



176 McGovern Dr., RR 32  
Cambridge, ON N3H 4R7  
Phone: (519) 653-2472  
Fax: (519) 652-2719

# ***PAC-KING I***

*MODEL PKI-29+4*



## **PARTS MANUAL**

PARTS AND SERVICE (800-809-0166)

**SECTION 1:** CHASSIS ASSEMBLY

International/Freightliner Cab Extension	pg.6
International/Freightliner Cab Extension Cont.	pg.7
Curtis Steering Box System	pg.8
Chassis Assembly	pg.9
Telescopic Single Acting Hoist	pg.10

**SECTION 2:** BODY

Body	pg.12
Tailgate	pg.13

**SECTION 3:** HOPPER

Hopper	pg.15
PK-1 Canopy Diagram	pg.16
Ram Assembly	pg.17
Ram Guide Assembly	pg.18
Hopper Door	pg.19
Crusher Panel	pg.20
Crusher Panel Diagram	pg.21
Body Installation	pg.22

**SECTION 4:** FINAL ASSEMBLY

Final Assembly	pg.24
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Safety Decals pg.25



**SECTION 5:** **AIR & ELECTRICAL**

Pneumatics Over Hydraulics Circuit	pg.27
In-Cab Mech Box	pg.28
Packer External Controls	pg.29
Packer Proximity Controls	pg.30
Electric Over Air Controller	pg.31
Air Controller	pg.32
Shu-Pak Electronic Packer Control	pg.33
Wire Rite General Note's	pg.34
Wire Rite Panel Pn. 809122	pg.35
Lights - Stop, Turn & Signal	pg.36

**SECTION 6:** **HYDRAULICS**

Front Pump Installation	pg.38
Front Mount Pump Hydraulic Oil Circuit	pg.39
Muncie Live Pak - Front Mount Pump Hydraulic Oil Circuit	pg.40
PTO Mount Pump Hydraulic Oil Circuit	pg.41
Permco Front Pump	pg.42
Transmission Pump Installation	pg.43
Transmission Pump	pg.44
Pump Assembly	pg.45
Flow Control Valve Assembly	pg.46

Valve Banks	pg.47
Typical Valve Section	pg.48
Hydraulic Oil Tank Assembly	pg.49
Hydraulic Tailgates	pg.50
Hydraulics Hopper	pg.51
Typical Pac-King Hydraulic Circuit	pg.52
MLS Series M Service Parts	pg.53
MLS Series M Service Parts Cont.	pg.54
Hydraulic Pump Trouble Shooting Guide	pg.55
Hydraulic Pump Trouble Shooting Guide Cont.	pg.56
New or Replacement Pump	pg.57
New or Replacement Pump Cont.	pg.58
MLS Series M Pump Installations Instructions	pg.59
Flow Limiter	pg.60
Recommended Lubricants	pg.61



## HOW TO USE THIS BOOK

This manual has been written and illustrated for easy identification of parts for SHU-PAK II series side loading refuse compactor.



The manual has been laid out so that each major group is broken down into its own section. Each section further expands on the parts required for each sub-section. The corresponding illustration for each section is shown with its part number and description clearly written on the same or next page.

The "ITEM" on the parts page corresponds to the number on the illustration.

The "Part Number" refers to the number under which SHU-PAK EQUIPMENT INC. stocks the part. These numbers should be used when ever parts are being ordered. Care should be taken to ensure that the correct part number has been used when ordering parts.

The "Description" refers to the name which SHU-PAK EQUIPMENT INC. calls it. This description should be included with the part number as a check to ensure the correct part has been ordered.

The "Quantity" refers to the number of parts of that item used on each SHU-PAK.

### **NOTE!!**

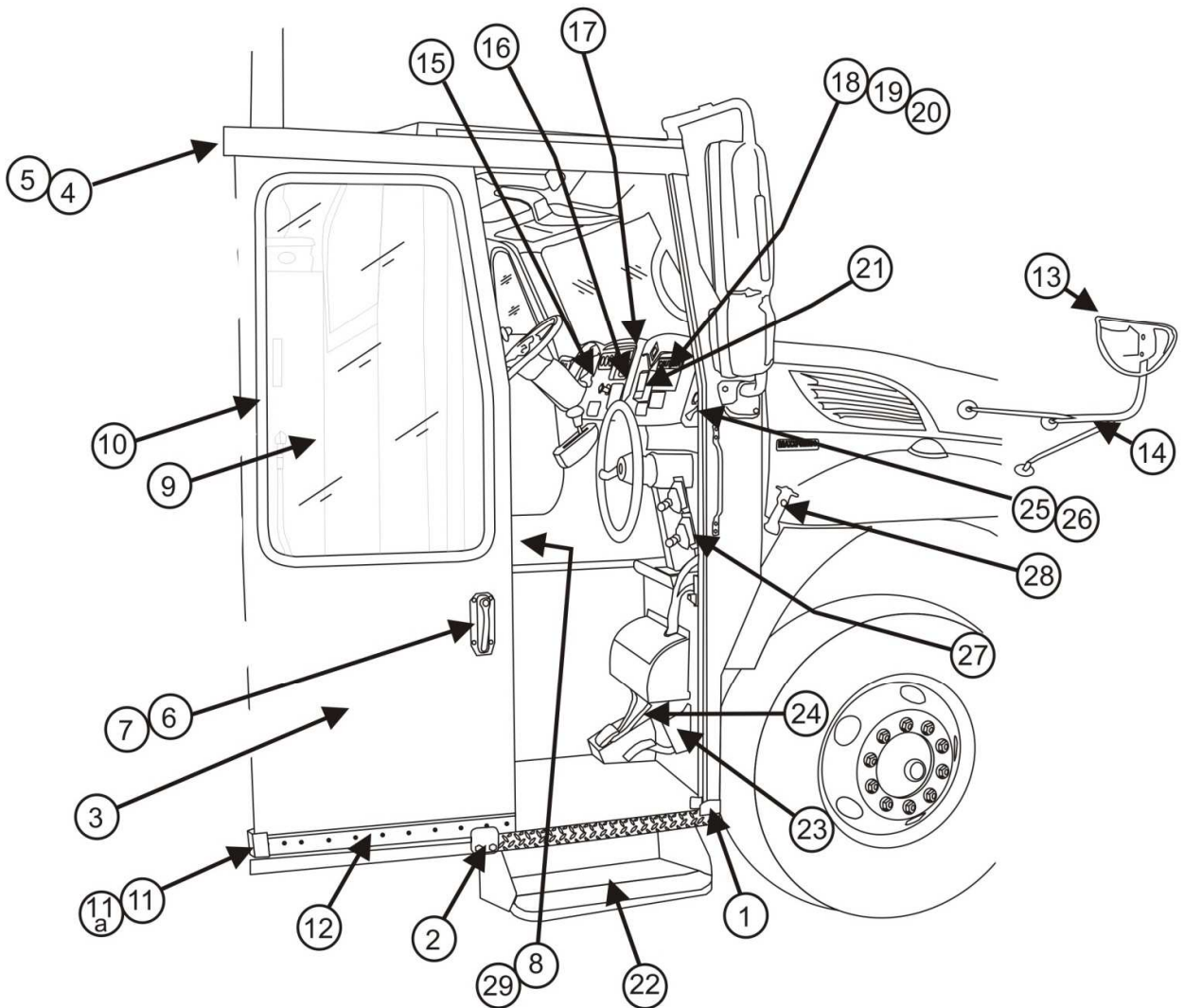
*The information and specifications included in this publication were in effect at the time of printing. SHU-PAK EQUIPMENT INC. reserves the right, however, to discontinue or change specifications or design at any time without notice and without incurring any obligation whatsoever.*

