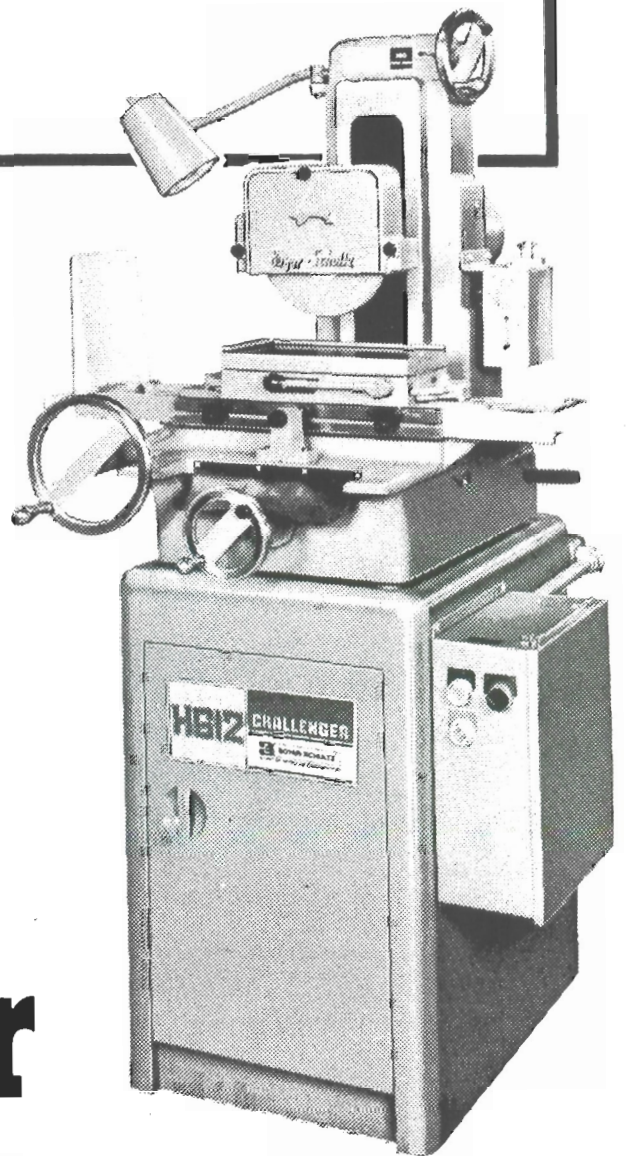


Manual of Instructions and Specifications



Challenger

SURFACE GRINDER

BOYAR-SCHULTZ

SERIAL NO. _____

Challenger

SURFACE GRINDER

BOYAR-SCHULTZ

702 South Main Street • Rockford, Illinois 61105 • 815/964-2600

WARRANTY

BOYAR-SCHULTZ provides a warranty, to the original owner, that all equipment and accessories manufactured by them are to be free from defects in material and workmanship for a period of one year, when properly lubricated and maintained.

A business reply warranty card is shipped with each machine. Fill out and return this card upon delivery to assure your rights under the guarantee.

BOYAR-SCHULTZ, following a policy of continuous improvement of all its products, reserves the right to change specifications or design at any time without notice or obligation.

HANDLING

Remove the machine from its shipping crate.

CABINET BASE: Lift by means of the studs located on either side of the machine bed and the crossfeed handwheel housing.

CAST IRON BASE: Fork lift under the base from the rear of the machine.

Lifting in any other manner may impair the precision to which this machine was manufactured.

INSTALLATION

Set the machine in place and level, adjusting the base leveling screws with the wrenches furnished, to obtain maximum grinding quality and to permit the lubrication system to operate efficiently.

Remove the table from its crate and clean thoroughly. Lubricate the ways and rack as recommended in the lubrication chart. Clean the table carriage ways and pinion carefully; set the table in place, sliding it back and forth until the pinion engages the rack.

SAFETY

Certain federal, state and local safety regulations must be adhered to in the operation of any machine tool; the importance of operator safety must not be neglected.

The safe operation of this machine will be maximized when these "rules" are followed:

1. Wire the machine according to the local electrical code.
2. Install the machine with adequate "body" clearance beyond the maximum travels.
3. Always wear protective eyeglasses.
4. Check wheel rotation: it must be clockwise.
5. Do not operate the grinding wheel faster than the speed shown on the wheel blotter.
6. Before starting machine, verify that the wheel is secure and the mounting wrenches removed.
7. Do not operate the machine without the wheel guard or end guards.
8. Verify that the work is secure and/or the magnetic chuck energized.
9. Verify that the grinding wheel clears the work.
10. Disengage the longitudinal handwheel before operating the machine hydraulically.
11. Place all hydraulic controls in the "off" or "neutral" position before starting machine.

ACCURACY

This grinder is manufactured to the highest degree of precision. The following minimum standards have been verified before it was released for shipment.

SPINDLE RUN-OUT: The spindle must run concentric within .0001; checked at two points on the spindle taper.

FLATNESS: The working area of the table or chuck must be flat within .0002.

CROSSFEED TRAVEL: The table must track parallel to the spindle axis within .0003 in 6 inches.

LONGITUDINAL TRAVEL: The table must track square to the spindle axis within .0002 in 12 inches.

SQUARENESS: The spindle axis must be square to the table working area within .0006 in 12 inches of vertical travel.

A quality assurance report, indicating manufactured accuracy, is included with this grinder.

LUBRICATION

The way surfaces, positioning screws and other moving parts are meter lubricated through a sintered bronze filter which assures clean oil distribution. A sight gage indicates oil level and the reservoir is replenished through the conveniently located oil cup.

The lubrication system is non-recirculatory, the used oil collected in a container located on the rear of the machine cabinet base or inside the heavy duty base. Empty the container weekly.

Clean or replace the filter every six months. Follow the procedure outlined on drawing 103443. Use lubricant recommended on lubrication chart 101245.

The automatic lubricator produces one shot of oil per minute. This frequent interval results in less oil required per cycle, reducing the probability of table lift. The volume of oil delivered per cycle is adjustable and has been pre-set at the factory. Follow the procedure outlined on drawing 103443 to adjust this flow.

GRINDING WHEEL

The grinding wheel is mounted on an adapter with a bore tapered to fit the spindle nose. Wrenches are provided to secure the grinding wheel to the adapter and the adapter to the spindle nose. **DO NOT** "hammer" the wrenches to tighten or loosen the grinding wheel or adapter; the spindle bearing life will be reduced significantly.

The grinding wheel is readily accessible through the hinged cover and easily changed with the wheel puller and wrenches provided.

Vibration is reduced to a minimum and surface finish potential increased when a balanced grinding wheel is used. Consult your local responsible grinding wheel representative for recommendations to suit your specific requirement.

SPINDLE

The spindle, supported by super-precision ball bearings, permanently lubricated and pre-loaded to take up end thrust, is directly coupled to a dynamically balanced drive motor.

Incorporated into the spindle design are proper mounting, lubrication and protection methods. These factors with spindle speed and bearing load determine bearing life.

It is recommended that the spindle be returned to the factory as an integral unit when repair is deemed necessary. Inspection and repair are facilitated in this manner.

Follow the procedure outlined on drawing 102916 for proper spindle dis-assembly.

Follow the procedure outlined on drawing 102916 to check or change motor coupling.

SPINDLE OPTIONS

DUPLEX BEARING MOUNT: The spindle nose is supported by a matched, pre-loaded pair of super precision ball bearings to provide exact radial and axial positioning as well as increased rigidity and radial load capacity. This design should be specified when the primary machine function is slot or face grinding, or when heavier than conventional cuts are anticipated.

BELTED SPINDLE DRIVE: The spindle is driven through a poly-vee pulley system to obtain a speed other than that provided by the motor. Available speed range is 2200 R.P.M. to 6000 R.P.M.

REMOVABLE CARTRIDGE SPINDLE: The housing is designed to accept an integral spindle to expedite dis-assembly when spindle repair is required. Reduce down time by stocking a spare cartridge.

TABLE

The grinder table is manufactured from a rugged casting, controlled in hardness and scientifically heat treated to remove all stress. Driven through a rack and pinion system, the table tracks on one flat way and one vee way; precision ground and grooved to permit proper lubricating oil distribution. The table working surface is final ground on the grinder and checked with an electronic gage to insure specified flatness and squareness tolerances.

Clean and liberally lubricate the way surfaces every three months. Consult the lubrication chart for the recommended lubricant.

TABLE WAY OPTIONS

HARDENED WAY: Hardened tool steel strips are mounted to the table to provide longer life. The accuracy standards and maintenance instructions outlined for the soft way table apply.

The hardened way table, standard equipment on all hydraulic model grinders, is an available option on all handfeed model grinders.

TEFLON WAY: Bronze impregnated teflon strips are mounted to the table to provide longer life and

more effortless operation. The accuracy standards and maintenance instructions outlined for the standard table apply.

The teflon way table is an available option on all model grinders.

TABLE CARRIAGE

The table carriage is manufactured from a rugged casting, controlled in hardness and scientifically heat treated to remove all stress. Topside, one flat way and one vee way, precision ground and hand spotted, provide the longitudinal track for the table. Two precision ground bottom ways travel on the precision ground and hand spotted bed ways. The table carriage is motivated by a precision ground Acme threaded screw, housed in a bracket attached to a precision ground rectangular key, which is fixture positioned to insure alignment within specified tolerances and tracks between a stationary gib and a set of adjustable tapered gibs which have been properly adjusted at the factory.

A carriage lock is provided for use when face or slot grinding. This lock must be released when operating the grinder conventionally.

Follow the procedure outlined on drawing 102917 to adjust the tapered gibs or the carriage lock.

HANDWHEELS

CROSSFEED: The dull satin chromed crossfeed handwheel, with zero setting slip ring, is black line engraved in easy to read graduations of .001". Each revolution is equivalent to .100" of table crossfeed travel.

TABLE FEED: The table feed handwheel transmits longitudinal motion to the table through a vibration free rack and pinion assembly. Each revolution is equivalent to approximately 3½ inches of table longitudinal travel. For operator convenience, the table feed handwheel may be oriented to the required work stroke. Follow the procedure outlined on drawing 102918 to engage or dis-engage this handwheel.

ELEVATING: The dull satin chromed elevating handwheel, with zero setting slip ring, is black line engraved in easy to read graduations of .0005". The pointer is graduated in a vernier scale to allow reading to .0001". Each revolution is equivalent to .050" of spindle vertical travel.

The rotating "feel" of the elevating handwheel is factory adjusted. Follow the procedure outlined on drawing 102919 to adjust this "feel."

HANDWHEEL OPTIONS

CROSSFEED: Accurate crossfeed table positioning is accomplished through a friction lock, which overrides the crossfeed handwheel, engaging the dull satin chromed dial setting crossfeed adjusting knob, which is black line engraved in easy to read graduations of .00005". Each revolution is equivalent to .001" of table crossfeed travel. Handfeed grinders equipped with this option are furnished with a backlash free crossfeed screw and nut assembly.

ELEVATING: Fine spindle positioning is accomplished through a large dull satin chromed zero setting slip ring which is black line engraved in easy to read graduations of .0001". Each revolution is equivalent to .025" of spindle vertical travel.

HYDRAULIC RESERVOIR

PORTABLE: Position the hydraulic reservoir along the right side and toward the rear of the machine base. Two hydraulic hoses are located in the top compartment of the reservoir. Connect these hoses as outlined on drawing 103420. Fill the reservoir with hydraulic fluid as recommended on lubrication chart 101245. Insert the pump electrical plug into the receptacle located on the rear of the machine bed.

BUILT IN: The hydraulic reservoir is located inside the machine base. Remove the screws which secure the rear cover exercising caution so as not to damage the cooling fan line cord. Slide the reservoir out for accessibility, remove the top cover and fill the reservoir with hydraulic fluid as recommended on lubrication chart 101245.

The level of hydraulic fluid must not be permitted to fall below the top of the filter screen as air will be taken into the hydraulic system causing erratic operation. This condition may also be encountered in the initial installation or after a prolonged idleness. Completely cycling each cylinder twice will generally eliminate the air accumulation.

To insure long, trouble free operation of the hydraulic system, change the hydraulic fluid and clean the filter screen, line filter and reservoir every six months.

The hydraulic system pressure has been set at the factory and requires no further adjustment.

ELECTRICAL CONTROL

HANDFEED: An "across the line" two position starter switch, located on the right side of the machine base, is provided. Verify compliance with all safety rules before operating machine.

