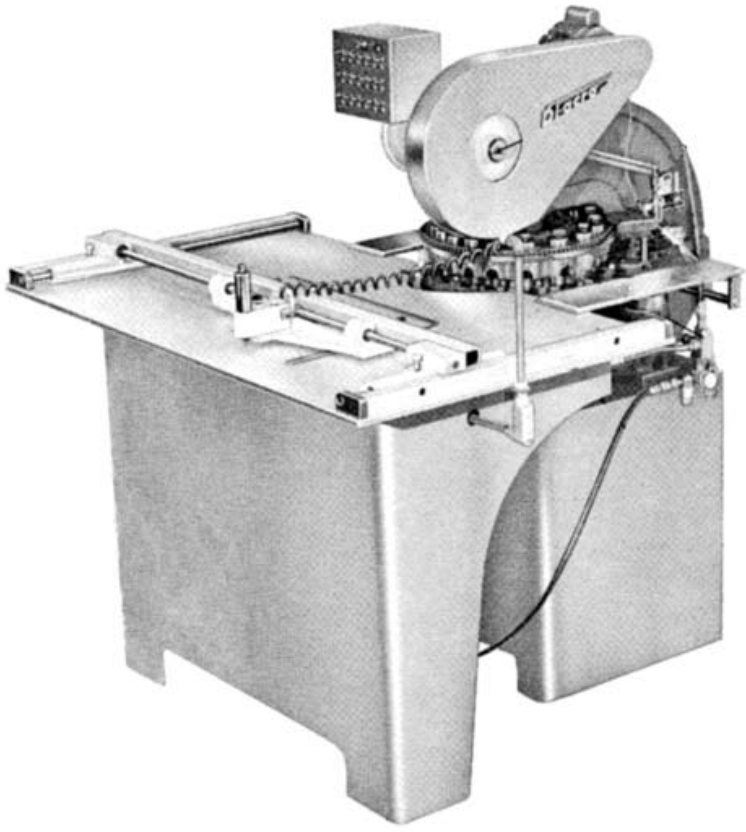
DI-ACRO STYLUS 18E TURRET PUNCH PRESS

OPERATING INSTRUCTIONS

and PARTS LIST



Di-Acro®

METAL FABRICATION EQUIPMENT

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DiAcro®
METAL FABRICATION EQUIPMENT

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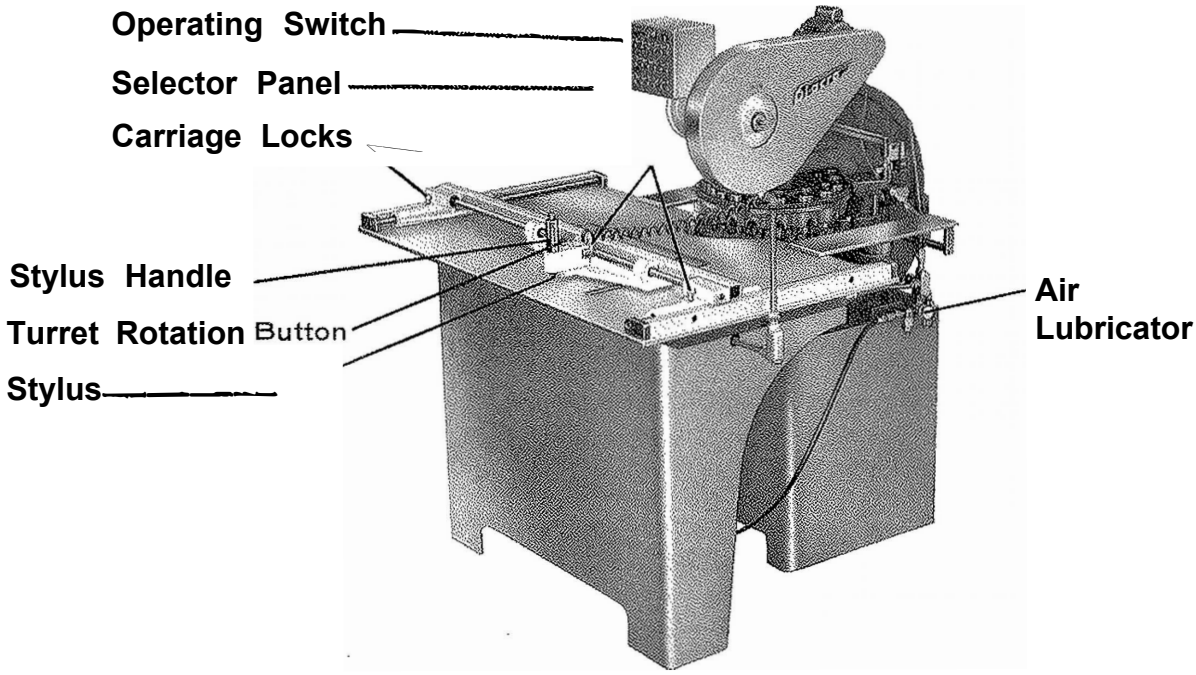
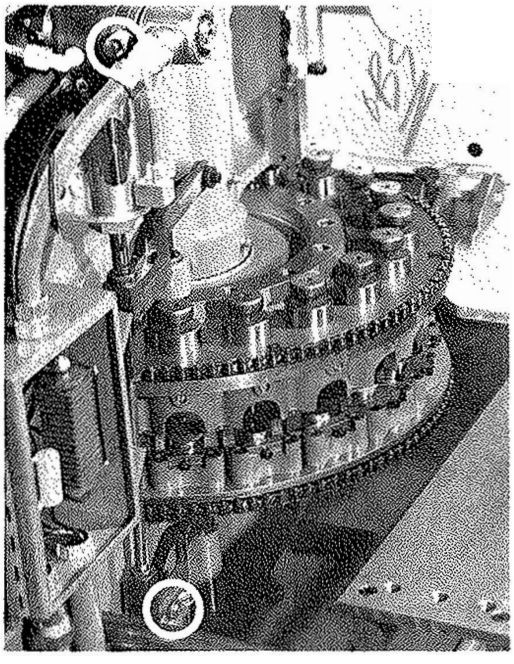


FAMILIARIZING YOURSELF WITH YOUR MACHINE

The above photograph points out many of the machine's parts which are discussed throughout this manual. Study it carefully to avoid confusion of part names.

Manual Over-ride Button



Safety Switch

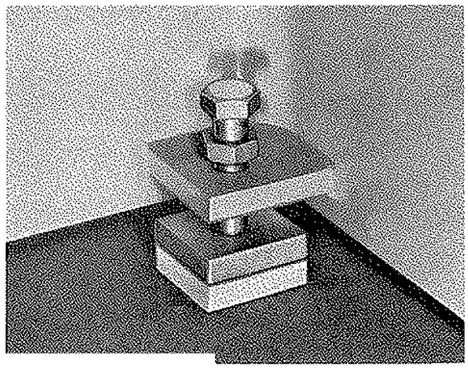
THE MANUAL OVER-RIDE BUTTON

When checking the linkage or changing punches and dies, you may wish to rotate the turrets manually without running the machine. The manual over-ride button is designed to retract the index pins, allowing you to turn the turrets freely.

THE SAFETY SWITCH

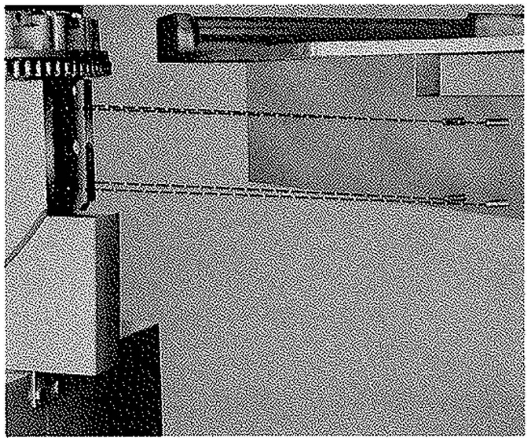
The safety switch is designed to prevent the cycling of the machine unless the punches and dies are perfectly aligned. IT IS RECOMMENDED that you check the switch before setting up for production. To check, remove the die from the sta,tion which will be under the ram during the test. Insert something into the index pin hole to prevent it from fuctioning. Actuate the stylus to see if the machine will cycle. If the safety switch is working, the machine will fail to operate.

INSTALLATION:

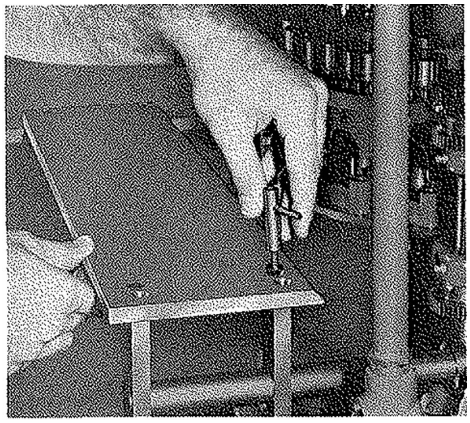


The Punch Press is shipped in two units consisting of the turret punching assembly and stylus table assembly. Mounting pads are furnished with the machine to prevent creeping on the floor and to level the work table with the machine. When punching where heavy shock moves the machine it may be necessary to fasten the machine to the floor.

1. Place mounting pads under the machine feet (photo above).
2. Adjust until the machine is level.

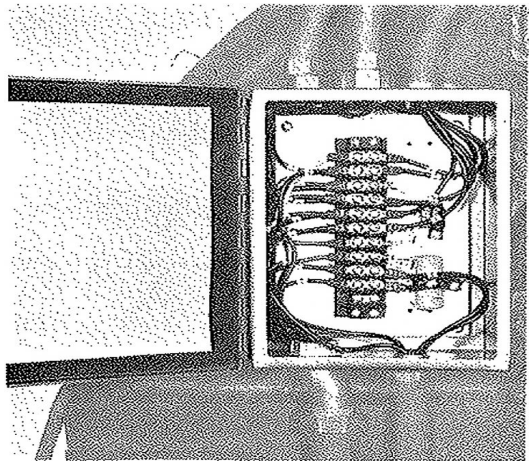


3. With the mounting pads in place, adjust the table leveling bolt until the table lines up with the machine base (photo left).
4. The table must be lined up with the machine in both directions (scale measurement is sufficient). Lock the leveling bolts in place with the lock nuts.



5. Attach material support to the support blocks and to the table with flat head screws.

IMPORTANT: Material supports must be installed with beveled edges toward table and turret (photo right).



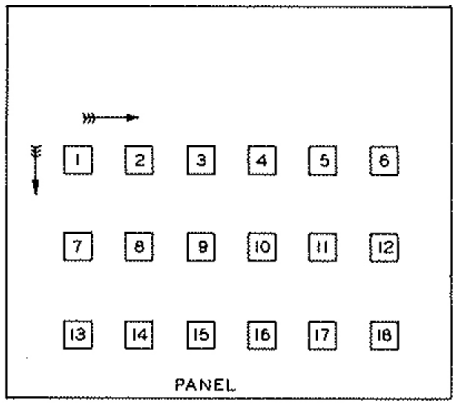
6. Connect the conduit to the control box (photo) and connect wires to their corresponding numbers on the terminal strip within the control box (see connection diagram).

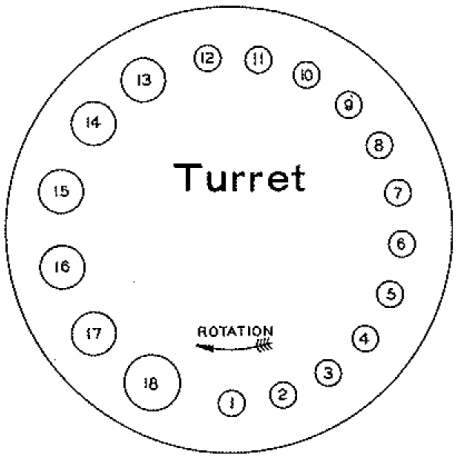
7. Plug lead in wire into 110-volt, single phase, 60 cycle power source.

8. Connect the air line to filter and regulator unit (45 to 50 P.S.I.).

9. Remove shipping retainers from the stylus assembly.

10. Space is provided under the stylus table for a container to catch slugs.

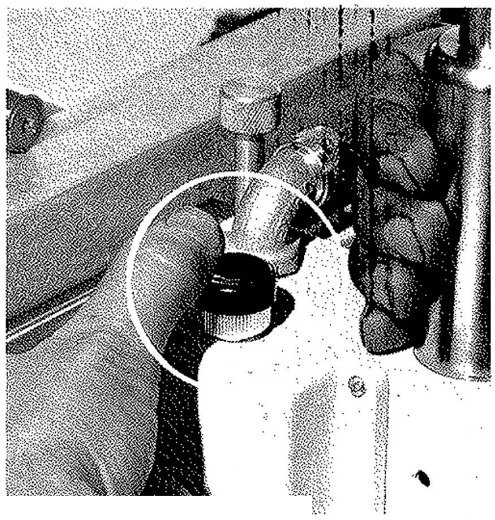




STATION SELECTION:

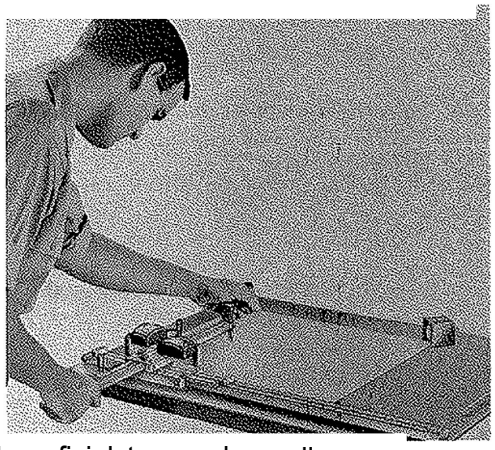
Selection panel has the No. I station in the upper left hand corner (drawing). The station numbers in-crease to the right. The turrets rotate clockwise only, with the No. 18 station adjacent to the No. 1 station. To check indexing, the turrets are stamped with corresponding station numbers. The tab slots on the selection panel may be used to insert color-coded paper, punch numbers or punch sizes.

With all the toggle switches to the right, the turret will stop at each station in sequence. To by-bass a station, move the corresponding toggle switch to the left and the turret will rotate past that station and go on to the next.