SECTION 1  
R.H. CAB EXTENSION

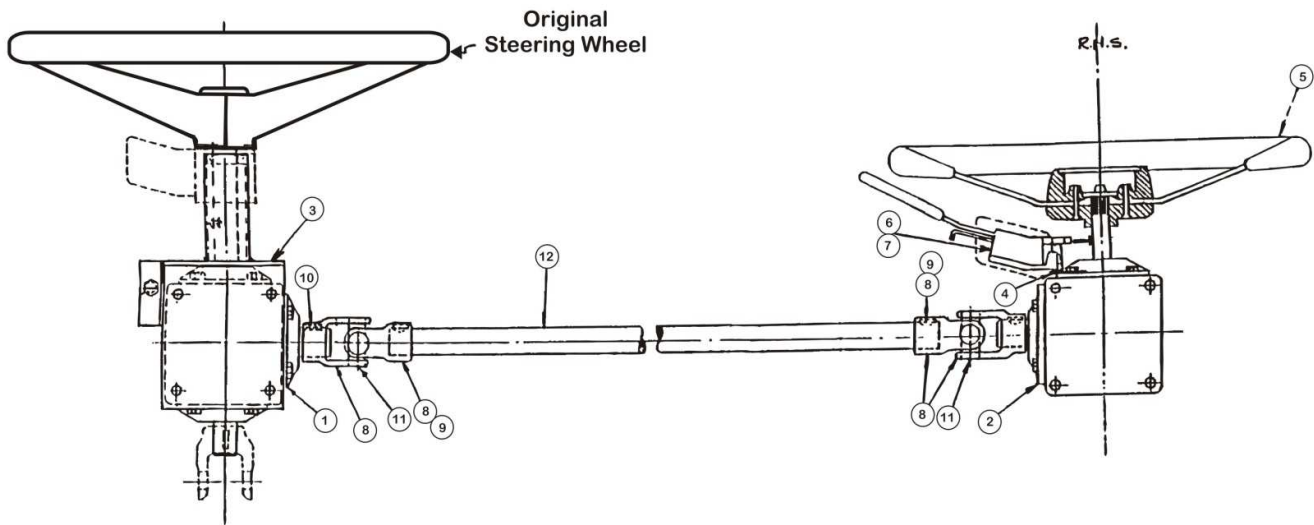


ITEM	PART NUMBER	DESCRIPTION	QTY
1	803019	Front Door Guide	1
2	804010	Rear Door Guide	1
3	808416	Sliding Door Assembly	1
4	PP-45	Door Rollers	4
5	806079	Roller Pins	2
6	670-7928	Outside Door Handle	1
7	807844	Door Lock H.D.	1
8	804451	Back Rest	1
9	808418	Glass Kit	1
10	310962	Glass Setting Rubber	310"
	808258	R.H. Sliding Window (Optional)	1
11	803443	Guide	1
11a	PP-10	Rubber Stop	1
12	PP-48	Guide Roller, Nylon	1
13	03T: 70-5001	Bus Boy Mirror	2
14	03T: SC07A	Bus Boy Mirror Bracket	2
15	804381	Change Over Relay	4
16	808762	Toggle Switch, L.H./R.H. Controls	1
17	PC-37	Horn Button	1
18	808232	Warning Label (Auto-Neutral)	1
19	807142-8	Caution Label (20 MPH)	1
20	807142-9	Caution Label	1
21	918002	Gauge Package	1

22	124	Retractable Step	1
23	2586242C91	Accelerator Pedal	1
24	R-13-1	Brake Pedal	1
25	R10-5	Work Brake Switch	1
26	Call	Air Pressure Gauge	1
27	807638	Joystick	1
28	099-452	Hood Hold Down	1
29	807788	Butt Seat	1



# CURTIS STEERING BOX SYSTEM



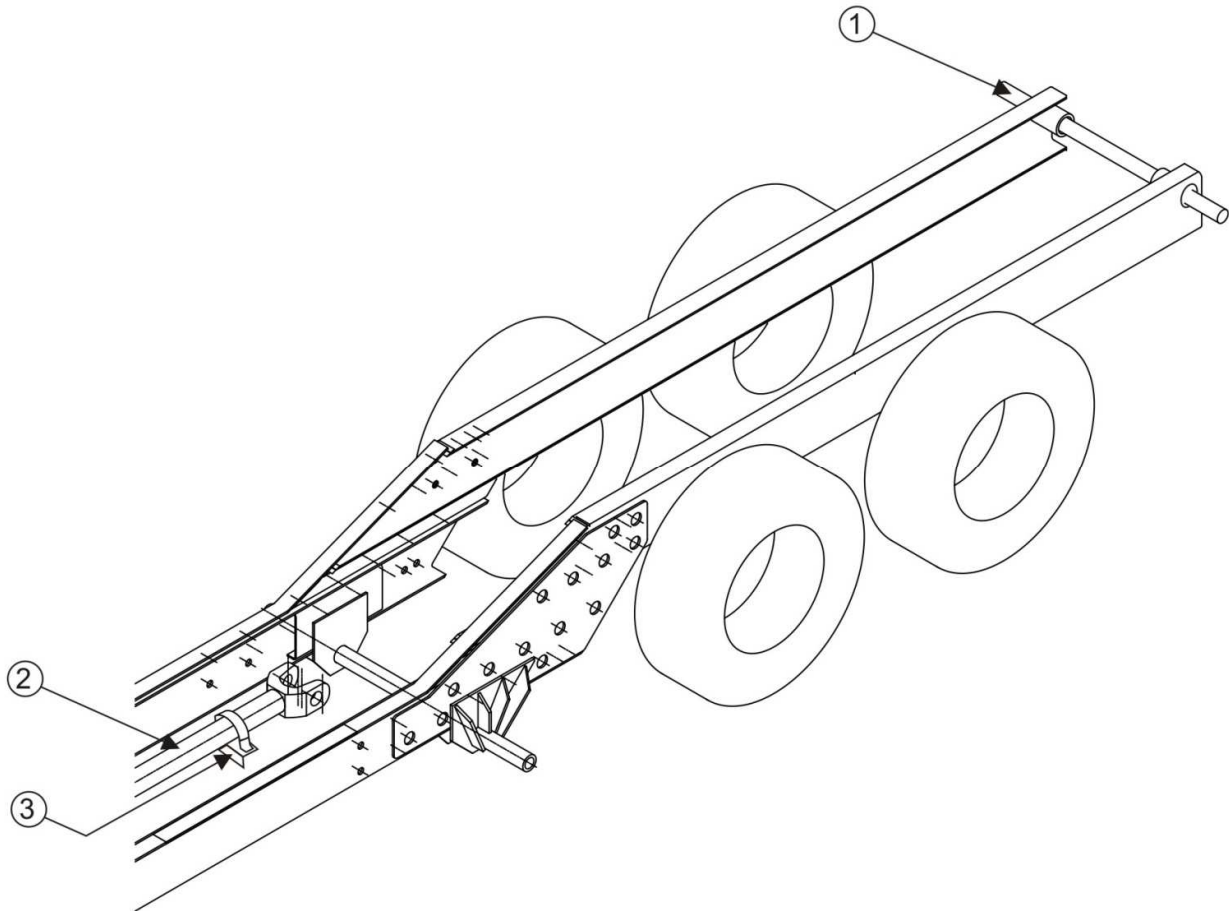
## CURTIS GEARBOX STEERING SYSTEM

ITEM	PART NUMBER	DESCRIPTION	QTY
1	810051	L.H. Curtis Gearbox	1
2	809986	R.H. Curtis Gearbox	1
3	809998	L.H. Gearbox Mtg. Plate	1
4	810040	Switch Support Bracket	1
5	808324	Steering Wheel - 18" Dia.	1
6	3587009C9	Turn Signal Switch	1
7	CALL	Harness	1
8	10-4-93	End Yoke (1" Dia. W 1/4 Keyway)	4
9	SET-203	Set Screw 3/8 NC x 3/4	4
10	KEY-1	Key 1/4 Sq x 1" Lg	2
11	D09-5-170X	Cross Kit	2
12	V981 (Det.)	Cross Shaft CRS 1" (l) x 35 1/4)	1

