



MAINTENANCE AND PARTS MANUAL



MANDREL DRAW BENDER MODEL: MB-350

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Book 2 of 2

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Table of Contents

SAFETY PRECAUTIONS	3
LUBRICATION AND MAINTENANCE	5
Gear Box Oil	5
Hydraulic System Maintenance	6
HYDRAULIC SCHEMATIC	7
Hydraulic Components	8
ELECTRICAL SCHEMATIC	9
Trouble Shooting	12
CART ASSEMBLY PARTS DIAGRAM	13
STANDARD POWER UNIT ASSEMBLY PARTS DIAGRAM	14
PRESSURE DIE ASSIST POWER UNIT ASSEMBLY PARTS DIAGRAM	15
CONTROL BOX ASSEMBLY PARTS DIAGRAM	16
GEAR BOX ASSEMBLY PARTS DIAGRAM	17
BASE PLATE ASSEMBLY PARTS DIAGRAM	18
LEAD SCREW ASSEMBLY PARTS DIAGRAM	19
DRAG LINK BRACE ASSEMBLY PARTS DIAGRAM	20
PRESSURE DIE EXTEND CYLINDER ASSEMBLY PARTS DIAGRAM	21
SPINDLE ASSEMBLY PARTS DIAGRAM	22
SWING ARM ASSEMBLY PARTS DIAGRAM	23
STAND PRESSURE DIE ASSEMBLY PARTS DIAGRAM	24
PRESSURE DIE ASSIST ASSEMBLY PARTS DIAGRAM	25
DRAG LINK ASSEMBLY PARTS DIAGRAM	26
INDEX TABLE ASSEMBLY PARTS DIAGRAM	27
MANDREL EXTRACT ASSEMBLY PARTS DIAGRAM	28
INDEX CARRIAGE ASSEMBLY PARTS DIAGRAM	29
Parts List	30

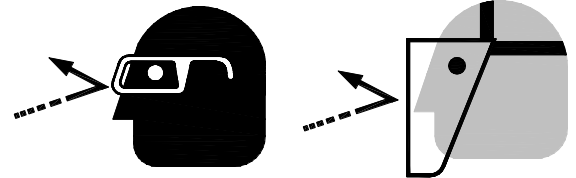


SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.



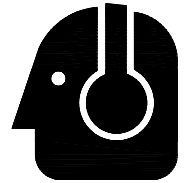
PROTECT EYES

Wear safety glasses or suitable eye protection when working on or around machinery.



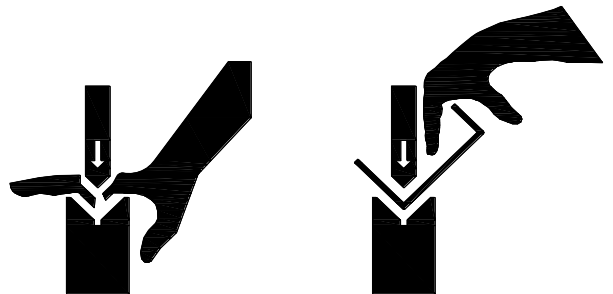
PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protective devices such as ear muffs or earplugs to protect against objectionable or uncomfortable loud noises.



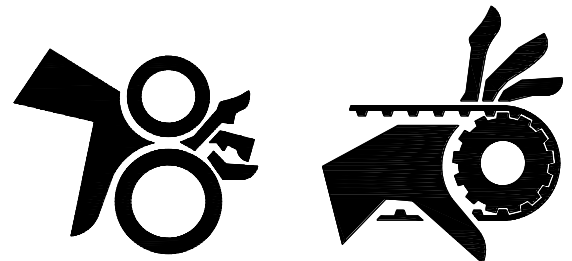
BEWARE OF CRUSH HAZARD

NEVER place your hands, fingers, or any part of your body in the die area of this machine. Be aware of the area on either side of the dies for crush points created by material movement.



BEWARE OF PINCH POINTS

Keep hands and fingers away from the drive mechanisms, cylinders, ratchets, and other moving linkage while the machine is in operation.





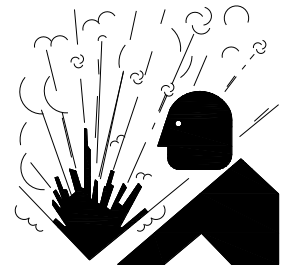
KEEP CLEAR OF MOVING OBJECTS

Always be aware of the position of the material and the swing area in which the material will travel. The material will swing with significant force. This swing area will create pinch points and the force of the material movement may cause serious bodily injuries.



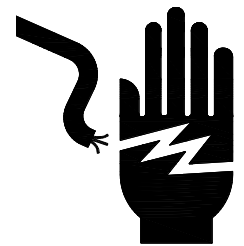
HYDRAULIC HOSE FAILURE

Exercise **CAUTION** around hydraulic hoses in case of a hose or fitting failure.



HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS. DO NOT assume the power to be off.
FOLLOW PROPER LOCKOUT PROCEDURES.





SAFETY PRECAUTIONS



Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.

REMEMBER: Your personal safety is your responsibility.



WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY

1. **Only trained and qualified personnel can operate this machine.**
2. **Make sure guards are in place and in proper working order before operating machinery.**
3. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
4. **Keep work area clean.** Cluttered areas invite injuries.
5. **Overloading machine.** By overloading the machine you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
6. **Dressing material edges.** Always chamfer and deburr all sharp edges.
7. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.
8. **Use the right tool for the job. DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.
9. **Dress appropriate. DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
10. **Use eye and ear protection.** Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.



11. **Do not overreach.** Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
12. **Stay alert.** Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
13. **Check for damaged parts.** Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
14. **Observe work area conditions.** **DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.
15. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
16. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.
17. **DO NOT operate machine if under the influence of alcohol or drugs.** Read warning labels on prescriptions. If there is any doubt, **DO NOT** operate the machine.
18. **DO NOT** touch live electrical components or parts.
19. **Turn off** power before checking, cleaning, or replacing any parts.
20. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.
21. **DO NOT** bypass or defeat any safety interlock systems.
22. Keep visitors a safe distance from the work area.



LUBRICATION AND MAINTENANCE



WARNING: Make sure the electrical disconnect is OFF before working on the machine.

Maintenance should be performed on a regular basis by qualified personnel.

Always follow proper safety precautions when working on or around any machinery.

Daily

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.

Weekly

- Clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.
- Check periodically for leaks. If a leak is detected, stop operation and repair the leak. On very hot days, gear oil may drip from the breather; this is normal expansion of the oil.
- Be sure to keep the slide blocks and lead screw lubricated with light hydraulic oil or equivalent.
- Check for any worn or damaged parts and replace immediately.

Quarterly

- There are two grease zerks on the machine that feed the main spindle bearing. Grease these zerks every three months with 3 - 4 pumps from a standard grease gun.



Note: *Proper maintenance can increase the life expectancy of your machine.*

Gear Box Oil

The main Planetary Gear Box is lubed with 80W90 gear lube. Check and replace the gear lube every 3 years or 200hrs of continuous use.



Hydraulic System Maintenance

This machine utilizes a self-contained hydraulic power unit; it is used to supply hydraulic pressure to 3 individual hydraulic circuits, the clamp die, mandrel extraction shaft and the pressure die. The system pressure is set to 2800 psi.

3000 psi is the maximum output of this unit and is not recommended as the operating pressure. Pressure can be adjusted by loosening the outer locknut and rotate center screw until desired pressure is reached.

There are two gauges; one for system pressure and one for clamp die pressure. The only hydraulic circuit that is adjustable is the clamp die, adjust pressure by loosening the locknut and rotate center screw until desired pressure is reached.

The clamp die pressure cannot exceed the system pressure.



Figure 2 System pressure gauge Figure 3 Clamp Die Pressure Gauge



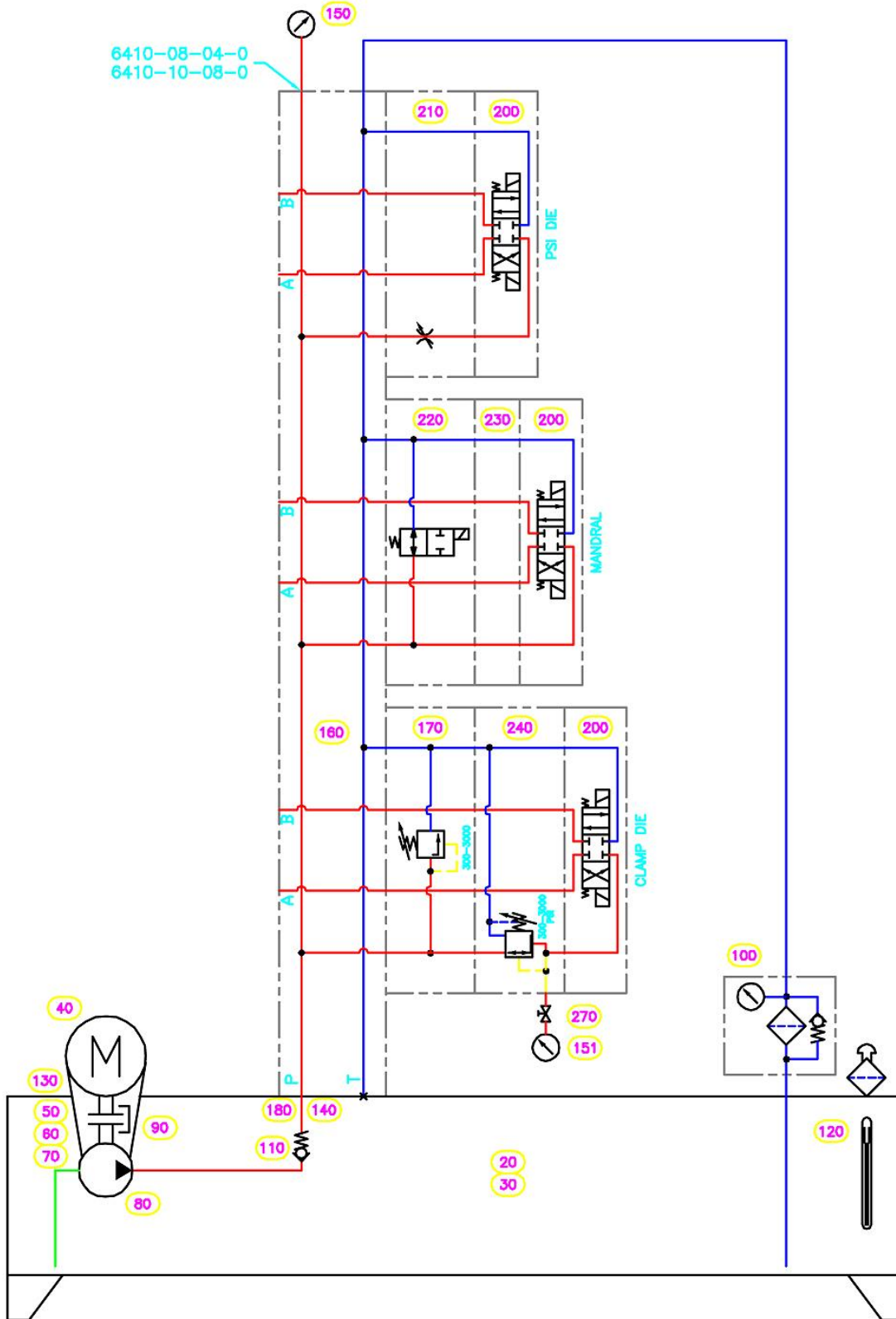
Figure 4 Pressure adjusting screws

- Check fluid level periodically, Change only when filter gauge indicator is in the red. If the hydraulic motor overloads, it can be reset inside of the main cabinet.

⚠ **IMPORTANT:** NEVER OPERATE THE MACHINE WITH DAMAGED OR LEAKY HOSES AND/OR FITTINGS.