HYDRAULIC: A 110 volt motor control with overload protection, located on the right side of the machine base, is provided. Verify compliance with all safety rules before operating machine.

HAND OPERATION

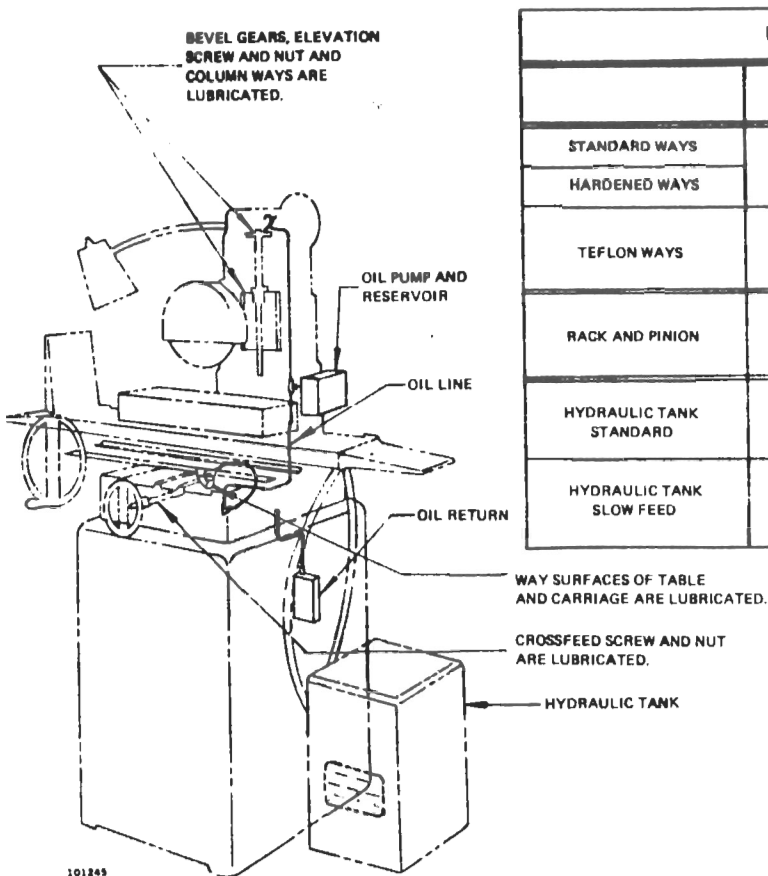
1. Verify compliance with all safety rules.
2. Place all hydraulic controls in the "off" or "neutral" position.
3. Move table reversing dogs to outermost position.
4. Engage table feed handwheel.
5. Disengage longitudinal cylinder rod.
6. Start machine.
7. Positioning operation
 - A. Rotate the table feed handwheel clock-wise to move the table right approximately 3½" per revolution.
 - B. Rotate the crossfeed handwheel clock-wise to move the table in .100" per revolution.
 - C. Rotate the elevating handwheel counterclockwise to move the wheelhead down .050" per revolution.

HYDRAULIC OPERATION

1. Verify compliance with all safety rules.
2. Place all hydraulic controls in the "off" or "neutral" position.
3. Engage table feed handwheel.
4. Engage longitudinal cylinder rod.
5. Disengage table feed handwheel.
6. Start machine.
7. Adjust the stop dogs to suit the length of work stroke desired.
8. Positioning operation
 - 8A. Single axis (longitudinal)
 - 8A1. The longitudinal table speed is variable, the rate set by the table speed control with the main control in the "on" position.
 - 8A2. Rotate the crossfeed handwheel clockwise to move the table in .100" per revolution.
 - 8A3. Rotate the elevating handwheel counterclockwise to move the wheelhead down .050" per revolution.
 - 8B. Two axis (longitudinal, crossfeed)
 - 8B1. The longitudinal table speed is variable, the rate set by the table speed control with the main control in the "on" position.
 - 8B2. The table will crossfeed in the direction dictated by the crossfeed directional control, in increments as set by the crossfeed control, with the main control in the "on" position.
 - 8B3. Rotate the elevating handwheel counterclockwise to move the wheelhead down .050" per revolution.

WHEEL DRESS (Two axis)

1. Verify compliance with all safety rules.
 2. Place all hydraulic controls in the "off" or "neutral" position.
 3. Engage table feed handwheel.
 4. Position diamond to correct relationship with grinding wheel.
 5. Disengage table feed handwheel.
 6. Start machine.
 7. Place the main control in the "wheel dress" position.
 8. Positioning operation
 - 8A1. The longitudinal travel is disengaged.
 - 8A2. The table will crossfeed in the direction dictated by the crossfeed directional control at the rate governed by the wheel dress speed control.
 - 8A3. Rotate the elevating handwheel counterclockwise to move the wheelhead down .050" per revolution.
-



LUBRICATION CHART		
	LUBRICANT	INSTRUCTIONS
STANDARD WAYS	SUN OIL COMPANY WAY LUBRICANT #80 OR EQUIVALENT	FILL RESERVOIR AS REQUIRED. CLEAN AND LIBERALLY LUBRICATE WAY SURFACES EVERY THREE MONTHS. CLEAN FILTER EVERY SIX MONTHS.
HARDENED WAYS		
TEFLON WAYS	PENNZOIL #4 OR EQUIVALENT	
RACK AND PINION	HUMBLE OIL COMPANY ANDOK "C" GREASE OR EQUIVALENT	CLEAN AND GREASE EVERY THREE MONTHS.
HYDRAULIC TANK STANDARD	MOBIL FLUID #62 OR EQUIVALENT	MAINTAIN FLUID LEVEL ABOVE TOP OF TANK FILTER. CLEAN LINE FILTER, TANK FILTER AND CHANGE FLUID EVERY SIX MONTHS.
HYDRAULIC TANK SLOW FEED	MOBIL FLUID #350 OR EQUIVALENT	

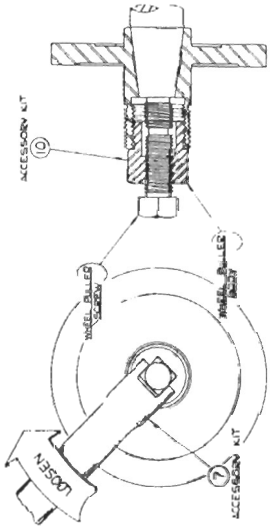
B **BOYAR-SCHULTZ**
A UNIT OF ESTERLINE CORPORATION

1. FILL RESERVOIR WITH OIL AS RECOMMENDED ON LUBRICATION CHART.
2. AFTER FILLING, HAND PUMP SEVERAL TIMES UNTIL AN OIL FILM APPEARS ON THE WAY SURFACES.
3. LUBRICATOR OIL FLOW HAS BEEN PRE-SET AT THE FACTORY. TO ADJUST VOLUME, LOOSEN HAND PUMP KNOB AND ROTATE COUNTER-CLOCKWISE TO INCREASE STROKE. SECURE NEW POSITION OF KNOB WITH THE JAM NUT.
4. DO NOT ALLOW OIL LEVEL TO FALL BELOW THE SIGHT GLASS.
5. CLEAN OR REPLACE FILTER EVERY SIX MONTHS.
6. FILTER REMOVAL - REMOVE RESERVOIR RETAINING SCREWS AND RESERVOIR. CLEAN RESERVOIR. REMOVE RETAINING RING AND FILTER. CLEAN FILTER.

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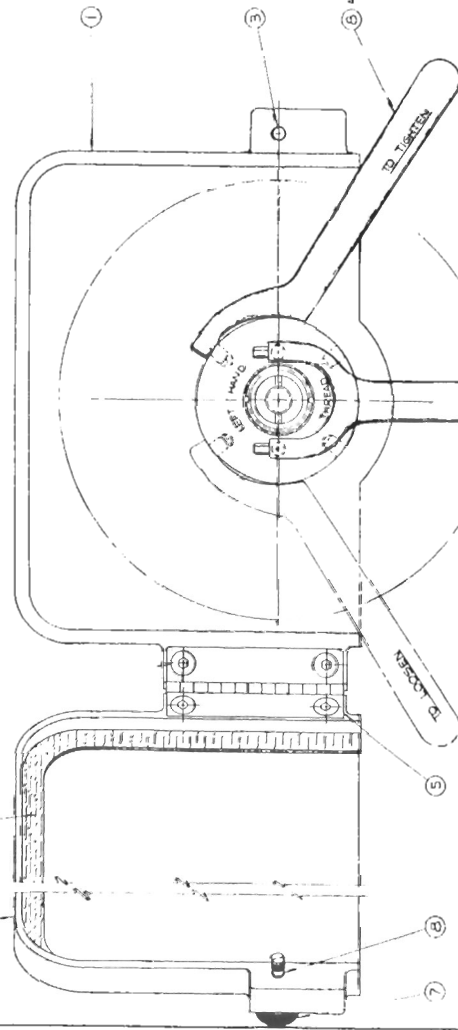
AUTOMATIC LUBRICATOR
Model _____
Serial _____
Part No. C 103443

CAUTION! IF THE WRENCHES TO BE REPLACED TO THE WHEEL ADAPTER ASSEMBLY, THE WRENCH BEARING LIFE WILL BE REDUCED SIGNIFICANTLY.



REPLACING THE WHEEL ASSEMBLY (continued)

- 3) THREAD WHEEL PULLER BODY INTO WHEEL ADAPTER. PLACE SLOT OF MOUNTING WRENCH OVER HEAD OF WHEEL PULLER SCREW AND TURN WRENCH UNTIL WHEEL ASSEMBLY BEARS WEDGE.
- 4) REPLACE WHEEL ASSEMBLY FROM SPINDLE TABLE.
- 5) INSERT PIN OF SPANNER WRENCH (ITEM 8) INTO HOLE IN WHEEL ASSEMBLY. TURN WRENCH TO REMOVE WRENCH FROM WRENCH LOCK NUT. INSERT BEYOND INTO BEGINS OF MOUNTING WRENCH AND TURN IN DIRECTION SHOWN TO TIGHTEN.



IMPORTANT! BEFORE STARTING MACHINE

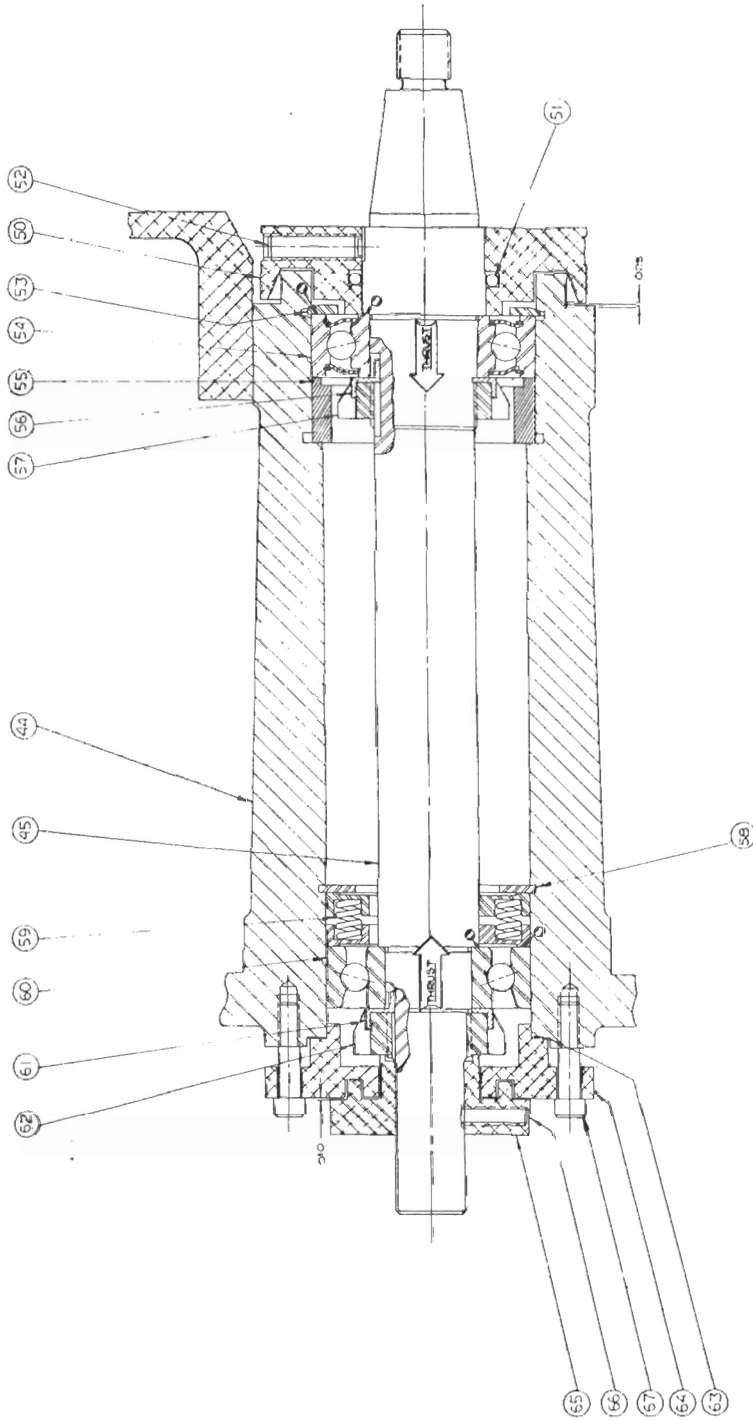
- 1) MAKE SURE WRENCH IS IN THE CORRECT POSITION.
- 2) CHECK THE WHEEL ADAPTER DO NOT OPERATE AT A SPEED GREATER THAN THAT SHOWN.
- 3) VERIFY THAT THE WHEEL IS SECURE AND THE CLAMPING WRENCH IS TIGHT.
- 4) VERIFY THAT THE WORK IS TRUE.
- 5) VERIFY THAT THE WRENCH IS CLEAN.