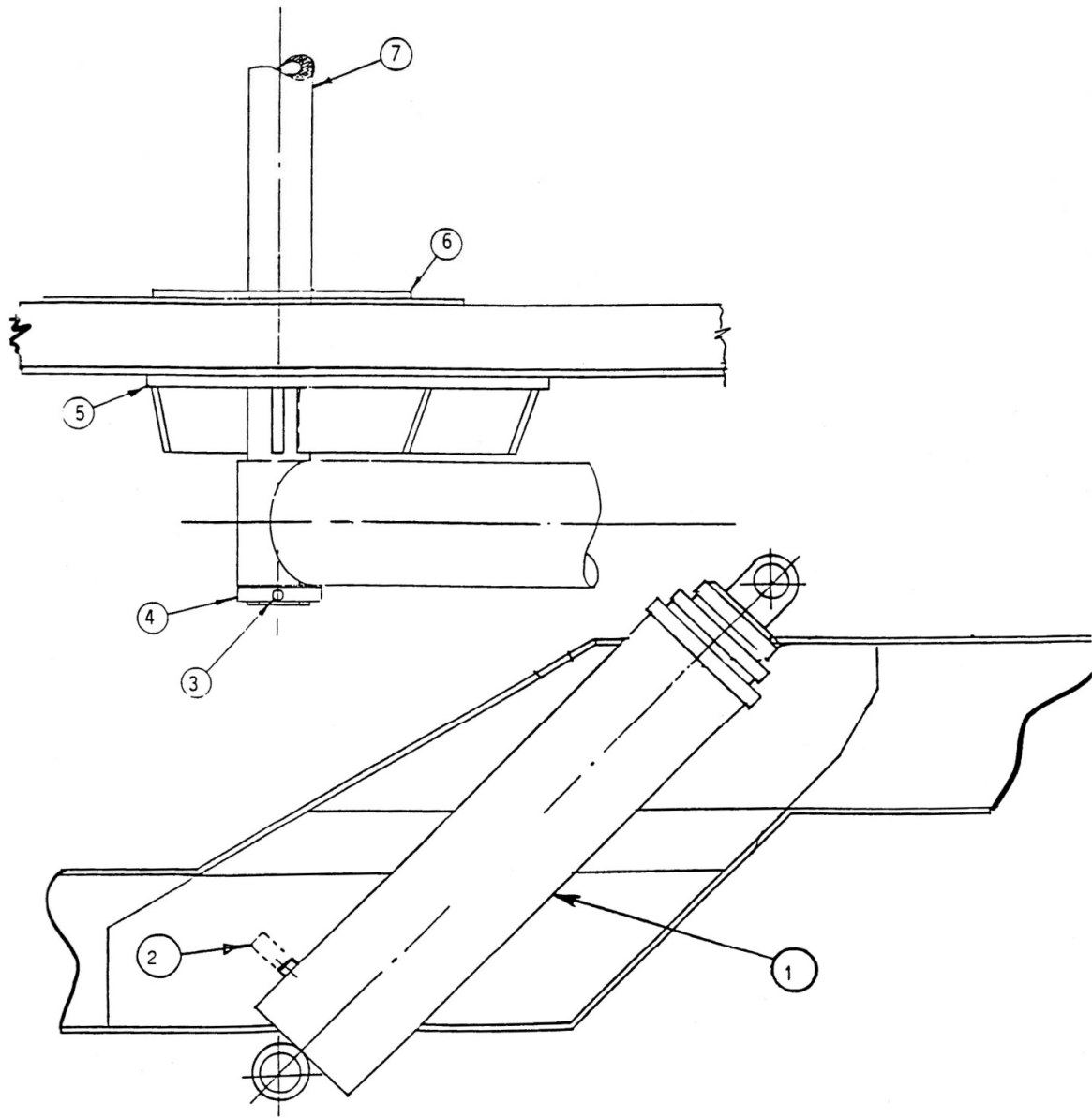
# **CHASSIS ASSEMBLY** **(PAC-KING)**



ITEM	PART NUMBER	DESCRIPTION	QTY
REF	808693	FRAME DROP MODIFICATION	1
1	808254	HINGE ASS'Y	1
2		DRIVESHAFT TUBE	1
3		DRIVESHAFT HANGAR	2



# TELESCOPIC SINGLE ACTING HOIST



ITEM	PART NUMBER	DESCRIPTION	QTY
REF	808692	HOIST INSTALLATION	1
1	808788	HOIST CYLINDER	2
2	PH-39	VELOCITY FUSE	2
3	B-785	HEX BOLT 3/8 X 5	2
4	808615	COLLAR	2
5	808614	OUTER SIDE PLATE	2
6	808613	INNER SIDE PLATE	2
7	808616	CROSS SHAFT	1
NOT SHOWN	808631	UPPER HOIST BRK W/PIN	2
NOT SHOWN	808353	HYDRAULIC MANIFOLD	1

