

OPERATING AND MAINTENANCE MANUAL

FOR

**PBM-8000
3" TO 8" PIPE
BEVELING MACHINE**



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REV. 3-08

PBM-8000 PIPE BEVELING MACHINE

WARNING: Otto Tool, Inc. provides this manual and information in good faith and as a basic guide line to our customers. Otto Tool will do its best to insure that the information and procedures contained in this manual are correct and up-to-date. However Otto Tool can not guarantee that it is correct for all applications or situations. Furthermore, the contents of this manual are subject to change without notice. It is, therefore, the obligation of the user of this information and of Otto Tool's pipe beveling equipment to read all information in this manual, become familiar with the equipment to be used, and exercise the utmost care in equipment operation. Do not make any modifications to this equipment since this will void all warranty claims, as well as possibly increasing the risk of injury or harm. Also, do not operate this equipment if all parts are not functioning to 100% efficiency. Notify Otto Tool for any repair requirements immediately.

Notice: Otto Tool can supply all repair and replacement parts necessary to maintenance and operation of this machine. For repair, service or additional information, please contact the factory at 916-939-3400

PBM-8000 PIPE BEVELING MACHINE

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PBM-8000 PIPE BEVELING MACHINE

GENERAL DESCRIPTION

General Description: The model PBM-8000 is a right angled pipe (tube) end prep machining tool designed to facing, beveling, and squaring, boring or cutting end prep configurations for welding. These operations can be performed separately or in combination simultaneously. Current model used a pneumatically powered motor and an optional electric motor is available. This machine uses an internal expanding clamping mandrel with interchangeable jaw sets, which will accommodate internal diameters from 3" to 8" ID. Optional 2" - 3" mandrel available. Components, operation and maintenance are covered in detail in the follow.

Pipe weld end preparation that meets all existing conventional codes including the more stringent nuclear codes may be machine using the PBM-8000 beveling machines.

The various interchangeable Mandrel blades and Ramps inserted onto the mandrel will secure the Pipe Beveling machine to the pipe and tubing having an inside diameter ranging from 3" to 8.60".

The expanding Mandrel provides fast, accurate self-centering and alignment to the pipe or tubing to be machined. You do have to be careful to not align the mandrel blade on the bead on the inside of the pipe.

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SAFETY INSTRUCTIONS

WARNING:

Keep hands away from all moving parts. Do not attempt to remove metal chips from cutting area while machine is in operation or while air line is attached.

Air supply hose should be disconnected at all times except when tool is clamped in pipe/tubing and ready for use

Safety glass must be worn at all times while operating all machines, and include side shields.

Do not wear loose clothing or jewelry or anything that may be caught in rotating or move parts (If you have long hair, keep it restrained and away from the operation of the tool)

When doing any type of repair to machine, including change tool bits, making adjustment of any kind, you must disconnect air line from machine

Always stay alert! Use common sense and do not operate any type of power equipment when you are tired or fatigued

Do not operate a tool that is not in adequate operating condition. A tool that has worn, loose or missing parts, will not be safe to operate and could cause more damage to machine and cause personal accident.

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Be sure to remove all wrenches and allen key wrench that are in the cutting head before operation (Tools that were used to change or adjust cutting bits)

If possible use clamps, vise, chains and straps to secure pipe. It is always safer to have both hands free to operate the tool

WARNING: Operate tool only in accordance with specific operating instructions

MAINTENANCE

- 1) Read the operating instruction carefully before attempting to operate the PBM-8000 Beveling Machine
- 2) Be sure to clean all chips and grit from the clamping mandrel assembly between each use. This is especially important around the mandrel feed nut and threads. Dirt and grit can severely shorten the life of the tool.
- 3) Monitor the temperature of the beveler housing during operation. Any heat buildup that can be felt on the aluminum housing is usually an indication of a need for bearings lubrication or maintenance. Heat buildup should be handled immediately to insure proper life of the tool. Note: Heat buildup can also be the result of improperly set bearing clearances. If this problem exists, it is recommended that you contact the factory.
- 4) Inspect all visible thread areas for excessive wear. Parts that have threads that are showing wear need to be replaced before they damage the mating thread assemblies.

