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PROCUNIER SAFETY CHUCK CO.

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**Style SLH, VLHH and VLHV
Lead Screw Tapping Units**

**Style 1000A, 3000A and 3037
Lead Screw Tapping Machines**

Series 29000
(Serial Nos. B4870 and higher
for Series 29000 1-AL)

(Serial Nos. B9230 and higher
for Series 29000 3-AL)

INSTRUCTION MANUAL

Introduction

PROCUNIER'S Lead Screw Tapping Units and Machines are precision made in several models offering extended machining life **when used within rated capacity limits.**

CAPACITY

Series/ Tapper	Cutting Taps	Forming Taps	Max. Speed
29051 29000- 29016	#0-#10 (M2 to M5) Steel #0-1/4" (M6) Soft Mtl.	#0-#6 (M2-M3.5) #0-#10 (M5)	2000 RPM
29053 29020- 29037	#8-1/2" (M4.5-M12) Steel #8-3/4" (M4.5-M18) Soft Mtl. 1/16"-3/8" Pipe	#8-3/8" (M4.5-M10) #8-5/8" (M4.5-M16)	1200 RPM

Standard Equipment: Styles 1000A, 3000A and 3037 Lead Screw Tapping Machines include the following standard equipment: steel base with oil trough table; complete electrical package, including magnetic starter, transformer and push button control station; filter-regulator-lubricator air control assembly with air lines; anti-tie down dual palm buttons; set of four (4) Tru-Grip tap collets; and the necessary wrenches. (They do not include an electrical disconnect switch or the lead screw assembly.)

Styles SLH, VLHH, and VLHV Lead Screw Units include air line; foot control switch with grounded cord and plug; 115V power line with grounded cord and plug; set of four (4) Tru-Grip tap collets; and the necessary wrenches. (They do not include motor starter, motor power line or lead screw assembly.)

Left-Hand Operation: When using left-hand taps, reverse the rotation of the motor (left to right rotation); modify the cover assembly (see Page 9) of the tapping head (Pin Shank, Drive Shell and internal Ring Gear); and use left-hand lead screw assemblies only. If this modification is not made and the machine is operated, damage to the tapping head will result.

Set-Up

PROCUNIER machines are shipped completely assembled, wired and tested. To position the head properly, loosen the column lock bolt then turn the head so the spindle is in the center of the table. The raising mechanism must be cranked to raise or lower the head to the desired tapping height. Retighten the bolt to lock the head for operation.

Multiple machines are shipped with the balance springs in the **reverse position** for unit stability. Reposition the counter balance springs and position the clamp on the guide rods under the multiple head and adjust spring tension to compensate the head weight. (See multiple instructions).

Air Control Assembly: The filter-regulator-lubricator assembly is required on all units and machines. Fill the lubricator, according to the instructions on the unit, using a light grade oil such as SAE 10W. Adjust the slotted head screw at the top so that **one drop** of oil forms in the sight bubble **every two minutes.** Over-

lubrication will clog the air cylinders.

Next, check that the air line is connected from the "out" end of the lubricator to the solenoid valve at the rear of the tapper. Connect the air supply line to the "in" side of the filter and adjust the regulator for the proper air pressure (15-70 psi on all #1 units; 20-90 psi on all #3 units.) Minimum air pressure, enough to drive a sharp tap, is more economical and assures greater tap protection because the friction clutch will slip rather than cause tap breakage. Excessive pressure will cause the solenoid valve to malfunction and damage the tapper.

Electrical: Connect the input power to L₁, L₂ and L₃ (see Machine Wiring Schematic, Page 4) in the main electrical box and ground for protection. All machine and tapper circuits are pretested and require no further adjustment.

When the optional Palm Button controls are used, the timer should be adjusted to provide the desired time delay between actuating one Palm Button and the other.

Before checking for proper rotation, **remove** the belt connecting the motor and tapper pulley or the drive collar Pin (63) from Lead Screw assembly, then depress the "Power On" button and jog the motor by pushing the "Motor Run" and "Emerg. Off" buttons. Improper rotation can be corrected by switching leads L₁ and L₂. Replace the Drive Belt or Collar Pin (63).

When machine is not in operation, all switches should be in the "Off" position, including air.

Speed: Models 1000A, 1VLHH and 1VLHV have a 3-step, V-belt pulley drive; models 3000A, 3VLHH, 3VLHV and 3037 use a single speed gear belt drive for maximum power. Recommended speeds and lubricants for common taps are listed on Page 29 of our Catalog.

Speed ratios of the tappers are: 1:1 drive and 1:2 reverse (input to output). Drive speeds in excess of 2000 RPM (Size 1) and 1200 RPM (Size 3) are not recommended. Maximum cycles/hour are 3600 (Size 1) and 1800 (Size 3). Exceeding these limits will cause excessive component wear and possible damage to the tapper.

Depth Adjustment: Tap feed is accomplished in the head itself, with stroke adjustable up to 3/4" (Size 1); up to 2 1/4" (Size 3). To change the stroke, loosen the depth stop lock nut (47) and adjust the depth nut (46) up or down; then relock the nut. Wrenches are provided for locking the hex jam nut (47) against the depth stop nut to maintain the correct depth. Once set, the lead screw will repeat depth to within 1/3 turn of the lead screw.

Tapping: The one-piece Lead Screw and Tru-Grip tap chuck accommodate the collet which holds the tap. Insert the tap completely into the collet, making certain that the square of the tap is totally engaged in the collet. If the tap is not completely engaged, it will cut out the square in the collet. Insert the entire assembly into the chuck and lock in place using the wrenches provided.

Once the unit or machine is started, the Lead Screw will feed in reverse until it reaches the neutral position and is ready for operation. Be sure the tap has the correct G.H. number to produce the desired class of fit. Accurate alignment of tap and hole is essential for good threads. The proper lubricant flowed on for the material being tapped will reduce load, assure better quality threads and lengthen tap life. (See Catalog Page 29 for recommended speeds and lubricants.)

Lubrication: Tapping Heads should be lubricated with 6 drops of light grade machine oil (SAE 10W) every 4 hours of operation in oiler at top of housing. Use liberal amounts of lubricant in the split in the Lead Screw nut at bottom of housing and yoke bushing (44). The Tapping Head should be lubricated before using, but **do not flood**, since glazing of the clutch will result and reduce drive capacity. Under heavy use, remove clutch and clean periodically. (See Disassembly, Page 5).

Lead Screw Assembly: To remove the Lead Screw assembly from the tapper, turn lead screw down by hand approximately $\frac{1}{2}$ " to relieve upward pressure on the lead screw drive collar (61). Slip the drive collar snap ring (62) off without bending or distorting it, push the drive collar pin (63) out of the drive collar (61), then remove both socket head cap screws (66) in the bottom of the cap.

