

REID



OPERATOR'S MANUAL
FOR

MODEL 618 HR

Bullard

WCI **White Consolidated**
Machine Tool Group

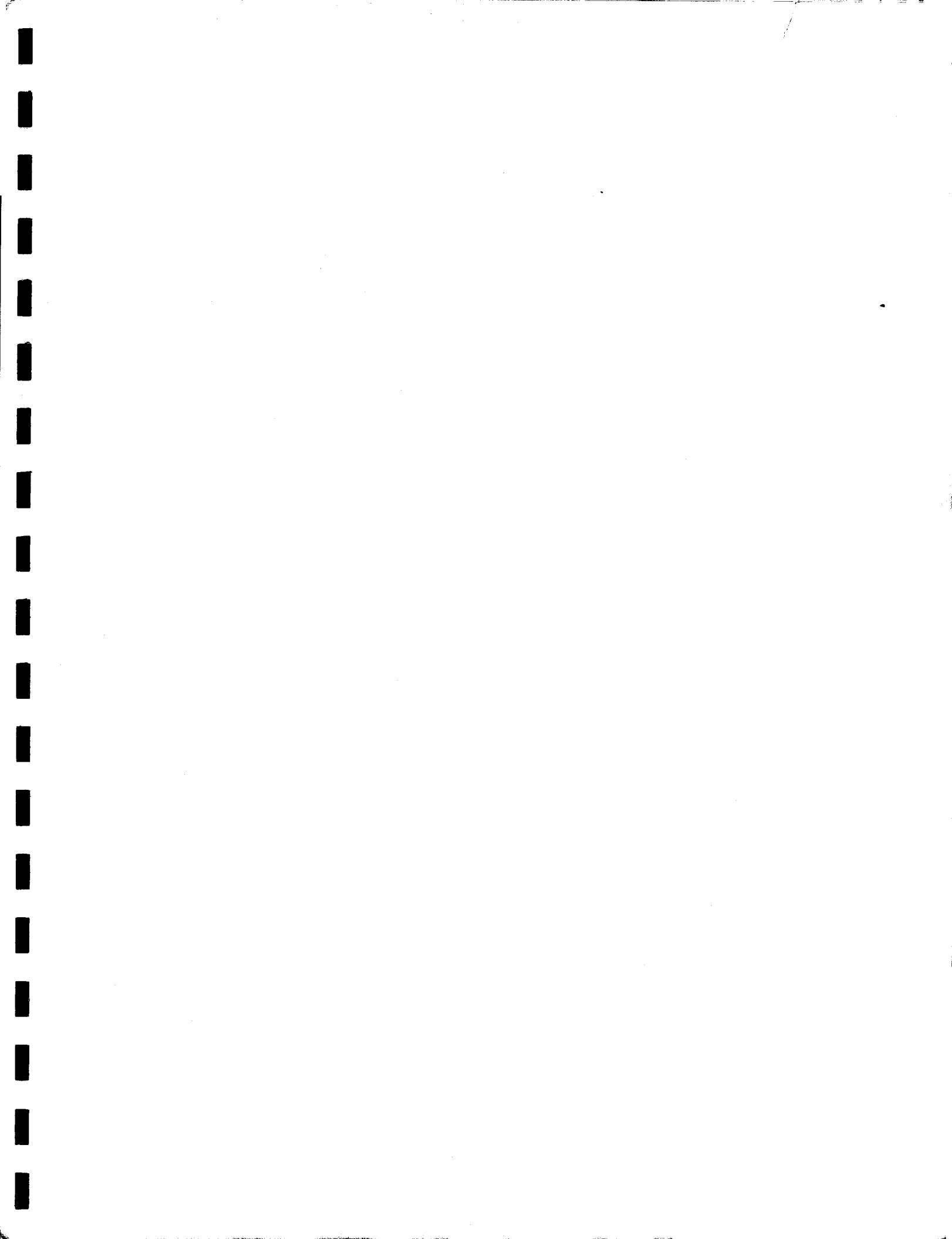
REID PRECISION SURFACE GRINDER



OPERATION & MAINTENANCE MANUAL

MODEL 618 HR

(EFFECTIVE S/N 21530)



MODEL 618 HR
OPERATION AND MAINTENANCE MANUAL

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SECTION I

SAFETY INSTRUCTIONS



CAUTION

DO NOT

OPERATE MACHINE WITHOUT GUARDS OR SAFETY DEVICES WHICH HAVE BEEN INSTALLED FOR THE PROTECTION OF PERSONNEL.

DO NOT

LOAD, UNLOAD, OPERATE, ADJUST OR SERVICE MACHINE WITHOUT PROPER INSTRUCTION.

DO NOT

MAKE REPAIRS UNLESS POWER IS DISCONNECTED AT MAIN LINE SWITCH.

NEVER

OPERATE MACHINE UNLESS CERTAIN THAT OTHERS ARE SAFELY CLEAR.



REID PRECISION SURFACE GRINDER
MODEL 618 HR
OPERATION AND MAINTENANCE MANUAL

1.0 INTRODUCTION

Your REID grinder has been designed and built to provide maximum operator safety. In order to realize the safest possible operation of the machine it must be installed, operated and maintained in accordance with the instructions and procedures detailed in this manual.

Despite "built in" safety features any machine tool is only as safe as the person operating it. Disregard of basic safety rules can subvert the protection provided by guarding and other safety features and result in SERIOUS INJURY to the operator and others nearby. In addition to reading the safety precautions in this manual, FIND and HEED all warning and caution signs attached to the machine.

As a supplement to this manual it is recommended that copies be obtained of the American National Standards Safety Code, (ANSI B.7.1) and Safety Code for the Use, Care and Protection of Abrasive Wheels, (ANSI B.7.1-1978).

In addition to the above mentioned points and publications the following list of safety rules is provided and must be adhered to.

1.1 GENERAL SAFETY RULES

1. Follow your company's safety regulations.
2. Maintain a clean uncluttered work area.
3. Wear safety glasses.

1.2 SAFETY IN INSTALLATION, MOVING AND REPAIR

1. Know the machine weight and designated lifting points, and lift only with equipment of proper capacity.
2. Keep hands and feet out from under a lifted machine.
3. A minimum of 26 inches clearance should be maintained between extreme table positions and any adjacent machines or structures.
4. Machine should be located so that all hinged doors can be fully opened and there is unobstructed access to all maintenance and repair points.
5. Ground machine electrically to prevent shock hazard should there be an electrical malfunction.

1.3 SAFETY RULES FOR OPERATION OF GRINDING MACHINES

1. NEVER operate machine without wearing safety glasses.
2. MAKE SURE that all guards are in position and fastened.
3. DO NOT wear clothing, jewelry or hair in such a manner that it may get caught in the machine.
4. DON'T leave tools or loose parts on table or cross slide.
5. DO NOT lean on or rest hands on any part of the machine.
6. BE SURE workpiece and chuck are securely held to the reciprocating table.
7. NEVER attempt to hand hold any workpiece.
8. NEVER touch a moving grinding wheel with your fingers.
9. DO NOT decelerate the wheel with your hand or any other object.
10. DO NOT adjust table reversing dog positions while table is in motion.
11. DO NOT exceed the machine's specified capacity.
12. Stop coolant flow before stopping wheel to avoid an out of balance condition upon re-starting.
13. Know wheel specifications and NEVER exceed the maximum speed specified for any given wheel.
14. CAREFULLY inspect the wheel, sleeve and flanges before mounting on machine.
15. Use only standard wheel dressers and proper procedure when dressing from the table.
16. Handle abrasive wheels with care and store in a rack specifically made for safe wheel storage.
17. Safe operation requires regular scheduled cleaning, inspection and maintenance.

SECTION II

INSTALLATION INSTRUCTIONS



I N S T A L L A T I O N

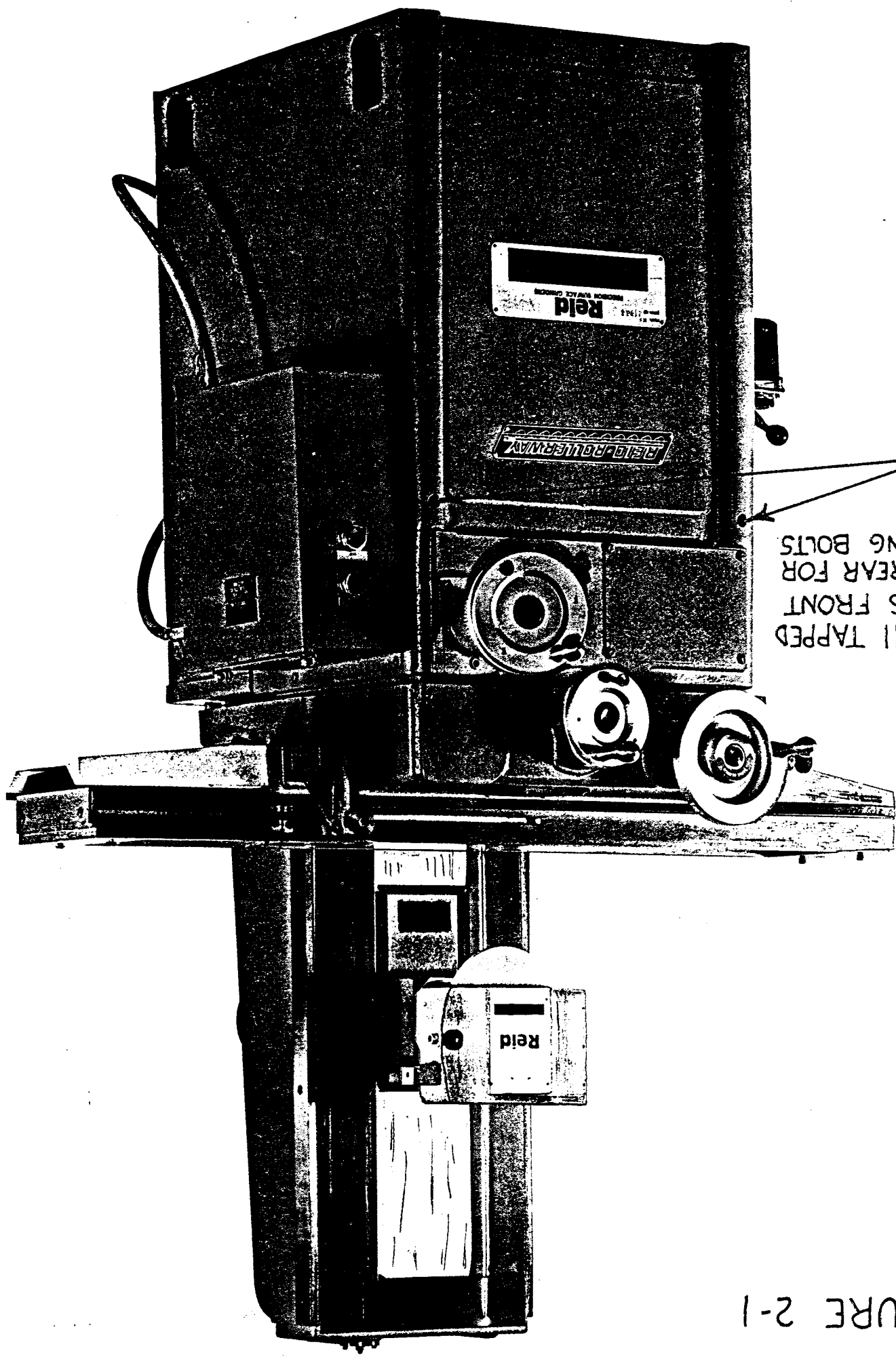
2.0 INTRODUCTION

Your Reid grinder was given a thorough inspection prior to shipment. All machine elements were correctly aligned and adjusted. After inspection, all critical components were properly blocked and a protective coating was applied to all finished surfaces. The machine was skidded, completely covered and then crated for shipment.

2.1 DESCRIPTION

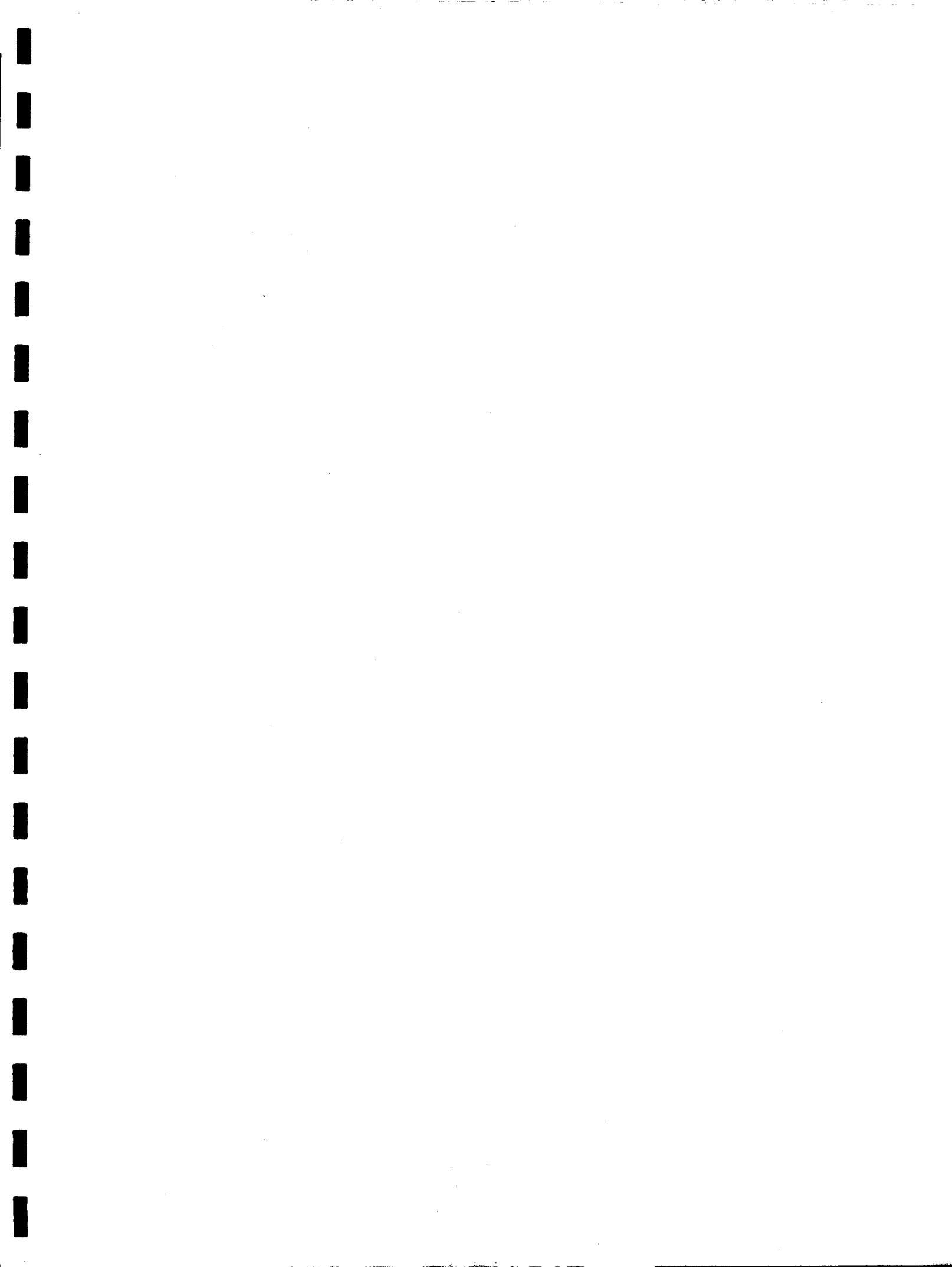
The 618 Reid grinder is a totally self contained unit except for the coolant tank which is a separate unit that can be conveniently located beside the machine base. The machine's weight is approximately 1525 lbs. and the proper lifting points and equipment are shown in Figure 2-1. Figure 2-2 is a plan view showing overall dimensions and arrangements of machine components.





5/8-11 TAPPED
HOLES FRONT
AND REAR FOR
LIFTING BOLTS

FIGURE 2-1



ITEM	REQD	MAT	DESCRIPTION
------	------	-----	-------------

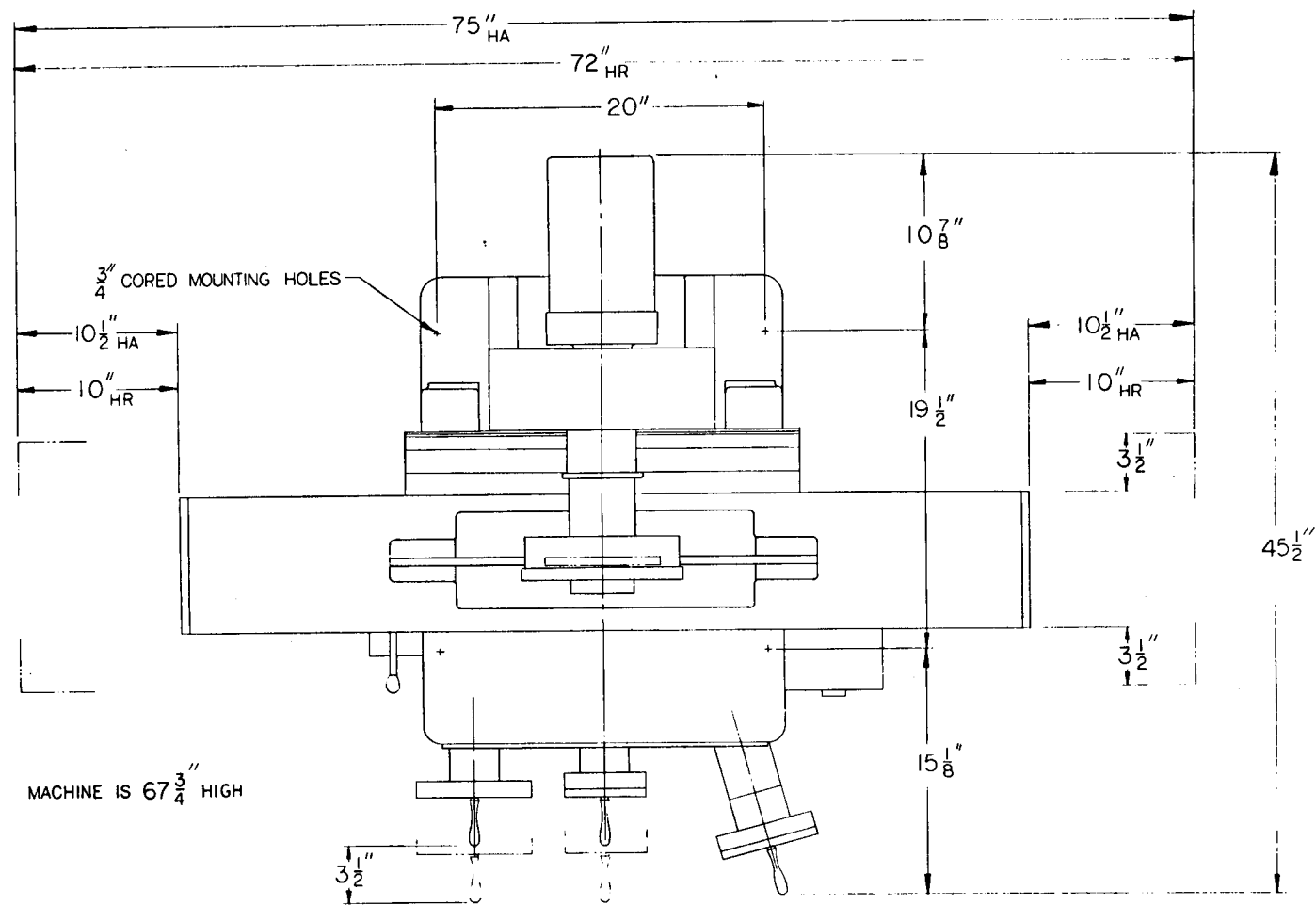


FIGURE 2-2

DRAWN			DATE		TITLE	
DATE	BY	WAS	7-12-50	REID	FLOOR PLAN FOR STD	
CHANGES			LIST NO.	REID HA, HR		
TOLERANCE			SCALE	473993		
COMMON FRACTIONS ± 1/4			1/4"			