HYDRAULIC SCHEMATIC



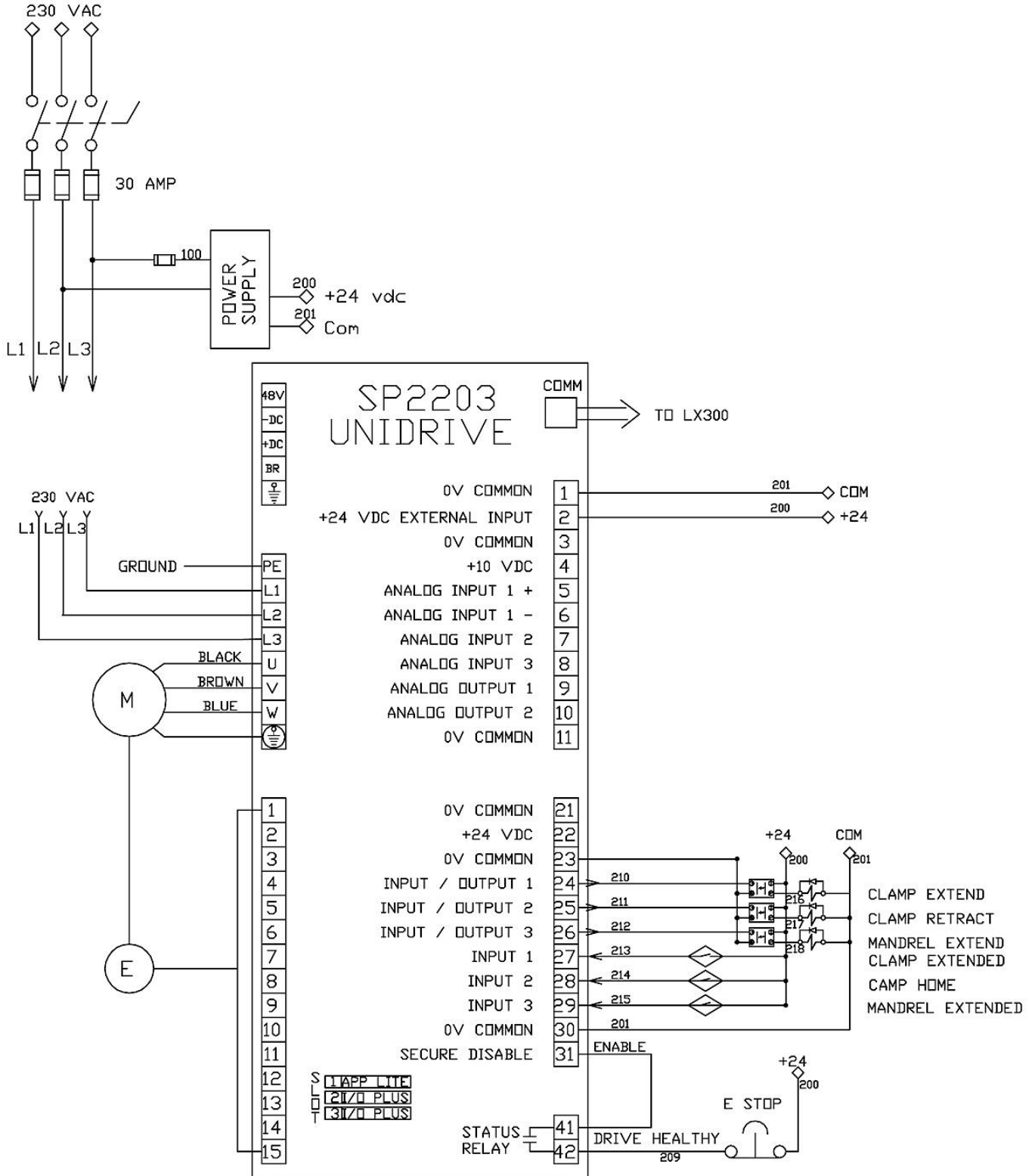


Hydraulic Components

Item	Part Number	Description	Qty.
20	R978812487	Reservoir 5PUA40-15 STD.	1
30	R978813462	Reservoir Cover 5 Gal Opt 2 3+5hp Rev1	1
40	R978805330	Motor B5H1800R184TCNFT230/460/3/60 TEFC	1
50	R978802995	Coupler HUB L095 Bored 1-1/8x1/4 key 33-20	1
60	R978807566	Coupler HUB L095 SPL SAE A 33-20	1
70	R978889101	Coupler Insert L090/095 Hytel	1
80	9510290015	Hydraulic Pump AZ-P-F-12-004-RRR12MB	1
90	R978889498	Bell Housing VE6026 182-256 SAE A2 4B 33-15B	1
100	R978002577	Filter Head Assembly RFMMM90BC15E2.0/12T-BRI	1
100A	0090R015MM	Replacement Filter Element	
110	R978840148	Check Valve RV12-01.X/12 00705837	1
120	R978905853	Sight Glass CS3615-200236 Lube Devices	1
130	R978810409	Gasket Bell Housing 182 Frame	1
140	R978812549	Gasket Reservoir 5gal.	1
150	R978886009	Press Gauge 2 1/2/0000PUA30-11A-4 SAE	1
151	R978837839	Pressure Gauge GSV 2 1/2/0000PUA30-11A SAE	1
160	R978813582	Hydraulic Manifold D03 3 ST AL AGA8853	1
170	R900564564	Pressure Relief Valve – Main, ZDBK 6 VP2-1X/210V	1
180	R978800064	Bulkhead Union 8S 37 PUA20-07-00	1
200	R900561278	Directional Valve 4WE6E6X/EG24N9K4	3
210	7472857530	Flow Control Block Z2FG6PY2-1X/V/60	1
220	R978706654	2 Way Normal Closed Valve SV10-25-S030-N024DG	1
230	R978706653	Spacer Plate Kit 6299021 Buna	1
240	R900433350	Pressure Relief Valve – Die Clamping, ZDR 6 DP2-4X/210YM/12	1
250	R900004823	Plug Z45 A GDM2012 RE-BR *BG	3
260	R900011039	Plug Z45 B GDM2012 RE-SW *BG	4
270	R978800004	Valve DV08-01.X/12 (00705022)	1

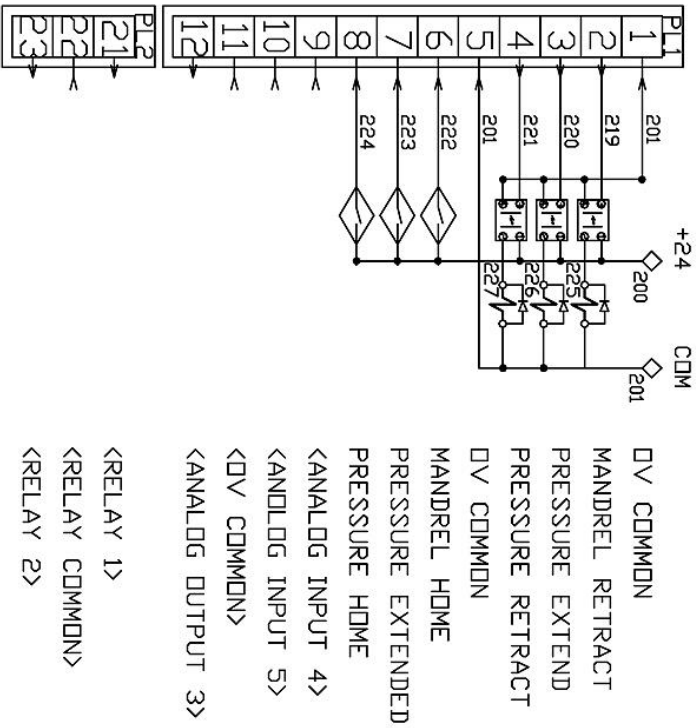


ELECTRICAL SCHEMATIC

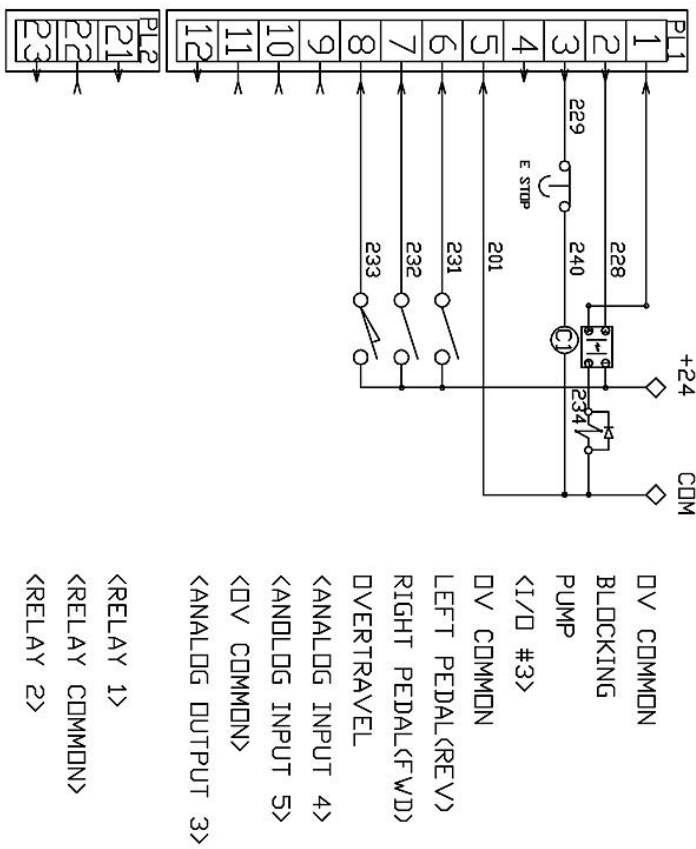


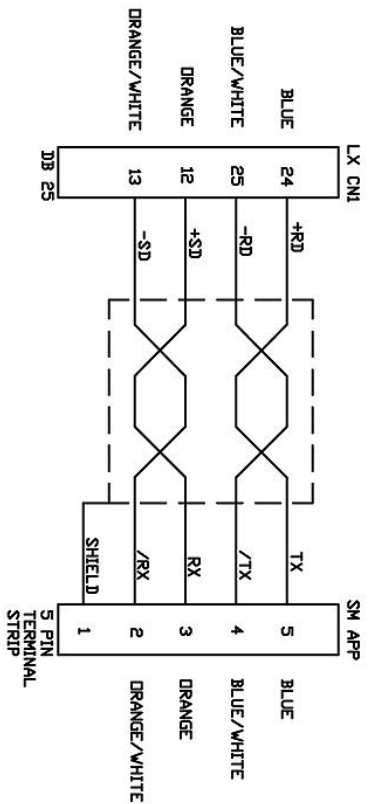
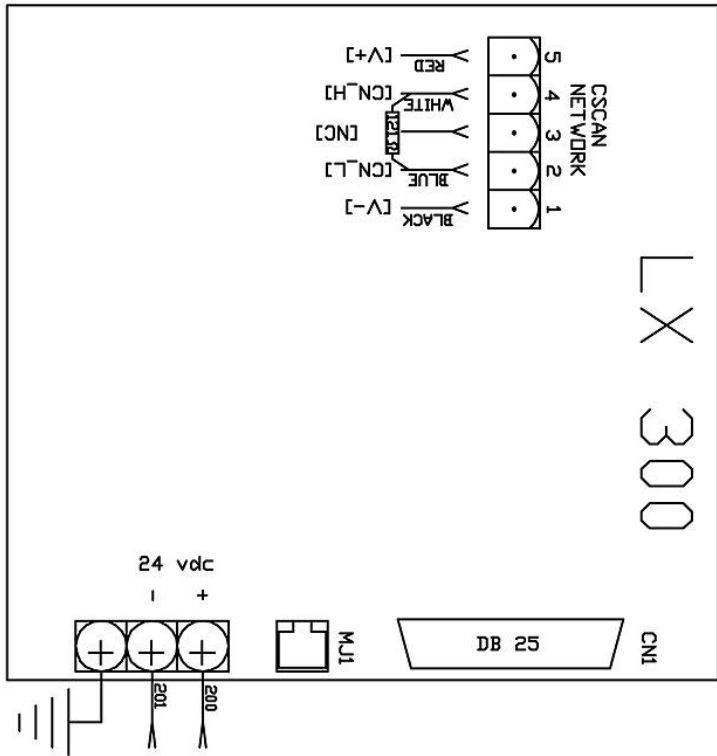