PROCUNIER's Lead Screw assembly is wear-adjustable simply by opening or closing the three (3) set screws located on the black cap. Adjust each until the Lead Screw turns freely without excessive float or runout, making sure the Lead Screw bronze nut is securely in the Lead Screw cap. Always adjust the Lead Screw assembly when it is disassembled from the unit.

Reverse the above procedure for reassembly.

Operating Procedures

General

PROCUNIER Lead Screw Tapping Units and Machines feature three electrical modes: Automatic, Manual Jog Cycle and Manual Single Cycle. Each is explained below.

Color-coded components simplify maintenance and repair. To replace any component, first disconnect the power cord, then replace the component and connect like-colored wires together; e.g., yellow to yellow, blue to blue, etc.

Should the tap stick, bind, hit an obstruction or the bottom of the hole, the Safety Return button immediately interrupts the cycle and returns the tap to the start of its stroke.

Indexing tables or other automatic features can usually be wired to the tapping head through an external switch located on the tapper body and actuated by the yoke. (See Catalog Page 17 for "Interlock Switch.") Use this signal to index the table. After the table has indexed, use its signal to cycle the tapper in the Manual Single Cycle mode. The tapper and most indexing tables require an impulse signal in lieu of a steady current. For

the correct switches and controls, contact your table manufacturer or representative.

Sequence of Operations: (For Tappers, refer to Schematic Wiring Diagram on next page.)

Automatic Cycle (Continuous operation): When the "Manual-Off-Automatic" selector switch is set in the "Automatic" mode (all other switches in any position), the forward coil of the solenoid valve will energize and cause the Lead Screw to rotate in a forward direction away from the tapper. When the rotating Lead Screw reaches its preset depth, the actuator switch will break, de-energizing the forward coil and energizing the reverse coil of the solenoid (29051 Series uses spring return). This will reverse the Lead Screw, returning it to its original position and reclosing the actuator switch to repeat the cycle over again until the switch is turned "OFF." The red Safety Return button can be depressed at any time to interrupt the automatic cycle. This cycle is not available with dual Palm Button operation.

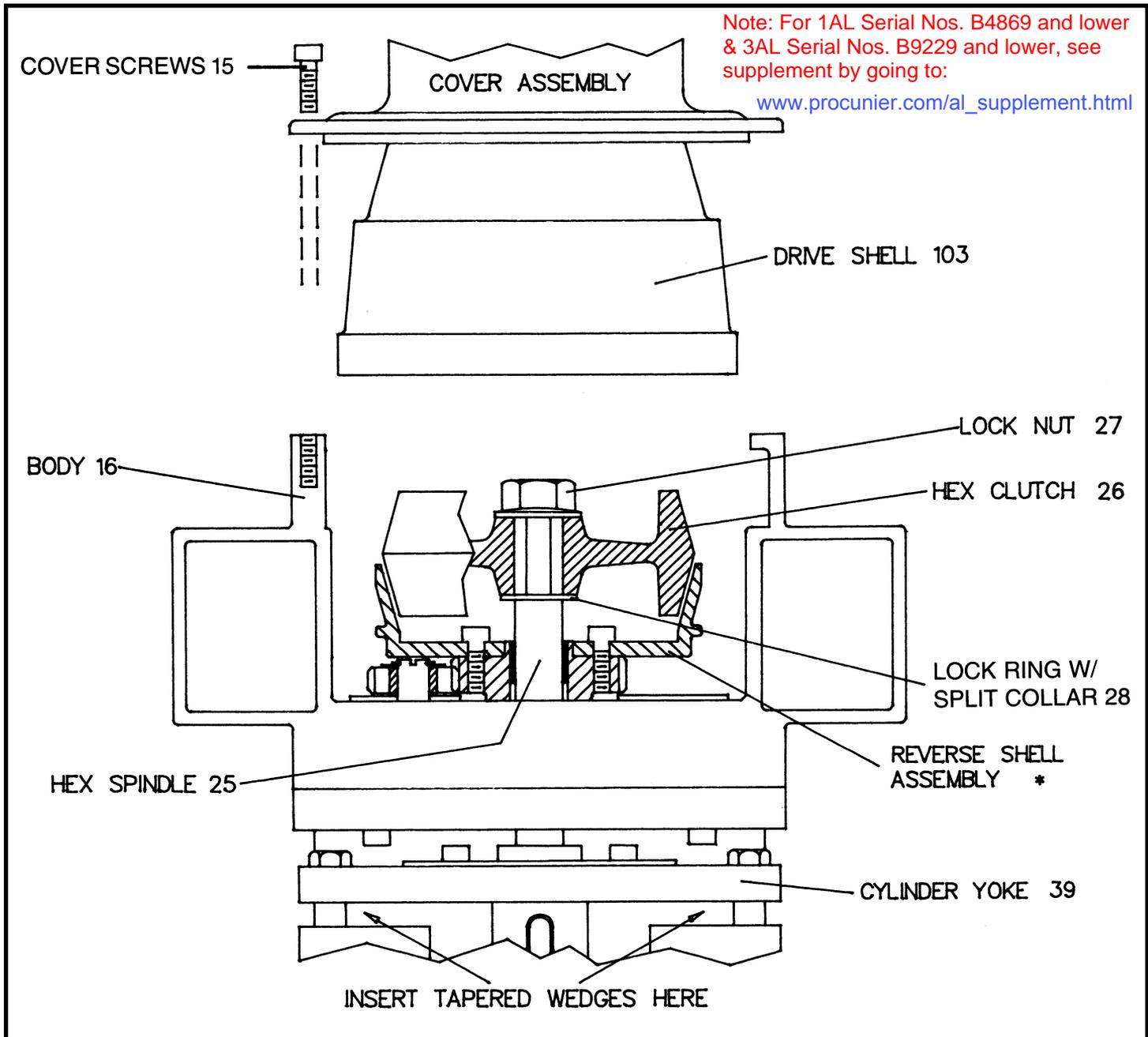
Manual Jog Cycle (Operation only when push button or foot switch is activated): With the "Manual-Off-Automatic" selector switch in the "Manual" mode and the "Single Cycle-Jog Cycle" switch in the "Jog Cycle" mode, the forward coil of the solenoid valve will energize whenever the push button or foot switch is activated. This causes the Lead Screw to rotate in a forward direction, as in the "Automatic" cycle mode. However, when either the push button or foot switch is released, the circuit will break and cause the Lead Screw to reverse and return to its original position. In the "Jog Cycle" mode, spring reversal is incorporated for the return stroke. When the button is continuously engaged, the cycle will be the same as "Automatic."