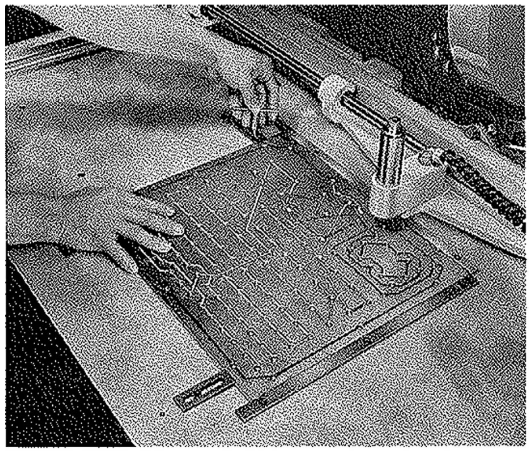
TO ROTATE TURRETS:

Press the turret rotation button (photo) • Turrets will rotate to the next station in sequence whose toggle switch is actuated. During the punching operation, the toggle switch at the top of the selector panel must be in the "RUN" position. The turrets may also be revolved with the switch in the "SET UP" postion. When checking the machine or aligning punches and dies, always be certain that the switch is in "SET UP" position. This will pre-vent accidental cycling of the machine. IMPORTANT: BEFORE rotating the turrets or moving the toggle switch to "RUN", be sure to return the ram to the top of its stroke.



TEMPLATE LAYOUT:

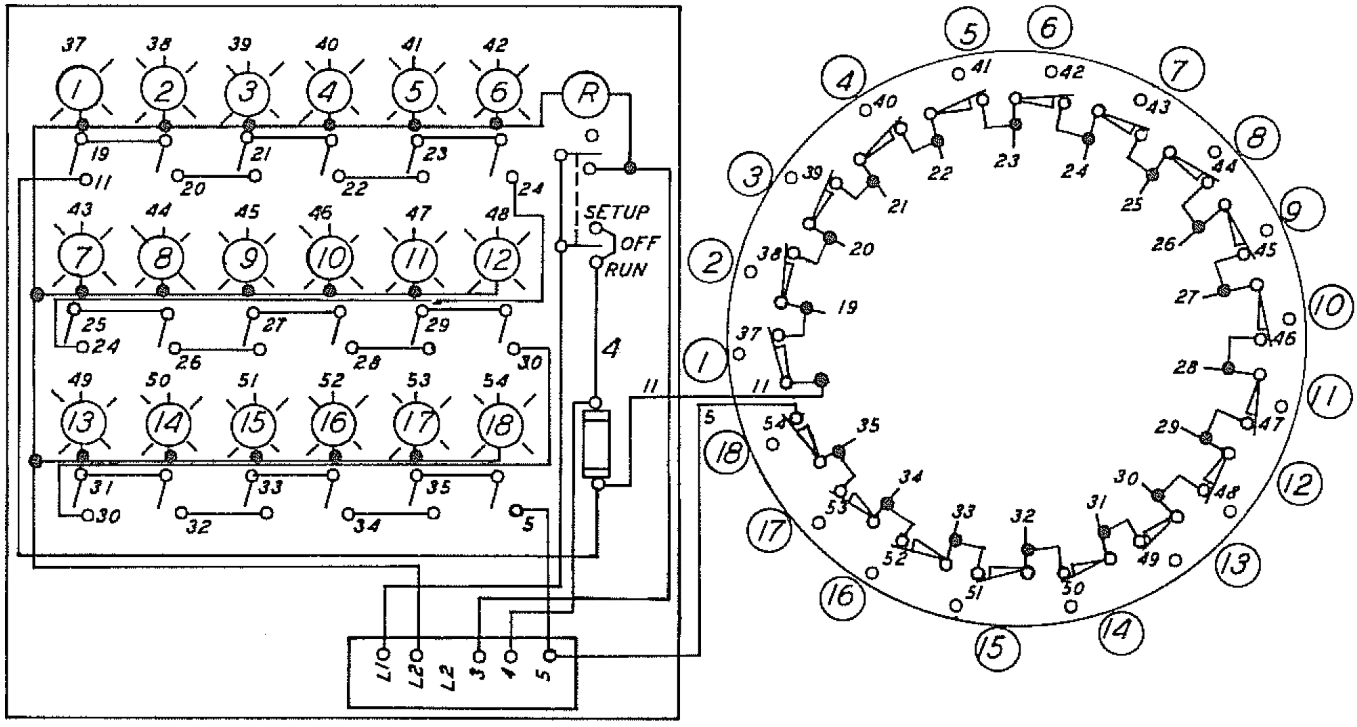
1. Lay out holes to be punched in 1/8" to 3/16" sheet metal (photo).
2. Drill, ream and countersink 1/4" (or 1/8") holes.
3. Color code by drawing colored lines between holes of the same size. NOTE: It may be beneficial to punch smaller holes first to take advantage of shorter turret rotation.

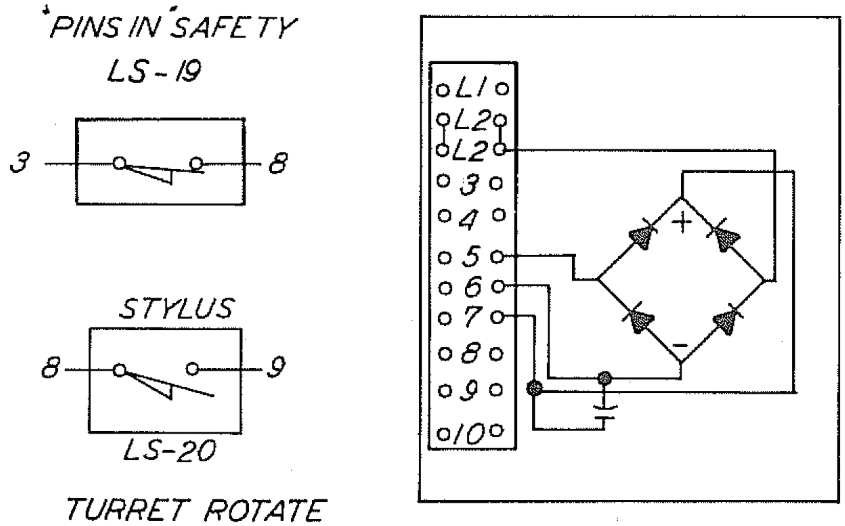


TEMPLATE INSTALLATION:

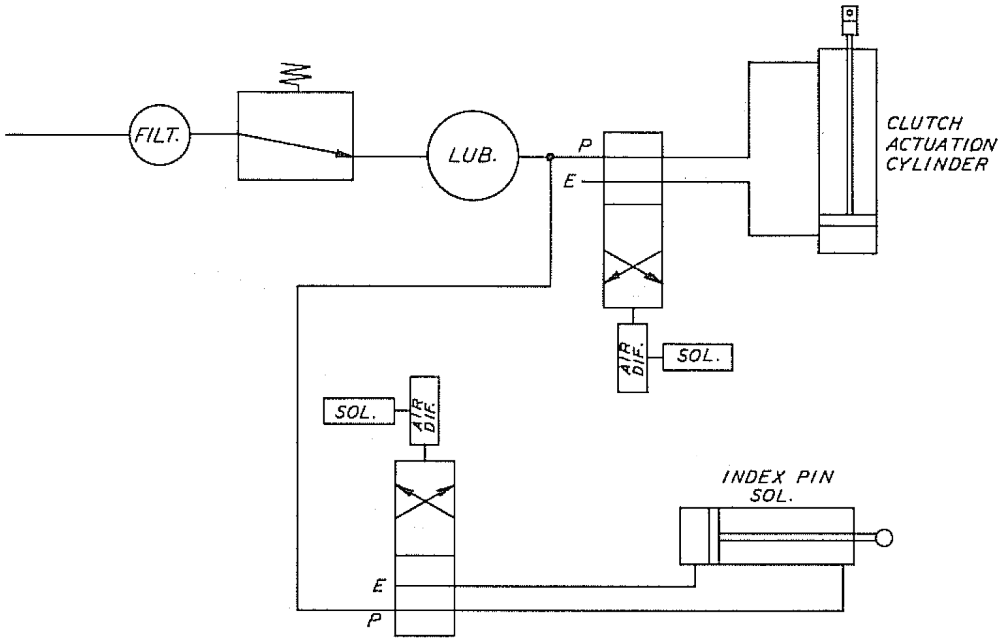
1. Place the template on the stylus table squarely against side and back gauges.
2. Using appropriate tapped hole in the table, secure template with adjustable clamps (photo). NOTE: Template and work material are located at 180 degrees to each other.

CONNECTION DIAGRAM

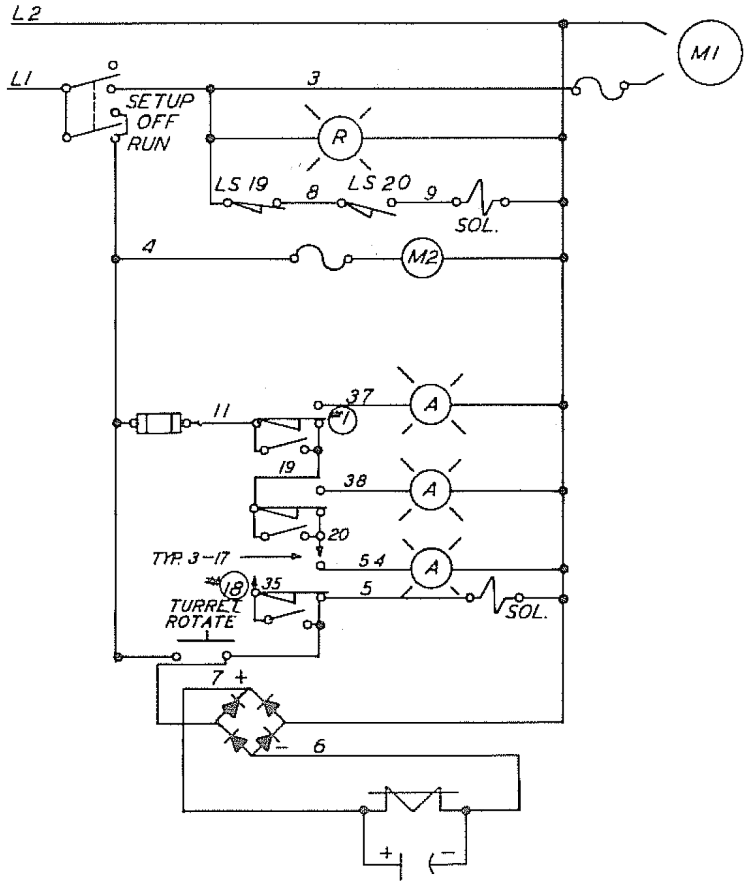




PNEUMATIC DIAGRAM



110V. 1 PHASE 60 CYCLE
18 E
LINE DIAGRAM



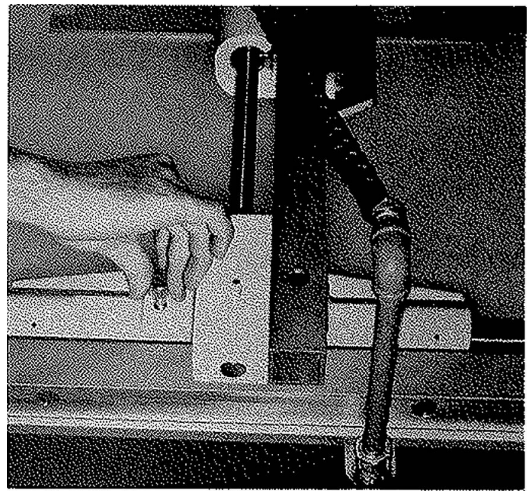
LOCATING MATERIAL CLAMPS:

1. Move the stylus carriage in to line up with the template holes closest to the turret.
2. Set the material clamps along the clamp bar to avoid conflict with die holders. If this is impossible, it may be necessary to move the material clamp after punching some holes on the edge of the material.
3. Lock clamps into place.
4. End stop may be swivelled out of position to avoid conflict with die holders.

LOCKING THE CARRIAGE:

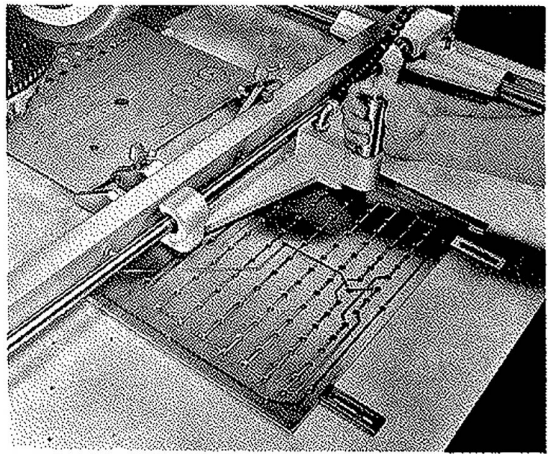
To speed the punching of holes located in a straight line, the carriage can be locked to travel only in one direction. Tighten the clamp on the carriage to lock (photo, right).

NOTE:
If extreme accuracy is required, don't lock the carriage, but allow the stylus to center itself in individual template holes.



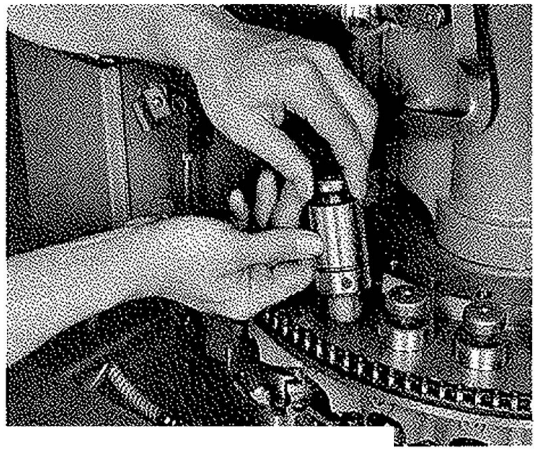
OPERATION:

With the material positioned in the material clamps and template secured on the stylus table, select the desired punch size. Position the stylus over the template hole corresponding to the station positioned under the ram. The ram is actuated by pushing the stylus into the template hole (photo).



