

AEROLOC

Built by BAYER INDUSTRIES INC

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8
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MAINTENANCE MANUAL

ACROLOC
SERIES 10

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Service Options
21-000-0001

HUECO PARTS
1800 638 1849
GMB Series

SECTION I INSTALLATION

1. **INSTALLATION:** A suitable handling device, preferably a 6,000 pound capacity fork truck is required to handle and move the ACROLOC into position. Although leveling is not necessary for proper operation of the ACROLIC, it is recommended that a reasonably level and solid floor be selected. A door opening to the building of not less than 8' x 8' is required.

1.1 **POWER REQUIREMENTS:**

220-Volt AC, 3-Phase, See electrical prints for amperage requirements.

CAUTION: If machine is wired for 220 Volt and connection to 440 Volt is made, extensive damage will occur.

1.2 **COMPRESSED AIR:** 95 - 100 psi Shop or plant air.

1.3 **OILS AND LUBRICANTS:** A supply of the following oils and lubricant should be on hand at all times.

<u>USED FOR</u>	<u>TYPE</u>
Air Lubricator	Mobil DET #24
One-Point Lube System	Mobil Vectra #2

SECTION II

PREVENTIVE MAINTENANCE

- 2.0 Periodic and conscientious preventive maintenance is essential in assuring optimum "on line time" and extended life from the ACROLOC. The following paragraphs are intended only as a guide to assist the user in developing a Preventive Maintenance Program which fits his individual needs.
- 2.1 LUBRICATIONS:
- 2.1.1 Table Ways: Table & Head Ways should always show signs of being well lubricated as evidenced by a wet appearance.
- 2.2 ADJUSTMENTS:
- Periodic checks and adjustments of items subject to wear and/or movement during use are essential when performing close tolerance work. Finding and correcting small discrepancies before they become major problems will add months and even years of trouble-free life to the ACROLOC.
- 2.2.1 Table Gibbs Readjustment X-Axis: Loosen the Gib set screws and Gib bolts. Manually rock Table to "back Gibbs off." Semi-tighten Gib bolts and adjust set screws to provide .0006" Table rock on each end of Compound. Tighten Gib bolts. Table should now rock .0002" to .0004" at each end of Compound with approx 50# force. Re-adjust as noted above if necessary to provide the specified Table rock. Check the Ball Screw Torque. If the torque exceeds 18" pounds, the Table is adjusted too tight. The Ball Screw torque may be measured by pulling tangent to the X-Dial with a string and fish scale. The distance from the center of the Ball Screw to the string times the scale load at which the dial starts to move is the torque in inch pounds.
- The Y-Axis may similarly be adjusted.
- 2.2.2 Brake Switch: Adjust this switch so that it is de-actuated when the Spindle is located 2 inches from the 'Up' position. This switch is used to turn the Spindle Brake off and the Spindle Motor on.

SECTION II

ADJUSTMENTS

- 2.2.3 Up One Switch: Adjust the Up One Switch so that it is actuated when the spindle is down .015".
- 2.2.4 Over Travel Limit Switches: These switches are located in the Resolver Drive Ass'y for each Axis. To adjust the Limit Switch, move table or spindle to over travel position with the bellow coupling screw aligned with the access hole in the Resolver Drive body. Loosen the coupling set screw and rotate the gear until the appropriate limit switch is actuated. Tighten the set screw.

Over Travel Position

X Axis: Table 3/8" from full left position
Y Axis: Table 1/4" from full out position
Z Axis: Spindle to zero plus 1/16"

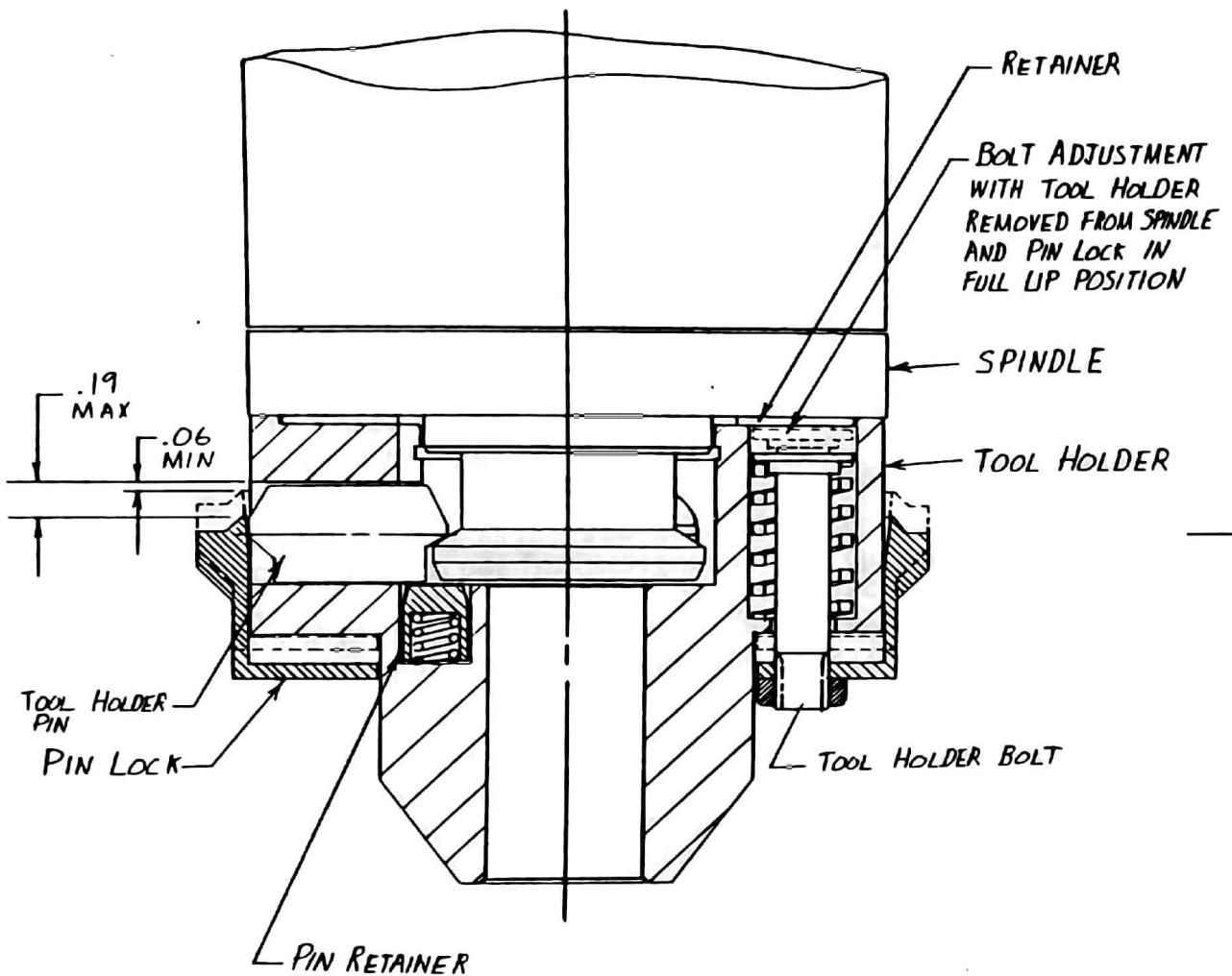
- 2.2.5 Home Position Switches: These switches are located in the Resolver Drive Ass'y for each Axis. They are adjusted by sliding the Home Cam as required to initiate Home position. The final Home position is set by rotating the Resolver. The limit switch must be set to actuate within $\pm .040"$ of the desired guide home position.

Home Position (always +)

X Axis: Table approximately 1.0" from full left position
Y Axis: Table approximately 1.0" from full out position
Z Axis: Spindle at zero as shown by the dial

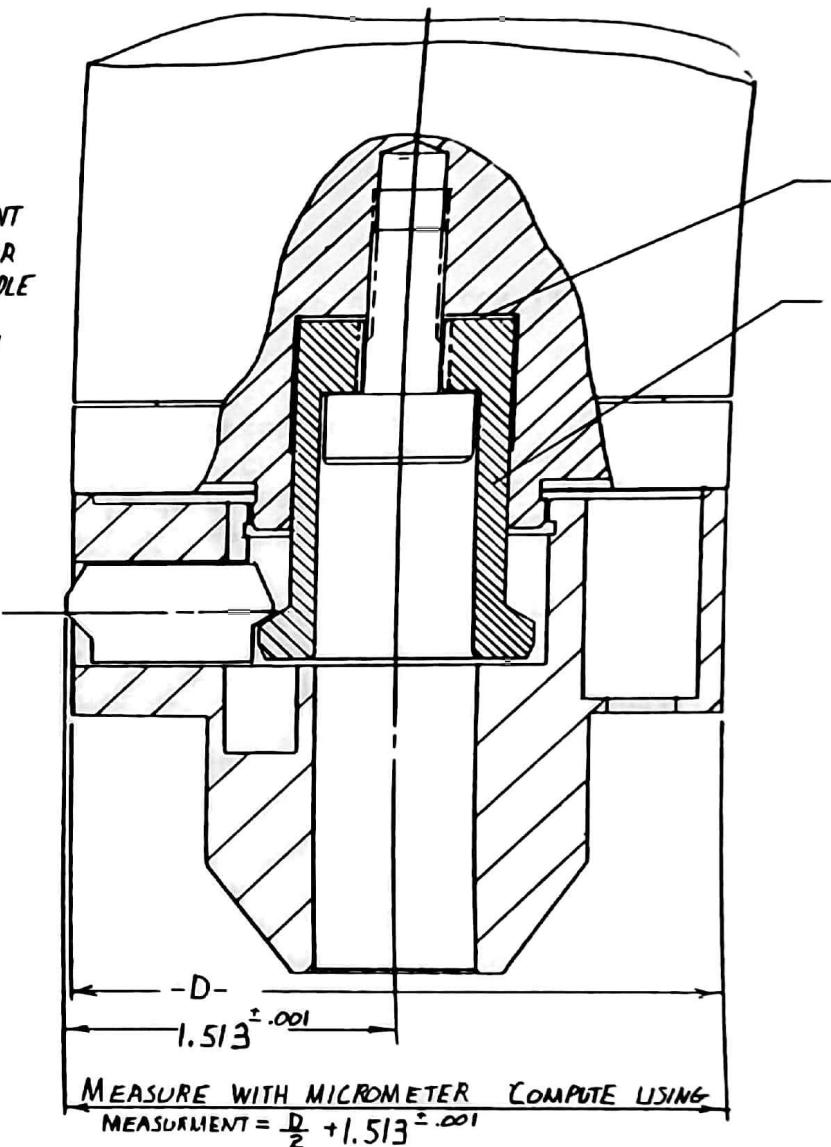
- 2.2.6 Spindle Bearing Adjustment: Remove the oil fitting located on top of the Spindle column. Rotate the Spindle quill until lock screw is visible. Insert Allen wrench and loosen lock screw. Leave Allen wrench inserted and rotate Spindle nose clockwise to increase preload and counterclockwise to decrease preload. Tighten lock screw and replace oil fitting.

CAUTION: Insufficient preload will impair the milling capability of the machine. Excessive preload will result in overheating of the Spindle. If high Spindle speed is used for a long machining operation, it may be necessary to reduce the Z up speed. This will allow time to transfer heat from the Spindle column to the head casting.



PIN LOCK POSITION WITH TOOL ENGAGED

AND TOOL HOLDER PLUG PROPERLY SHIMED



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-M- TOOL HOLDER ADJUSTMENT

T111-028

SECTION III

OPERATIONAL MECHANICS

- 3.0 This section is devoted to description of the operational mechanics of the system which collectively make up the ACROLOC. It is assumed that the reader has a broad knowledge and understanding of the Operational and Functional characteristics of the ACROLOC. Only the mechanics of how a system functions will be considered here; theory and principle of systems are reserved for the classroom. The purpose of the discussion is to aid the "trouble shooter" in faster and better failure analysis.
- 3.1 The motions of the Table (X and Y) and Spindle (Z) are provided by electric motors that turn precision ball screws. These motions are controlled by the N.C. Control Unit.
The tool holder engagement is accomplished by moving the Spindle down, contacting the tool and driving it through a circular ring held by the Tool Disc. This motion causes the tool holder pins to move radially inward, thereby locking the tool to the Spindle. The pins are locked in place by an outer ring.
The tool is disengaged when the Spindle moves up, causing the tool to be re-deposited in the circular ring.
When the Spindle is in the 'Up' position and the 'Up' switch is actuated, a programmed signal from the N.C. Control Unit energizes relays which energize a gear-head electric motor, and energizes an air valve that releases the tool disc locking plunger. This turns the disc. When the disc pins actuate switches in the Turret Switch Assembly that correspond to the tool position programmed, the motor and valve are de-energized and the disc stops and is re-locked by the locking plunger.
Spindle speed is provided by a variable speed DC motor and a two-speed pulley. The motor is provided with dynamic braking. When the Spindle moves down, it de-actuates the Brake Switch. This switch turns the spindle motor on. The speed is adjusted for each tool by turning the respective dial (variable speed motor control) and turning the two-speed pulley switch to 'High' or 'Low.'
The two-speed pulley consists of two clutches that are pneumatically engaged. When the high-speed clutch is engaged, the spindle speed is increased. When the low-speed clutch is engaged, the spindle speed is reduced.

SECTION IV

FAILURE ANALYSIS AND CORRECTIVE ACTION

4.0 Malfunction of the ACROLOC is accompanied by distinct and recognizable symptoms; however, some malfunctions exhibit nearly exact symptoms. It is therefore advisable to devote a reasonable amount of time identifying all the symptoms prior to attempting corrective action.

The simplest causes, such as programming errors, should be investigated first as they normally are the causes of apparent malfunctions.