TO REPLACE SPINDLING WHEEL

- 1) INSERT PIN OF SPANNER WRENCH INTO HOLE IN WHEEL ASSEMBLY AND SUPPORT AGAINST WHEEL. TURN WRENCH TO LOOSEN.
- 2) INSERT PIN OF MOUNTING WRENCH (ITEM 7) INTO HOLE IN WHEEL. TURN NUT AND TURN IN DIRECTION SHOWN.
- 3) REPLACE WHEEL.
- 4) INSERT PIN OF SPANNER WRENCH (ITEM 8) INTO HOLE IN WHEEL ASSEMBLY AND SUPPORT AGAINST WHEEL. TURN WRENCH TO TIGHTEN.
- 5) INSERT PIN OF MOUNTING WRENCH INTO HOLES IN WHEEL. TURN NUT AND TURN IN DIRECTION SHOWN.

TO REPLACE THE WHEEL ASSEMBLY

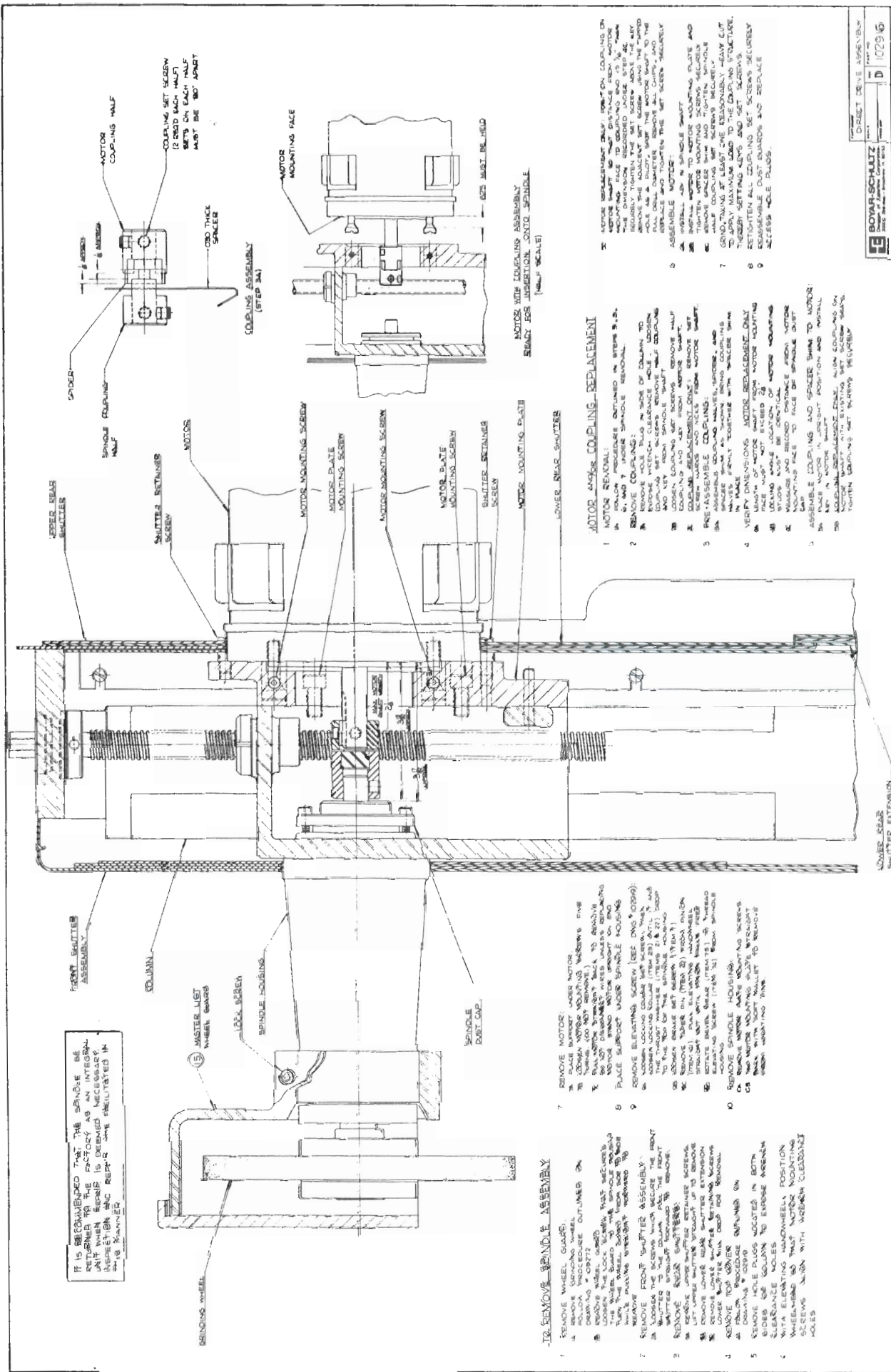
- 1) REMOVE WRENCH FROM WHEEL ASSEMBLY (ITEM 8) INTO HOLE IN WHEEL ADAPTER AND SUPPORT AGAINST WHEEL. TURN WRENCH AS SHOWN TO LOOSEN.
- 2) INSERT BEGINS OF MOUNTING WRENCH (ITEM 7) INTO HOLES IN WHEEL ASSEMBLY. TURN WRENCH IN DIRECTION SHOWN TO LOOSEN.



NOTES:

1. BEARINGS MUST BE ASSEMBLED WITH THE WORD "THRUST" ON FACE OF OUTER RACES FACING EACH OTHER.
2. BURISH MARKS ON INNER AND OUTER RACE OF BEARINGS INDICATE HIGH POINT OF ECCENTRICITY.
3. BURISH MARKS ON INNER RACES SHOULD OPPOSE EACH OTHER.
4. BURISH MARKS ON OUTER RACES SHOULD OPPOSE EACH OTHER.
5. INCORPORATED INTO THIS SPINDLE DESIGN ARE PROPER MOUNTING WRENCHES AND TOOLING TO FACILITATE REPAIRS AND TO PROTECT ON BEARINGS LOAD. DETERMINE BEARING LIFE.
6. IT IS RECOMMENDED THAT THE SPINDLE BE RETURNED TO THE FACTORY AS AN INTEGRAL UNIT WHEN REPAIR IS DEEMED NECESSARY. INSPECTION AND REPAIR ARE FACILITATED IN THIS MANNER.

7. FOR FIELD REPAIR:
 - A. APPLY FORCE TO INNER RACE ONLY WHEN ASSEMBLING BEARINGS TO SPINDLE WHEN OPERATING UNDER LOAD.
 - B. ASSEMBLE BEARINGS TO HOUSING CHECK NON-SHIELDED BEARINGS FOR PROPER AMOUNT OF GREASE.
 - C. AVOID CONTAMINATION!
 - D. NEVER HAMMER MOUNTING WRENCHES TO CHANGE GRINDING WHEELS. BEARING LIFE MAY BE REDUCED.



IF IT IS OBSERVED THAT THE SPINDLE BE RETURNED TO THE FACTORY AS AN INTEGRAL UNIT WHEN REPAIR IS DEEMED NECESSARY. INSPECTION AND REPAIR ARE FACILITATED IN THE FOLLOWING MANNER:

TO REMOVE SPINDLE ASSEMBLY:

- 1 REMOVE WHEEL GUARD.
- 2 FOLLOW PROCEDURE OUTLINED IN DRAWING 1027-1.
- 3 REMOVE LOWER HOUSING THAT SECURES THE WHEEL GUARD TO THE SPINDLE ASSEMBLY. THE LOWER HOUSING MUST BE REMOVED WITH THE HOUSING ATTACHED TO THE SPINDLE ASSEMBLY.
- 4 REMOVE FRONT SHUTTER ASSEMBLY.
- 5 REMOVE LOWER HOUSING LOCATED IN BOTH SIDES OF COLUMN TO EXPOSE ADEQUATE CLEARANCE HOLES.
- 6 WITH ELEVATING HANDWHEEL POSITION WHEELHEAD TO THAT MOTOR MOUNTING SCREWS ALIGN WITH HOUSING CLEARANCE HOLES.
- 7 REMOVE MOTOR.
- 8 PLACE MOTOR MOUNTING SCREWS IN LINE WITH HOUSING CLEARANCE HOLES.
- 9 REMOVE ELEVATING SCREW (SEE DIM 10099).
- 10 REMOVE MOTOR MOUNTING SCREWS FROM THE MOTOR HOUSING (ITEMS 2 & 27) DROP THE MOTOR HOUSING (ITEM 28) UNTIL IT AND THE MOTOR MOUNTING SCREWS (ITEMS 2 & 27) DROP TO THE LOWER RAIL (ITEM 29).
- 11 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 12 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 13 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 14 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 15 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 16 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 17 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 18 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 19 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 20 REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.

MOTOR AND COUPLING REPLACEMENT:

- 1 MOTOR REMOVAL:
 - a FOLLOW PROCEDURE OUTLINED IN STEP 7.2.
 - b AND 7 MOTOR SPINDLE REMOVAL.
- 2 REMOVE COUPLING:
 - a REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
 - b REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
 - c REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
 - d REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
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 - w REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
 - x REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
 - y REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
 - z REMOVE LOWER HOUSING (ITEM 29) FROM POSITION.
- 3 PRE-ASSEMBLE COUPLING:
 - a ASSEMBLE COUPLING HALVES, SPINDLE, AND MOTOR MOUNTING SCREWS.
 - b ASSEMBLE COUPLING TO MOTOR MOUNTING SCREWS.
 - c ASSEMBLE COUPLING TO MOTOR MOUNTING SCREWS.
 - d ASSEMBLE COUPLING TO MOTOR MOUNTING SCREWS.
 - e ASSEMBLE COUPLING TO MOTOR MOUNTING SCREWS.
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 - x ASSEMBLE COUPLING TO MOTOR MOUNTING SCREWS.
 - y ASSEMBLE COUPLING TO MOTOR MOUNTING SCREWS.
 - z ASSEMBLE COUPLING TO MOTOR MOUNTING SCREWS.
- 4 VERIFY DIMENSIONS MOTOR BEARING ONLY:
 - a VERIFY DIMENSIONS MOTOR BEARING ONLY.
 - b VERIFY DIMENSIONS MOTOR BEARING ONLY.
 - c VERIFY DIMENSIONS MOTOR BEARING ONLY.
 - d VERIFY DIMENSIONS MOTOR BEARING ONLY.
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 - x VERIFY DIMENSIONS MOTOR BEARING ONLY.
 - y VERIFY DIMENSIONS MOTOR BEARING ONLY.
 - z VERIFY DIMENSIONS MOTOR BEARING ONLY.
- 5 ASSEMBLE COUPLING AND SPACER SHIM TO MOTOR:
 - a ASSEMBLE COUPLING AND SPACER SHIM TO MOTOR.
 - b ASSEMBLE COUPLING AND SPACER SHIM TO MOTOR.
 - c ASSEMBLE COUPLING AND SPACER SHIM TO MOTOR.
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 - x ASSEMBLE COUPLING AND SPACER SHIM TO MOTOR.
 - y ASSEMBLE COUPLING AND SPACER SHIM TO MOTOR.
 - z ASSEMBLE COUPLING AND SPACER SHIM TO MOTOR.

