOOL OPERATORS AND MAINTENANCE PERSONNEL MUST ALWAYS COMPLY WITH THE SAFETY PRECAUTIONS GIVEN IN THIS MANUAL, AND WITH ALL STICKERS AND TAGS ATTACHED TO THE TOOL AND HOSE. ALL SAFETY PRECAUTIONS ARE GIVEN FOR YOUR SAFETY. READ TO UNDERSTAND AND FOLLOW ALL SAFETY, MAINTENANCE AND OPERATION INSTRUCTIONS BEFORE YOU USE OR MAINTAIN THE TOOL. REVIEW THE MANUAL DAILY BEFORE USING THE TOOL. IN ADDITION, FOLLOW ALL SAFETY GUIDELINES GIVEN YOU BY YOUR SUPERVISOR. DO NOT USE THE TOOL IF YOU HAVE ANY QUESTIONS ABOUT THE OPERATION, SAFETY OR MAINTENANCE OF THIS TOOL. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

PANDROL HAS NO CONTROL OVER TOOL USE OR OPERATION ONCE IT LEAVES THE PANDROL PLANT. PANDROL HAS NO CONTROL OVER OPERATOR OR MAINTAINER SELECTION. THE CUSTOMER MUST ASSUME RESPONSIBILITY FOR THE TOOL'S SUITABILITY FOR A PARTICULAR FUNCTION. DURING USE OF TOOL, GOOD JUDGEMENT MUST BE USED TO WORK SAFELY AND EFFICIENTLY WITHOUT ENDANGERING THEMSELVES OR BYSTANDERS. UNDERSTANDING OF THE OPERATION AND MAINTENANCE MANUAL IS ESSENTIAL FOR ANYONE USING OR MAINTAINING THE TOOL.

- DO NOT OPERATE THE TOOL UNTIL YOU HAVE BEEN THOROUGHLY AND PROPERLY TRAINED OR UNDER THE SUPERVISION OF AN INSTRUCTOR.
- CHECK POWER SOURCE DAILY TO DETERMINE IF CORRECT FLOW AND PRESSURE ARE AVAILABLE. NEVER EXCEED FLOWS OR PRESSURES FOR THE TOOL BEING USED. PERSONAL INJURY OR DAMAGE TO THE TOOL CAN RESULT.
- OPERATORS MUST CLEAR THE WORK AREA OF NONESSENTIAL PERSONNEL. FLYING DEBRIS CAN CAUSE SERIOUS INJURY.
- THE OPERATOR MUST BE FAMILIAR WITH ALL PROHIBITED WORK AREAS SUCH AS UNSAFE GRADES, POOR FOOTING AREAS AND OVERHEAD HAZARDS.
- MAINTAIN BALANCE AND PROPER FOOTING AT ALL TIMES. NEVER OVERREACH TO THE EXTENT THAT A BROKEN PART OR SUDDEN MOVEMENT OF THE TOOL CAN CAUSE YOU TO LOSE YOUR BALANCE AND FALL, OR CAUSE INJURY TO YOUR SELF OR SOMEONE ELSE.
- WHEN WORKING NEAR ELECTRICAL CONDUCTORS, ALWAYS ASSUME THAT THE CONDUCTORS ARE ENERGIZED AND THAT HOSES AND CLOTHING CAN CONDUCT HARMFUL ELECTRICITY. USE HOSES LABELED AND CERTIFIED AS NONCONDUCTIVE.
- DO NOT OPERATE THE TOOL AT EXCESSIVE FLUID TEMPERATURES OPERATOR DISCOMFORT AND POTENTIAL BURNS CAN RESULT AT HIGH OIL TEMPERATURES.
- NEVER WEAR LOOSE CLOTHING THAT CAN GET ENTANGLED IN THE WORKING PARTS OF THE TOOLS OR BE CARELESS WITH HANDS, FEET OR OTHER BODY PARTS AROUND THE WORKING PARTS OF THE TOOLS. HYDRAULIC TOOLS EXERT HIGH TORQUE AND FORCE AND CAN CAUSE SERIOUS INJURY OR DEATH IF IMPROPERLY USED.

- TO AVOID PERSONAL INJURY OR EQUIPMENT DAMAGE, ALL TOOL REPAIR, MAINTENANCE OR SERVICE MUST ONLY BE PERFORMED BY AUTHORIZED AND PROPERLY TRAINED PERSONNEL.
- ALWAYS WEAR SAFETY EQUIPMENT SUCH AS OIL INJECTION RESISTANT WORK GLOVES, SAFETY GLASSES, SAFETY BOOTS, EAR PROTECTION AND OTHER SAFETY APPAREL DICTATED BY YOUR SUPERVISOR APPLICABLE FOR THE JOB YOU ARE DOING AND THE TOOL YOU ARE USING.
- DO NOT CLEAN INSPECT OR REPAIR THE TOOL WHILE CONNECTED TO THE POWER SOURCE. ACCIDENTAL ENGAGEMENT OF THE TOOL CAN CAUSE SERIOUS PERSONAL INJURY.
- OIL INJECTION HAZARD EXISTS WITH THIS TOOL. OIL INJECTION IS A CONDITION WHERE HYDRAULIC OIL IS INJECTED UNDER THE SKIN FROM PRESSURE IN THE LINE. ALWAYS WEAR GLOVES AND REPAIR ANY LEAKS IMMEDIATELY. NEVER CARRY A TOOL BY THE HOSES.
- DO NOT USE DAMAGED EQUIPMENT. IMMEDIATELY REPLACE ANY DAMAGED HOSES, FITTINGS, OR OTHER COMPONENTS SHOWING WIRE BRAID, NICKS, CUTS, DAMAGE OR ABRASIONS. FAILURE TO DO SO MAY RESULT IN EQUIPMENT DAMAGE AND / OR PERSONAL INJURY OR DEATH.
- CLEAN UP ANY OIL OR FLUID SPILLS IMMEDIATELY.
- HAVE SUPERVISOR ADD ADDITIONAL PRECAUTIONS RELATING TO THE SPECIFIC WORK AREA AND LOCAL SAFETY REGULATIONS BELOW:

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SAFETY PRECAUTIONS:

1. **ALWAYS** WEAR PROTECTIVE EQUIPMENT SUCH AS GLOVES, SAFETY GLASSES, EAR PROTECTION AND SAFETY SHOES.
2. DO NOT WEAR CLOTHING WHICH MAY BECOME ENTANGLED IN THE TOOL.
3. **ALWAYS** KEEP WORK AREA FREE OF TOOLS OR ANY OTHER OBJECTS WHICH MAY IMPAIR SOUND FOOTING.
4. **CAUTION** OIL INJECTION HAZARD EXISTS WITH THIS TOOL. OIL INJECTION IS A CONDITION WHERE THE HYDRAULIC OIL IS FORCED UNDER THE SKIN THROUGH PRESSURE IN THE LINE. ALWAYS WEAR GLOVES, DO NOT CARRY THE TOOL BY HYDRAULIC HOSES, AND REPAIR LEAKS IMMEDIATELY..
5. **NEVER** CHANGE STONES WITH THE POWER SOURCE VALVE(S) IN THE “**ON**” POSITION, TURN THE POWER SOURCE “**OFF**”.
6. **NEVER** ATTEMPT TO CARRY THE GRINDER WITH THE POWER SOURCE IN THE “**ON**” POSITION, TURN THE POWER SOURCE “**OFF**”.
7. **NEVER** TOUCH OR TRY TO STOP A MOVING STONE.
8. **ALWAYS** CHECK THE WORK AREA FOR ANY TRASH WHICH MAY IGNITE FROM SPARKS.
9. **ALWAYS** CHECK THE AREA FOR SMOLDERING TIES OR TRASH BEFORE LEAVING THE SITE.
10. WHEN CHANGING STONES, FOLLOW ALL GRINDING STONE MANUFACTURERS INSTRUCTIONS FOR SAFETY AND OPERATION. USE ONLY STONES THAT COMPLY WITH ANSI STANDARDS. BEFORE USING, RUN NEW GRINDING STONE FOR ONE MINUTE AT FULL SPEED TO CHECK FOR DEFECTS OR VIBRATION.
11. MOST HYDRAULIC OILS HAVE A FLASH POINT OF APPROXIMATELY 450 DEGREES (F). MAKE SURE HOSES ARE COMPLETELY CLEAR OF SPARKS AND HOT DEBRIS. HAVE ANOTHER PERSON STAND CLOSE TO HYDRAULIC POWER SOURCE CONTROLS TO OBSERVE OPERATION AND FOR EMERGENCY SHUTDOWN IF NECESSARY.