DRAWING NO. 135 2187



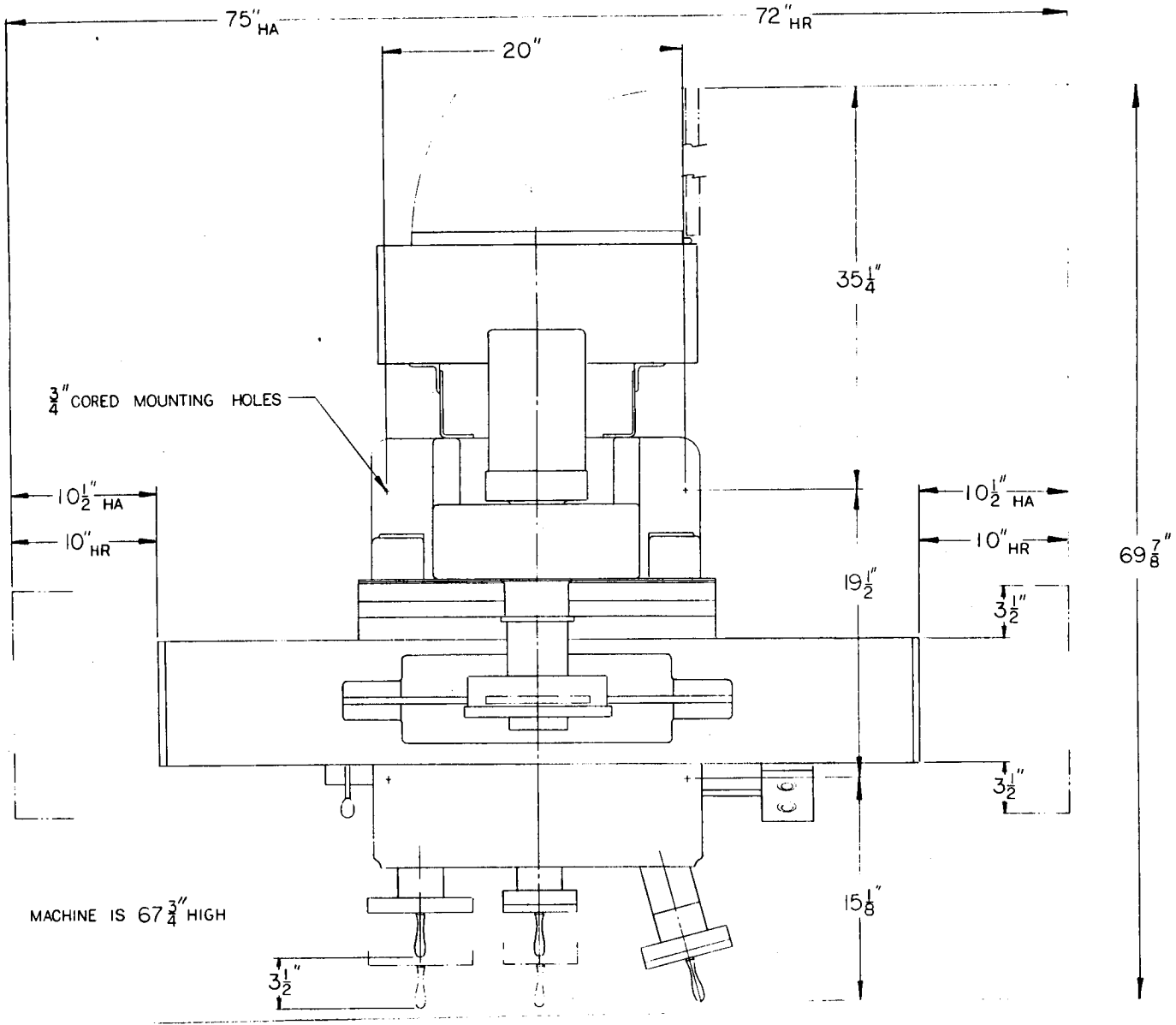


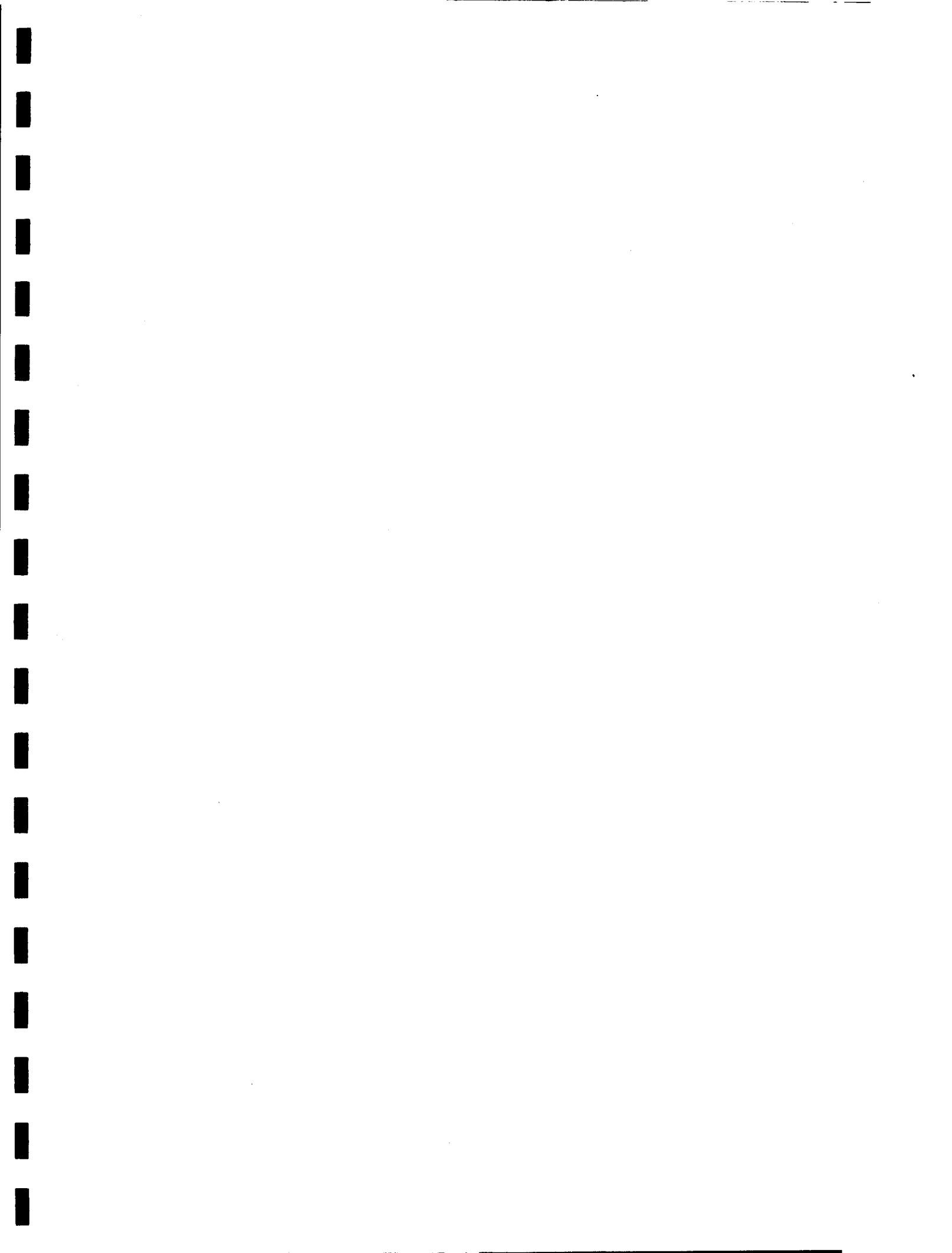
FIGURE 2-2A

DATE	BY	WAS
CHANGES		
TOLERANCE		
COMMON FRACTIONS ± 1/32		

REID

TITLE	FLOOR PLAN FOR REID JIC HA, HR
	473995

DRAWING NO. 15 2187



2.2 INSTALLATION PROCEDURES

A. Initial Inspection

1. Remove the protective crating and covers from the machine.
2. Examine the machine for any damage that may have occurred during shipment. If any damage is discovered, notify both the carrier and your local REID representative immediately.
3. Remove all boxes and extra material from the skid. Check contents against the shipping list enclosed and report any discrepancies to your local Reid representative.

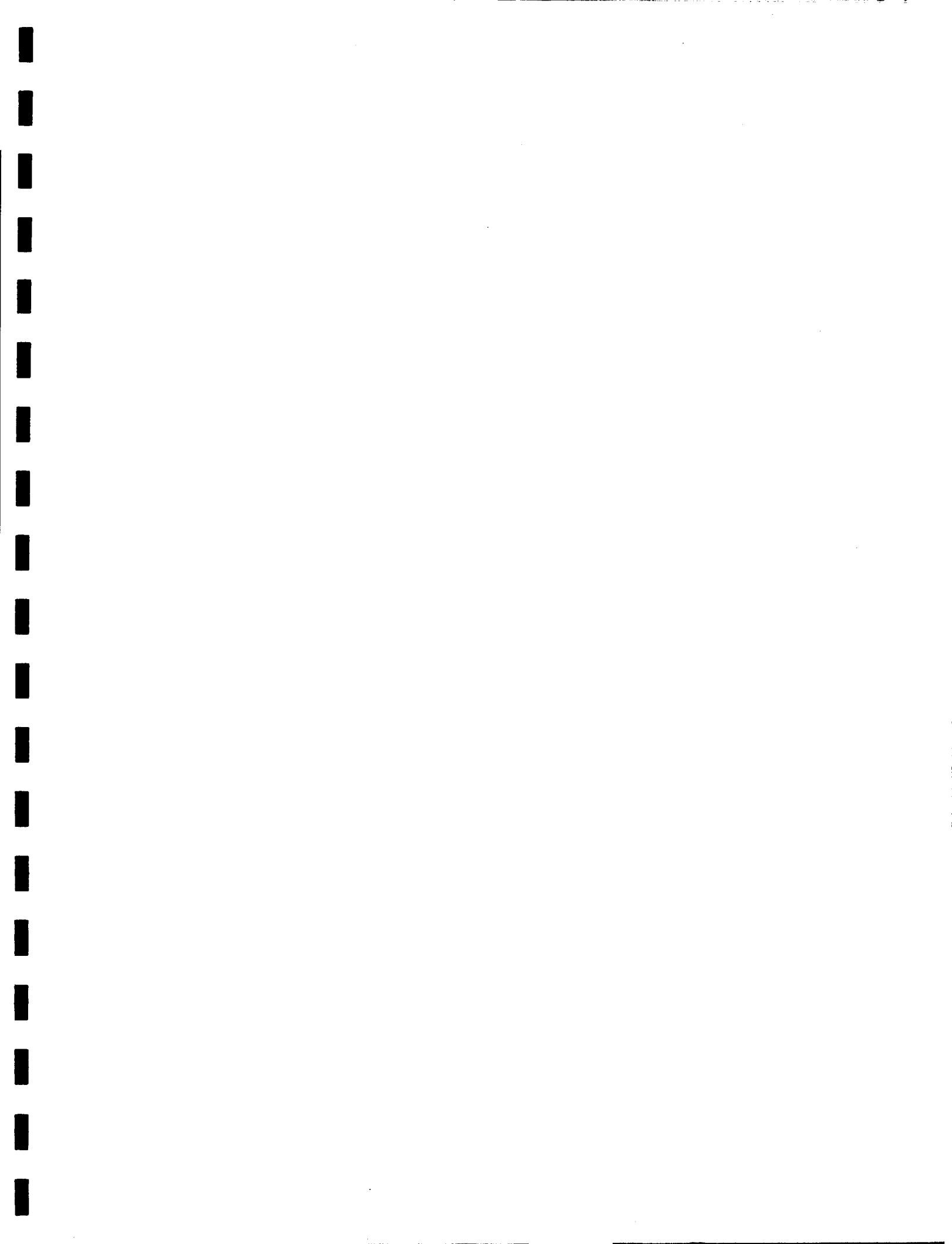
B. Foundation

If possible the machine should be installed on a level concrete foundation or floor. When the very finest finish or maximum degree of accuracy and precision is required, the foundation should be isolated from adjacent flooring and/or isolation mounts used so that vibration transmitted from nearby machines or other sources is minimized.

C. Installation and Set-up

1. Lift machine from skid and place on foundation.
2. Remove blocks and straps used to secure sliding components.
3. Using a clean petroleum solvent and clean, lint-free rags, remove all protective coating from the finished surfaces. Apply a light coat of machine oil to the cleaned surfaces.
4. Using a precision spirit level on the table work surface, level the machine in both the longitudinal and transverse directions by shimming as necessary under the machine's feet.

NOTE: While it is important that the machine be accurately leveled, it is even more important that all four corners are evenly and firmly supported in order to absolutely prevent any rocking motion as the table reciprocates.



SECTION III

OPERATORS MANUAL



4

OPERATOR'S MANUAL

3.0 INTRODUCTION

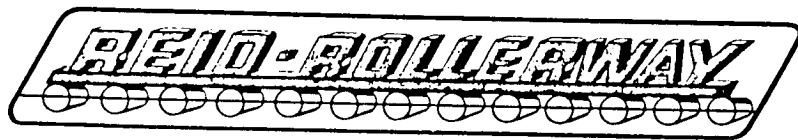
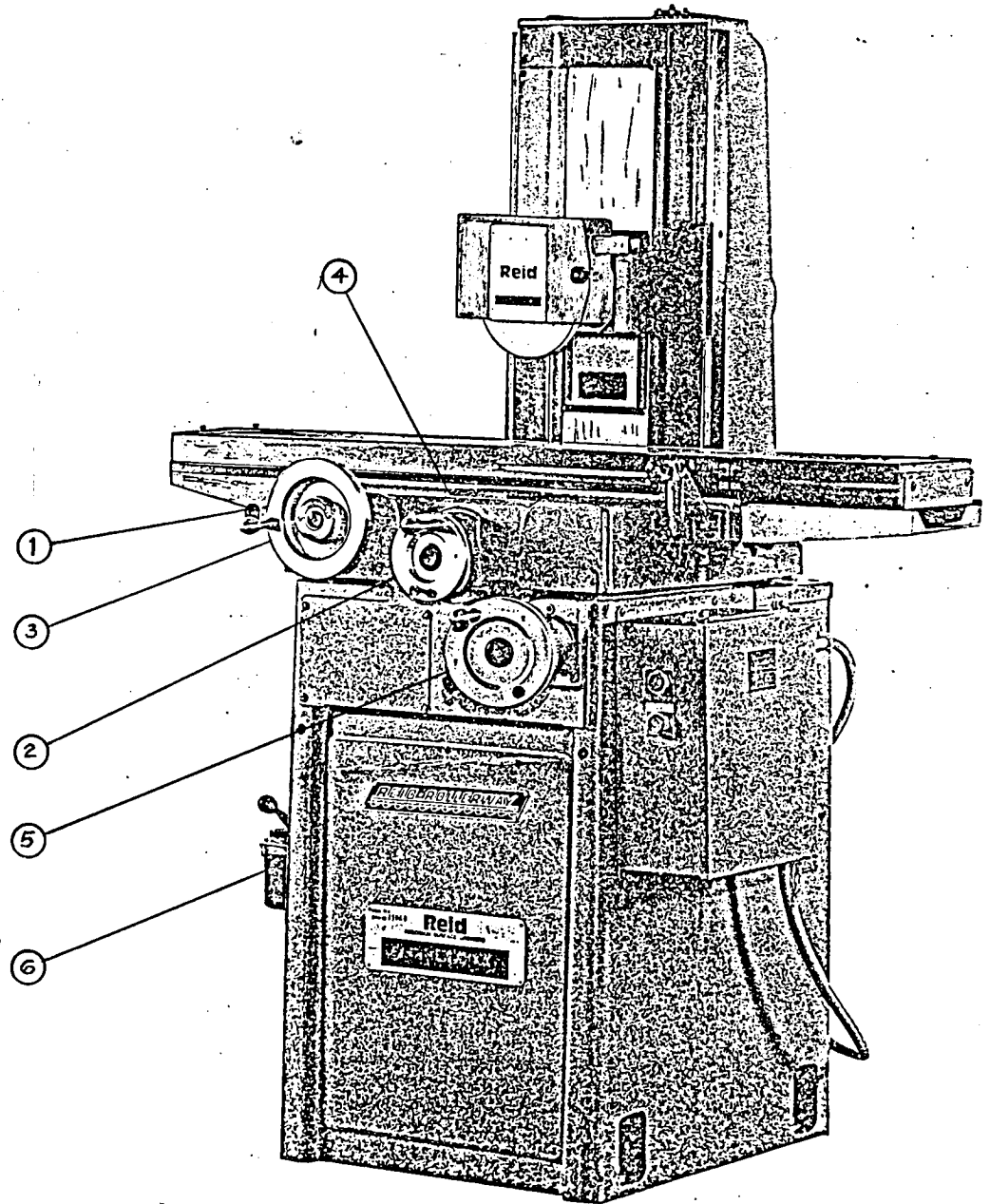
This section contains a complete description of the grinder's controls and operating modes. The location and nomenclature for each control is shown in Figure 3-1 (Photo) and is followed by a complete explanation of the function of each control individually. Also included in this section are the initial start-up procedures that must be performed before the machine can be used for grinding workpieces.

It is essential that all personnel operating the grinder read this section of the manual and become thoroughly familiar with the location and function of all controls. This will help to assure safe and efficient use of the grinder.

MODEL 618 HR

- ① Table Lock For Wheel Dressing
- ② Cross Feed Handwheel
- ③ Table Handwheel
- ④ Cross Slide Lock
- ⑤ Head Elevating Handwheel
- ⑥ One-Shot Lubrication System

NOTE: Always reference machine serial number when ordering parts. Serial number is located on front of machine base under the cross feed handwheel.



**MACHINE
NOMENCLATURE**

3.2 EXPLANATION OF CONTROLS

This section explains the function of each manual control and is arranged so that the controls for each axis of motion are grouped together.

3.2.1 TABLE CONTROLS

1. The Table Handwheel is located in the front, left side of the machine and used for manual operation of the table. Clockwise rotation will traverse the table to the right.
2. The table Handwheel Handle can be placed where most comfortable for your operator. Just pull the handwheel forward, set handle in position desired, and release.
3. A table drag adjustment knob provides control of the handwheel rotation "feel" or "torque" and is used to help prevent excessive overtravel of the table movement.

3.2.2 CROSS SLIDE CONTROLS

1. The Cross Slide Handwheel is located on the front of the machine between the table and elevating handwheels and used for manual operation. Turn clockwise for inward motion, i.e., away from operator.

3.2.3 VERTICAL CONTROLS

1. The downfeed (elevating) handwheel is located on the front, right side of the machine and used for manual operation of the vertical traverse. Counter clockwise rotation will traverse head (grinding wheel) downwards.
2. The handwheel drag adjustment knob provides control of the handwheel rotation "feel" or "torque" and is used to prevent overspin of the handwheel when incrementing.

3.3 INITIAL START-UP PROCEDURES

3.3.1 FLUID SYSTEMS

1. Check the lubrication reservoir, if required, add clean oil. We recommend MOBIL VACTRA No. 2 or an equivalent. Push one shot lubricator 2 - 3 times to provide adequate oil.
2. After startup, push one shot lubricator at least once daily.

3.3.2

ELECTRICAL HOOK-UP AND ROTATIONAL CHECKS

1. Connect the main power lines. Refer to the electrical diagram provided with your machine.
2. Check for proper rotation of motors.
(Note: All motors were phased before shipment. Only the main power line should be adjusted to correct motor rotation).
 - a. Press spindle start (See 3.3.3)
 - b. Check to see that the spindle is rotating in a clockwise motion.
 - c. If improper rotation is observed, STOP IMMEDIATELY, reverse two phases of the three phase connection at the main disconnect and repeat the above procedure.

3.3.3

SPINDLE

Due to settling of the lubricant in the spindle during transportation or extended idle periods, the following start-up procedure must be adhered to:

1. JOG three (3) or four (4) times for one (1) minute.
2. Run for ten (10) minutes, shut down and allow to cool for one (1) hour.
3. Run again for ten (10) minutes and check with pyrometer. If temperatures exceed 120° F shut down and allow to cool for one (1) hour.
4. Repeat Step 3.
5. If spindle continues to operate at elevated temperatures after several cycles, stop running and notify your local Reid representative or spindle manufacturer immediately.

3.3.4

WHEEL TRUING AND DRESSING

** (See CAUTION BELOW)

1. GENERAL

The term "TRUING" refers to the process of removing abrasive material from the wheel for the purpose of making it as nearly circular as possible so that it will "RUN TRUE" with the spindle centerline. The term "DRESSING" refers to the process of "SHARPENING" or "CLEANING" the wheel's cutting surface when it has become dull, glazed, or loaded.

A wheel should be trued the first time it is installed on the spindle and re-trued each time it is put back on the spindle after storage on the shelf.

The wheel should be dressed only as often as really necessary since dressing can account for up to 90% of wheel wear over the life of the wheel. If the wheel must be re-dressed too frequently, then it is probable that it is not of the proper grade for the material being ground or the particular grinding conditions.

The "SEVERITY" of dressing directly affects the performance of the grinding wheel and the quality of the surface obtained. Severity can be varied from coarse to fine. The coarsest dress would be obtained with deep diamond penetration into the wheel and a very rapid traverse speed. The finest dress would result from a very shallow diamond penetration and a slow traverse speed. Of course, any severity of dressing can be obtained by appropriately adjusting diamond feed and traverse speed. In general, the following can serve as rough guidelines:

COARSE DRESSING

Will produce a sharp, open wheel surface with a small number of active cutting grits which will result in low grinding forces and a relatively poor surface finish.

Will be less likely to produce loading of the wheel or thermal damage to the workpiece.

Should result in poorer grinding ratios.*

FINE DRESSING

Will produce a wheel surface with more active cutting grits resulting in higher cutting forces and a better surface finish.

May cause wheel to load up quickly and/or burn the workpiece.

May give higher grinding ratios.*

* Grinding Ratio = $\frac{\text{VOLUME OF METAL REMOVED}}{\text{VOLUME OF WHEEL LOST}}$

** CAUTION - ALWAYS LOCK THE TABLE WHEN TRUING OR DRESSING THE GRINDING WHEEL (See 3.1. Item 1)

2. TABLE MOUNTED DRESSER

A truing diamond is mounted in a standard wheel truing fixture and the fixture is located on the chuck or table surface such that the diamond point contacts the wheel slightly to the left of the lowest point on the wheel's periphery. This prevents the diamond from chattering or being drawn into the wheel by frictional forces and gouging the wheel.

3.3.5 MOUNTING AND BALANCING GRINDING WHEEL

A. MOUNTING WHEEL ON WHEEL ADAPTER

1. Carefully inspect wheel for defects or damage.
2. Slide wheel adaptor into the wheel. NOTE:
The fit should not be too tight (Possibly cracking the wheel if forced on) or too loose (allowing wheel to be off center and out of balance). Consult ANSI B7.1 for Safety Requirements for mounting grinding wheels.
3. New blotters or cardboard washers should be used between the sides of the wheel and adapter clamping surfaces to equalize the pressure against the wheel and reduce the possibility of cracking the wheel.
4. Tighten the adapter nut sufficiently to hold the wheel firmly, but do not tighten excessively as this may crack the wheel.
5. If possible a wheel and its adaptor should remain mounted for the life of the wheel. This allows more efficient operation by eliminating the need to re-balance each time the wheel is changed.

B. INITIAL BALANCING PROCEDURE (Using optional Reid Balancing Device consisting of balancing stand and arbor)

1. Level the balancing stand lengthwise and crosswise as accurately as possible and clean the ways.
2. Adjust the position of the adapter balance weights so that they are 180° apart.
3. Carefully clean spindle and adapter tapers and install wheel on machine spindle.
4. True the wheel round.
5. Remove the wheel from the spindle (Use Puller), mount on a balancing arbor and place assembly on ways of balancing stand.

6. Allow wheel to rotate on its own and come to rest; mark to indicate the low point (Heavy side).
7. Move the balancing weights to trial positions on the light side of the wheel and symmetrically spaced with respect to the mark made to indicate the heavy point.
8. Again allow the wheel to come to rest on its own and repeat the marking and weight adjustment procedure until the wheel is balanced; stops in any position.
9. Re-mount the wheel on the machine spindle and re-true it.

NOTE: The wheel should now be adequately balanced. However, the above procedure can be repeated to obtain an even better balance when an extremely fine finish is desired.

C. CHANGING WHEELS

1. Always use the proper puller to remove the wheel adapter from the spindle.
2. Never strike or jar the wheel to remove it.
3. Always inspect and carefully clean sleeve and spindle tapers before mounting new wheel.

3.3.6 INSTRUCTIONS FOR GRINDING CHUCK

Grinding in a chuck to the table of its grinder is extremely important to the flatness and finish which will be obtained. A chuck that is not ground flat on its bottom can warp the table when it is clamped onto the work surface, and, of course, a chuck that is not ground flat on its top will warp the work-piece when it is magnetized. The following procedure is recommended:

Use the proper grinding wheel, such as --32A46-H8-VBE or equivalent.

GRINDING THE BOTTOM OF THE CHUCK

1. Give wheel a coarse dress using a fast traverse speed. Remove 2 to 3 thousandths (.002 - .003) from the wheel.
2. Mount chuck bottom side up and check to see that it does not rock on table surface (if it does, shim under ends to eliminate rocking) and butt clamps against ends of chuck to prevent shifting.
3. Using a fast table speed, start grinding from the high point of the chuck.
4. Set cross feed increment at approximately 150 thousandths (.150).
5. Use coolant, if possible, proper grinding without coolant is extremely difficult.
6. Make one pass only across the chuck.
7. Re-dress the wheel (coarse) as in Step 1. Then repeat steps 3, 4, and 5 until ENTIRE surface has been ground flat.

GRINDING IN THE TOP OF THE CHUCK

1. Remove the chuck from its bottom up position and thoroughly clean the table top and bottom of chuck.
2. Place the chuck face up in its normal position and clamp to the table, but do not clamp tighter than necessary to prevent shifting. Then magnetize the chuck. (NOTE: Electromagnetic chucks should be turned on and the table reciprocated with coolant flowing until the machine and chuck have stabilized at normal operating temperature).
3. Re-dress the wheel (coarse), as in Step 1, above.
4. Grind the top of the chuck exactly as you ground the bottom (Steps 3, 4, 5, and 6 above).