MOTOR WITH LOOSENING ASSEMBLY READY FOR OPERATIONAL DOWEL SPINDLE (HALF SCALE)

THE CROSSFEED HANDWHEEL IS EQUIPPED WITH A ZERO SETTING SLIP RING.

TO RELEASE:

- 1) ROTATE THE CROSSFEED HANDWHEEL AS REQUIRED TO OBTAIN DESIRED GRINDING WHEEL TO WORKPIECE RELATIONSHIP.
- 2) GRASP THE CROSSFEED HANDWHEEL TO PREVENT MOVEMENT. ROTATE THE LOCKING KNOB COUNTERCLOCKWISE TO ALIGN THE MARKS WITH THE INDICATOR MARK ON THE FRONT. ROTATE THE LOCKING KNOB CLOCKWISE.

7 2 6 (OF TABLE ASSEMBLY)

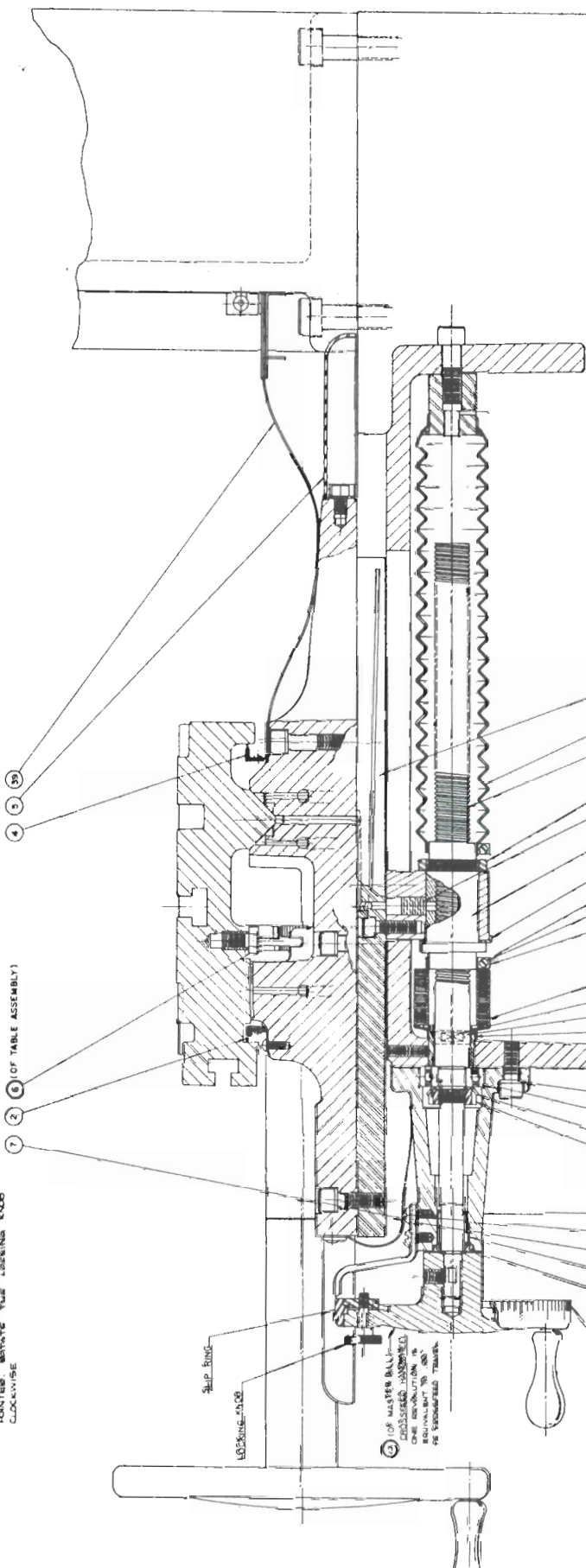
4 3 59

SLIP RING

LOCKING KNOB

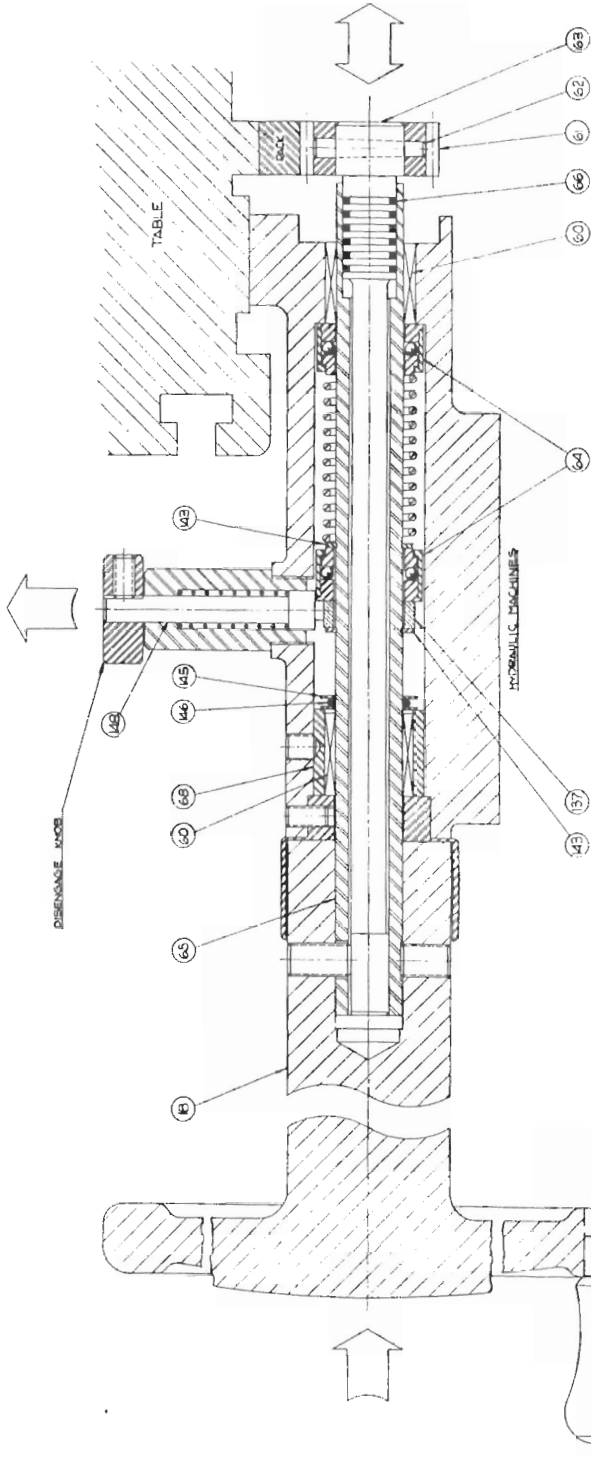
2 (OF MASTER BALL-CROSSFEED HANDWHEEL) ONE REVOLUTION OF THIS KNOB WILL MOVE THE SUBMERGED TABLE

EXC. EQUIPMENT IS EQUIVALENT TO .000



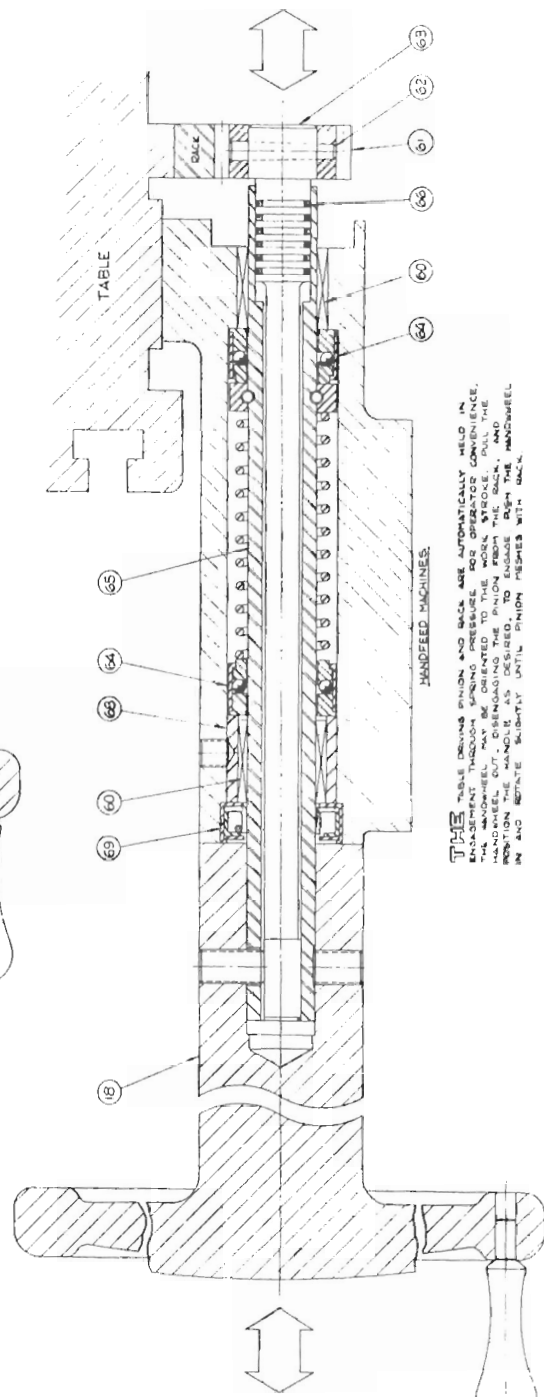
TOLERANCES UNLESS OTHERWISE SPECIFIED	
FRACTIONS	± .001
DECIMALS	± .0005
ANGLES	± 30'
THREADS	AS SHOWN
HOLE DIMENSIONS	
ALL SIZES	± .0005
1/8" AND LARGER	± .0015
1/16" AND SMALLER	± .0010
HOLE LOCATIONS	
ALL SIZES	± .0050
DO NOT SCALE DIMENSIONS	
DRAWN BY: J. E. ...	
CHECKED BY: ...	
APPROVED BY: ...	
DATE: ...	
PART NAME: CARTRIDGE & BALL ASSEMBLY	
DRAWING NO: D 100284	
SHEET NO: 1 OF 1	

INDICATOR, TABLE, DEVICE IN ASSEMBLY



THE TABLE DRIVING PINION AND BACK ARE HELD IN ENGAGEMENT THROUGH SPRING PRESSURE. BY THE DIS-EN-GA-GEMENT OF THE SPRING PRESSURE, THE HANDFEED MACHINES ARE ORIENTED TO THE WORK STROKE. THE HANDFEED MACHINES ARE ORIENTED TO THE WORK STROKE ON PULL THE DIS-EN-GA-GEMENT KNOB OUT AUTOMATICALLY DIS-EN-GA-GING THE PINION FROM THE BACK, AND POSITIONING THE HANDFEED MACHINES TO THE WORK STROKE. THE HANDFEED WHEEL IN AND RETRAME SLIGHTLY UNTIL PINION MESHES WITH THE BACK. THE DIS-EN-GA-GEMENT PIN WILL AUTOMATICALLY RETURN TO LOCK THE PINION IN POSITION.

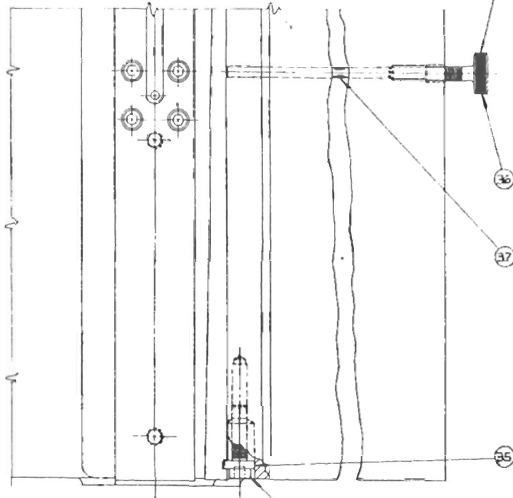
CAUTION! ALWAYS DIS-EN-GA-GEMENT HANDWHEEL BEFORE OPERATING MACHINE HYDRAULICALLY.