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- 5) Although the drive assembly is greased and lubricated for the life, it is recommended that each beveling machine drive assembly be cleaned, inspected and greased after approximately 600 hours of use. This will help maintain the gear backlash setting for wear and will help isolate seal or bearing problems. The inspection should be preformed by a qualified individual.

- 6) The air motor assembly needs periodic lubrication and cleaning. A light, high quality oil is recommended, in conjunction with an automatic oiling systems. A air caddie oiling systems must be used with all Otto Tool beveling machine to keep the air motor warranty in affect. If automatic oiling is not available, add a couple drops of oil to the air inlet at the end of each day. Do not put an excessive amount of oil in the air inlet or sludge will build up and cause problems.

- 7) It is very important that the mandrel clamping mechanism and components remain free of dirt and corrosion. All machined surfaces and the surfaces that come in contact with seals should be cleaned and inspected periodically. A light coat of oil can be put on all metal surfaces to protect from rusting.

- 8) After approximately 50 hours of operation on a new (or newly assembled) machine, the drive shaft end play should be checked for main bearing preload and gear backlash, in certain instances, this area may need adjusted as the new parts wear into (seat) their mating surfaces. This adjustment should be performed by a qualified individual or by the factory if a qualified individual is not available.

- 9) Do not drop, hit or otherwise abused your pipe beveling machine. This equipment is designed as a portable machining assembly, and as such, is not designed to withstand excessive abuse. Care for your equipment will increase your utilization, the life of the machine, and will minimize your repair cost.

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- 10) Remember that cutting tools in good condition perform better. Do not try to use dull tools bits or force feed the tool bits into the work piece. If excessive back pressure exists, if the tool bits seem to be tearing rather than cutting, or if the chips begin to turn blue or brown, replace your cutting tool bits.

OPERATING INSTRUCTIONS

- 1) Read the operating instruction carefully before attempting to operate the PBM-8000 Beveling Machine
- 2) Use eye protection at all times when operating any machinery.

SET UP CLAMPING MANDREL AND BLADE

- 1) Measure the inside diameter of the tube or pipe to be beveled. This measurement is important for correct sizing and selection of the clamping mandrel and components.
- 2) Select the proper clamping mandrel and set of clamping blades from the drawing or chart on clamping mandrel selection.

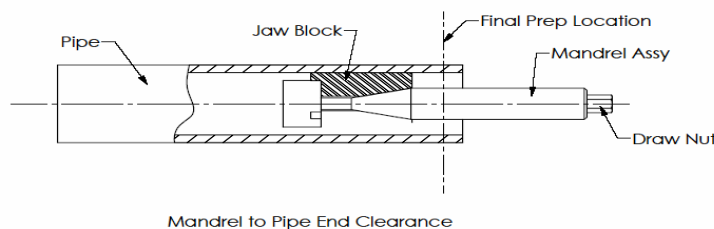
MANDREL BLADES PARTS LIST			
ITEM	QTY	PART/NUMBER	NAME / SIZES
1	3	PBM-6016A	PAD # 1 3.3" TO 3.9"
2	3	PBM-6016B	PAD # 2 3.8" TO 4.4"
3	3	PBM-6016C	PAD # 3 4.4" TO 5.0"
4	3	PBM-6016D	PAD # 4 5.0" TO 5.6"
5	3	PBM-6016E	PAD # 5 5.6" TO 6.2"
6	3	PBM-6016F	PAD # 6 6.2" TO 6.8"
7	3	PBM-6016G	PAD # 7 6.8" TO 7.4"
8	3	PBM-6016H	PAD # 8 7.4" TO 8.0"
9	3	PBM-6016I	PAD # 9 8.0" TO 8.6"

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- 3) Install the correct clamping blade set on the ID clamping mandrel, being sure all mandrel blades secure and seated properly.