**SECTION 2.0**

**BODY**



**2.1**

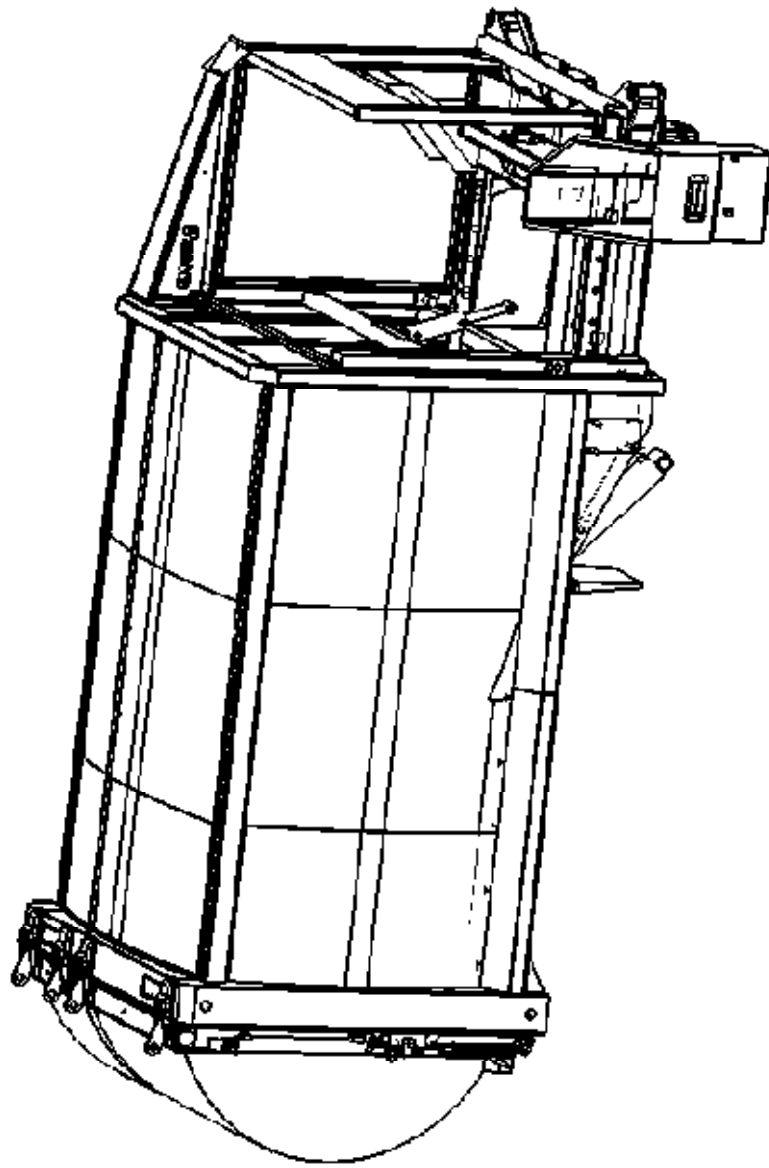
**Body**

**2.2**

**Tailgates**

**BODY**

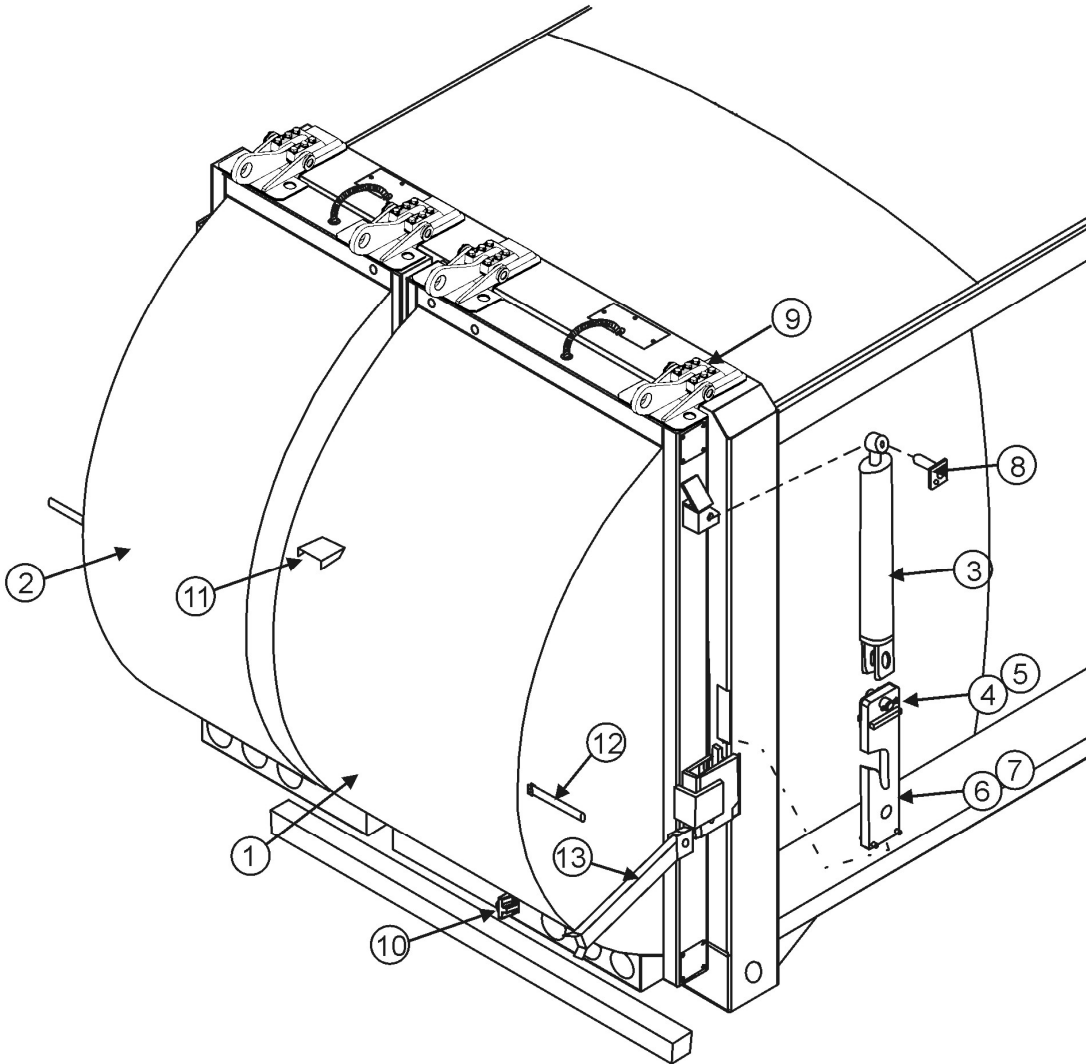
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	836589	Body - 29yd.	1



**TAILGATES**

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	810245 Rt	Right Tailgate	1
2	810245 Lt	Left Tailgate	1
3	807724	Tailgate Cylinder	2
4	802439-3	Cylinder Pin - Rod End	4
5	CP-115	Cotter Pin	8
6	802439	Tailgate Lock Slider	2
7	TP-41	3/8 Roll Pin	4
8	802442	Cylinder Pin	2
9	04PK-0030-03-A	Hinge Assembly	4
10	L02-32	License Plate Light	1
11		Optional Camera Mount	1
12		Tailgate Marker	2
13	809218	Tailgate Safety Prop	2

**Typical 60/40 Tailgate Assembly**



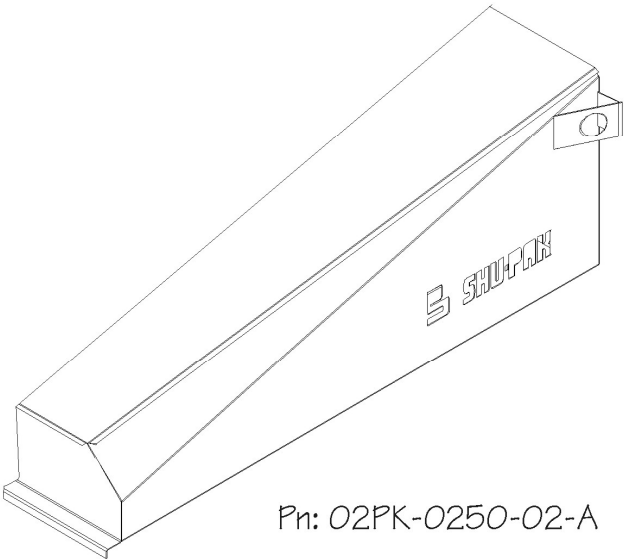
**SECTION 3.0**

**HOPPER**

- 3.1 Hopper Assembly**
- 3.2 Tailgates**



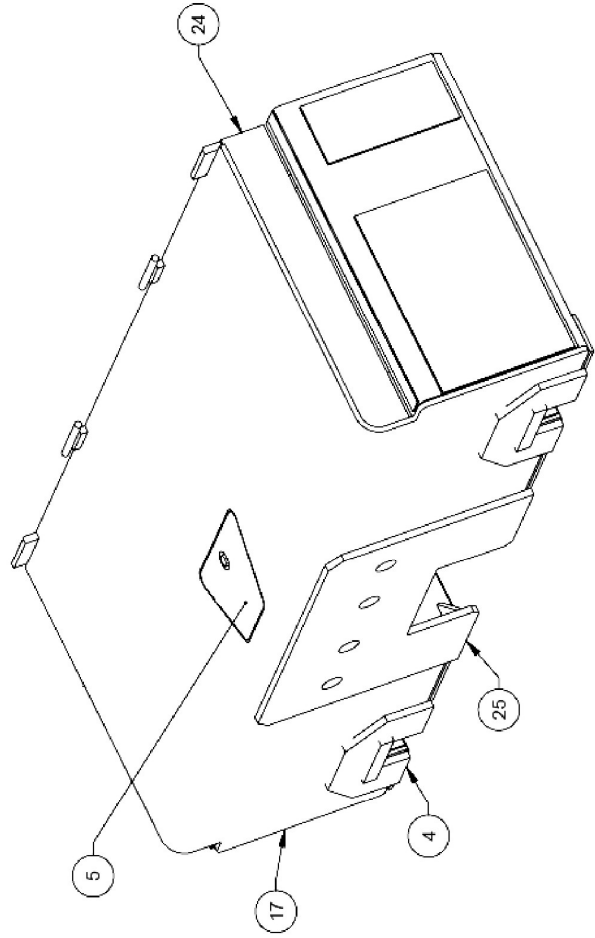
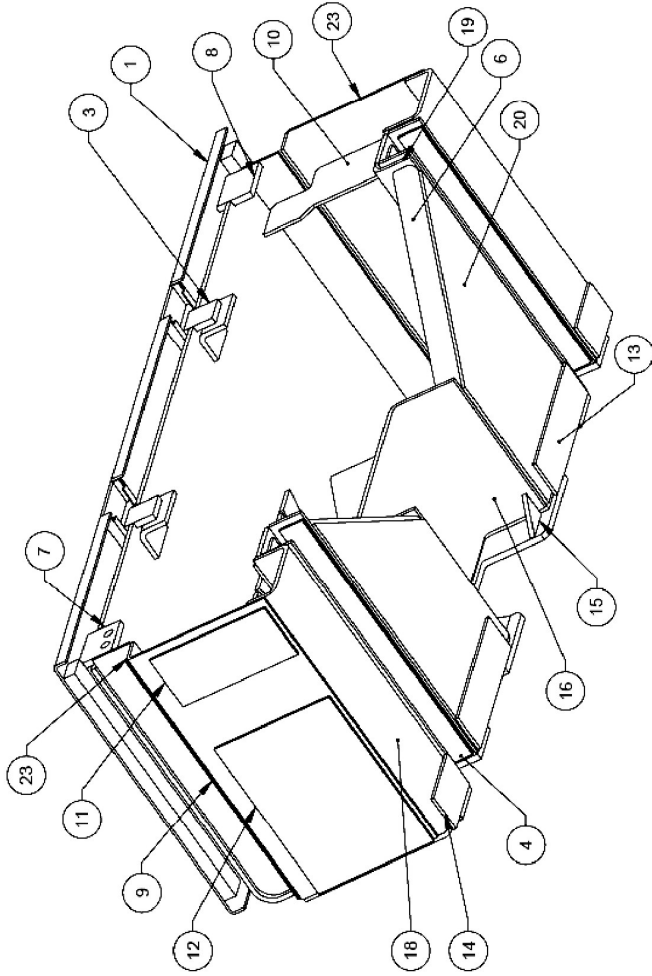
# PAC-KING I AUTOMATED ARM CANOPY