UNDRIVE SP - SLOT 2
SM I/O PLUS



UNDRIVE SP - SLOT 3
SM I/O PLUS





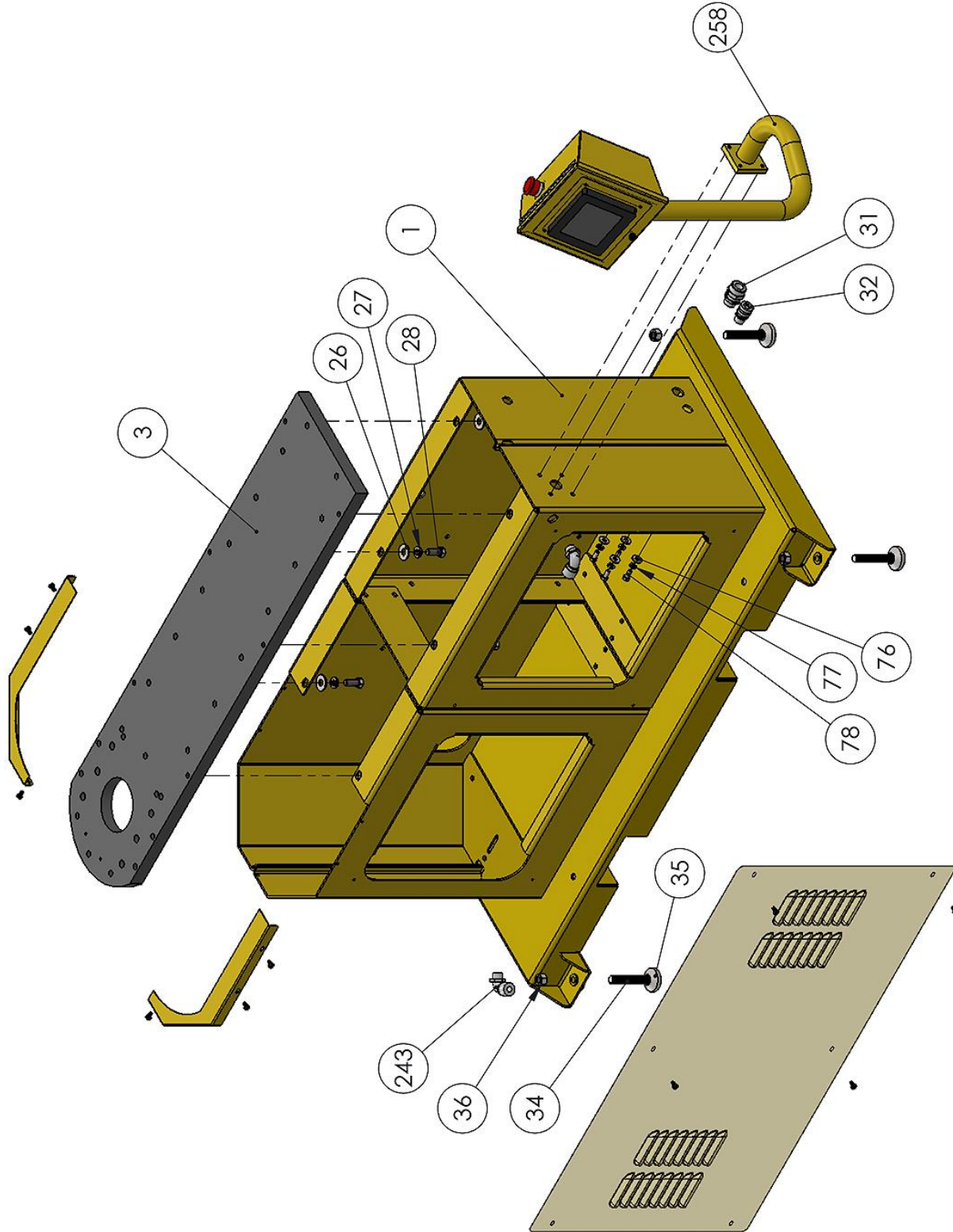


Trouble Shooting

Problem	Causes
Wrinkles on the inside of the bend	Wiper die has too much Rake
	Wiper die is not close enough to tangent
	Not enough pressure on pressure die
	Wrong size mandrel
	Clamp die slipping
	Too much wiper die lube
	Wall thickness of tubing doesn't match mandrel size
Clamp Die Slipping	Not enough pressure
	Tube too small
	Serrations/ knurling worn out on clamp die
Humps on the outside of the bend	Mandrel is too far forward
Flat on the outside of the bend	Mandrel is too far back
Machine doesn't move	Hydraulic conditions not met (green/red indicator lights)
	Communication Failure
Mandrel Lockup	Not enough lube on mandrel
	Pressure die set to loose
	Clamp die slipped
	Mandrel is too large for the tube being bent.
Hydraulics do not work	Hydraulic pump is off
	Overload tripped
	Pressure set too low
	Mechanical parts are jammed up
Machine Overloads	Tubing wall thickness is to heavy
	Bend speed is to high
	Too much pressure on the die
	Mandrel too large

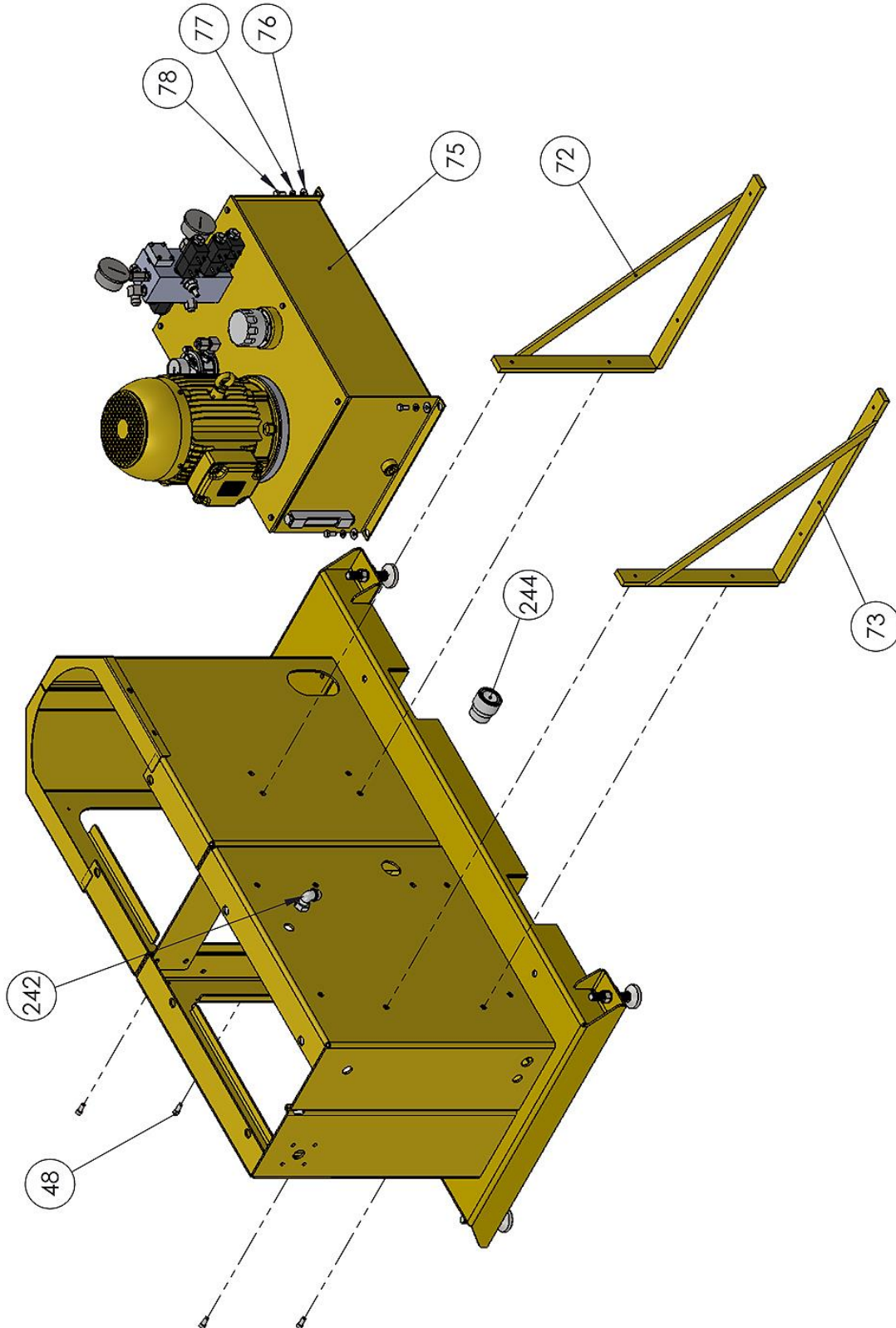


CART ASSEMBLY PARTS DIAGRAM



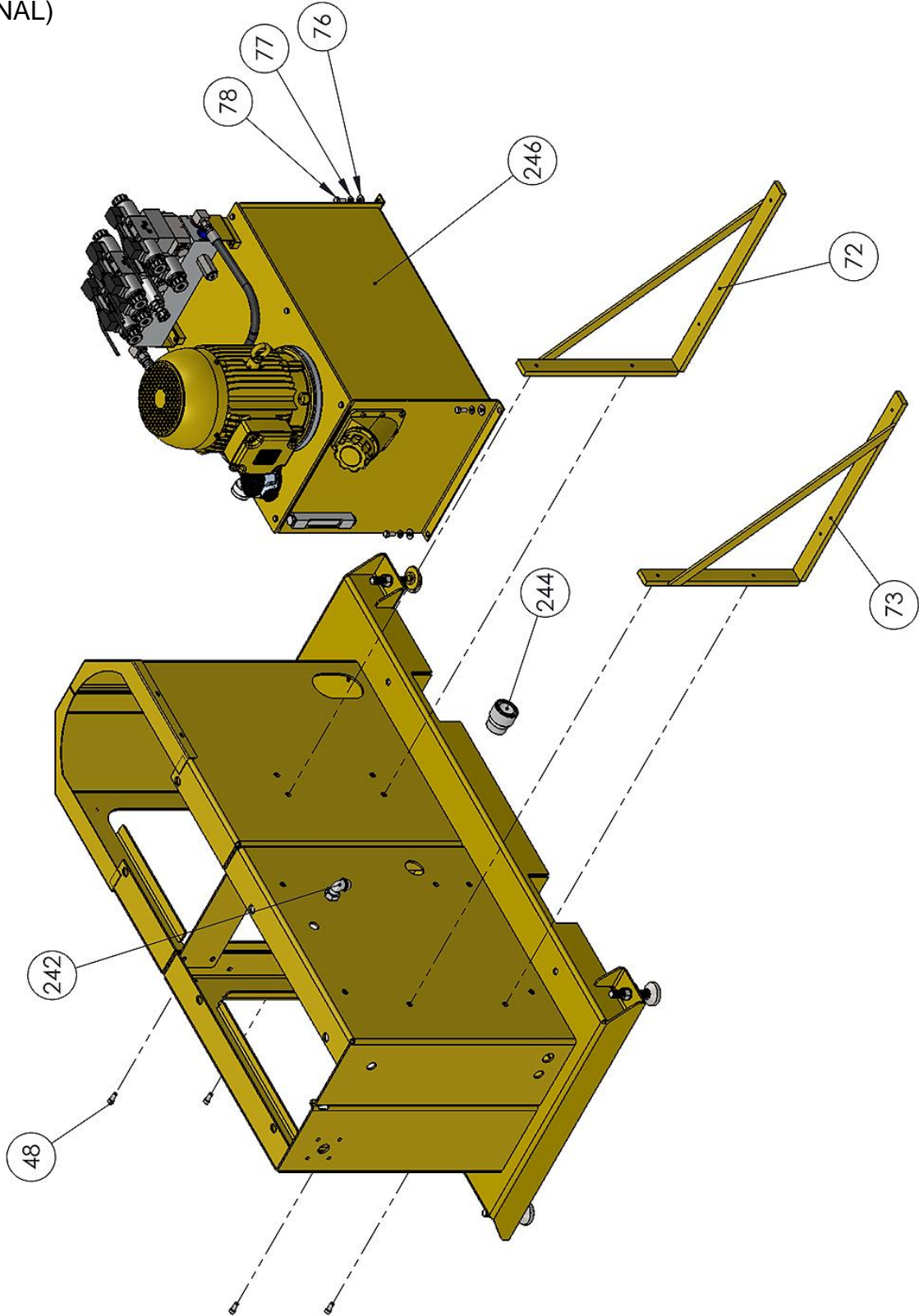


STANDARD POWER UNIT ASSEMBLY PARTS DIAGRAM



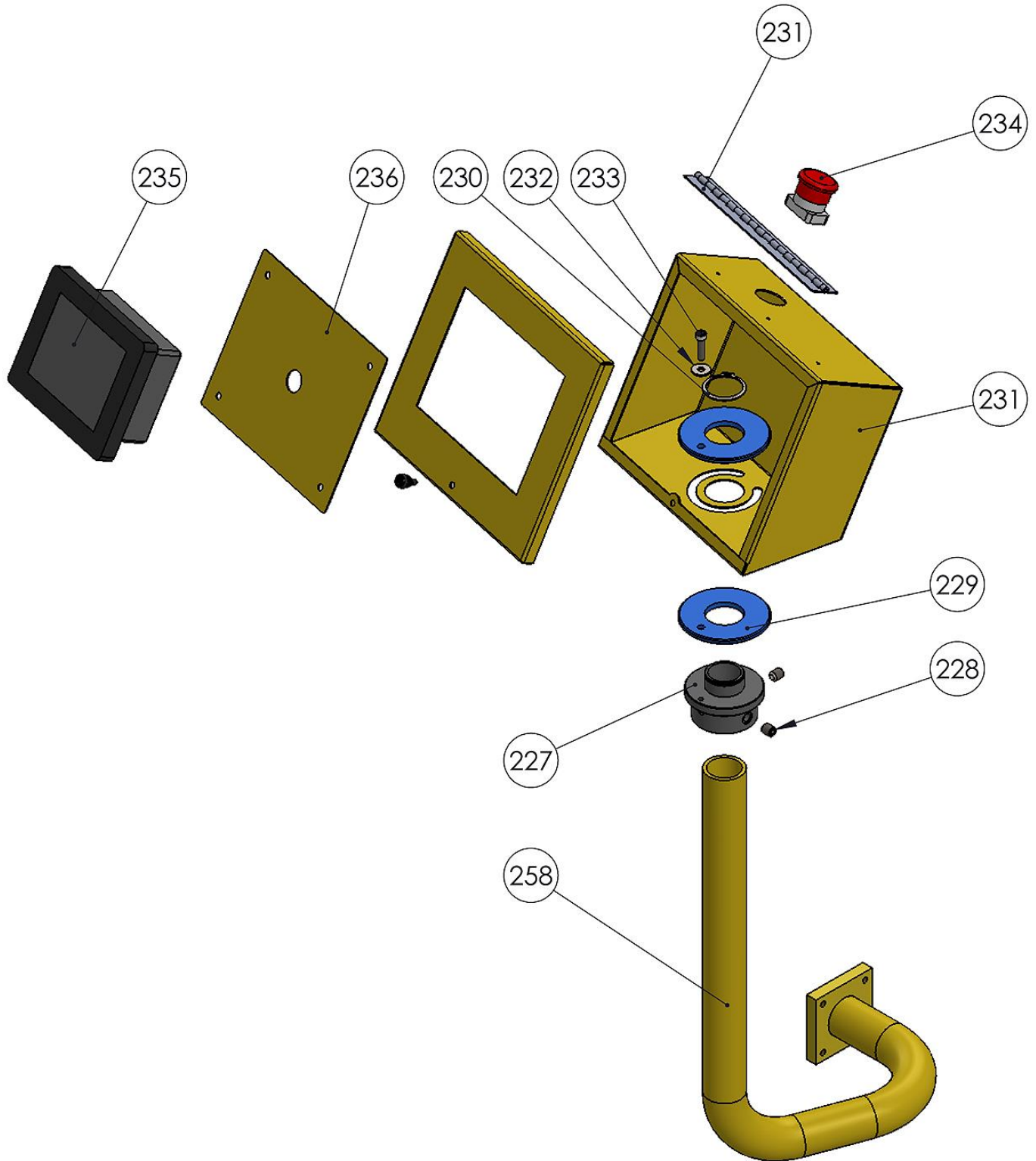


PRESSURE DIE ASSIST POWER UNIT ASSEMBLY PARTS DIAGRAM
(OPTIONAL)