SECTION IV

MAINTENANCE MANUAL



MAINTENANCE MANUAL

4.0 INTRODUCTION

The maintenance requirements for the lubrication and coolant systems are covered in this section. Regular periodic attention paid to these systems will result in the longest possible machine life and the least downtime. As an aid in assuring proper preventive maintenance, the following descriptions, recommendations and schedules are provided.

4.1 LUBRICATION SYSTEMS

- A. Two separate lubrication systems are available for application of lubricant to the machine's mechanisms: a manual system and an optional automatic system. With the manual one shot system, one push of the lever is required at the start of each shift. This system provides lubricant metered individually to the cross slide ways, elevating screw and nut, and cross feed screw and nut.
- B. The optional automatic system consists of a reservoir/pump unit. This system provides lubricant metered individually to the cross slide ways, column ways, elevating screw and nut, and cross feed screw and nut. A pipe plug is provided to drain used oil from the collection area. For adjustment of discharge volume see Bijur Data Sheet 2047. Lubrication of the optional Over-the-Wheel Dresser is applied manually through standard oil cups.

4.2 GRINDING COOLANT SYSTEM

The optional coolant system consists of a separate free standing tank unit with integral pump and motor. Coolant is delivered to the wheel guard mounted nozzle and control valve through abrasion resistant tubing. The coolant tank capacity is 10 gallons and maximum output is approximately 8 GPM.

4.3 RECOMMENDED FLUIDS AND FREQUENCIES

<u>SYSTEM</u>	<u>FLUID</u>	<u>FREQUENCY</u>
1. One Shot Lubrication System (capacity 1 quart)	Mobil Vactra #2 or equivalent 335 S.U.S. @ 100 ^o F.	Check oil level daily and fill before empty. Check used oil plug daily and drain when necessary.
2. Optional: Automatic Lubrication System (Capacity: 1 quart)	Mobil Vactra #2 or equivalent 335 S.U.S. @ 100 ^o F.	Check oil level daily and fill before empty. Check used oil plug daily and drain when necessary.
3. Over-the-Wheel Dresser	Mobil Vactra #2 or equivalent 335 S.U.S. @ 100 ^o F.	Clean oil cups and add several drops of clean new oil monthly.
4. Grinding Coolant Unit (Capacity: 10 gallons)	TRIM 9106CS (Master Chemical Corp.) or equivalent. Mix according to manufacturer's instructions.	Check weekly and top up, filter, or change as required.

4.4 PREVENTIVE MAINTENANCE SCHEDULE

<u>PROCEDURE</u>	<u>FREQUENCY</u>
1. Clean top of table and cross slide. <u>NOTE:</u> Center table and cross slide so that dust or grit will not land on ways. <u>NEVER</u> use an air blast to clean the machine. Use a vacuum or dust cloth.	Each Shift
2. Check lubrication reservoir oil level.	DAILY
3. Check used oil level.	DAILY
4. Clean out settled material from coolant tank sump and coolant drain of table. If coolant is contaminated with oil or contains suspended or floating particles that will not settle out, change coolant.	WEEKLY
5. Lubricate Over-the-Wheel Dresser. Be careful to see that dirt or grit does not enter oil cups.	MONTHLY

6. CARE OF PRECISION TABLE ROLLS

As part of the maintenance procedure for the Reid Rollerway, it is recommended that the precision, matched rolls which provide exceptionally free table movement be cleansed occasionally--every three to four months under normal use, or as need is indicated. This is accomplished by removing the table and cleaning rolls, cages, and ways as follows:

- a. IMPORTANT. Turn table locking clamp 271079 to the left and unwind all the way. This eliminates possibility of damaging locking blade 271071 when replacing table.
- b. Notice the tension of the table belt so that when table is reassembled same tension can be applied.
- c. Run table all the way to left or right. Remove nut and washer on end of belt holder. Tie a piece of string or wire on the threaded rod, and let this hang down over the guard 371442. (The string eliminates need to remove way guard, and prevents losing belt end when replacing table.)
- d. Push table to opposite end and repeat step c.
- e. Lift table straight up, and off the machine.
- f. Remove rolls from cages and place in clean solvent. Wipe roll cages with the solvent. Wipe "V" and flat ways on both top of cross slide and table with solvent. Remove rolls from solvent and wipe them clean.
- g. Apply a light coating of spindle oil to all ways. Position roll cages in the center of the ways. Wipe the rolls with the light spindle oil and replace them in the cages.
- h. Replace the table with care, being sure the table is lowered evenly so as not to disturb rolls in cages. Carefully push table to one end, hook up belt to table and replace washer and nut. Push table to opposite end and do the same.
- i. Adjust the belt to the same tension as was noted in Step b.
- J. Turn table locking clamp to right and wind to full lock, or desired position.

7. Table Belt Tension Adjustment is obtained by adjusting the belt tensioning device located on the underside of butt ends of the table. Care must be exercised so that too much tension is not set.

WHEN ORDERING SPECIFY:

Lubricator L5P, D-3174

OPERATION:

Lubricator is of the spring - discharge type. It is operated by pushing the lever down, which raises the piston and compresses a spring. By releasing the lever, discharge of oil into system is automatic. Discharge volume and pressure are independent of oil viscosity.

DISCHARGE VOLUME PER STROKE:

1 to 5 cc's infinitely adjustable. Lubricator supplied set for 5cc discharge.

DISCHARGE PRESSURE: 75 psi maximum.

Discharge pressure will decrease as discharge volume decreases and the number of Meter-Units in the system increases.

SYSTEM: Use Meter-Units Type F.

SYSTEM LIMITATION: 70 Meter-Units.

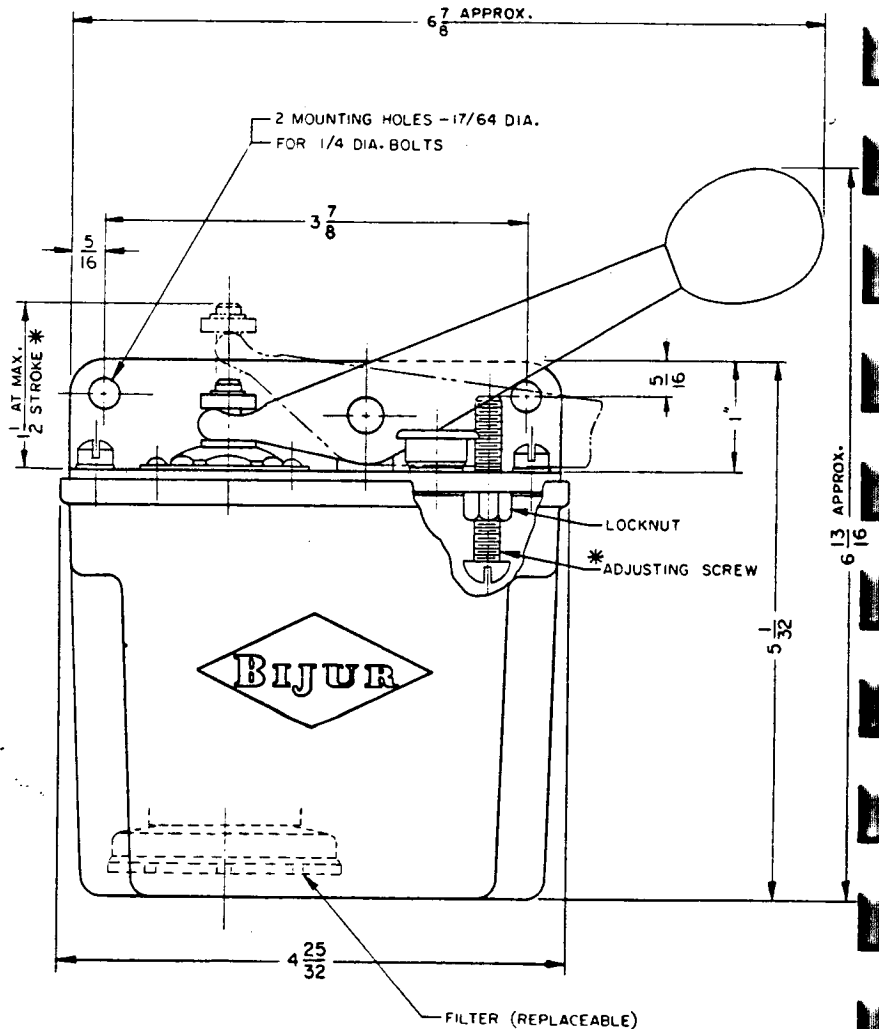
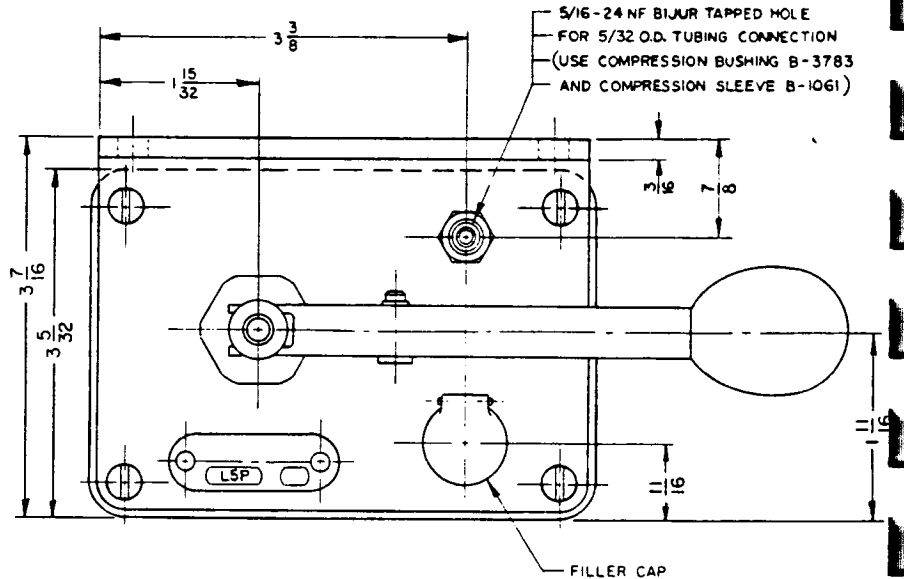
System β limitation is given in table below. Do not exceed figures shown. To calculate system β refer to the "Engineering Manual."

Viscosity range is 100 to 10,000 SSU at operating temperature.

LUBRICATOR INLET FILTER:

40 micron particle separation. It should be inspected periodically and cleaned or replaced as required.

RESERVOIR CAPACITY: 1 Pint (475cc)



CC's Per Shot	1	2	3	4	5	
Stroke Setting	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	
Number Of Meter-Units	5	240	450	700	800	
	10	170	320	550	680	750
	15	140	250	440	520	650
	20	115	210	360	460	520
	25	100	180	320	400	450
	30	85	150	275	325	390
	40	60	120	210	245	290
	50	57	90	155	185	220
	60		60	110	135	160
70			70	85	96	
Max. Permissible Total Sys. β						

* ADJUST SCREW FOR DESIRED STROKE SETTING AND TIGHTEN LOCKNUT (SEE TABLE TO LEFT)

BIJUR

LUBRICATOR TYPE TM-5

DATA SHEET

LUBRICATING CORP.
ROCHELLE PARK, N.J.

AUTOMATIC - CYCLIC

2047

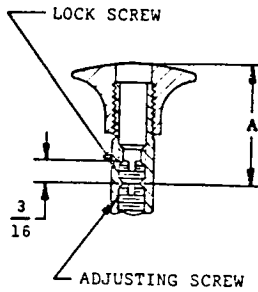
OPERATION:

Lubricator Type TM-5 is a motor driven piston pump of spring - discharge type. The motor incorporates a gear reduction which determines the operating cycle of the pump piston. The cycle times available are shown in the table below.

DISCHARGE VOLUME PER STROKE:

Adjustable - 2.5 cu cm minimum
5.0 cu cm maximum

Lubricator supplied set at maximum stroke, 5.0 cu cm discharge. For less delivery remove the lock screw, measure A, turn adjusting screw clockwise increasing A by B dimension.



B	DISCHARGE
.400	2.5 cc
.320	3.0 cc
.240	3.5 cc
.160	4.0 cc
.080	4.5 cc
0	5.0 cc

DISCHARGE PRESSURE RANGE: 30 - 60 psi

Discharge pressure will decrease as the number of Meter-Units in the system increases.

MOTOR:

Type: Continuous duty, single phase, synchronous induction timing motor for 50 and/or 60 cps.

Voltage: 115/220 Volt

Wiring: For 110 Volt service connect Blue and White, insulate Red.
For 220 Volt service connect Blue and Red, insulate White.

Power Consumption: 3 Watts.

BIJUR reserves the right to change motor size, mounting dimensions and manufacturer.

Liquid Level Switch:

Models of this lubricator equipped with a Liquid Level Switch are listed below. For fail safe operation, they are supplied so the switch will close an electrical circuit whenever the oil in the reservoir is above the minimum operating level. Thus, when connected to a light or other indicating device, the liquid level can be monitored.

Customers may reverse the operation when desired by inverting the float. When the float is reversed, the switch will close an electrical circuit whenever the oil level is below the minimum operating level.

NOTE: Switch Contact Rating: 15 Watt Max.
Light or indicating device not supplied by Bijur.

LUBRICATOR INLET FILTER:

40 micron particle separation. It should be inspected periodically and cleaned or replaced as required.

RESERVOIR: 1 litre (1000 cu cm) refill capacity, (1 quart).

SYSTEM: Use Meter-Units Type F

SYSTEM LIMITATION:

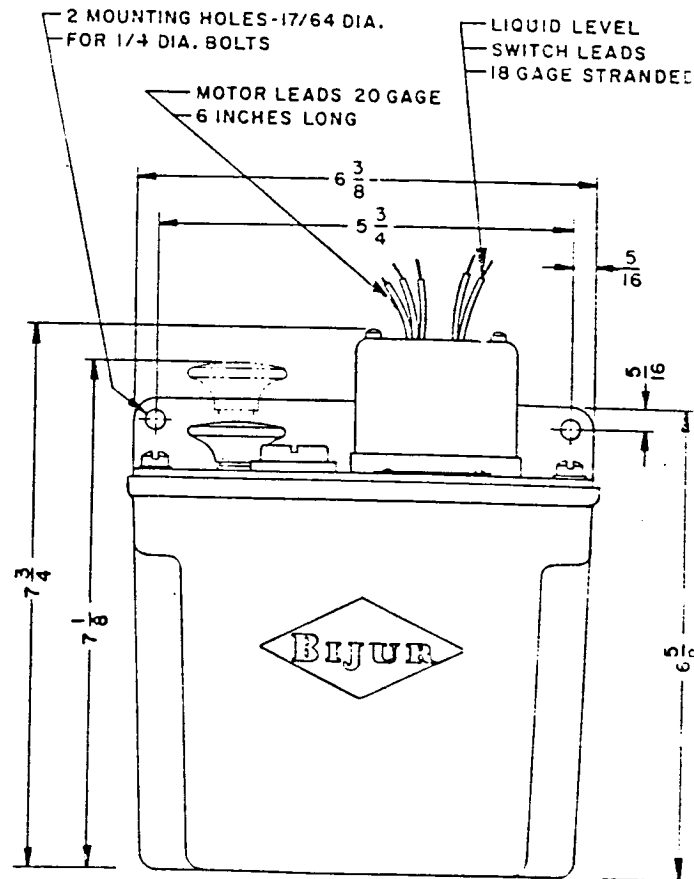
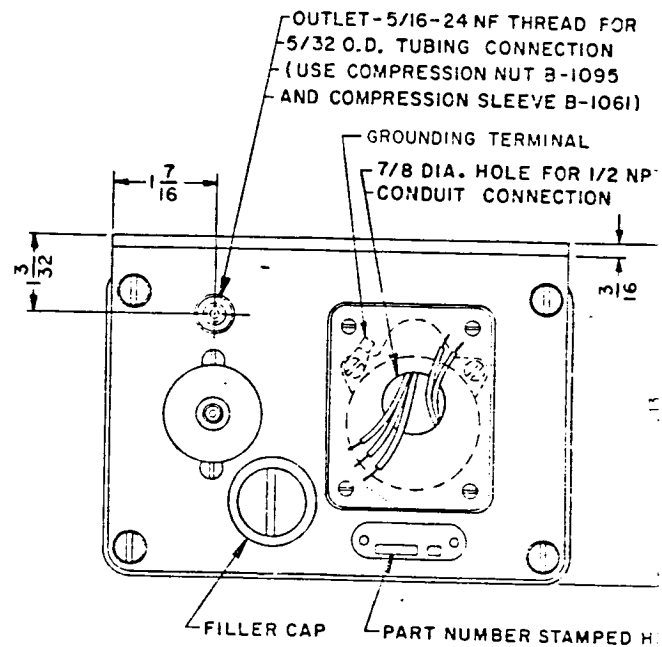
For System & Limitation see "Engineering Manual".

Viscosity range 150 to 8000 SSU at operating temperature.

WHEN ORDERING SPECIFY:

Name, symbol and Part Number such as:
LUBRICATOR TM-5 D-2994

LUBRICATOR CYCLE TIME IN MINUTES		PART NUMBER	
		WITHOUT LIQUID LEVEL SWITCH	WITH LIQUID LEVEL SWITCH
50 cps	60 cps	BIJUR	BIJUR
6.4	5.3	D-2994	D-2986
10.6	8.8	D-2996	D-2988
32	27.7	D-2998	D-2990
64.0	53.5	D-3189	D-3187
128	107	D-3000	D-2992



JK
ME
GL
GA
FL
EE
CD
CB



SECTION V

TROUBLESHOOTING



TROUBLESHOOTING

5.0 INTRODUCTION

There are several problems that commonly occur in any precision surface grinding operation. The following chart lists these problems along with the probable causes and recommended corrective action.

5.1 TROUBLESHOOTING CHART

<u>SYMPTOM</u>	<u>CAUSE</u>	<u>CORRECTIVE ACTION</u>
1. Chatter or vibration marks.	1. Dull wheel and/or variations in hardness around wheel periphery. 2. Wheel adapter not sufficiently tightened, allowing wheel to shift on initial start-up or contact with work. 3. Unbalanced wheel/wheel adapter assembly causing vibration of spindle assembly. 4. Dirt or other particles assembled on spindle taper. 5. Wheel too hard for work, causing wheel to load up with work metal.	Dress wheel. Tighten wheel adapter, re-true and re-balance. Compare vibration of spindle alone to that of spindle with wheel mounted. If wheel assembly is the problem re-balance. If spindle is the problem, send it back to the manufacturer for service. Carefully clean both adapter and spindle tapers and re-assemble. Use a softer grade wheel.

5.1 TROUBLESHOOTING CHART (Continued)

<u>SYMPTOM</u>	<u>CAUSE</u>	<u>CORRECTIVE ACTION</u>
2. Inaccurate grinding (Out of parallel or out of square).	1. Magnetic chuck or other work holding fixture clamped too tightly or too loosely to table, warping table or allowing work to shift position, respectively.	Check clamping bolts to be sure they are not under or over tightened.
	2. Machine not level or not completely supported.	Re-check level and make sure all four feet are firmly supported.
	3. Glazed or loaded wheel causing poor cutting action and excessive vertical loads on spindle.	Re-dress wheel or switch to a softer grade wheel.
	4. Worn magnetic chuck surface.	Re-grind chuck surface to renew flatness.
	5. Irregular downfeed response caused by stick-slip action between spindle head and column ways.	Check for lack of lubrication or presence of dirt on column ways. If ways are properly lubricated and clean, "Run In" by cycling the spindle head all the way up and down several times.
	6. Misaligned column.	Return to factory for correction.
3. Poor Finish (Longitudinal lines or scratches).	1. Sides of wheel harder than middle.	Carefully break corners of wheel with an abrasive stick.
	2. Wheel too soft, causing scratchy surface due to excessive grit breakout.	Switch to a harder grade wheel.
	3. Wheel too hard or too finely dressed, causing lines that appear burnt or discolored.	Increase severity of dressing or use a softer grade wheel.
	4. Excessively dirty coolant, causing scratchy finish.	Clean out coolant tank sump and filter or replace coolant.

SECTION VI

PARTS MANUAL



PARTS ORDERING INFORMATION

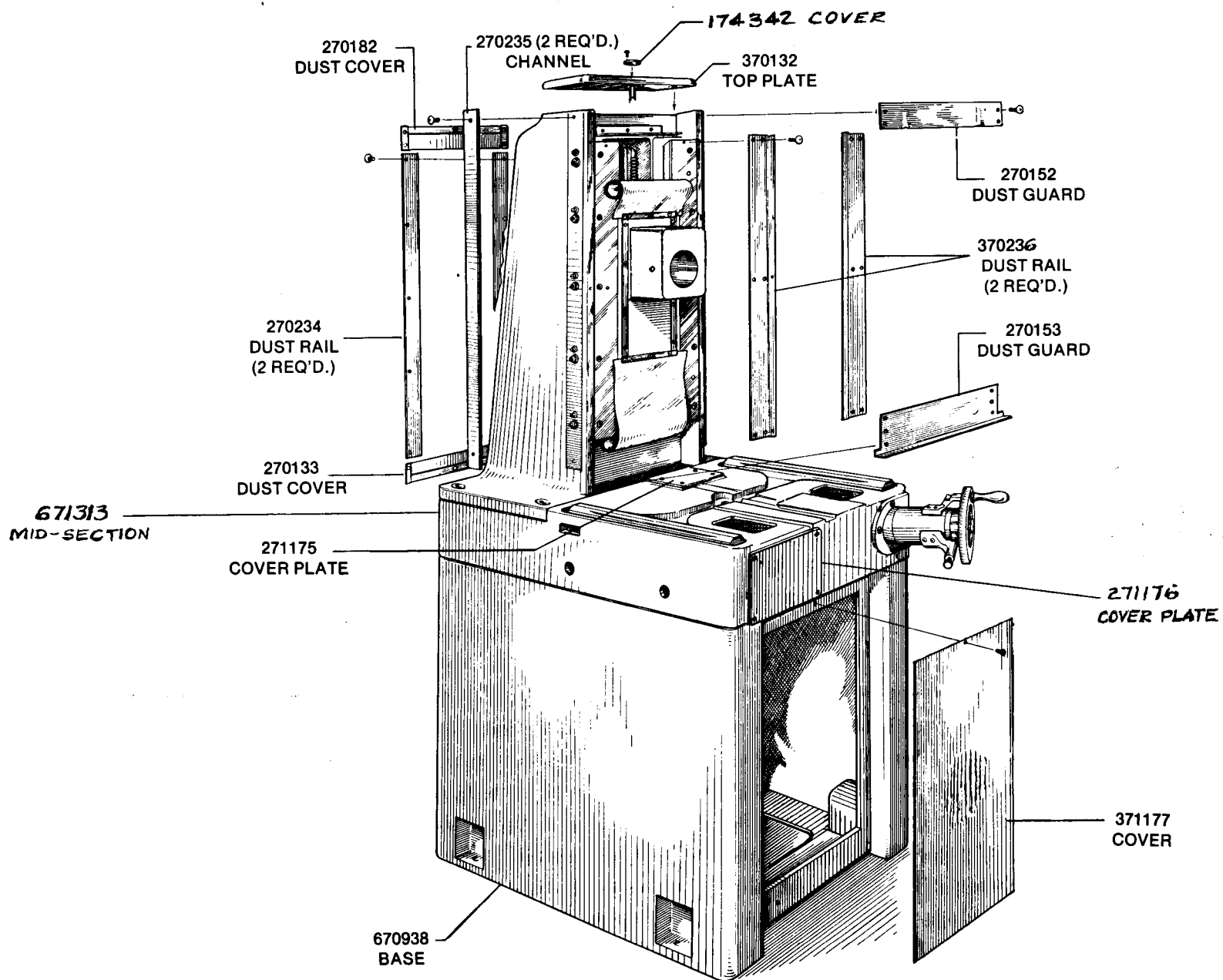
TO ORDER REPAIR PARTS:

1. State the machine SERIAL NUMBER.
2. State the MODEL of your machine.
3. State the QUANTITY of each part required.
4. State the PART NUMBER and NAME from the parts manual.
5. State exact SHIPPING INSTRUCTIONS:
 - (a) Specify where to ship.
 - (b) Specify the type of shipping agency.
 - (c) Specify regular delivery, special delivery or special handling.
6. Forward all requests for repair parts to our authorized representative in your area or to the attention of SALES/REPAIR PARTS DEPARTMENT at the Home Office of Reid Surface Grinders, Dexter, Maine.