4.0.1 Loose or defective relays, loose connectors, defective switches, burned-out fuses, or broken wires are not always listed among the possible causes but should be checked when a problem occurs.

	<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>
4.1.1	Table not holding accuracy or repeatability.	<ol style="list-style-type: none">1. Table Ways not properly adjusted:<ol style="list-style-type: none">a. Too loose;b. Too tight.2. Table Ways not properly lubricated.3. Ball Screw or Ball Screw Thrust Bearings defective or loose.4. Tool load too great for N.C. Control.5. N.C. Control defective.
4.1.2	Spindle (Z) not holding accuracy or repeatability	<ol style="list-style-type: none">1. Spindle binding because of bearing heat.2. Binding in the Z drive system or tool holder.3. Ball Screw or Ball Screw Thrust Bearings defective, or loose.4. Tool load too great for N.C. Control.5. N.C. Control defective.

	<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>
4.1.3	Tool Disc does not stop at programmed position.	<ol style="list-style-type: none"> 1. A, B, C, D or E Switch in Turret Switch Assembly not actuated. 2. Z Index Relay defective 3. Plunger Ass'y defective, leaking or stuck. 4. Less than 95 psi inlet air. 5. Disc Release Switch on. 6. N.C. Control Unit not supplying correct signal. 7. Plunger air valve defective.
4.1.4	Tool Disc does not rotate.	<ol style="list-style-type: none"> 1. Z Index Motor defective. 2. Z Index Relay or N.C. Control defective. 3. UP₁ Switch not actuated or defective. 4. Plunger or Plunger Valve defective. 5. Z Fuse "blown."
4.1.5	Spindle Motor does not turn on.	<ol style="list-style-type: none"> 1. Brake Switch not actuated or defective. 2. Z Index Relay defective or loose. 3. Spindle on relay defective or loose. 4. Variable speed motor control or motor defective. 5. Speed not set high enough (S code in control). 6. Pendent Motor Switch defective. 7. Defective Brake Resistor: Sympton: Relay Chatter and loss of Dynamic brake.

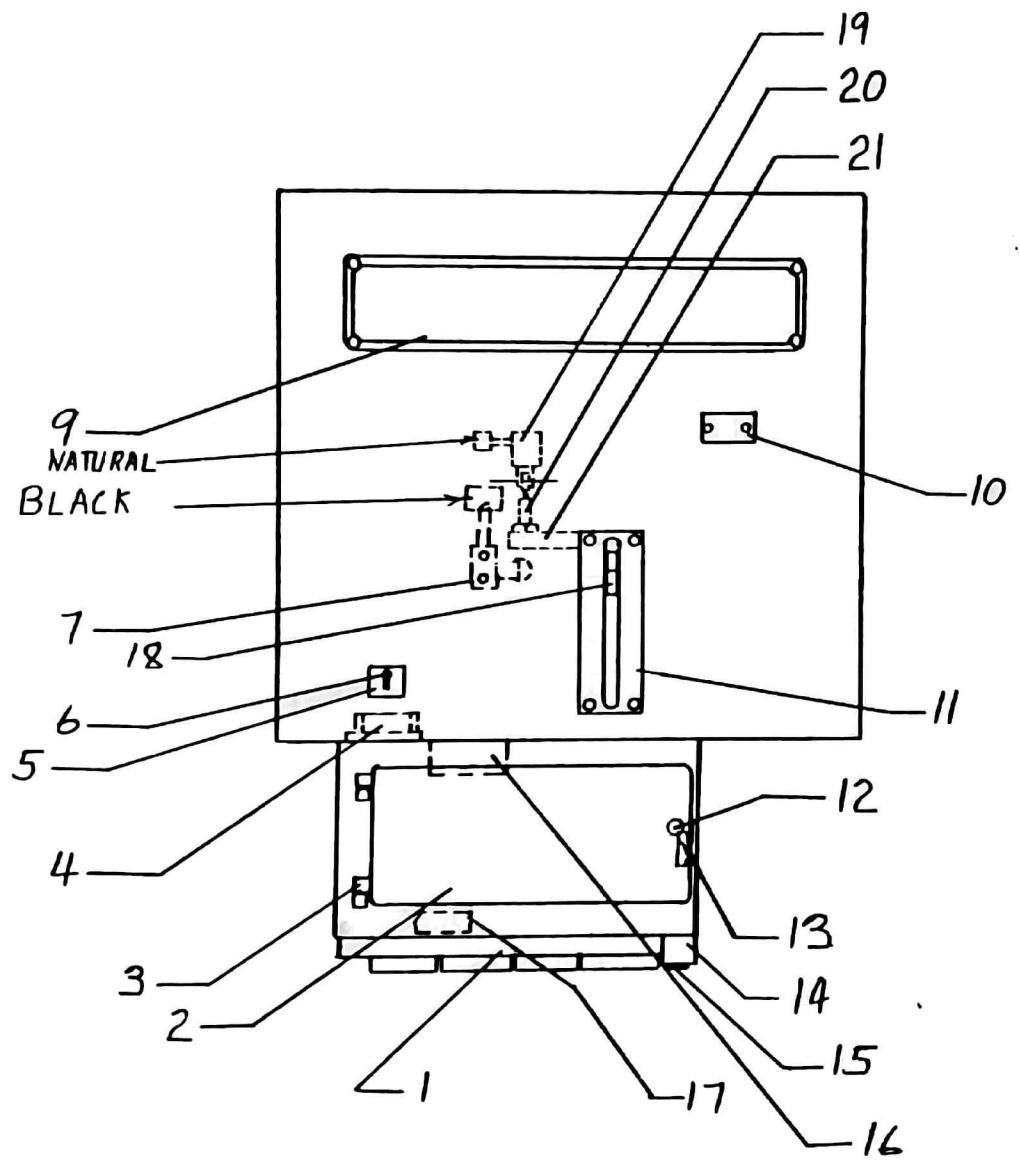
<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>
4.1.6 Spindle Motor does not reverse.	<ol style="list-style-type: none"> 1. Same as 4.1.5. 2. N.C. Control defective.
4.1.7 Spindle does not turn when motor turns.	<ol style="list-style-type: none"> 1. Two-Speed Pulley Clutch slipping: <ol style="list-style-type: none"> a. Lining worn; b. Defective air valve; c. Defective regulator; d. No or low air pressure; e. Belt not tight.
4.1.8 Two-Speed Pulley does not release.	<ol style="list-style-type: none"> 1. Neither valve, High or Low speed, is energized (both Clutches engaged): <ol style="list-style-type: none"> a. Defective or loose Stop Relay; b. Defective Pot Box; c. Defective Z Index Relay (probable if Pot Box tool lights do not turn on); d. 'P' Fuse blown.
4.1.9 Dynamic Brake Inoperative (Remove jumper between brake and CMN. on circuit panel at back of Acroloc to provide mechanical braking until dynamic brake is repaired.)	<ol style="list-style-type: none"> 1. Defective Brake Resistor. 2. Defective forward or reverse Relay.

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>
4.1.10 Spindle Bearings over-heating.	<ol style="list-style-type: none">1. Bearings adjusted too tight. (See adjustment section)2. Defective bearings or insufficient lubrication.
4.1.11 Spindle chatter. Any machine will chatter under various conditions of feed and speed. Generally, chatter can be reduced by increasing the speed or reducing the spindle speed.	<ol style="list-style-type: none">1. Bearings not properly adjusted (See adjustment section)

S T A N D A R D D R A W I N G S

HEAD ASSY - 3 AXIS FRONT 115-10

ITEM	PARTS	QUAN.
1	Disk Assy 111-016	
2	Door - Box Head 111-348	
3	Block - Hinge 111-160-2	2
4	Plunger Assy 111-3	
5	Disc Release Plate 115-57	
6	Disc Release Sw. REF	
7	Brake Sw. 111-407-2	
8		
9	Name Plate 115-58	
10	Window - Z 115-59	
11	Scale - Z 115-66	
12	Latch Assy - Door 111-368	
13	Catch 111-369-2	
14	Support - Disc 111-319	
15	1/2-13 x 1 1/2 shcs	
16	Index Assy - Z 111-017	
17	Reader - Disc 115-217	
18	Indicator - Scale 115-48	
19	Up 1 Switch 111-407-1	
20	Plunger - Ref Sw 115-180-2	
21	Bar - Up Switch 115-64	



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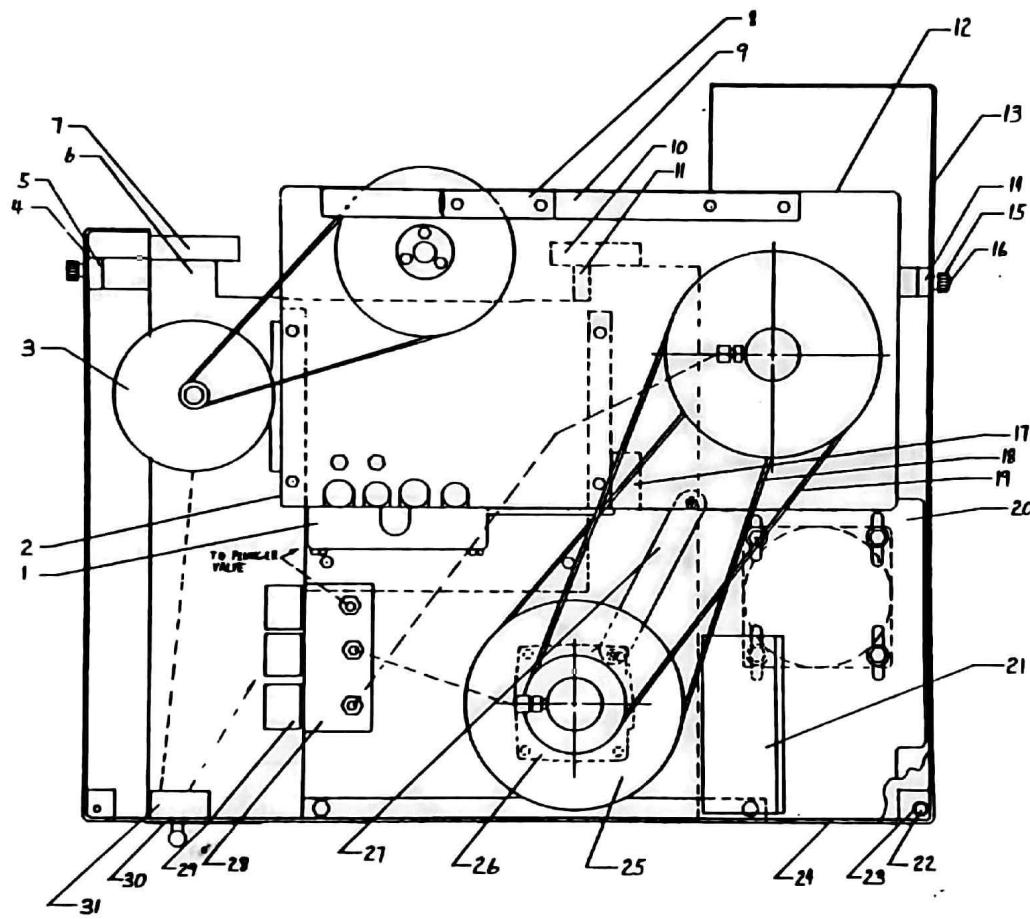
HEAD ASSY - 3 AXIS FRONT

115-10

HEAD ASSY - TOP VIEW 116-131

ITEM	PARTS	QUAN.
1	Cap - Head Cables 115-898	
2	Super Structure - 3.0 115-758	
3	Motor - Elevator 3-122	
4	Cover - Side 115-39-2	
5	Bracket - Cover LH 115-49	
6	Housing - 3 Axis Head 115-301	
7	Gib - Head 115-216	
8	Retainer - Cable Bracket 115-853	
9	Bracket - Cables 115-852	
10	Gib - Wide 115-215	
11	Gib - Side 111-336	
12	Top Plate - Getty 3.0 115-757	
13	Cover - Side - RH 115-39-1	
14	Bracket - Cover 115-215	
15	Nut - X - Y - Cover 111-494	4
16	1/4 - 28 x 3/4 Long Socket Set Screw	4
17	Brace - Superstructure 115-370	
18	Belt - Poly V 440-J16 3-159	
19	Belt - Poly V 440-J10 3-158	
20	Top Plate - Servo Mount 115-201	

ITEM	PARTS	QUAN.
21	Resolver Z (REF) (ASSY) 115-318-3	
22	1/4-20 x 3/4 Long Hex Bolt	4
23	Seat - Hinge 115-90	4
24	Front - Head 115-40	
25	Pulley - 2 Speed (ASSY) 115-391	
26	Drive - Spindle (ASSY) 115-483	
27	Brace - Large Drive 115-533	
28	Manifold Assy 115-11	
29	Asco Valve #832837 (REF) 3-135	3
30	Indicator - Disc and Head 115-267	