Manual Single Cycle (One complete cycle by pulse activation of either the push button or foot switch): With the "Manual-Off-Automatic" selector switch in the "Manual" mode and the "Single Cycle-Jog Cycle" switch in "Single Cycle" mode, activation of either the push button or foot switch will energize the coil of the relay — in turn, energizing the forward coil of the solenoid valve. This causes the Lead Screw to rotate forward until it reaches its preset depth, through the holding relay, and then the actuator switch will break, de-energizing the relay and solenoid, and energizing the reverse coil of the solenoid valve (Size 1 uses spring return), reversing Lead Screw rotation and returning it to its original position where it remains until either the push button or foot switch is activated again. Continuous activation of either switch will cause the Lead Screw to operate as in the "Automatic" mode. The red Safety Return button can be depressed at any time during the forward stroke to interrupt the cycle. This cycle is the most commonly used.

NOTE: When the solenoid valve is energized, air enters the cylinder, engaging the friction clutch ... and vice versa. A minimum 15 lbs. to a maximum 90 lbs. for Size 3 (Size 1 maximum 70 lbs.) ... will satisfy all tapping operations within the capacity of these tapping heads.

Note: For 1AL Serial Nos. B4869 and lower & 3AL Serial Nos. B9229 and lower, see supplement by going to:

www.proconier.com/al_supplement.html



Disassembly

Disassembly of the Tapping Head is easily accomplished by following the proper sequence:

1. Remove the top cover screws (15) and raise the cover assembly clear of body.
2. Remove the friction clutch (26) by first inserting wedges between the bottom of the cylinder yoke (39) and the top of the cylinders (36) to remove pressure from the clutch, as per diagram.
3. Place a 3/16" dia. rod through the splined spindle (25) to secure it from rotating. Remove the locknut (27) from the spindle (right hand thread). Pull the hex clutch (26) completely off the spindle.

Clean the clutch by wiping with a cloth dipped in a good non-residue cleaning solution, such as alcohol or acetone. (Do not use paint thinner.) If the clutch is swollen, out of shape or will not clean thoroughly, replace the clutch. **Do not sand, file or rough up clutch surfaces.**

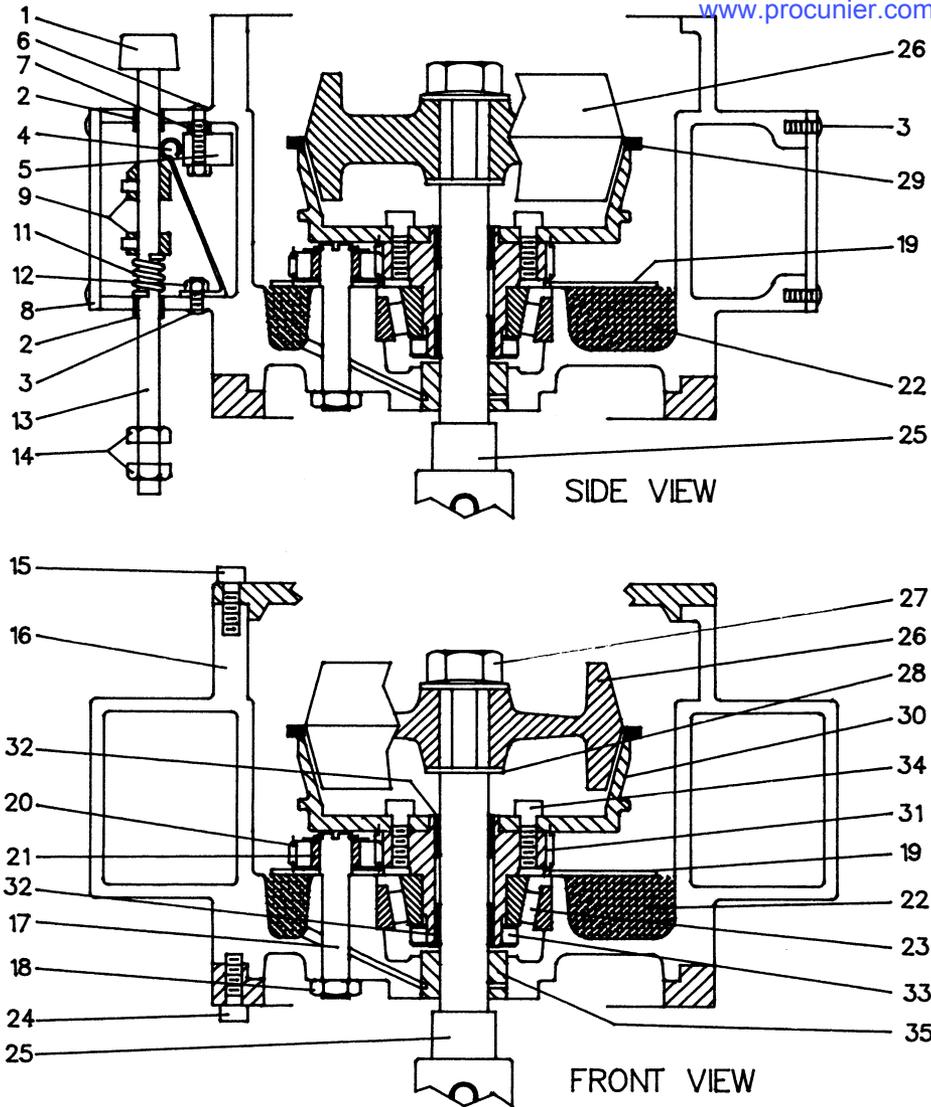
Remove the reverse shell assembly (*) and wipe the inside of both the reverse shell and the drive shell (103), using a clean cloth or a fine (000) emery paper. Drain out all excess oil in the head; then place a drop of oil on the top of the three studs (17). Grease the inside of the reverse shell between the two bushings (32) and on the body bearing (23) with a good grade TEFLON impregnated grease and saturate the oil felt with #10 oil.

When reassembling the taper, insert the 2-piece split collar (28S) tapered side up, into the groove on the hex spindle (25), then place the lock ring (28L) over the split collar, then the clutch (26) making sure it is seated on the lock ring. Assemble the hex locknut (27) on the spindle threads and lock the assembly by torquing the nut to 12-15 ft.-lbs. (21000 1-AL) and 35-38 ft.-lbs. (23000 3-AL). Reposition the cover assembly (C) making sure the separator ring (29) is not jammed and tighten the screws (15).

Before actual operation, test the head in all three cycles for a few minutes for correct operation.