Pn: 02PK-0250-02-A

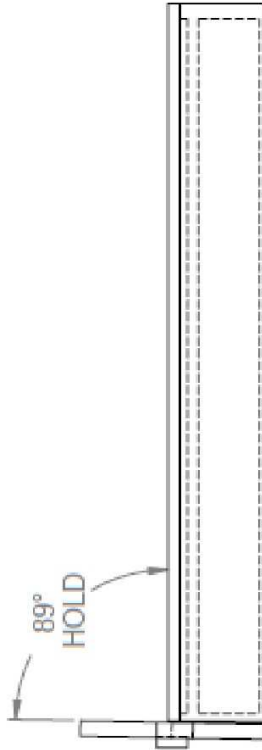
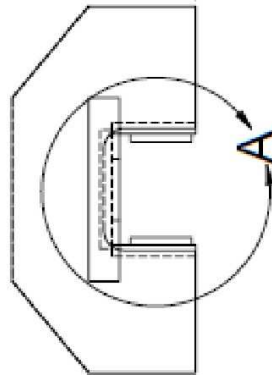
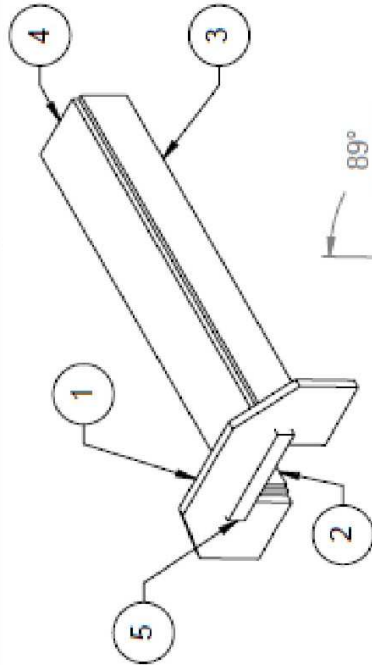
# Ram Assembly Suits Main PK Hopper 02-PK-0330-01-A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	02PK-0135-02-A	FOLLOWER ASSY, PK, 71-1/4" LONG	1
2	02PK-0139-03-A	PIN ASSY, 5-3/4" LONG	2
3	02PK-0159-02-A	GUIDE PIN ASSY, FOLLOWER PLATE	2
4	02PK-0339-01-A	GUIDE SHOE ASSY, AR PLATE	2
5	02PK-0409-01-A	COVER ASSY, PK RAM	1
6	02PK-0099-01-A	TUBE, GUSSET, 19-1/2" LONG	2
7	02PK-0081-02-A	PLATE, FOLLOWER STOP, 4" LONG	1
8	02PK-0081-03-A	PLATE, FOLLOWER STOP, 4" LONG	1
9	02PK-0107-07-A	WEAR PLATE, 1-1/2 X 23" LONG	2
10	02PK-0136-02-A	RAM GUSSET, 15-5/8" TALL	2
11	02PK-0142-05-A	WEAR PLATE, 4-1/2 X 10" TALL	2
12	02PK-0142-06-A	WEAR PLATE, 14 X 10" TALL	2
13	02PK-0142-07-A	WEAR PLATE, BOTTOM, 13-1/2" LONG	2
14	02PK-0142-08-A	WEAR PLATE, BOTTOM, 6" LONG	2
15	02PK-0231-01-A	GUSSET, 3" LONG	2
16	02PK-0344-01-A	CHANNEL, CENTER, 12-1/4" LONG	1
17	02PK-0353-01-A	RAM FRONT FACE, 70-1/4" WIDE	1
18	02PK-0358-01-A	CHANNEL, BOTTOM, 23-1/4" LONG	2
19	02PK-0359-01-A	CAP, GUIDE, 22-3/4" LONG	2
20	02PK-0362-01-A	PLATE, BOTTOM, 21-1/2" LONG	2
21	02PK-0363-L1-A	STIFFENER, RAM, LEFT, 15-3/4" TALL	1
22	02PK-0363-R1-A	STIFFENER, RAM, RIGHT, 15-5/8" TALL	1
23	02PK-0364-01-A	SIDE PLATE, 23-1/4" LONG	2
24	02PK-0364-02-A	SIDE PLATE, 3-1/4" TALL	2
25	02PK-0369-01-A	MOUNT PLATE, CENTER, 26" LONG	1
26	02PK-0388-01-A	ANCHOR LUG, RAM, LOWER	1
27	02PK-0388-02-A	ANCHOR LUG, RAM, UPPER	1
28	02PK-0401-01-A	SHIM, LUG, LOWER	1



**REF. DWG:**

REVISIONS			
REV	DESCRIPTION	DATE	APVD
A	FIRST ISSUE	5/20/2010	



STITCH WELD WEAR PLATE  
WELD 100% OUTSIDE  
STITCH WELD INSIDE

ITEM NO.	PART NUMBER	DESCRIPTION	Material	Q2PK-0339-01-AQTY.
1	Q2PK-0339-01-A	MOUNT PLATE, GUIDE SHOE	V580 1/2 STL PLATE	1
2	Q2PK-0339-01-A	PLATE, WEAR, 23-3/4" LONG	V1254 1/4" PLATE AR500	3
3	Q2PK-0339-01-A	PLATE, OUTER, 23-1/2" LONG	V579 3/8 STL PLATE	2
4	Q2PK-0339-02-A	PLATE, TOP, 23-1/2" LONG	V579 3/8 STL PLATE	1
5	Q2PK-0339-03-A	BAR, SCRAPER, 6" LONG	V579 3/8 STL PLATE	1

UNLESS OTHERWISE SPECIFIED  
DO NOT SCALE DRAWING  
INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-2009  
DIMENSIONS ARE IN INCHES  
TOLERANCES APPLY AS SHOWN BELOW  
FRACT. DIM. : ± 0.10  
1 PL. DEC. : ± 0.005  
3 PL. DEC. : ± 0.010  
SURFACE FINISH : 125



THIRD ANGLE PROJECTION

PROPRIETARY  
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176 MCCOVERN RD, CAMBRIDGE ON, N3H 4R7