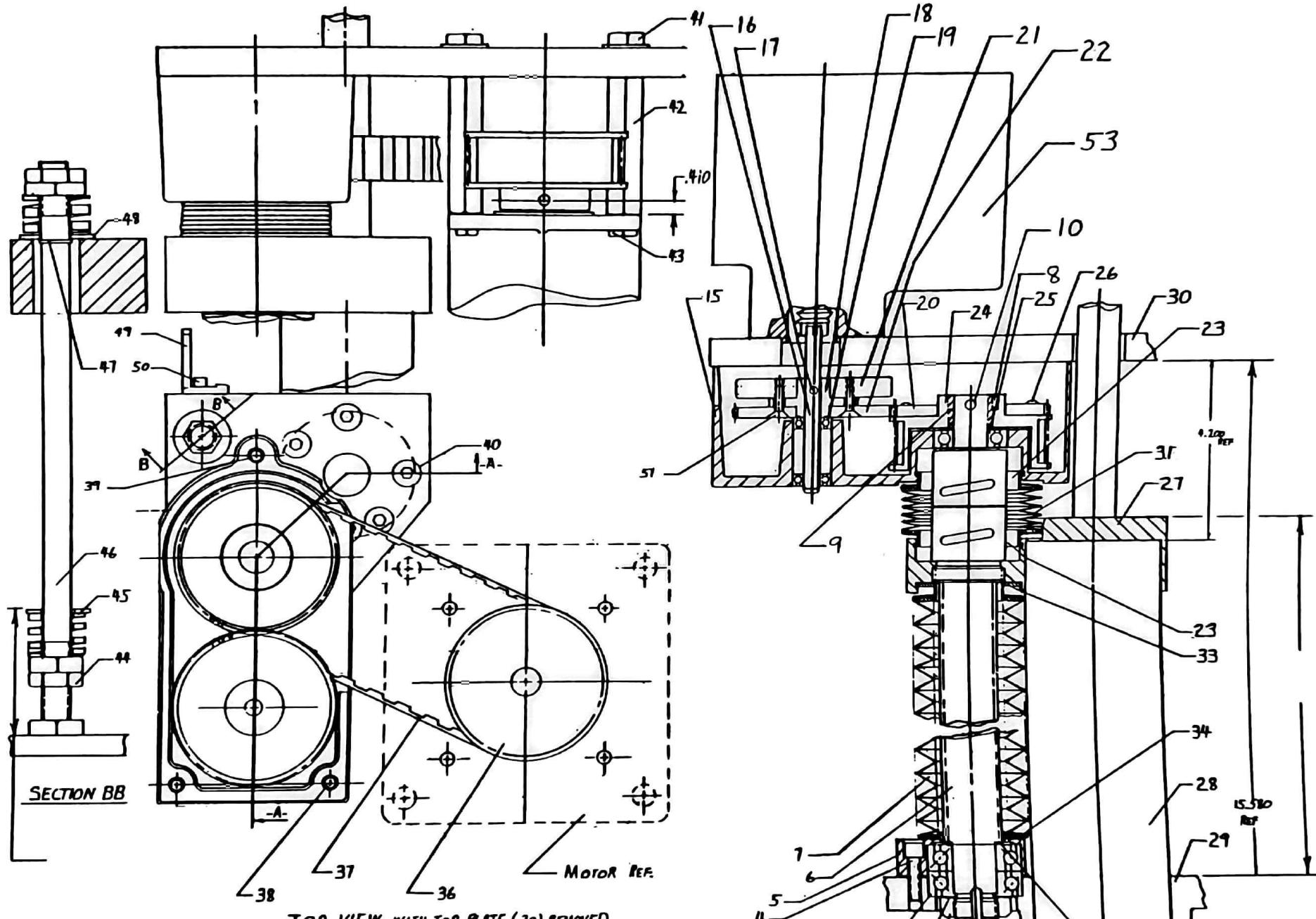
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HEAD ASSY - TOP VIEW

116-131

ITEM	PARTS	QUAN.
1	Lock Nut N05	3-171
2	Lock Washer W05	3-172
3	Bearing-Ball ND #Q30205 or MRC 7205 Pds (Duplex)	2
4	5/16 - 18 X 1 1/4 SHCS	2
5	Clamp - 3 Axis Bearing	115-24
6	Ball Screw Assy	115-25
7	Cover - Ball Screw	115-210-2
8	1/4-20 x 3/8 Long shcs	3
9	Bushing - Taper Lock	115-813
10	Roll Pin 1/4 dia. x 1.0 Long	
11		
12		
13		
14		
15	Housing - 3 Axis	115-20
16	Shaft - Photo Drive	115-322
17	1/8 Dia X 1 Roll Pin	2
18	Adaptor - Gear	115-61
19	Bearing - Ball R6F	3-166
20	Gear - Special	115-32-1
21	Dial - Z Axis	115-35
22	Gear - Special	115-32-2
23	Retainer - Z Cover	115-206
24	Pulley - Special	115-33
25	Bearing - Ball R12FF	3-165
26	#10 - 32 X 1/2 RHMS & Lock Washer	2

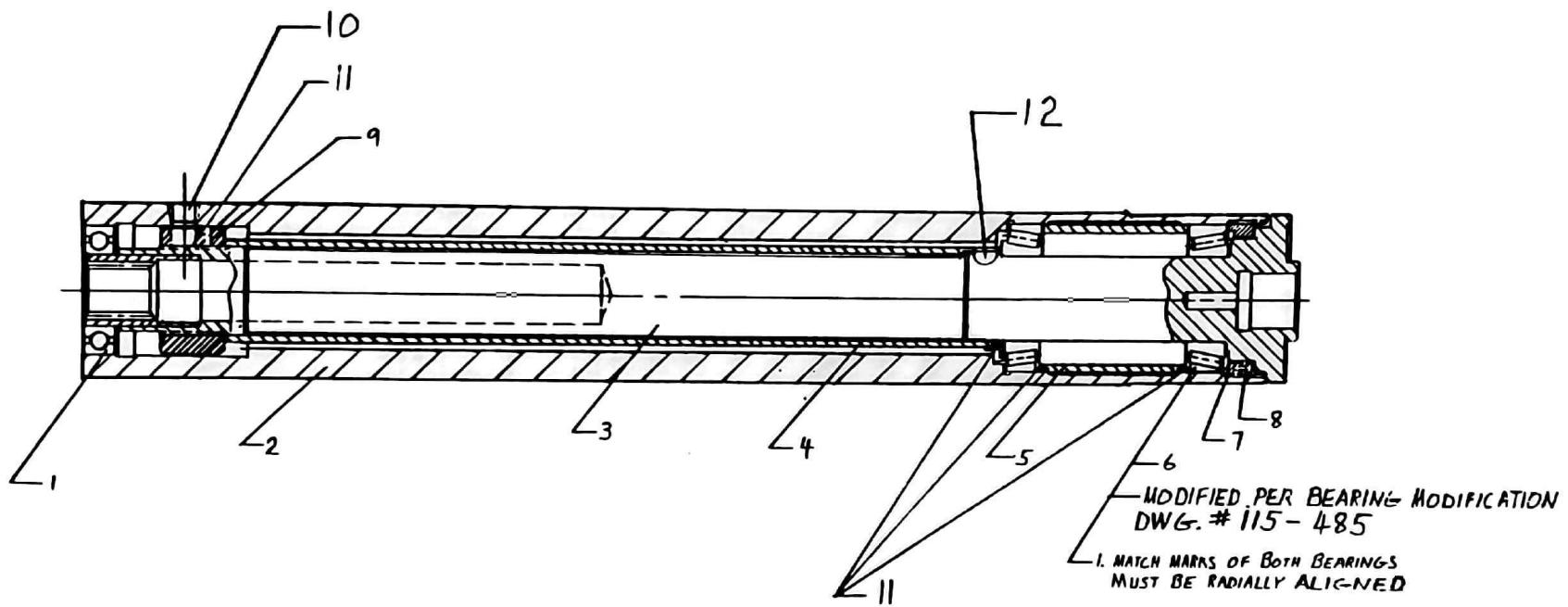
ITEM	PARTS	QUAN.
27	Cap-Spindle	115-23
28	Spindle Assy - Tapered	115-138
29	Housing - 3 Axis Head	REF
30	Top Plate - 3 Axis	115-201
31	Cover - Ball Screw	115-210-2
32		
33	Retainer - Z Cover	115-209-1
34	Retainer - Cover Bottom	115-207
35		
36	Pulley - Z Motor	REF
37	Browning Gear Belt #240H 100	3-169
38	5/16 - 18 X 1.25 Long SHCS	2
39	5/16 - 18 X 1.0 Long SHCS & Flat Washer	
40	5/16 - 24 X 1 1/4 FHCS	6
41	1/4 - 20 X 11/4 SHCS and Flat Washer	4
42	Spacer - Motor	REF
43	1/4 - 20 X 3/4 SHCS	4
44	5/8 - 18 Jam Nut	5
45	Spring Compression	110-116-8
46	Rod - Z Limit	115-38
47	Ring - Retaining	5160-62
48	5/8 Flat Washer	2
49	Cam - Motor Switch	115-47
50	#10 - 24 X 3/8 SHCS	2
51		
52	Spacer	111-199-17
53	Resolver - Drive	115-318-Z



INSTALL BEARINGS WITH RACES
AS SHOWN
PACK BEARINGS 3070 FULL WITH
MOBIL GREASE BBB LIFE TIME

SPINDLE ASSEMBLY - TAPER. BRG - MOD 115-238

ITEM	PART	QUAN.
1	Bearing-Ball ND #R20Z 3-162	
2	Column-Taper Bearing 115-240	
3	Spindle-Taper Bearing 115-239	
4	Spacer-Adjusting 115-244	
5	Spacer-Bearings 115-241	
6	Bearing-Taper Timken LM29749 Cone & LM29710 Cup, Class 'o' 3-161	
7	Retainer- Bearing 115-242	
8	Screw-Locking 115-194	
9	Nut-Spindle 115-269	
10	1/8" Taper Pipe Plug Socket	2
11	3/32" Dia x 1/4" Long Roll Pin	3
12	Woodruff Key 1/2 x 1/8 Amer. Std #404	



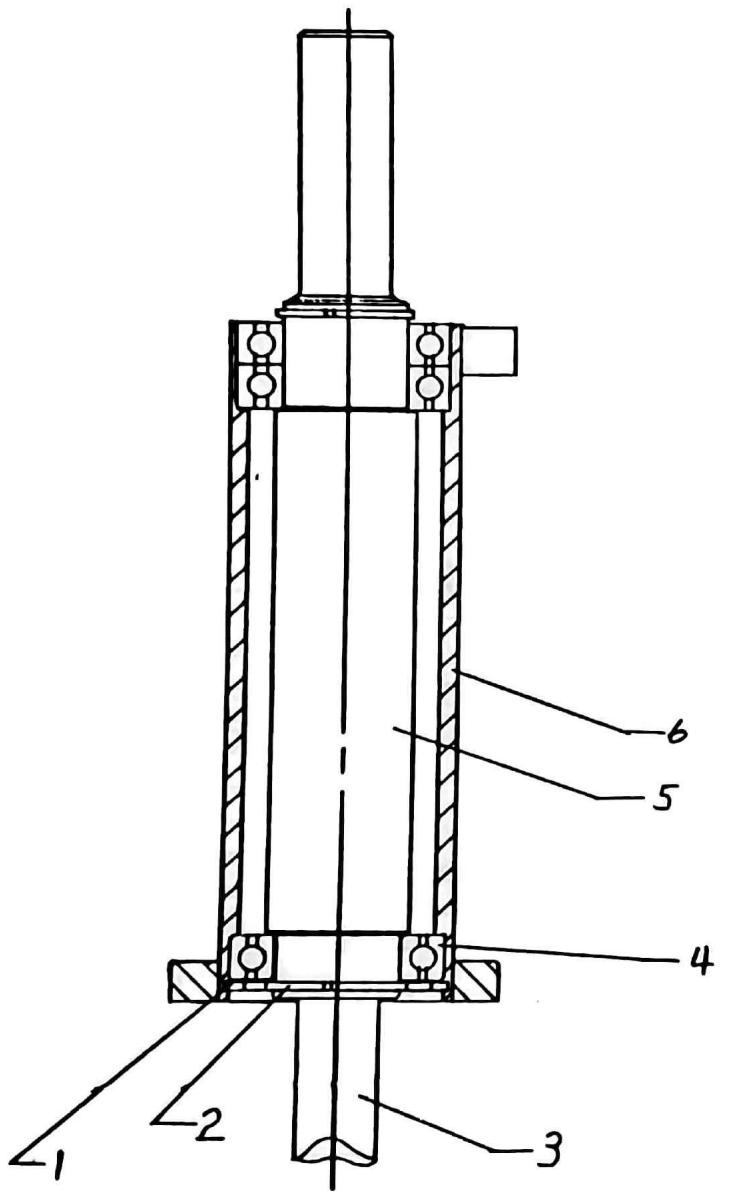
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SPINDLE ASSEMBLY - TAPER BRG

MOD 115-238

DRIVE-SPINDLE 115-483

ITEM	PARTS	QUAN.
1	Ring - Retaining 5000-268	
2	Ring - Retaining 5100-156	2
3	Shaft - Spline 115-141	
4	Bearing - Ball ND #773L08 3-160 3	
5	Drive Shaft 115-158	
6	Housing - Drive Shaft 111-464	