SET UP PBM-8000 BEVELING MACHINE FOR USE

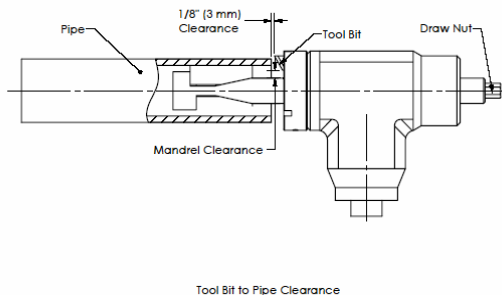
- 1) Cutter head must be secure and mandrel seal in the head must be in good condition to insure smooth operation and to prevent damage to beveler and / or mandrel assembly.
- 2) Before putting in the mandrel into beveling machine, make sure you have loosen the torque acceptance key adjustment screws on the beveling machine. So the mandrel will be able to aliens with 2 slots on the mandrel shaft.
- 3) Clean and gently install the selected clamping mandrel assembly into the cutter head end of the tool (front end), while keeping the mandrel keyway oriented 180 degrees from the air motor. Looking at the front end of the pipe beveling tool with the air motor pointing down (6 o'clock position), the keyway would be straight up (12 o'clock position). Check to make sure the mandrel blades are not on weld seam on inside of pipe. When on weld seam will cause misalignment



- 4) Gently apply inward pressure while turning the feed nut on the rear of the beveler. The clamping mandrel threads should engage and the clamping mandrel should be moving into the tool as the feed nut is turned. Continue turning the feed nut until the threads on the end of the mandrel begin to extend beyond the feed nut.

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- 5) **NOTE:** A minimum of 10 threads must be engaged to prevent thread stripping of the threads during the machining operation
- 6) After you have move the mandrel into the beveling machine, check the backlash on the mandrel and adjust the Torque Acceptance keys to take out the backlash as required. Make sure you do not over tight the adjustment screw, if they are to tight, you will not be able to move the mandrel while operating the machine.
- 7) Slide the clamping mandrel into the inside of the tube/pipe. Then gently tighten the mandrel clamping nut (draw rod nut) until the internal clamping mechanism begins to grip the work piece.
- 8) With the mandrel loose enough for the mandrel to slide along the inside of the tube/pipe, move the cutting head about 1/2" away from the end of the tube/pipe, and tighten the draw rod nut while gently working the tool back and forth so that the clamping blades seat evenly. It is very important to make sure the mandrel blades are not on the inside of the weld bead, this will cause misalignment

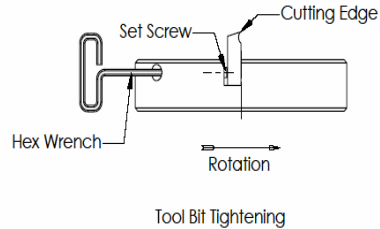
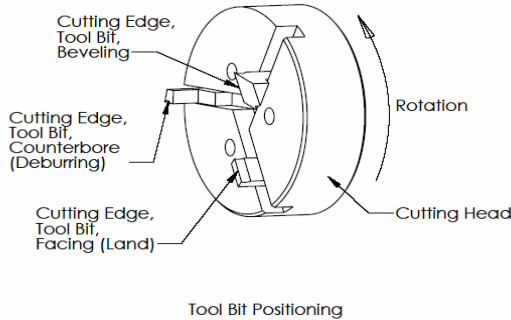


SELECTING AND SETTING CUTTING INSERTS

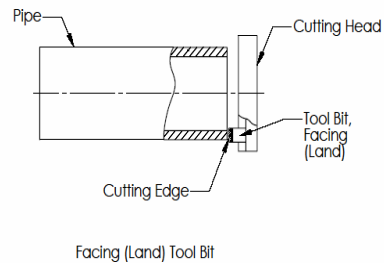
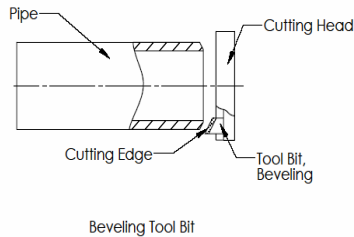
WARNING! Use of dull or improperly designed Tool Bits or Tool Bits not manufactured by OTTO TOOL, Inc may result in poor performance and may constitute abuse of this machine and therefore voids the Otto Tool factory warranty.

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- 1) Select the correct combination of cutting inserts and slip them into the cutter head. Be sure to place the cutting blades in a position where the blades will cover the entire area required. Make sure that when putting in the tool blades, the cutting edge is facing way from the set-screw. Only one bevel blade is required for cutting.