THE TABLE DRIVING PINION AND BACK ARE AUTOMATICALLY HELD IN ENGAGEMENT THROUGH SPRING PRESSURE FOR OPERATOR CONVENIENCE. THE HANDWHEEL MAY BE ORIENTED TO THE WORK STROKE. PULL THE HANDWHEEL OUT DIS-EN-GA-GING THE PINION FROM THE BACK, AND POSITIONING THE HANDFEED MACHINES TO THE WORK STROKE. THE HANDFEED WHEEL IN AND RETRAME SLIGHTLY UNTIL PINION MESHES WITH BACK.

CARRIAGE LOCK

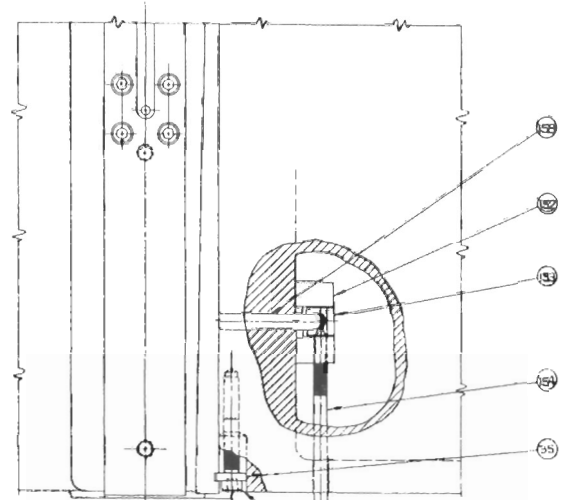
TURN THE THUMB SCREW CLOCKWISE TO EXERT PRESSURE AGAINST CROSSFEED KEY AND ADJUSTABLE GIBS TO PREVENT CARRIAGE/TABLE CROSSFEED MOTION WHEN FACE OR SLOT GRINDING.
CAUTION! TURN THE THUMB SCREW COUNTER-CLOCKWISE TO RELEASE THIS PRESSURE WHEN OPERATING THE MACHINE CONVENTIONALLY.



GIB ADJUSTMENT

IT IS NECESSARY TO RE-ESTABLISH PROPER FIT AS WEAR OCCURS ON THE CROSSFEED GUIDE. TURN THE GIB ADJUSTMENT SCREW CLOCKWISE UNTIL PROPER FIT IS OBTAINED.

HANDFEED AND SINGLE AXIS HYDRAULIC MACHINES



GIB ADJUSTMENT

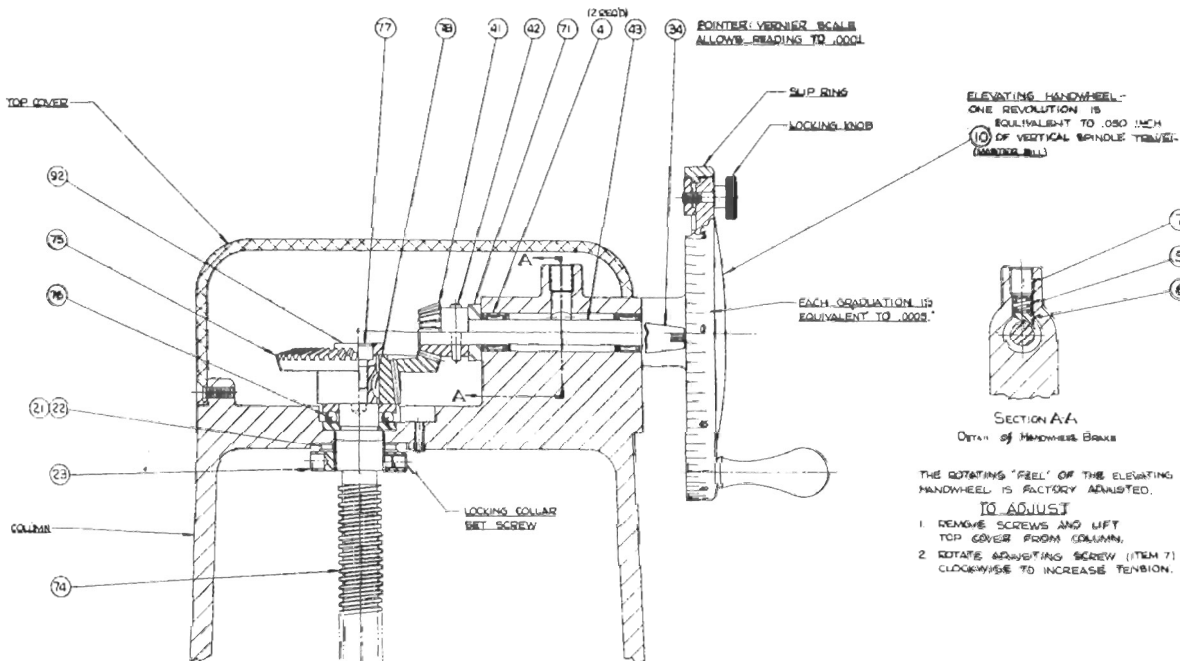
IT IS NECESSARY TO RE-ESTABLISH PROPER FIT AS WEAR OCCURS ON THE CROSSFEED GUIDE. TURN THE GIB ADJUSTMENT SCREW CLOCKWISE UNTIL THE PROPER FIT IS OBTAINED.

CARRIAGE LOCK

TURN THE THUMB SCREW CLOCKWISE TO EXERT PRESSURE AGAINST CROSSFEED KEY AND ADJUSTABLE GIBS TO PREVENT CROSSFEED/TABLE CROSSFEED MOTION WHEN FACE OR SLOT GRINDING.
CAUTION! TURN THE THUMB SCREW COUNTER-CLOCKWISE TO RELEASE THIS PRESSURE WHEN OPERATING THE MACHINE CONVENTIONALLY.

DOUBLE AXIS HYDRAULIC MACHINES

BOYAR-SCHULTZ Division of Estabro Corporation 200 E. 7th Ave., St. Louis, MO 63102	Part No.	GIB ADJUSTMENT & LOCK
	Part No.	C 102917



34 POINTER-VERNIER SCALE
 ALLOWS READING TO .0001

ELEVATING HANDWHEEL -
 ONE REVOLUTION IS
 EQUIVALENT TO .050 INCH
 (10 OF VERTICAL BRANDLE TRAVEL -
 (MINUTE INCH))

SECTION AA
 Detail of Handwheel Brake

THE ROTATING "FEEL" OF THE ELEVATING
 HANDWHEEL IS FACTORY ADJUSTED.

TO ADJUST

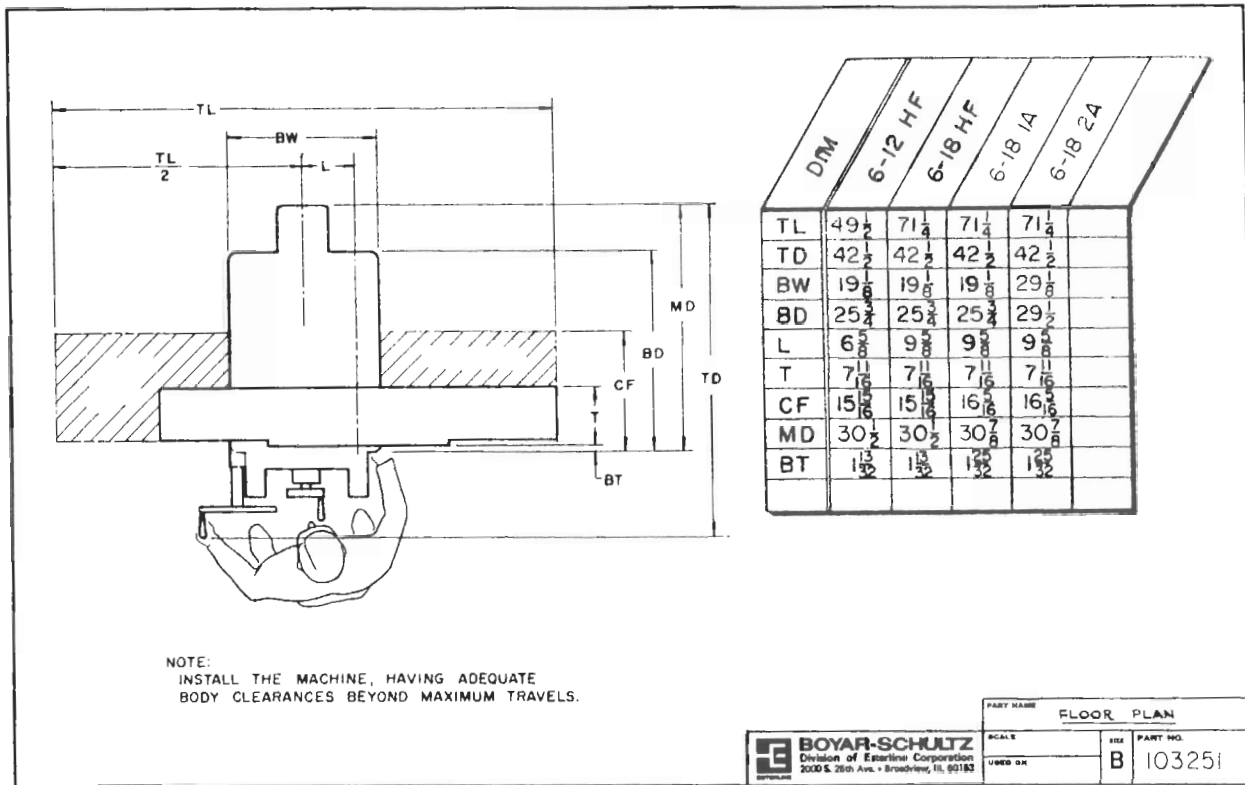
1. REMOVE SCREWS AND LIFT TOP COVER FROM COLUMN.
2. ROTATE ADJUSTING SCREW (ITEM 7) CLOCKWISE TO INCREASE TENSION.

THE ELEVATING HANDWHEEL IS EQUIPPED WITH
 A ZERO SETTING SLIP RING

TO SET ZERO

1. ROTATE THE ELEVATING HANDWHEEL COUNTER-CLOCKWISE, FEEDING THE WHEELHEAD DOWNWARD, AND SPARK THE WORKPIECE TO ESTABLISH START POSITION.
2. GRASP THE ELEVATING HANDWHEEL TO PREVENT MOVEMENT AND ROTATE THE LOCKING KNOB COUNTER-CLOCKWISE. SPIN THE SLIP RING UNTIL "ZERO" ALIGNS WITH THE INDICATOR MARK ON THE POINTER. ROTATE THE LOCKING KNOB CLOCKWISE.

BOYAR-SCHULTZ Division of Estabro Corporation 200 E. 7th Ave., St. Louis, MO 63102	Part No.	ELEVATION ASSEMBLY
	Part No.	C 102919



OPTIONAL EQUIPMENT AND ACCESSORIES

Magnetic chuck — permanent and electric
 Duplex bearing spindle
 Removable cartridge spindle
 Belt drive spindle — 2200 R.P.M. to 6000 R.P.M.
 Hardened ways mounted on table
 Bronze impregnated teflon ways mounted on table
 Fine 1/10th direct reading depth setting handwheel
 Fine 1/10th direct reading dial setting crossfeed adjustment
 Riser block for added work height — 2", 3" and 4"
 Adjustable table stop — standard and cushioned
 Heavy duty cast iron base
 Dust collector — built into base
 Dust collector — portable
 Mounted work light
 Wet coolant system — 5 gallon and 10 gallon capacity
 Power spindle elevation
 Electric controls — 110 Volt, NEC or JIC
 Over the wheel dresser
 Grinding wheel balancer
 High speed grinding attachment
 Precision wheel former
 Diamond holder/mounted diamond

MAGNETIC CHUCK GRINDING INSTRUCTIONS

A chuck factory mounted on the machine table has been ground to established accuracy standards. Further grinding is not required until wear indicates the need.

A chuck furnished unmounted must be ground on the top and bottom surfaces.

WHEEL DRESSING AND CHUCK GRINDING PROCEDURE

1. WHEEL: 8" diameter 60-H
2. COOLANT: Always use adequate coolant flow or spray mist.
3. FINISH: A commercial finish provides a good non-slip surface for work holding. (It is not advantageous to strive for a mirror-like finish.)
4. DRESS: Always grind with a free cutting wheel dressed by removing approximately .001" per diamond pass using a moderate to fast crossfeed rate.
(Grinding with a finely dressed wheel may glaze, heat and/or expand the chuck surface resulting in hollow spots directly affecting chuck accuracy.)