REMOVING PUNCHES AND DIES

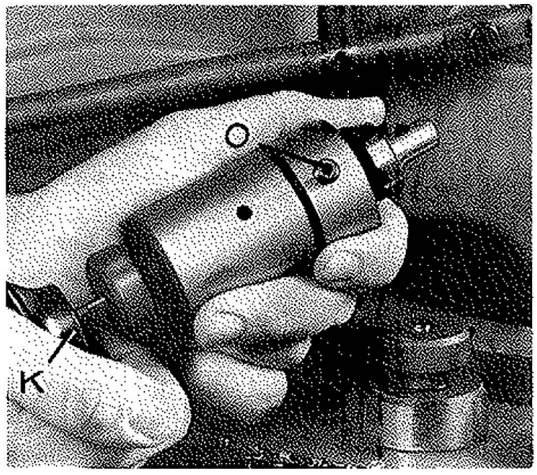
REMOVING PUNCH HOLDERS:



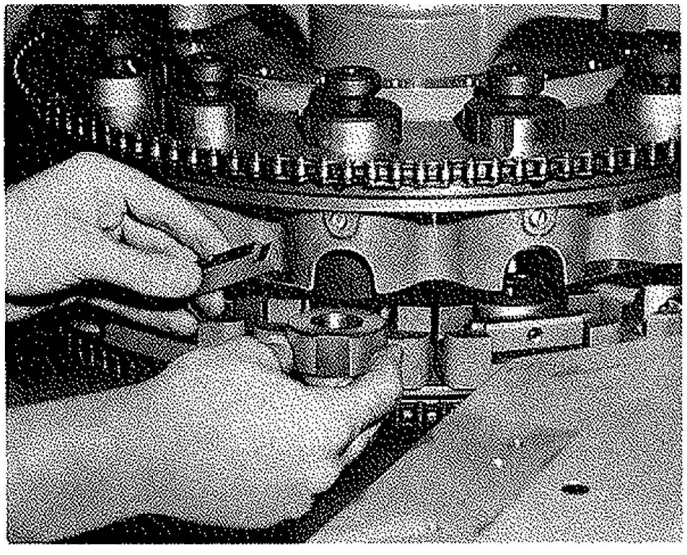
1. Rotate the turrets so that the punch to be changed is to the side of the machine opposite the flywheel.
2. Bump the punch holder down 1/4" to 1/2" to retract ball detent.
3. Pull punch holder from the turret (photo) .

NOTE: Punch holders are aligned at the factory. Both punch holders and punch holder stations in the top turret are stamped with the corresponding numbers. To maintain the highest degree of accuracy, punch holders should only be used in the station stamped with a corresponding number.

REMOVING PUNCHES:



1. Loosen set screw (o) several turns.
2. Remove punch (right photo). If the punch sticks, insert a pin (k) through the hole in the top of the holder and bump.



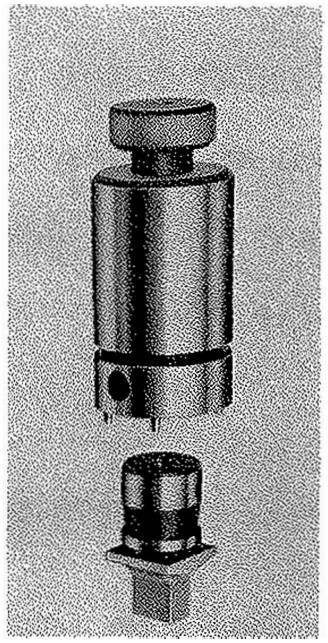
REMOVING DIES:

1, Loosen screw in die clamp several turns and remove the clamp from the slotted die holder.

2. Slide the die out of the holder (photo).

INSTALLING PUNCHES AND DIES

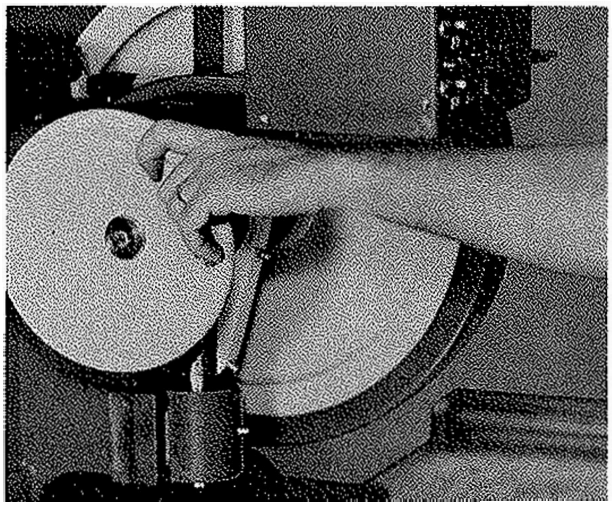
INSTALLING PUNCHES:



1 • Insert the punch into the punch holder. For keyed punches, the squared portion of the punch should enter between the pins on the bottom of the holder (photo).

2. Tighten the set screw.

3 • Insert the punch holder into the turret, lining up the key with the key slot. Tap the holder down until the ball detent locks the holder in position.



INSTALLING DIES:

1. Insert die into holder. Keyed die should be rotated so that pin enters correct slot for rotation required.

2. Install the die clamp in the slot on the die holder and tighten the set screw.

3. Rotate the punch and die to the front position under the ram.

4. With the operation switch in "SET UP" position, bring the punch down using the hand wheel to check the alignment with the die (photo above) •

IMPORTANT: Return the ram to the top of its stroke after checking alignment.

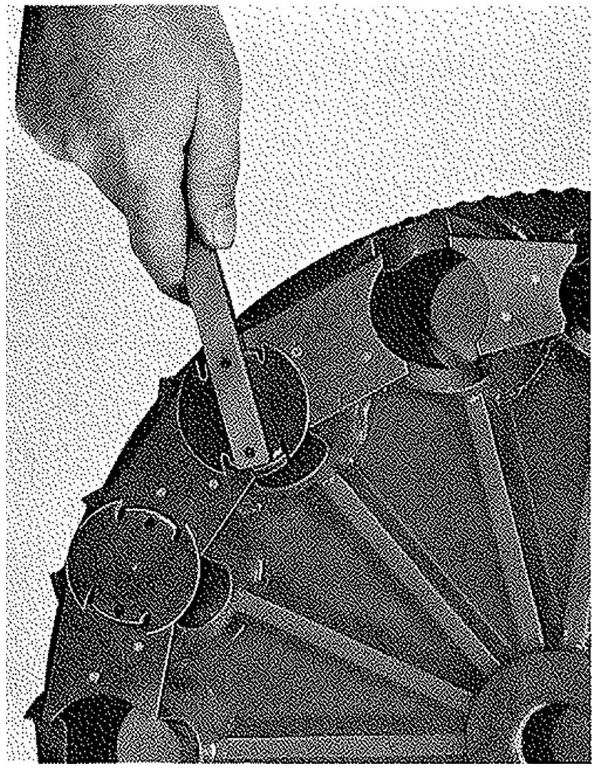
STRIPPER INSTALLATION

METAL STRIPPERS:

Metal strippers are supplied without holes. The hole size punched in the stripper depends on the thickness of the material to be punched in production. Thin materials require much closer stripping than heavier materials. As a general rule, 1/32" clearance is sufficient. A centering mark is provided for location under the centering point of the punch.

INSTALLATION:

Metal strippers are installed with the punch opposite the flywheel. Place the stripper on the special stripper wrench provided, insert between the upper and lower turret. Line up the lugs on the stripper with the slots in the upper turret, turn the stripper 90 degrees to engage the lugs in the slots (photo). Remove wrench.



RUBBER STRIPPER INSTALLATION:

Pull the punch holder from the turret, install the stripper firmly against the holder and replace holder to turret.

ADJUSTMENT OF STYLUS SWITCH

ADJUSTMENT OF STYLUS SWITCH:

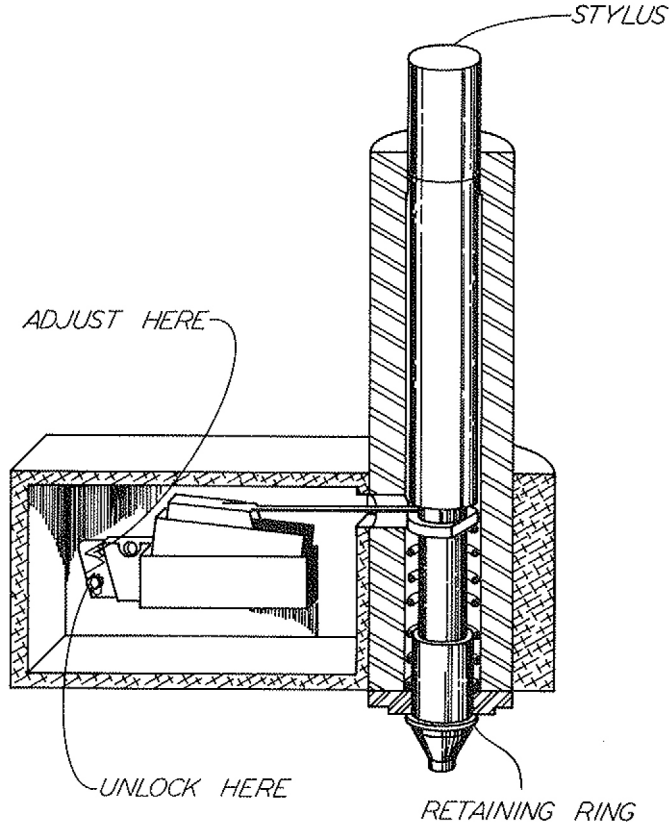
The stylus switch is pre-set before shipping. If the stylus fails to engage the clutch or engages it before the plunger enters the template hole, adjust the switch to actuate as close to the table as possible (see drawing below). Adjustment is made by removing the switch enclosure on the side of the switch housing and slightly loosening the locking screw on the stylus housing. Insert a screw driver into the slotted hole in the switch backing plate and tum slightly.

Test the switch by pushing the stylus and listening for the "click" of the stylus switch. When the adjustment is correct, tighten the locking screw and replace the switch enclosure.

CHANGING THE STYLUS:

In cases where template hole centers are located closer than 1/4 inches apart, it becomes necessary to replace the standard 1/4 inch stylus with a smaller (1/8 inch) one.

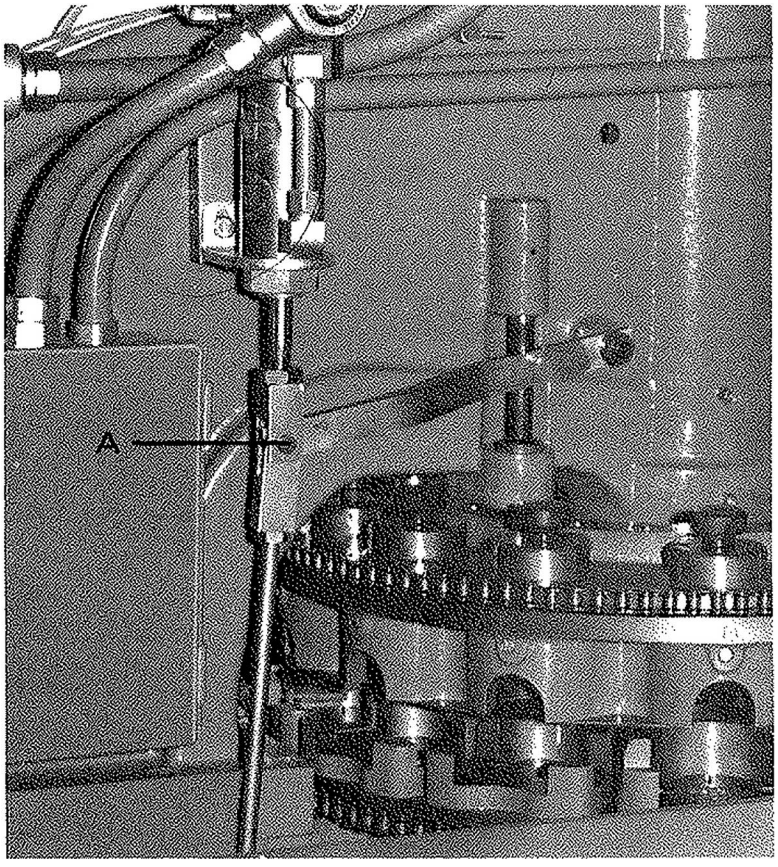
1. Disconnect the power supply.
2. Snap off the retaining ring at the bottom of the stylus and pull the stylus out from the top of the stylus handle. Rotate while pulling to line up the flat with the switch actuator.
3. Reverse this procedure to re-install the stylus.
4. Check the switch adjustment (see stylus switch adjustment).



ADJUSTMENT OF FLYWHEEL BELTS AND TURRET LINKAGE

FLYWHEEL BELT ADJUSTMENT:

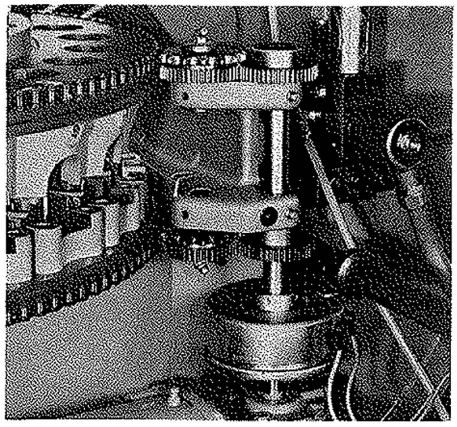
To adjust the tension on the flywheel belts, loosen the bolts in the motor base and slide the motor into the slotted holes (belt should flex 1/2" each direction from a centerline).



TURRET LOCKING LINKAGE:

Linkage coordinating the index pins for upper and lower turrets must be adjusted so that both upper and lower index pins clear the turrets at the same time (photo). To adjust, remove clevis pin A, loosen the lock nut on the linkage rod and turn the clevis to proper adjustment. Replace the pin and re-tighten nuts.

ELECTRIC CLUTCH MAINTENANCE:



No servicing or maintenance should be required throughout the life of the clutch. Wear grooves will appear on the armature and rotor surfaces. This is normal wear and doesn't impair the functioning of the unit. Never machine either the armature or rotor contact surfaces to remove grooves or marks resulting from wear. As a precaution, if the punch press is used in an area where abrasive dust, chips or grit is dispelled into the atmosphere, shielding of the clutch may be necessary if maximum life is to be obtained. Care should be taken so that oil or grease does not come in contact with the friction surfaces of the clutch. This may cause the clutch to slip.