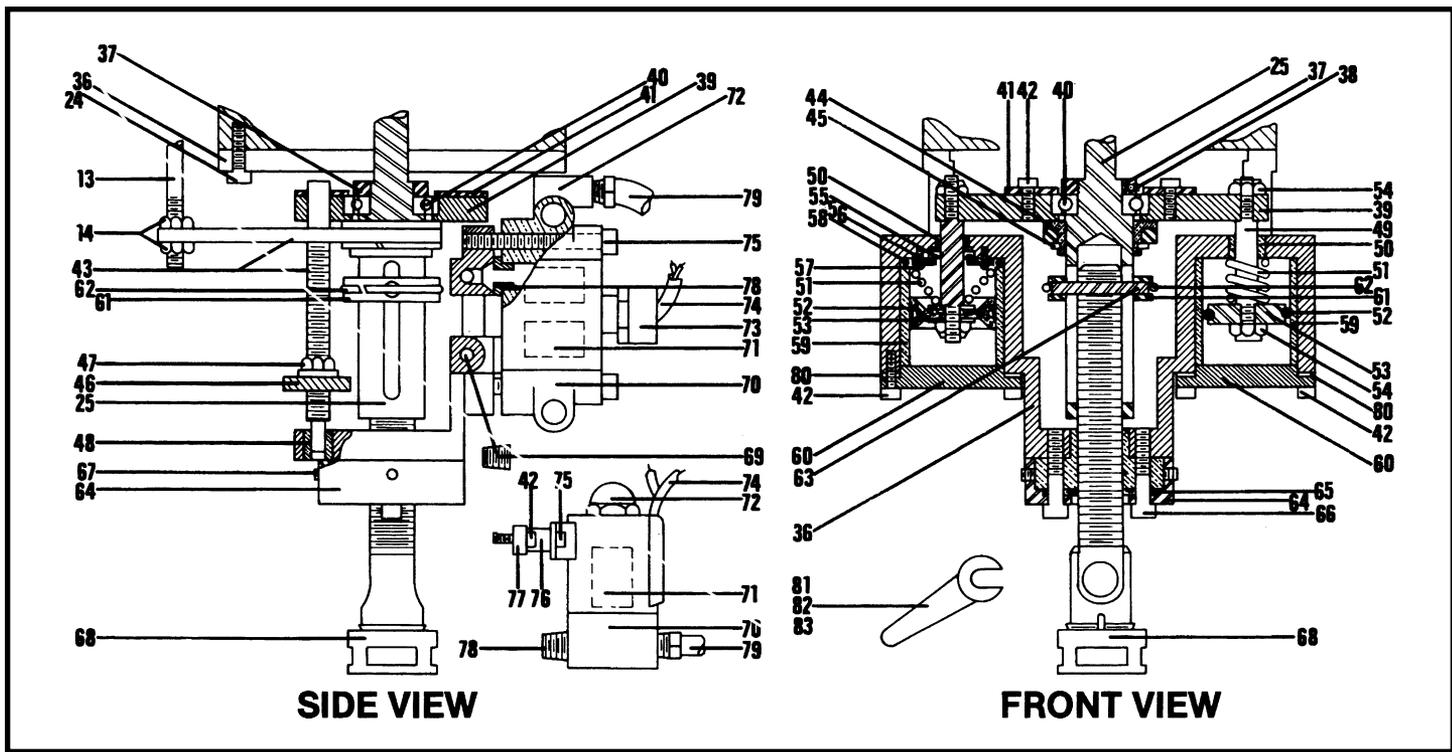
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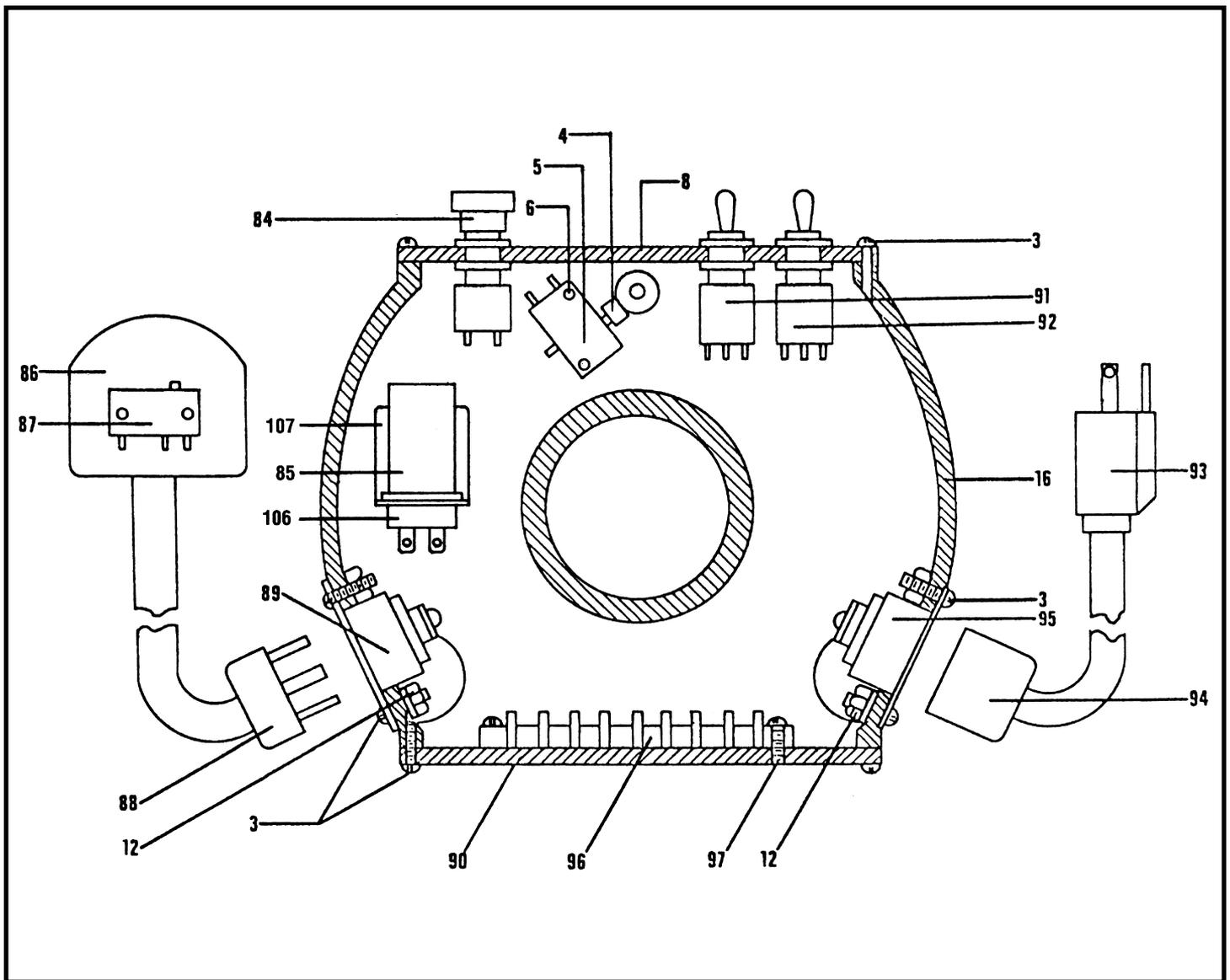
BODY ASSEMBLY