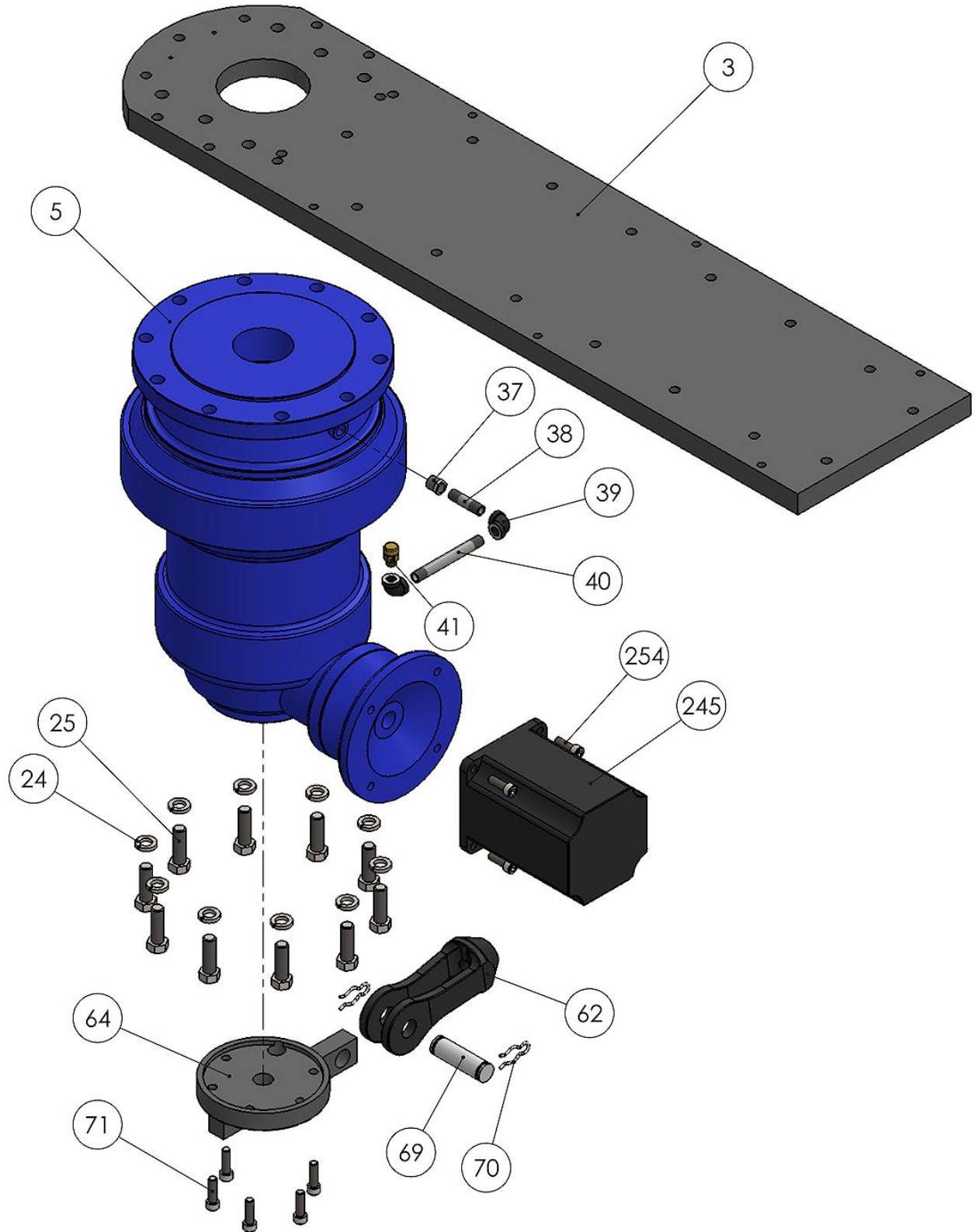


CONTROL BOX ASSEMBLY PARTS DIAGRAM



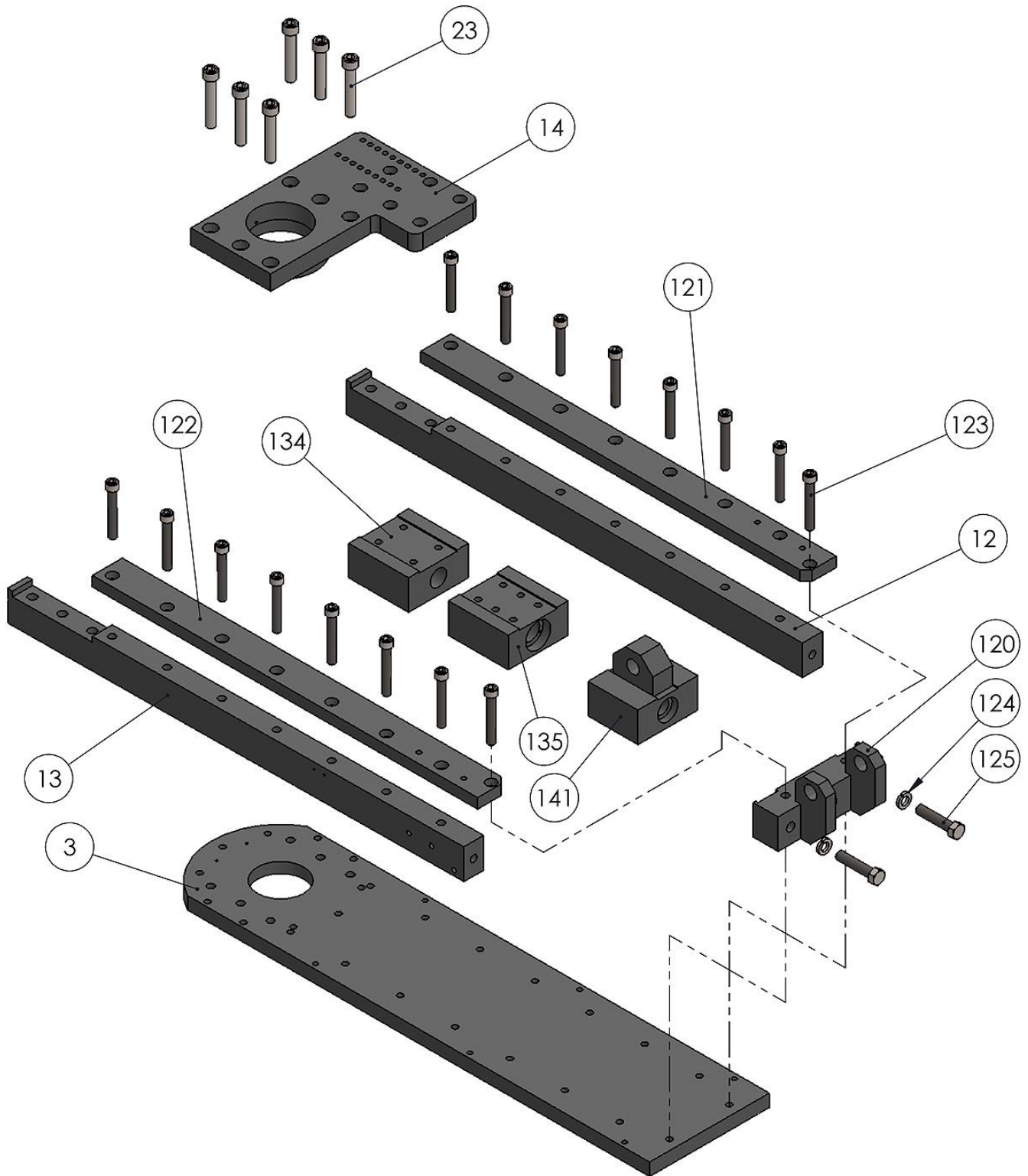


GEAR BOX ASSEMBLY PARTS DIAGRAM



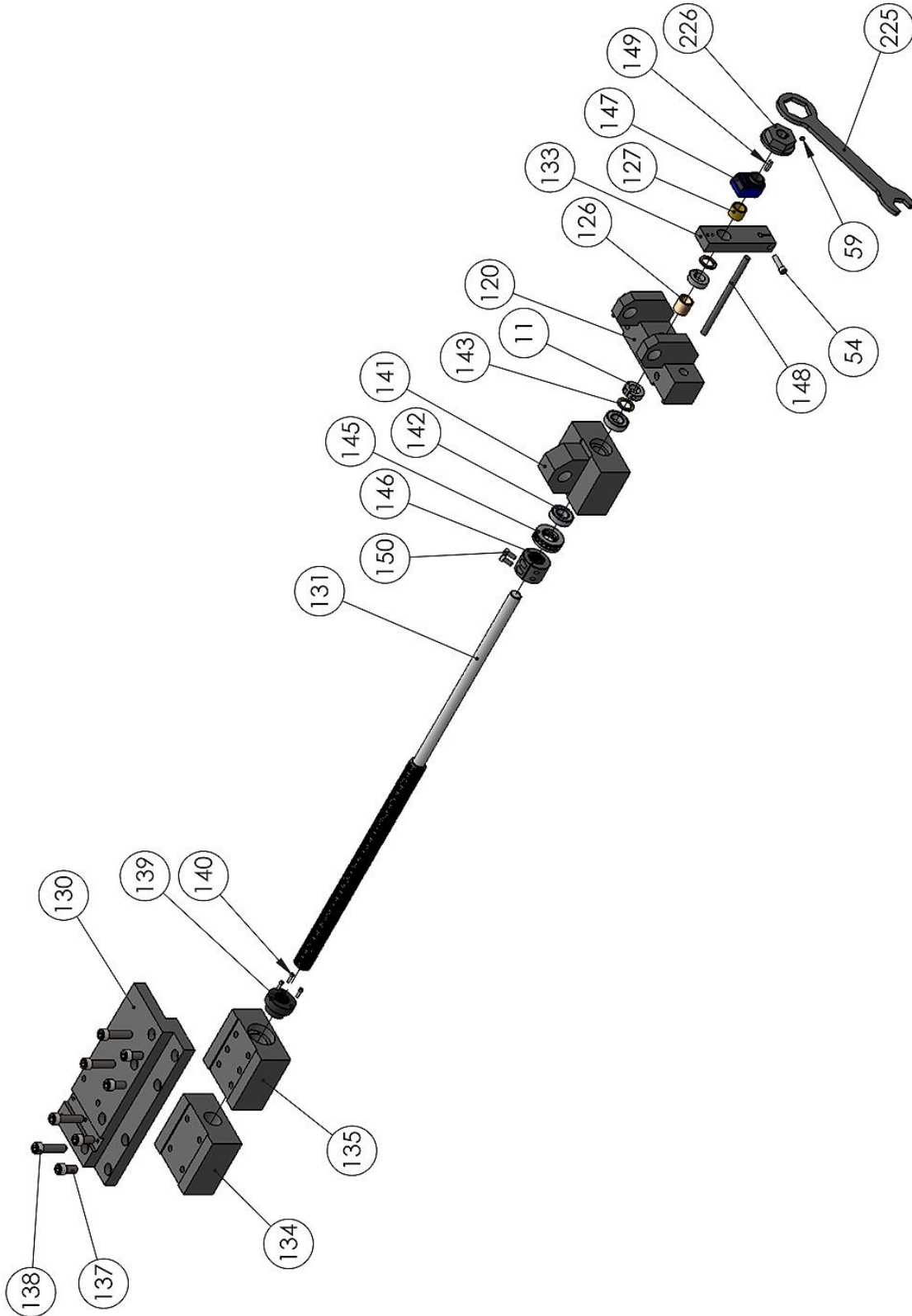


BASE PLATE ASSEMBLY PARTS DIAGRAM