TO GRIND BOTTOM

1. Leave chuck in "off" position.
2. Place chuck, top down, on the machine table blocking both ends with hold down clamps to prevent shifting.
3. Grind, removing .0003" per pass using .050" cross-feed increment, until surface is cleaned up.
4. Dress wheel, as indicated, after each crossfeed pass.

TO GRIND TOP

1. Place chuck, top up, on the machine table tightening hold down clamps just enough to prevent shifting.
CAUTION: Over tightening may distort chuck base and/or machine table.
2. Place chuck in "on" position.
3. Grind, removing .0003" per pass using .050" cross-feed increment, until surface is cleaned up.
4. Grind one pass removing .0001".
5. Dress wheel, as indicated, after each crossfeed pass.

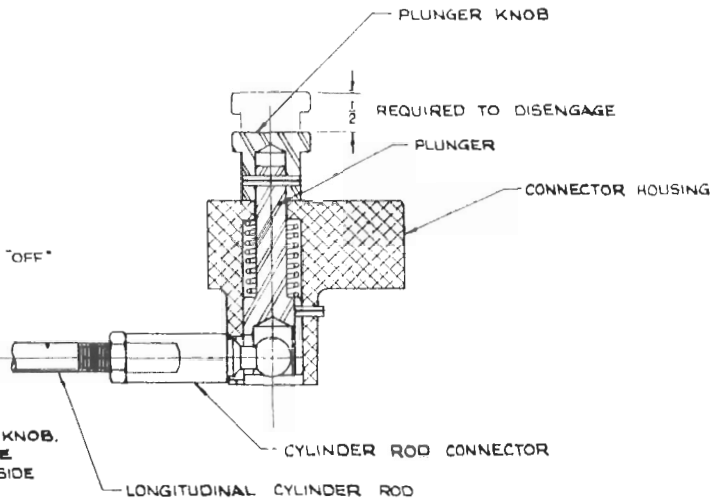
SPECIFICATIONS

		H612	H618	1A618	2A618
TABLE TRAVEL	LONGITUDINAL	13"	13"	13"	13"
	CROSSFEED	7"	7"	7"	7"
TABLE SPEED		MANUAL	MANUAL	0-50 FPM	0-50 FPM
CROSSFEED INCREMENT		MANUAL	MANUAL	MANUAL	0-1/8"
CROSSFEED WHEEL DRESS		MANUAL	MANUAL	MANUAL	0-48 IPM
WORK HEIGHT 8" DIA. WHEEL	TABLE	10 3/4"	10 3/4"	10 3/4"	10 3/4"
	PERMANENT CHUCK	8-1/8"	8"	8"	8"
	ELECTRIC CHUCK	7-7/8"	7-7/8"	7-7/8"	7-7/8"
WORK SURFACE	TABLE	5-5/8" x 12"	5-5/8" x 18"	5-5/8" x 18"	5-5/8" x 18"
	CHUCK	6" x 12"	6" x 18"	6" x 18"	6" x 18"
GRINDING WHEEL	MAXIMUM DIAMETER	8"	8"	8"	8"
	WIDTH	3/16" - 5/8"	3/16" - 5/8"	3/16" - 5/8"	3/16" - 5/8"
	HOLE SIZE	1 1/4"	1 1/4"	1 1/4"	1 1/4"
SPINDLE MOTOR		1 HP 3450 RPM	1 HP 3450 RPM	1 HP 3450 RPM	1 HP 3450 RPM
PUMP MOTOR		N/A	N/A	1/2 HP	1/2 HP
RESERVOIR CAPACITY		N/A	N/A	3 GALLONS	5 GALLONS
HANDWHEEL GRADUATIONS	DOWNFEED	.0005	.0005	.0005	.0005
	CROSSFEED	.001	.001	.001	.001
WEIGHT	NET	700	775	925	1320
	SHIPPING	925	1000	1150	1545

NOTES:

FOR HYDRAULIC OPERATION

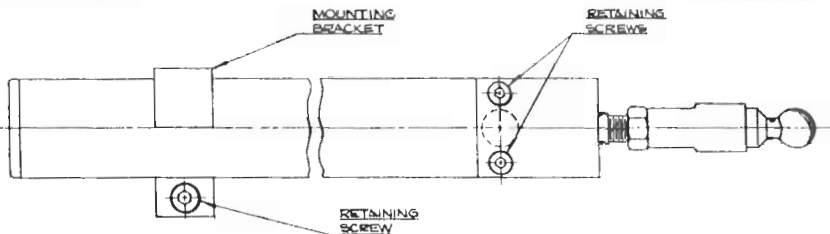
1. PLACE ALL HYDRAULIC CONTROLS IN THE "OFF" OR "NEUTRAL" POSITION.
2. WITH THE TABLE FEED HANDWHEEL; MOVE THE TABLE LEFT UNTIL THE CONNECTOR HOUSING CONTACTS THE CYLINDER ROD CONNECTOR. RAISE THE PLUNGER KNOB, MOVE THE TABLE LEFT UNTIL THE BALL END OF THE CYLINDER ROD CONNECTOR ENGAGES THE PLUNGER. NOW RELEASE PLUNGER KNOB. TO VERIFY CONNECTION, MOVE THE TABLE TO THE RIGHT, AND VIEW FROM UNDERSIDE OF TABLE.
3. DISENGAGE TABLE FEED HANDWHEEL AS OUTLINED ON DRAWING #102918.
4. FOLLOW OPERATION PROCEDURE.



PART NAME
HYDRAULIC CYL. DISENGAGE

BOYAR-SCHULTZ
Division of Esterline Corporation
2000 S. 26th Ave. • Brookview, IL 60113

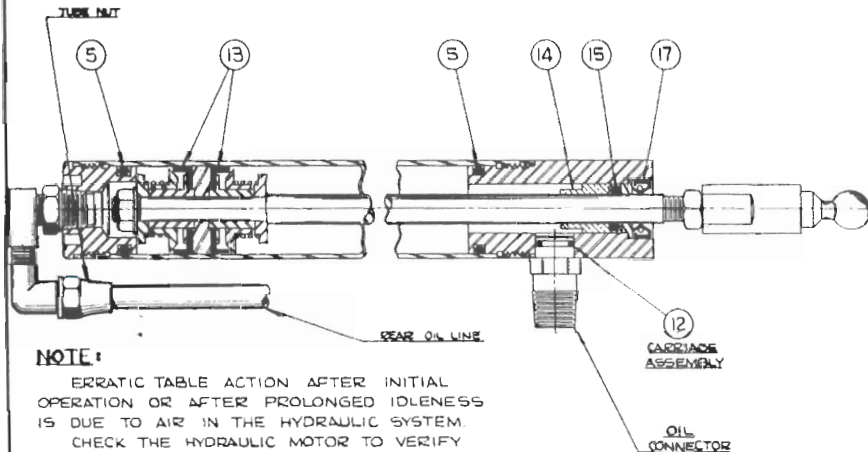
SCALE
ISS. PART NO.
B 102389



IT IS RECOMMENDED THAT THE LONGITUDINAL CYLINDER BE SERVICED AT THE FACTORY OR BY A FIELD SERVICE REPRESENTATIVE

TO REMOVE LONGITUDINAL CYLINDER:

1. DISENGAGE LONGITUDINAL CYLINDER ROD.
2. REMOVE TABLE.
3. REMOVE CYLINDER RETAINING SCREWS.
4. DISCONNECT REAR OIL LINE AT TUBE NUT.
5. LIFT CYLINDER STRAIGHT UP FROM OIL CONNECTOR.



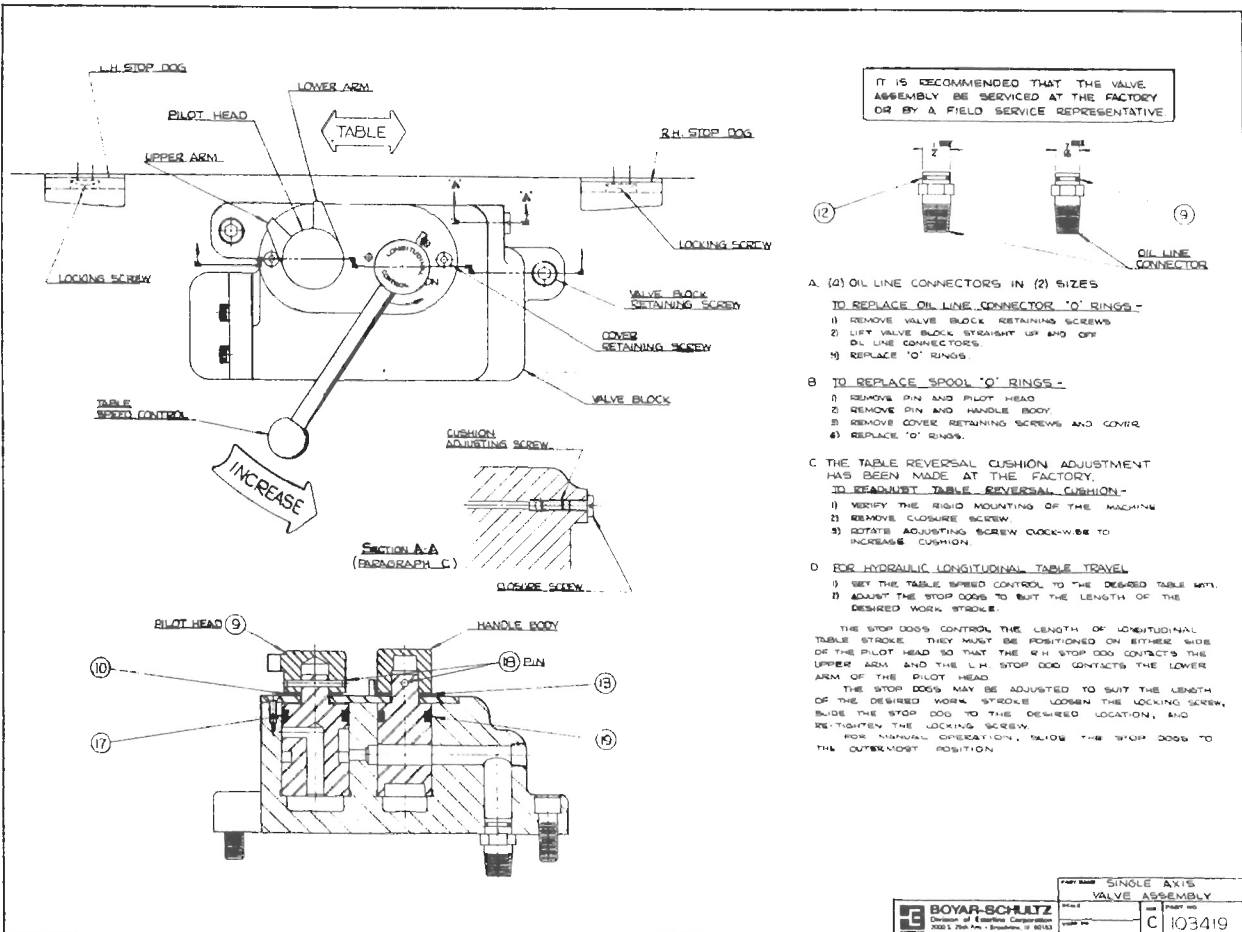
NOTE:

ERRATIC TABLE ACTION AFTER INITIAL OPERATION OR AFTER PROLONGED IDLENESS IS DUE TO AIR IN THE HYDRAULIC SYSTEM. CHECK THE HYDRAULIC MOTOR TO VERIFY CORRECT ROTATION. OPERATE THE TABLE HYDRAULICALLY AT FULL STROKE TO WORK THE AIR OUT OF THE SYSTEM.