Code No.	Description	Qty.	Series 21000	Series 23000	Code No.	Description	Qty.	Series 21000	Series 23000
1.	Cam Shaft Button		21216	21216	21.	Pinion Bearing	3	—	13255
2.	Shank Bushing	2	11220	11220	22.	Oiler Felt		11247	13247
3.	Screw	15	21207	21207	23.	Body Ball Bearing		11273	23229
4.	Switch Arm		21214	23214	24.	Screw	4-6	14223	14223
5.	Actuator Switch		21211	23211	25.	Hex Splined Spindle		21288	23288
6.	Actuator Mounting Screw & Nut	2	21213	21213	26.	Hex Clutch		21285	23285
7.	Actuator Switch Spacer	2	21212	21212	27.	Lock Nut		21286	23286
8.	Front Name Plate		21206	23206	28.	Lock Ring W/Split Collar		21277	23277
9.	Actuator Cam W/Screw (2 pc.)		21218	21218	28L.	Lock Ring Only		21278	23278
11.	Actuator Cam Spring		21219	23219	28S.	Split Collar Only		21279	23279
12.	Ground Nut	6	21224	21224	29.	Separator Ring		11234	13234
13.	Actuator Cam Shaft		21215	23215	*	Reverse Shell Assembly (includes 30, 31, 32, 33 & 34)		11266	13266
14.	Cam Shaft Nut	2	21217	21217	30.	Reverse Shell Only		11267	13267
15.	Screw	4-6	11223	14223	31.	Reverse Gear W/Bushing (32)		11268	13268
16.	Body W/Bushing (2)		21205	23205	32.	Reverse Gear Bushing Only	2	11270	13270
17.	Stud	3	11249	13249	33.	Reverse Gear Lock Nut		—	13271
18.	Stud Nut	3	11252	12252	34.	Screw	4-6	16272	11223
19.	Stud Plate		11248	13248	35.	Body Bushing		11246	13246
20.	Pinion Gear W/Bearing (21)	3	11254	13253					