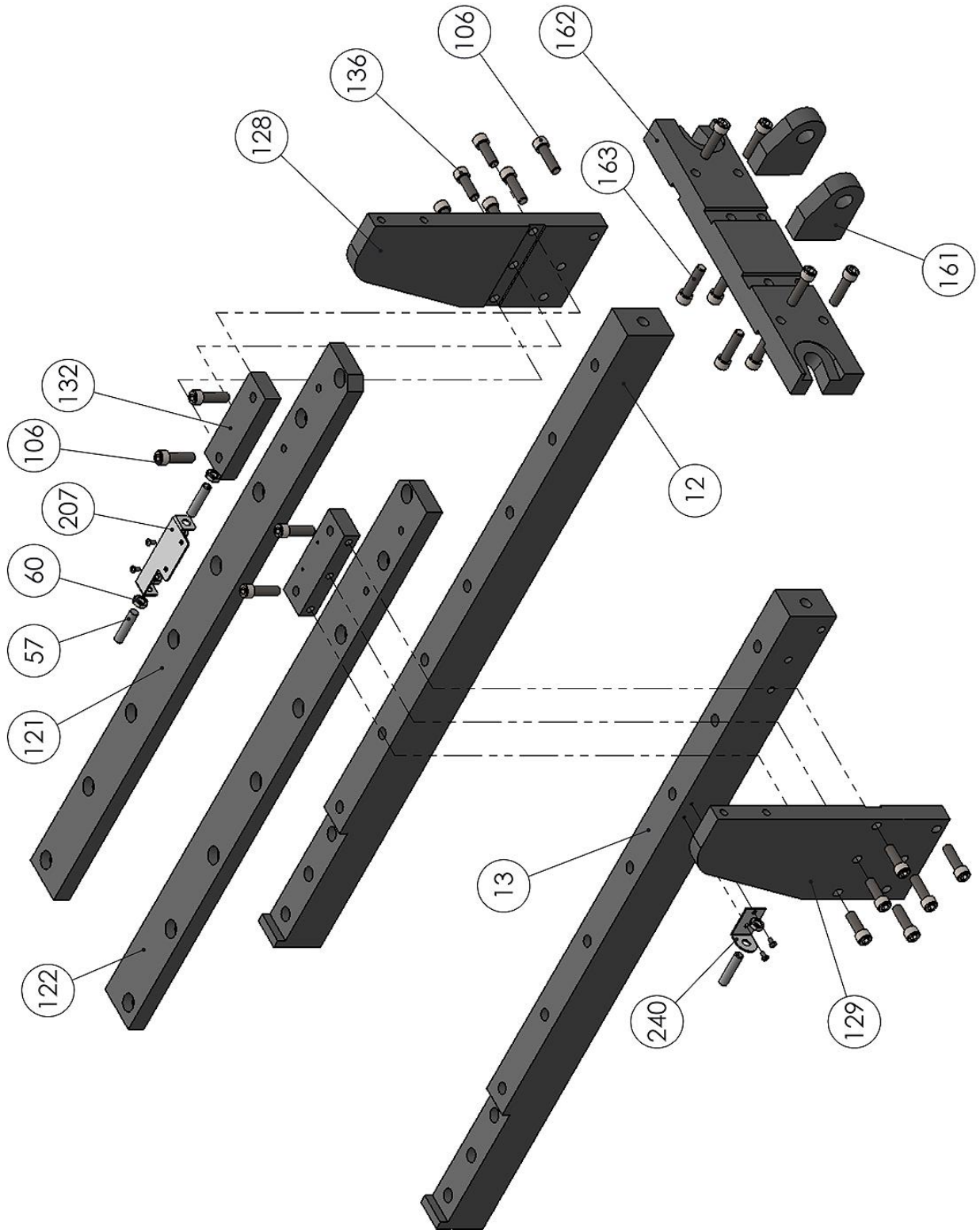


LEAD SCREW ASSEMBLY PARTS DIAGRAM





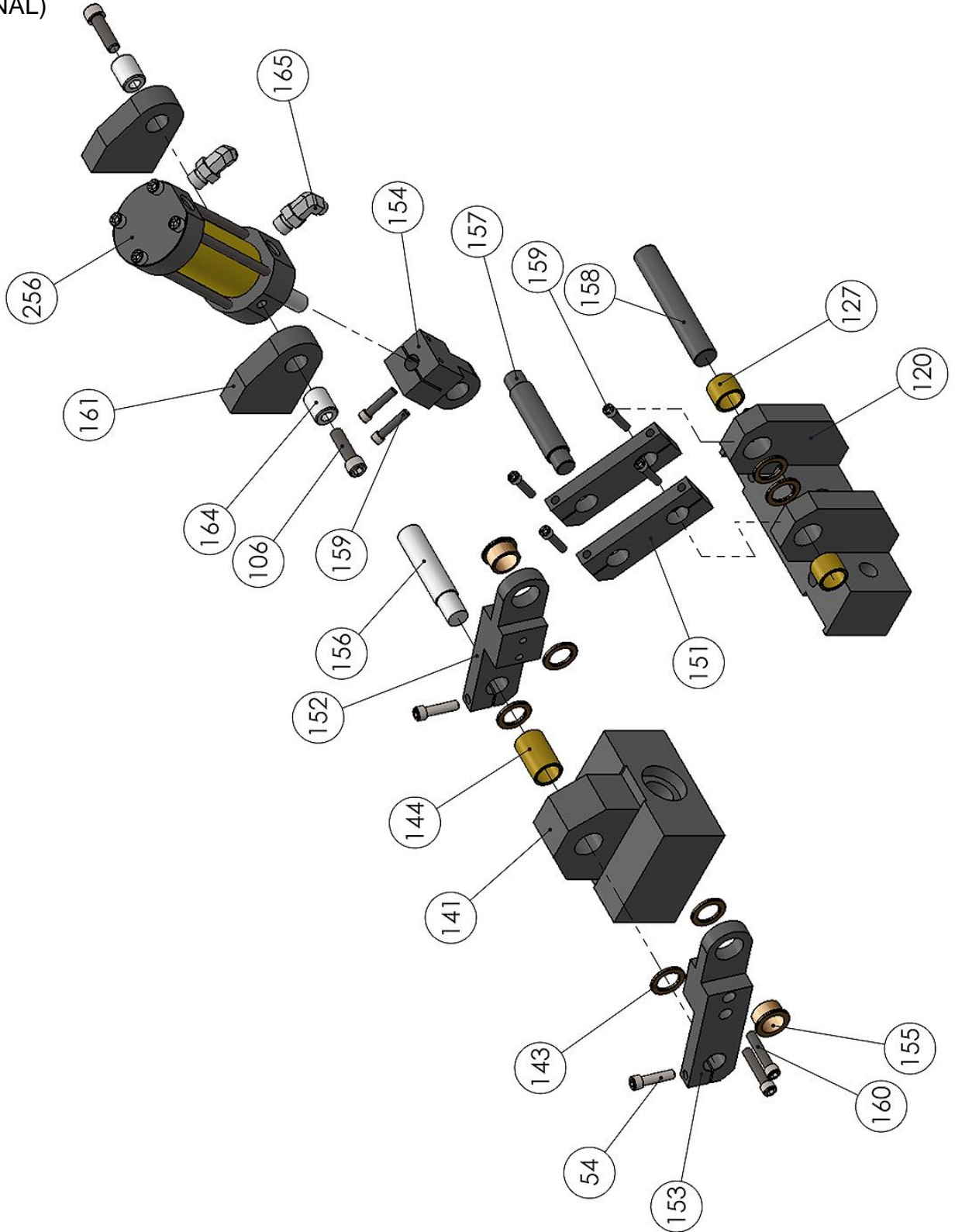
DRAG LINK BRACE ASSEMBLY PARTS DIAGRAM





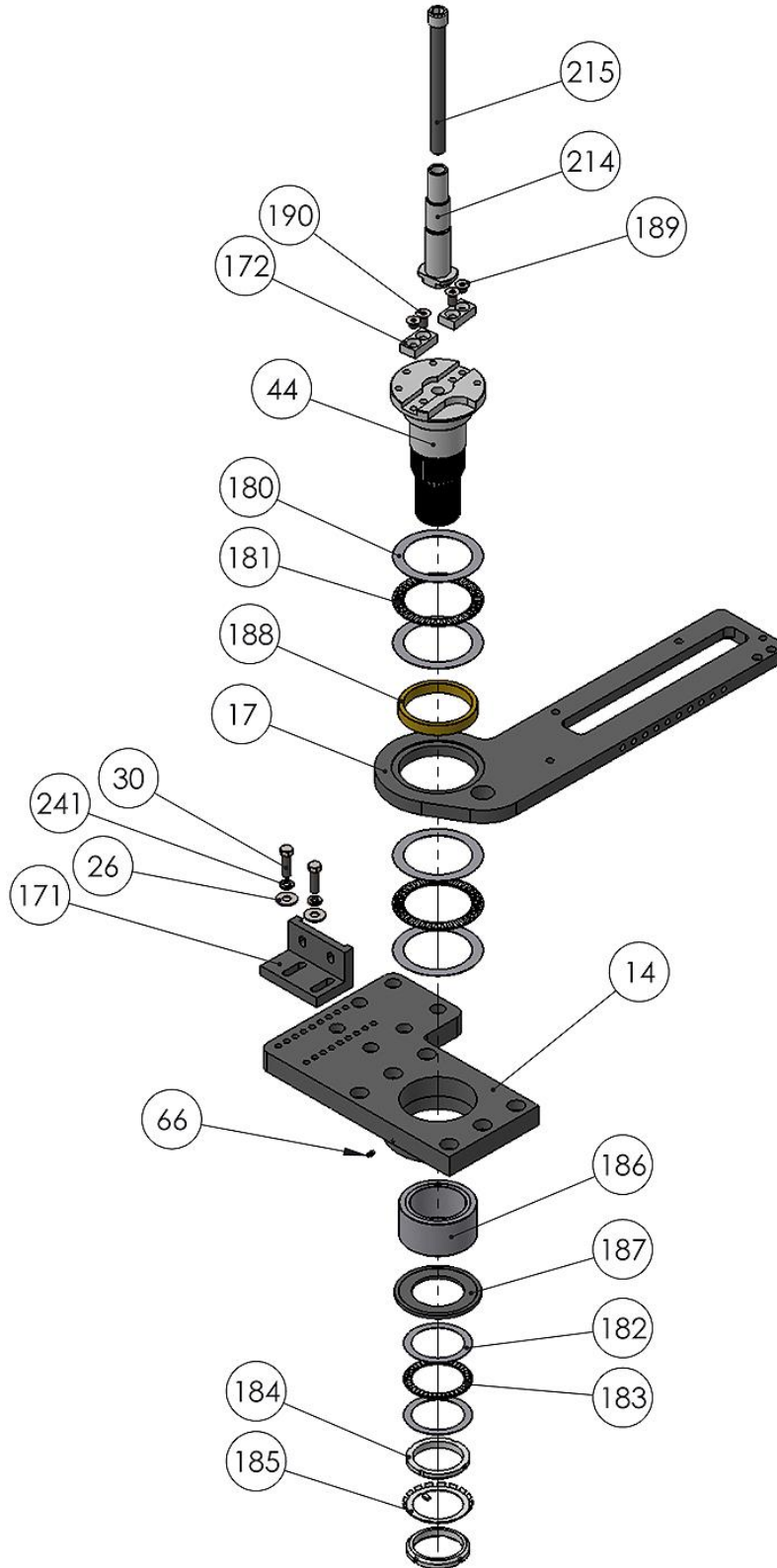
PRESSURE DIE EXTEND CYLINDER ASSEMBLY PARTS DIAGRAM

(OPTIONAL)