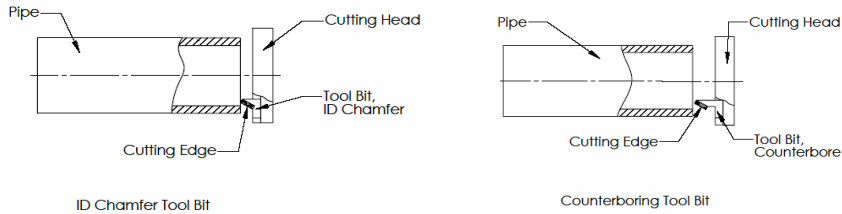
- 2) Depending on the required bevel configuration, the blades should be set in a set order. ID (inside diameter) cutting blades should be set first, facing or squaring blades next, and OD (outside diameter) or j-groove blades last. When each blade is in the correct position, secure the blade by tightening the cutting blade wedge clamp with the hex key wrench.



- 3) When a land is required on the end of the tube/pipe, use a facing blade in combination with the beveling blades. The width of the land can be controlled by adjusting the position of the beveling blade or by using a facing blade with a higher or lower overall height. It is recommended that the beveling blade be adjusted to regulate land width.

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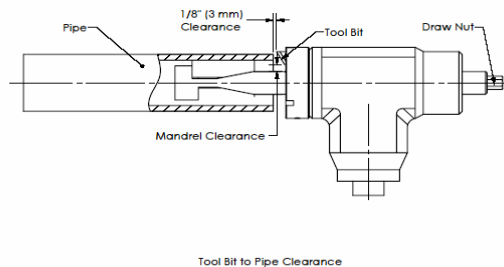
- 4) When a specific diameter for the ID bevel (inside diameter) is required, the ID cutting tool should be set and tested first to insure the correct sizing. In many instances, it may be beneficial to cut the ID portion of a bevel first.



- 5) On production jobs, it may also be beneficial to set and test the cutting blade settings on a test piece of pipe or tube.

STARTING & OPERATING THE PIPE BEVELING MACHINE

- 1) Slide the tool into a position where the cutting tool bits will just clear the end of the tube or pipe when the cutting blades are rotated, and securely clamp the tool in place. Be sure the tool is firmly clamped in the tube or PIPE (Tighten the draw rod nut while gently moving the tool back and forth until the tool no longer moves and the mandrel clamp is securely seated). The clamping mandrel must be tight to prevent slippage, but must not be over tightened.



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- 2) Connect the air supply hose to the air motor and jog the air motor throttle to insure that the cutters are not touching the tube or pipe.
- 3) Depress and hold the throttle on the air motor and feed the cutter head forward using the wrench on the feed nut wrench.
- 4) Continue feeding the beveling head into the work piece until you begin to get a smooth curly (ribbon) chip. You may wish to add a small amount of cutting oil to the pipe as the beveler is cutting the work piece.
- 5) Do not stop the air motor while the tool is cutting the work piece. When the desired bevel is present on the end of the tube or pipe, let the cutting head rotate a few turns without feeding the machine forward. As the chip diminishes, reverse the feeding motion and back the cutter head assembly away from the work piece.
- 6) Release the throttle on the air motor assembly and disconnect the air supply hose. Back off the feed mechanism until the threads on the mandrel shaft assembly are even with the end of the feed nut. Loosen the draw rod nut and gently rock the tool to loosen the clamping mandrel and remove the beveling machine from the work piece.

SPECIFICATIONS

- 1) Model TSM-8000 Beveling machine with Air Motor
- 2) Weight: 58lbs. Approx
- 3) Dimension: 21" wide w/air motor, 21" long w/ mandrel, 8" tall
- 4) Power requirements: 55 cfm at 90 psi.
- 5) Basic Pipe sizes: 3" Pipe / 8.6" ID. to 3" Pipe / 8" ID
- 6) Schedules 5 through 160 and wall thickness to 2"

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- 7) Counterboring operations: 3.6" to 8.6 ID
- 8) Material cutting capabilities: Mild Steels, chrome steels (35 Rc. Max), Stainless Steel, Copper-Nickel, Inconel, and Aluminum without limitations except size and wall thickness as specified above.