NOTE: The serial number for the machine for which the repair parts are needed is necessary so that the Sales Department can check and furnish the proper parts to fit your machine. This will avoid unnecessary delays and possibilities of errors.

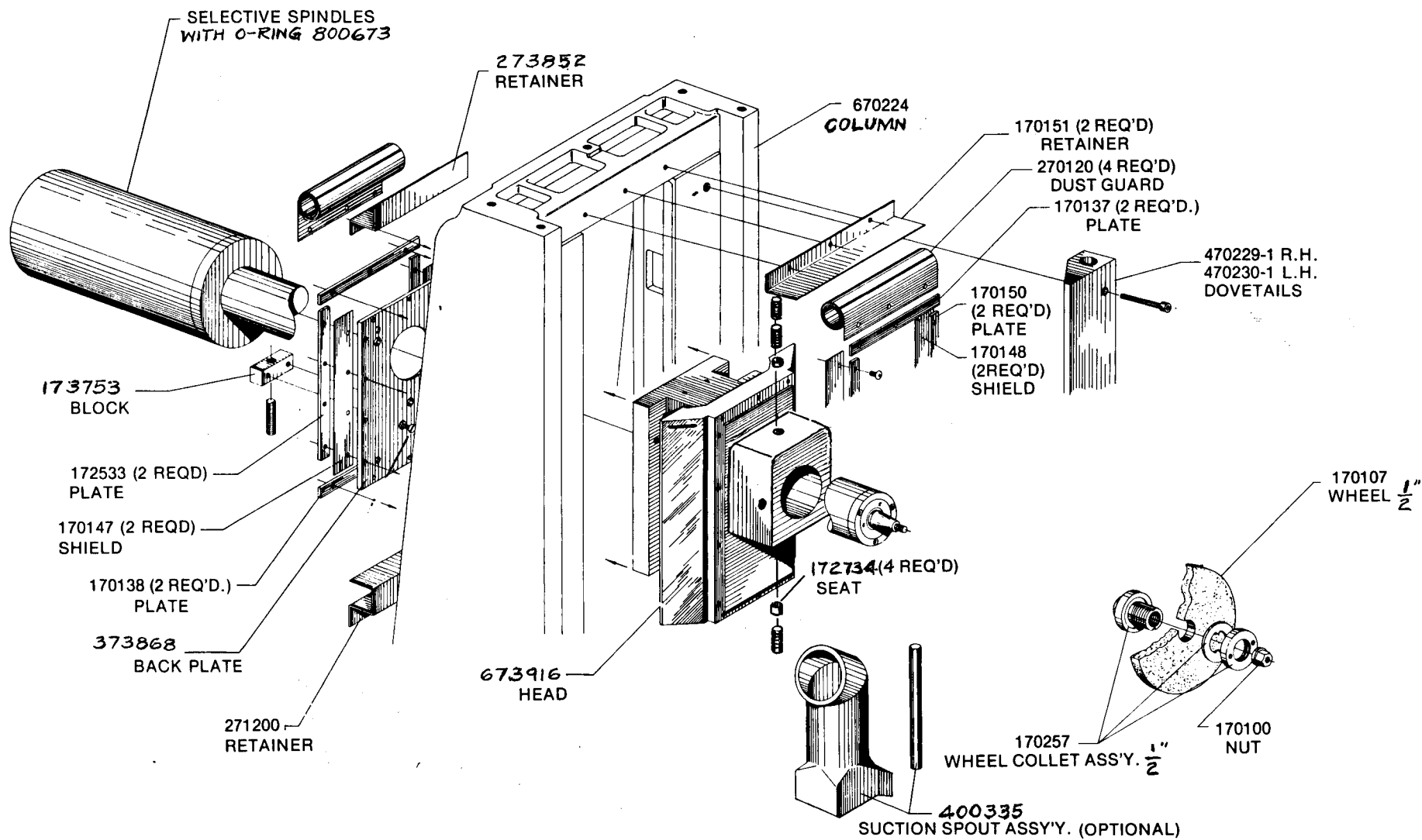
The serial number is stamped on front of machine base under the cross feed handwheel.





BASIC MACHINE ARRANGEMENT





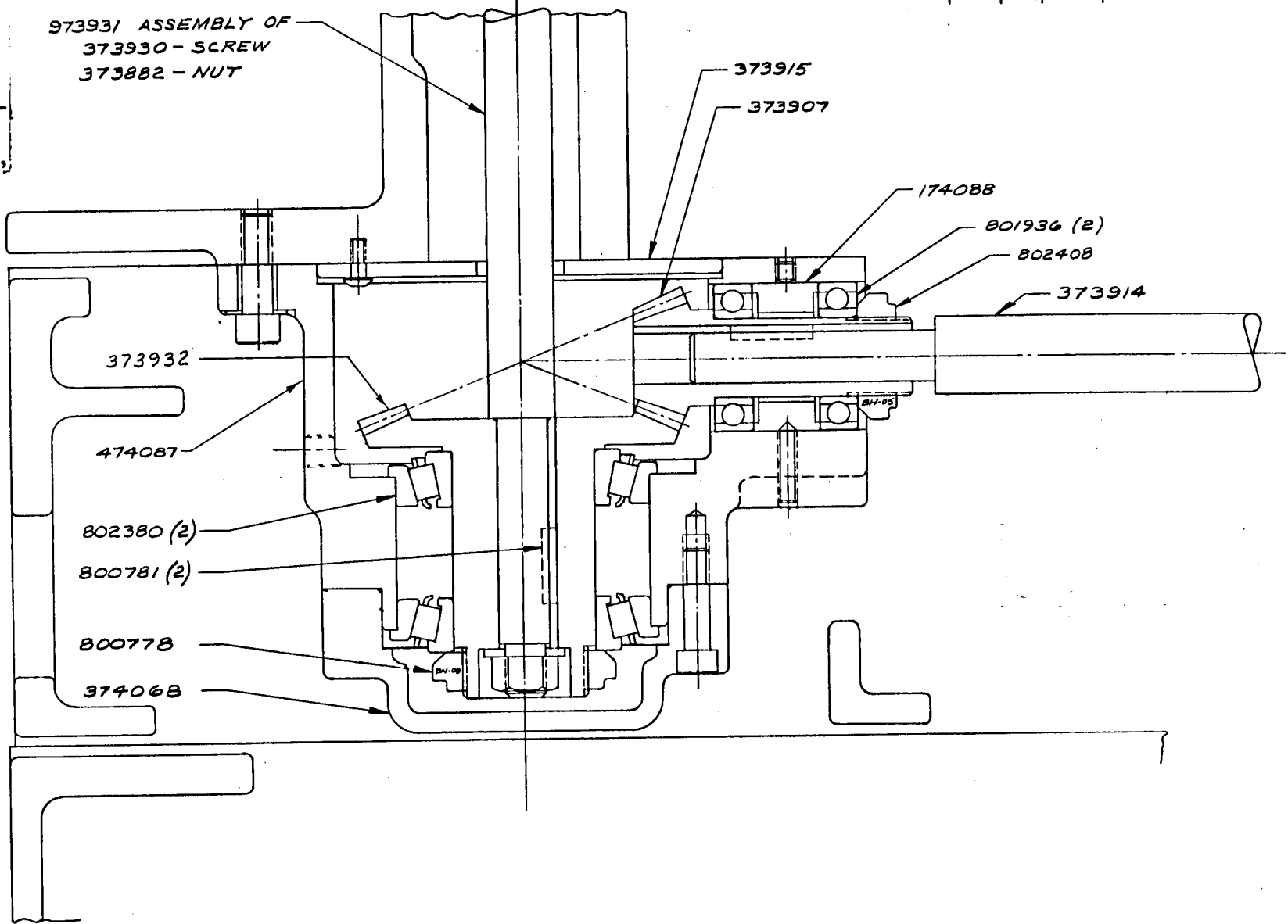
COLUMN SHOWING HEAD AND MOTORIZED SPINDLE ARRANGEMENT



ITEM	REQD	MAT	DESCRIPTION
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374075

Upper bearing for 373930 screw not shown. Parts as follows: 801903 plain sealed ball bearing, 800235 retaining ring.



DRAWING 40-135 21287

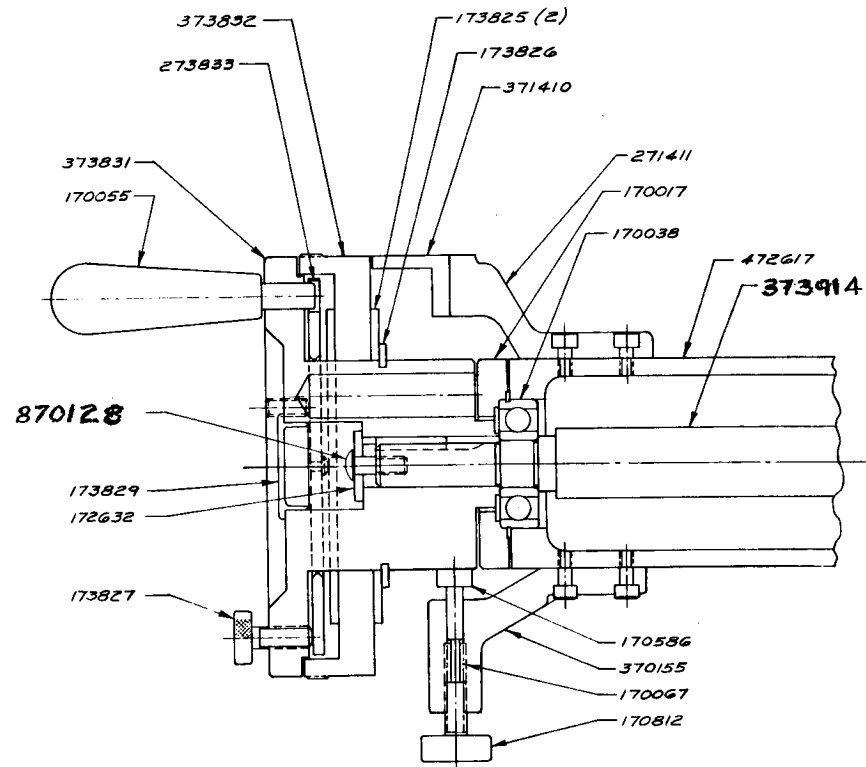
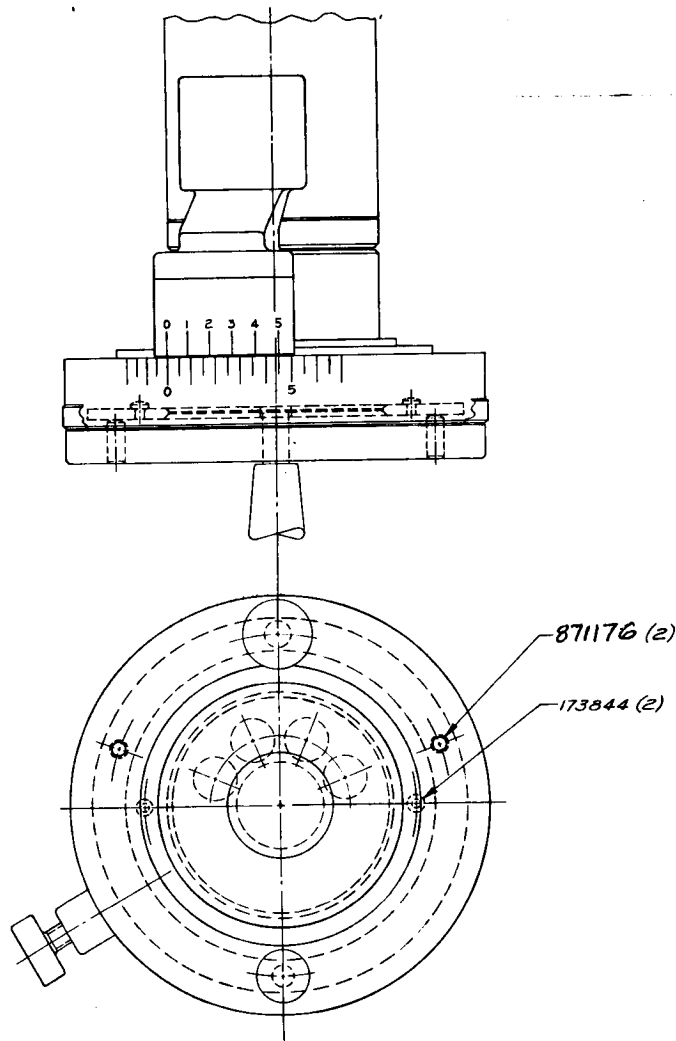
			DRAWN TH	CHECKED TH	MATERIAL	HARDNESS	TITLE GEAR HOUSING ASSEMBLY
DATE	BY	WAS	DATE 9-19-80	DATE 11-24-80	PATT. NO.		SHEET
CHANGES			LIST NO. 974080	REID BROS. COMPANY <small>One of the White Consolidated Industries</small>			374075
TOLERANCE COMMON FRACTIONS $\pm \frac{1}{16}$			SCALE FULL	DEXTER	WCI MAINE	OF	

HANDWHEEL ASSEMBLY VERTICAL TRAVEL #473830

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
170017	Bearing Cap	1
170038	Bearing	1
170055	Handle	1
170067	Spring	1
170586	Lock	1
170812	Adjusting Screw	1
172632	Washer	1
173825	Clamp Washer	2
173826	Ret. Ring	1
173827	Thumb Screw	1
173829	Hole Plug	1
173844	Clamp Button	2
271411	Bracket Elevation Vernier	1
273833	Ring Clamp	1
370155	Locking Case	1
371410	Elevation Vernier	1
373831	Handwheel - Vertical Travel	1
373832	Graduated Rim, .050"	1
373914	Shaft	1
472617	Housing	1
870128	Screw	1
871176	Set Screw	2

473830

ITEM	REQD	MAT	DESCRIPTION
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NOTE: For machines with MICROMETER FINE ELEVATING FEED refer to Drawing No. 473716.

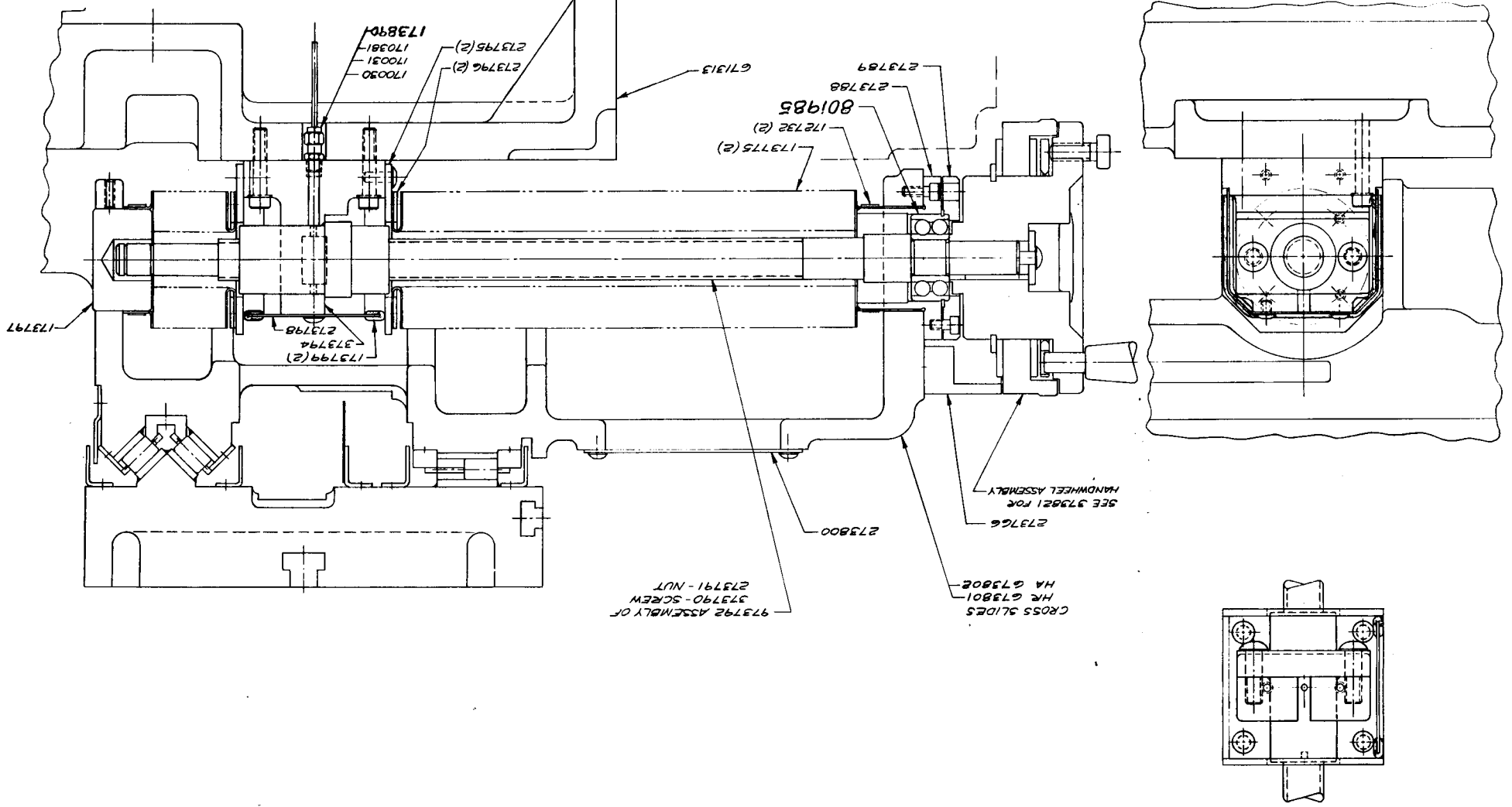
DATE	BY	WAS	DRAWN	CHECKED	MATERIAL	HARDNESS	TITLE
			77	77			HANDWHEEL ASSEMBLY
			DATE 7-22-78	DATE 10-24-78	PART NO.		VERTICAL TRAVERSE
CHANGES			LIST NO.	REID		COMPANY	SHEET
TOLERANCE			SCALE	DEXTER		MAINE	OF
COMMON FRACTIONS ± 1/32			FULL				473830

DRAWING 473830

CROSS TRAVERSE ASSEMBLY #473787

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
170030	Comp. Sleeve	1
170031	Comp. Nut	1
170381	Straight Adapter	1
172732	Hose Clamp	2
173775	Boot	2
173797	Boot Support	1
173799	Rubber Channel	2
173890	Coupling	1
273766	Cross Feed Vernier	1
273788	Bearing Adapter	1
273789	Bearing Cap	1
273791	Cross Feed Nut	1
273795	Boot Flange	2
273796	Boot Ring	2
273798	Nut Cover	1
273800	Cover	1
274043	Boot Support	1
373790	Cross Feed Screw	1
373794	Nut Bracket	1
671313	Mid-Section	1
801985	Ball Bearing	1

DRAWING TITLE		DRAWING NO.		DATE	
CROSS TRAVERSE ASSEMBLY		27-278		6-18-78	
HANDERS		PART NO.		WAS	
MATERIAL		REV.		CHANGES	
CHECKED		LIST NO.		TOLERANCE	
REID		17001		COMMON FRACTIONS & 1/16"	
COMPANY		SCALE		DEXTER	
MAINE		1/2" = 1"		REV. 2	
SHEET		OF		473787	