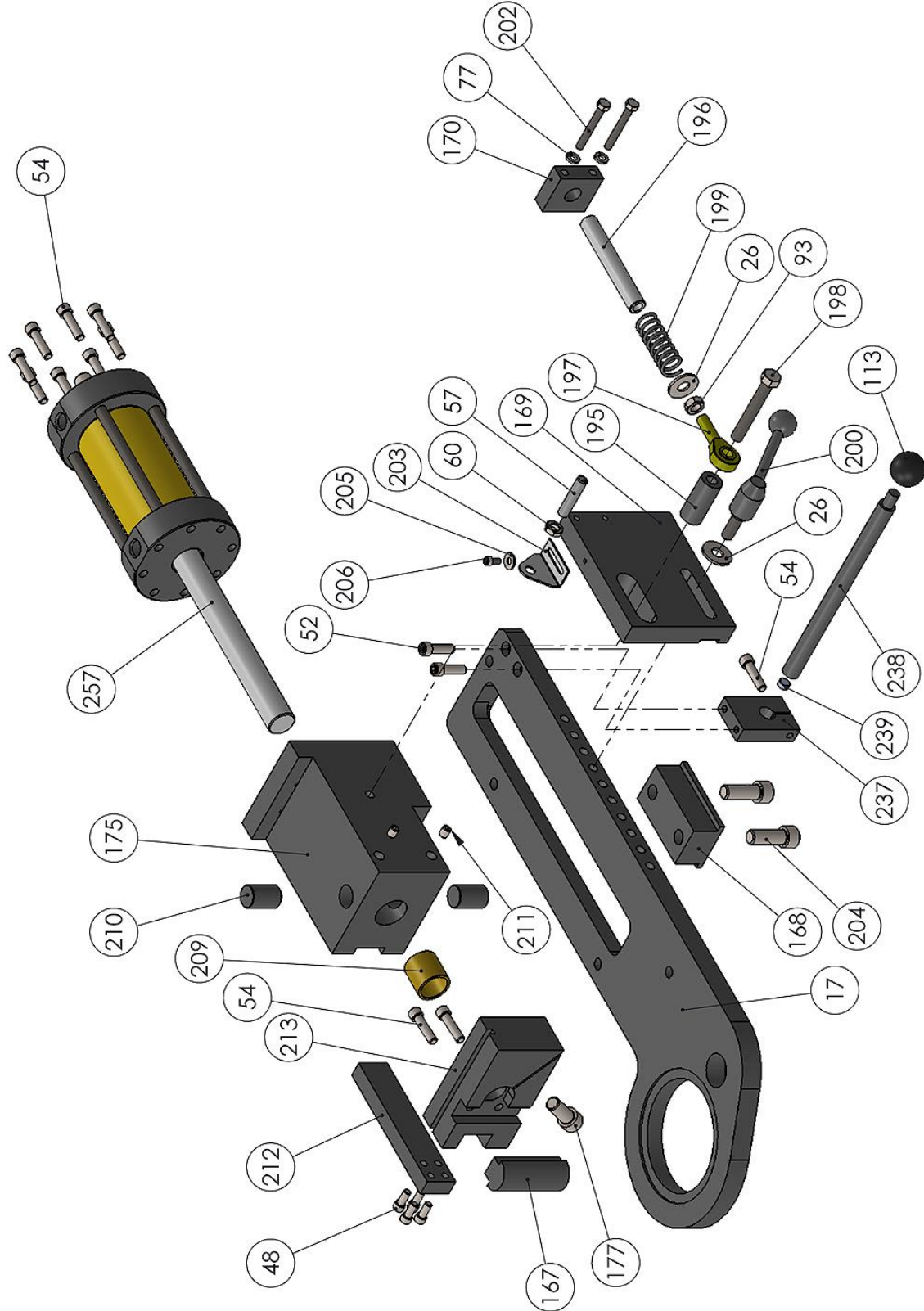


SPINDLE ASSEMBLY PARTS DIAGRAM

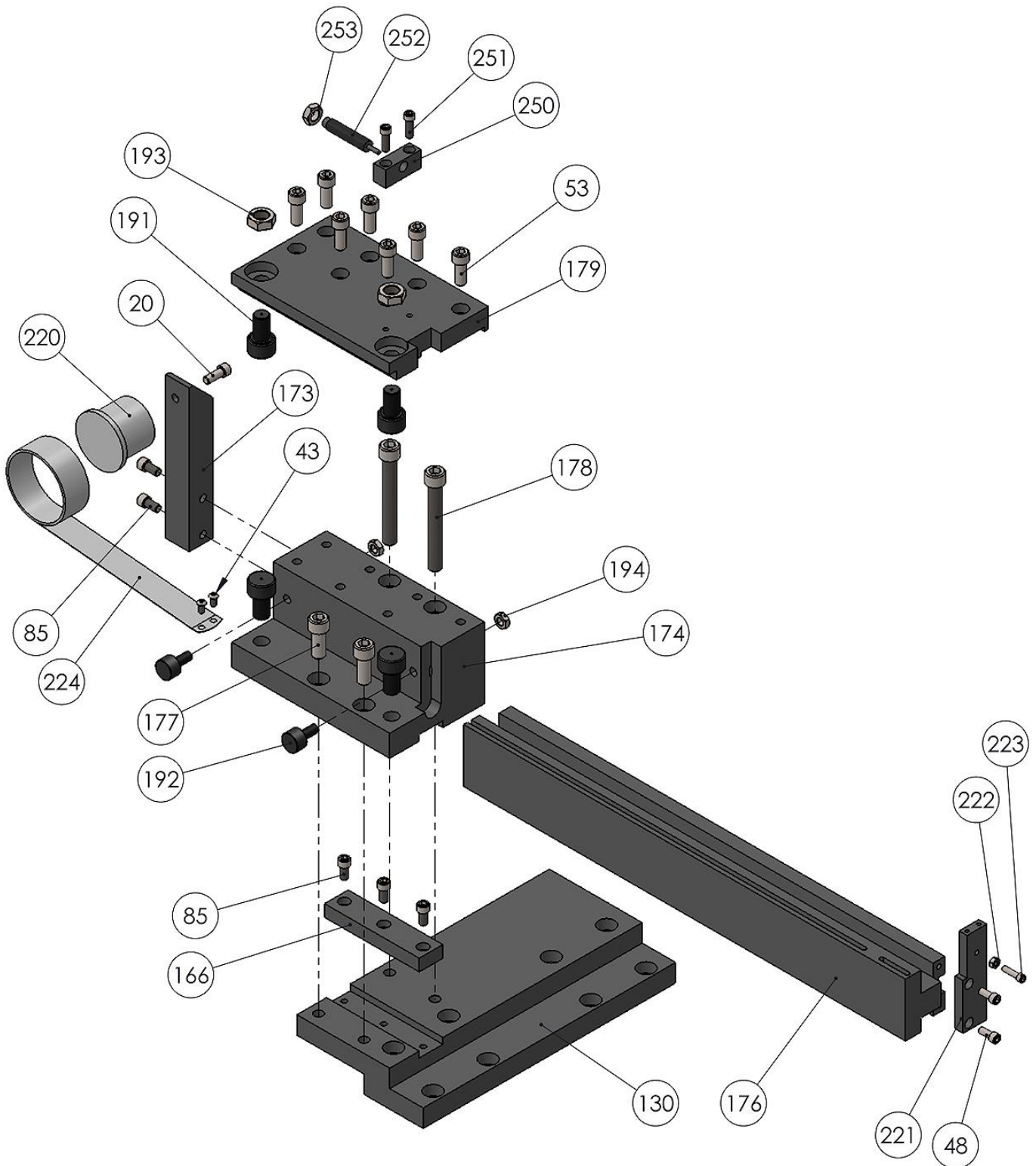




SWING ARM ASSEMBLY PARTS DIAGRAM

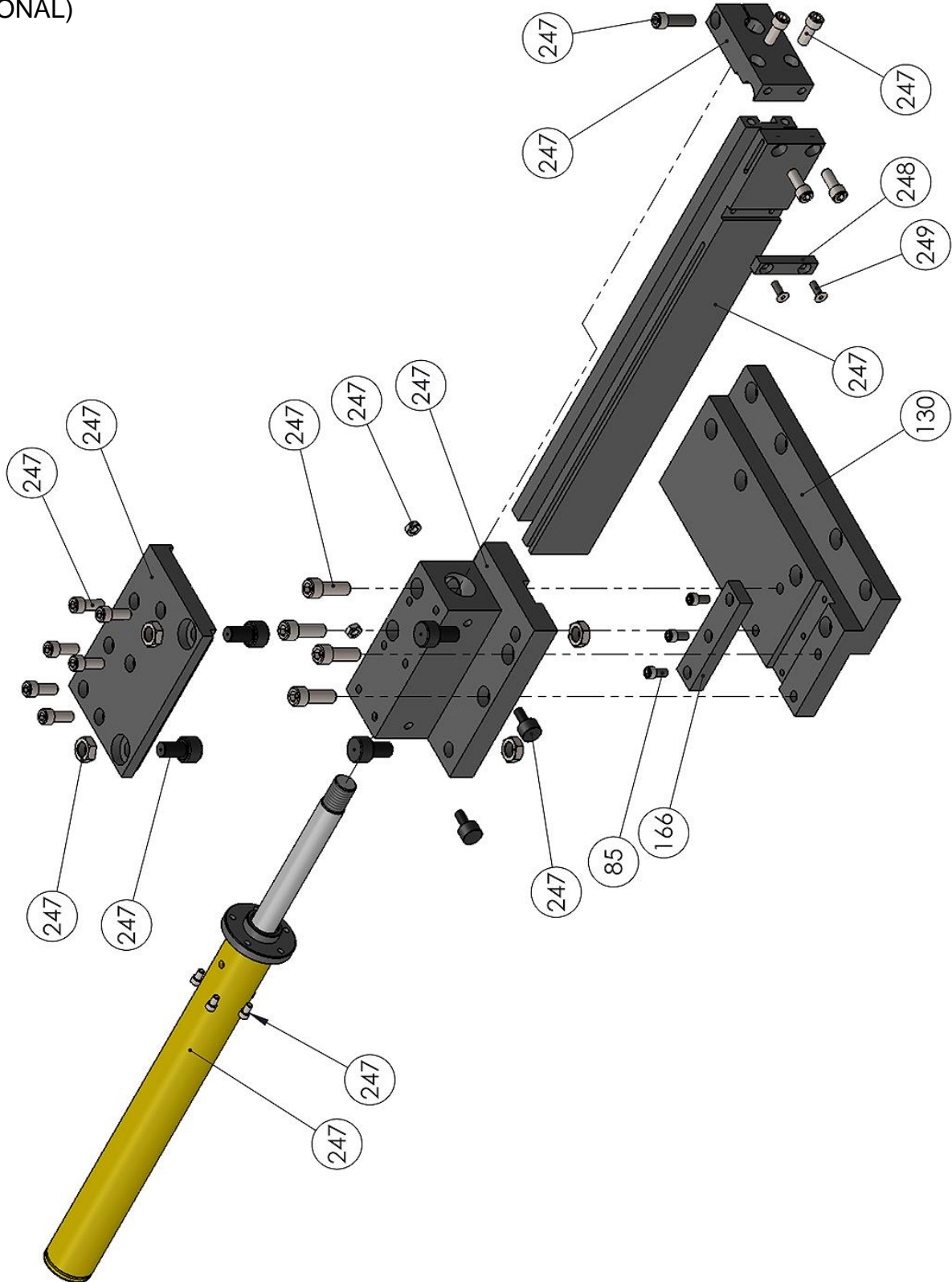


STAND PRESSURE DIE ASSEMBLY PARTS DIAGRAM



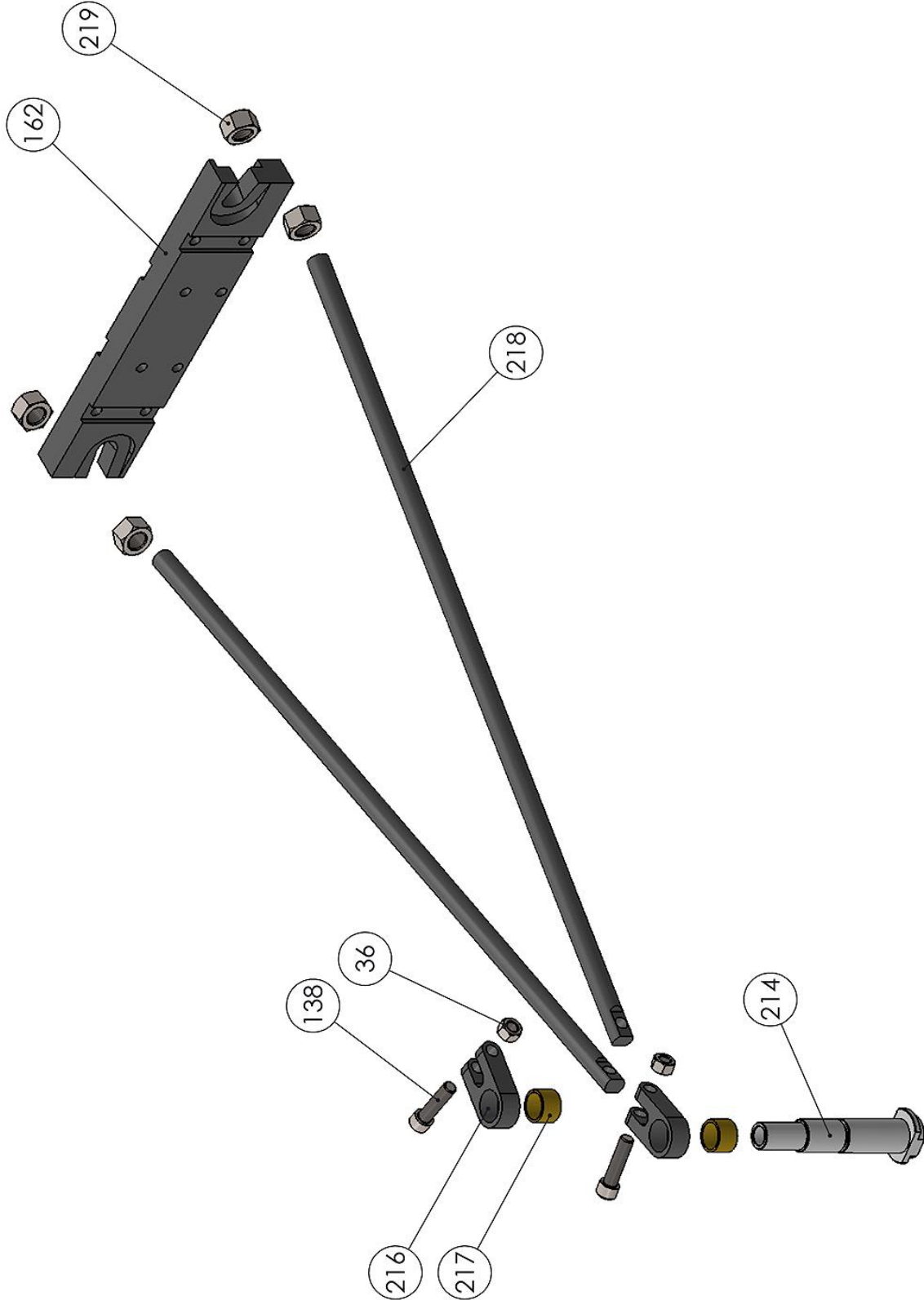


PRESSURE DIE ASSIST ASSEMBLY PARTS DIAGRAM (OPTIONAL)