TROUBLE CHART

TROUBLE	PROBABLE CAUSE	REMEDY
Loss of Torque	Power loss	Check input voltage to magnet. Readings should be 85 to 95 volts. Check current. Ammeter should read approx. 0.35 amperes on a 90 volt system -- 3.5 amperes on a 6 volt system. Check for break in wiring and repair. Check for iron dust residue at terminals, and clean.
	Slipping clutch	Check for oil or grease on armature and magnet friction surfaces. Clean with carbon tetrachloride. Enclose or shield unit.
	Clutch is worn out	Replace worn parts

LUBRICATION:

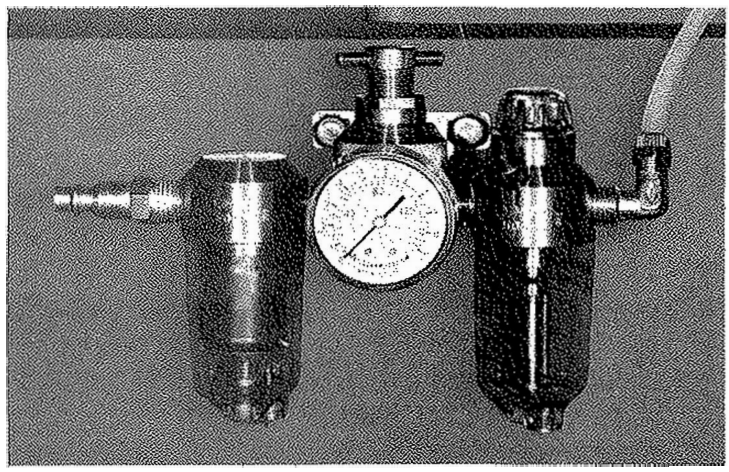
Lubricate your machine regularly according to the following schedule:

1. Electric motors -- lightly grease bearing every six months in frequent operation; yearly for infrequent operation. Use high grade medium consistency grease.
2. Punch, flywheel and ram assembly -- with grease gun lightly grease fittings daily.
3. Stylus carriage -- oil carriage rods occasionally by wiping on a light film of oil.
4. Punch holders -- rub on a light coat of oil or grease occasionally.
5. Linkage -- a few drops of oil occasionally on clutch and turret locking mechanism.
6. Turrets and turret gear train -- with grease gun, lightly grease daily.
7. Watts Air Lubricator -- refill to oil level indicated on lubrication bowl.

RECOMMENDED OILS:

- Mobil Almo Oil No. 1
- Sun Oil Co, Sunvis 916
  Solnus 150
- Standard -- Aero No. 43
- Shell -- Tellus No. 27
- Gulf -- Gulf Coast No. 44
- Sinclair -- Dura No. 150

WATTS AIR LUBRICATOR



WATTS AIR LUBRICATOR ASSEMBLY:

REGULATORS - ADJUSTMENT

Regulators are factory set to 45 - 50 P.S.I. To increase turn adjusting screw clockwise; to decrease pressure turn counter-clockwise.

LUBRICATORS - ADJUSTMENT

Turn on air supply and adjust regulator to desired operating pressure, start equipment and note oil drop rate through sight glass. If more lubrication is required turn adjusting screw in direction of arrow clock-wise (with 3/32" Allen Wrench) and counter-clockwise if less lubrication is needed. As a start, 5 - 10 drops per minute are usually adequate - correct lubrication is a matter of experience. To check lubrication of the equipment, hold the thumbnail or a mirror near the exhaust port: a slight film of oil should be deposited at each exhaust cycle. A heavy film indicates over lubrication and the drops per minute should be reduced.

NOTE: Do not turn out adjusting screw to more than 1/32" beyond flush with body.

AIR LUBRICATOR - MAINTENANCE

To obtain best efficiency and longest periods of trouble-free operation, the air supply must be kept clean and only clean oil for lubrication used.

As dirt is the most common cause of errati.c regulator operation and lubricator mal-functioning only a few parts require occasional replacement - most troubles can be cured by a thorough and careful cleaning procedure. To clean, it is not necessary to remove unit from the line.

FILTER

1. Shut off air supply, unscrew bottom plug and remove bowl.
2. Remove nut and drop out gasket, baffle and filter cone.
3. Clean parts with any household type soap. (NEVER use alcohol, carbon tetrachloride, trichlorethylene, gasoline, thinner, acetone or similar solvents). With compressed air blow out parts giving particular attention to the filter cone. Open air supply to blow out body. Replace any damaged or worn part •
4. Reassemble in same order, keeping flanged end of filter cone up, tighten nut. When attaching bowl, place one bowl gasket on top of bowl and the other gasket in bottom plug - before finally tightening bottom plug make sure gaskets and bowl are centrally located.

REGULATOR

1. Shut off air supply and back out adjusting screw until spring tension is relieved.
2. Unscrew bonnet, remove gasket and diaphragm assembly.
3. Unscrew bottom plug and remove with spring and disc.
4. Clean parts with any household detergent or soap and blow off with compressed air. Blow out body by momentarily opening air supply.
5. Replace damaged or worn parts and reassemble in same order. NOTE: In replacing lower parts, place spring in bottom plug, place disc in position on top of spring and insert into body. Tighten cage and bottom plug and reset as instruction under ADJUSTMENT.

LUBRICATOR

1. Shut off air supply, unscrew bottom plug and remove bowl.
2. Remove retaining rod, filler plug, adjusting screw, sight glass and sight glass gasket.
3. Clean parts with any household type soap. (NEVER use alcohol, carbon tetrachloride, trichlorethylene, gasoline, thinner, acetone or similar solvents). With compressed air blow our parts including body, making sure that center hole is clear. NOTE: It is not recommended dip tube be removed as the small ball check may be lost. Air applied to the lower end is sufficient to clean passage up through bent tube at top. Also, when cleaning returning rod make sure felt is in place before reassembling. Replace any damaged or worn parts.
4. Reassemble in same order, tightening all parts. When attaching bowl place on bowl gasket on top of bowl and the other gasket in bottom plug before finally tightening bottom plug make sure gaskets and bowl are centrally located.
5. Fill with proper oil to level mark, turn on air, start equipment and set for correct lubrication as instructed under ADJUSTMENT.

TROUBLE SHOOTING

PROBLEM: Turret will not rotate when turret rotation button is depressed.

CAUSE 1: Index pin not retracting far enough.

REMEDY 1: Increase air pressure or readjust index pin linkage.

Check for binding in linkage by removing clevis pin and checking upper and lower index pins independently for binding.

CAUSE 2: Punch holder in down position rotated against ram.

REMEDY 2: Pull up punch holder by hand or rotate hand wheel to bring down ram until it engages slot in punch holder. Pull up with ram.

CAUSE 3: Thermal overload tripped.

REMEDY 3: If motor is hot, wait a few moments and overload will automatically re-set.

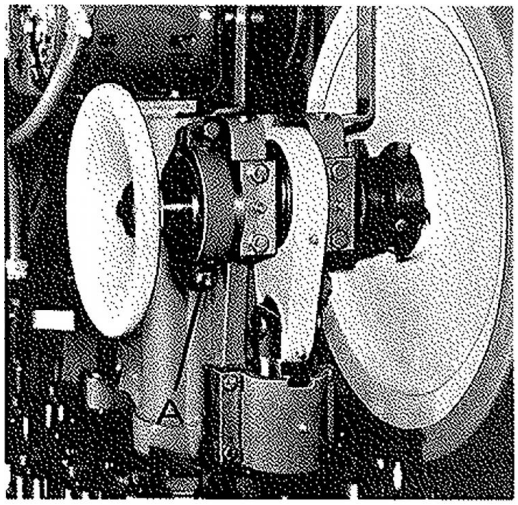
PROBLEM: Double tripping of ram.

CAUSE 1: Brake too loose.

REMEDY 1: Tighten brake (A photo)

CAUSE 2: Excessive stripping pressure at top of stroke.

REMEDY 2: Increase clearance on die or re-design stripper to strip lower on stroke.



PROBLEM: Turret will not stop at station selected.

CAUSE 1: Micro switch not being tripped by actuator. Remove micro switch cover. Determine which switch is not being actuated.

REMEDY 1: Loosen switch mounting with screws and push switch in toward actuator. Re-tighten mounting screws while holding switch in.

REMEDY 2: Replace switch.

PROBLEM: Turret will not stop and lock at any one station. Turret goes past the punching station or stops before punching station.

CAUSE 1: Micro switch actuator (B drawing) out of adjustment.

REMEDY 1: Remove micro switch cover, loosen clamp screw on actuator. Tum actuator to point where switch will be activated just as punch reaches punching position. Re-tighten clamp screw.

PROBLEM: Failure to cycle occasionally when stylus is tripped.

CAUSE: Piston is loose on the cylinder rod causing the clutch release lever to hit against the spring container - the safety link cannot hook behind the pin.

IMPORTANT: If not repaired immediately, this may damage the clutch cylinder and cause undue wear on the clutch release lever.

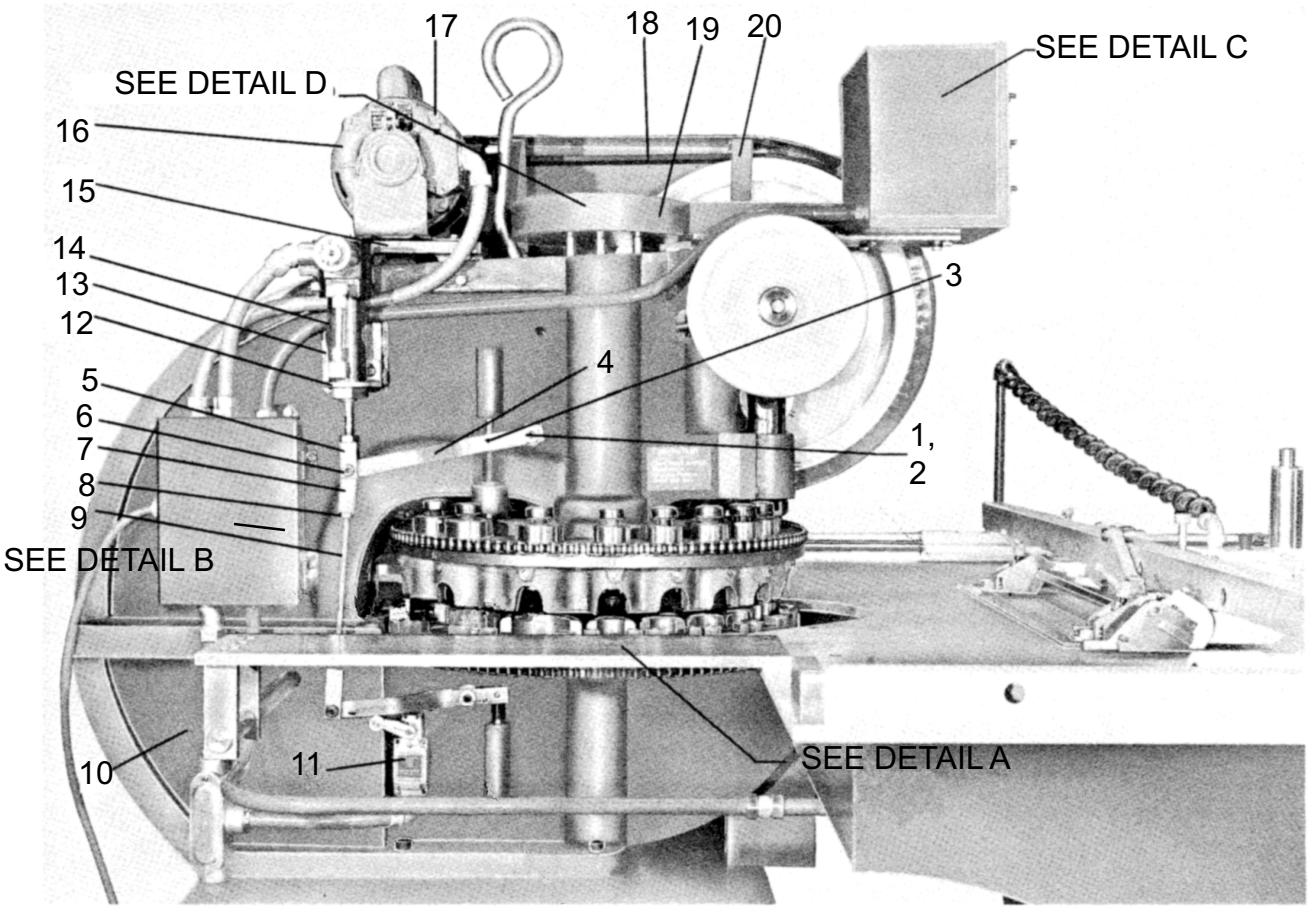
REMEDY: Remove the belts to the motor. Switch the machine to the"RUN" position and actuate the stylus to see if the cylinder actuates. Adjust the clutch cylinder (drawing) until the clutch release lever operates freely and the cylinder will operate properly.

TABLE OF CONTENTS
PARTS LIST

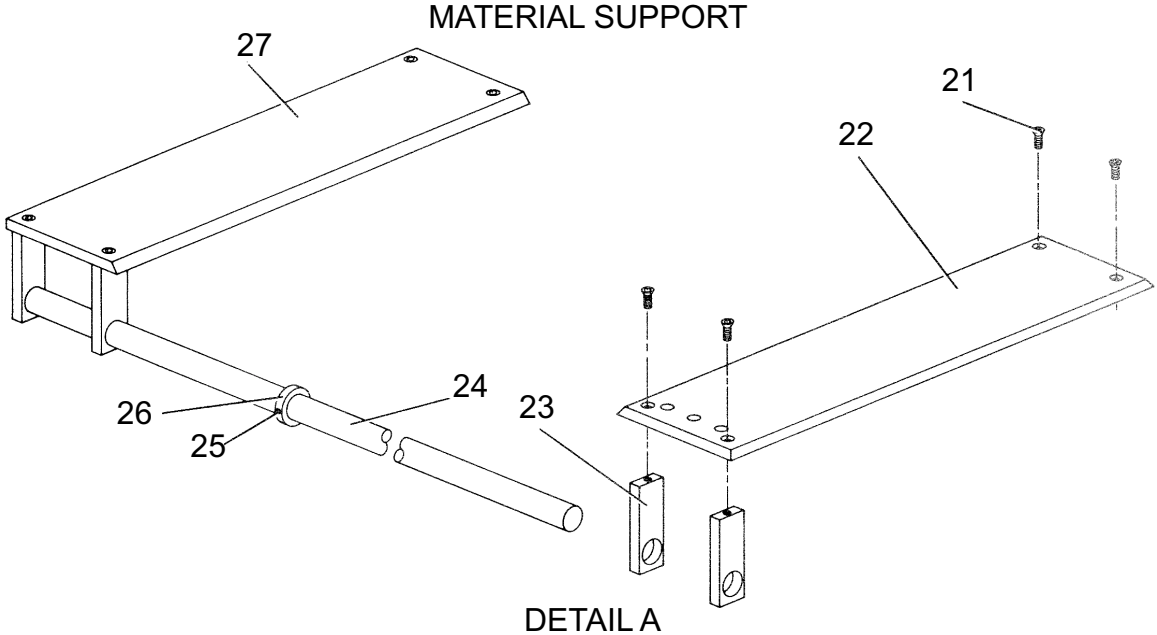
SPECIFICATIONS

MODEL	Standard	Metric
Punching Pressure	7-1/2 tons	6804 Kg
Punching Capacity	2” in 16-gauge mild steel	50.8 mm in 1.5 mm mild steel
Throat Depth	19”	483 mm
Number of Stations	18	
Workpiece Size*	19” x 24”	483 mm x 610 mm
Material Capacity (maximum)	1/8”	3.2 mm
Table Size*	19” x 24”	483 mm x 610 mm
Carriage Travel*	19” x 24”	483 mm x 610 mm
Punching Speeds	up to 140 holes per minute dependent on operator proficiency	
Crankshaft Speed	245 strokes per minute	
Dependable Accuracy	+-.005”	+- .127 mm
Height	68”	1730 mm
Width*	60”	1520 mm
Depth	60”	1520 mm
Shipping Weight	1875 lbs.	851 Kgs
Motor	1/2-hp, 800 rpm (specify 230 or 460 volts) A.C. 3-phase, 60 cycle dual V-belt	