TOOL BITS

STANDARD TOOL BITS FOR PBM-8000		
PART#	TYPE	
TB-2904	Facing Bit	3" to 8" Dia
TB-2905	3-1/2 Degree Bevel Bit	3" to 6" Dia
TB-2906	3-1/2 Degree Extended Bevel Bit	5" to 8" Dia
TB-2930	30 Degree Bevel Bit	3" to 6" Dia
TB-2931	30 Degree Extended Bevel Bit	5" to 8" Dia
TB-2913	45 Degree Bevel Bit	3" to 6" Dia
TB-2914	45 Degree Extended Bevel Bit	5" to 8" Dia
TB-2915	J Bevel 25 Degree Bevel Bit	3" to 6" Dia
TB-2916	J Bevel Ext. 25 Degree Bevel Bit	5" to 8" Dia
TB-2907	C-Bore 14.5 Deg. Lower Range	3" to 5" Dia.
TB-2908	C-Bore 14.5 Deg. Middle Range	4.5" to 6.5" Dia.
TB-2909	C-Bore 14.5 Deg. Upper Range	6" to 8" Dia.
TB-2910	C-Bore 10 Deg. Lower Range	3" to 5" Dia.
TB-2911	C-Bore 10 Deg. Middle Range	4.5" to 6.5" Dia.
TB-2912	C-Bore 10 Deg. Upper Range	6" to 8" Dia.

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WARRANTY

EVERY OTTO TOOL IS THOROUGHLY INSPECTED AND TESTED BEFORE LEAVING OUR MANUFACTURING FACILITIES. ALL PRODUCTS MANUFACTURED BY OTTO TOOL COMPANY ARE WARRANTED TO THE ORIGINAL PURCHASER TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE, FOR A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE. THIS DOES NOT INCLUDE TOOL BITS OR OTHER CONSUMABLE ITEMS. SHOULD ANY TROUBLES DEVELOP, RETURN THE COMPLETE TOOL PREPAID TO OTTO TOOL OR THE NEAREST AUTHORIZED SERVICE CENTER. IF INSPECTION SHOWS THE TROUBLE IS CAUSED BY DEFECTIVE

WORKMANSHIP OR MATERIAL, OTTO TOOL AT ITS OPTION WILL REPAIR OR REPLACE WITHOUT CHARGE FOR EITHER PARTS OR LABOR. THE PRODUCT WILL BE RETURNED TO THE PURCHASER FREIGHT PREPAID AND BILLED TO THE PURCHASER.

THIS WARRANTY DOES NOT APPLY WHERE:

- A) REPAIRS OR ATTEMPTED REPAIRS HAVE BEEN MADE BY PERSONS OTHER THEN OTTO TOOL PERSONAL, OR AUTHORIZED SERVICE REPAIR PERSONAL.
- B) REPAIRS ARE REQUIRED BECAUSE OF NORMAL WEAR.
- C) THE TOOL HAS BEEN ABUSED OR INVOLVED IN AN ACCIDENT.
- D) MISUSE IS EVIDENT, SUCH AS CAUSED BY OVERLOADING THE TOOL BEYOND IT RATED CAPACITY.