**GUIDE SHOE ASSY, AR PLATE SUITS RAM ASSEMBLY**

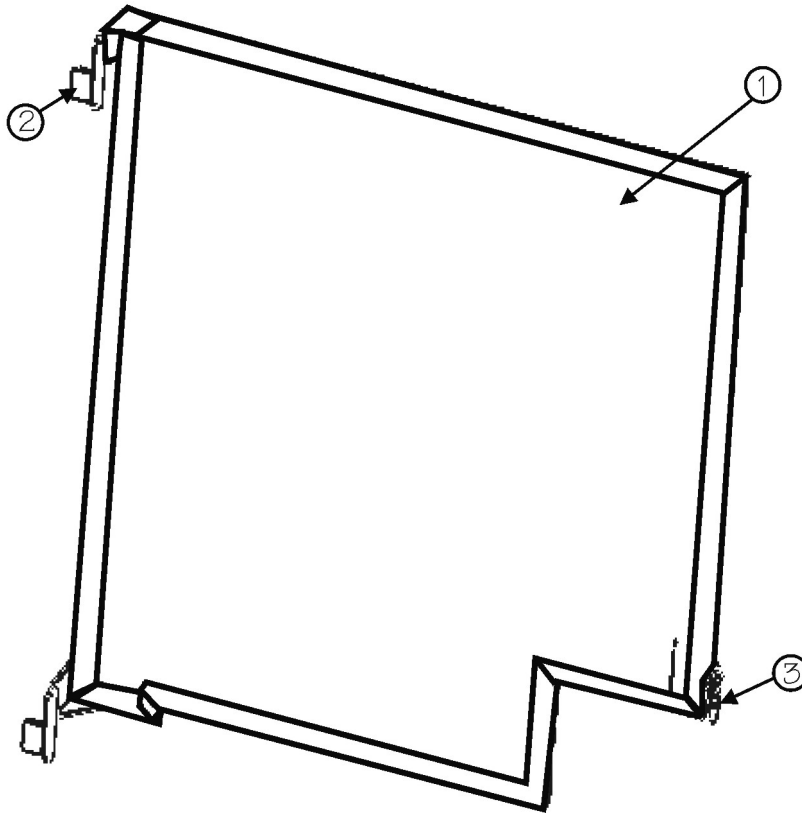
**RELEASE**

PROCESS			
SCALE	3:16	WEIGHT	41.324 lbs
DATE	JAN 28, 2009	REVISION	A
DRAWN BY	LMS	QTY	2
		DESCRIPTION	<b>02PK-0339-01-A</b>
			SHEET 1 OF 2

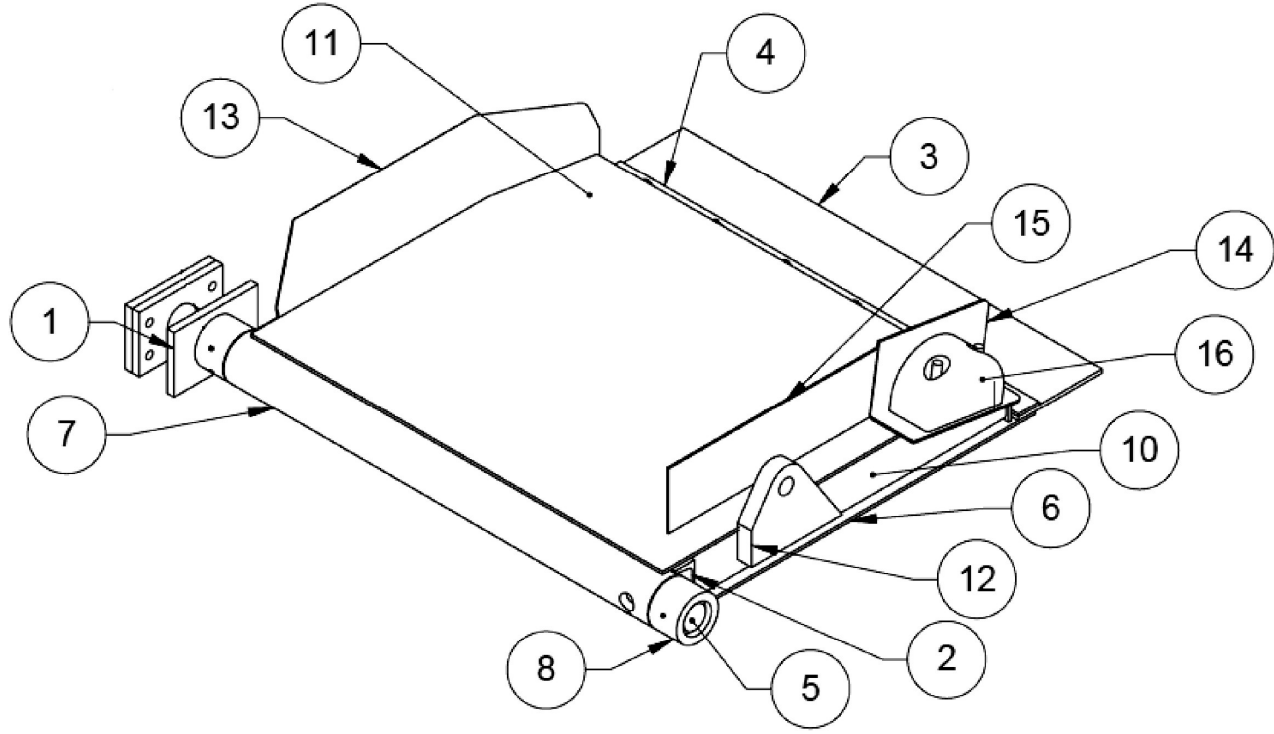
HOPPER DOOR

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	02-PK-0165-L1 or 02-PK-0165-R3	Hopper Door (Specify Left or Right)	1
2	809281	Weld On Bullet Hinge	2
3	808445	Spring Latch	1