18E STYLUS LEFT SIDE



MATERIAL SUPPORT



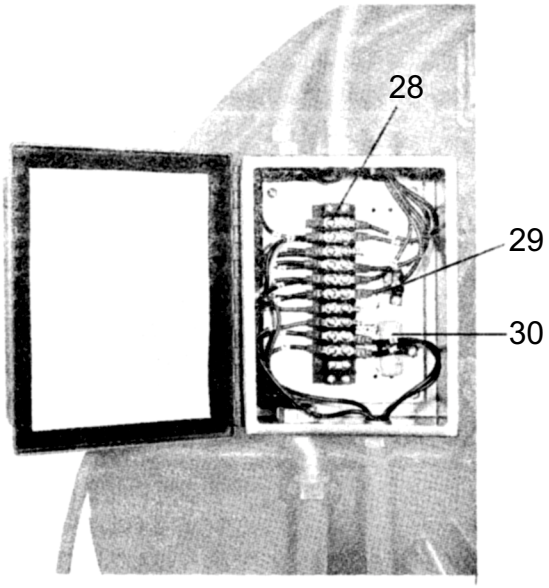
DETAIL A

18E STYLUS LEFT SIDE

Item No.	Part No.	Description	Qty Used
1	21A0104C1104	Hex Head Cap Screw Sleeve	1
2	066-3110002	Pin	1
3	1203175	Index Arm (upper)	2
4	066-1325024	Clevis	1
5	066-1324005	Shoulder Screw	1
6	25X0308C1000	Clevis	1
7	066-1301101	Nut	3
8	31X0308C	Rod	2
9	066-1301113	Frame Assembly	1
10	066-1103720	Micro Switch	1
11	3305038	Foot Mount	1
12	3307004	Cylinder Mount	1
13	066-1110106	Allen Air Cylinder	1
14	65-1110048 3507002	Motor Mount Motor	1 1
15	3301020	Thermal Overload Protector V-	1
16	3325010	Belts	1
17	4401003	Switch Cover Assembly Guard	1
18	66-1106034	Mount	1
19	65-1106055	Flat Head Soc Set Screw Material	
20	20C0104C0304	Support “L”	1
21	66-1105014	Material Support Block Material	2
22		Support Rod	1
23	066-1105012	Allen Set Screw	1
24	066-1105011	Collar	4
25	23A0308C0104	Material Support “Right” Terminal	1
26	150-1301087	Capacitor	1
27	066-1105013	Rectifier	1
28		SWITCH MOUNT ASSEMBLY	1
29	3309001	Glo-lite (Red)	1
30	3310003	Toggle Switch	1
31	066-3399717	Fuse Holder	1
32	3302012	Fuse Slow Burn	1
33	3303035	Toggle Switch	1
34	3308108	Locking Ring	1
35	3308103	Card Holder	1
36	3303036	Switch Actuator	1
37	3303049 6999105	Switch Mount	1
38		Microswitches	1
39	066-1301108	Shaft	18
40	066-1301109	Glo-lite (Amber)	19
41	3305012		3
42	066-1211044		1
43	3302011		1
			18