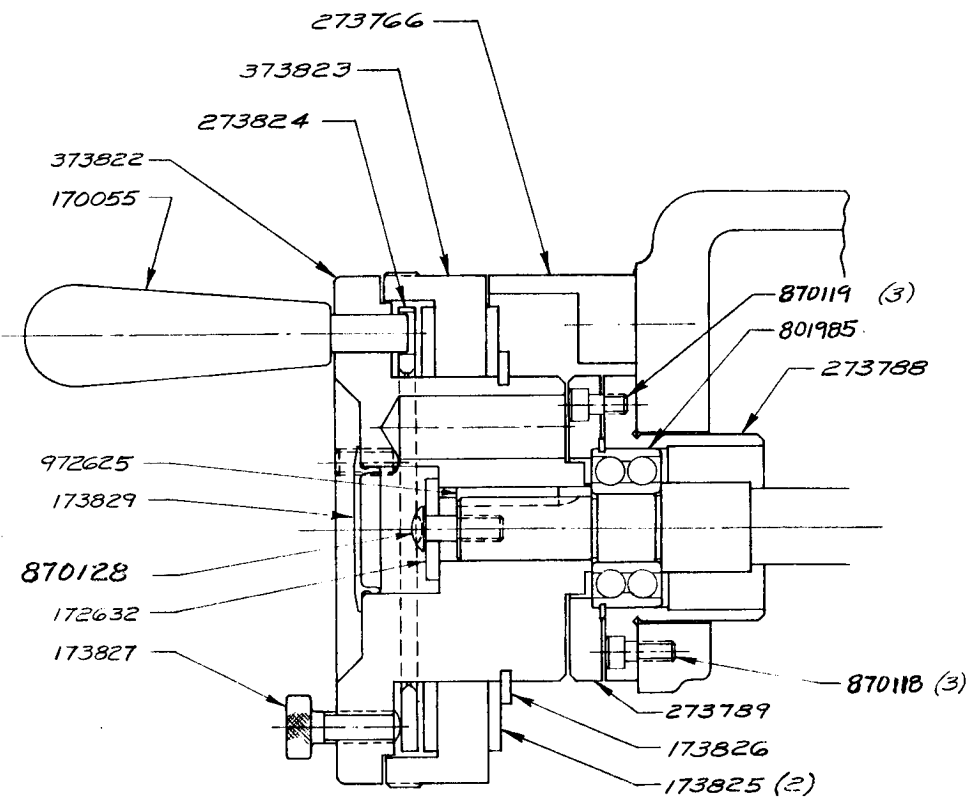
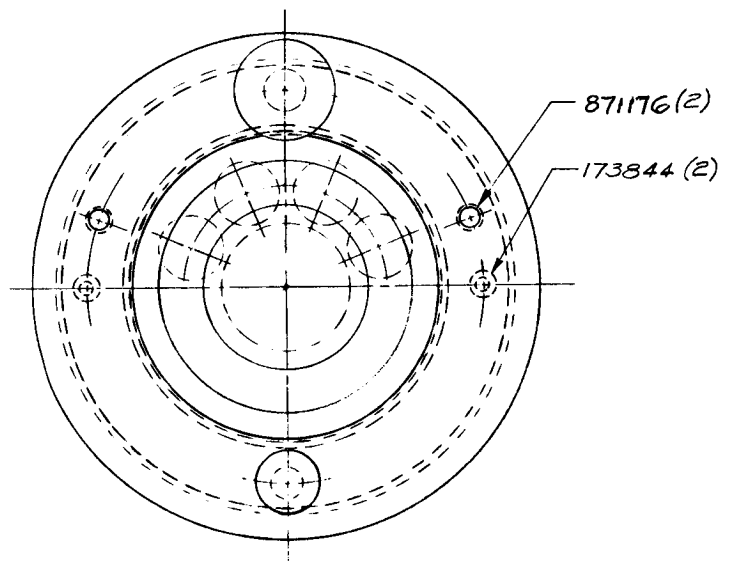
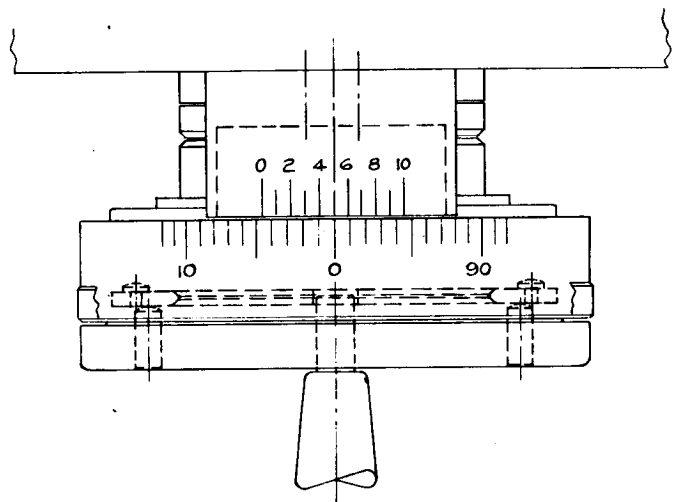
ITEM	QTY	DESCRIPTION

HANDWHEEL ASSEMBLY CROSS TRAVERSE #373821

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
170055	Handle	1
172632	Washer	1
173825	Clamp Washer	2
173826	Ret. Ring	1
173827	Thumb Screw	1
173829	Hole Plug	1
173844	Clamp Button	2
273766	Cross Feed Vernier	1
273788	Bearing Adapter	1
273789	Bearing Cap	1
273824	Clamp Ring	1
373822	Handwheel - Cross Traverse	1
373823	Graduated Rim - .100"	1
801985	Ball Bearing	1
870118	10-32 x 3/8 Soc. Hd. Cap Screw	3
870119	10-32 x 1/2 Soc. Hd. Cap Screw	3
870128	Screw	1
871176	Set Screw	2
972625	Key	1

12881E

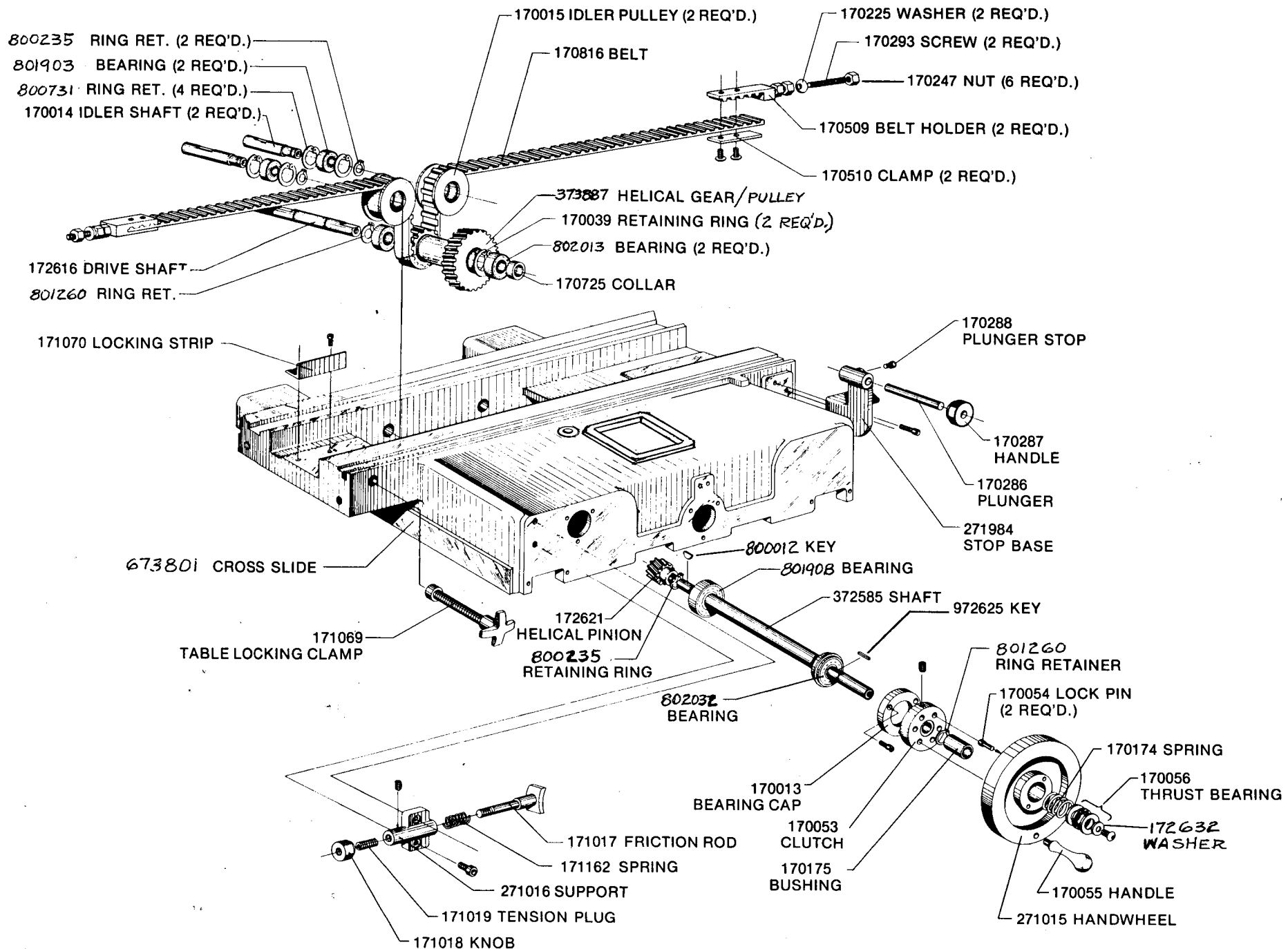
ITEM	REQD	MAT	DESCRIPTION
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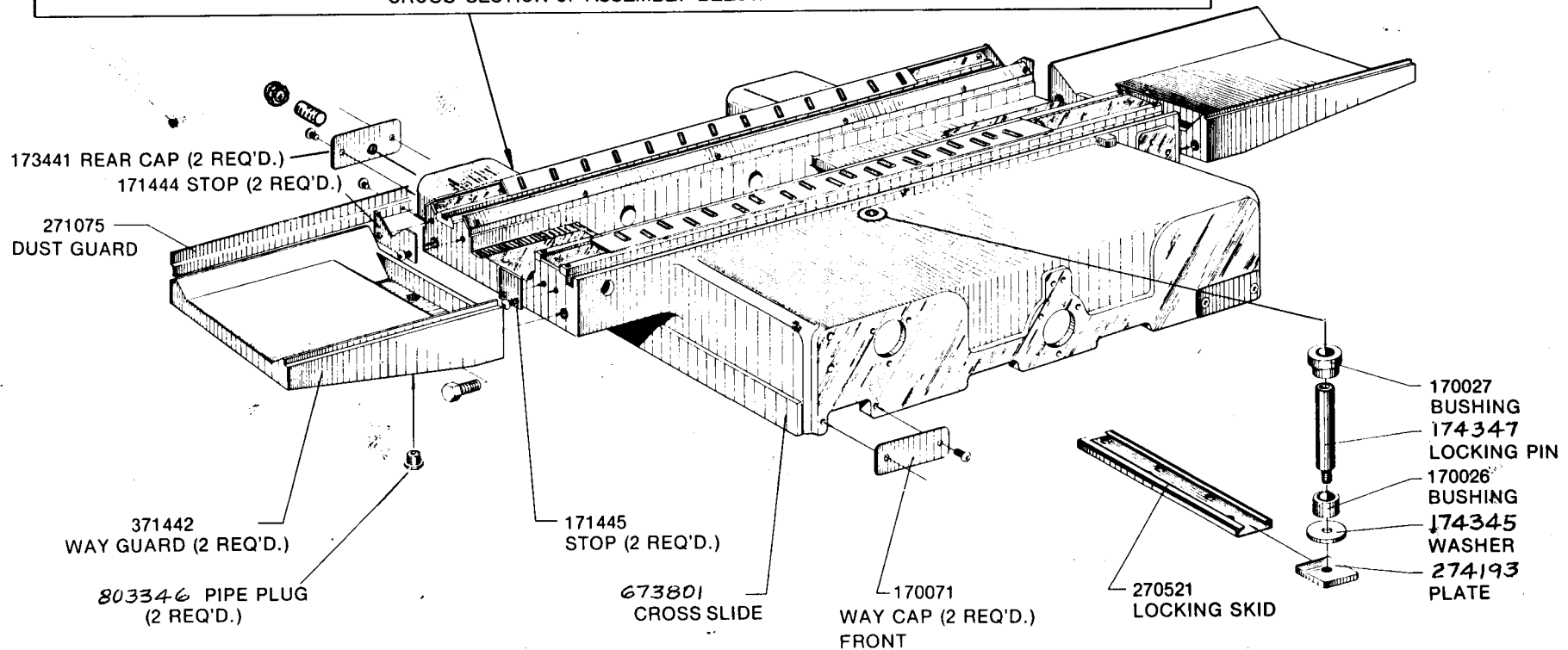
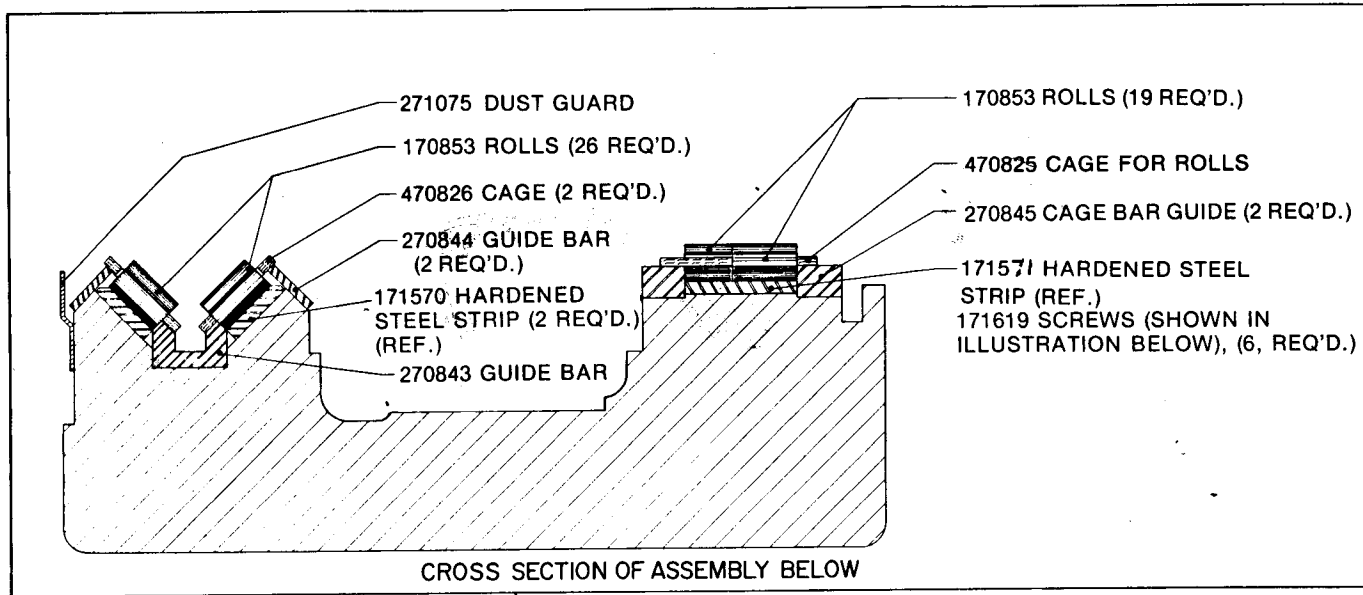
NOTE: Refer to Drawing No. 473682 for machines equipped with MICROMETER FINE CROSS FEED.

DRAWN TH			CHECKED TH		MATERIAL		HARDNESS		TITLE	
DATE	BY	WAS	DATE	PATT. NO.	REID BROS. COMPANY				HANDWHEEL ASSEMBLY CROSS TRAVERSE	
CHANGES			LIST NO.	One of the White Consolidated Industries		SHEET		373821		
TOLERANCE COMMON FRACTIONS ± 1/64			SCALE FULL	DEXTER WCI MAINE		OF				

DRAWING 40-135 21287



**CROSS SLIDE SHOWING...
TABLE DRIVE ARRANGEMENT**



**CROSS SLIDE SHOWING...ROLLS & CAGES
 ON FLAT & VEE WAYS**

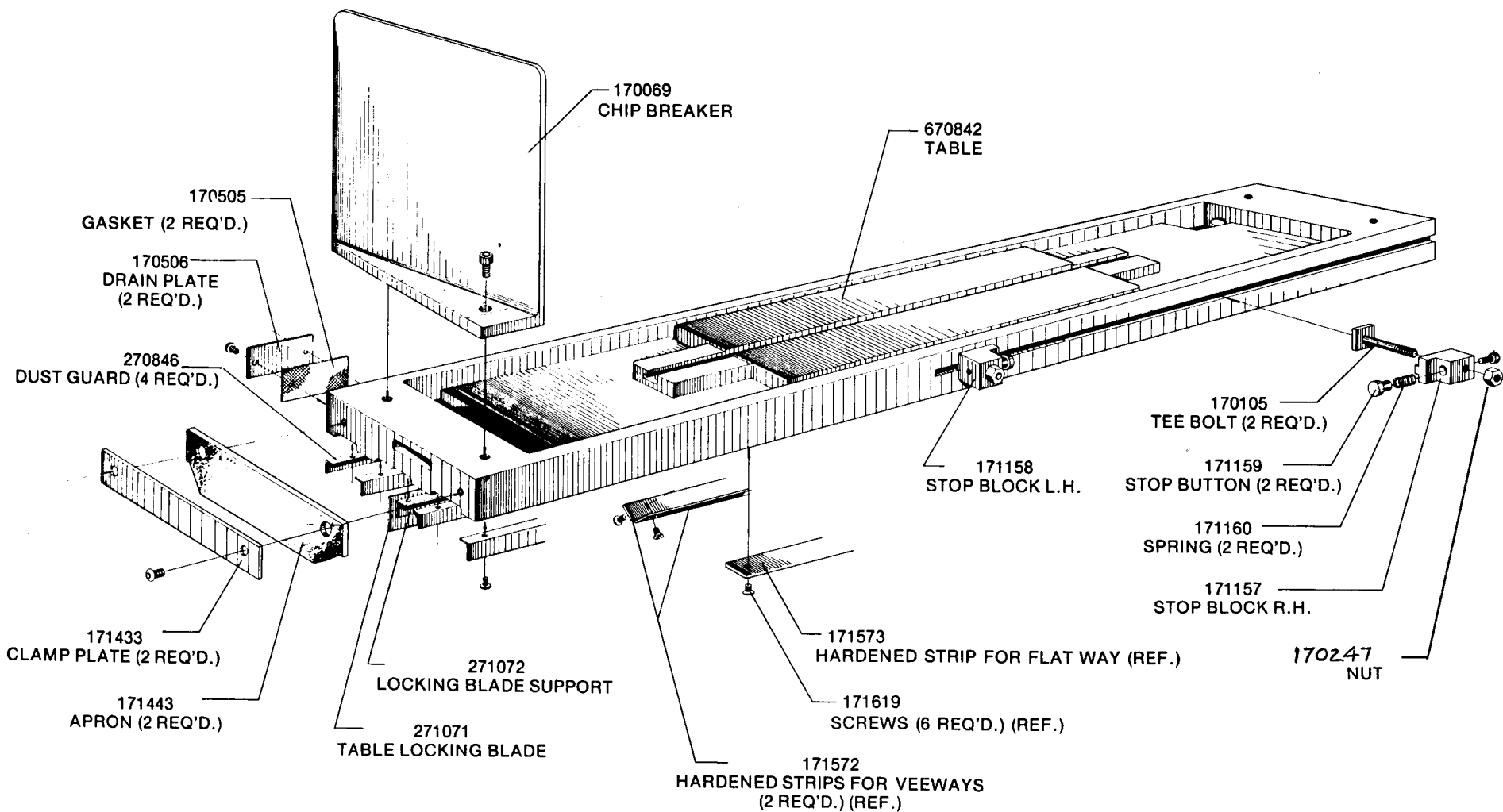
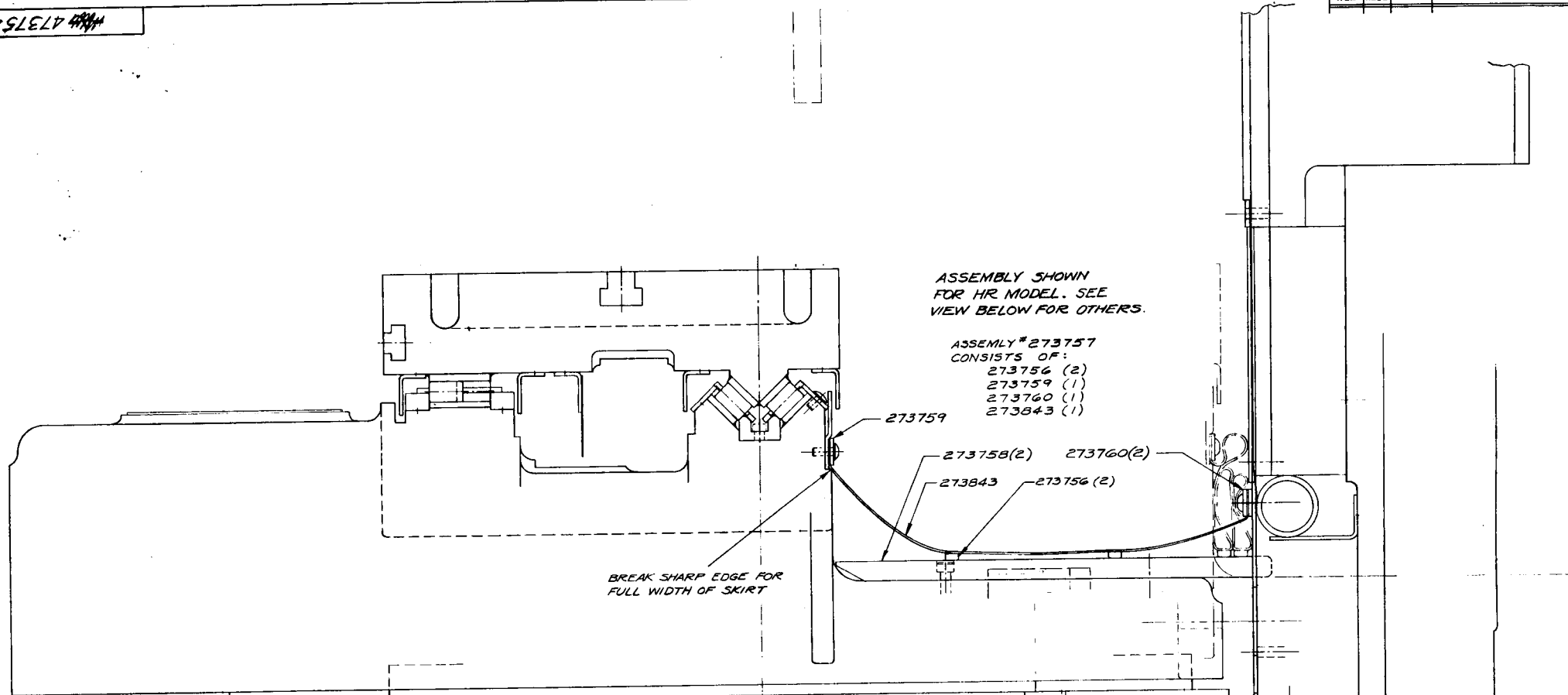


TABLE ARRANGEMENT

473754

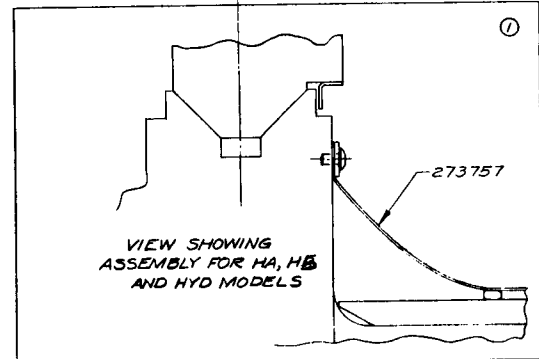
ITEM REQD MAT DESCRIPTION



ASSEMBLY SHOWN
FOR HR MODEL. SEE
VIEW BELOW FOR OTHERS.