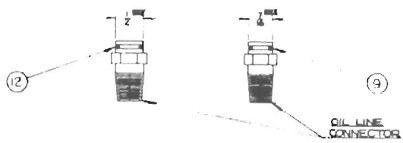
PART NAME
LONGITUDINAL CYLINDER ASSY

BOYAR-SCHULTZ
Division of Esterline Corporation
2000 S. 26th Ave. • Brookview, IL 60113

SCALE
ISS. PART NO.
B 103399



IT IS RECOMMENDED THAT THE VALVE ASSEMBLY BE SERVICED AT THE FACTORY OR BY A FIELD SERVICE REPRESENTATIVE



- A. (2) OIL LINE CONNECTORS IN (2) SIZES
- TO REPLACE OIL LINE CONNECTOR 'O' RINGS -**
- 1) REMOVE VALVE BLOCK RETAINING SCREWS
 - 2) LIFT VALVE BLOCK STRAIGHT UP AND OFF OIL LINE CONNECTORS
 - 3) REPLACE 'O' RINGS
- B. **TO REPLACE SPOOL 'O' RINGS -**
- 1) REMOVE PIN AND PILOT HEAD
 - 2) REMOVE PIN AND HANDLE BODY
 - 3) REMOVE COVER RETAINING SCREWS AND COVER
 - 4) REPLACE 'O' RINGS
- C. **THE TABLE REVERSAL CUSHION ADJUSTMENT HAS BEEN MADE AT THE FACTORY.**
- TO READJUST TABLE REVERSAL CUSHION -**
- 1) VERIFY THE RIGID MOUNTING OF THE MACHINE
 - 2) REMOVE CLOSURE SCREW
 - 3) ROTATE ADJUSTING SCREW CLOCKWISE TO INCREASE CUSHION
- D. **FOR HYDRAULIC LONGITUDINAL TABLE TRAVEL**
- 1) SET THE TABLE SPEED CONTROL TO THE DESIRED TABLE MPH.
 - 2) ADJUST THE STOP DOGS TO SUIT THE LENGTH OF THE DESIRED WORK STROKE.
- THE STOP DOGS CONTROL THE LENGTH OF LONGITUDINAL TABLE STROKE. THEY MUST BE POSITIONED ON EITHER SIDE OF THE PILOT HEAD SO THAT THE R.H. STOP DOG CONTACTS THE UPPER ARM AND THE L.H. STOP DOG CONTACTS THE LOWER ARM OF THE PILOT HEAD.
- THE STOP DOGS MAY BE ADJUSTED TO SUIT THE LENGTH OF THE DESIRED WORK STROKE. LOOSEN THE LOCKING SCREW, SLIDE THE STOP DOG TO THE DESIRED LOCATION, AND RETIGHTEN THE LOCKING SCREW.
- FOR MANUAL OPERATION, SLIDE THE STOP DOGS TO THE OUTERMOST POSITION.

SINGLE AXIS VALVE ASSEMBLY	
BOYAR-SCHULTZ Division of Emerson Corporation 255 E. 26th Ave. • Brookline, MA 02133	C 103419

THE VALVE ASSEMBLY MUST BE SERVICED AT THE FACTORY

THE STOP DOGS CONTROL THE LENGTH OF LONGITUDINAL TABLE STROKE. THEY MUST BE POSITIONED ON EITHER SIDE OF THE PILOT HEAD SO THAT THE R.H. STOP DOG CONTACTS THE UPPER ARM AND THE L.H. STOP DOG CONTACTS THE LOWER ARM OF THE PILOT HEAD.

THE STOP DOGS MAY BE ADJUSTED TO SUIT THE LENGTH OF THE DESIRED WORK STROKE. LOOSEN THE LOCKING SCREW, SLIDE THE STOP DOG TO THE DESIRED LOCATION, AND TIGHTEN THE LOCKING SCREW.

FOR MANUAL OPERATION, SLIDE THE STOP DOGS TO THE OUTERMOST POSITIONS.

FOR SINGLE AXIS HYDRAULIC OPERATION -

1. PLACE THE CROSSFEED DIRECTIONAL CONTROL IN THE 'NEUTRAL' POSITION.
2. PLACE THE WHEEL DRESS SPEED CONTROL IN THE 'OFF' POSITION.
3. START THE MACHINE.
4. PLACE THE MAIN CONTROL IN THE 'ON' POSITION.
5. SET THE TABLE SPEED CONTROL TO THE DESIRED TABLE MPH.
6. ADJUST THE STOP DOGS TO SUIT THE LENGTH OF THE DESIRED WORK STROKE.

FOR TWO AXIS HYDRAULIC OPERATION -

1. PLACE THE CROSSFEED DIRECTIONAL CONTROL IN THE 'NEUTRAL' POSITION.
2. PLACE THE WHEEL DRESS SPEED CONTROL IN THE 'OFF' POSITION.
3. START THE MACHINE.
4. PLACE THE MAIN CONTROL IN THE 'ON' POSITION.
5. SET THE TABLE SPEED CONTROL TO THE DESIRED TABLE RATE.
6. ADJUST THE STOP DOGS TO SUIT THE LENGTH OF THE DESIRED WORK STROKE.
7. PLACE THE CROSSFEED DIRECTIONAL CONTROL IN AN OPERATING POSITION.
8. SET THE CROSSFEED CONTROL TO THE DESIRED INCREMENT.

WHEEL DRESS -

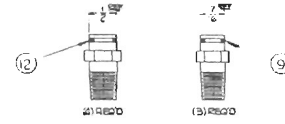
1. PLACE THE CROSSFEED DIRECTIONAL CONTROL IN THE 'NEUTRAL' POSITION.
2. PLACE THE WHEEL DRESS SPEED CONTROL IN THE 'OFF' POSITION.
3. START THE MACHINE.
4. PLACE THE MAIN CONTROL IN THE 'ON' POSITION.
5. PLACE THE CROSSFEED DIRECTIONAL CONTROL IN AN OPERATING POSITION.
6. SET THE WHEEL DRESS SPEED CONTROL TO THE DESIRED CROSSFEED RATE.

THE CUSHION ADJUSTMENTS HAVE BEEN MADE AT THE FACTORY TO ADJUST TABLE REVERSAL AND CROSSFEED CUSHION -

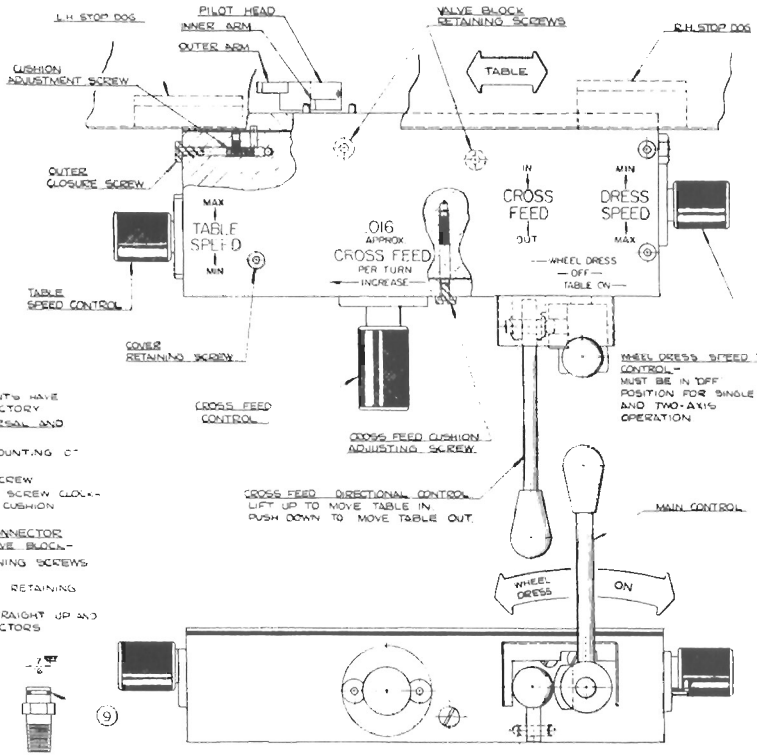
1. VERIFY THE RIGID MOUNTING OF THE MACHINE
2. REMOVE CLOSURE SCREW
3. ROTATE ADJUSTING SCREW CLOCKWISE TO INCREASE CUSHION

TO REPLACE OIL LINE CONNECTOR 'O' RINGS OR REMOVE VALVE BLOCK -

1. REMOVE COVER RETAINING SCREWS AND COVER
2. REMOVE VALVE BLOCK RETAINING SCREWS
3. LIFT VALVE BLOCK STRAIGHT UP AND OFF OIL LINE CONNECTORS
4. REPLACE 'O' RINGS



TWO SIZES OF OIL LINE CONNECTORS.



TWO AXIS VALVE BLOCK ASSEMBLY	
BOYAR-SCHULTZ Division of Emerson Corporation 255 E. 26th Ave. • Brookline, MA 02133	C 103434

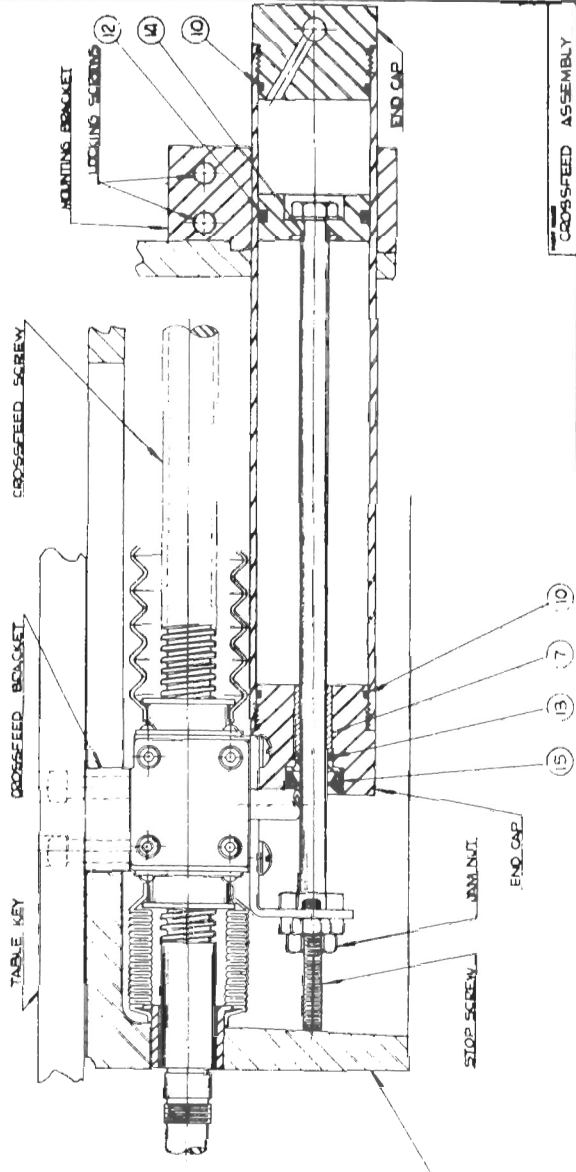
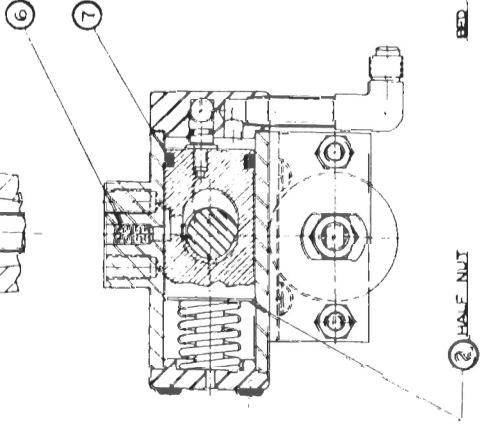
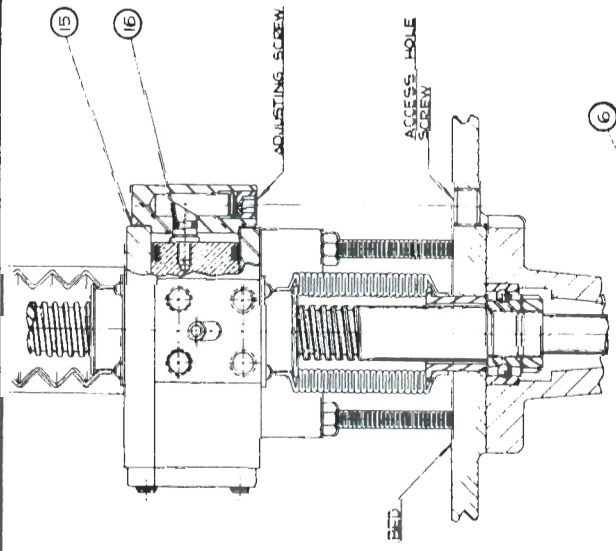
THE CROSSFEED CYLINDER AND HALF-NUT MUST BE SERVICED AT THE FACTORY OR BY A FIELD SERVICE REPRESENTATIVE.