PBM-8000 PARTS NUMBER BREAKDOWN

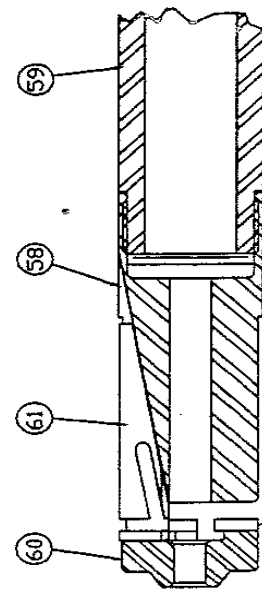
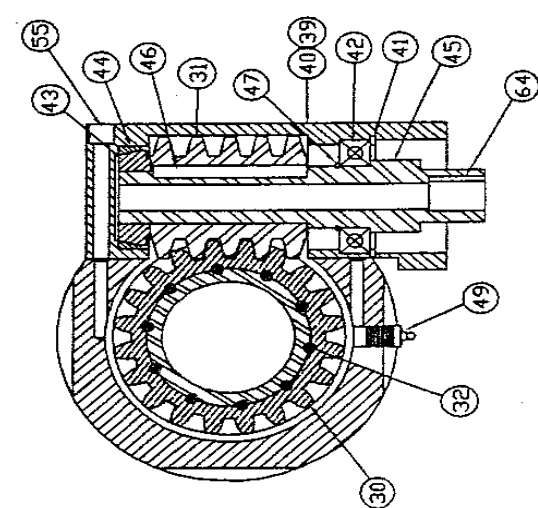
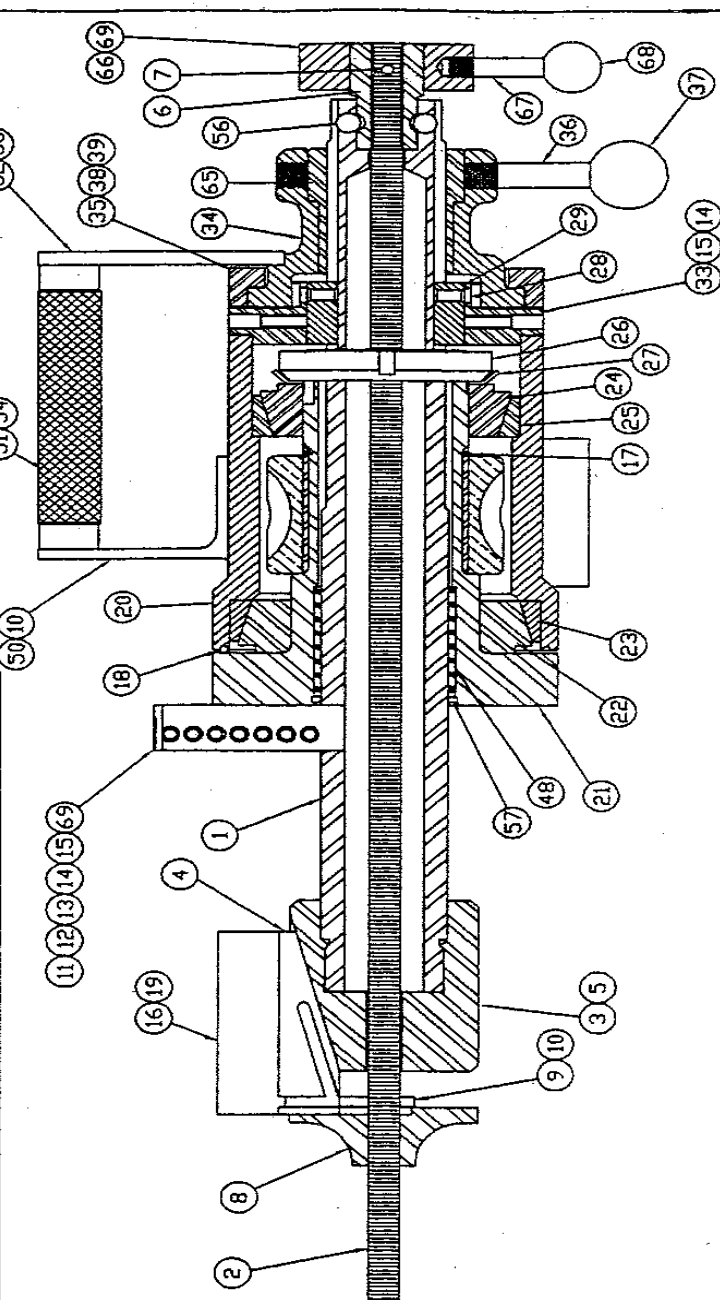
- E) THE TOOL HAS BEEN USED AFTER PARTIAL FAILURE,
OR THE TOOL HAS BEEN USED WITH AN IMPROPER
ACCESSORY.

- F) AIR MOTOR WILL NOT BE COVER IF DAMAGE IS
CAUSED BY NOT USING OILER/MISER WHILE USING.