61

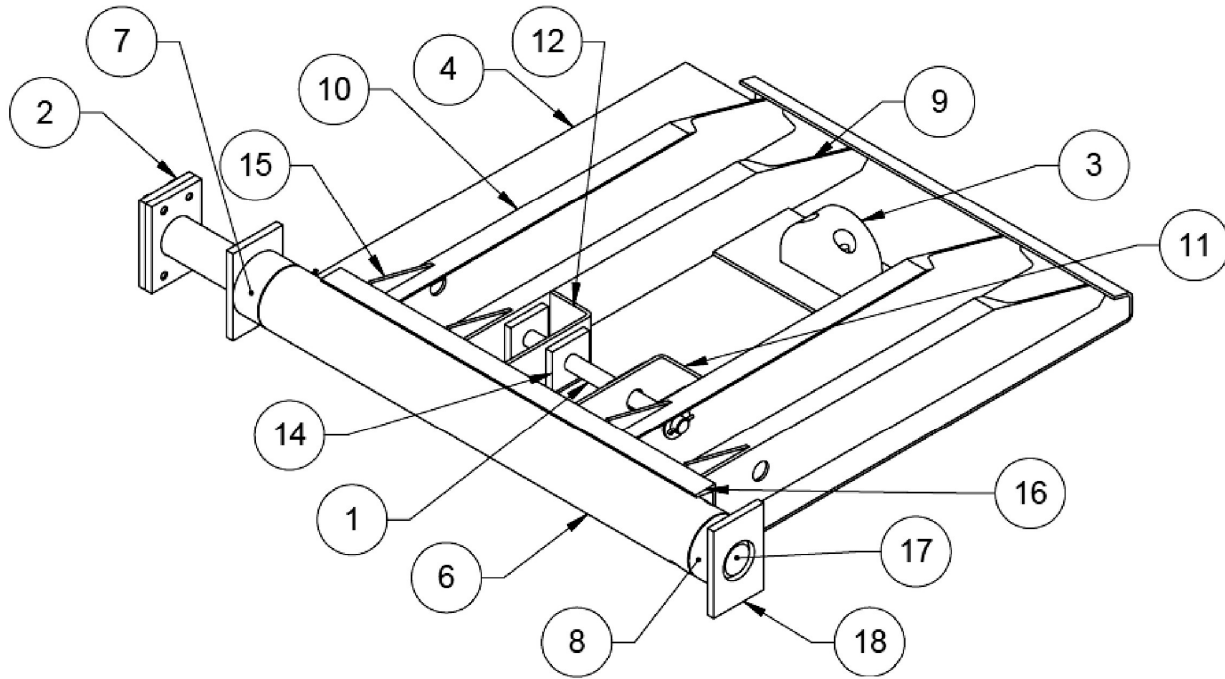


# Crusher / Chute Panel Assy. 02PK-0365-01-A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	02PK-0389-01-A	CRUSHER/CHUTE PIN ASSY	1
2	02PK-0037-01-A	CHANNEL, CRUSHER, 30" LONG	1
3	02PK-0082-03-A	RUBBER, CRUSHER, 30" LONG	1
4	02PK-0083-03-A	BAR, RETAINER, 30" LONG	1
5	02PK-0217-04-A	PIN, CRUSHER, Ø1-15/16", 6" LONG	1
6	02PK-0382-01-A	PANEL, BOTTOM, 30" LONG	1
7	02PK-0383-01-A	TUBE, CRUSHER, 30-3/8" LONG	1
8	02PK-0383-02-A	TUBE, BUSHING, 2" LONG	2
9	02PK-0384-L1-A	CHANNEL, CRUSHER, LEFT, 22-11/16"	1
10	02PK-0384-R1-A	CHANNEL, CRUSHER, RIGHT, 22-11/16"	3
11	02PK-0386-01-A	PANEL, TOP, 29-1/2" LONG	1
12	02PK-0391-01-A	PLATE, LUG, 5" TALL	1
13	02PK-0419-01-A	DEFLECTOR, CHUTE, 23" LONG	1
14	02PK-0421-01-A	MOUNT, BUMPER, 8" LONG	1
15	02PK-0422-01-A	DEFLECTOR, CHUTE, 15" LONG	1
16	A01-22	BUMPER, CRUSHER, 2-3/4" TALL	1
17	B0250-01	BOLT, 1/4" X 1" LG, GR #5	6
18	B0500-04	BOLT, 1/2 NC X 2-3/4" LG, GR #8	2
19	G6001	1/8 ZERK GREASE NIPPLE	1
20	N0250-02	NUT, TOP LOCK, 1/4" - 20NC, GR #5	6
21	N10500-02	NUT, NYLOCK, 1/2" - 13NC, GR #5	2
22	W0250-01	1/4 FLAT WASHER, GR #5	6
23	W0500-02	1/2 FLAT WASHER, SAE, GR #5	2

# Crusher Panel Assy. 60% Split 02PK-0360-01-A

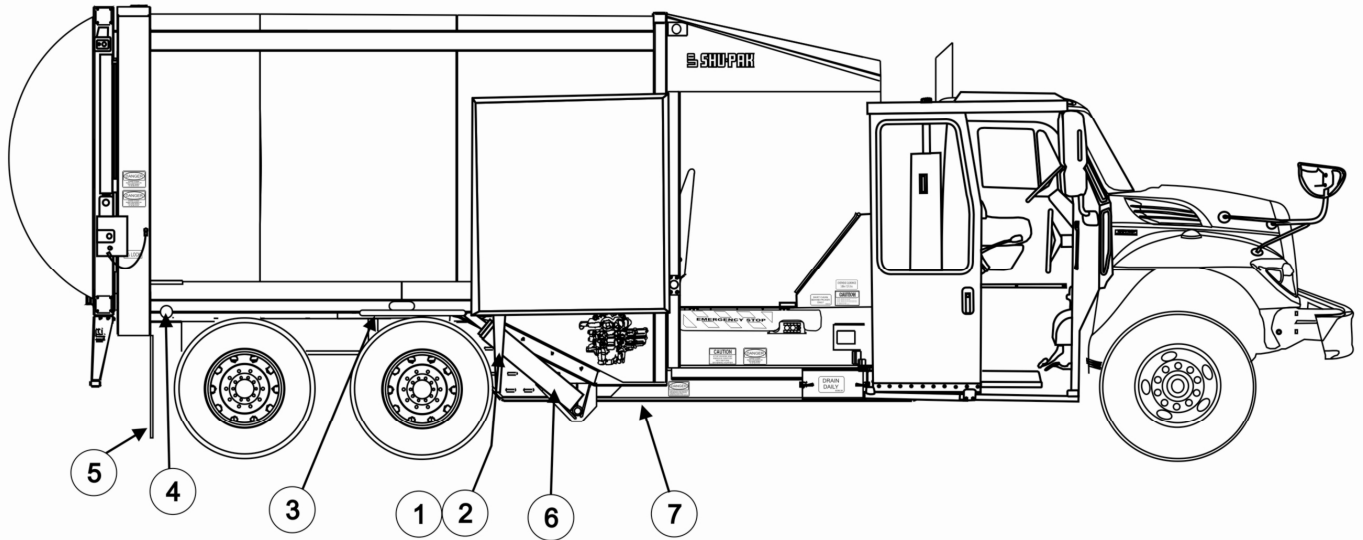


ITEM NO.	PART NUMBER	DESCRIPTION	02PK-0360-01-A/ QTY.
1	02PK-0085-01-A	PIN ASSY, CRUSHER, 13-5/8" LONG	1
2	02PK-0220-02-A	CRUSHER PIN ASSY, PK, Ø2-7/16"	1
3	02PK-0420-01-A	BUMPER MOUNT ASSY	1
4	02PK-0082-01-A	RUBBER, CRUSHER, PK, 31-1/4" LONG	1
5	02PK-0083-01-A	BAR, RETAINER, PK, 31-1/4" LONG	1
6	02PK-0093-02-A	TUBE, CRUSHER, 34-3/8" LONG	1
7	02PK-0093-03-A	TUBE, SPACER, 2" LONG	1
8	02PK-0093-04-A	TUBE, BUSHING, 1-1/2" LONG	1
9	02PK-0094-L1-A	CHANNEL, LEFT, 33-3/16" LONG	2
10	02PK-0094-R1-A	CHANNEL, RIGHT, 33-3/16" LONG	2
11	02PK-0095-L1-A	FORMED ANGLE, LEFT, 4" TALL	1
12	02PK-0095-R1-A	FORMED ANGLE, RIGHT, 4" TALL	1
13	02PK-0096-02-A	CRUSHER PANEL, PK, 30" LONG	1
14	02PK-0097-01-A	PLATE, PIN LUG, 2-7/8" LONG	4
15	02PK-0098-01-A	GUSSET, 1-1/4 X 5"	4
16	02PK-0099-02-A	CHANNEL, SUPPORT, 30" LONG	1
17	02PK-0218-03-A	PIN, CRUSHER, Ø2-7/16", 6" LONG	1
18	02PK-0219-02-A	CRUSHER PLATE, INBOARD, 2-1/2" DIA	1
19	B0250-01	BOLT, 1/4" X 1" LG, GR #5	6
20	G6001	1/8 ZERK GREASE NIPPLE	2
21	N0250-01	NUT, 1/4" - 20NC, GR #5	6
22	W0250-01	1/4 FLAT WASHER, GR #5	6

## BODY INSTALLTION

### PAC-KING

ITEM	PART NUMBER	DESCRIPTION	QTY
1	802306	MUDGUARD - L.H.	1
2	804708	MUDGUARD - R.H.	1
3	808714	BODY PROP ASS'Y	1
4	808254	REAR HINGE ASS'Y	1
5	807269	REAR MUDFLAPS RUBBER	2
6	377-1413-117	SINGLE ACTING HOIST CYLINDERS	2
7	810199	BODY POSITION LIMIT SWITCH	1



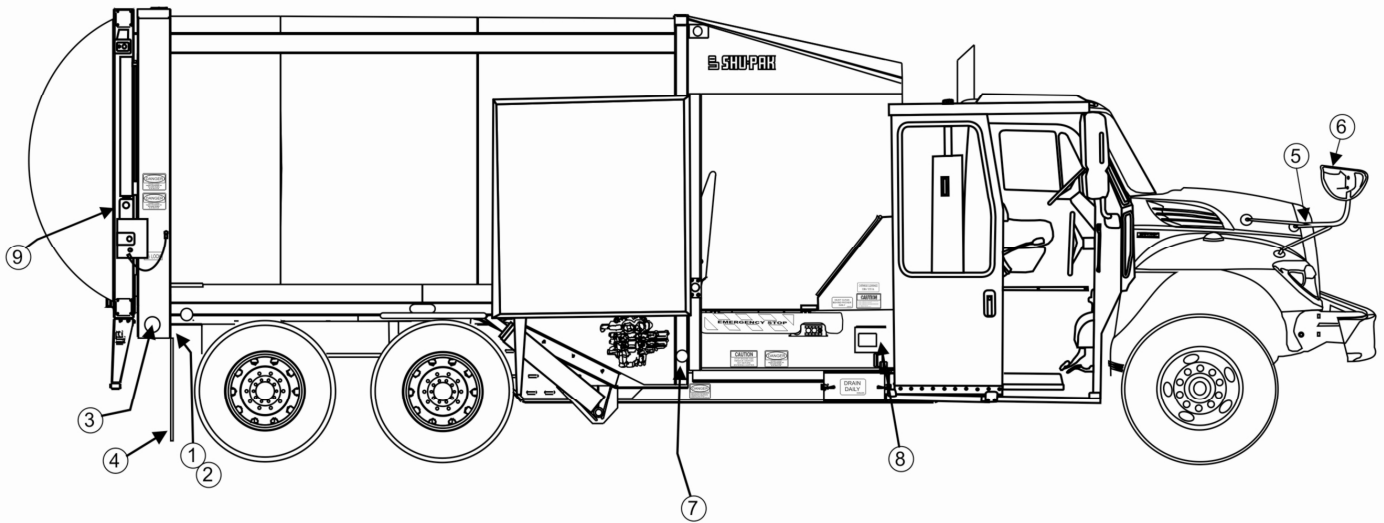
**SECTION 4.0                      FINAL ASSEMBLY**