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DRIVE - SPINDLE

115-483

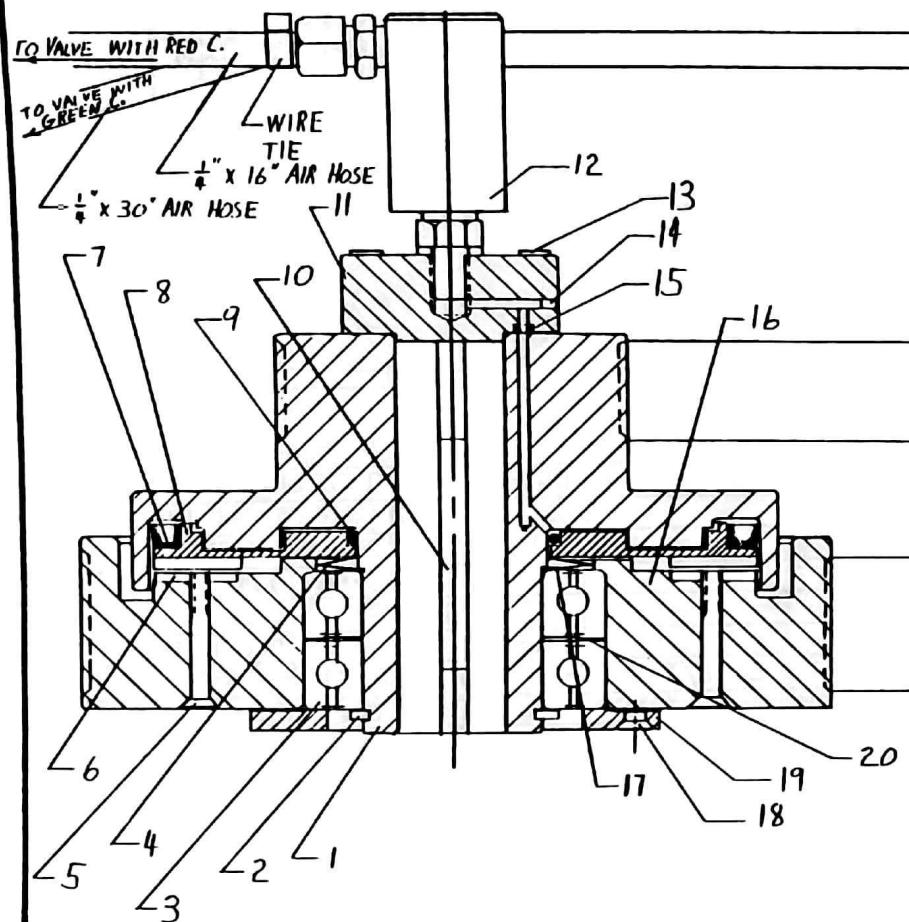
#115-391-1 SPINDLE

PULLEY - TWO SPEED

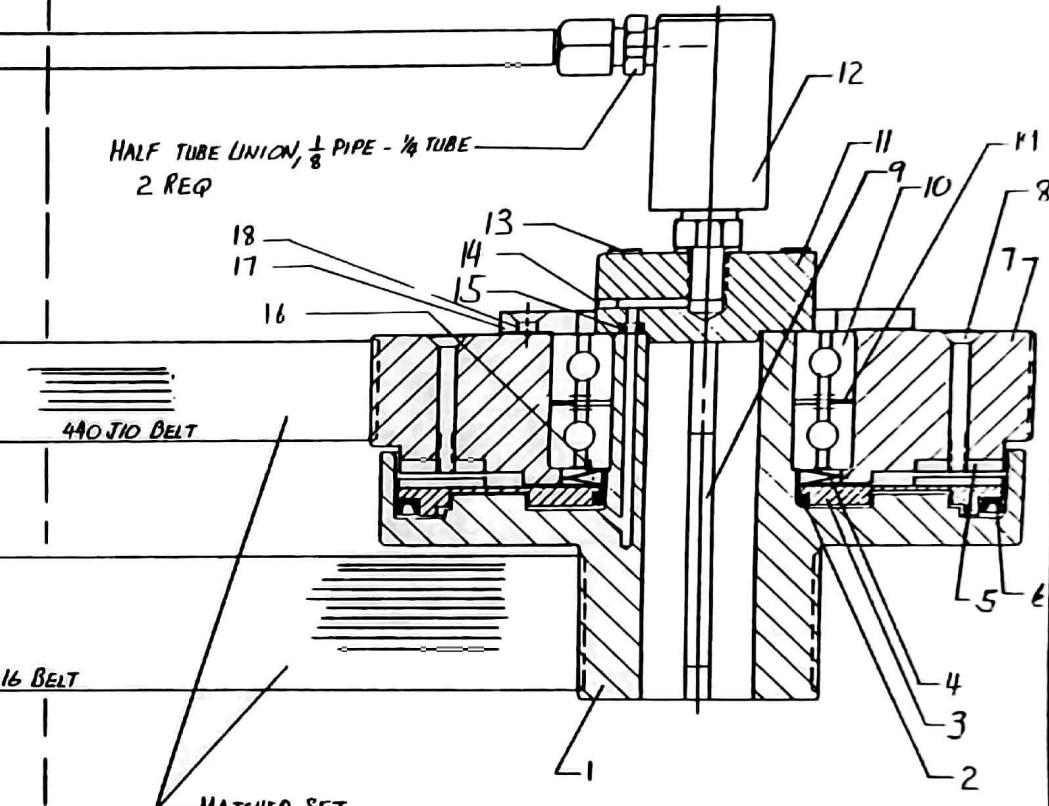
ITEM	PART	QUAN.
1	Housing-Spindle Pulley 115-393	
2	Ring - Retaining 5160-175	
3	Bearing-Ball MRC #109KSFF ND#73L09	2
4	Belleville Spring #6207	3-156
5	#10-32 x 1-1/2 FHMS (Mach. to length at ass'y)	2
6	Wear Disc-Pulley 111-482	6
7	Seal-Parker #84-0537-10	3-157
8	Piston-Pulley 111-414	1
9	Seal-O-Ring 2-227	
10	Key-Taper 111-435	
11	Adaptor-Seal 115-396	
12	Seal-Deublin Union #1005	3-154
13	#10-24 x 3/4 Long Nylock SHCS	5
14	1/8 Dia. x 1/4 Long Dowel Pin	
15	Seal-O-Ring 2-006	
16	Pulley-Large Input 111-451-W	
17	Washer - Seal 115-773	
18	#10-24 X .50 Long FHMS	6
19	Retainer - Small Pulley 115-851-2	

#115-391-2 MOTOR

ITEM	PART	QUAN.
1	Housing - Motor Pulley 115-392	
2	Seal-O-Ring 2-227	
3	Piston - Pulley 111-414	
4	Belleville Spring #6207	3-156
5	Wear Disc Pulley 111-482	2
6	Seal - Parker #84-0537-10	3-157
7	Pulley - Small 115-394	
8	#10-32 x 1-1/4 Long FHMS	6
9	Key - Taper 111-435	
10	Bearing-Ball MRC#109KSFF ND #73L09	3-155
11	Adaptor - Seal 115-396	2
12	Seal - Deublin Union #1005	3-154
13	#10-24 x 3/4 Long NY Lock SHCS	5
14	1/8 Dia. x 1/4 Long Dowel Pin	
15	Seal-O-Ring 2-006	
16	Washer - Seal 115-773	
17	#10-24 X .50 Long FHMS	6
18	Retainer - Small Pulley 115-851-1	



PULLEY - TWO SPEED
115-391 - 1 SPINDLE



PULLEY - TWO SPEED
115-391 - 2 MOTOR

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PULLEY - TWO SPEED

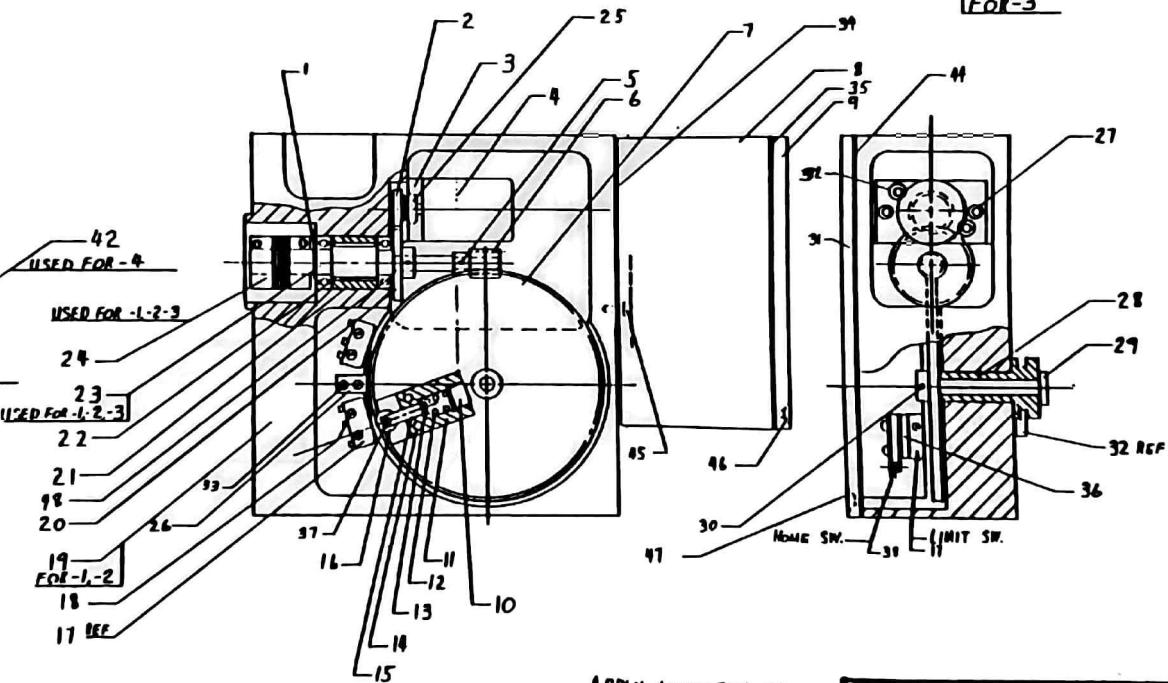
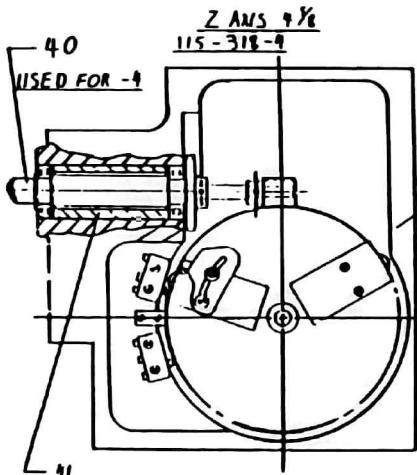
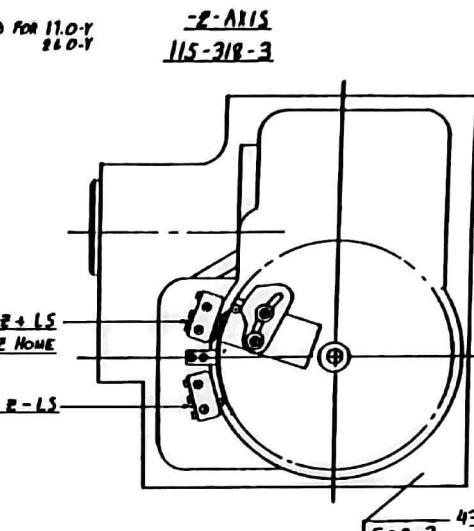
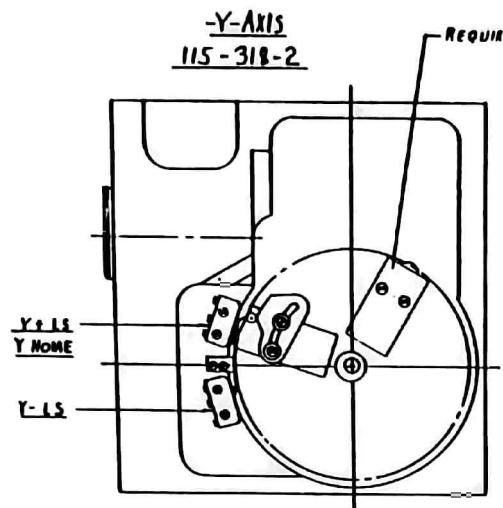
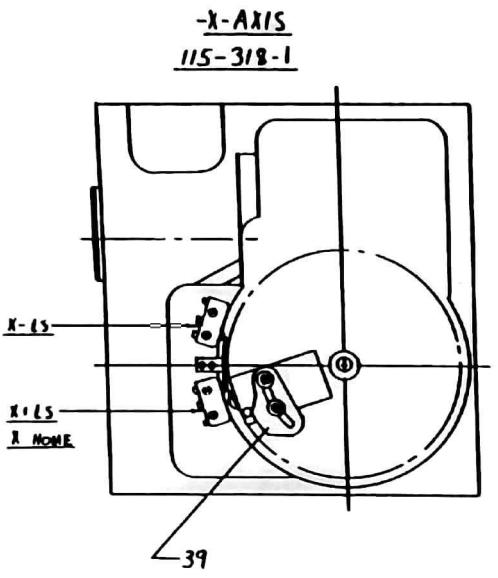
115-391-1 SPINDLE
115-391-2 MOTOR

RESOLVER DRIVE 115-318

ITEM	PART	QUAN
1	RING-RETAINING TRUARC #5100-37	
2	GEAR-PIC #H9-60014	
3	MOUNT-RESOLVER 115-331	
4	RESOLVER (ACTRION # KEARFOTT #CR41095045)	
5	ROLL PIN 1/16 DIA X 5/16 LONG	
6	SEE USE CHART BELOW	
7	SEE USE CHART BELOW	
8	ENCLOSURE-RESOLVER JUNCTION 115-877	
9	COVER-RESOLVER JUNCTION 115-878	
10	3/8-24 X 3/8 LONG SET SCREW	
11	BODY-ACTUATOR 115-310	
12	SPRING ACTUATOR 110-116-25	2
13	RING-RETAINING 5100-19	2
14	#6-32 X 1 1/4 RHMS & FLAT WASHER	2
15	PLUNGER-SWITCH 111-106	2
16	ROLLER-SWITCH 111-104-1	2
17	SWITCH MICRO #111-SM1	
18	#2-56 X 3/4 (2 REQ) AND #2-56 X 1/2 (2 REQ) RHMS	
19	BODY-RESOLVER DRIVE 115-311	
20	GEAR, BERG #P96S17-120 3-146	
21	SPACER-111-199-20	
22	BEARING-BALL MRC # R6FF 3-166	2
23	SHAFT-RESOLVER 115-312	
24	COUPLING-HELICAL # 3-150	