**NO OTHER WARRANTY EITHER WRITTEN OR
VERBAL IS AUTHORIZED.**

QTY	PART #	PART DESCRIPTION
68	3	BALL
69	1	CS1420X34SET
70	3	PBM-60128

QTY	PART #	PART DESCRIPTION	
1	PBM6001	MANDREL SHAFT	
2	PBM6002	DRAW SCREW	
3	PBM6003	MANDREL HEAD	
4	PBM6004	HEAD RAMP	
5	PIN-3/16X3/4R	ROLL PIN 3/16" X .75	
6	PBM6006	DRAW NUT	
7	PIN-3/16X1R	ROLL PIN #3/16" X 1"	
8	PBM6008	RAMP RETAINER HEAD	
9	PBM6009	RAMP RETAINER PLATE	
10	CS1032X12BH	10-32 X 1/2" BHCS. ALLOY. BLACK OXIDE	
11	3	PBM6011	TOOL BLOCK #1 FOR 6" PIPE
12	3	PBM6012	TOOL BLOCK #2 FOR 8" PIPE
13	CS1420X114	1/4-20 X 1-1/4" SHCS	
14	6	PIN-1/4X1	Ø1/4" X 1" ALLOY DOWEL PIN
15	36	CS3816X12SET	SET SCREW 3/8-16 X 1/2"
16	PBM6016	CLAMP BLOCK	
17	PBM6017	RETAINING RING SMALLER WSM-262	
18	PBM6018	"O" RING 01-250	
19	3	CS174-20X3/4	SHCS 1/4-20 X 3/4"
20	PBM6020	MAIN HOUSING	
21	PBM6021	MAIN SHAFT	
22	PBM6022	FRONT BEARING CONE TIMKEN #27684	
23	PBM6023	FRONT BEARING CUP TIMKEN #27620	
24	PBM6024	REAR BEARING CONE TIMKEN #29590	
25	PBM6025	REAR BEARING CUP TIMKEN #29522	
26	PBM6026	LOCK NUT N-13	
27	PBM6027	LOCK WASHER #W113	
28	CS1420X12BH	BHCS 1/4-20 X 1/2"	
29	PBM6029	MANDREL KEY	
30	PBM6030	WORM GEAR	
31	PBM6031	WORM BOSTON #H143BRH ITEM # 12994	
32	10	PIN-3/16X1	DOWEL PIN #3/16" X 1"
33	PBM6033	MANDREL LOCK PLATE	
34	PBM6038	FEED NUT	
35	PBM6035	FEED NUT RETAINER PLATE	
36	PBM6036	FEED NUT STUD	
37	3	PBM6037	HANDLE, OR CARR IANE #CL-872-PB
38	6	CS51618X114	51618 X 114 SHCS
39	7	PIN14X1	DOWEL PIN Ø1/4" X 1"
40	PBM6040	WORM SHAFT HOUSING	
41	PBM6041	RETAINING RING TRUARC NS5000-0218	
42	PBM6042	BOTTOM BEARING SKF 6008 2RS1	
43	PBM6043	UPPER BEARING CONE TIMKEN #07100	
44	1	PBM6044	UPPER BEARING CUP TIMKEN #07196
45	PBM6045	WORM SHAFT	
46	60718	WORM KEY	
47	PBM6047	RETAINING RING TRUARC #S100-0118	
48	PBM6048	GAR-FIL BUSHING SFB104-032	
49	1	ZERX1178	GREASE FITTING 1/8 NPT
50	PBM6050	HANDLE BRACKET, FRONT	
51	PBM6051	HANDLE	
52	PBM6052	HANDLE BRACKET, REAR	
53	2	CS51618X114FH	5/16-18 X 1-1/4 FHSS
54	2	CS3816X1FH	3/8-16 X 1 FHSS
55	5	CS1420X234	1/4-20 X 2-3/4" SHCS
56	2	PIN-3/8X7/8R	ROLL PIN 3/8 X .875
57	1	HW-21	WIPPER SEAL
58	1	PBM-6060	HEAD 2" MANDREL
59	1	PBM-6061	SHAFT 2" MANDREL
60	1	PBM-6062	CAP 2" MANDREL
61	1	PBM-6063	RAMP 2" MANDREL
62	3	PBM-6064	RAMP RETAINER 2" MANDREL
63	6	CS832X75	SHCS 8-32 X .75"
64	1	60734	MOTOR SHAFT KEY
65	1	PBM-6038	FEED NUT INSERT
66	1	PBM-6056	DRAW NUT HANDLE
67	1	STUD381616134	STUD 3/8-16 X 1/2 X 1-3/4"



CONTRACT NO.		APPROVALS		DATE
DRAWN BY: BUCKENRODRE		CHECKED		5/8/98
ISSUED		SCALE: 8011		D
RELEASED		PBM-8000 ASSEMBLY		REV. D
SCALE: 8011		L\BEVELING PBM-8000\8001		SHEET 1 OF 1

OTTO TOOL

PBM-8000 ASSEMBLY