HYDRAULIC SPECIFICATIONS

FLOW:	10 GPM (38 LPM)
PRESSURE:	2000 PSI (140 BAR)
MAX BACK PRESSURE:	250 PSI (17 BAR)
RPM:	4000

09200A PRECISION FROG GRINDER

Set up and operation

The Precision Frog Grinder is designed to operate both 1" X 8" and 4" X 3" grinding stones.

The 1" X 8" grinding stone is used for the majority of operations such as grinding out defects as well as grinding back the profile of the Frog after rebuilding.

The 4" X 3" cup stone is ideal for the finish grinding, radius profiling and to grind in the point slope.

Set the base of the Precision Frog Grinder on the Frog, centering it on the work area. Set the grinder onto the base and lock with the roller clamps.



ROLLER CLAMP

With the 1" X 8" stone installed the defect can be ground out or if defect is carbon arc cut with air (CAC-A) then the grinder can be used to clean out the slag before welding.



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After welding up the Frog, begin to rough grind the surface with the 1" X 8" stone. The base of the grinder is still centered for this purpose.



For flange way alignment

Mark the casting of the Frog with a straight edge and soap stone for reference of original profile.



Stretch the guide cable from each eye hook on the base to align the base grinder over the straight edge mark.



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Tighten the base to the Frog, centered over this work area. Ensure that the soap stone reference line and cable are aligned



Grind the flange way from the bottom up. The angle adjustment will be on approximately the 4th notch from vertical.

(#8 notch in this example. This may vary depending on the grinding stone wear.)



Starting at the bottom of the flange way begin grinding upward.

Use the hand wheel to move the stone up or down.

The crank handles are for adjusting the stone from side-to-side while rolling the grinder back and forth across the length of the base.



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Finish Grinding the Top of Rail

With the cup stone installed as position 1, start on either side of the weld repair and set the stone to where it just touches the rail and then run the stone into the weld.



Grinding the Radius

Adjust angle of cup to approximately position 6 to grind radius.



Grinding the Radius

Change angle of cup stone to approximately position 8.



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Set angle of cup stone to approximately 3 to complete radius.



Check Grinding



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ADDITIONAL USES OF THE PRECISION FROG GRINDER

Grind Switch Points and Stock Rails



Grinding Defect for Head Wash Rail Weld Repair

Picture below shows 09295 - 2' Rail Kit installed



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10/19

09200 PRECISION FROG GRINDER

CHANGING THE 8" GRINDING STONE:

- 1.) **DISCONNECT** THE TOOL FROM THE POWER SOURCE.
- 2.) USING THE WRENCH PROVIDED LOOSEN THE TWO HEX FASTENERS OR BOLTS AND REMOVE THE STONE GUARD.
- 3.) ROTATE THE STONE SLOWLY BY HAND WHILE **DEPRESSING** THE SHAFT LOCKING PIN MECHANISM LOCATED ON THE SIDE OF BEARING HOUSING.
- 4.) WHEN THE PIN ENGAGES, LOCKING THE SHAFT, REMOVE THE NUT HOLDING THE STONE AND FLANGES TO THE SHAFT
- 5.) **INSTALL** THE NEW STONE. BE SURE THAT THE FLANGES HAVE BEEN REPLACED AND THAT THE GRINDING STONE IS EQUIPPED WITH A BLOTTER.
- 6.) TIGHTEN THE NUT ON THE SHAFT. **DO NOT OVER TIGHTEN** AS THIS MAY CAUSE THE STONE TO FAIL WHILE IN USE.
- 7.) RELEASE THE LOCKING MECHANISM AND CHECK TO MAKE SURE IT IS RELEASED FROM THE SHAFT **BEFORE** BEGINNING TO USE.
- 8.) REINSTALL THE STONE GUARD.
- 9.) REFER TO MANUFACTURER'S SPECIFICATIONS FOR TORQUE SETTINGS ON STONE ATTACHMENT



09200 PRECISION FROG GRINDER

CHANGING THE 4" CUP STONE:

- 1.) **DISCONNECT** THE TOOL FROM THE POWER SOURCE.
- 2.) USING THE WRENCH PROVIDED LOOSEN THE TWO HEX FASTENERS OR BOLTS AND REMOVE THE STONE GUARD.
- 3.) ROTATE THE STONE SLOWLY BY HAND WHILE **DEPRESSING** THE SHAFT LOCKING PIN MECHANISM LOCATED ON THE SIDE OF BEARING HOUSING.
- 4.) WHEN THE PIN ENGAGES, LOCKING THE SHAFT, CONTINUE DEPRESSING THE LOCKING PIN WHILE TURNING THE 4" CUP STONE BY HAND TO LOOSEN AND REMOVE.
- 5.) LEAVE THE BACKING FLANGE IN PLACE AND INSTALL THE NEW CUP STONE. MAKE SURE THE NEW CUP STONE HAS A PAPER BLOTTER INSTALLED.
- 6.) RELEASE THE LOCKING MECHANISM AND CHECK TO MAKE SURE IT IS RELEASED FROM THE SHAFT **BEFORE** BEGINNING TO USE.
- 7.) REINSTALL THE STONE GUARD.



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MAINTENANCE:

1. CHECK TOOL **DAILY** FOR PROPER OPERATION, LEAKS, OR DAMAGE.
2. INSPECT HOSES **DAILY**. REPLACE CUT, BURNED, OR OTHERWISE DAMAGED HOSES.
3. KEEP QUICK DISCONNECT COUPLERS **CLEAN AND LUBRICATED**.
4. USE HYDRAULIC FLUIDS THAT COMPLY WITH HTMA SPECIFICATION 5.7, THE HYDRAULIC FLUID SHOULD HAVE A VISCOSITY BETWEEN 100 AND 400 SSU (20-82 CENTISTOKE) AT THE MAXIMUM AND MINIMUM EXPECTED OPERATING TEMPERATURES. PETROLEUM BASED HYDRAULIC FLUIDS WITH ANTI-WEAR PROPERTIES AND A VISCOSITY INDEX OF OVER 140 WORK FOR A WIDE RANGE OF OPERATING CONDITIONS.

THE FOLLOWING OILS MEET HTMA SPECIFICATION 5.7:

AMOCO RYKON MV	CITGO A/W ALL TEMP
SUNVIS 706	MOBIL D.T.E. 13
CHEVRON EP-MV	TEXACO "RANDO" HDAZ

OTHER FLUIDS THAT MEET OR EXCEED THIS SPECIFICATION CAN BE USED.

5. HAVE TOOL INSPECTED, AT LEAST ANNUALLY, BY PANDROL OR A PANDROL QUALIFIED SERVICE REPRESENTATIVE TO DETERMINE IF TOOL IS IN NEED OF SAFETY CHANGES OR WORN PART REPLACEMENT.
6. CONTACT PANDROL ON A PERIODIC BASIS, AT LEAST ANNUALLY, FOR SERVICE BULLETINS, SAFETY NOTICES, OR OTHER IMPORTANT INFORMATION PERTAINING TO THIS TOOL.