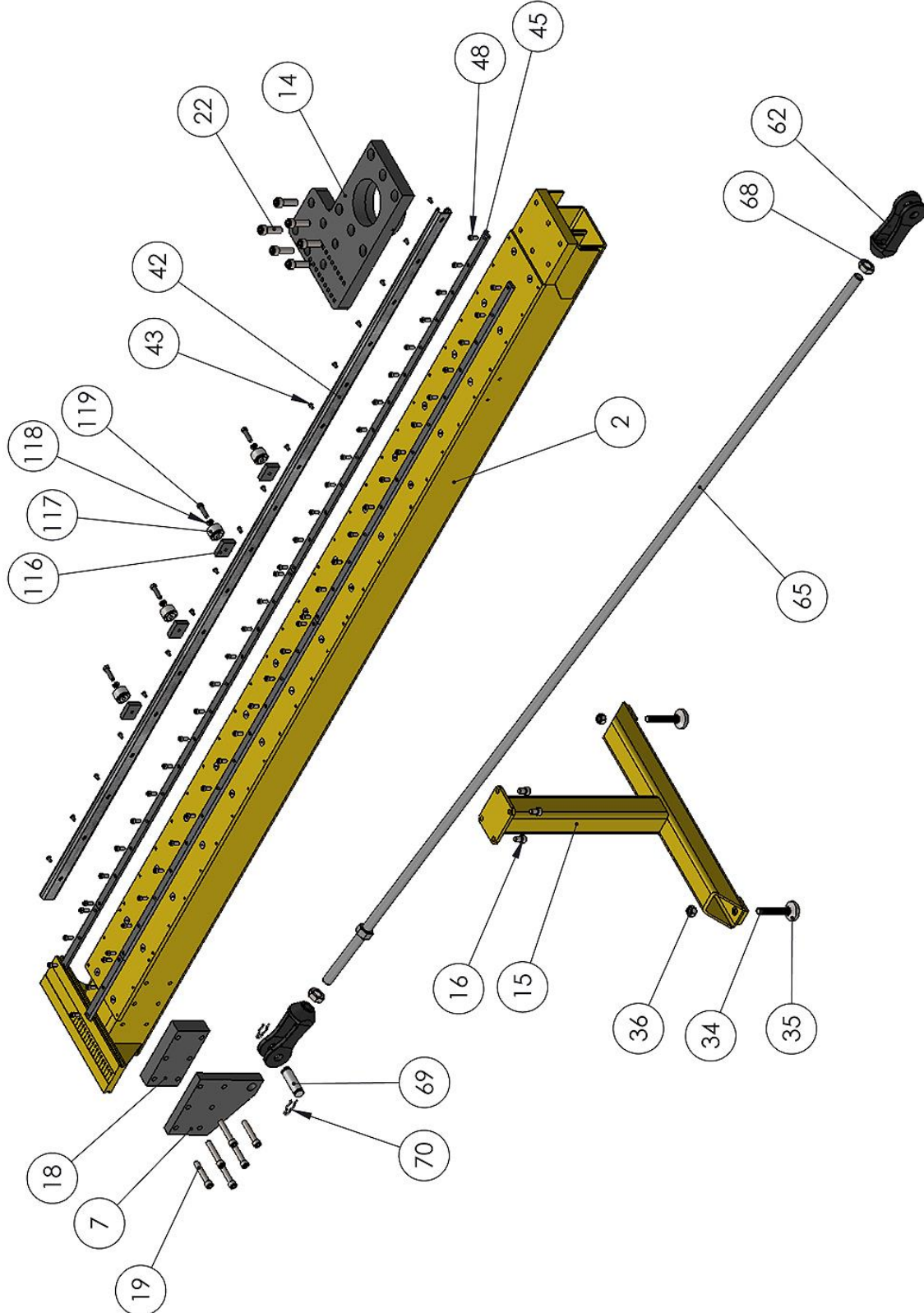


DRAG LINK ASSEMBLY PARTS DIAGRAM



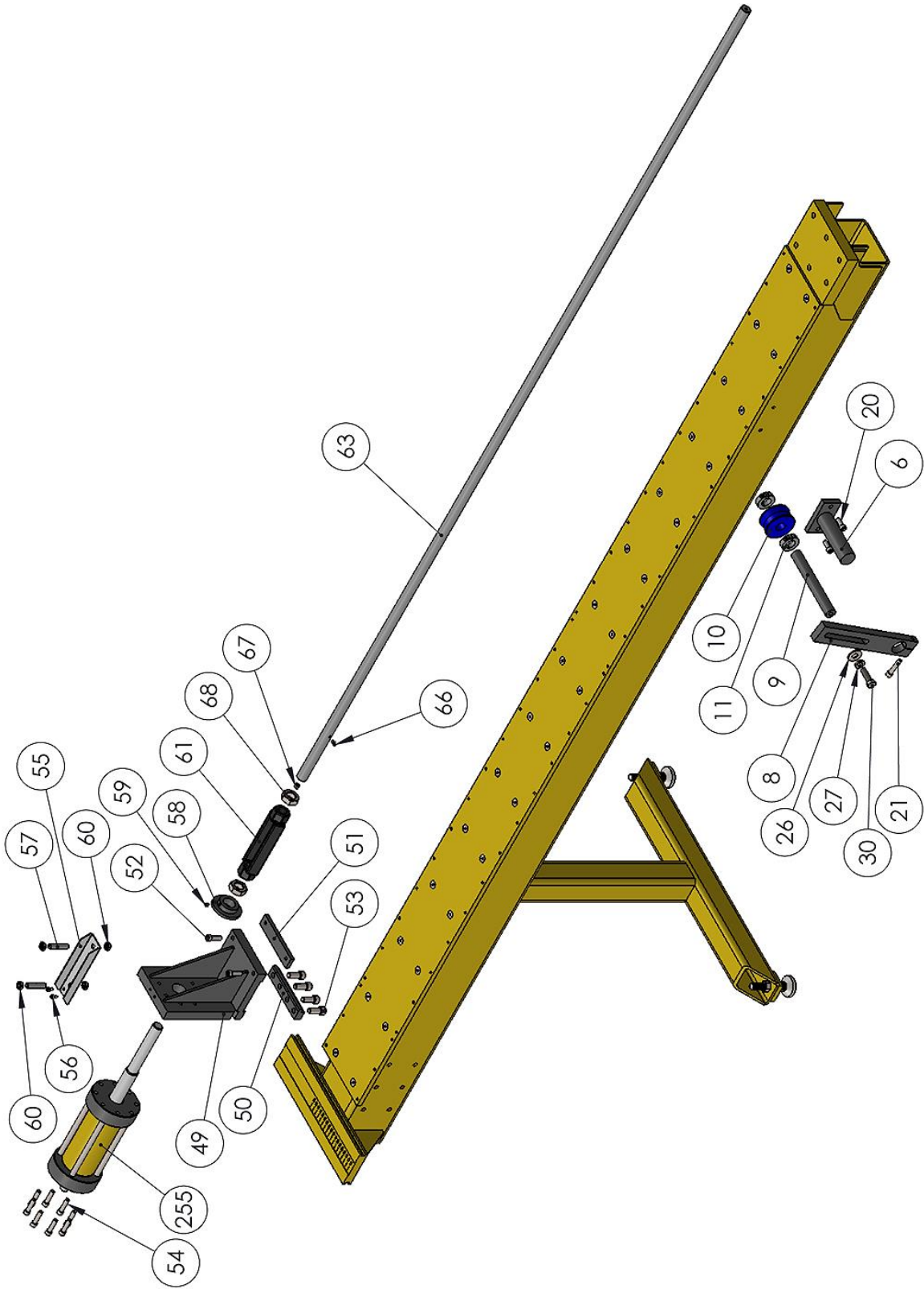


INDEX TABLE ASSEMBLY PARTS DIAGRAM



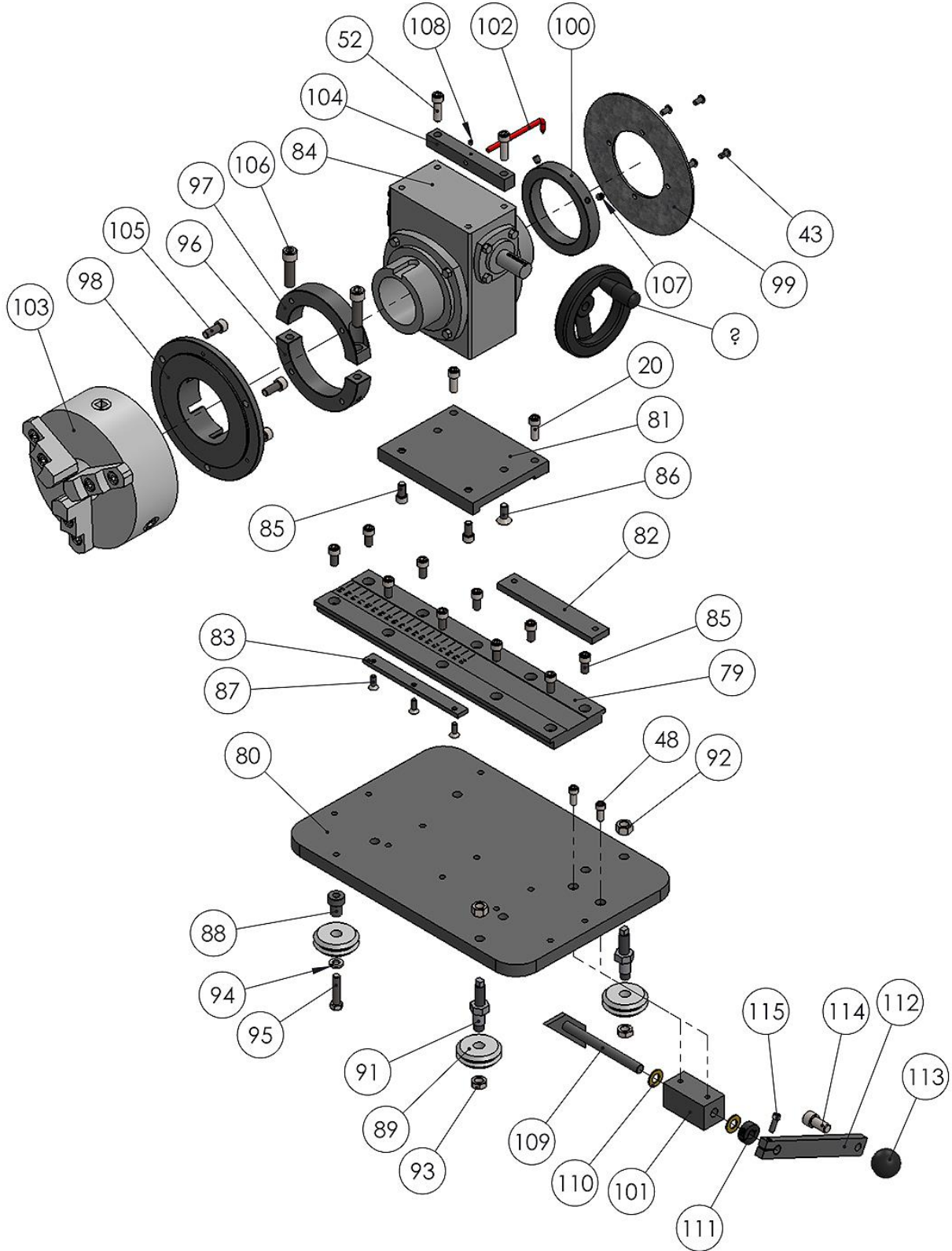


MANDREL EXTRACT ASSEMBLY PARTS DIAGRAM





INDEX CARRIAGE ASSEMBLY PARTS DIAGRAM





Parts List

Item	Part Number	Description	Qty.
1	M350-5A004	Mandrel Cabinet	1
2	M350-5D021	Mandrel Extract Table	1
3	M400-6A001	Base Plate	1
4	M350-6A105	Track Mounting Plate	1
5	PP-1418	Mandrel Gearbox	1
6	M350-5A016	Mandrel Support Base	1
7	M350-6A097	Drag Link Brace	1
8	M350-6A073	Mandrel Support Bar	1
9	M350-7A015	Mandrel Support Shaft	1
10	M350-7A030	Mandrel Support Roller	1
11	PP-0036	1.0 Clamp Collar (Split)	4
12	M350-6A021	Mandrel Frame Bar (R.H.)	1
13	M350-6A022	Mandrel Frame Bar (R.H.)	1
14	M350-5A017	Main Spindle Bearing Plate Assembly	1
15	M350-5A009	Index Leg	1
16	1/2-13 X 3/4	SHCS	4
17	M350-6A019	Clamp Die Carriage	1
18	M350-6A098	Brace Spacer	1
19	1/2-13 X 3.0	SHCS	6
20	3/8-16 X 1.0	SHCS	5
21	3/8-16 X 1.75	SHCS	1
22	5/8-11 X 2.0	SHCS	6
23	3/4-10 X 4.25	SHCS	6
24	5/8" LOCKWASHER	Std.	10
25	5/8-11 X 2.0	SHCS	10
26	STD.	1/2" Flat Washer	11
27	1/2 LOCK WASHER	Std.	7
28	1/2-13 X 1.25	HHCS	6
29	3/8-16 X .75	FHCS	30
30	1/2-13 X 1.75	HHCS	3
31	PP-0290	3/4" Cord Grip	1
32	PP-0023	Cord Grip	1
33	PP-0304	On/Off 2 Pole Switch	1