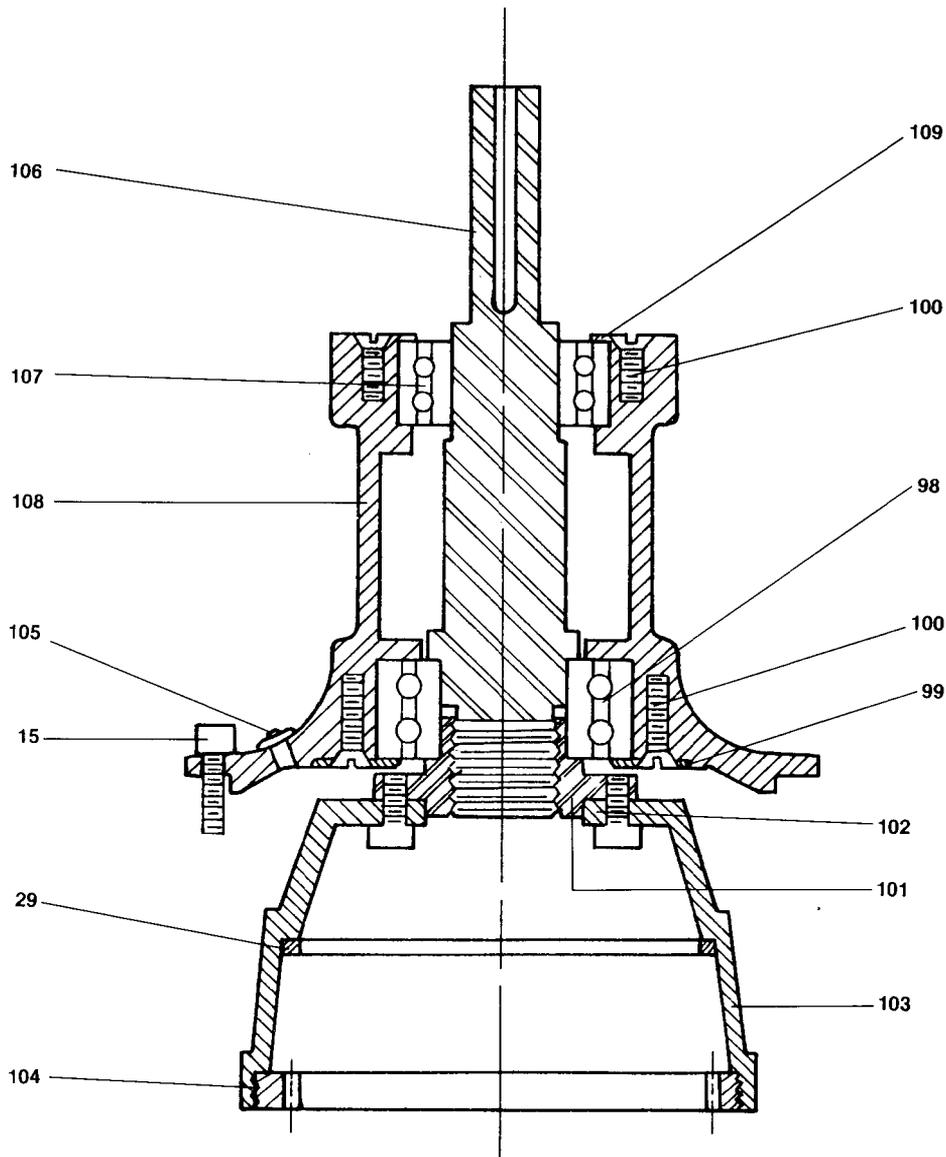
HOUSING ASSEMBLY

Code No.	Description	Qty.	Series 21000	Series 23000	Code No.	Description	Qty.	Series 21000	Series 23000
13.	Actuator Cam Shaft		21215	29218	59.	Cylinder Sleeve	2	21250	23250
14.	Cam Shaft Nut	2	21217	21217	60.	Cylinder Cap	2	21263	23263
24.	Screw	6	14223	14223	61.	Drive Collar		21249	23249
25.	Hex Splined Spindle		21288	23288	62.	Drive Collar Snap Ring		21248	23248
36.	Cylinder Housing W/Sleeve (59)		21230	23230	63.	Drive Collar Pin		12260	23247
37.	Lock Nut (includes 38)		21233	21233	64.	Lead Screw Cap		21280	23280
38.	Yoke Pin Screw		20226	20226	65.	Oiler Felt		21283	23283
39.	Cylinder Yoke		21236	23236	66.	Screw	2	21284	21284
40.	Yoke Ball Bearing		21235	21235	67.	Screw		21282	21281
41.	Retainer Plate		21237	23237	68.	Tru-Grip Nut		11287	13287
42.	Screw	12-14	11223	11223	69.	Pipe Plug	3-6	21276	21276
43.	Depth Stop Yoke Ass'y (Includes 44, 45)		21238	23238	70.	Solenoid Valve Ass'y 120V (includes 71, 72, 73 & 74)		21264	23264
44.	Yoke Bushing		21242	23242	70.	Solenoid Valve Ass'y 12V (includes 71, 72, 73 & 74)		21265	23265
45.	Snap Ring		21243	23243	71.	Solenoid Coil 120V	1-2	21266	23266
46.	Depth Stop Nut		21245	23245	71.	Solenoid Coil 12V	1-2	21267	23267
47.	Depth Stop Lock Nut		12252	23244	72.	Solenoid Adapter		21270	23270
48.	Shank Bushing		—	12220	73.	Solenoid Connector		—	23268
49.	Cylinder Shaft	2	21255	21255	74.	Solenoid Wire Insulator		21269	23269
50.	Cylinder Bronze Bushing	2	21251	23251	75.	Valve Mounting Screw	2-4	14223	23274
51.	Piston Spring REGULAR	2	21256	23256	76.	Solenoid Mounting Spacer		21273	—
51.	Piston Spring HEAVY DUTY	2	21257	—	77.	Solenoid Mounting Strap		21272	—
52.	Cylinder Piston Cup	2	21259	23259	78.	Solenoid Nipple or Seal	1-2	21275	23271
53.	Piston Cup Washer	2-4	21258	23258	79.	3' Air Line		21295	23295
54.	Cylinder Shaft Yoke Nut	4	21260	21260	80.	Cylinder Cap Gasket	2	21262	23262
55.	Cylinder Shaft Seal	2	—	23252	81.	Tru-Grip Spindle Wrench		11288	13288
56.	Cylinder Seal Retainer	2	—	23253	82.	Tru-Grip Nut Wrench		11288	13289
57.	Seal Retainer Screw	4	—	23254	83.	Depth Nut Wrench 1/2"-9/16"		21297	21297
58.	Cylinder "O" Ring Seal	2	—	23261					



TAPPER ELECTRICAL COMPONENTS

Code No.	Description	Qty.	Series 21000	Series 23000	Code No.	Description	Qty.	Series 21000	Series 23000
3.	Screw	15	21207	21207	88.	Foot Control Plug		21293	21293
4.	Switch Arm		21214	23214	89.	Foot Control Receptacle		21223	21223
5.	Actuator Switch		21211	23211	90.	Rear Name Plate		21225	23225
6.	Actuator Mounting Screw	2	21213	21213	91.	Toggle Switch (2-Way)		21209	21209
8.	Front Name Plate		21206	23206	92.	Toggle Switch (3-Way)		21208	21208
12.	Ground Nut	6	21224	21224	93.	Power Line Cord W/Plug		21289	21289
16.	Body W/Bushing (2)		21205	23205	94.	Power Line Plug Only		21290	21290
84.	Push Button Switch		21210	21210	95.	Power Line Receptacle		21222	21222
85.	Relay 120V		21228	21228	96.	Terminal Board		—	23226
85.	Relay 10V		21229	21229	97.	Terminal Board Screw	2	—	23227
86.	Foot Control Assembly		21291	21291	106.	Relay Socket	1	21226	21226
87.	Foot Control Switch		21292	21292	107.	Relay Bracket	1	21227	21227