COLD WEATHER OPERATION

HYDRAULIC SYSTEM PERFORMANCE IS AFFECTED WHEN THE TEMPERATURE DROPS BELOW 50 F. THEREFORE MEASURES SHOULD BE TAKEN TO PRE-WARM TOOLS AND FLUIDS BEFORE OPERATING.

REVIEW OF HYDRAULIC PRINCIPLES

A. TOOL CIRCUIT

1. HYDRAULIC FORMULAS:

$$\text{GPM} = \frac{\text{CID} \times \text{RPM}}{231} \qquad \text{HP} = \frac{\text{GPM} \times \text{PSI}}{1714 (.85)}$$

1456.9

Example: HP required to deliver 10 GPM at 1500 PSI.

$$\frac{10 \text{ GPM} \times 1500 \text{ PSI}}{1456.9} = \frac{15000}{1456.9} = 10.3 \text{ HP}$$

(subtract back pressure for tool HP)

Estimated HP delivered by pump or used by tool.

	PSI					
GPM	500	1,000	1,500	2,000	2,500	3,000
3	1.03	2.06	3.09	4.12	5.15	6.18
5	1.72	3.43	5.15	6.86	8.58	10.30
10	3.43	6.86	10.3	13.70	17.20	20.60
15	5.15	10.30	15.40	20.60	25.70	30.90

2. BACK PRESSURE

BACK PRESSURE MEASURED AT THE TOOL RETURN PORT MUST NOT EXCEED THE MANUFACTURERS BACK PRESSURE RATING. MOST MANUFACTURERS LIST THE MAXIMUM BACK PRESSURE FOR THEIR HYDRAULIC TOOLS AT 250 PSI. BACK PRESSURE MEASURED ON THE RETURN SIDE OF THE TOOL IS THE FORCE REQUIRED TO GET THE OIL BACK TO THE TANK. IN ALMOST ALL CASES THE LOWER THE BACK PRESSURE THE BETTER THE TOOL PERFORMANCE. FIRST, THE BACK PRESSURE IS SUBTRACTED FROM THE MAXIMUM TOOL PRESSURE TO ARRIVE AT A MAXIMUM TOOL OPERATING PRESSURE. FOR EXAMPLE, TOOLS WITH 2000 PSI OPERATING PRESSURE ARE INSTALLED ON A SYSTEM WITH 250 PSI BACK PRESSURE. THIS LEAVES 1750 PSI AS A MAXIMUM TOOL PRESSURE. IMAGINE A SYSTEM WITH 500 PSI BACK PRESSURE. 2000 MINUS 500 PSI BACK PRESSURE LEAVES ONLY 1500 PSI FOR THE TOOL. SECOND, TOOLS ARE DESIGNED FOR PRESSURE TO BUILD ON THE PRESSURE SIDE OF THE TOOL. IF TOO MUCH PRESSURE BUILDS ON THE RETURN SIDE, NOT ONLY IS PERFORMANCE EFFECTED, BUT SEALS MAY BLOW. THIS IS WHY IT IS VERY IMPORTANT TO DIRECT THE FLOW INTO THE TOOL CORRECTLY. REVERSING THE HOSES TO TEST MAY RESULT IN BLOWN SEALS, DAMAGE TO THE TOOL, AND PERSONAL INJURY.

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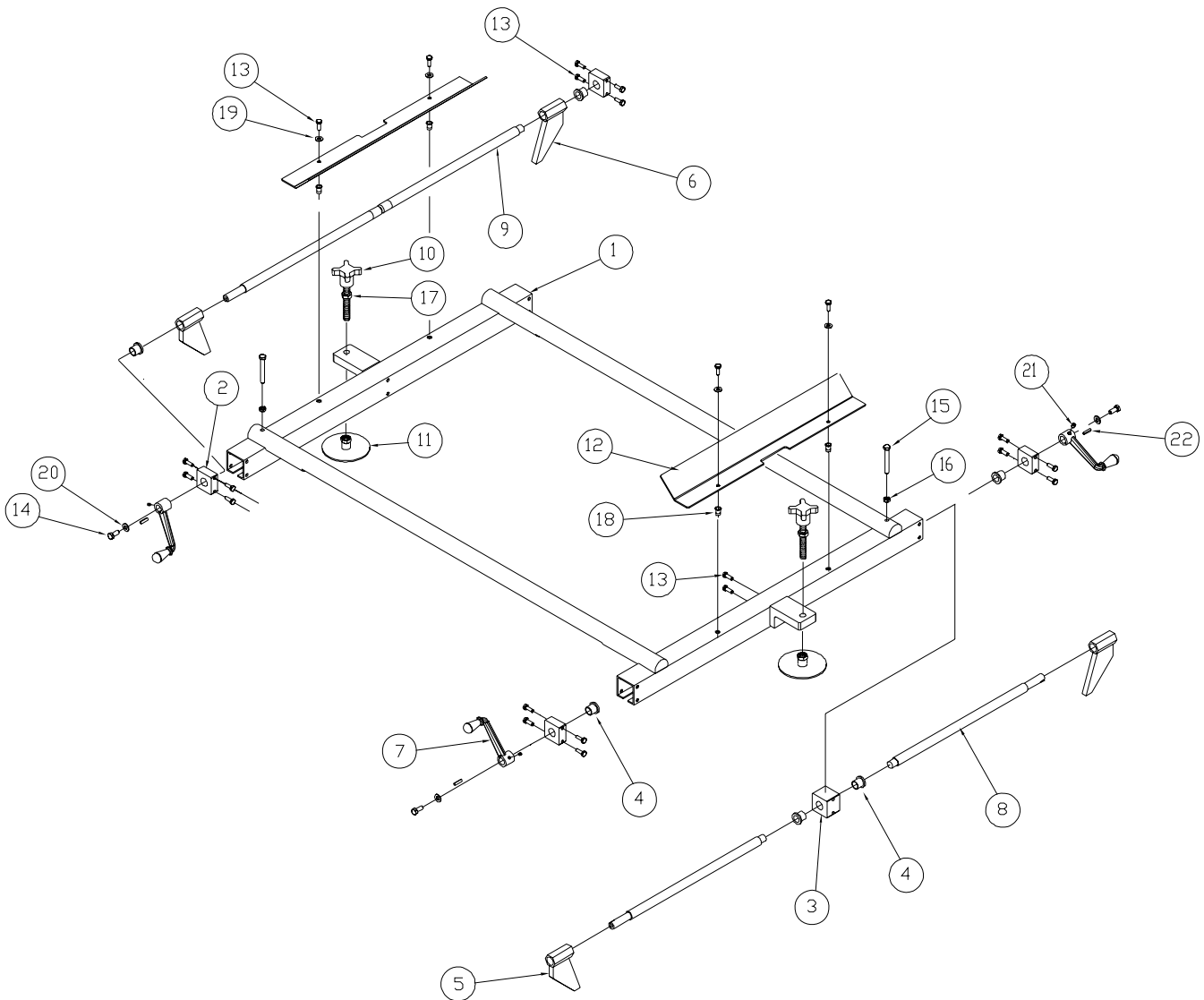
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BASE FRAME ASSEMBLY

09200
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PRODUCED PRIOR TO 08/29/07