ASSEMBLY # 273757
CONSISTS OF:
273756 (2)
273759 (1)
273760 (1)
273843 (1)

BREAK SHARP EDGE FOR
FULL WIDTH OF SKIRT



VIEW SHOWING
ASSEMBLY FOR HA, HB
AND HYD MODELS

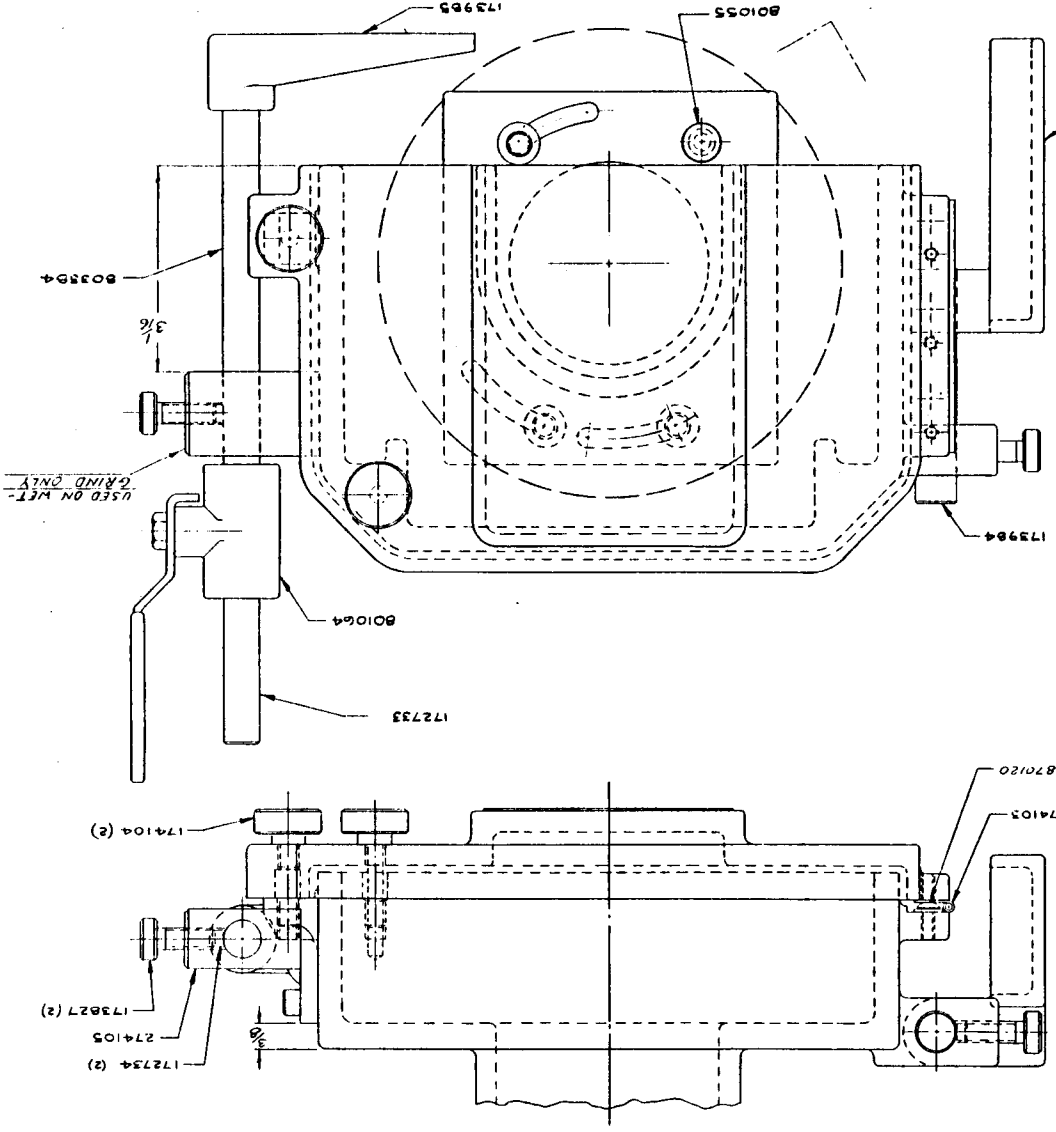
473754	TH	ADDED VIEW FOR HA, HB, HYD	DRAWN BY TH	CHECKED FOR TH	MATERIAL	HARDNESS	TITLE
ECN	ENG DATE	BY	DATE	DATE	PART NO		DUST SKIRT ASSEMBLY
CHANGES			LIST NO	REID BROTHERS COMPANY		SHEET	473754
TOLERANCE COMMON FRACTIONS ± 1/32			SCALE FULL	DEXTER MAINE		OF	

473754

JUL 21 1981

474100

WHEEL GUARD ASSEMBLY		DRAWING TITLE	
REID COMPANY		CHECKER MATERIAL	
MAINE		DATE	
Dexter		BY	
FULL		WAS	
SCALE		DATE	
TOLERANCE		PART NO.	
COMMON FRACTIONS 2		REV. NO.	
1		CHANGES	



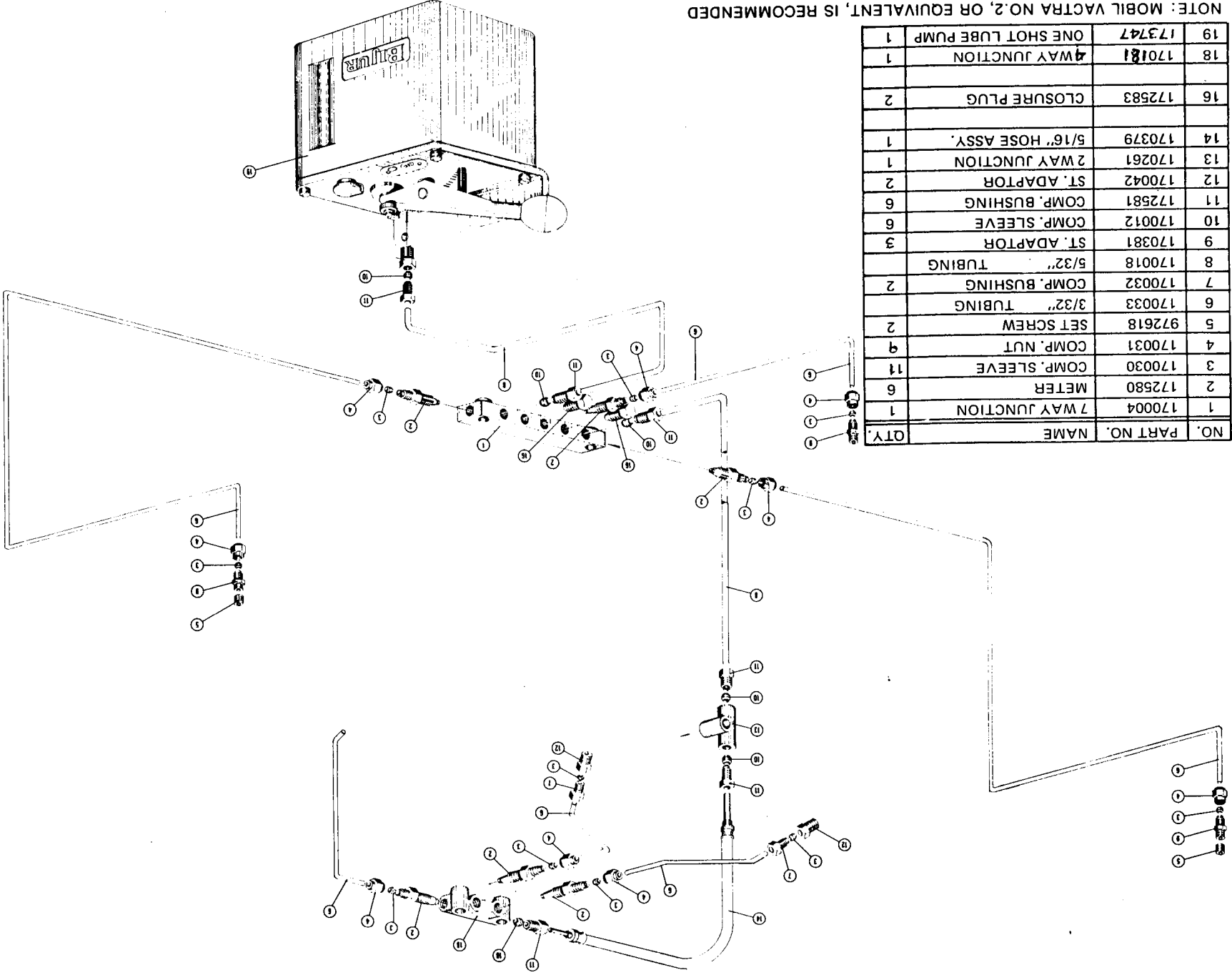
ITEM	QTY	DESCRIPTION
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474100

ONE SHOT LUBE PIPING LAYOUT... AND PARTS LIST... MODEL 618 HR

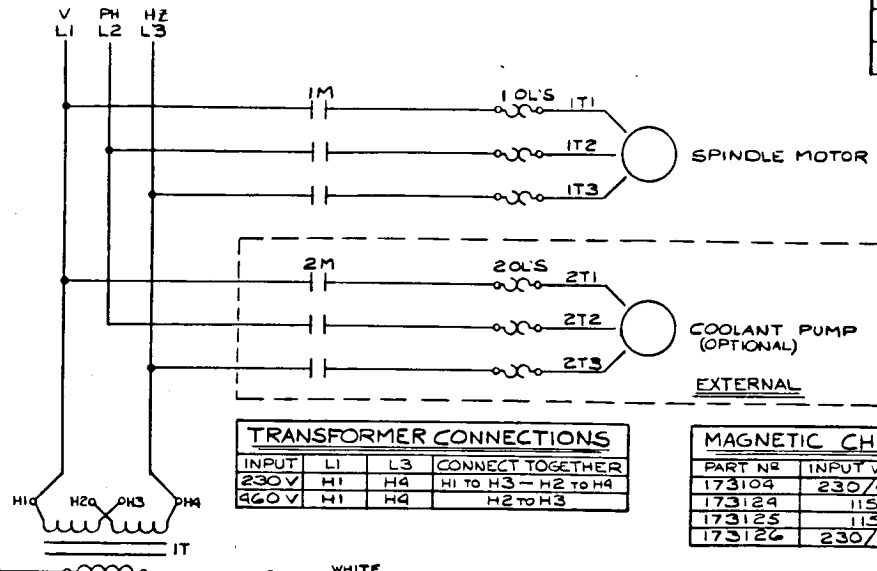
NOTE: MOBIL VACTRA NO.2, OR EQUIVALENT, IS RECOMMENDED

NO.	PART NO.	NAME	QTY.
1	170004	7 WAY JUNCTION	1
2	172580	METER	6
3	170030	COMP. SLEEVE	11
4	170031	COMP. NUT	9
5	972618	SET SCREW	2
6	170033	3/32" TUBING	2
7	170032	COMP. BUSHING	2
8	170018	5/32" TUBING	
9	170381	ST. ADAPTOR	3
10	170012	COMP. SLEEVE	6
11	172581	COMP. BUSHING	6
12	170042	ST. ADAPTOR	2
13	170261	2 WAY JUNCTION	1
14	170379	5/16" HOSE ASSY.	1
16	172583	CLOSURE PLUG	2
18	170181	4 WAY JUNCTION	1
19	173747	ONE SHOT LUBE PUMP	1



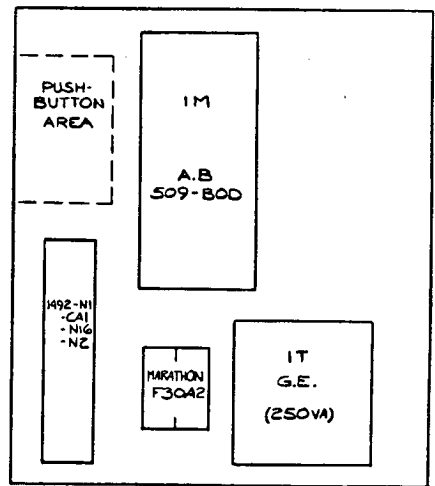
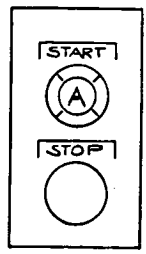
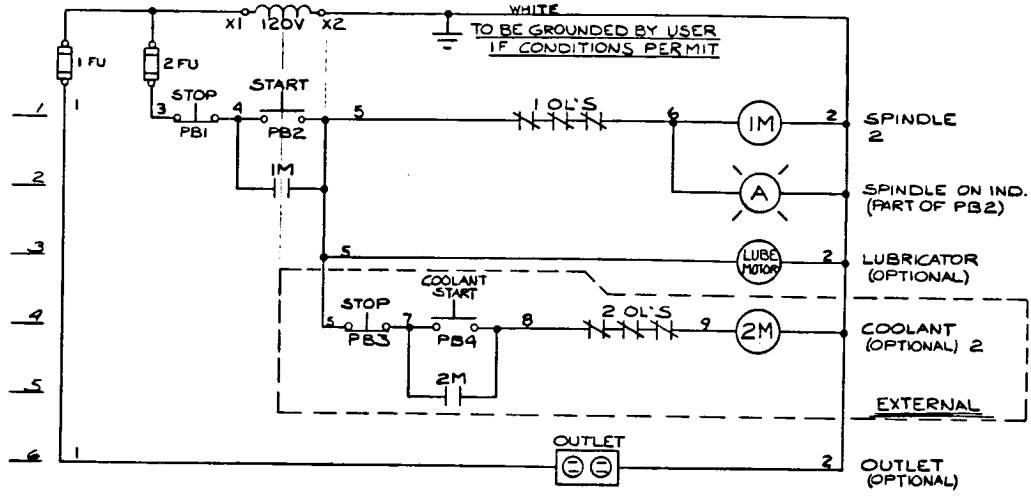
400323
DR. NO.

REVISION RECORD				
REV. NO.	DATE	BY	DESCRIPTION	MICRO



TRANSFORMER CONNECTIONS			
INPUT	L1	L3	CONNECT TOGETHER
230V	H1	H4	H1 TO H3 - H2 TO H4
460V	H1	H4	H2 TO H3

MAGNETIC CHUCK CONTROL		
PART NO.	INPUT VOLTAGE	CONNECT TO
173104	230/460	L1 + L3
173124	115	1 + 2
173125	115	1 + 2
173126	230/460	L1 + L3



DIMENSION TOLERANCE UNLESS SPECIFIED		MATERIAL -	
XX	± .010	MT. TREAT BEFORE MACH'G	
XXX	± .006	MT. TREAT AFTER MACH'G	
XXXX	± .0006	HARDNESS -	
REF DIM		DRAWN BY	DATE CHECKED
REF UNIT		SCALE	
REF ASSEM		SUPERSEDED BY	
OZALID OP.		BULLARD STD. GEOMETRIC TOLERANCES APPLY UNLESS SPECIFIED. USE DR. NO. 173700	
SIMILAR TO			

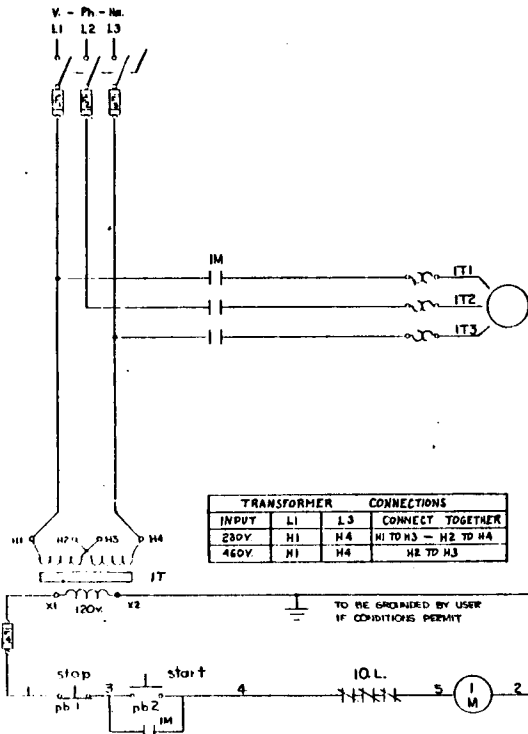
The Bullard Company
BRIDGEPORT, CONN., U.S.A.

ELECTRICAL SCHEMATIC
REID - STD. HA, HR, HB

DR. NO. **400323**

Bullard Where Considered

400323



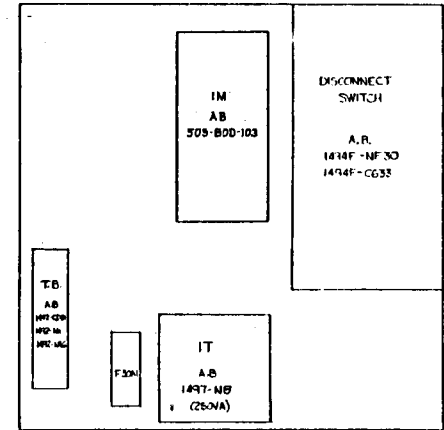
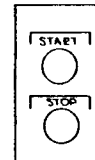
MAGNETIC CHUCK CONTROL		
PART NO	INPUT VOLTAGE	CONNECT TO
173104	230 / 460	L1 & L3
173124	115	L1 & 2
173125	115	L1 & 2
173126	230 / 460	L1 & L3

(OPTIONAL)

TRANSFORMER CONNECTIONS			
INPUT	L1	L3	CONNECT TOGETHER
230V	H1	H4	H1 TO H3 - H2 TO H4
460V	H1	H4	H2 TO H3

SEQUENCE OF OPERATION

PRESS PUSHBUTTON PB2 (1) ENERGIZING IM COIL (1)
 IM CONTACTS (2) CLOSE HOLDING IN IM COIL (1)
 PRESS PUSHBUTTON PB1 (1) DE-ENERGIZING IM COIL (1)
 SIMILAR OPERATION CEASES



BILL OF MATERIALS		
QTY.	DESCRIPTION	MANU. P/N
1	HOFFMAN ENCLOSURE	A28A210BLP
1	HOFFMAN PANEL	A20P20
1	A.B. DISCONNECT SWITCH	BUL 1494F-NF30
1	A.B. FUSE KIT	BUL 1494F-C633
1	A.B. DOOR HARDWARE KIT	BUL 1494F-L1
1	A.B. TRANSFORMER (250VA)	BUL 1497-NB
1	A.B. STARTER	BUL 509-800-103
1	MARATHON FUSE BLOCK	F30A1
12	A.B. TERMINAL BLOCK	BUL 1497-GA1
1	A.B. END BARRIER	BUL 1497-N16
1	A.B. MOUNTING CHANNEL	BUL 1497-N1
2	A.B. RETAINING CLIP	BUL 1497-N2
1	A.B. PUSHBUTTON	BUL 8007-A2D1
1	A.B. PUSHBUTTON	BUL 8007-86D2
1	A.B. NAMEPLATE	START
1	A.B. NAMEPLATE	STOP
2	FUSE	1A-750V-1 TIME
3	FUSE	15A-600V-1 TIME

DATE	BY	WAS	DRAWN BY	DATE	CHECKED BY	MATERIAL	DATE	PAID BY	REID BROS. COMPANY	MAINE	W-A-712-E1
CHANGES: TOLERANCE COMMON FRACTIONS 1/16										SCALE: 1/16" = 1"	DEXTER



POWER VERTICAL TRAVERSE

We are pleased that you have chosen to equip your new Reid grinder with Power Vertical Traverse.

Power Vertical Traverse is an approximate locating device which traverses the grinding head at 1/2 inch per second. It allows the operator to make major wheel head changes effortlessly and faster than conventional means.

The controls are located on the left hand side of the machine's pushbutton station and are clearly marked for your convenience. Simply push and hold the upper button to move the wheel head upward or the lower button to move downward.

A safety switch is provided at the upper travel to prevent damage to the lead screw. Use caution, however, when lowering so that the wheel does not overtravel into the workpiece. A shielded button is provided to prevent accidental down travel.

Also note that the handwheel is automatically locked when in the power mode. Additionally, the electrical circuit includes a time delay feature to prevent momentary engagement of the handwheel when jogging is attempted.

You will find that this unit is maintenance free. However, if you have any questions regarding its' care and operation, please contact the factory.

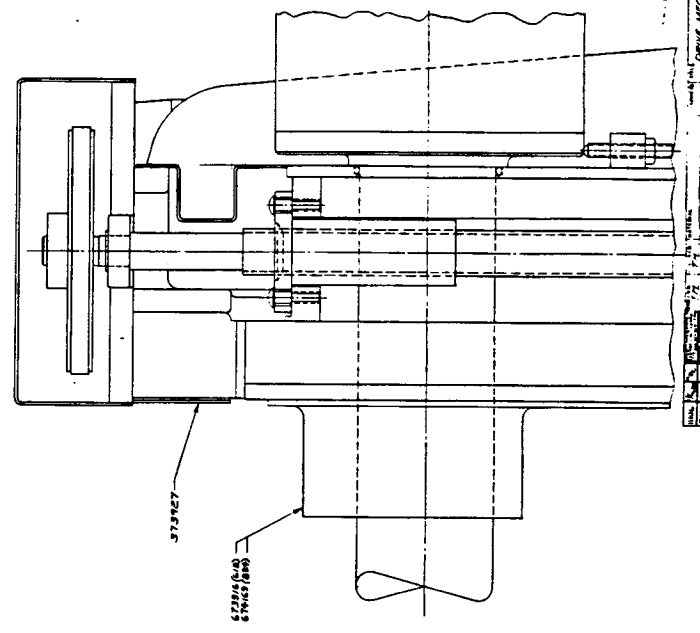
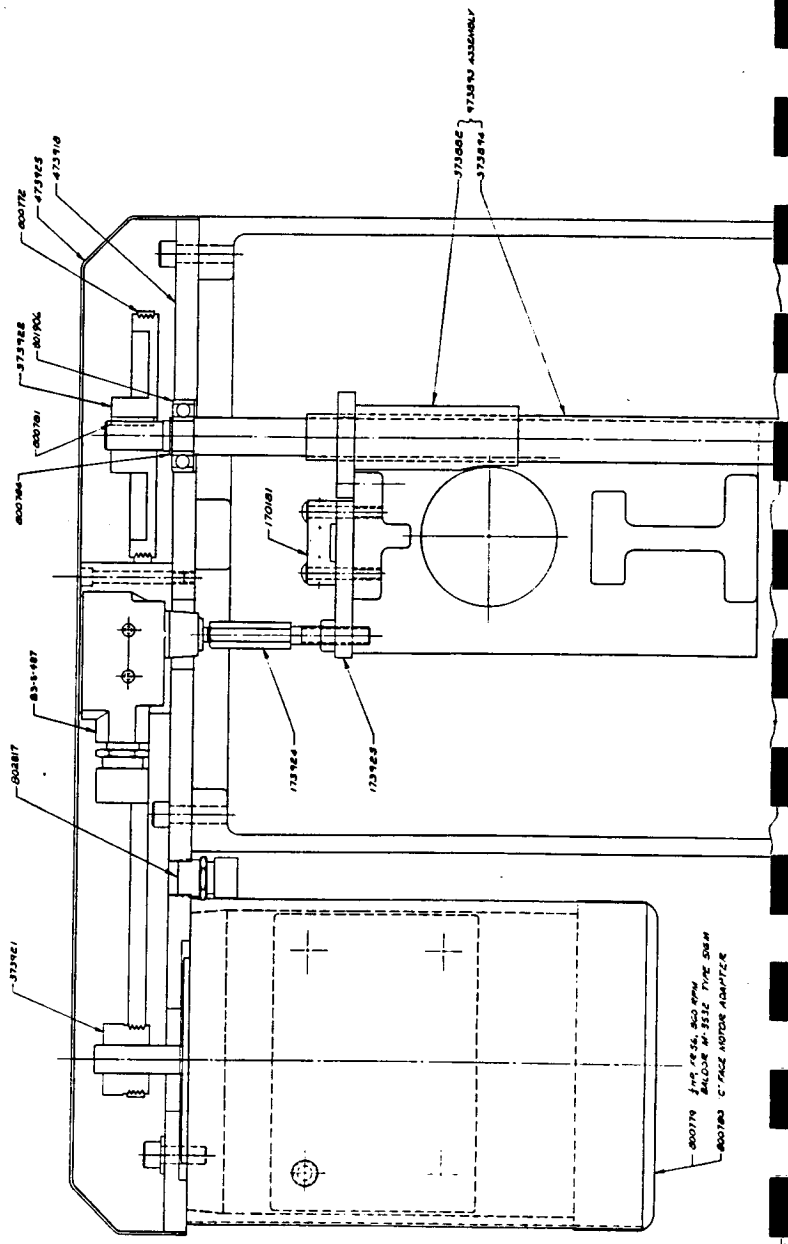
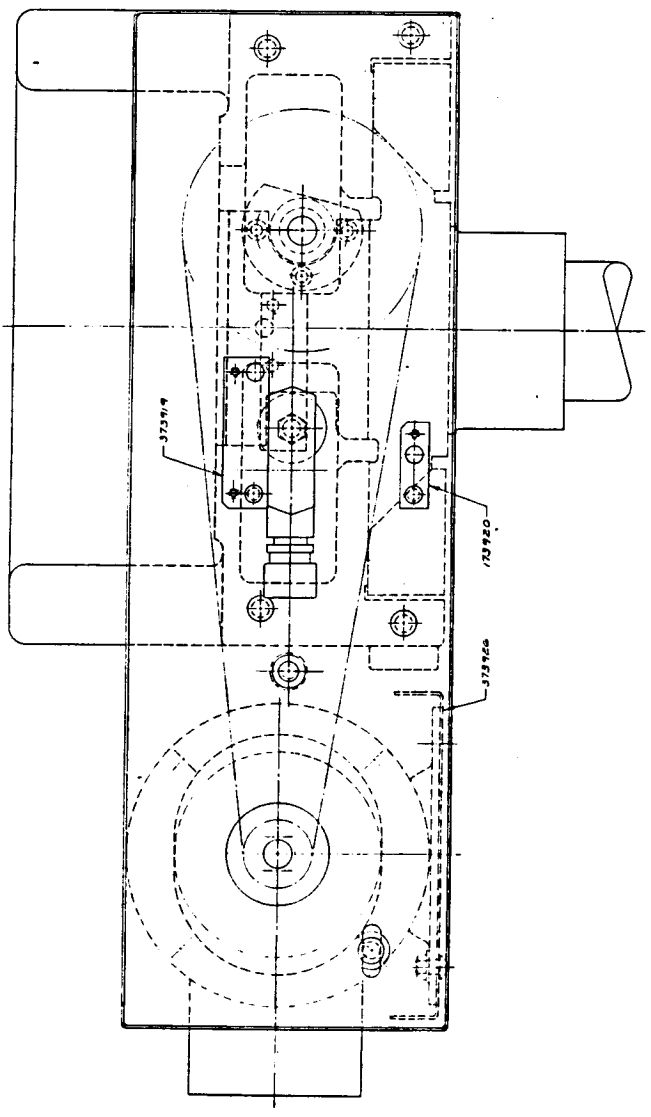