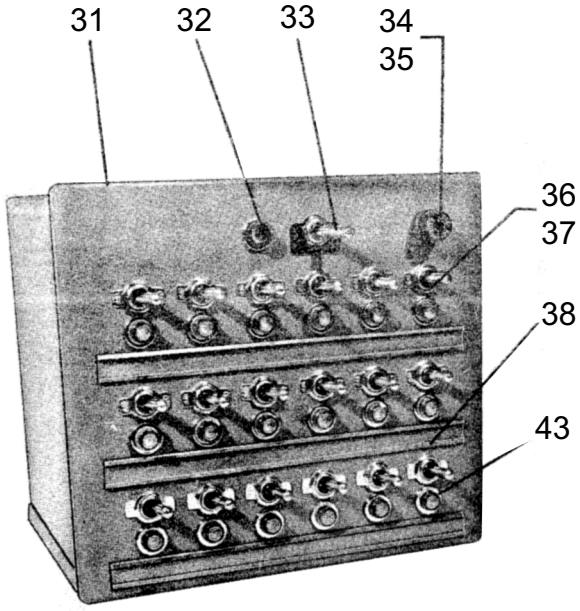
SWITCH MOUNT ASSEMBLY

ELECTRICAL BOX



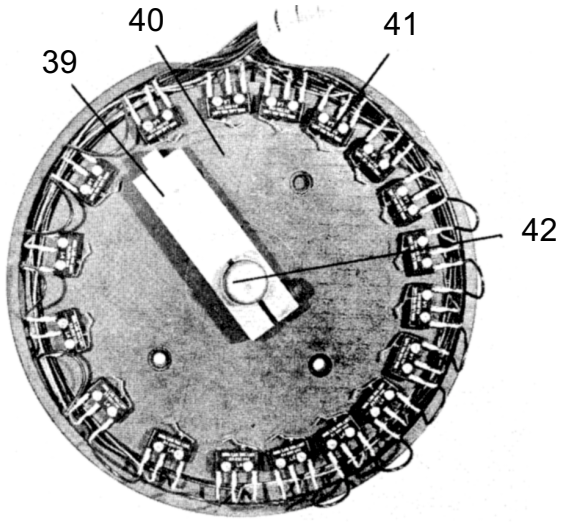
DETAIL B

SWITCH MOUNT ASSEMBLY



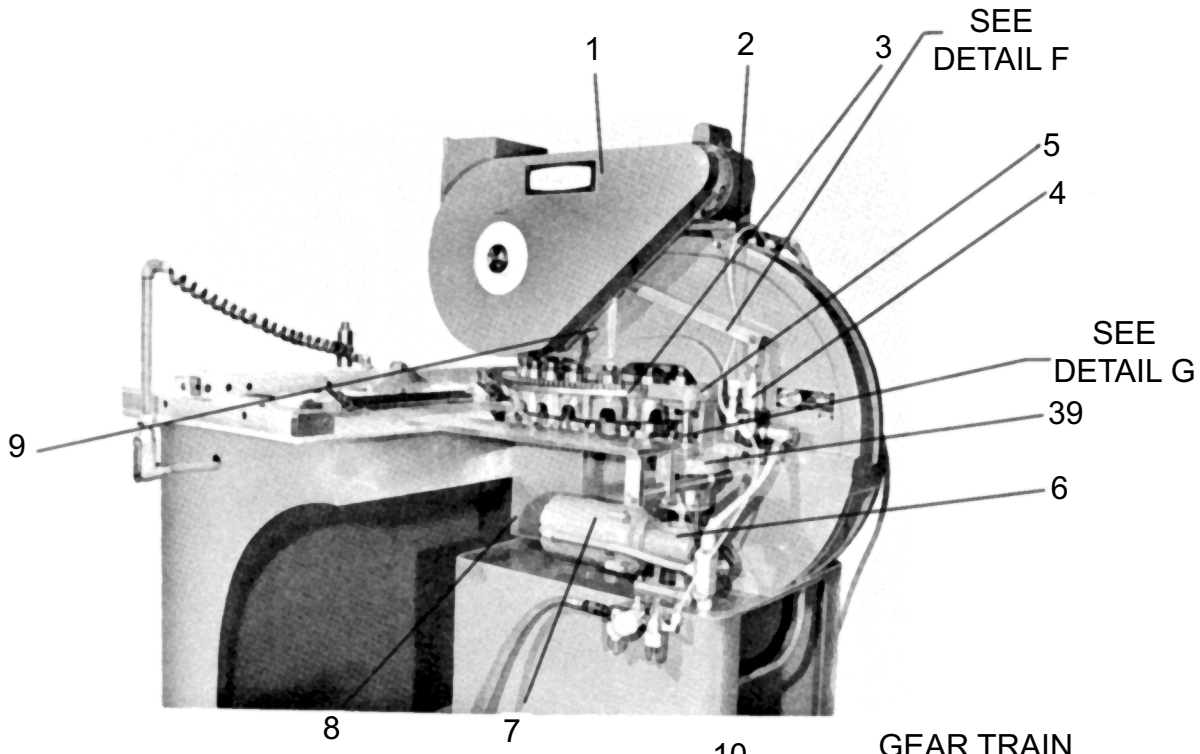
DETAIL C

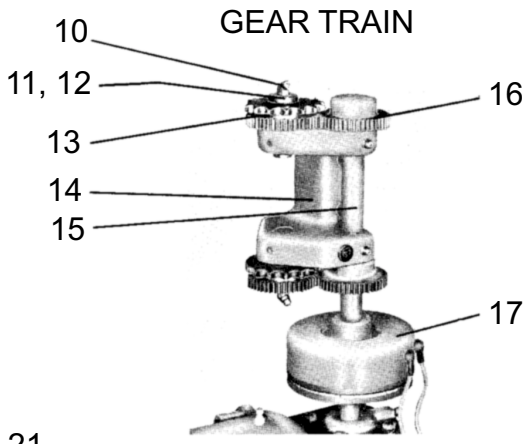
SWITCH MOUNT

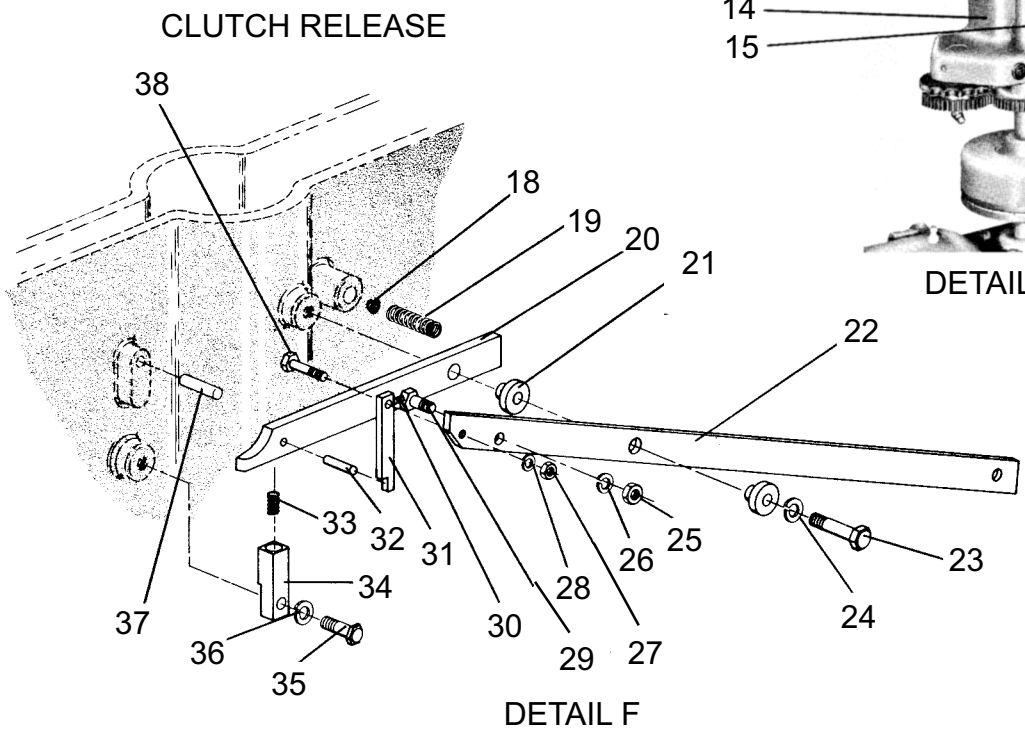


DETAIL D

18E STYLUS RIGHT SIDE



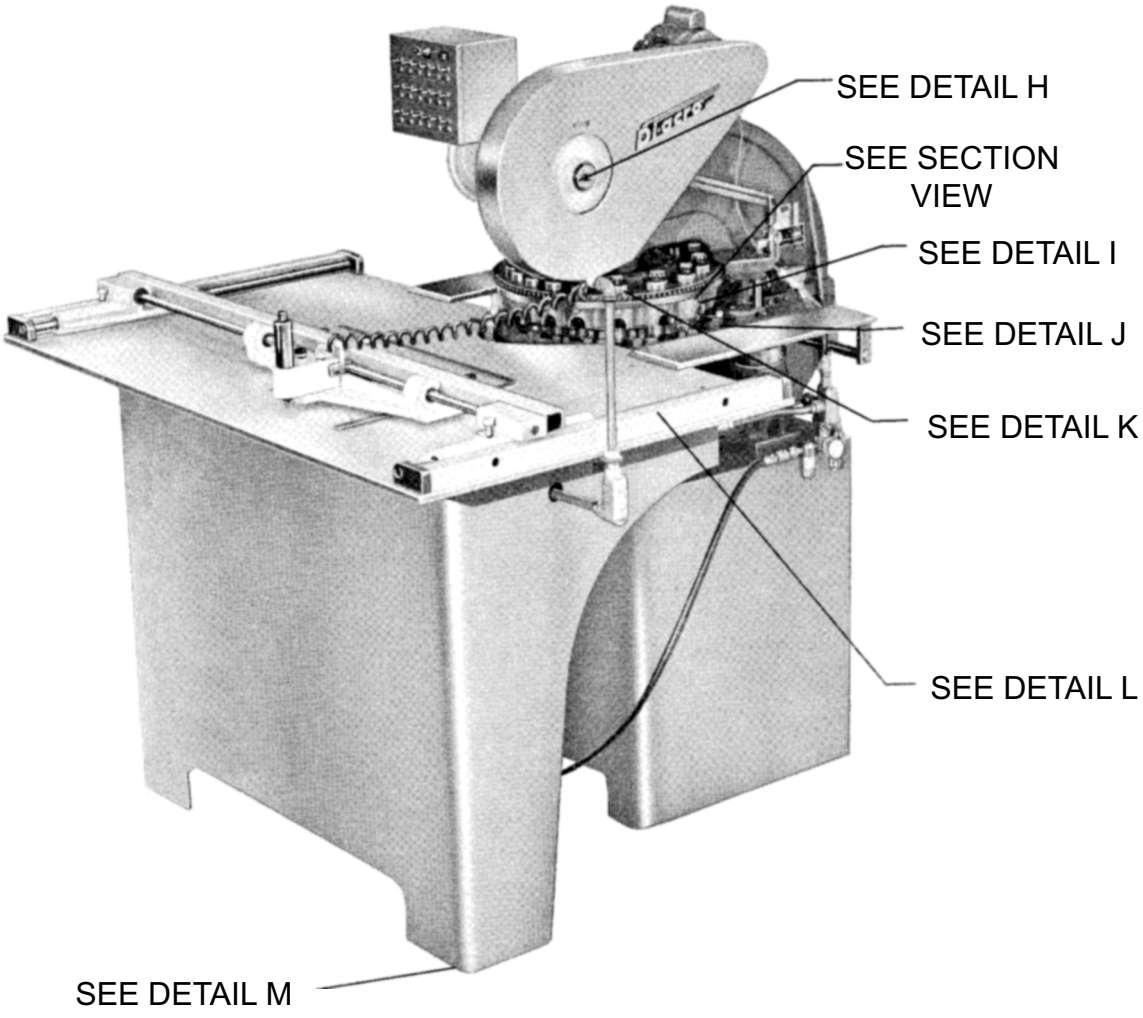


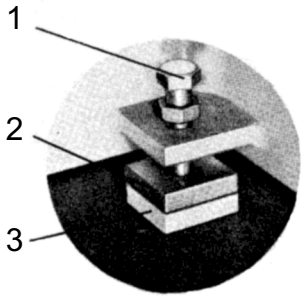


18E STYLUS RIGHT SIDE

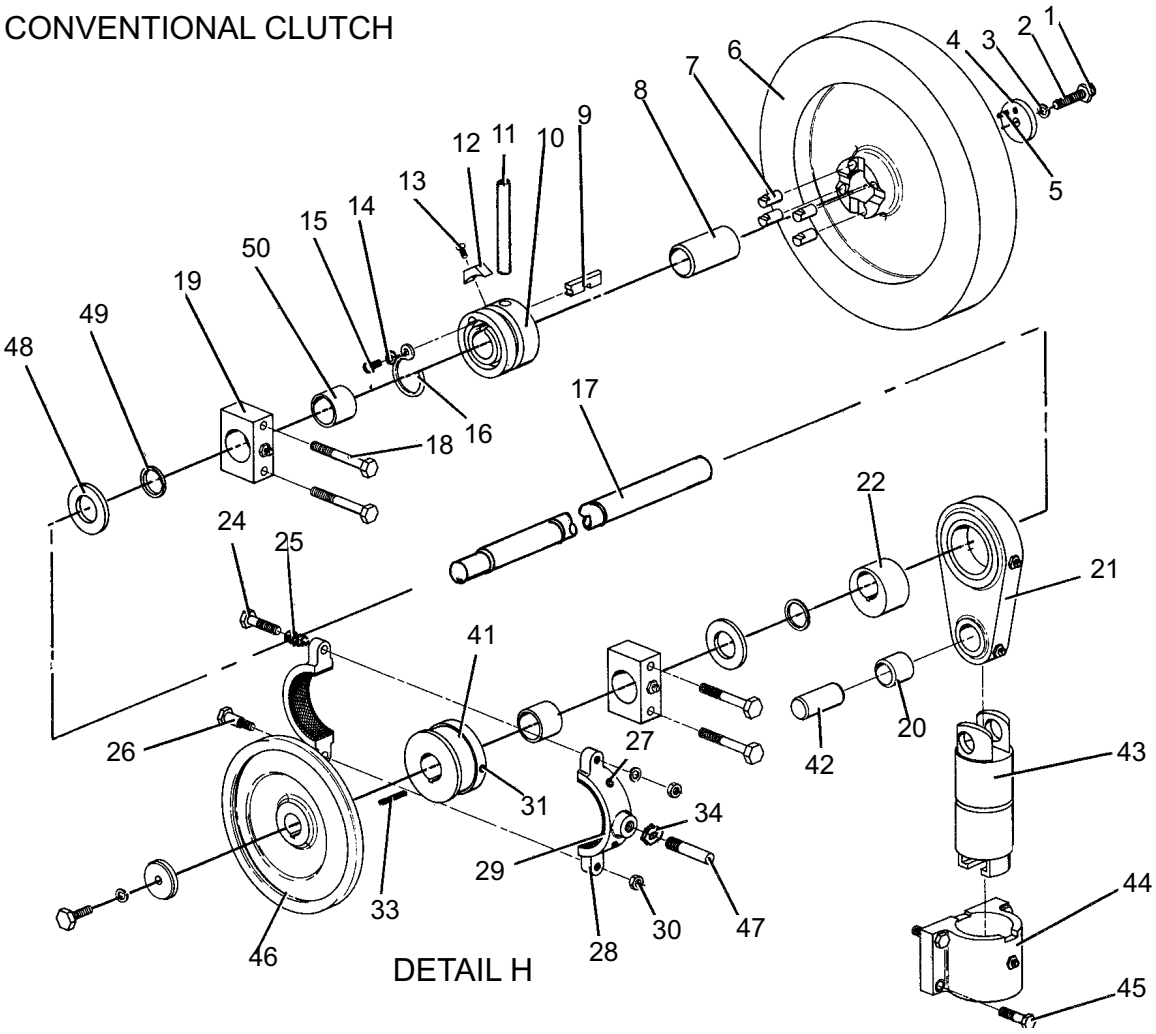
Item No.	Part No.	Description	Qty Used
1	065-1106083	Guard Assembly	1
2	3509902	Polyethylene Tubing	1
3	066-4301013	Chain	1
4	066-9300811	Punch Cycle Mod Kit	1
5	066-1106031	Guard Assembly “Upper”	1
6	1223002	Gear Reducer	1
7	3301017	Motor	1
8	066-1109109	Chute Assembly	1
9	056-1110088	Bracket “B”	1
10	6901002	Grease Fitting	2
11	3104125	Pin	2
12	062-1203039	Bearing Sleeve	2
13	066-5301072	Index Idler	2
14	066-1110104	Index Mount	1
15	066-1211006	Index Shaft	1
16	066-3901001	Gear	2
17	3322007	Warner Clutch Coupling	1
18	238-1301026	Slug	1
19	5102102	Spring	1
20	056-1301096	Clutch Release Lever	1
21	250-1108069	Link Spacer Sleeve	2
22	065-1301038	Trip Lever	1
23	21A0308C1304	Hex Hd Cap Screw	1
24	62X0308	Lock Washer	
25	30X0308C	Nut	1
26	62X0308	Lock Washer	1
27	30X0104C	Nut	1
28	62X0104	Spring Lock Washer	1
29	035-1301093	Spring Bolt	1
30	120-5102022	Spring	1
31	056-1301094	Safety Link	1
32	1203171	Pin	1
33	5102110	Spring	1
34	056-1301091	Spring Container	1
35	21A0308C1104	Hex Head Cap Screw	1
36	62X0308	Lock Washer	1
37	1203171	Pin	1
38	21A0104C1000	Hex Head Cap Screw	1
39	066-1106037	Guard Assembly “Lower”	1

PAD PLATE ASSEMBLY



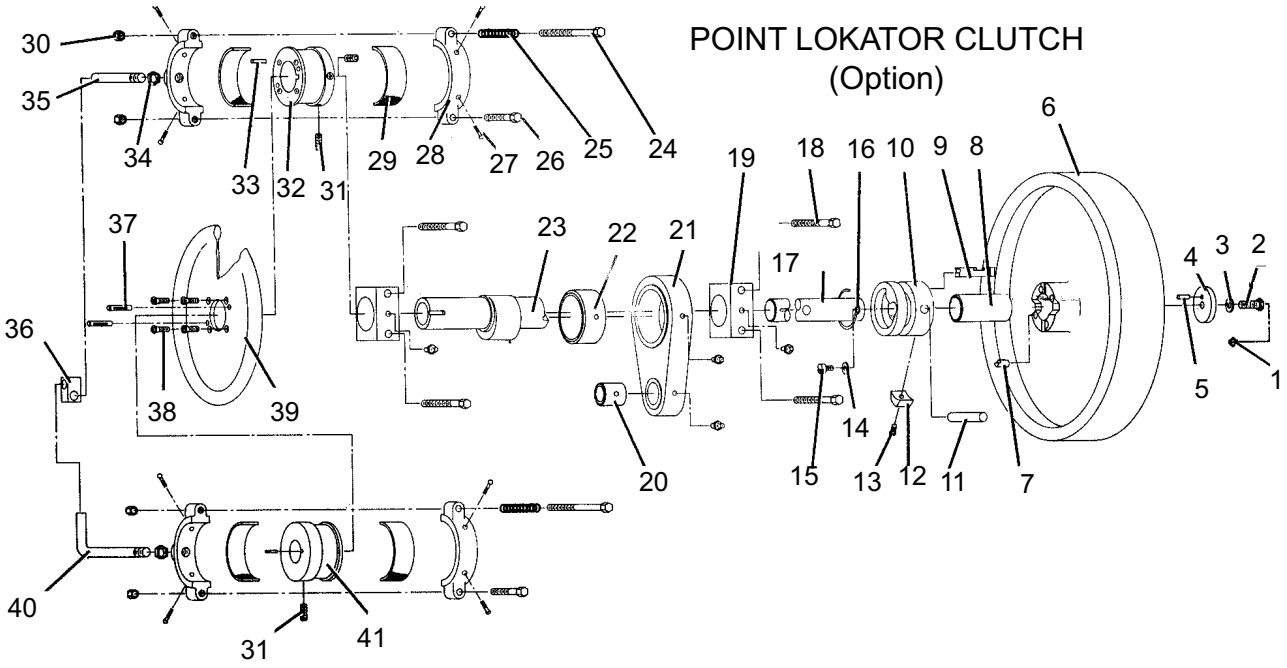


CONVENTIONAL CLUTCH



DETAIL H

POINT LOKATOR CLUTCH
(Option)



CONVENTIONAL CLUTCH

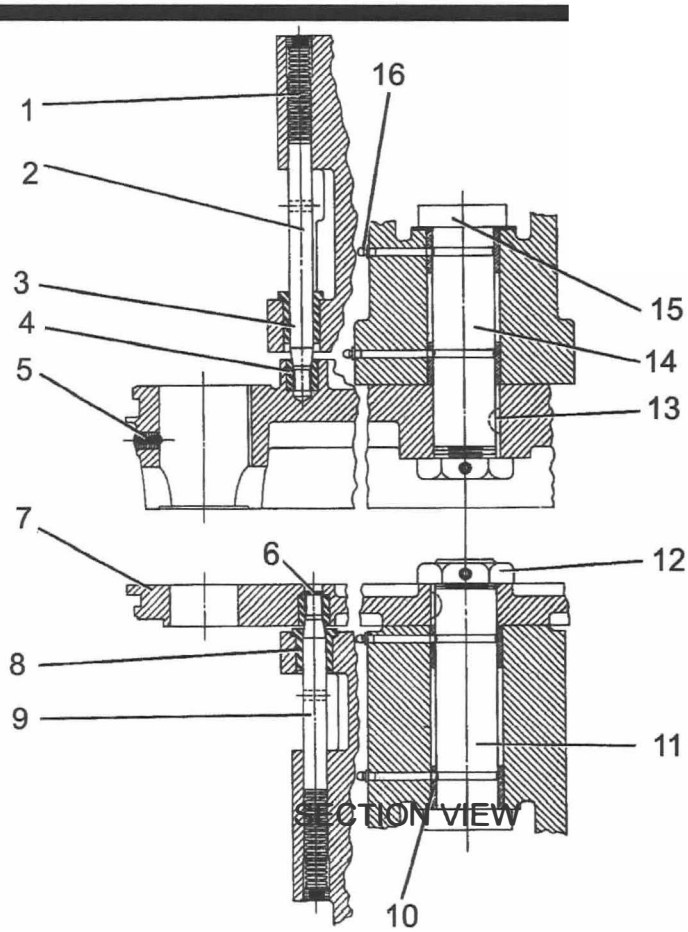
Item No.	Part No.	Description	Qty Used
1	6901002	Grease Fitting	6
	6901002	Grease Fitting (Optional)	4
2	056-4701087	Hex Head Cap Screw	1
	056-4701087	Hex Head Cap Screw (Optional)	1
3	62X0508	Lock Washer	1
	62X0508	Lock Washer (Optional)	1
4	250-4901067	Shaft Washer	1
	250-4901067	Shaft Washer (Optional)	1
5	1203105	Pin	1
	1203105	Pin (Optional)	1
6	056-1204086	Fly Wheel	1
	056-1204089	Fly Wheel (Optional)	1
7	250-1203074	Drive Pin	4
	250-1203074	Drive Pin (Optional)	4
8	056-3106092	Fly Wheel Bearing	1
	056-3106092	Fly Wheel Bearing (Optional)	1
9	8000120-603	Clutch Dog	1
	250-1206039	Clutch Dog (Optional)	1
10	250-1206038	Clutch	1
	065-1206008	Clutch (Optional)	1
11	1203104	Pin	1
	1203104	Pin (Optional)	1
12	056-1201069	Non Repeat Cam	1
	056-1201069	Non Repeat Cam (Optional) Flat	1
13	20C0104C0304	Hd Soc Set Screw	1
	20C0104C0304	Flat Hd Soc Set Screw (Optional)	1
14	61X0104F0102	Flat Washer	1
	61X0104F0102	Flat Washer (Optional)	1
15	22B0104C0308	Fillister Head Screw	1
	22B0104C0308	Fillister Head Screw (Optional)	1
16	250-5103040	Clutch Spring	1
	250-5103040	Clutch Spring (Optional)	1
17	066-1201061	Crankshaft	1
	065-1211007	Camshaft (Optional)	1
18	21A0308C2304	Hex Head Cap Screw	4
	21A0308C2304	Hex Head Cap Screw (Optional)	4
19	065-3106015	Main Bearing	2
	065-3106015	Main Bearing (Optional)	2