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ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	09201	BASE FRAME ASSEMBLY	1
2	09202	STRUT BEARING CAP	4
3	09203	BEARING BLOCK-FEED ROD	1
4	09204	FLANGE BEARING 3/4 x 5/8	6
5	09205	RAIL CLAMP LH	3
6	09206	RAIL CLAMP RH	1
7	09207	CLAMP/FEED HANDLE	3
8	09208	FEED ROD LH	2
9	09210	FEED ROD DUAL	1
10	09211	BASE ADJUSTMENT KNOB	2
11	09212	SWIVEL BASE	2
12	09235	FLAP GUARD	2
13	A1001	1/4-20 x 3/4 HEX HEAD BOLT	22
14	A1021	5/16-18 x 3/4 HEX HEAD BOLT	3
15	A1028	5/16-18 x 2 1/2 HEX HEAD BOLT	2
16	A1452	5/16-18 JAM NUT ZP	2
17	A1458	1/2 -13 JAM NUT ZP	2
18	A2062	1/4-20 NUT INSERT	4
19	A2190	1/4 SAE FLAT WASHER	4
20	A2191	5/16 SAE FLAT WASHER	3
21	A5590	10-24 x 1/4 SET SCREW	3
22	00804-01	DRIVE SHAFT KEY	3

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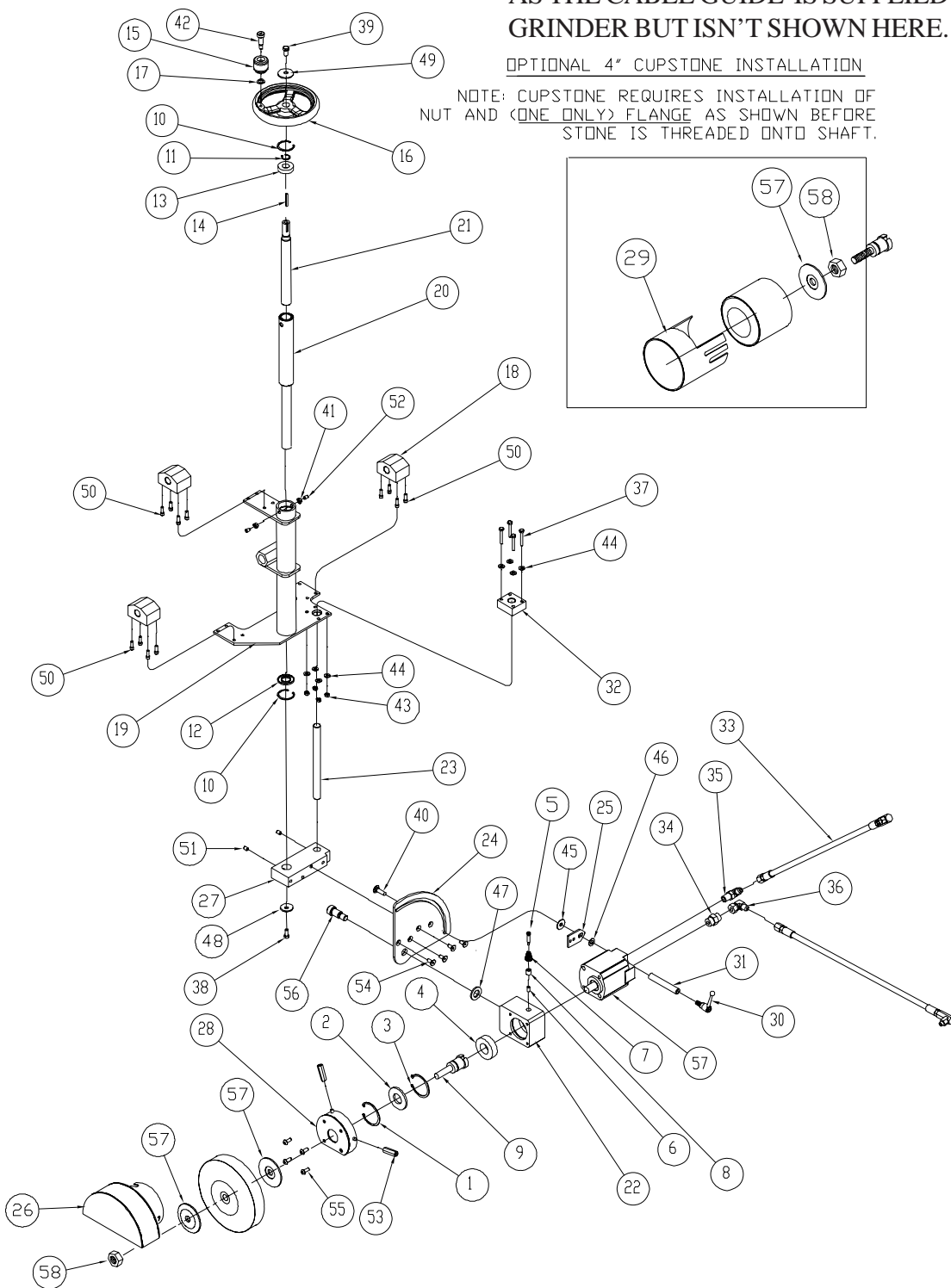
GRINDER HEAD ASSEMBLY

09200 PRECISION FROG GRINDER PRODUCED PRIOR TO 08/29/07

PART #09275 (CHAIN REEL) THAT IS USED AS THE CABLE GUIDE IS SUPPLIED WITH GRINDER BUT ISN'T SHOWN HERE.

OPTIONAL 4" CUPSTONE INSTALLATION

NOTE: CUPSTONE REQUIRES INSTALLATION OF NUT AND (ONE ONLY) FLANGE AS SHOWN BEFORE STONE IS THREADED ONTO SHAFT.



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ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	00403	INTERNAL RETAINING RING	1
2	00404	SEAL	1
3	00405	EXTERNAL RET. RING	1
4	00406	DRIVE SHAFT BEARING	1
5	00410B	TOP PORT MOTOR	1
6	00412	LOCKING PIN	1
7	00413	SPRING	1
8	00415	PLUG	1
9	00502	DRIVE SHAFT CCW	1
10	00705	1 5/8 INT. RET. RING	2
11	00706HD	3/4 EXT. RET. RING HD	1
12	00710	HEIGHT ADJ. TUBE SEAL	1
13	00713	HEIGHT ADJ. BEARING	1
14	00806-01	MOTOR SHAFT KEY	1
15	03930A	CRANK HANDLE KNOB	1
16	05919	HAND WHEEL	1
17	05940	1/2 WAVE WASHER	1
18	09218	SLIDE BEARING	3
19	09220	HEIGHT ADJUSTMENT ASSEMBLY	1
20	09221	HEIGHT ADJUSTMENT SHAFT	1
21	09222	HEIGHT ADJUSTMENT SCREW	1
22	09223	BEARING HOUSING	1
23	09224	SUPPORT SHAFT	1
24	09225	ANGLE ADJUSTMENT ASSEMBLY	1
25	09226	ANGLE LOCK PLATE	1
26	09228	8" STONE GUARD ASSEMBLY	1
27	09229	SUPPORT BLOCK	1
28	09230	GUARD MOUNT	1
29	09231	4" CUPSTONE GUARD	1
30	09232	ADJUSTABLE HANDLE	1
31	09232-01	LOCK KNOB SHAFT	1
32	09237	SUPPORT SHAFT BLOCK	1
33	09238	PRESSURE/RETURN HOSE	2
34	315-08-10	1/2 T x #10 MALE CONN.	1
35	515-08-10	1/2 T x 10 STR. THRD. 90	1
36	6500-08-08	#8 MJIC x #8 FJIC SWIVEL	1
37	A1005	1/4-20 x 1 3/4 HEX HEAD BOLT	4
38	A1021	5/16-18 x 3/4 HEX HEAD BOLT	1
39	A1041	3/8-16 x 3/4 HEX HEAD BOLT	1
40	A1043 - CARRIAGE	3/8-16 x 1 1/4 CARRIAGE BOLT	1
41	A1452	5/16-18 JAM NUT ZP	2
42	A1481	DIA. 1/2 x 1 SHOULDER BOLT	1
43	A2046	1/4-20 NYLOCK NUT	4
44	A2190	1/4 SAE FLAT WASHER	8
45	A2192-N	3/8 NYLON WASHER	1
46	A2192-T	3/8 TOOLING WASHER	1
47	A2200	3/4 x 1 1/4 WASHER	1
48	03858	5/16 x 1 1/4 FENDER WASHER	1
49	A3860	3/8 x 1 1/4 FENDER WASHER	1
50	A5434	1/4-20 x 3/4 SHCS	12
51	A5620	5/16-18 x 1/2 SET SCREW	2
52	A5624	5/16-18 x 1/2 SET SCREW - N	2
53	A5751	5/16-18 x 1 3/4 COUPLING NUT	2
54	A6311	5/16 x 3/4 FLAT HEAD BOLT	4
55	A6358	5/16-18 x 3/4 BHCS	4
56	A6960	DIA. 3/4 x 1 SHOULDER BOLT	1
57	00402	STONE FLANGE	2
58	A1436	5/8-11 HVY HEX NUT	1