GEAR HOUSING ASSEMBLY
(POWER VERTICAL TRAVERSE)
NO. 374060

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
173896	Bearing Spacer - Inner	1
173897	Bearing Spacer - Outer	1
173898	Bearing Retainer	1
174088	Spacer	1
274062	Armature Guide	1
274065	Oil Deflector	1
274164	Gasket	1
373895	Bevel Gear	1
373904	Friction Driver	1
373907	Bevel Gear	1
373915	Pivot Plate	1
374056	Friction Disc	1
374057	Friction Drive Assembly	1
374063	Armature	1
374250	Magnet Mounting Plate	1
474087	Bevel Gear Housing	1
800769	Ball Bearing	2
800773	Brake Magnet	1
800777	Locknut	1
800778	Locknut	1
800781	Key	2
800785	Oil Seal	1
801936	Ball Bearing	2
802326	Dowel Pin	6
802327	Spring	6

GEAR HOUSING ASSEMBLY
(POWER VERTICAL TRAVERSE)
NO. 374060

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
802380	Roller Bearing	2
802408	Locknut	1
803939	90 ^o Elbow	1
805241	Cup	2
805242	Cone	2
870991	Set Screw	1
973893	Elevating Screw & Nut Assembly	1



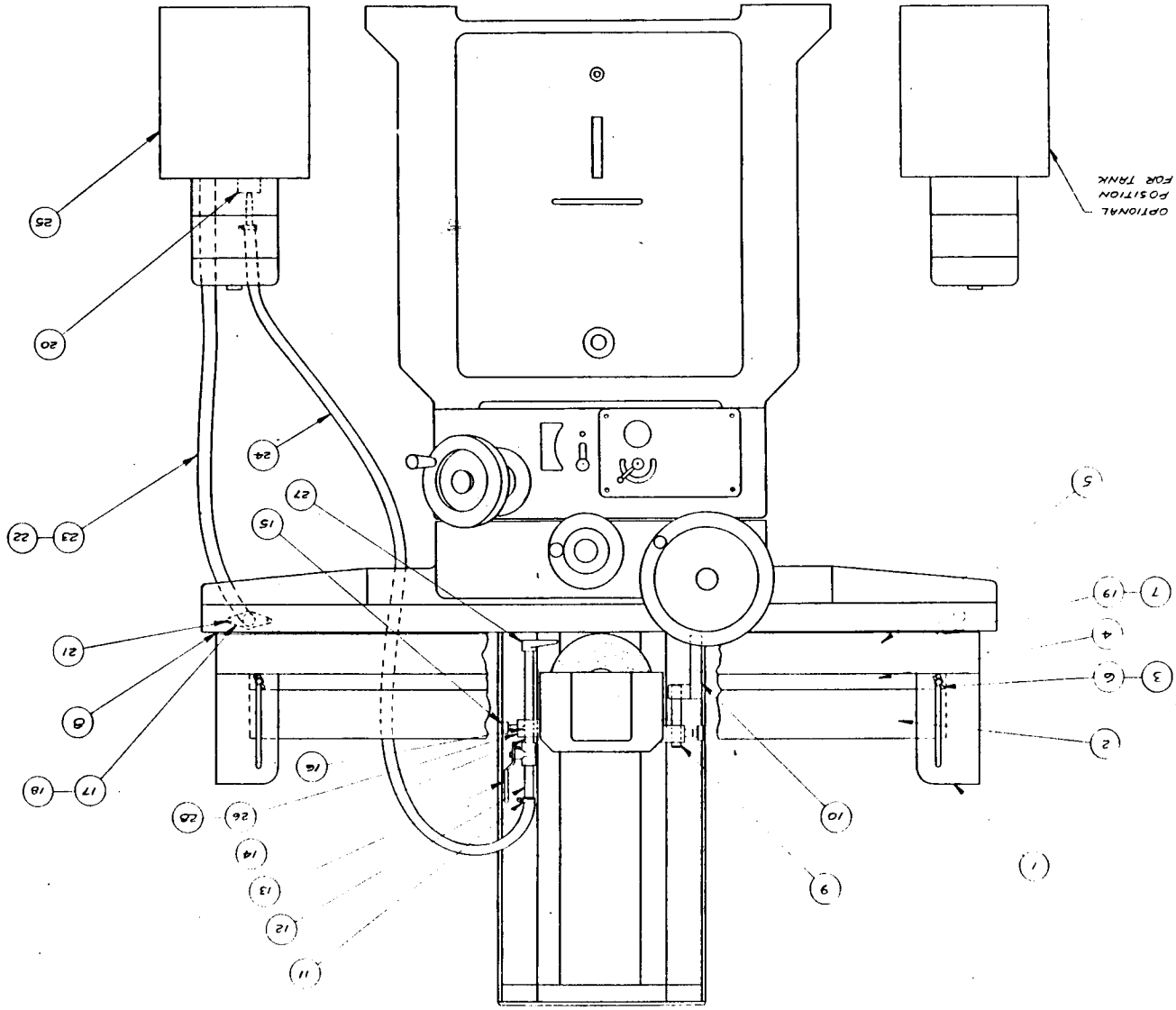
WET GRIND ATTACHMENT
NO. 474176

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	273334	End Baffle	2
2	270415	Guard-Large	2
3	870717	1/4-20 Wing Nut	4
4	270412	Guard-Small	2
5	373333	Gondola	1
6	870814	1/4 Flat Washer	4
7	870149	5/16 Flat Washer	4
8	803334	Gasket	10 ft.
9	173984	Stem	1
10	272723	Splasher	1
11	172739	1/2 Hose Clamp	2
12	172733	1/4 x 2-1/2 Nipple	2
13	801064	1/4 Bronze Ball Valve	1
14	803384	1/4 x 6" lg. Bk. Iron Pipe	1
15	173827	Thumb Screw	2
16	172734	Shoe	2
17	170470	Connector	1
18	170483	Gasket	1
19	870193	5/16-18 x 1/2 But. Hd. Screw	4
20	171142	Red. Coupling	1
21	870194	5/16-18 x 1 But. Hd. Screw	2
22	172732	1-1/4 Hose Clamp	2
23	803667	Return Hose	5 ft.
24	803664	Supply Tubing	9 ft.
25	172727	Pump Unit	1

WET GRIND ATTACHMENT
NO. 474176

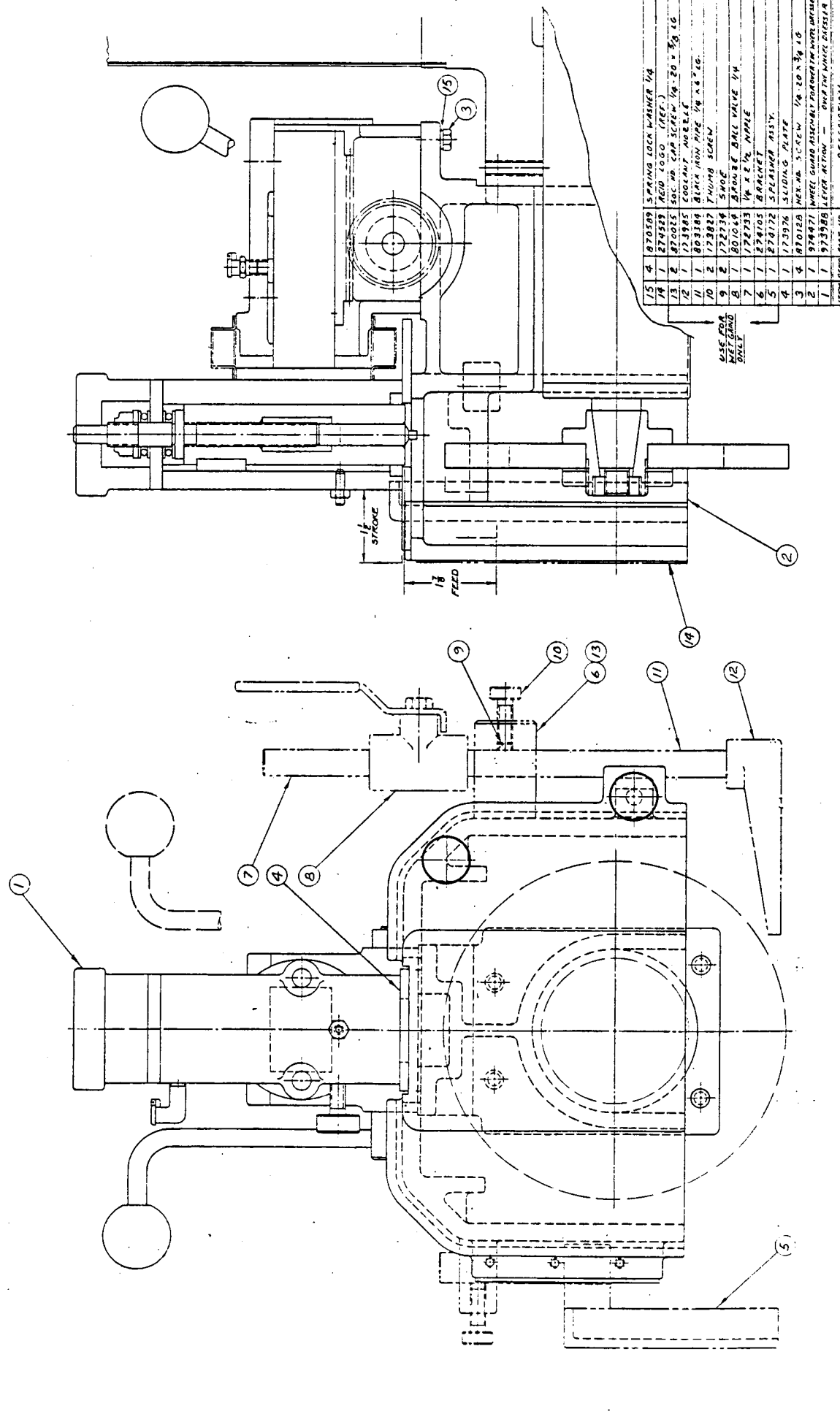
<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
26	274105	Bracket	1
27	173985	Coolant Nozzle	1
28	870025	1/4-20 x 5/8 Soc. Hd. Cap Screw	2

474176



ITEM NO.	REV.	DATE	BY	WAS	DESCRIPTION
1					1/2-20 X 5/8 SOCR HD SCR
2					COOLANT NOZZLE
3					BRACKET
4					PUMP UNIT
5					NYLON MADE 1/2 DIA X 1 FT. PVC TUBING
6					1/4 HOSE 1/4 X 10 X 5 FT. #34026
7					1/2 HOSE CLAMP
8					5/16 - 18 X 1 BUT HD SCR
9					1/4 X 1/2 RED. COUPLING
10					GASKET
11					CONNECTOR
12					SHOE
13					THUMB SCREW
14					1/4 X 6 LG. BLK IRON PIPE
15					1/4 BRONZE BALL VALVE
16					1/4 X 2 1/2 NIPPLE
17					1/2 HOSE CLAMP
18					SPLASHER
19					5 TEM
20					GASKET 10 FT
21					5/16 FLAT WASHER
22					1/4 FLAT WASHER
23					GONDOLA
24					GUARD - SMALL
25					1/4 - 20 WING NUT
26					GUARD - LARGE
27					END Baffle
28					WET GRIND ATTACHMENT

ITEM	REQD.	MAT.	DESCRIPTION
1			1/2-20 X 5/8 SOCR HD SCR
2			COOLANT NOZZLE
3			BRACKET
4			PUMP UNIT
5			NYLON MADE 1/2 DIA X 1 FT. PVC TUBING
6			1/4 HOSE 1/4 X 10 X 5 FT. #34026
7			1/2 HOSE CLAMP
8			5/16 - 18 X 1 BUT HD SCR
9			1/4 X 1/2 RED. COUPLING
10			GASKET
11			CONNECTOR
12			SHOE
13			THUMB SCREW
14			1/4 X 6 LG. BLK IRON PIPE
15			1/4 BRONZE BALL VALVE
16			1/4 X 2 1/2 NIPPLE
17			1/2 HOSE CLAMP
18			SPLASHER
19			5 TEM
20			GASKET 10 FT
21			5/16 FLAT WASHER
22			1/4 FLAT WASHER
23			GONDOLA
24			GUARD - SMALL
25			1/4 - 20 WING NUT
26			GUARD - LARGE
27			END Baffle
28			WET GRIND ATTACHMENT



ITEM	QTY	DESCRIPTION	UNIT
15	4	SPRING LOCK WASHER 1/4	
14	1	ACID LOGO (REF.)	
13	2	SOC. NO. CAP SCREW 1/4 X 20 X 3/8 LG	
12	1	COOLANT NOZZLE	
11	1	BLACK IRON PIPE 1/4 X 2 LG	
10	2	THUMB SCREW	
9	2	SWOPE	
8	1	BRASS BALL VALVE 1/4	
7	1	1/2 X 2 1/4 NIPPLE	
6	1	BRACKET	
5	1	SPLASHER ASSY.	
4	1	SLIDING PLATE	
3	4	WAS. NO. 3 SCREW 1/4 X 20 X 3/8 LG	
2	1	WHEEL GUARD ASSEMBLY FOR PUMP WHEEL	
1	1	LEVER ACTION — OVER THE WHEEL GUARD ASSEMBLY	

DATE BY: _____

CHANGES: _____

SCALE: _____

TOLERANCE: _____

COMMON FRACTIONS: _____

DRAWN: _____

CHECKED: _____

DATE: _____

BY: _____

REID

COMPANY: _____

MAINE

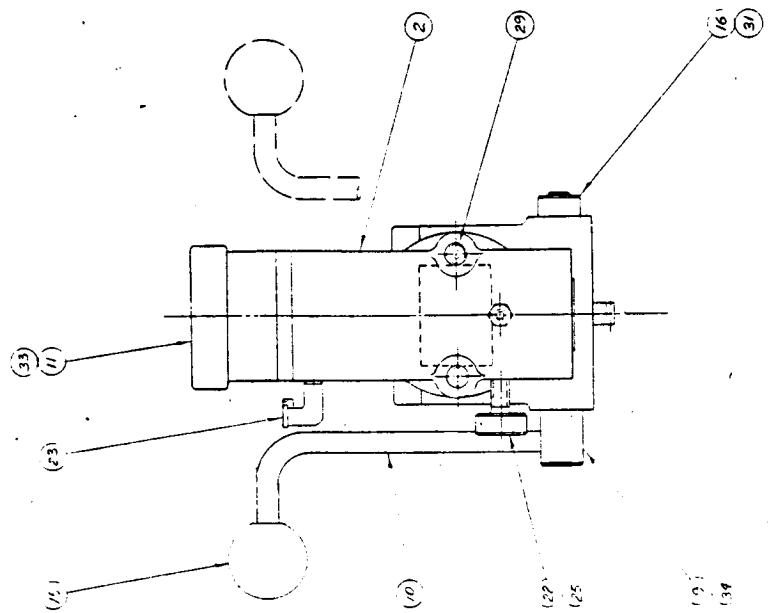
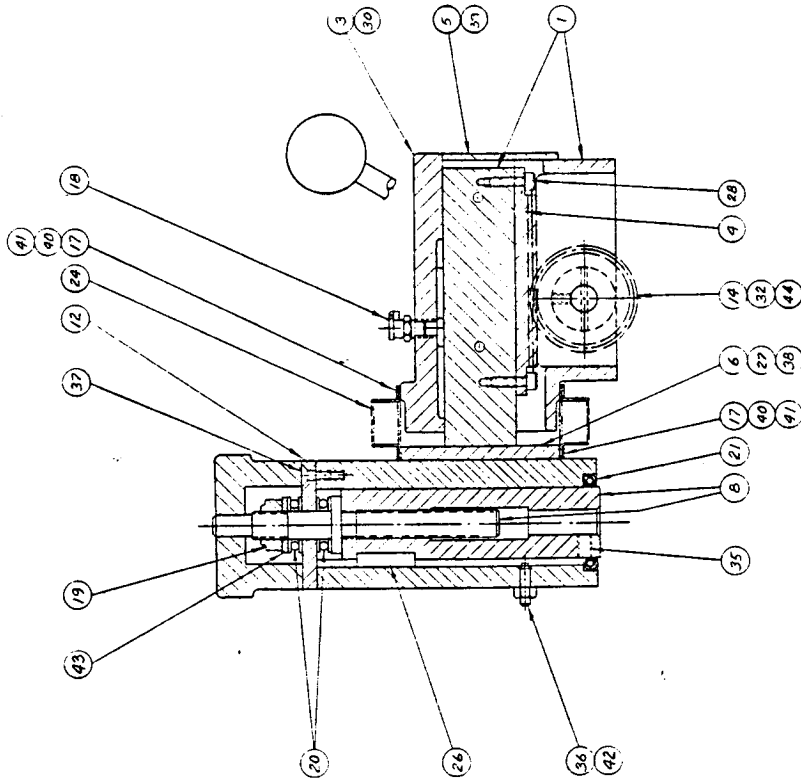
474109

LEVER ACTION — OVER THE WHEEL GUARD ASSEMBLY

DESCRIPTION

JUL 31 1981

REV	DATE	BY	CHK	DESCRIPTION
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Faysscott
 Division of **Wyle** Consulting Engineers, Inc.

ITEM: **LEVER ACTION OPER. TIRE WHEEL DRESSER**

DATE: **6-7-42**

DESIGNED BY: **W.H.E.**

CHECKED BY: **W.H.E.**

SCALE: **1/4" = 1"**

DRAWING NO: **4744/3**

REV: **1**

UNLESS OTHERWISE SPECIFIED

1 FINISH: 125 RMS

2 FINISH: 125 RMS

3 FINISH: 125 RMS

4 FINISH: 125 RMS

5 FINISH: 125 RMS

6 FINISH: 125 RMS

7 FINISH: 125 RMS

8 FINISH: 125 RMS

9 FINISH: 125 RMS

10 FINISH: 125 RMS

11 FINISH: 125 RMS

12 FINISH: 125 RMS

13 FINISH: 125 RMS

14 FINISH: 125 RMS

15 FINISH: 125 RMS

16 FINISH: 125 RMS

17 FINISH: 125 RMS

18 FINISH: 125 RMS

19 FINISH: 125 RMS

20 FINISH: 125 RMS

21 FINISH: 125 RMS

22 FINISH: 125 RMS

23 FINISH: 125 RMS

24 FINISH: 125 RMS

25 FINISH: 125 RMS

26 FINISH: 125 RMS

27 FINISH: 125 RMS

28 FINISH: 125 RMS

29 FINISH: 125 RMS

30 FINISH: 125 RMS

31 FINISH: 125 RMS

32 FINISH: 125 RMS

33 FINISH: 125 RMS

34 FINISH: 125 RMS

35 FINISH: 125 RMS

36 FINISH: 125 RMS

37 FINISH: 125 RMS

38 FINISH: 125 RMS

39 FINISH: 125 RMS

40 FINISH: 125 RMS

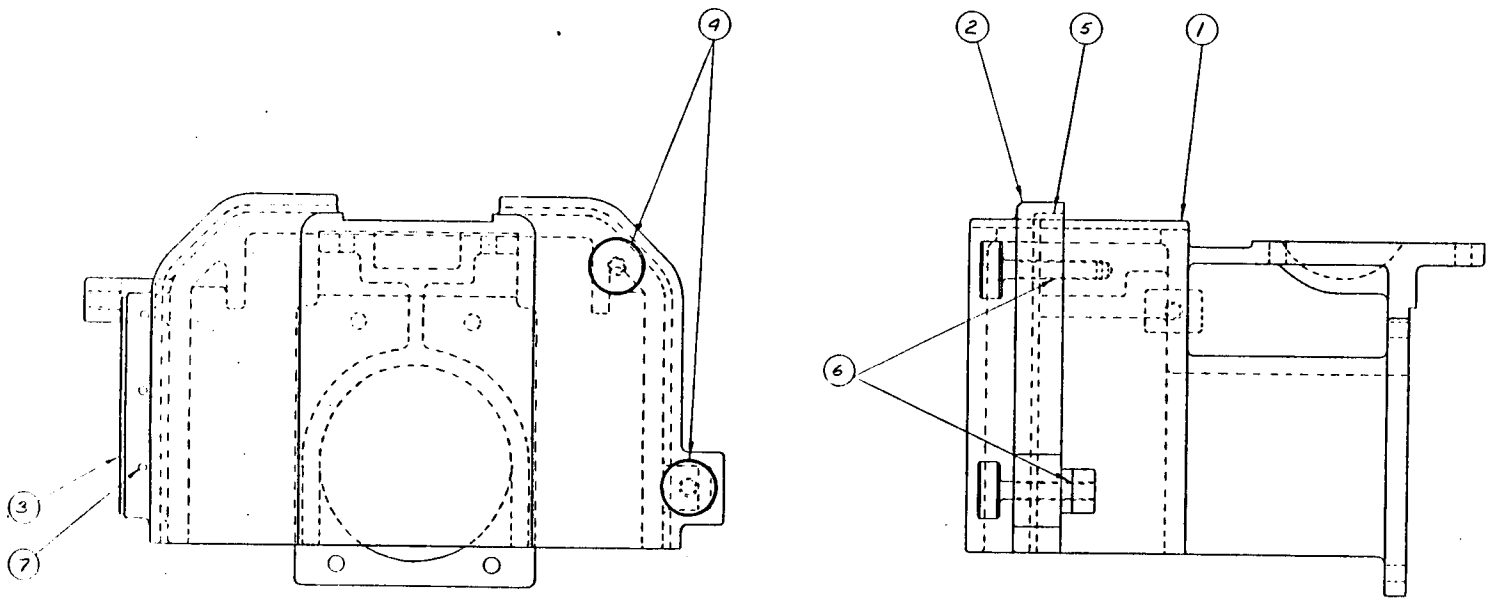
41 FINISH: 125 RMS

42 FINISH: 125 RMS

43 FINISH: 125 RMS

44 FINISH: 125 RMS

REV	CHANGE	BY	CHK	DATE



REV	DESCRIPTION	QTY	UNIT
7	BOTTOM BRACKET 020180	1	PC
6	WHEEL GUARD 020119	1	PC
5	WHEEL GUARD 020119	1	PC
4	COVER PLATE 120109	1	PC
3	HINGE 120109	1	PC
2	COVER 020119	1	PC
1	WHEEL GUARD 020119	1	PC

Faysscott
 Division of White Consolidated Industries, Inc.