ITEM	PART	QUAN
25	CLAMP PIC #L1-10	
26	SPRING-SWITCH 115-399-1 (FOR X & Y) 115-339-2 (FOR Z)	
27	#10-24 X 1/2 RHMS NYLOCK	2
28	BUSHING-RESOLVER DRIVE 115-313	
29	SHAFT-WORM GEAR 115-314	
30	ROLL PIN 1/16 DIA X 1/2 LONG	2
31	COVER-SIDE 115-316	
32	CLAMP PIC #L3-6 3-148	3
33	#2-56 X 1/4 RHMS & LOCK WASHER	2
34	GASKET-COVER END 115-383	
35	SEAL-RESOLVER JUNCTION 115-879 3-153	
36	SPACER-SWITCH 115-354	2
37	ROLL PIN 1/16 DIA X 1/4 LONG	
38	SWITCH, MICRO #111-SM2 3-152	
39	CAM-HOME 115-340	
40	SHAFT-Z RESOLVER 4 5/8 115-426	
41	SPACER-Z RESOLVER 111-199-29	
42	BODY-4 5/8 RESOLVER 115-425	
43	BODY-Z RESOLVER 115-388	
44	GASKET-SIDE COVER 115-382	
45	#10-24 X .50 LONG SHCS	4
46	#10-24 X .50 LONG FLAT HEAD SOCKET	4
47	#6-32 X .50 LONG FLAT HEAD SOCKET	4
48	SHAFT-SPACER PIC #B12-7	

ITEM	NAME	32" X	40.0" X	16.0" Y	17.0" Y	26.0" Y	Z-3.0 DIA	Z-4 5/8
6	WORM, BERG #	W48S-3S C/N 3-141	W64S-3S C/N 3-703	W48S-3D C/N 3-141	W48S-3S C/N 3-140	W48S-3S C/N 3-140	W48S-3F C/N 3-142	W48S-3D C/N 3-141
7	WORM GEAR-MOD MAKE FROM WORM WHEEL BERG #	115-499-1 W48B29 S180 C/N 3-143	115-499-4 W64B29 5231 SPEC C/N 3-702	115-499-2 W48B29 D180 C/N 3-144	115-499-5 W48B29 S180 C/N 3-143	115-499-6 W48B29 S180 C/N 3-143	115-499-3 W48B29 F180 C/N 3-145	115-499-0 W48B29 D180 C/N 3-144



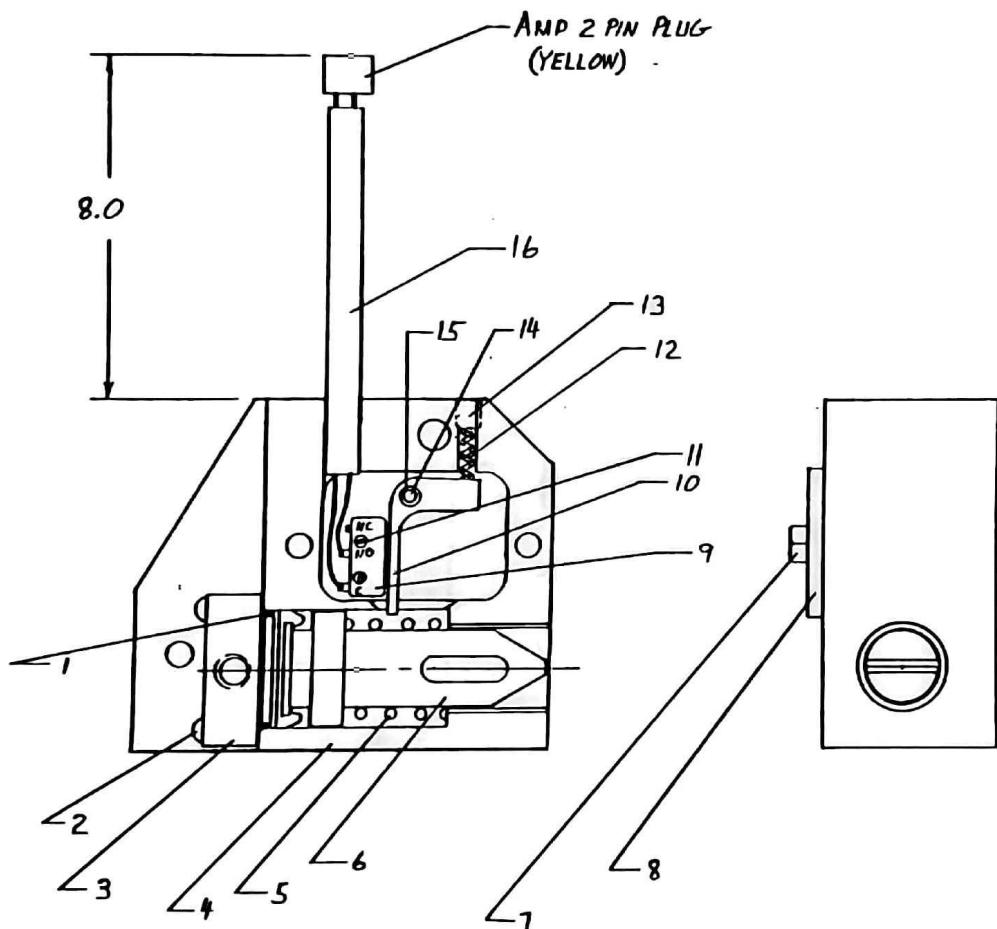
APPLY LIGHT FILM OF
GREASE TO GEARS

BAYER INDUSTRIES INC.

RESOLVER DRIVE

PLUNGER ASSY 115-371

ITEM	PARTS	QUAN.
1	Seal-O-Ring 2-022	
2	#10-24 RHMS X 3/4 Long	4
3	Cylinder Head-rear 111-167	
4	Housing-Plunger 115-372	
5	Spring-Compression 110-116-12	
6	Piston-Plunger 111-206	
7	5/16-18 X 1/2 Long Hex Bolt	2
8	Cover-Plunger 115-373	
9	Switch-Micro #111-SM2 3-152	
10	Lever-Plunger SW 115-459	
11	#2-56 X 5/8 RHMS	2
12	Spring 110-116-22	
13	1/4-20 X 1/4 Long Set Screw	
14	1/8 Dia X Dowel Pin	
15	Bronze Bushing #P12-4	
16	3/8 Dia 2 Conductor Cable	



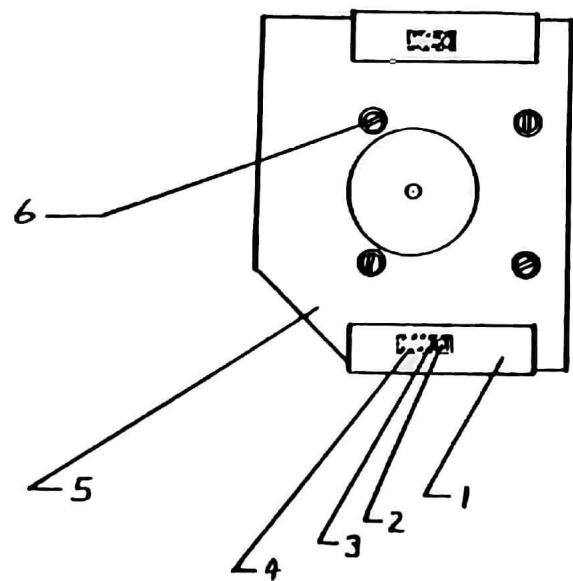
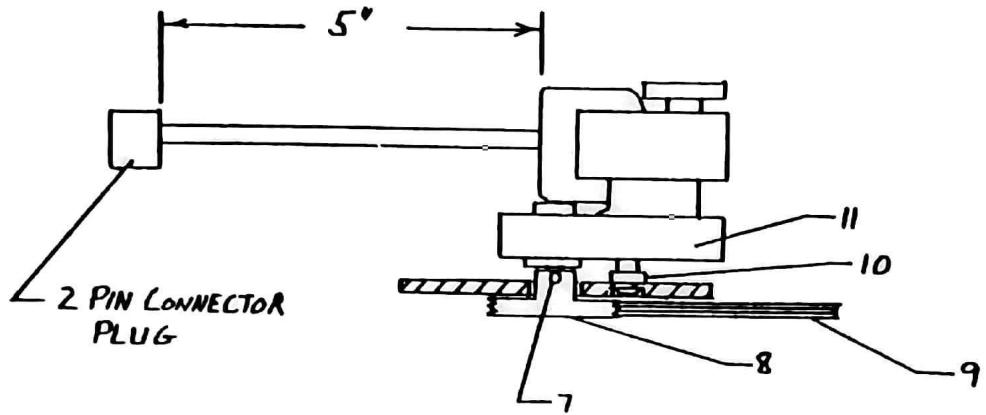
BAYER INDUSTRIES INC.

PLUNGER ASSEMBLY

115-371

INDEX ASSY - Z 111-017

ITEM	PART	QUAN.
1	Cover - Spring 111-292	2
2	1/4 - 20 x 3/4 Hex Bolt (reference)	2
3	Spacer - Tension 111-199-8	2
4	Spring - Compression 110-116-15	2
5	Motor Plate 111-214	
6	#8 - 32 x 1/2 Phillips, RH	4
7	1/4 - 20 x 3/16 Socket Set Screw	
8	Pulley - Index 110-105	
9	Poly - V - Belt 200J2	
10	Spacer 110-46-4	4
11	Motor - Brevel #GB33L1-31B233-11T16B7T1 3-129	



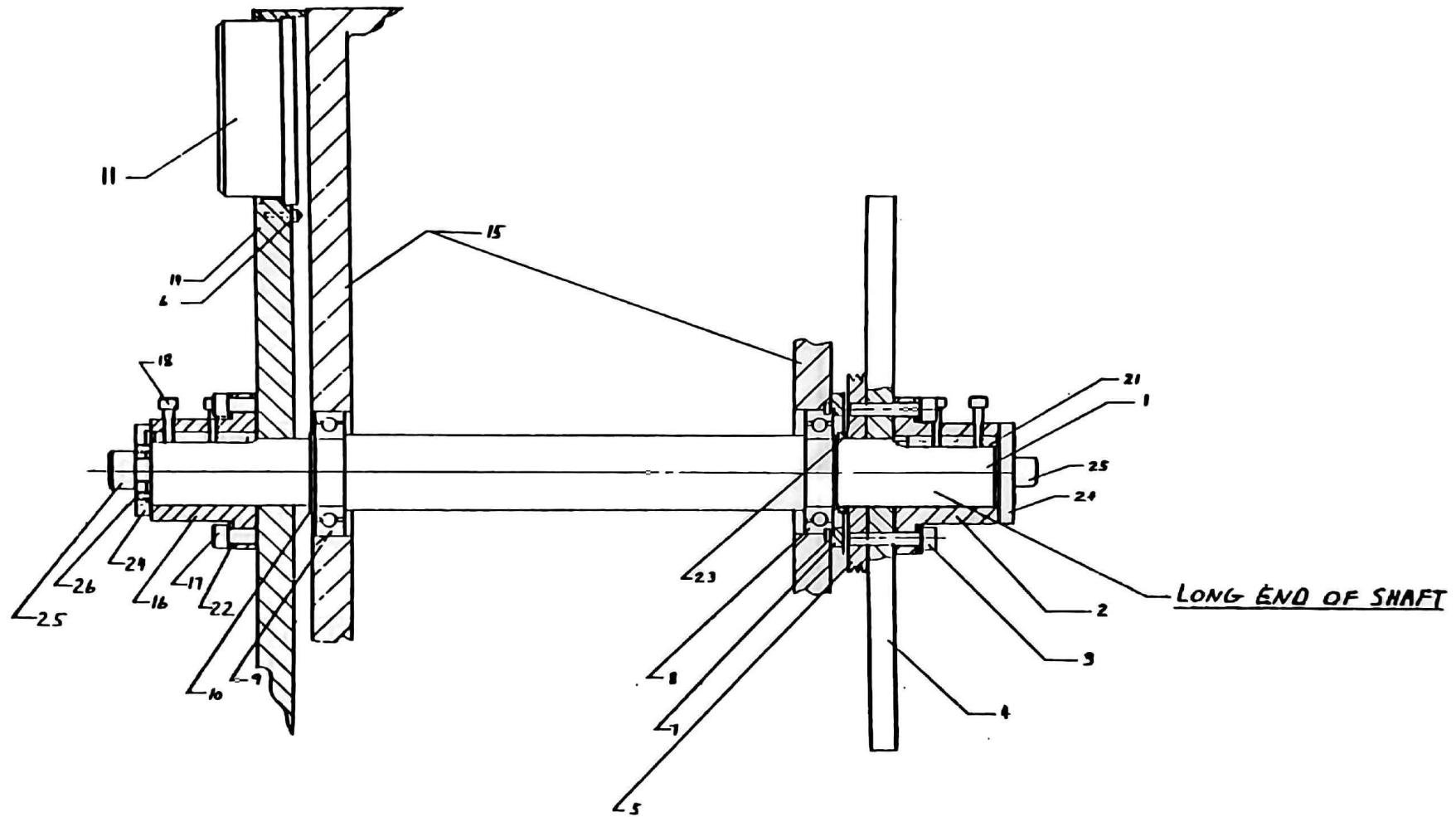
BAYER INDUSTRIES INC.