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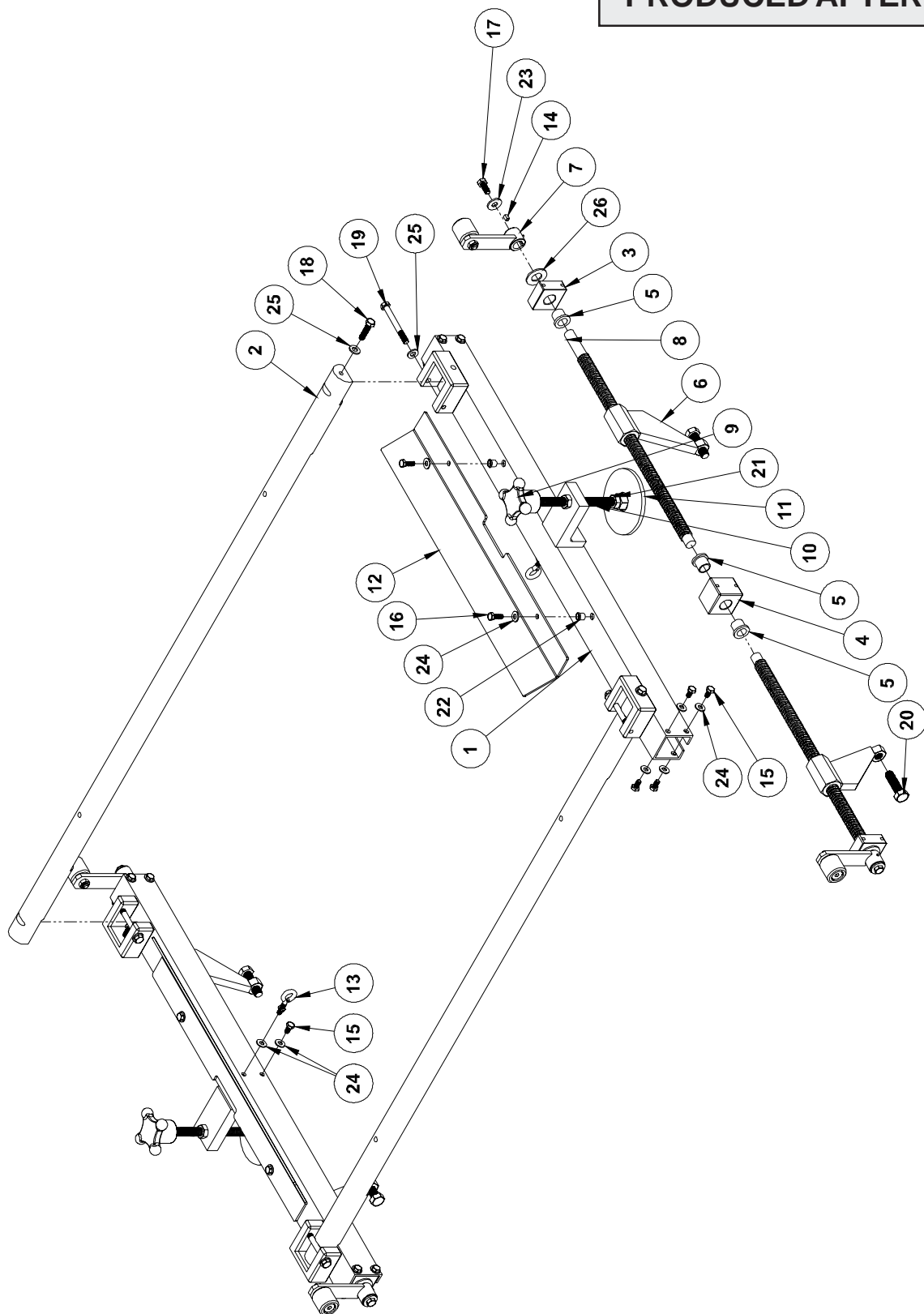
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BASE FRAME ASSEMBLY

09200A
PRECISION FROG GRINDER
PRODUCED AFTER 08/29/07



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1	09201A	BASE STRUT WELDMENT	2
2	09201-01A	BASE FRAME RAIL	2
3	09202	STRUT BEARING CAP	4
4	09203	BEARING BLOCK FEED ROD	2
5	09204	FLANGE BEARING	8
6	09205	RAIL CLAMP LH	4
7	09207	FEED HANDLE	4
8	09208	FEED ROD LH	4
9	09211-01	BASE ADJUSTMENT KNOB	2
10	09211-02	HEIGHT ADJUSTMENT SCREW	2
11	09212	BASE SUPPORT PAD	2
12	09235	FLAP GUARD	2
13	09255	1/4-20 EYEBOLT	2
14	00804-01	KEY	4
15	A1000	1/4-20 x 1/2 HEX HEAD BOLT	18
16	A1001	1/4-20 x 3/4 HEX HEAD BOLT	4
17	A1021	5/16-18 x 3/4 HEX HEAD BOLT	4
18	A1023	5/16-18 x 1 1/4 HEX HEAD BOLT	4
19	A1030	5/16-18 x 3 HEX HEAD BOLT	4
20	A1084	1/2-13 x 1 3/4 HEX HEAD BOLT	4
21	A1458	1/2-13 HEX JAM NUT	4
22	A2062	1/4-20 NUT CERT	4
23	A2162	5/16 USS FLAT WASHER	4
24	A2190	1/4 SAE FLAT WASHER	24
25	A2191	5/16 SAE FLAT WASHER	8
26	A2196	5/8 SAE FLAT WASHER	4