ERRATIC TABLE ACTION AFTER INITIAL OPERATION OR PROLONGED IDLENESS IS DUE TO AIR IN THE HYDRAULIC SYSTEM. CHECK THE HYDRAULIC MOTOR TO VERIFY CORRECT ROTATION. OPERATE THE CROSSFEED HYDRAULICALLY AT FULL STROKE WITH THE WHEEL DRESS CONTROL TO WORK AIR OUT OF THE SYSTEM. THE 'UP' MARKS ON THE END CAPS MUST BE ALIGNED AND ON THE UPPER VERTICAL CENTER LINE POSITION. CROSSFEED CYLINDER ANIALLY SO THAT FULL TRAVEL IS ATTAINED HYDRAULICALLY. TIGHTEN MOUNTING BRACKET SCREWS. ADJUST STOP SCREWS SO THAT CONTACT IS MADE WITH THE INSIDE WALL OF THE BED AS THE CROSSFEED BRACKET REACHES THE END OF ITS TRAVEL.

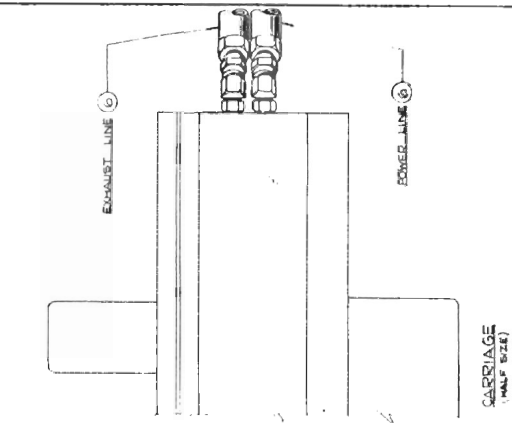
THE CROSSFEED HANDWHEEL IS AUTOMATICALLY DISENGAGED WHEN THE DIRECTIONAL CONTROL IS OPERATED. WITH THE DIRECTIONAL CONTROL IN THE 'NEUTRAL' POSITION FOR MANUAL CROSSFEED CONTROL, THE HALF-NUT IS AUTOMATICALLY ENGAGED WITH THE CROSSFEED SCREW, THEREBY ENGAGING THE CROSSFEED HANDWHEEL. TO ADJUST ENGAGEMENT OF CROSSFEED SCREW AND HALF-NUT:

- 1) REMOVE ACCESS HOLE SCREW
- 2) INSERT KEY THRU ACCESS HOLE AND ROTATE ADJUSTING SCREW CLOCKWISE TO INCREASE CROSSFEED SCREW CLEARANCE.

HALF-NUT ITEMS ARE DENOTED BY ○



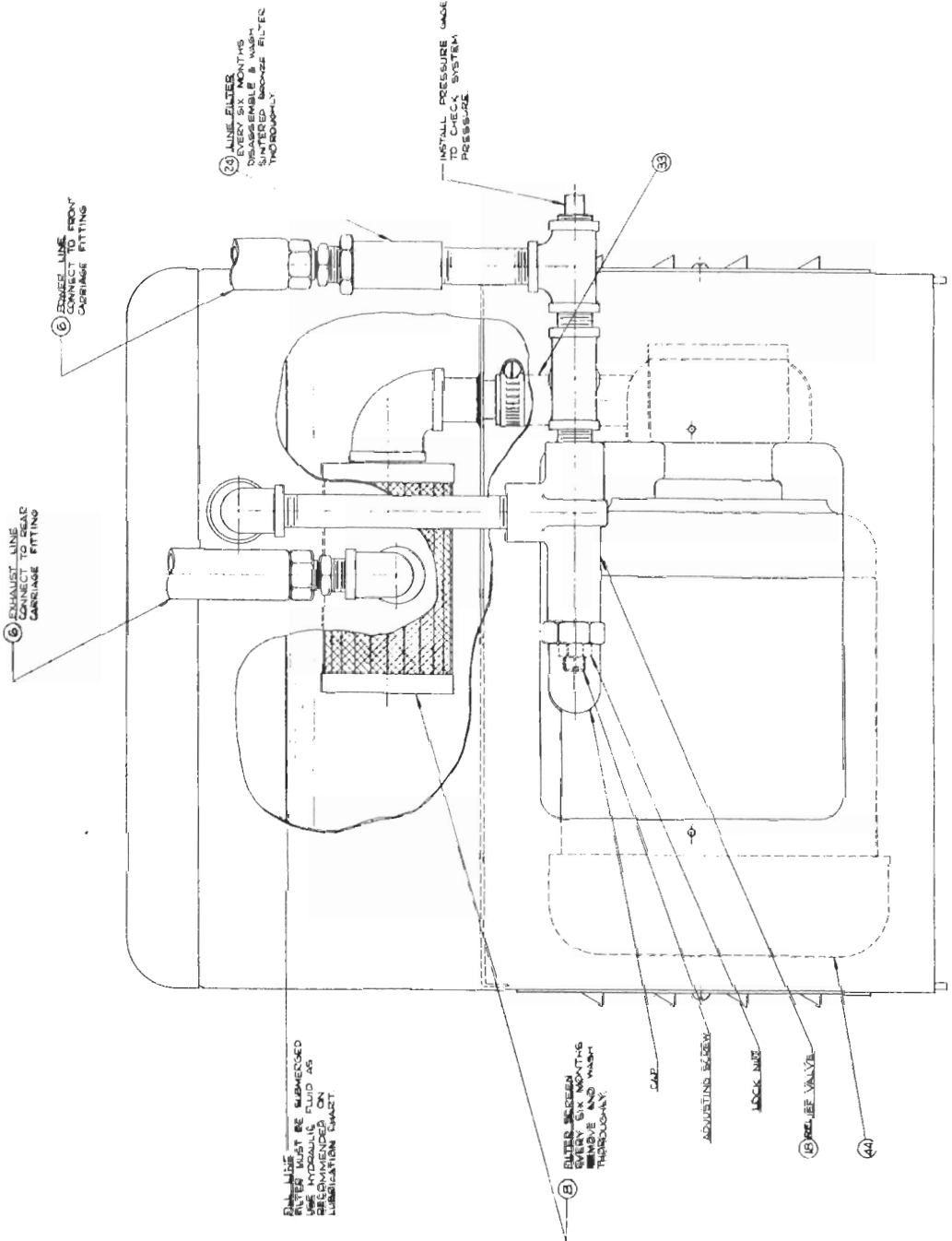
BOWAR-SCHLITZ Div. of Lincoln Electric 200 E. 4th St., Columbus, 1, OH 43215		CROSSFEED ASSEMBLY
PART NO.		C 103433



- NOTES:**
1. CHECK MOTOR DIRECTION IN CONJUNCTION WITH MACHINE SPINDLE MOTOR.
 2. SPINSE THE HYDRAULIC FLUID AND WASH THE FILTER EVERY SIX MONTHS. FILTERS AND OIL RESERVOIR EVERY SIX MONTHS.
 3. VERIFY PLACEMENT OF OIL SPLASH GAUGE.

THE HYDRAULIC PRESSURE HAS BEEN SET AT THE FACTORY TO SET SYSTEM PRESSURE-

1. REMOVE PIPE PLUG AND INSTALL 200 PSI PRESSURE GAUGE
 2. REMOVE RELIEF VALVE CAP
 3. START MACHINE
 4. POSITION TABLE SPEED CONTROL UNTIL TABLE MOTION BEGINS;
 5. LOOSEN RELIEF VALVE LOCK NUT AND ROTATE ADJUSTING SCREW CLOCKWISE TO INCREASE PRESSURE
- SET SYSTEM PRESSURE TO 100 PSI



RESERVOIR FILTER MUST BE SUBMERGED IN HYDRAULIC FLUID AS SHOWN ON LUBRICATION CHART

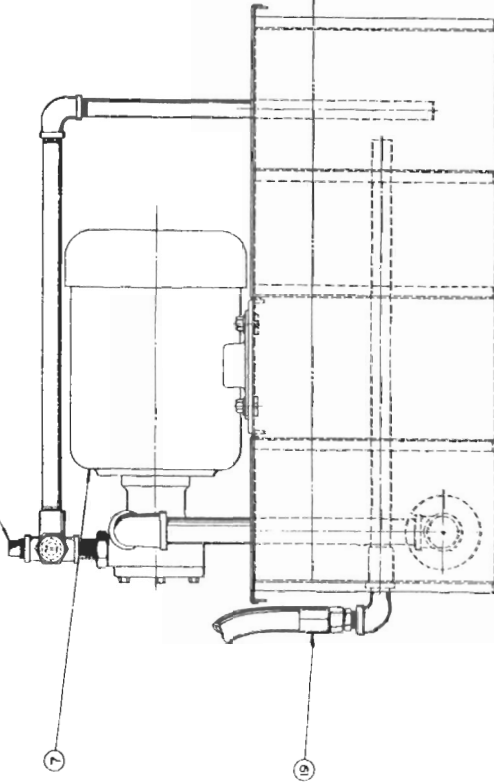
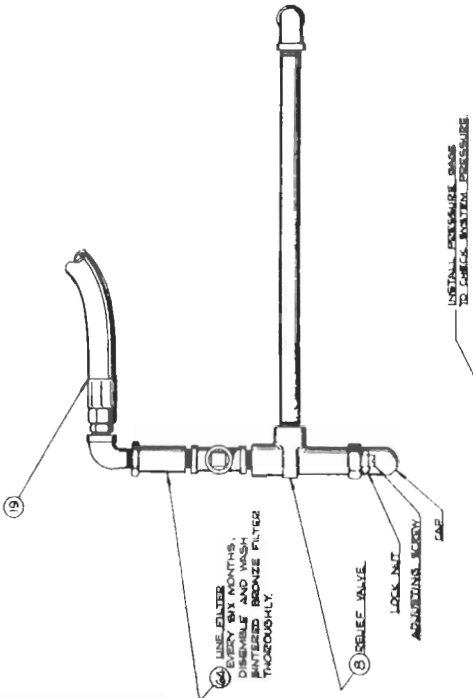
6. HYDRAULIC SYSTEM PRESSURE HAS BEEN SET AT THE FACTORY TO SET SYSTEM PRESSURE

SINGLE AXIS HYDRAULIC-

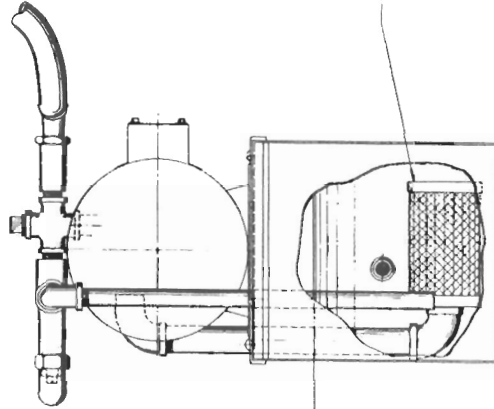
1. REMOVE PIPE PLUG AND INSTALL 200 PSI PRESSURE GAUGE
2. REMOVE RELIEF VALVE CAP
3. START MACHINE
4. POSITION TABLE SPEED CONTROL UNTIL TABLE MOTION BEGINS; THEN BACK OFF POSITION CONTROL UNTIL TABLE MOTION STOPS. LOOSEN RELIEF VALVE LOCK NUT AND ROTATE ADJUSTING SCREW CLOCKWISE TO INCREASE PRESSURE.
5. SET SYSTEM PRESSURE AT 90 PSI.

TWO AXIS HYDRAULIC-

1. REMOVE PIPE PLUG AND INSTALL 200 PSI PRESSURE GAUGE
2. REMOVE RELIEF VALVE CAP
3. PLACE WHEEL DRESS SPEED CONTROL IN THE "OFF" POSITION
4. PLACE MAIN CONTROL IN THE "WHEEL DRESS" POSITION
5. PLACE WHEEL DRESS DIRECTIONAL CONTROL IN AN OPERATING POSITION
6. START MACHINE
7. LOOSEN RELIEF VALVE LOCK NUT AND ROTATE ADJUSTING SCREW CLOCKWISE TO INCREASE SYSTEM PRESSURE AT 90 PSI.



FILL LINE USE THIS LINE AS RECOMMENDED ON LUBRICATION CHART



NOTES:

1. CHECK MOTOR DIRECTION IN CONJUNCTION WITH MACHINE SPINDLE MOTOR
2. CHANGE HYDRAULIC FLUID AND CLEAN THE FILTER SCREEN, LINE FILTER, AND OIL RESERVOIR EVERY SIX MONTHS

BOYAR-SCHULTZ

702 South Main Street • Rockford, Illinois 61105 • 815/964-2600