INDEX ASSEMBLY - Z

111-017

DISK ASSEMBLY 111-016

ITEM	PART	QUAN.
1	Shaft Disk 111-40-2	
2	Collar Shaft 111-138-1	
3	5/16 - 18 x 1 1/2 Socket Head Cap & 2 Lock Washer	4
4	Disk - Depth 111-48	
5	Pulley - Turret 111-78	
6	Pin - Turret 111-115-2	
7	Plate - Index 111-337	
8	Bearing Ball 4993L07 or MRC 107KSZZG 3-163	
9	Bearing Ball 993L07 or MRC 107KSZZ 3-164	
10	Retaining Ring 5100-137	2
11	Guide - M - Tool 111-460	12
12		
13		
14	Disc - Tool 111-317	
15	Head Ref.	
16	Collar - Shaft 111-138-2	
17	5/16 - 18 x 1 1/4 Socket Head Cap & Lock Washer	4
18	1/4 - 28 x 3/4 Socket Head Cap	4
19		
20		
21	Key Tool Disc 115-809	2
22	Spacer - Slot 111-207	
23	Spacer 111-199-1	
24	Washer 111-239	2
25	Shcs 1/2 - 20 x 3/4 with Nylock	2
26	1/4 - 28 Set Screw x 5/16 long, Nylock	4



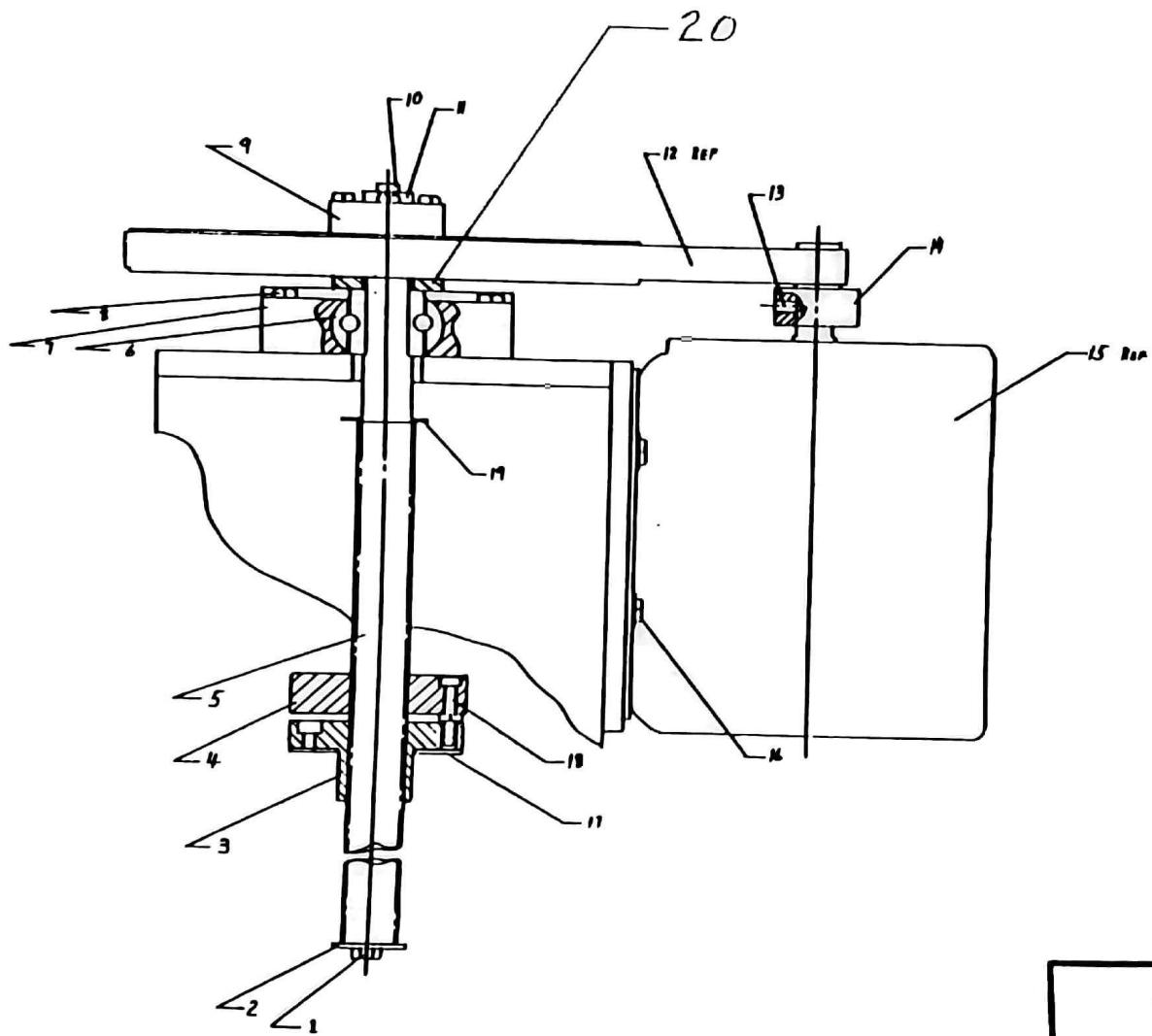
BAYER INDUSTRIES INC.

DISK ASSEMBLY

111-016

ELEVATOR ASSY 115-658

ITEM	PARTS	QUAN.
1	3/8-24 X 3/4 Hex Bolt	
2.	3/8 Flat Washer	
3	Nut-Ext. Elevator 116-260	
4	Nut Ext. Elevator 116-261	
5	Screw-Elevator 115-659-1	
6	Boston Bearing #A-AL204 3/4 06986 - 4T 3/4 Bore 3-125	
7	Block-Bearing 115-369	
8	5/16-18 X 2 Hex Nut & Washers	2
9	Dayco Poly-V-Belt Sheave For Acroloc 6J1060 & SH 3/4 Bushing 3-123	10
10	1/4-28 X 3/4 Long SHCS	
11	Spacer 111-199-24	
12	400 J6 Belt 3-126 For Acroloc 10	
13	Set Screw-Pulley 111-357	
14	Pulley-Elevator 111-356	
15	Elevator Motor Ref	
16	1/4-20 X 3/4 Long Hex Bolt & Flat Washer	4
17	Washer-Rubber 111-255	
18	1/4-20 X 1 1/4 SHCS & Jam Nut	
19	7/8 Flat Washer	
20	Spacer-Screw Elevator 117-111	



BAYER INDUSTRIES INC.

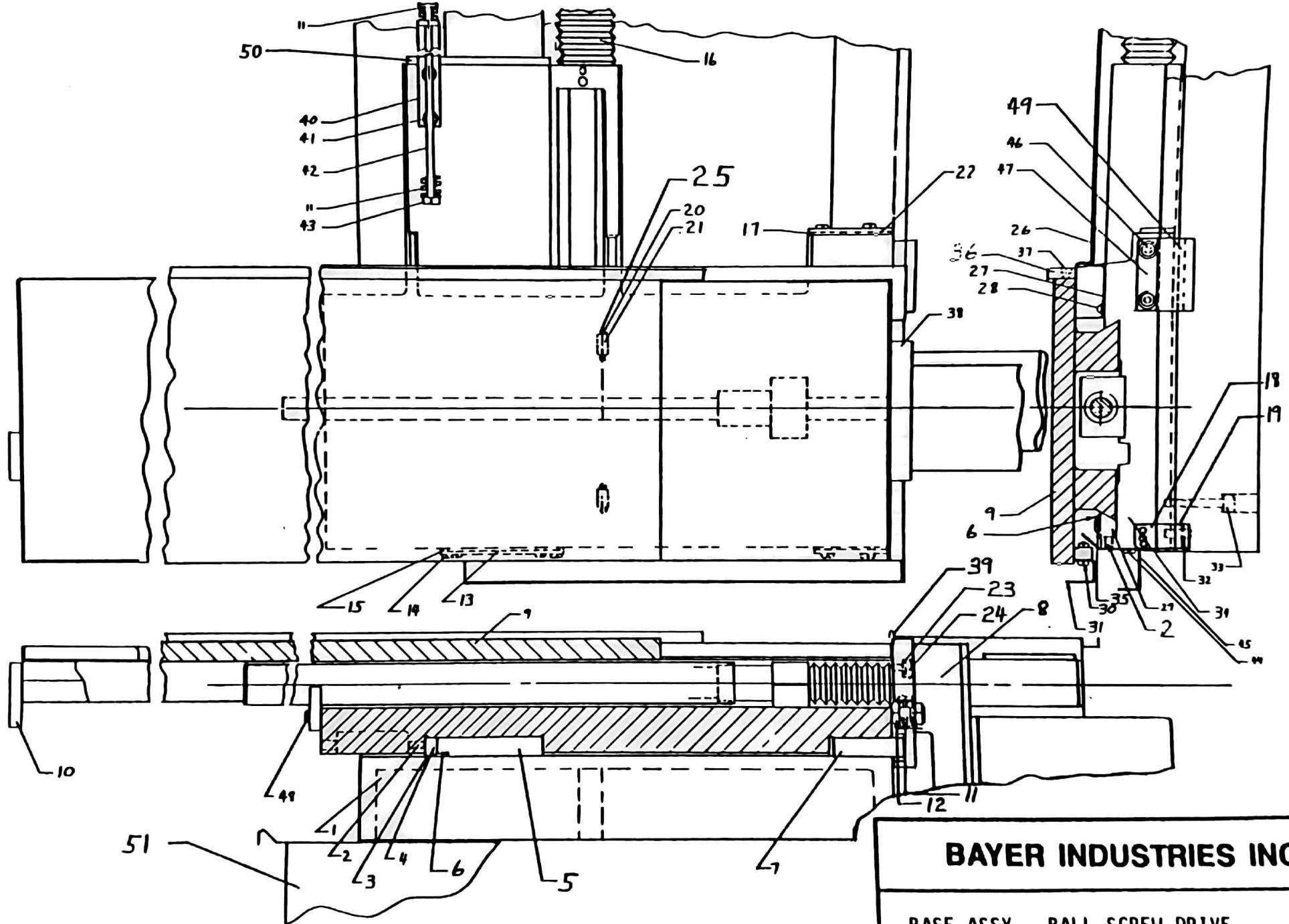
ELEVATOR ASSY

115-658

BASE ASSY - BALL SCREW DRIVE 115-287

ITEM	PARTS	QUAN.
1	Base Support 115-755	
2	3/8-24 Socket Screw X 1/2, Nylock	8
3	3/8-24 X 1 1/2 Hex Bolt "H"	
4	Gib-Guide 110-296	
5	Guide-Side 110-287	
6	Cover-Gib 115-212	
7	Support-Compound 110-286	
8	Drive Assy-X REF	
9	Table-Ball Screw 114-56	
10	Plate-Table Stop 114-63	
11	Spring-Compression 110-116-8	2
12	5/8-11 X 1 1/12 Hex Bolt & Nut	2
13	Insert-Wiper 115-213	
14	1/4-20 X 3/4 Hex Bolt	8
15	Wiper Way 110-429	
16	Drive Assy-Y REF	
17	Insert-Support Wiper 115-265	
18	Guide-Front Anti lift 115-753	
19	Shoe-Front Anti Lift 115-754	
20	Pin Lever 110-153-1	2
21	Roller-Lube 110-291-1	2
22	Wiper-Support 115-264	2
23	Spacer 111-199-22	2
24	1/2-20 X 1 1/4 Long Bolt	2
25	Spring-Compression 110-116-6	
26	Guard-Way Cover Front 115-946	
26	Guard-Way Cover Back 115-945	

ITEM	PARTS	QUAN.
27	Guard-Ball Screw Table 114-65	
28	#10-32 RHMS	4
29	Gib-Table 110-283	
30	1/4-20 X 3/4 Hex Bolt & Lock Washer & Nut	2
31	Guard-Front 114-62	
32	1/2 X 1.0 Dowell Pin	2
33	1/2-20 X 2.0 SHCS & Lock Washer	16
34	Compound 16Y 115-268	
35	3/8-24 X 1 3/4 Hex Bolt "H"	
36	Guide-X Axis 114-58	
37	1/4-28 X 1/2 SHCS	8
38	Plate-X Drive 114-59	
39	Cover-X Motor 115-943	
40	Bracket-Limit Bar 114-45-2	
41	3/8 - 24 FHSS	2
42	Limit Bar-Y 114-44-2	
43	5/8-18 Hex Nut	
44	3/8-24 X 1/2 Hex Bolt & Lock Washer	3
45	Guard-Compound 114-66	
46	3/8-16 X 1.0 SHCS	2
47	Guide-Anti Lift 115-260	
48	3/8-16 X 1.0 Hex Bolt & Lock W.	2
49	Shoe-Anti Lift 115-128	
50	Wiper-Back 115-263	
51	Cabinet-Modular 116-118	



BAYER INDUSTRIES INC.