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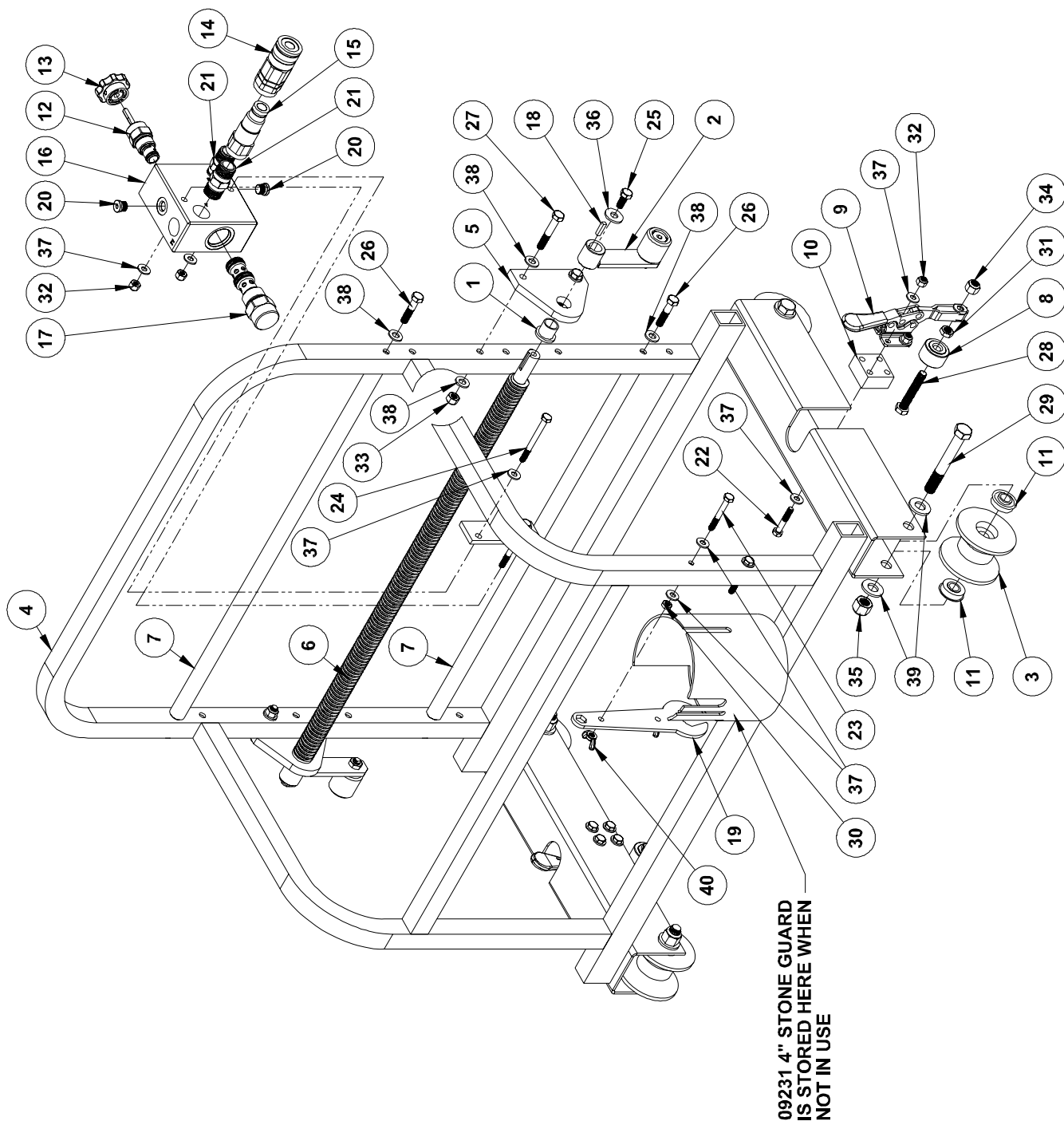
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	09204	FLANGE BEARING	2
2	09207	FEED HANDLE	2
3	09213	FLANGED ROLLER WHEEL	4
4	09214	GRINDER FRAME	1
5	09215	FEED ROD SUPPORT BRACKET	2
6	09216	CROSS FEED ROD	1
7	09217	SLIDE ROD	2
8	09219	GUIDE WHEEL	2
9	09234	TOGGLE CLAMP	2
10	09236	SPACER BLOCK	2
11	00109	RAIL WHEEL BEARING	8
12	00137	CONTROL VALVE w/KNOB	1
13	00138A	REPLACEMENT KNOB ONLY	1
14	00145	FEMALE QUICK DISCONNECT	1
15	00146	MALE QUICK DISCONNECT	1
16	00795	FLOW CONTROL MANIFOLD	1
17	00796	FLOW REGULATOR VALVE	1
18	00806-01	3/16 SQ. KEY	2
19	06910	OPEN END WRENCH	1
20	231P-04	-04 O-RING PLUG	2
21	69-08-08	1/2 NPT x 1/2 NPT HEX NIPPLE	2
22	A1004	1/4-20 x 1 HEX HEAD BOLT	8
23	A1006	1/4-20 x 2 HEX HEAD BOLT	2
24	A1009	1/4-20 x 2 3/4 HEX HEAD BOLT	2
25	A1021	5/16-18 x 3/4 HEX HEAD BOLT	2
26	A1024	5/16-18 x 1 1/2 HEX HEAD BOLT	4
27	A1026	5/16-18 X 2 HEX HEAD BOLT	4
28	A1047-FULL	3/8-16 x 2 1/4 FULL THREAD HEX HEAD BOLT	2
29	A1092	1/2-13 x 3 3/4 HEX HEAD BOLT	4
30	A1450	1/4-20 HEX JAM NUT	2
31	A1454	3/8-16 HEX JAM NUT	2
32	A2046	1/4-20 NYLOCK NUT	10
33	A2048	5/16-18 NYLOCK NUT	4
34	A2050	3/8-16 NYLOCK NUT	2
35	A2054	1/2-13 NYLOCK NUT	4
36	A2162	5/16 USS FLAT WASHER	2
37	A2190	1/4 SAE FLAT WASHER	24
38	A2191	5/16 SAE FLAT WASHER	12
39	A2194	1/2 SAE FLAT WASHER	8
40	A2499	1/4-20 WING NUT	2

NOTE:

PART 09231 & 06910 ARE NOT SHOWN FOR CLARITY.
SEE PAGE 22 FOR INSTALLATION INSTRUCTIONS.

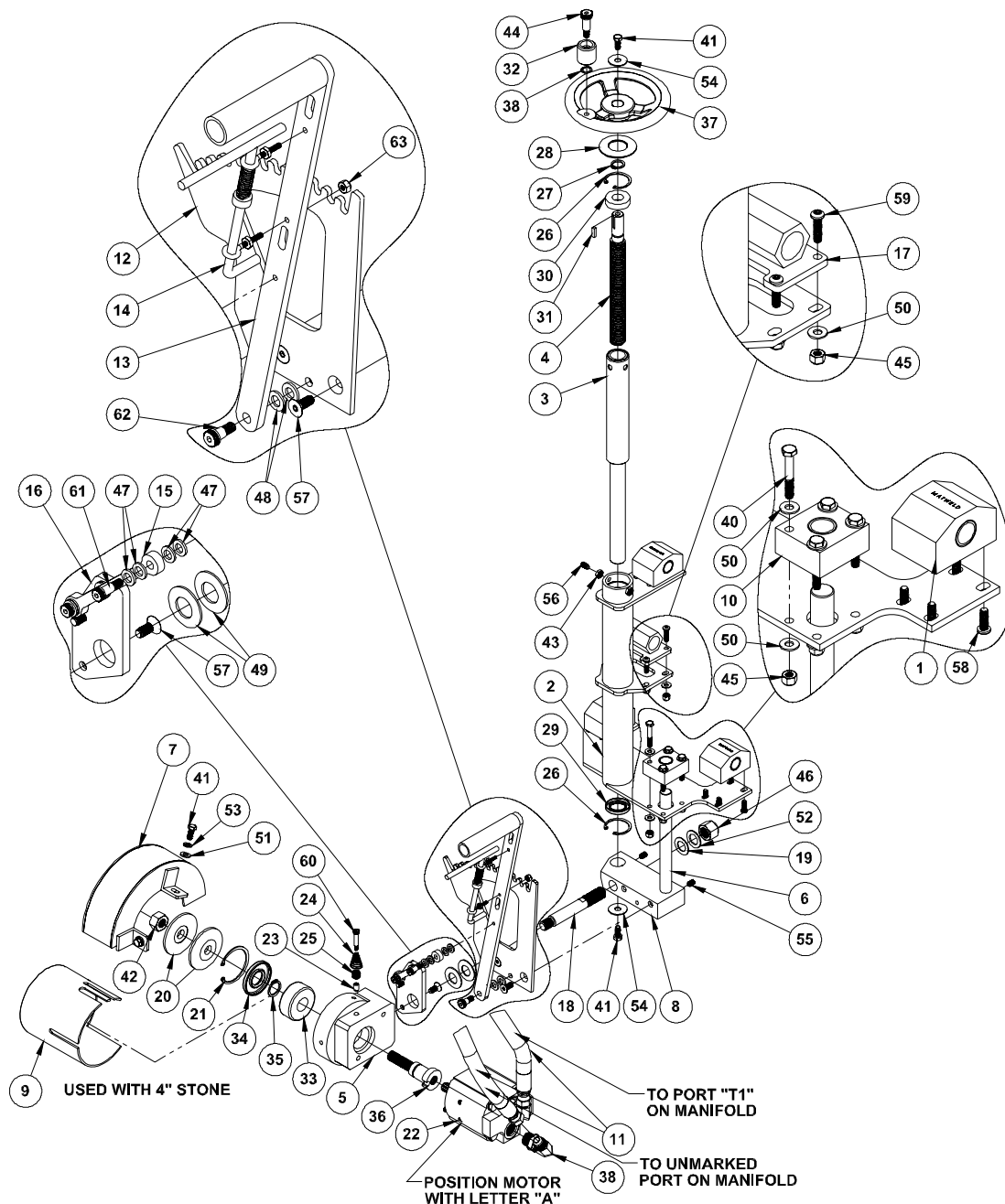
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09200A GRINDER HEAD ASSEMBLY