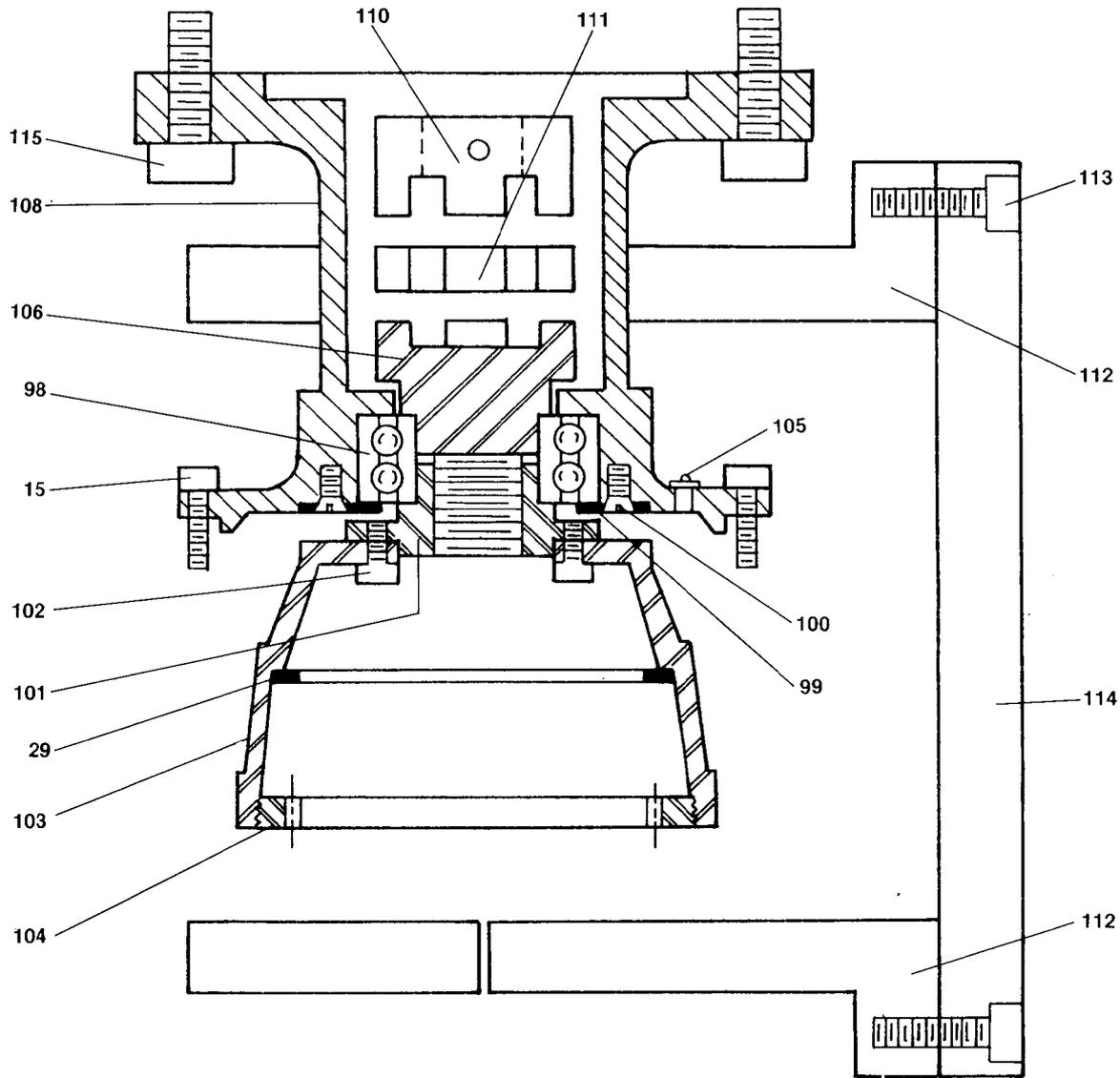


VLHH, VLHV and MACHINE COVER ASSEMBLY

Code No.	Description	Qty.	Size 1*	Size 3*	Code No.	Description	Qty.	Size 1*	Size 3*
15.	Cover Screw	4-6	11223	14223	103.	Drive Shell Only		11231	13231
29.	Separator Ring		11234	13234	104.	Ring Gear		11233	13233
98.	Ball Bearing		11221	13221	105.	Oiler		11224	11224
99.	Cover Brg. Ret.		11228	13228	106.	Shank $\frac{5}{8}$ " Pulley		29207	29217
100.	Retainer Screw	8	11229	12229	107.	Ball Bearing		11221	12221
101.	Drive Shell Adapter		—	13232	108.	Cover		29115	29125
102.	Adapter Screw	6	—	14235	109.	Cover Bearing Ret.		11228	12228
103.	Shell Ass'y. (101-103)		11231	13230					

* Size 1 includes Unit numbers 29010 -29016, 29047-29049 and 29051.

* Size 3 includes Unit numbers 29030 -29037 and 29053-29082.

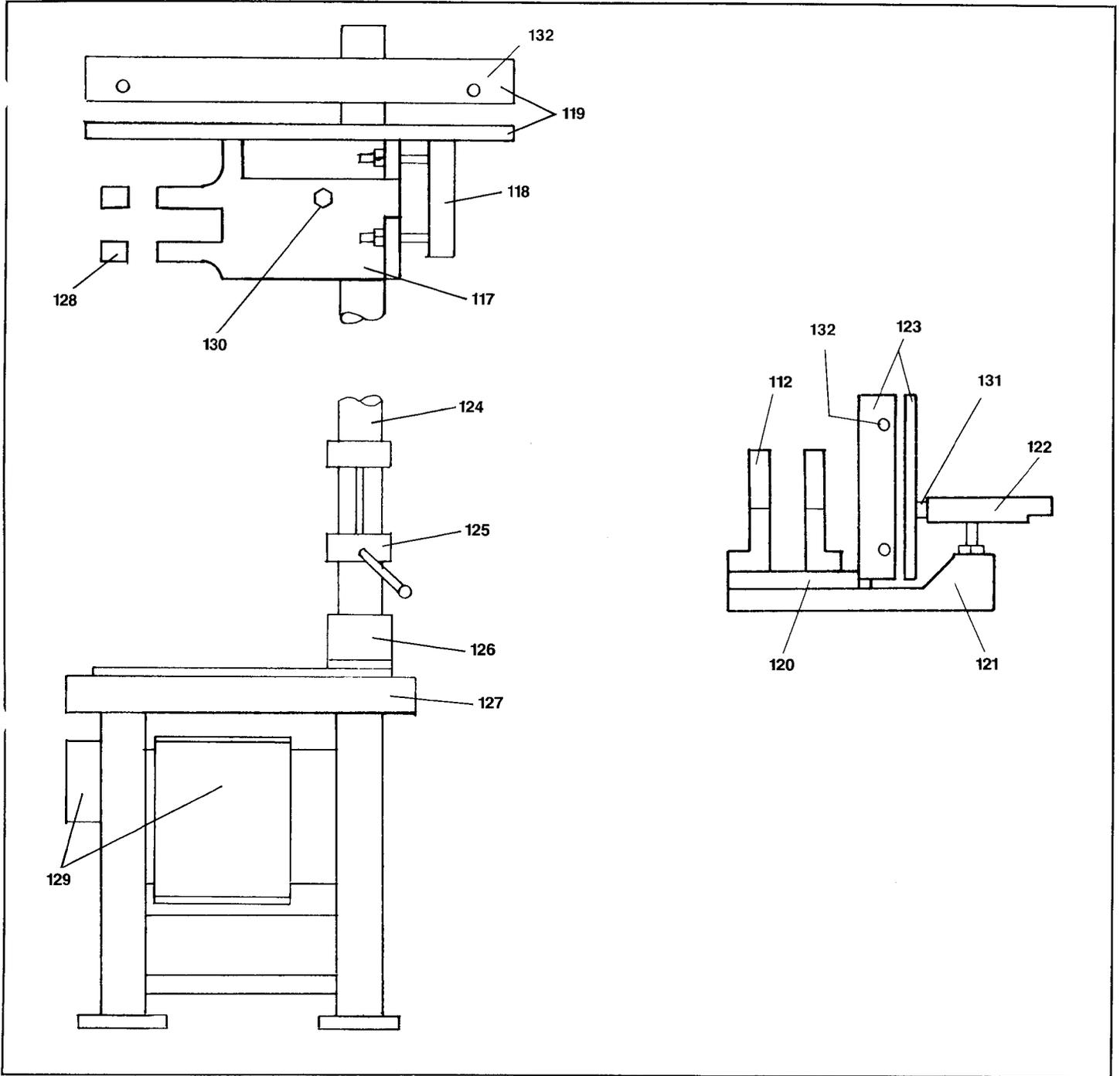


SLH COVER ASSEMBLY

Code No.	Description	Qty.	Size 1*	Size 3*	Code No.	Description	Qty.	Size 1*	Size 3*
15.	Cover Screw	4-6	11223	14223	105.	Cover Oiler		11224	11224
29.	Separator Ring		11234	13234	106.	Motor Adapter Shank		29201	29210
98.	Cover Ball Bearing		11221	13221	108.	SLH Cover		29110	29120
99.	Cover Bearing Retainer		11228	13228	110.	Motor Coupling Ass'y. (110-111)		29203	29213
100.	Retainer Screw	4	11229	12229	110.	Motor Coupling Only		29204	29214
101.	Drive Shell Adapter		—	13232	111.	Spider		29205	29215
102.	Adapter Screw	6	—	14235	112.	Holding Bracket	1-2	29220	29240
103.	Drive Shell Only		11231	13231	113.	Bracket Screw	8	—	29273
103.	Drive Shell Ass'y. (101-103)		11231	13230	114.	Sub Plate		—	29253
104.	Ring Gear		11233	13233	115.	Mounting Screw	4	29271	29273

* Size 1-SLH includes Unit numbers 29000 - 29008, 29046 - 29049

* Size 3-SLH includes Unit numbers 29020 - 29024.