BASE ASSY - BALL SCREW DRIVE

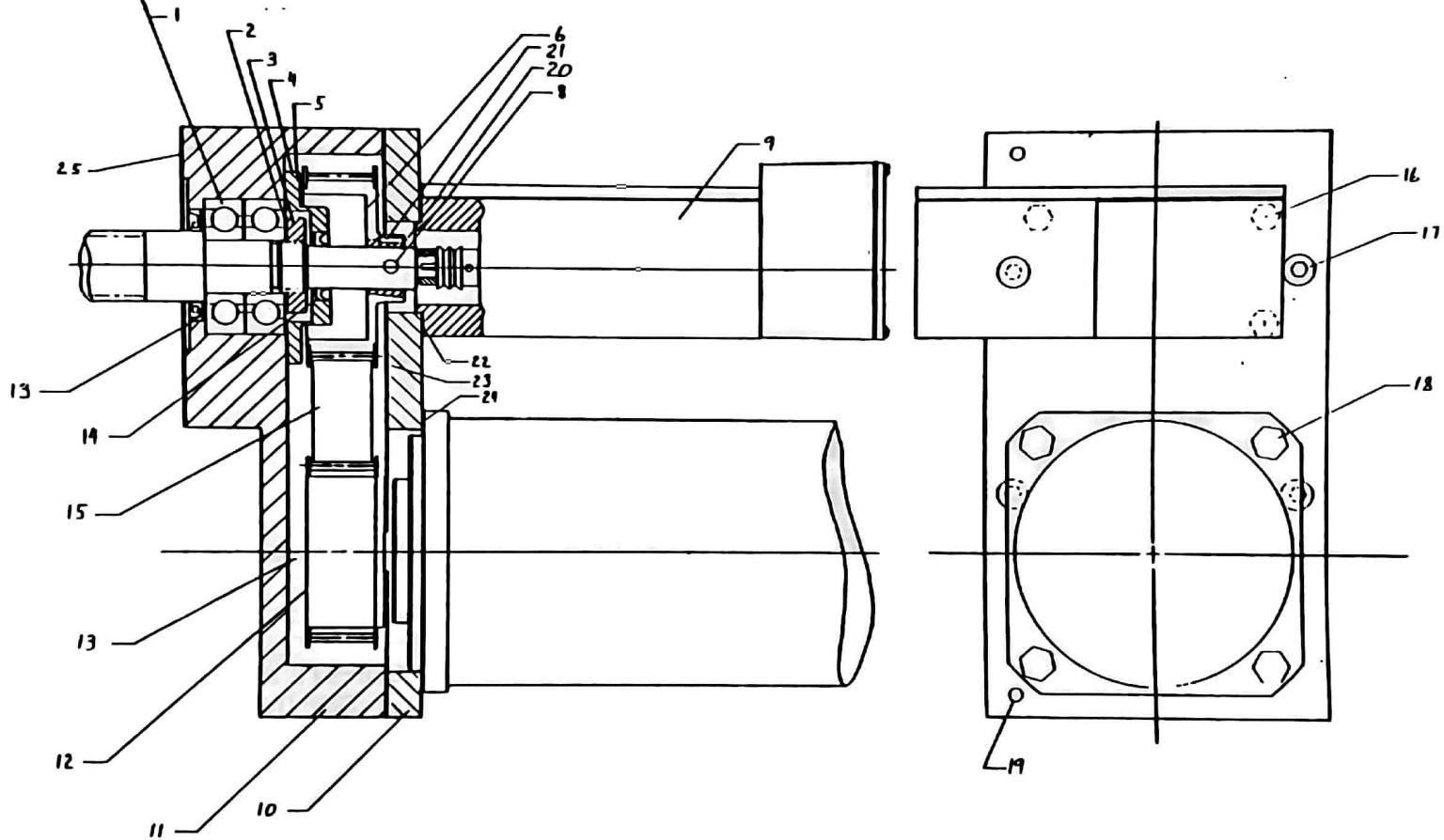
115-287

DRIVE ASSEMBLY #5 MOTOR 115-319

ITEM	PARTS	QUAN.
1	Bearing-Ball MRC #7305 PDS 3-168	2
2	Lock Washer #W05 3-172	
3	Lock Nut #N05 3-171	
4	Retainer-Bearing 115-189	
5	1/4-20 X 1/2 Long FHMS	3
6	Pulley X-Y Ball Screw GN 115-250	
7		
8	ROLL PIN 1/4 DIA x 1.0 LONG	
9	Resolver Drive 115-318	
10	Cap - #5 Drive 115-305	
11	Housing-Model 5 Motor 115-304	
12	Clutch 115-176-2	
13	Seal - Shaft NATIONAL #471766 3-173	
14	Seal-Shaft CR #7418 or National #40579 3-173	
15	Belt-Gear Browning #210L100 3-170	
16	1/4-20 Hex Bolt X 1.0 Long	3
17	3/8-16 SHCS X 3/4 Long	4
18	5/16-18 Hex Bolt X 1.0 Long	4
19	1/4 DIA Dowel Pin X 3/4 Long	2
20	Bushing Taper Lock 115-813	
21	1/4-20 x 3/8 Long Socket Set Screw	3
22	Gasket - Resolver Drive 116-672	
23	Gasket - Cap 116-673	
24	Gasket - Motor 116-674	
25	Gasket - Drive 116-671	

Install Races as shown

Pack 30% full with
Mobil Grease BRB Life Time



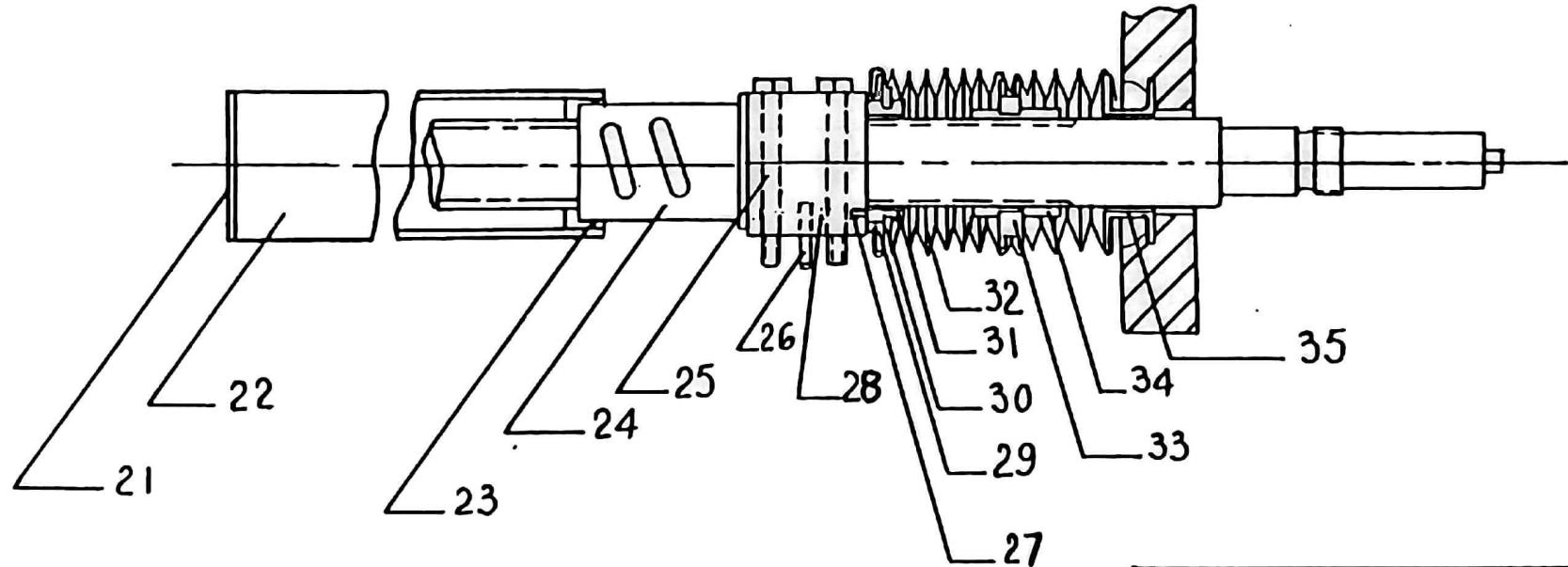
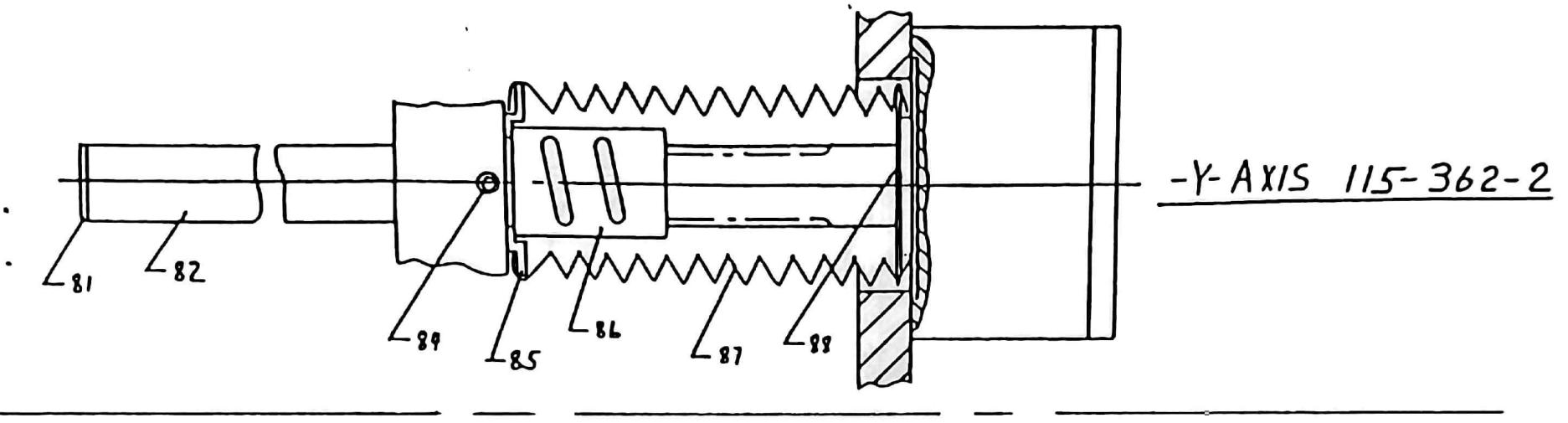
BAYER INDUSTRIES INC.

DRIVE ASSEMBLY #5 MOTOR

115-319

DRIVE ASSEMBLY -X-Y 115-362

ITEM	PARTS USED FOR X-AXIS 115-362-1	QUAN	ITEM	PARTS USED FOR Y-AXIS 115-362-2	QUAN
21	CAP-TUBE 114-72-3		81	CAP-TUBE 114-72-2	
22	X TUBE-GE 115-193		82	CYLINDER-DRILL 110-92-13	
23	SEAL-O-RING 2-030		83		
24	BALL SCREW ASS-X AXIS 114-60		84	1/4-28 X 1/2 NYLOC SET SCREW AND PLUG	
25	3/8-16 X 2 3/4 HEX BOLT HEAT TREATED	4	85	RETAINER-16Y FRONT 115-261	
26	1/4 DIA X 1.0 LONG DOWEL PIN		86	BALL SCREW ASS-Y AXIS 114-61	
27	1/4-28 X 1/2 LONG NYLOCK SET SCREW	2	87	Y-COVER 115-210-5	
28	FLANGE-BALL NUT X 117-002		88	RETAINER-Y BEARING 115-262	
29	RETAINER-X LEFT 116-708				
30	RING-RETAINING TRU-ARC #5100-150				
31	LOCK-X BALL SCREW 115-985				
32	COVER-BALL SCREW 115-210-5	2			
33	RETAINER X-Y CENTER 116-709				
34	BEARING-X COVER 115-205				
35	RETAINER-X RIGHT 116-710				



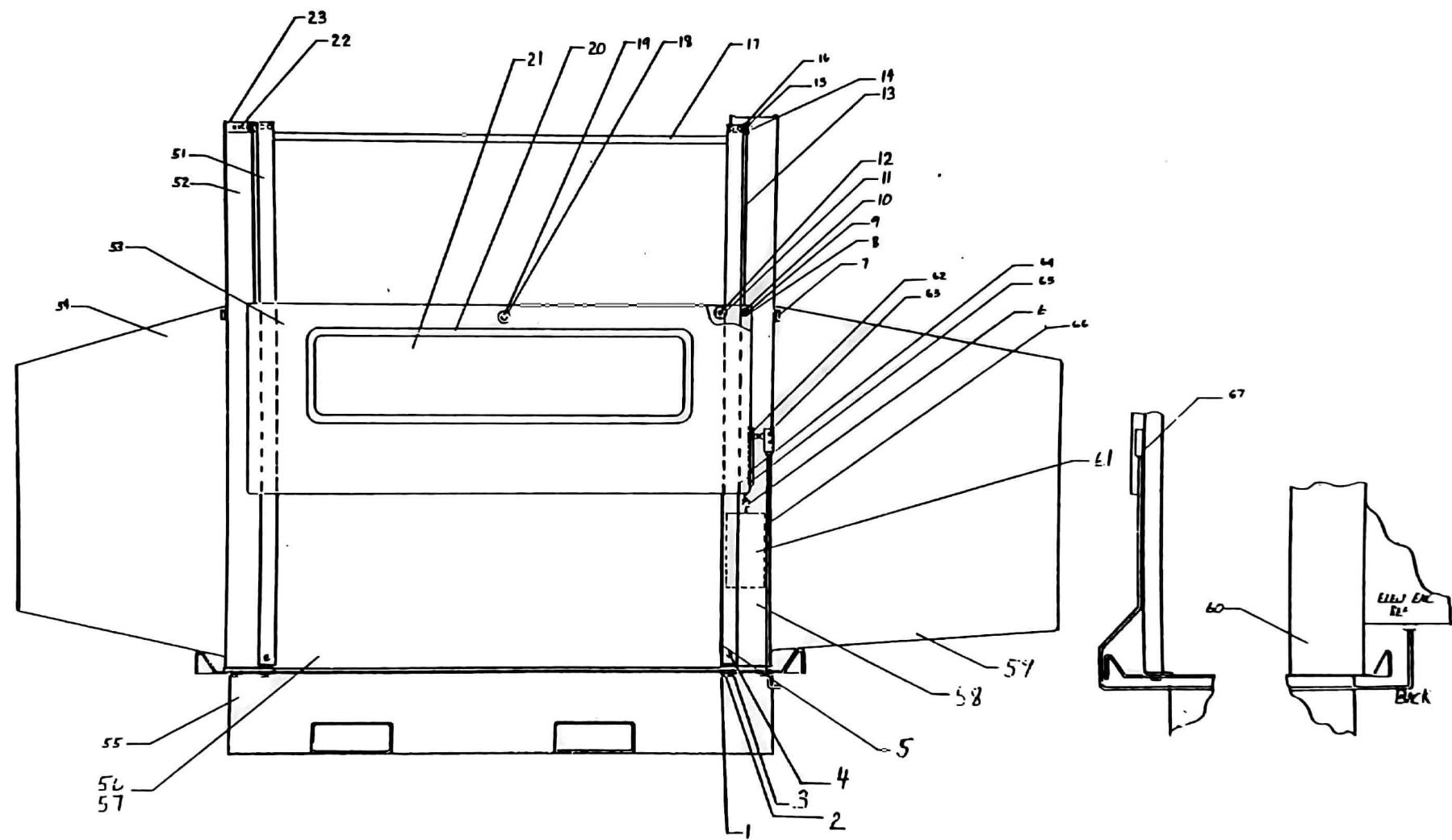
BAYER INDUSTRIES INC.