09200A PRECISION FROG GRINDER PRODUCED AFTER 08/29/07

PART #09275 (CHAIN REEL) THAT IS USED AS THE CABLE GUIDE IS SUPPLIED WITH GRINDER BUT ISN'T SHOWN HERE.



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ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	09218	SLIDE BEARING BLOCK	3
2	09220	HEIGHT ADJUSTMENT ASSEMBLY	1
3	09221	HEIGHT ADJUSTMENT SHAFT	1
4	09222	HEIGHT ADJUSTMENT SCREW	1
5	09223A	MOTOR BEARING BLOCK	1
6	09224	SUPPORT SHAFT	1
7	09228A	8" STONE GUARD	1
8	09229A	GUIDE SUPPORT BLOCK	1
9	09231	4" STONE GUARD	1
10	09237	SUPPORT SHAFT BLOCK	1
11	09238	PRESSURE/RETURN HOSES	1
12	09245	ANGLE ADJUSTMENT PLATE	1
13	09246	ANGLE ADJUSTMENT HANDLE	1
14	09247	LATCH ASSEMBLY	1
15	09250	ANGLE LINK	1
16	09251	ANGLE LINK PLATE	1
17	09256	FEED ROD ADJUSTMENT PLATE	1
18	09260	PIVOT BOLT	1
19	09262	BRONZE WASHER	1
20	00402	FLANGE	2
21	00403	INTERNAL RETAINING RING	1
22	00410B	TOP PORT MOTOR	1
23	00412	LOCKING PIN	1
24	00413	SPRING	1
25	00415	PLUG	1
26	00705	1 5/8 INTERNAL RETAINING RING	2
27	00706HD	3/4 HD EXTERNAL RETAINING RING	1
28	00709	SEALING WASHER	1
29	00710	OIL SEAL	1
30	00713	HEIGHT ADJUSTMENT BEARING	1
31	00806-01	3/16 SQ. KEY	1
32	03930A	DISCONNECT CRANK HANDLE KNOB	1
33	046003	DRIVE SHAFT BEARING	1
34	046004	OIL SEAL	1
35	046005	EXTERNAL RETAINING RING	1
36	047001	CCW DRIVE SHAFT	1
37	05919	HAND WHEEL	1
38	05940	1/2 WAVE WASHER	1
38	515-08-10	-08 JIC x -10 O-RING 90 ELBOW	2
40	A1005	1/4-20 x 1 3/4 HEX HEAD BOLT	4
41	A1021	5/16-18 x 3/4 HEX HEAD BOLT	4
42	A1436	5/8-11 HEAVY HEX NUT	1
43	A1452	5/16-18 HEX JAM NUT	2
44	A1481	DIA. 1/2 x 1 SHOULDER BOLT	1
45	A2046	1/4-20 NYLOCK NUT	8
46	A2061	3/4-16 NYLOCK NUT	1
47	A2101	5/16 BELLVILLE WASHER	8
48	A2102	3/8 BELLVILLE WASHER	2
49	A2106	3/4 BELLVILLE WASHER	2
50	A2190	1/4 SAE FLAT WASHER	12
51	A2191	5/16 SAE FLAT WASHER	2
52	A2200	14 GA. FLAT WASHER	1
53	A3810	5/16 LOCK WASHER	2
54	A3858	5/16 x 1 1/4 FENDER WASHER	2
55	A5620	5/16-18 x 1/2 SET SCREW	2
56	A5624	5/16-18 x 1/2 NYLON TIP SET SCREW	2
57	A6311	5/16-18 x 3/4 FLAT HEAD BOLT	4
58	A6350	1/4-20 x 3/4 BHCS	12
59	A6351	1/4-20 x 1 BHCS	4
60	A6910	DIA. 1/4 x 1 SHOULDER BOLT	1
61	A6916	DIA. 5/16 x 1/2 SHOULDER BOLT	2
62	A6926	DIA. 3/8 x 3/8 SHOULDER BOLT	1
63	A6699	#10-24 NYLOCK NUT	2

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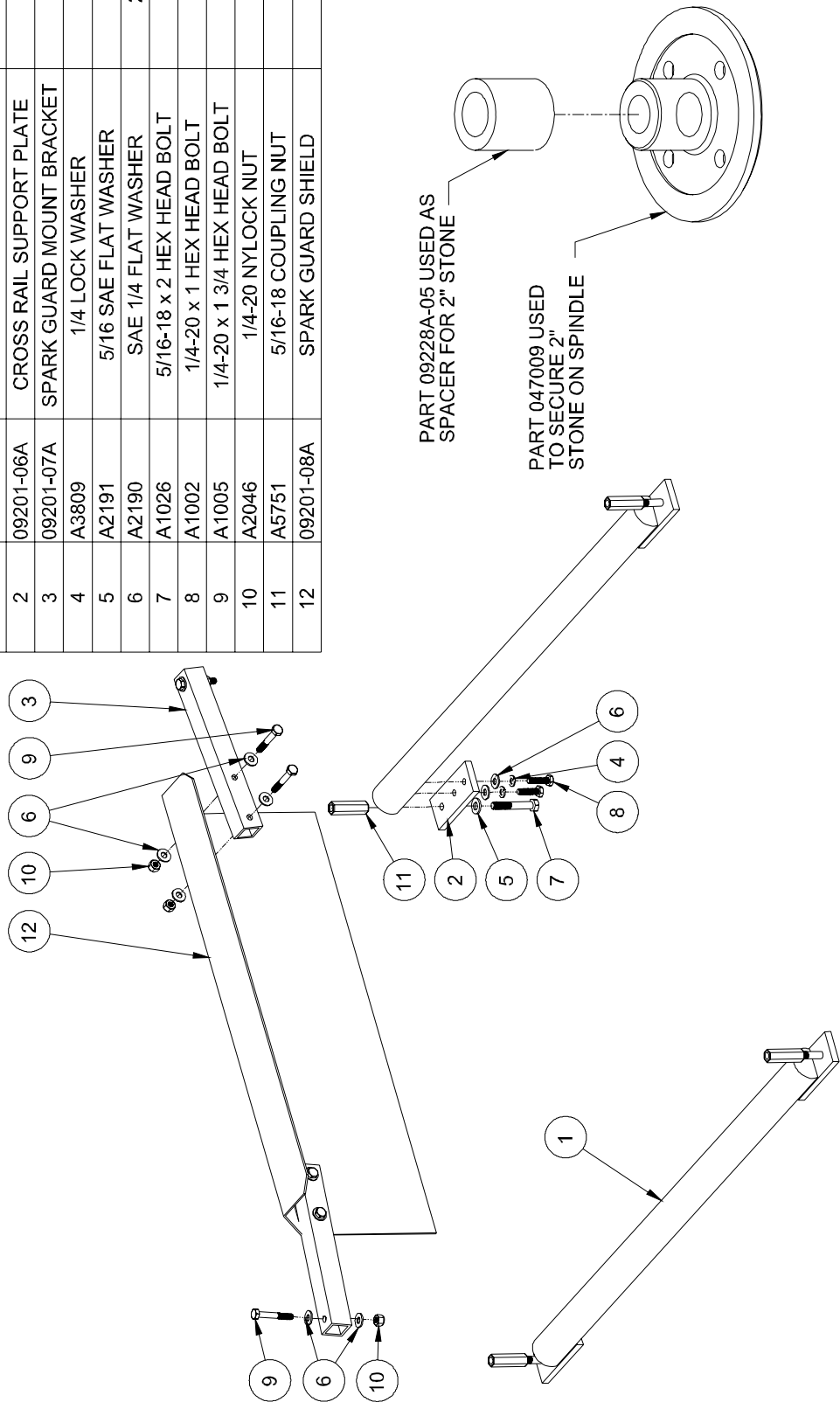
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09295 - 2' RAIL KIT