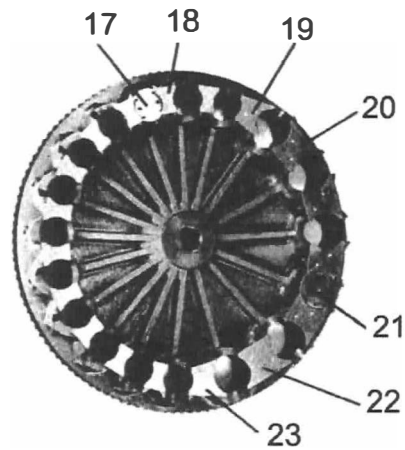
CONVENTIONAL CLUTCH

Item No.	Part No.	Description	Qty Used
20	065-3106063	Bearing	1
	065-3106063	Bearing (Optional)	1
21	065-1201062	Connecting Arm	1
	065-1201062	Connecting Arm (Optional)	1
22	065-1202061	Eccentric	1
	650-3106036	Main Bearing (Optional)	1
23	065-1202004	Cam (Optional)	1
	270-1207710	BRAKE SHOE ASSEMBLY	
24	21A0516C2102	Hex Head Cap Screw	1
	21A0516C2102	Hex Head Cap Screw	2
25	5102110	Spring	1
	510211	Spring (Optional)	2
26	21A0516C1102	Hex Head Cap Screw	1
	21A0516C1102	Hex Head Cap Screw (Optional)	2
27	4703001	Rivet	4
	4703001	Rivet (Optional)	8
28	270-1207055	Brake Shoe	1
	270-1207055	Brake Shoe (Optional)	2
29	6999005	Brake Lining	2
	6999005	Brake Lining (Optional)	4
30	30X0516C	Hex Nut	2
	30X0516C	Hex Nut (Optional)	4
31	23A0516C0102	Socket Set Screw	1
	23A0516C0102	Socket Set Screw (Optional)	3
32	065-1207030	Brake Drum (Optional)	1
33	5501008	Key (Optional)	1
34	31X0102F	Jam Nut	1
	31X0102F	Jam Nut (Optional)	2
35	065-1207032	Brake Rod Inner (Optional)	1
36	065-1207031	Brake Stop (Optional)	1
37	1203171	Drive Lok Pin (Optional)	2
38	20C0104C0308	Flat Hd Soc Cap Screw (Optional)	4
39	065-1208007	Hand Wheel (Optional)	1
40	065-1207033	Brake Rod Outer (Optional)	1
41	066-1207053	Brake Collar	1
	066-1207053	Brake Collar (Optional)	1
42	065-1203006	Wrist Pin	1
43	065-1213008	Ram	1
44	060-1108006	Cap	1
45	21A0516C1708	Hex Head Cap Screw	4
46	066-1208001	Hand Wheel	1
47	056-1207056	Brake Rod	1
48	3107101	Thrust Bearing	2
49	4705102	Retaining Ring	2
50	620-3106011	Main Bearing	2

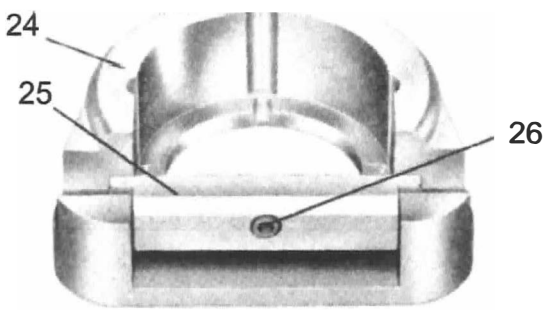
Di-Acro®

UPPER & LOWER TURRETS



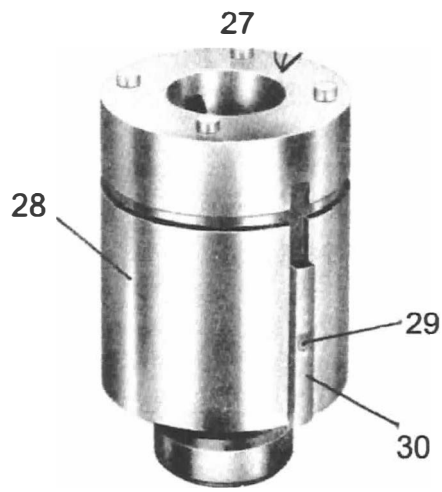


DETAIL I



DETAIL J

DIE HOLER ASSEMBLY
066-1502706 (A)
066-1502707 (B)
066-1502708 (C)



DETAIL K

PUNCH HOLDER ASSEMBLY
066-1501709 (S)
066-1501710 (L)

Item No.	Part No.	Description	Qty Used
1	5102007	Spring	2
2	066-1327001	Index Pin (Upper)	1
3	3110004	Bushing	1
4	066-1108041	Tapered Bushing	18
5	6999020	Ball Plunges	18
6	3709067	Plug	18
7	066-1111002	Lower Turret	1
8	3110005	Bushing	1
9	066-1327002	Index Pin (Lower)	1
10	066-3104127	Bearing	4
11	060-4701029	Lower Turret Bolt	1
12	060-4704013	Turret Nut	2
13	5501103	Woodruff Key	2
14	060-4701028	Upper Turret Bolt	1
15	3107103	Thrust Bearing	1
16	6901002	Grease Fitting	4
17	060-1403042	Stripper “Small”	12
18	062-1403050	Stripper Clip “A”	11
19	062-1403052	Stripper Clip “C”	1
20	062-1403053	Stripper Clip “D”	4
21	060-1403043	Stripper “Large”	6
22	062-1403054	Stripper Clip “E”	1
23	062-1403051	Stripper Clip “B”	1
24	066-1502056	Die Holder “A”	12
	066-1502057	Die Holder “B”	5
	066-1502058	Die Holder “C”	1
25	066-1502053	Clamp	12
	066-1502054	Clamp	5
	066-1502055	Clamp	1
26	23AXX10F0102	Soc Set Screw	1
	23AXX10F0102	Soc Set Screw	18
27	1203176	Pin	18
28	066-1501042	Punch Holder	12
	066-1501043	Punch Holder	6
29	1203176	Drive Pin	18
30	066-5501001	Key	18

1	4701142	Adjusting Bolt	6
2	066-6910701	Pade Plate Assembly	1
3	6910001	Air-Lok Pad	1

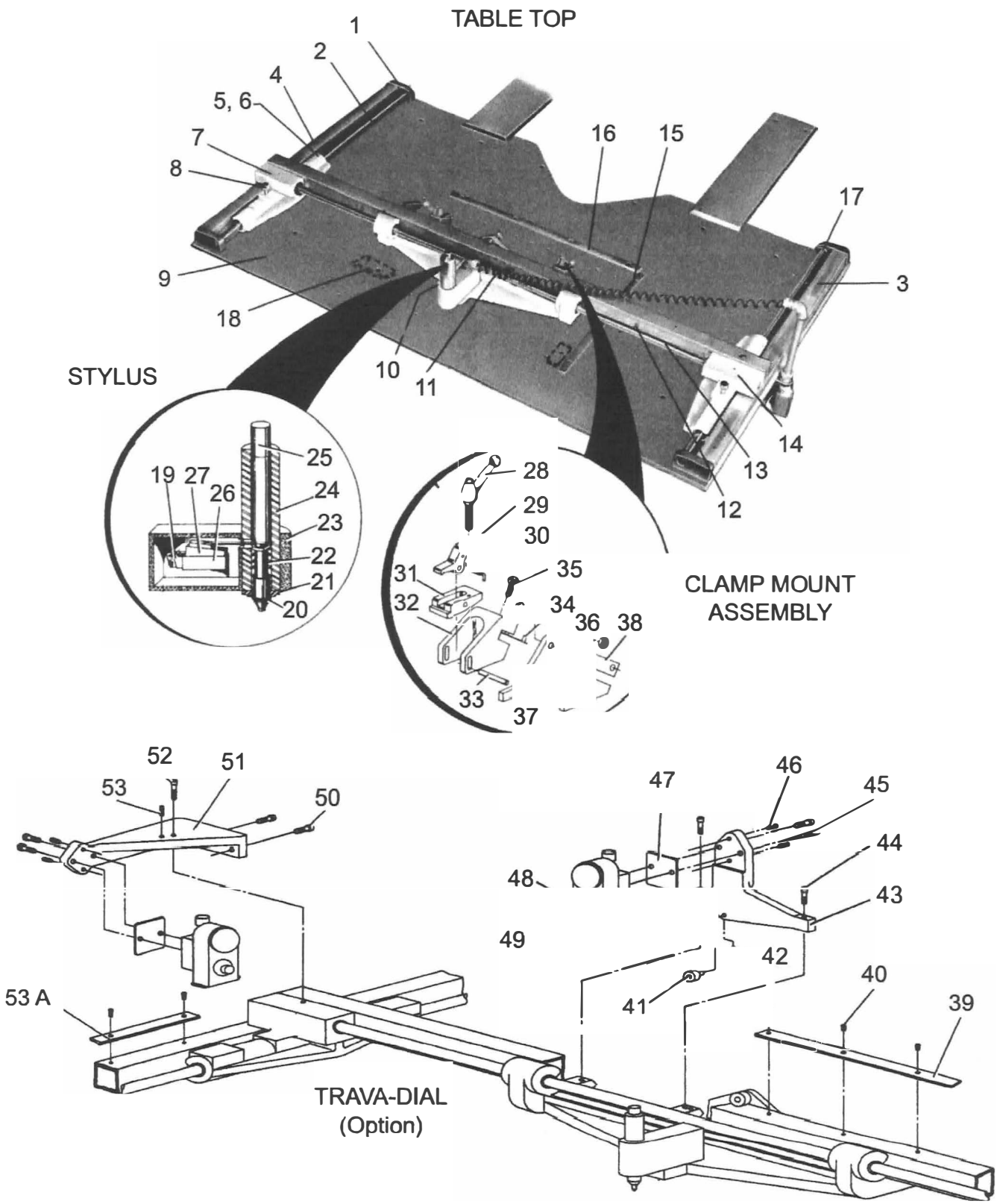


TABLE TOP
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CLAMP MOUNT
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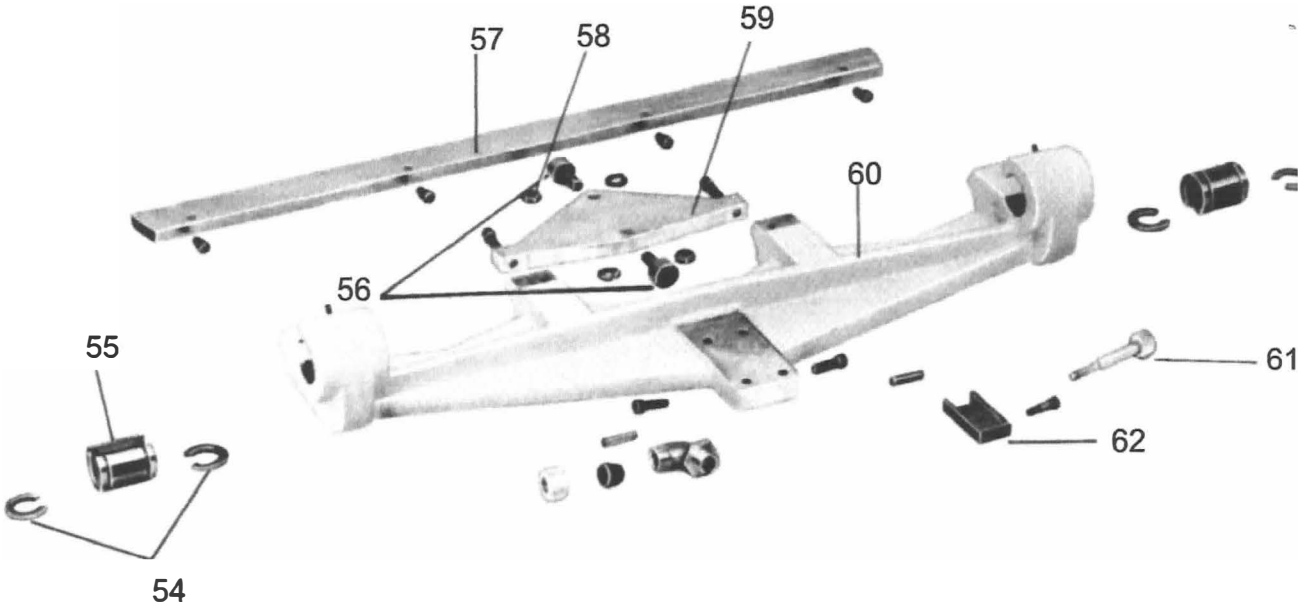
53 A
TRAVA-DIAL
(Option)

Item No.	Part No.	Description	Qty Used
1	066-1113118	Block	4
2	066-1211001	Shaft	2
3	066-1113114	Support Bar "Right"	1
4	066-1113127	Support Bar "Left"	1
5	3102011	Seal	8
6	3102010	Ball Bearing	6
7	066-1113121	Bearing Housing Left	1
8	066-4701002	Screw	2
9	066-1105101	Table	1
10	066-1113126	Enclosure	1
11	3316926	Retractile Power Cord	1
12	066-4701001	Stud	2
13	066-1211002	Shaft	1
14	066-1113120	Bearing Housing Right	1
15	066-1105108	Side Bar	1
16	066-1105109	Base Bar	1
17	6999119	Neoprene Washer	6
18	066-1105110	Template Clamp Microswitch	4
19	3305010	Mounting Bracket Retaining	1
20	4705120	Ring	1
21	066-3110001	Bearing	1
22	620-5102054	Spring	1
23	066-1113104	Stylus Mount	1
24	066-1113105	Stylus Handle	1
25	066-1327701	Standard Stylus	1
	066-1327702	Small Stylus	1
26	3307113	Terminal Enclosure	1
27	3305009	Microswitch	1
	066-1113721	CLAMP MOUNT ASSEMBLY	
28	4710001	Adjustment Handle	1
29	066-1113004	Clamp	1
30	066-5103001	Spring	1
31	066-1113108	Clamp Support	1
32	066-1113109	Clamp Mount	1
33	1203162	Pin	1
34	066-1113128	Clamp Shoe	1
35	21A0104F	Hex Head Cap Screw	1
	066-1402707	END STOP ASSEMBLY Stop	
36	066-1402038	Pin	1
37	1203192	Body	1
38	066-1402040	Clamp (not shown)	1
	066-1402039	Pin (not shown)	1
	1203124	Pin (not shown)	1
	1203164	Facing Strip	1
39	066-1464001	Flat Head Machine Screw	1
40	22CXX08F0308	Cam Follower	11
41	3103016	Socket Head Set Screw Gage	1
42	23A0104F0104	Support "Long"	1
43	066-1464003	Socket Head Cap Screw	1
44	20A0104C0708	Socket Head Cap Screw Soc	2
45	20A0104C1000	Set Cap Screw	4
46	23A0104C0102	Sub Plate	4
47	0661464006	Dial	2
48	066-1464007	Trav-A-Dial	2
49	1464005	Socket Head Cap Screw	2
50	20A0104C0102	Gage Support "Transverse•	2
51	066-1464004	Socket Head Cap Screw	1
52	20A0104C0304	Facing Strip	1
53A	066-1464002		1