VLHH, VLHV, and MACHINE MOUNTING BRACKETS

No.	Description	Qty.	Size 1*	Size 3*	No.	Description	Qty.	Size 1*	Size 3*
112.	Holding Bracket	1-2	29220	29240	124.	Column 3 × 42"		29223	29223
117.	Column Bracket w/Pad		29222	29242	124.	Column 3 × 65"		29224	29224
118.	Motor Pad		29243	29243	125.	Raising Mechanism		29225	29225
119.	Belt Guard Ass'y.		29230	29248	126.	Column Flange		29226	29226
120.	Sub Plate		—	29252	127.	Table Ass'y.		29236	29236
121.	Longitudinal Bracket w/Pad		29260	29265	128.	Bracket Clamp	4	—	29241
122.	Motor Pad		29228	29228	129.	Electrical Package		57525	57525
123.	Belt Guard Ass'y.		29261	29261	130.	Lock Ass'y.	1	29245	29245
					131.	Spacer	2	29264	29264
					132.	Screw	4	29234	29234

* Size 1 includes Unit numbers 29010 - 29016 and 29051.

* Size 3 includes Unit numbers 29030 - 29037 and 29053 - 29082.

TROUBLESHOOTING

Problem 1

Tapper does not tap to rated capacity or has lost its driving power.

Cause

(A) Clutch is glazed, oil soaked or swollen – disassemble tapper, clean or replace clutch as described under “Disassembly.”

(B) Check alignment of tap and hole, drill press speed, improper lubrication, dull or loaded tap, or part being tapped having undersized hole.

(C) Air pressure too low – increase pressure.

(D) Yoke bearing lock nut (37) has loosened.

Problem 2

Lead Screw does not complete a full cycle, going down about 1/2", then reversing to original start position.

Cause

(A) Actuator cam(13) not set correctly – adjust cam with set screw and lock in place.

Problem 3

Lead Screw feeds forward to end of stroke but does not return.

Cause

(A) Actuator switch (5) may be stuck in “normally closed” position (switch normally functions properly if a crisp click is heard when button is depressed). If necessary, replace actuator switch as in No. 5 below. Check new switch to assure that cam assembly (9) is in upper position when switch is depressed.

(B) If actuator switch is not the cause, remove solenoid valve assembly (70) and check for coil burnout (smell). If defective, replace.

(C) If depth stop nut (46) is set too low, tap will bottom in hole, or drive collar pin (63) is bottoming on splined spindle before depth stop nut engages.

(D) Check tap for dullness, or if it is jammed in bottom of hole with chips – change style of tap and/or lubrication method.

(E) Readjust bottom section of cam assembly (9) so that spring pressure holds the cam shaft (13) up.

Problem 4

Lead Screw does not start cycle and there is no unusual noise when tapper is in “Automatic” or “Manual Jog Cycle” mode.

Cause

(A) Check that actuator switch (5) is closed by actuator cam(9) – adjust.

(B) Usual cause is lack of air pressure reaching cylinders. Check for broken actuator switch. To replace, disconnect power line, remove front and rear nameplates, and unhook actuator switch wires at rear of tapper. Remove the two actuator switch mounting screws (6) and pull out switch. NOTE: To check actuator switch, listen for sharp “click” when button is depressed or use test lamp. Install new switch, if needed, checking that it is engaged by actuator cam. Adjust cam by set-screw (10), if necessary, so that when Lead Screw is in “UP” position, switch is depressed. Reinstall nameplates.

(C) If actuator switch is not malfunctioning, remove solenoid valve assembly (70) and check for burned coil, replacing if necessary.

(D) Check that proper 115V power is getting to tapper.

(E) Check 2- and 3-way switches (91 and 92) for proper operation.

(F) Make sure air pressure is getting to the valve.

Problem 5

Lead Screw does not start cycle and there is no unusual noise when run in “Manual Single Cycle” mode only.

Cause

(A) Set selector switch on “Automatic” mode. (If unit does not work, see No. 5 above.) If tapper responds normally in this mode, check relay (85). To replace relay, remove front and rear nameplates, unhook all four relay wires and remove relay by unscrewing the mounting screws. Check relay contacts and check for burnt coil. When replacing relay, keep wires and terminals clear of casting.

Problem 6

Flutters at bottom of stroke.

Cause

(A) Actuator switch (5) malfunctioning – reset switch by moving actuator cam (9) downward toward tap.

Problem 7

Squealing noise in tapper. Lead Screw may or may not act erratically.

Cause

(A) Glazed clutch or frozen reverse shell assembly bushing is usual cause. Remove cover assembly clutch and reverse shell assembly (see “Disassembly.”) Check gears for excessive wear or broken teeth. Check that pinion gears (20) are running free and not frozen. Check hex spindle shaft (25) for wear or ridges. Replace worn parts as necessary; remove excess oil; clean drive shell, reverse shell and clutch. Remove cylinder caps (60) from housing and clean. If piston assemblies (51) are removed, do not cut seals (55) or cups (52).

(B) Check that depth stop yoke bushing (44) has not frozen to splined spindle or yoke.

(C) Jammed tap, causing clutch (26) to slip. Turn off motor – free tap.

Problem 8

Lead Screw not maintaining proper depth control.

Cause

(A) Depth stop yoke bushing (44) may be frozen to splined spindle. Replace bushing and check all related parts for brass chips and worn or sharp edges. Check depth stop yoke assembly(43) for squareness between threaded rod and plate; check drive collar (61) for smoothness on flat surfaces.

(B) Check actuator switch (5) for erratic operation – replace if necessary.

(C) Solenoid valve(70) may be clogged with oil or dirt, causing sluggish or erratic operation – disassemble and clean.

(D) Clutch may be glazed – clean or replace.

CAUTION: Always disconnect power and air lines to the tapper before removing nameplates or working on tapper head. **Make sure that motor is not operating.**