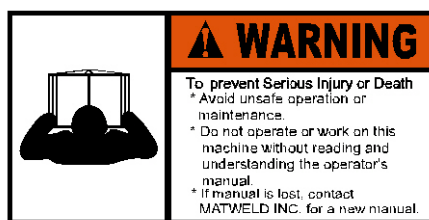
ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY
1	09201-05A	BASE FRAME CROSS RAIL	2
2	09201-06A	CROSS RAIL SUPPORT PLATE	4
3	09201-07A	SPARK GUARD MOUNT BRACKET	2
4	A3809	1/4 LOCK WASHER	8
5	A2191	5/16 SAE FLAT WASHER	4
6	A2190	SAE 1/4 FLAT WASHER	20
7	A1026	5/16-18 x 2 HEX HEAD BOLT	4
8	A1002	1/4-20 x 1 HEX HEAD BOLT	8
9	A1005	1/4-20 x 1 3/4 HEX HEAD BOLT	6
10	A2046	1/4-20 NYLOCK NUT	6
11	A5751	5/16-18 COUPLING NUT	4
12	09201-08A	SPARK GUARD SHIELD	1



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09200A PRECISION FROG GRINDER

DECAL LEGEND



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PANDROL, NAPOLEAN, OH., WARRANTS TO THE ORIGINAL PURCHASE OF THIS PRODUCT THAT THE PRODUCT WILL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR THE PERIOD OF ONE (1) YEAR AFTER THE DELIVERY OF SUCH PRODUCT TO THE CUSTOMER. OTHER EQUIPMENT AND PARTS USED, BUT NOT MANUFACTURED BY PANDROL ARE COVERED DIRECTLY BY THE WARRANTY OF THE MANUFACTURER OF THOSE PRODUCTS. PROOF OF PURCHASE MUST BE DOCUMENTED INCLUDING REFERENCE TO A SERIAL NUMBER LOCATED ON EACH TOOL. THE PURCHASER'S ONLY REMEDIES UNDER THIS LIMITED WARRANTY SHALL BE LIMITED AT PANDROL'S SOLE OPTION TO THE FOLLOWING: REPAIR, REPLACEMENT OR REFUND OF THE PURCHASE PRICE OF THE DEFECTIVE PRODUCTS. EACH OF THESE REMEDIES REQUIRES TIMELY NOTIFICATION OF THE DEFECT IN THE PRODUCT AND SUBSTANTIATION THAT THE PRODUCT HAS BEEN PROPERLY STORED, MAINTAINED AND USED. PANDROL'S OBLIGATIONS HEREUNDER EXTEND ONLY TO THE PURCHASER OF THE PRODUCT AND NOT TO ANY THIRD PARTY.

AS A CONDITION PRECEDENT TO PANDROL'S OBLIGATION HEREUNDER, THE DEFECTIVE PRODUCT MUST NOT HAVE BEEN ALTERED OR MODIFIED WITHOUT THE EXPRESS WRITTEN APPROVAL OF PANDROL THE PRODUCT MUST NOT HAVE BEEN SUBJECTED TO DELIBERATE DAMAGE, SHIPPING DAMAGE, NEGLIGENCE, TAMPERING BY UNAUTHORIZED PERSONNEL OR DAMAGE BY IMPROPER USE, STORAGE OR MAINTENANCE. SERIAL NUMBERS MUST NOT HAVE BEEN ALTERED, DEFACED OR REMOVED. SUCH ACTION VOIDS LIMITED WARRANTY.

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THIS LIMITED WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITED WARRANTY DOES NOT COVER NORMAL WEAR AND TEAR ITEMS SUCH AS FILTERS, HOSES, COUPLERS, BITS, SOCKETS, AUGERS, AND BATTERIES.

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09200A PRECISION FROG GRINDER
GENERAL NOTES:

CUSTOMER INFORMATION:

Name _____

Company _____

Serial # of your Pandrol tool _____

(Upon receiving your Pandrol tool, make sure to list serial number above so that a good record is kept for order information.)

PANDROL HYDRAULIC TOOL LIST

All Pandrol Hydraulic Tools operate at 5 or 10 GPM @ 2000 PSI

POWER UNITS:

00100K – GASOLINE POWERED 1-10 GPM OR 2-5 GPM

02900A – DIESEL 1-10 GPM OR 2-5 GPM

(OPTIONAL CATALYTIC EXHAUST AND/OR MSHA CERTIFIED)

05500 – TWIN POWER DUAL CIRCUIT 1-10 GPM OR 2-5 GPM & 5000 WATT GENERATOR

02050K – GASOLINE POWERED 1-5 GPM

03700A – ELECTRIC POWER 1-10 GPM OR 2-5 GPM

GRINDERS:

09200A – PRECISION FROG GRINDER

06000 – PROFILE GRINDER

06900 & 06900A – MULTI-PURPOSE GRINDER (TRIGGER VERSION AVAILABLE)

05900 – FROG/PROFILE GRINDER (TRIGGER VERSION AVAILABLE)

00700 – RAIL SURFACING GUIDE

04600 – STRAIGHT STONE CW ROTATION (TRIGGER VERSION AVAILABLE)

04700 – STRAIGHT STONE CCW ROTATION (TRIGGER VERSION AVAILABLE)

07500 – CHAMFER TOOL

04800 – CUP STONE GRINDER (TRIGGER VERSION AVAILABLE)

00600C – CUP STONE GRINDER

05400 – ANGLE GRINDER

05600 – BULL NOSE GRINDER

02400 – 10" OR 14" FROG AND SWITCH GRINDER

TRACK TOOLS:

03900A – REVERSING RAIL SAW

05100A & 05100B – POWER WELD SHEAR

03500 – SELF FEED RAIL DRILL

01600A – 5 GPM 1" IMPACT WRENCH

04500D – HYDRAULIC DRILL IMPACT WRENCH

08200 – TAMPER

02800 – 60 TON BRIDGE SPREADER

01200 – SPRING ANCHOR APPLICATOR

01100A – SPIKE PULLER (SINGLE, 2 STAGE & TRIGGER VERSIONS AVAILABLE)

00800A – 16" RAIL SAW

05000 – HAND PUMP WELD SHEAR

01500 – RAIL DRILL

02500 – 10 GPM 1" IMPACT WRENCH

03100C – RAIL PULLER

08300 – SPIKE DRIVER

07650 – HYDRAULIC CLIP TOOL

OTHER PRODUCTS:

HYDRAULIC MANIFOLDS

HYDRAULIC TEST GAUGES

HOSE REELS

HYDRAULIC HOSES

ACCESSORIES

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