TITLE WHEEL GUARD ASSEMBLY FOR OVER THE WHEEL DRESSER

OPERATOR

DRAWN BY DATE **4-1-82** **CHECKED BY** DATE

SCALE DRAWING NO. **474414** **SHEET** 1 **OF** 1

SUPERSEDES—

SUPERSEDED BY—

TOLERANCE SYMBOLS	UNLESS OTHERWISE SPECIFIED
□ FLATNESS	1. FINISH—125 RMS
— STRAIGHTNESS	2. ALL GROUND SURFACES TO BE SQUARE, PARALLEL,
○ ROUNDNESS	CONCENTRIC WITHIN .001 E. I. B.
∞ CYLINDRICITY	3. TOLERANCES
∥ PARALLELISM	2. .001 ON ALL 4 PLACE DECIMAL DIMENSIONS
∠ ANGULARITY	2. .005 ON ALL 3 PLACE DECIMAL DIMENSIONS
⊥ PERPENDICULAR	2. .01 ON ALL 2 PLACE DECIMAL DIMENSIONS
⊕ TRUE POSITION	2. 1/64 ON ALL FRACTIONAL DIMENSIONS
⊙ CONCENTRICITY	2. 1/32 ON ALL ANGULAR DIMENSIONS
∩ SYMMETRY	
∕ RUNOUT	

REFERENCE DIMENSION

MICROMETER FINE ELEVATING FEED
DRAWING NO. 473716

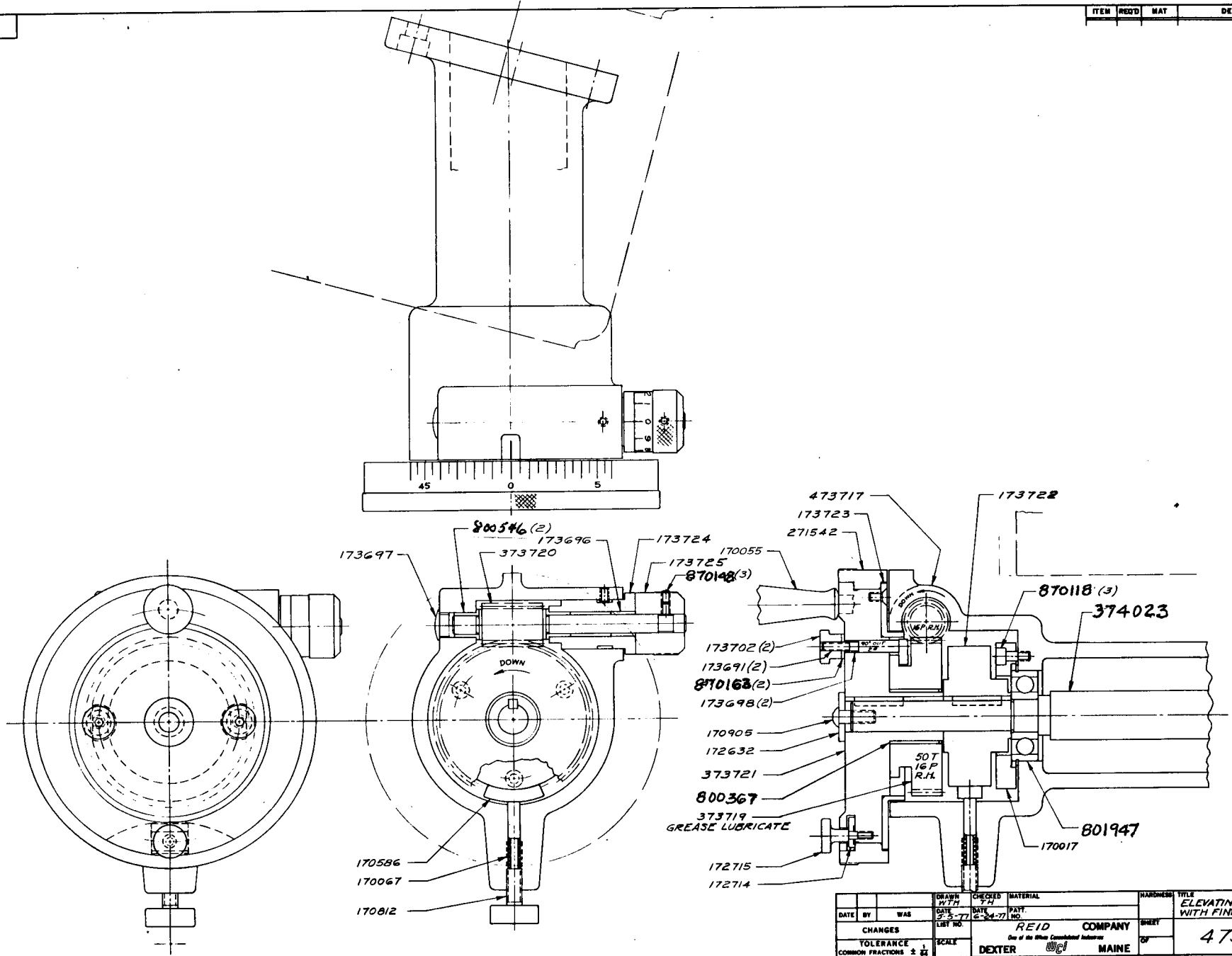
<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
170017	Bearing Cap	1
170055	Handle	1
170067	Spring	1
170586	Lock	1
170812	Adjusting Screw	1
170905	Nyloc Screw	1
172632	Washer	1
172714	Clamp	1
172715	Clamp Screw	1
173691	Binder	2
173696	Sleeve Bearing	1
173697	Hole Plug	1
173698	Spring	2
173702	Binder Knob	2
173722	Spacer	1
173723	Retainer	1
173724	Retainer	1
173725	Knob	1
271542	Graduated Rim	1
373719	Helical Gear	1
373720	Helical Pinion	1
373721	Handwheel	1
374023	Shaft	1
473717	Housing	1
800367	Sleeve Bearing	1

MICROMETER FINE ELEVATING FEED
DRAWING NO. 473716

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
800546	Flanged Bearing	2
800781	Key	2
801947	Bearing	1
870118	#10-32 x 1/2 Soc. Hd. Cap Screw	3
870148	#10-32 x 1/4 Soc. Set Screw	3
870163	Washer	2
871132	#8-32 x 3/8 Flat Hd. Screw	4

473716

ITEM	REID	MAT	DESCRIPTION
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- 473717
- 173723
- 271542
- 173722
- 800546 (2)
- 173696
- 373720
- 173724
- 170055
- 173725
- 870148 (3)
- 870118 (3)
- 374023
- 173702 (2)
- 173691 (2)
- 870163 (2)
- 173698 (2)
- 170905
- 172632
- 373721
- 800367
- 373719
- GREASE LUBRICATE
- 172715
- 172714
- 170017
- 801947

DATE	BY	WAS	DRAWN P.W.H.	CHECKED T.H.	MATERIAL	HARDNESS	TITLE
			DATE 3-5-77	DATE 6-24-77	REID COMPANY <i>One of the Other Consolidated Industries</i>		ELEVATING HANDWHEEL WITH FINE FEED KNOB
CHANGES			LIST NO.	SCALE		SHEET	473716
TOLERANCE			COMMON FRACTIONS $\pm \frac{1}{32}$	DEXTER	MAINE	OF	

DRAWING NO. 473716

MICROMETER FINE CROSS FEED
DRAWING NO. 473682

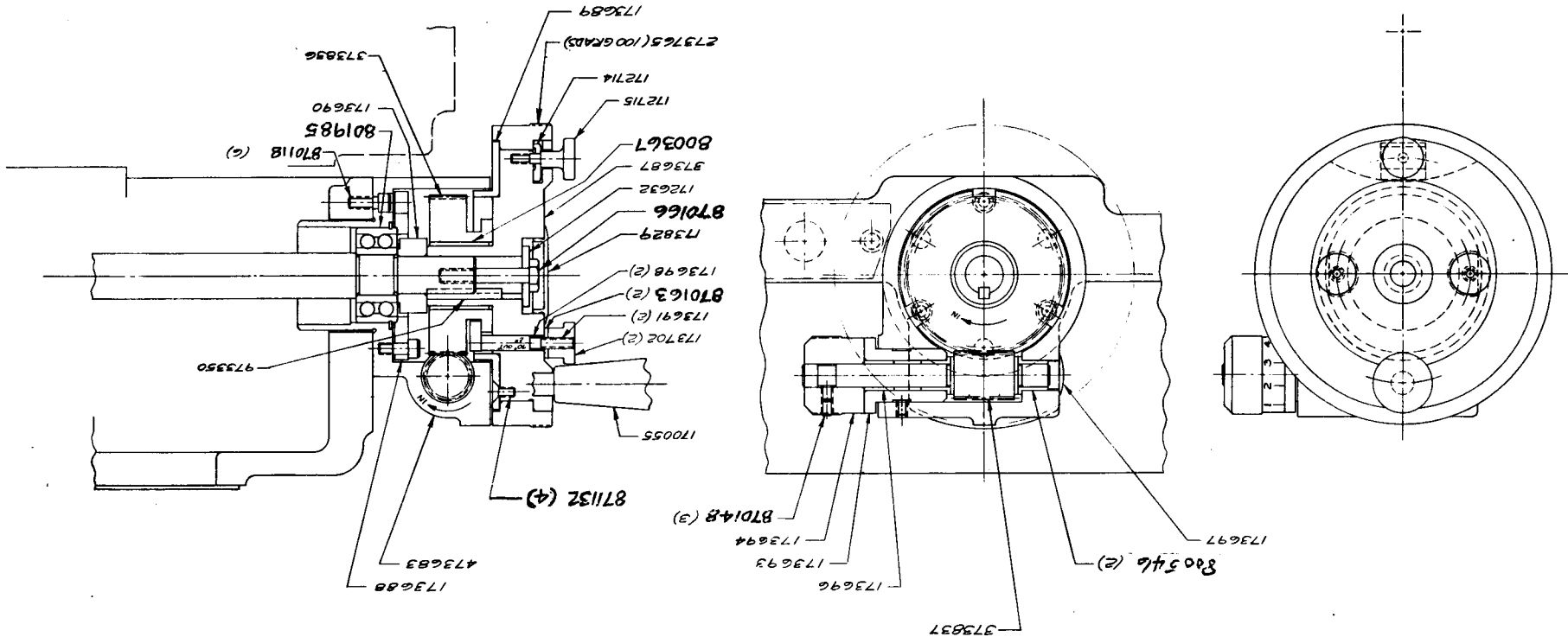
<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
170055	Handle	1
172632	Washer	1
172714	Clamp	1
172715	Clamp Screw	1
173688	Bearing Cap	1
173689	Retainer	1
173690	Spacer	1
173691	Binder	2
173693	Bearing Retainer	1
173694	Knob	1
173696	Sleeve Bearing	1
173697	Hole Plug	1
173698	Spring	2
173702	Binder Knob	2
173829	Hole Plug	1
273765	Graduated Rim	1
373687	Handwheel	1
373836	Helical Gear	1
373837	Helical Pinion	1
473683	Housing	1
800367	Sleeve Bearing	1
800546	Flanged Bearing	2
801985	Bearing	1
870118	#10-32 x 1/2 Soc. Hd. Cap Screw	6

MICROMETER FINE CROSS FEED
DRAWING NO. 473682

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
870148	#10-32 x 1/4 Soc. Set Screw	3
870163	Washer	2
870166	1/4-20 x 1-1/2 Hex. Hd. Screw	1
871132	#8-32 x 3/8 Flat Hd. Screw	4
973350	Key	1

Drawing of Part

473682			
DRAWING TITLE	GROSS FEED HANDWHEEL MICROMETER FINE FEED		
	DATE	BY	WA
	DATE	BY	WA
	DATE	BY	WA
REVISION	BY	DATE	DESCRIPTION
DRESS MATERIAL		DATE	DESCRIPTION
P.C. COMPANY		DATE	DESCRIPTION
MAINE		DATE	DESCRIPTION



ITEM	REQD	MAT	DESCRIPTION
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473682

DIGITAL MEASURING SYSTEM BASIC OPERATION

INTRODUCTION

Your ACU-RITE® II Digital Measuring System consists of a digital position readout (console), for control and display, and the linear measuring scales installed on your machine tool to detect and measure table movement. This easy-to-use system accurately measures the position coordinates of your machine table while you are machining, and displays them in inches or millimeters on the console.

PRINCIPLES OF OPERATION

The system measures in two ways, or modes: the *incremental* measurement mode and the *absolute* measurement mode. You select either mode on the console by pushing the ABS key. When the ABS key is lit, the console is in the absolute mode, and when the ABS key is not lit, the console is in the incremental mode.

The incremental mode is used when you want the system to measure and display point-to-point table positioning. After you've moved the table from one point to another, just reset to zero and continue to the next step.

The absolute mode keeps track of the total incremental distance the table moves from the original zero starting position, no matter how many incremental steps you've done. This absolute distance is displayed the instant you push (lighting) the ABS key.

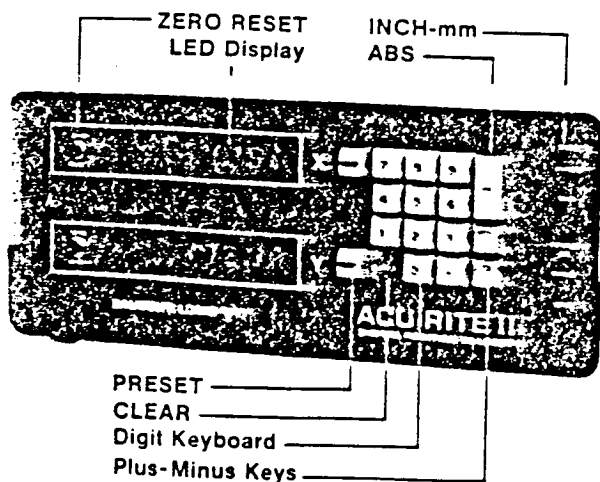
The *preset* function allows you to preset your console to any value when in the incremental mode. The preset function may also be used for tool offset (radius or diameter) by adding the preset value to or subtracting it from the incremental value. At any time, you can recall the preset or offset dimension to the display by pushing (lighting) the PRESET key again.

Panel controls, set-up and preset operating procedures are described below. (See the operator's manual for typical examples of the above functions.)

PANEL CONTROLS (Figure 1)

ZERO RESET (to set either measurement mode to display all zeros).

One pushbutton in each axis that resets the display to zero in either the absolute mode (ABS key lit) or the incremental mode (ABS key not lit). The display shows all zeros, unless the preset value is displayed (ABS key not lit, PRESET key lit). In that case, the incremental mode is still zeroed, but the preset value continues to be displayed.



LED Display

- Shows measured absolute distance when in the absolute mode (ABS key is lit).
- Shows measured incremental position when in the incremental mode (ABS key and preset key not lit).
- Shows value entered in preset memory when in the incremental mode and PRESET key is pushed (PRESET key is lit, ABS key not lit).
- When in either the incremental or the absolute mode, the plus or minus sign at the left of the display indicates the direction from the zero reference point (polarity of table travel). However, when the value in the preset memory is being displayed, it is always an absolute number (no sign), and the plus or minus sign tells you whether you last added or subtracted that value.

INCH-mm

Instantly converts incremental or absolute mode measurement from inches to millimeters, and vice versa. Does not convert value in preset memory even though decimal place will change.

PRESET (when lit)

- Changes the display from the incremental measurement to the value in the preset memory when in the incremental mode (ABS key not lit).
- Activates the preset keyboard functions (CLEAR, digit keys, \ominus , \oplus).
- Both measurement modes still measure machine table coordinates, but only preset value is displayed. (ABS key not lit).
- Push to return to incremental mode when not adding or subtracting preset value.

NOTE: If ABS key is lit, display will not show preset entry, though entry *does* take place.

CLEAR (Functional only when PRESET key is lit).

- Clears value in the preset memory. (Display will blank except when ABS key is lit).
- Enables entry of a new value into preset memory.

Digit Keyboard

Enters new value into preset memory when PRESET key is lit and CLEAR key has been pushed.

Plus-Minus Keys (Functional immediately following a digit keyboard entry or immediately after pushing PRESET key if reusing an established preset value.)

- When used to enter preset value: light goes out when either key is pushed, indicating that the plus or minus preset value has been entered into the preset memory. Display will then be returned to the incremental mode and display the preset value.
- When used for tool radius/diameter offset: add or subtract radius/diameter dimension to or from the incremental measurement. For easy reference circle represents cutter, tangent lines represent workpiece surface to be machined (see Operator's Manual for examples).

ABS Key (when lit)

Switches display from incremental mode or preset value to the absolute mode, and displays the absolute measurement.

SET-UP OPERATION

NOTE: AUTO RESET switch on the rear of the console must be in the OFF position before proceeding. See the Operator's Manual for an explanation of this optional feature.

1. Place the workpiece in position and move the table to the location of your zero coordinates (starting point).
2. Flip the POWER switch to ON (Figure 2). Both the ABS key and the power-fail indicator(s) at the left of the display(s) will light, indicating that the power-fail/fault circuit of the absolute mode is working properly.

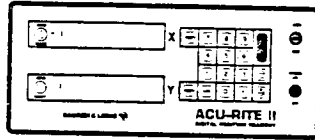


Figure 2

3. Push the ZERO RESET key for each axis to now properly zero the absolute mode. Plus zeros will be displayed (Figure 3).

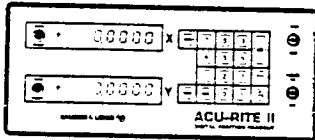


Figure 3

4. Push the ABS key (Figure 4). The light will go out, changing the console to the incremental mode. The power-fail indicator(s) will light again, indicating that the power-fail/fault circuit of the incremental mode is working properly.

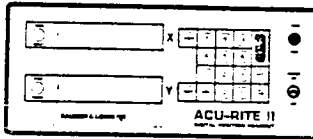


Figure 4

5. Push the ZERO RESET key for each axis again to zero the incremental mode, and plus zeros will be displayed (Figure 3).

6. Make the proper selection on the INCH-mm switch (Figure 4) to be certain that measurements will be made and displayed in the correct dimensions (inches or millimeters).

NOTE: Display will read 0.0000 in INCH measurement and either 0.00 or 0.000 in mm measurement, depending on the resolution of the system.

Your ACU-RITE II system is now ready to use.

PRESET OPERATION—To preset the incremental mode of your console with a specific dimension:

1. Push ZERO RESET key on desired axis to zero incremental mode display.
2. Push PRESET key on desired axis (Figure 5). The key will light up, and the display will indicate the value in the preset memory (zero or any previously entered number).

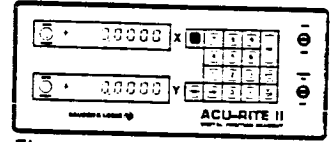


Figure 5

NOTE: When the PRESET key is lit, the system will still measure the machine coordinates, but not display them.

3. Push the CLEAR key to clear any previous number from the preset memory. The display will blank out except for the decimal point (Figure 6).

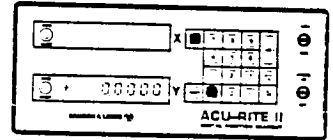


Figure 6

4. Enter the preset value by pushing the appropriate digit keys, including the decimal point (Figure 7). If an error is made, push the CLEAR key and start again.

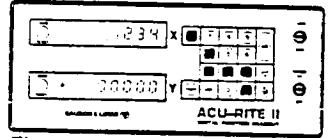


Figure 7

5. To preset the incremental mode to the above value, push the plus or minus key, depending on whether the preset value is to be positive or negative (Figure 8). The PRESET light will go out and the display will indicate the preset machine coordinates.

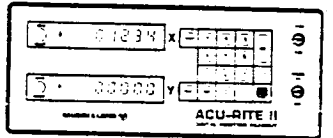


Figure 8

NOTE: The preset value may be recalled at any time by pushing (lighting) the PRESET key. To return to the incremental mode, push the PRESET key again (light out).

OFFSET OPERATION

To add tool diameter or radius to, or subtract it from your incremental dimension, follow instructions for presetting, but *do not* zero-reset your incremental mode display (step 1). This allows the tool offset to be added to or subtracted from the incremental coordinates. The symbols on the plus/minus keys

(\oplus) | (\ominus) indicate the reference surface of the cutter with respect to the workpiece.

(See Cutter Offset examples in the Operator's Manual.)

NOTES ON ABSOLUTE OPERATION

- To switch to the absolute mode, push (lighting) the ABS key. Display will read the total distance from the zero reference (starting) point. Pushing the ABS key a second time (light goes out) returns the display to the incremental mode.
- **IMPORTANT**—To properly rezero absolute mode when in the incremental mode, push the ABS key (will light) and push ZERO RESET key(s); then push the ABS key again (light goes out) to return to incremental mode.
- The preset feature applies to the incremental measurement mode only—never to the absolute mode. That is, if the ABS key is lit, the display will continue to show the absolute measurement, even while preset entries are being made that affect the incremental measurement.

REID SURFACE GRINDERS
THE BULLARD CO. DEXTER PLANT
225 SPRING STREET
DEXTER, ME. 04930
TEL: 207-924-5531

Bullard

WCI **White Consolidated**
Machine Tool Group

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