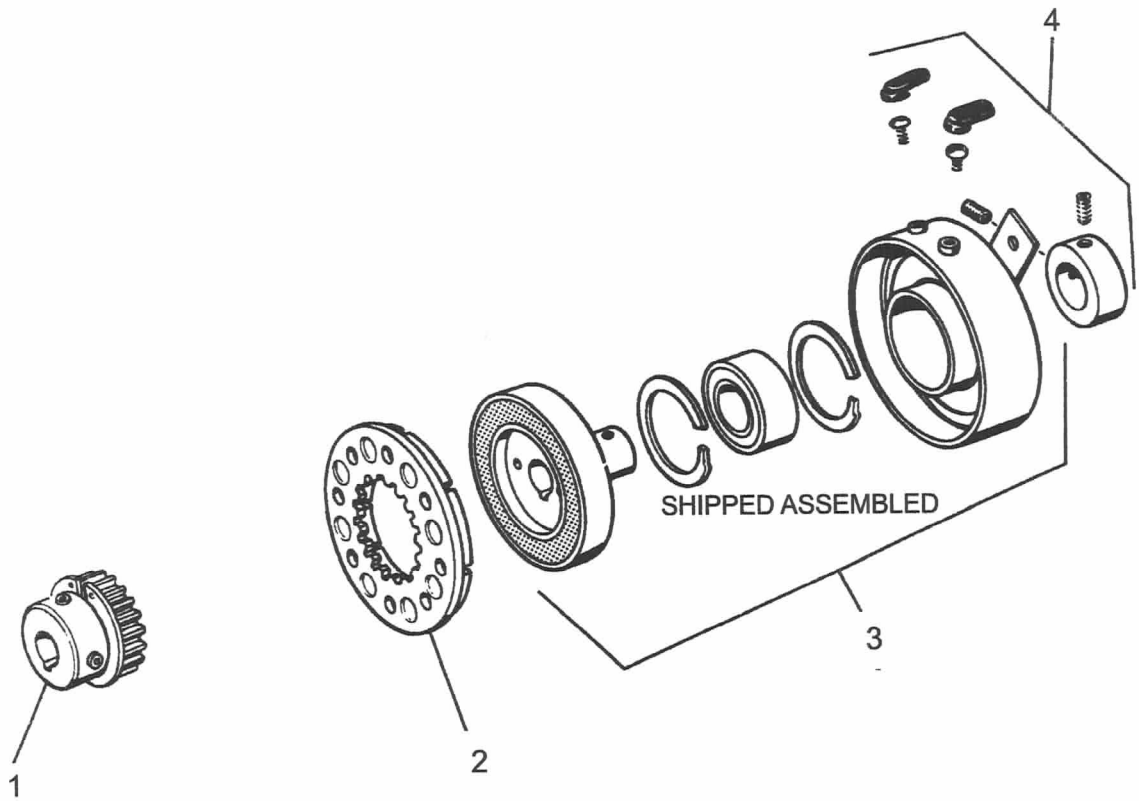
CARRIAGE



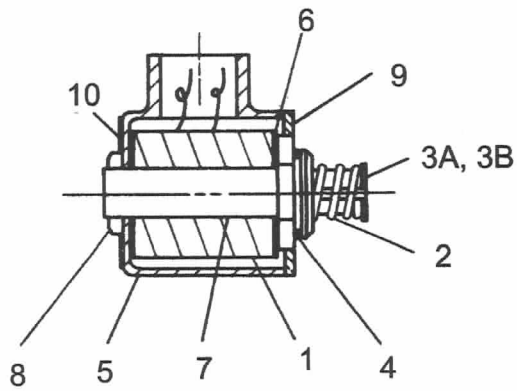
Di-Acro 18E Stylus (Part 5 of 5)
Figure 8

Item No.	Part No.	Description	Qty.
54	3102011	Seal	8
55	3102010	Ball Bearing	6
56	3103016	Cam Follower Bearing	2
57	066-1113111	Clamp Mount Bar	1
58	4901110	Washer	2
59	066-1113102	Carriage Support	1
60	066-1113101	Carriage	1
61	066-4701143	Clamp Screw	1
62	066-1113123	Carriage Clamp	1
63	066-1113115	Support Bar	1

CLUTCH COUPLING



Item No.	Description	Part No.
1	Armature hub assebly	5104-541-006
2	Armature	5125-111-001
3	Bearing mounted field and rotor assembly	5104-452-022
4	Terminal accessory	5103-101-002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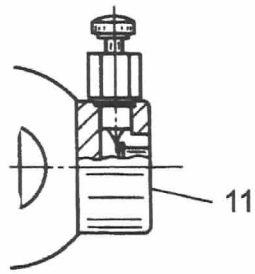
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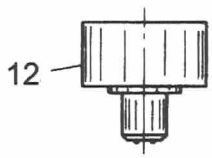
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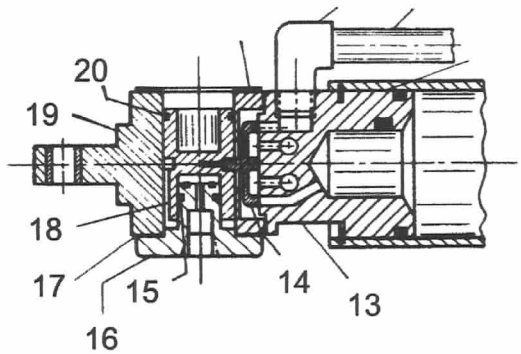
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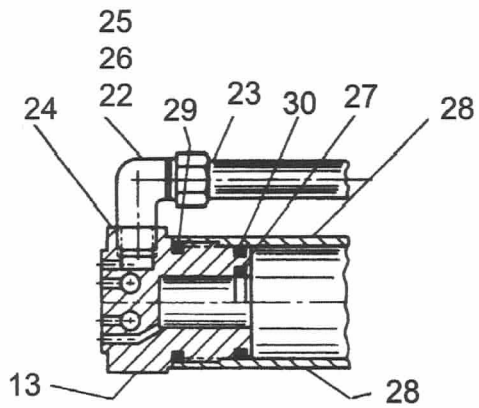
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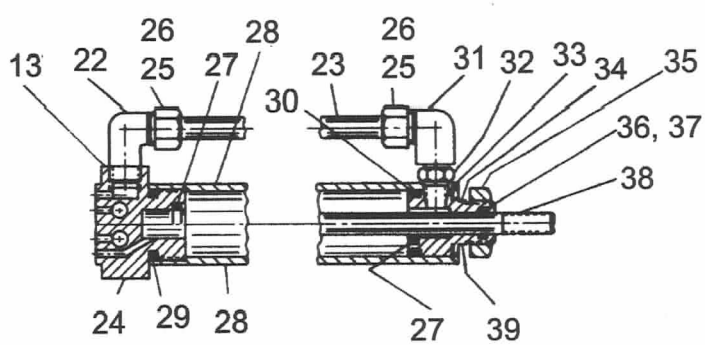
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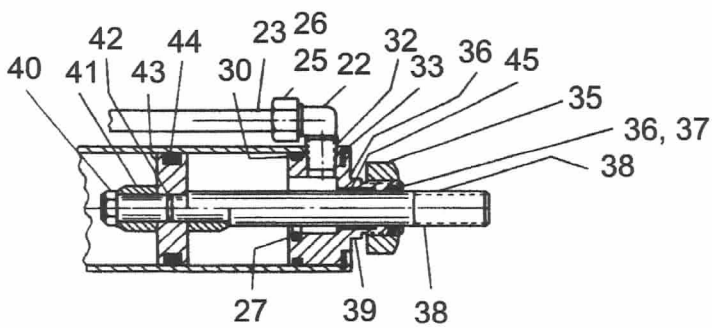
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Allenair Assembly - Part Identification List

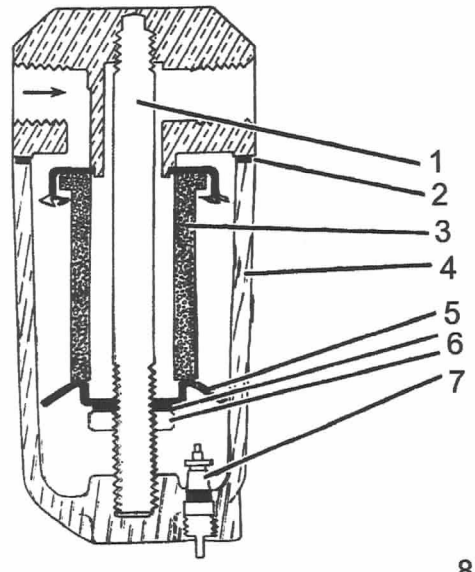
Item No.	Description	Part No.
1	Coil	243-1-SV-PK
2	Spring	243-2-SV-PK
3	Plunger	243-3-SV-PK
3A	Over-ride Plunger	243-3A-SV-PK
4	"0" Ring	243-4-SV-PK
5	Cover	243-5-SV-PK
6	Fibre Washer	243-6-SV-PK
7	Plunger Housing	243-8-SV-PK
8	Plunger Housing Nut	243-9-SV-PK
9	Steel Washer	243-10-SV-PK
10	Name Plate	243-13-SV-PK
11	Over-ride Button	AV-249-SV-OR-LH
12	Allenair Spool Cap	AV-249-SV

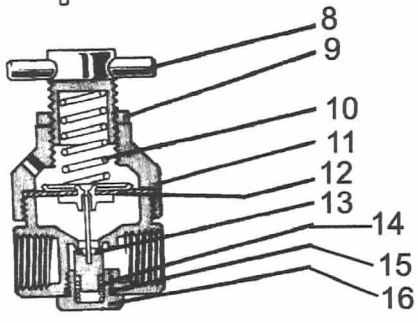
Air Valve Assemblies

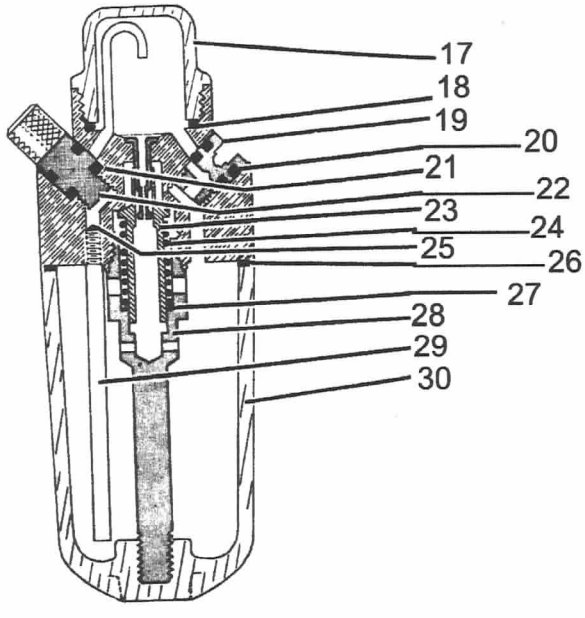
Item No.	Description	SVS-R-PK Part No.	SVS-E-OR-PK Part No.
13	Rear Head	AV-103-SV	AV-1503-SV
14	Slider	AV-235-SV	AV-235-SV
15	Spool Cap "U" Cup	AV-262-AP	AV-262-AP
16	Spool Cap	AV-249-APSR	AV-249-APSR
17	Spool Cap Gasket	AV-251-SV	AV-251-SV
18	Valve Spool	AV-246-APSR	AV-246-APSR
19	Top Valve Body	AV-234-SV	AV-234-SV
20	Spool "0" Ring	AV-261-AP	AV-261-AP
21	Spool Cap Gasket	AV-251-SV	AV-251-SV
22	Elbow (Rear)	AV-262-SV	AV-262-SV
23	Copper Tubing	AV-161-SV	AV-1561-SV
24	Rear Head (Cushion)	AV-103-SV-C	AV-1503-SV-C
25	Compression Ring	AV-261-A-SV	AV-261-1-SV
26	Compression Nut	AV-261-2-SV	AV-261-2-SV
27	Head Cushion Seal	A-115	A-1515
28	Cylinder Tube	AV-101-SV	AV-1501-SV
29	Rear Head "0" Ring Seal	AV-118-SV	AV-1518-SV
30	Heads "0" Ring Seal	A-118	A-1518
31	Elbow (Front)	AV-162-SV	AV-162-SV
32	Nipple	AV-165-SV	AV-1565-SV
33	Snap Rings	A-112	A-1512
34	Front Head	A-102	A-1502
35	Head Nut	A-114	A-214
36	Front Head Rod "0" Ring	A-110	A-1510
37	Front Head Back-up Ring	A-127	A-1527
38	Piston Rod	A-104	A-1504
39	Front Head Cushion	A-102-C	A-1502-C
40	Piston Lock Nut		A-1506
41	Boss		A-1507
42	Piston Rod "0" Ring Seal		A-1517
43	Piston**	A-105	A-1505
44	Piston Packing	A-116	A-1516
45	Front Head Bearing		A-1511

** Include on Rod

Foot Mount Flange for SVS-E-OR-PK ... Part No. 232







Item No.	Description	Part No.
1	Retaining Rod	49
2	Bowl Gasket	101
3	Filter Cone	77
4	Bowl	3
5	Baffle	76
	Baffle Gasket (not shown)	102
6	Nut	51
7	Drain Valve Assy	SA7
8	Adjusting Screw	SA53
9	Check Nut	51
10	Adjusting Spring	52C
11	Diaphragm Gasket	102
12	Diaphragm Assy	SA20R
13	Disc	SA37
14	Bottom Spring	105
15	Bottom Plug Gasket	103
16	Bottom Plug	2
17	Sight Glass	103
18	Sight Glass Gasket	43
19	Adjusting Screw	37
20	"0" Rings (3 req'd)	41
21	"0" Rings	42
22	Filler Plug	4
23	By-pass Disc	137
24	By-pass Spring	52
25	Ball Check	106
26	Bowl Gasket	101
27	Felt Seal	105
28	Retaining Rod	49
29	Dip Tube	74
30	Bowl	3