DRIVE ASSEMBLY - X - Y

115-362

ENCLOSURE-HI RISE 116-945

ITEM	PART	QUAN	ITEM	PARTS COMMON TO ACROLOC 10 & 100	QUAN
1	STATO-SEAL PARKER #600-.375 (3-883)	4	51	RAIL-DOOR 116-957	2
2	3/8-16 X 1.0 LONG HEX BOLT	4	52	CORNER-LEFT ENCLOSURE 116-946	
3	1/2-20 X .50 LONG SOCKET SET SCREW	8	53	DOOR-CHIP ENCLOSURE 116-955-1	
4	1/4-20 X 1/2 LONG SOCKET FLAT HEAD	18	54	ENCLOSURE-LEFT 116-950	
5	GUIDE-FRONT PANEL 115-457	4	55	CABINET-MODULAR (REF) 116-118	
6	#10-24 EYE BOLT	2	56	PANNEL-LOWER 116-150	
7	PLUG-COVER 115-110-1	4	57		
8	BUSHING-ROLLER 115-451	2	58	CORNER-RIGHT ENCLOSURE 116-947	
9			59	ENCLOSURE-RIGHT 116-951	
10	ROLLER-RAIL 115-450	2	60	ANGLE-CHIP ENCLOSURE 115-940	
11	ROLLER-VERTICAL 115-456	4	61	COUNTER WEIGHT 115-449-1	
12	BOLT-ROLLER 115-76-2	4	62	RAM-DOOR SWITCH 116-992	
13			63	SWITCH ROLLER 300-633	
14	7/16-20 X 1 1/4 SHCS & NUT		64	1/4-20 FLAT HEAD SCREW	2
15	ROLLER-SHIELD 115-77-3	2	65	BACK-RAM DOOR SWITCH 116-993	
16	BAR-COUNTER WEIGHT 115-453	2	66	1/2 EMT CONDUIT DOOR SWITCH 116-995-1	
17	BRACE-CHIP ENCLOSURE 116-954		67	SPACER-ROLLER DOOR SWITCH 116-994	
18	3/8-16 X 3/4 LONG HEX BOLT				
19	PLASTIC BALL, AMER. DRILL BUSHING #45080 (3-139)		ITEM	PARTS COMMON TO ACROLOC 1000	QUAN
20	LOCKING CHANNEL ATLANTIC #X-5414 AND X-5415 10' LONG (3-882)		51	RAIL-EXTENDED DOOR 116-958	2
21	WINDOW-CHIP ENCLOSURE 116-956		52	CORNER-EXTENDED LEFT ENC 116-948	
22	PIN-DOOR ROLLER 116-766		53	DOOR-CHIP ENCLOSURE 116-955-2	
23	CAP-CORNER 116-720		54	ENCLOSURE-EXTENDED LEFT 116-952	
			55	CABINET-EXTENDED-Y 116-329	
			56	PANEL-EXTENDED LOWER 116-332	
			57		
			58	CORNER-EXT RIGHT ENC 116-949	
			59	ENCLOSURE-EXT RIGHT 116-953	
			60	ANGLE-EXTENDED ENCLOSURE 116-333	
			61	COUNTER WEIGHT 115-449-2	
			62	RAM-DOOR SWITCH 116-992	
			63	SWITCH ROLLER 300-633	
			64	1/4-20 FLAT HEAD SCREW	
			65	BACK-RAM DOOR SWITCH 116-993	
			66	1/2 EMT CONDUIT DOOR SWITCH 116-995-2	
			67	SPACER-ROLLER DOOR SWITCH 116-994	



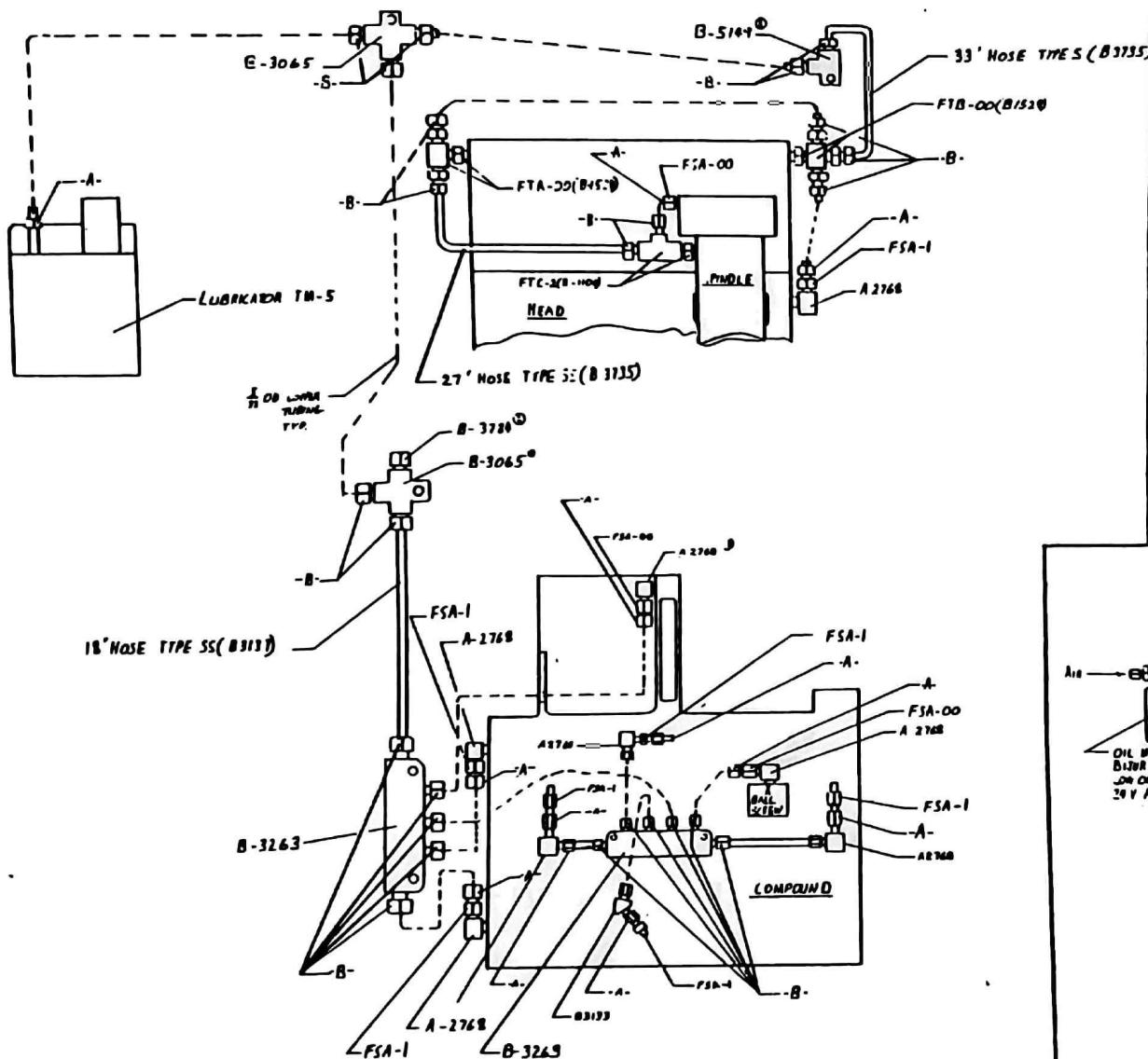
BAYER INDUSTRIES INC.

ENCLOSURE-HI RISE

116-945

LUBRICATION SYSTEM 115-651

QUAN	DESCRIPTION	BIJUR PART#
<u>1</u>	<u>Lubricator - TM 5</u>	<u>D-2990</u>
<u>3</u>	<u>Meter Unit FSA-00</u>	<u>B-1620</u>
<u>7</u>	<u>Meter Unit FSA-1</u>	<u>B-1084</u>
<u>1</u>	<u>Meter Unit FTB-00</u>	<u>B-1528</u>
<u>1</u>	<u>Meter Unit FTC-2</u>	<u>B-1100</u>
<u>1</u>	<u>Meter Unit FTA-00</u>	<u>B-1524</u>
 <u>2</u>	<u>Junction - 5 way</u>	<u>B-3263</u>
<u>1</u>	<u>Junction - 2 way</u>	<u>B-5149</u>
<u>2</u>	<u>Junction - 3 way</u>	<u>B-3065</u>
<u>1</u>	<u>Junction - 6 way</u>	<u>B-3264</u>
 <u>1</u>	<u>18" Hose Type SS</u>	<u>B-3137</u>
<u>1</u>	<u>27" Hose Type SS</u>	<u>B-3533</u>
<u>1</u>	<u>33" Hose Type SS</u>	<u>B-3735</u>
 <u>11</u>	<u>Compression Nut</u>	<u>B-1095</u>
<u>25</u>	<u>Compression Bushing</u>	<u>B-1371</u>
<u>36</u>	<u>Sleeve</u>	<u>B-8272</u>
<u>2</u>	<u>Closure Plug</u>	<u>B-3784</u>
 <u>5</u>	<u>Tubing Clip</u>	<u>A-2435</u>
<u>8</u>	<u>Elbo 90°</u>	<u>A-2768</u>
<u>1</u>	<u>Elbo 45°</u>	<u>B-3133</u>



Oil Mist Unit
 Bijur #D3694 With
 Low Oil Switch
 and 24V AC Coil

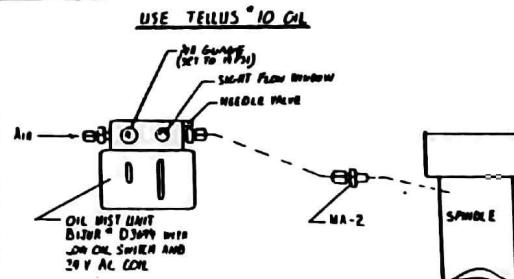
ADJUSTMENT

- Set Air Pressure to 14PSI

- Needle Valve:

- Turn off
- Turn on until first drop is observed in sight flow window, then turn one revolution CCW

- Air Mist spindle 1 hour and confirm presence of oil between spindle and spindle column before spindle is turned on



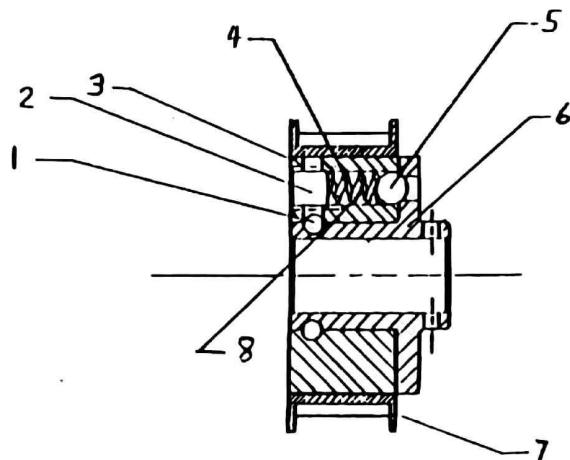
OPTIONAL OIL MIST SYSTEM

BAYER INDUSTRIES INC.

LUBRICATION SYSTEM

ITEM	PART	QUAN.
1	1/4 DIA BALL	17
2	SET SCREW-SLIP CLUTCH 115-307	3
3	RING-CLUTCH 115-177-2	
4	SPRING-COMPRESSION 110-116-26	3
5	3/8 DIA BALL	3

P/N	115-176-1	115-176-2	115-176-3	115-176-4	115-176-5
USE	GN (Z)	GN (X-Y)	ACTRON (Z)	ACTRON (X-Y)	AUTO ELEVATE
ITEM #6	HUB-CLUTCH 115-316	HUB-CLUTCH #5 115-316	HUB-CLUTCH 115-178	HUB-CLUTCH 115-178	HUB-CLUTCH 115-316
#7	PULLEY-Z CLUTCH 115-179M	PULLY-XY MOTOR 115-386	PULLY-Z-CLUTCH 115-179M	PULLEY-X-Y-MOTOR 115-560 2	PULLY-AUTO ELEV-Z 116-180
#8				110-116-29 SPRING 3 REQ + 3 110-116-26	110-116-29 SPRING 3 REQ + 3 110-116-26



TORQUE: 90 to 110 IN-POUNDS FOR GN 115-176-1, 115-176-2, 115-176-3, 115-176-5

TORQUE: 120 to 140 IN-POUNDS FOR 115-176-4

BAYER INDUSTRIES INC.

CLUTCH

115-176

OPTIONS

6.0

P/N

1	#10-32 X 1/4 LONG RHMS
2	COVER-BOTTOM 116-680-1
3	COVER-CENTER 116-681-1
4	COVER-TOP 116-686
5	BAR-Y COVER TOP 116-684
6	GUARD-COMPOUND 116-688
7	BAY-Y COVER BOTTOM 116-687
8	1/4-20 X 3/8 LONG RHMS

QUAN

10

2

SERIES 10
MINIMUM HEIGHT,
STORED TOOL TO
TABLE

2

SPINDLE

3

SERIES 100
MIN HEIGHT, STORED
TOOL TO TABLE

2

STORED
TOOL
SERIES 100

STORED
TOOL
SERIES 10

6

7

8

BAYER INDUSTRIES INC.

COVER-BACK ASSY

116-685