Item	Part Number	Description	Qty.
34	BS-0323	Foot Pad Shaft	6
35	M350-7A071	Leveling Foot	6
36	5/8-11	Hex Nut	8
37	PP-0586	3/8" To 1/4" Reducer	1
38	PP-0587	1/4" X 2" Pipe	1
39	PP-0589	1/4" Elbow	2
40	PP-0588	1/4" X 4 1/2" Pipe	1
41	PP-0454-D	Breather Plug	1
42	PP-0300	Metal Channel	1
43	1/4-20 X .50	BHCS	23
44	M350-7A009	Mandrel Spindle	1
45	PP-0622	Linear "V" Track	4
46	PP-0622	Linear "V" Track (Short)	1
47	PP-0622	Linear "V" Track (Short V2)	1
48	5/16-18 X .75	SHCS	70
49	M350-5A013	Mandrel Extract Cylinder Mount	1
50	M350-6A049	Slide Key	1
51	M350-6A050	Clamp Key	1
52	3/8-16 X 1.25	SHCS	6
53	1/2-13 X 1.25	SHCS	11
54	3/8-16 X 1.50	SHCS	22
55	M350-6A086	Extract Cylinder Sensor Mount	1
56	1/4-20 X .375	SHCS	2
57	PP-0643	Proximity Sensor	6
58	M350-7A029	Switch Actuator	1
59	1/4-20 X 3/8	Set Screw	2
60	M12 X 1.75	Jam Nut	11
61	PP-0779	Turnbuckle	1
62	PP-0777	Clevis End (L.H.)	1
63	M350-7A022	Mandrel Extract Shaft	1
64	M350-5A020	Gearbox Drag Link Adaptor	1
65	M350-7A045	Mandrel Strut Rod	1
66	.25-28 GREASE ZERK	Straight Grease Zerk	2
67	1/8 NPT PIPE PLUG	Std.	1
68	1"-8 JAM NUT	Std.	5



Item	Part Number	Description	Qty.
69	PP-0403-J	Pin	2
70	PP-0403-K	Hairclip	4
71	M10 X 1.5 X 35	SHCS	5
72	M350-5A033	Hydraulic Pump Bracket RH	1
73	M350-5A034	Hydraulic Pump Bracket LH	1
74	PP-0778	Clevis End (L.H.)	1
75	PP-1375	Power Unit (Non Pressure Die)	1
76	STD.	5/16" Flat Washer	8
77	5/16 LOCK WASHER	Std.	10
78	5/16-18 X .75	HHCS	8
79	M350-6A027	IDX Main Gib	1
80	M350-6A020	Index Carriage	1
81	M350-6A028	Gearbox Mounting Plate	1
82	M350-6A029	Clamp Rail	1
83	M350-6A030	Keeper Rail	1
84	PP-0452	Gearbox	1
85	3/8-16 X .75	SHCS	17
86	3/8-16 X 1.0	FHCS	2
87	1/4-20 X .75	FHCS	3
88	M800-7A036	Non Adjusting Bushing W4 (Metric)	2
89	PP-0091	V Roller	4
90	5.0 HANDWHEEL	5.0 Handwheel	1
91	PP-0623	Adjusting Eccentric	2
92	1/2-20	Hex Nut	2
93	1/2-20	Hex Jam Nut	3
94	3/8 LOCK WASHER	Std.	2
95	3/8-16 X 1.75	HHCS	2
96	IDX-6A031	Clamp Disc Bottom	1
97	IDX-6A032	Clamp Disc Top	1
98	IDX-7A013	Chuck Mounting Disc (3 Jaw)	1
99	M350-7A018	Degree Disk	1
100	M350-7A021	Disc Mount	1
101	M350-6A072	Pivot Block	1
102	M350-6A090	Pointer	1
103	PP-0207	3-Jaw Chuck	1



Item	Part Number	Description	Qty.
104	IDX-6A016	Pointer Mount	1
105	M10 X 1.5 X 25	SHCS	3
106	1/2-13 X 1.75	SHCS	14
107	5/16-18 X .375	Set Screw	2
108	10-24 X .25	Set Screw	1
109	M350-5A036	Stop Pin Latch	1
110	PP-0055	0.5 Id X 1.0 Od X .0625 THK	2
111	PP-0037	1/2" Clamp Collar	1
112	M350-6A069	Latch Bar	1
113	PP-0133	Black Ball Knob	2
114	1/2-13 X 1.0	SHCS	1
115	.25-20 X .75	SHCS	1
116	IDX-6A050	Slide Block	4
117	IDX-7A022	Stop Pin	4
118	3/8" LOCK WASHER	Std.	4
119	3/8-16 X 1.5	HHCS	4
120	M350-5A015	End Brace Weldment	1
121	M350-6A047	Top Cap (R.H.)	1
122	M350-6A048	Top Cap (L.H.)	1
123	5/8-11 X 4.25	SHCS	16
124	3/4 LOCK WASHER	Std.	2
125	3/4-10 X 3.50	HHCS	2
126	PP-0143	1.25 Od X 1.0 Id X 1.25 Long	1
127	PP-0144	1.0 Id X 1.25 Od X 1.0 Long	3
128	M350-6A044	Drag Ling Brace (R.H.)	1
129	M350-6A068	Drag Ling Brace (L.H.)	1
130	M350-6A016	Main Slide Mount	1
131	M400-7A002	Lead Screw Assy.	1
132	M350-6A046	Support Brace	2
133	M400-6A012-V2	Counter Mount (1/4 Shorter)	1
134	M350-6A012	Front Slide Block	1
135	M350-6A034	Slide Block	1
136	1/2-13 X 1.50	SHCS	6
137	5/8-11 X 1.25	SHCS	4
138	5/8-11 X 2.50	SHCS	6



Item	Part Number	Description	Qty.
139	M350-7A046	Lead Screw Nut	1
140	10-24 X .75	SHCS	3
141	M350-5A023	Slide Block	1
142	PP-0210	Thrust Ball Bearing	2
143	PP-0056	1.0 Id X 1.5 Od X .125 THK	8
144	PP-0142	1.25 O.D. X 1.00 I.D. X 2.00 LNG	1
145	PP-0209	Thrust Ball Bearing	1
146	M350-7A077	Lead Screw Stop Nut	1
147	PP-0137-V2	Fiana Counter	1
148	M350-7A010	Guide Shaft	1
149	STD.	.25 X .25 X 1.0 Key	1
150	M8 X 1.25 X 20	SHCS	2
151	M350-6A084	Toggle Link	2
152	M350-6A075	Toggle Link (R.H.)	1
153	M350-6A076	Toggle Link (L.H.)	1
154	M350-6A078	Trunnion Block	1
155	PP-0913	1.0 Id X 1.25 Od X 0.75lg	2
156	M350-7A028	Link Shaft	1
157	M400-7A007	Latch Pin	1
158	M350-7A079	End Brace Pin	1
159	5/16-18 X 1.50	SHCS	6
160	3/8-16 X 2.0	SHCS	2
161	M350-6A093	Cylinder Mount	2
162	M350-6A092	Rear Drag Link Brace	1
163	0500-13 X 2.00	SHCS	8
164	M350-7A039	Cylinder Mount Spacer	2
165	PP-0687	Straight Thread Elbow	2
166	M350-6A018	Lock Key	1
167	M350-6A026	Half Round Key	1
168	M350-6A024	Clamp Die Slide Key	1
169	M350-6A032	Spring Position Adjuster	1
170	M350-6A033	Spring Stop Block	1
171	M350-6A035	Wiper Die Angle Bracket	1
172	M350-6A043	Drive Key	2
173	M350-6A052	Spring Mount	1



Item	Part Number	Description	Qty.
174	M350-6A017	Roller Mtg. Block	1
175	M350-6A040	Clamp Die Cylinder Mount	1
176	M350-6A058	28" Pressure Die Slide Block	1
177	5/8-11 X 1.50	SHCS	3
178	5/8-11 X 4.75	SHCS	2
179	M350-6A059	Roller Block Top Cap	1
180	PP-0663	Hardened Thrust Washer	4
181	PP-0664	Thrust Roller	2
182	PP-0619	Hardened Thrust Washer	2
183	PP-0618	Thrust Roller	1
184	PP-0620	Lock Nut	2
185	PP-0621	Lock Ring	1
186	PP-0617	Needle Bearing. W/Inner Race	1
187	M350-7A020	Steel Thrust Washer	1
188	M350-7A080	Swing Arm Bushing	1
189	1/2-20 X .50	FHCS	2
190	1/2-20 X 1.0	FHCS	2
191	PP-0673	1.25" Cam Follower	4
192	PP-0674	1" Cam Follower	2
193	3/4-16 HEX NUT	Std.	4
194	7/16-20 HEX NUT	Std.	2
195	M350-7A023	Rod End Spacer	1
196	M350-7A012	Spring Shaft	1
197	PP-0107	1/2" Male Rod End	1
198	1/2-13 X 3.50	HHCS	1
199	PP-0472	Spring	1
200	PP-0570	Release Handle	1
201	1/2-13 X 2.0	Set Screw	1
202	5/16-18 X 2.50	HHCS	2
203	M350-6A088	Spring Position Sensor Mount	1
204	5/8-11 X 1.75	SHCS	2
205	1/4" FLAT WASHER	Std.	1
206	1/4-20 X .50	SHCS	1
207	M350-6A087	Pressure Die Clamp Sensor Mount	1
208	10-24 X .375	Cross Machine Screw	4



Item	Part Number	Description	Qty.
209	PP-0837	1.25 I.D. X 1.50 O.D. X 1.50 Long	1
210	M350-7A081	Hook Arm Pin	2
211	3/8-16 X 0.5	Set Screw	2
212	M350-6A074	Guide Bar	1
213	M350-6A079	Clamp Die Master Mount	1
214	M350-7A016	Center Pin	1
215	BS-0207 (MODIFIED)	7/8-9 X 10 SHCS	1
216	M350-6A045	Drag Link Yoke	2
217	PP-0842	1.25 Id X 1.50 Od X 1.0 Long Bushing	2
218	M350-7A027	Drag Link Shaft	2
219	1-8 HEX NUT	Std.	4
220	M350-7A011	Spring Drum	1
221	M350-6A082	Spring Mount	1
222	.25-20	Hex Nut	1
223	1/4-20 X 1.0	SHCS	1
224	PP-0676	Slide Block Return Spring	1
225	M350-6A085	2.25 Dual Wrench	1
226	M350-7A032	Hex Nut	1
227	ME-M350-7A057-V2	Electrical Box Pivot Hub	1
228	M10 X 1.5 X 12	Set Screw	2
229	M350-7A058	Electrical Box Washer	2
230	1.50 EXT. RETAINING RING	Std.	1
231	M350-5A026 (MANDREL)	Controller Box	1
232	M6 FLATWASHER	Std.	1
233	M6 X 1.0 X 25	SHCS	1
234	PP-0683	'E' Stop	1
235	PP-1509	Touch Screen Controller	1
236	M350-6A162	HMI Panel Adapter	1
237	M350-6A081	Limit Block	1
238	M350-7A031	Lever Shaft	1
239	PP-1177	Magnet	1
240	M350-6A089	Swing Arm Sensor Mount	1
241	1/2 LOCK WASHER	Std.	2
242	PP-0022	1/2" Elbow	1
243	PP-0151	1/2" Elbow Cord Grip	2



Item	Part Number	Description	Qty.
244	PP-0707	1.375" Cord Grip	1
245	PP-1514	Servo Motor	1
246	CALL	Pressure Die Assist Power Unit	1
247	CALL	Pressure Die Cylinder Assist Assembly	1
248	M350-6A164	Pressure Die Key	1
249	5/16-18 X 1.0	FHCS	2
250	M350-6A083	Shock Mount	1
251	5/16-18 X 1.0	SHCS	2
252	PP-0700	Shock Absorber	1
253	9/16-18 HEX NUT	Std.	1
254	M10 X 1.5 X 30	SHCS	4
255	M350-5A038	Mandrel Extract Cylinder	1
256	M350-5A039	Pressure Die Cylinder	1
257	M350-5A040	Clamp Cylinder	1
258	M350-5A041	Mandrel Box Tube Assembly	1

NOTES



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