- 4.1                      Final Assembly**
- 4.2                      Decals**

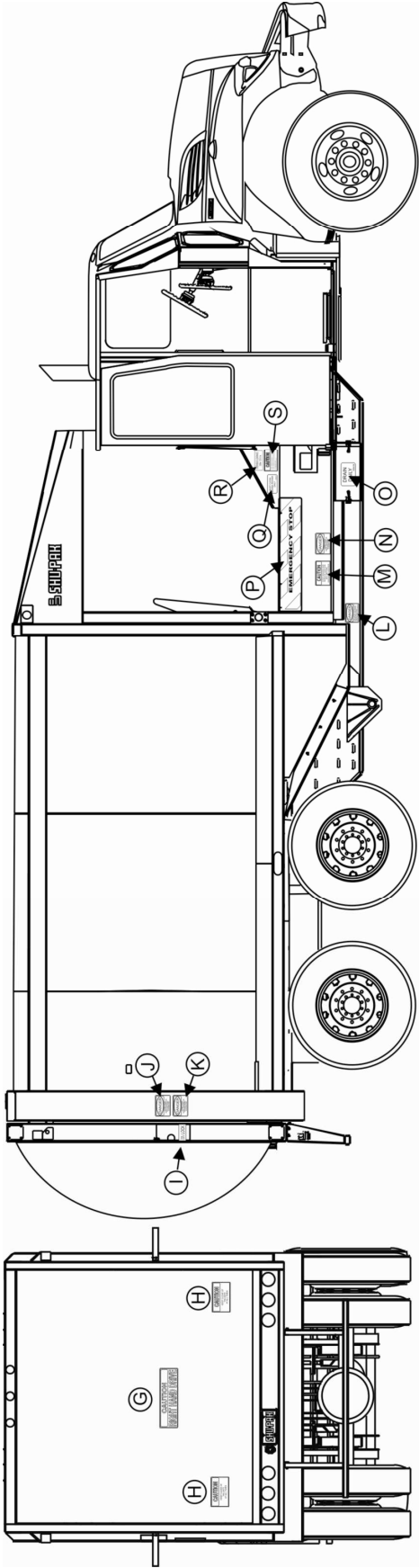
## FINAL ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	803376	Bracket - Mud flap L.H.	1
2	806217	Bracket - Mud flap R.H.	1
3	L01-89	Reflectors Red	2
4	807369	Mud Flap -Rubber	2
5	806836	Bus Boy Mirror Arm	2
6	806835	Bus Boy Mirror Head	2
7	L01-90	Reflector Yellow	2
8		Ram Proximity Sensor Cover	1
9		Tailgate Proximity Sensor Cover	1

24



# SHU-PAK SAFETY DECALS



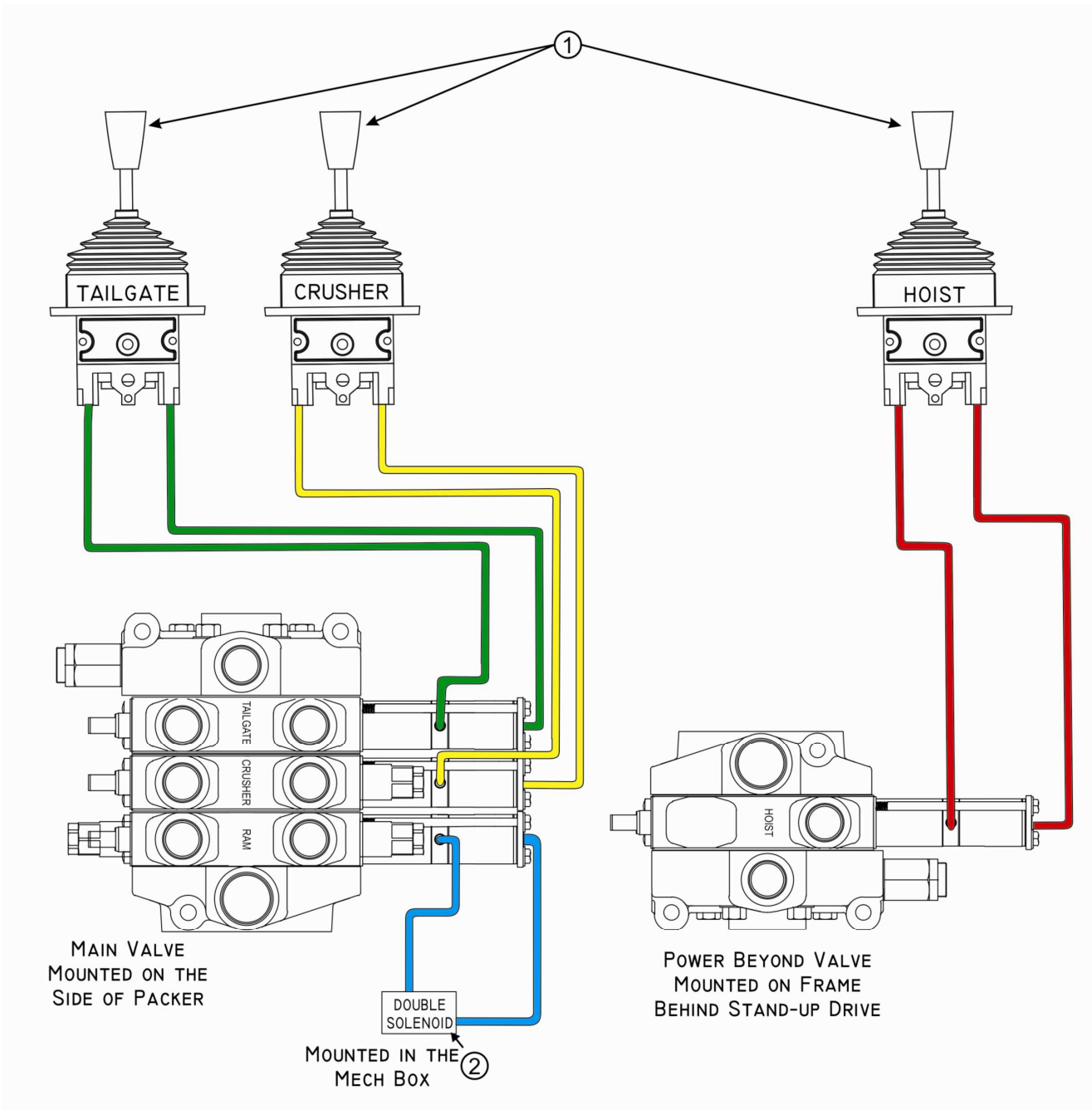
Item	Rec'd.	Description
A	1	ATTENTION, ADJUST MIRRORS... (Cab General)
B	1	CAUTION, 5 lb FIRE EXTINGUISHER... (Cab General)
C	1	CAUTION, OPERATING SPEED... (Cab General)
D	1	CAUTION, DO NOT... (Cab General)
E	1	WARNING, TRANS. WILL AUTO... (Cab General)
F	2	WATCH FOR OVERHEAD...
G	2	CAUTION, RIGHT HAND DRIVE
H	2	CAUTION, KEEP CLEAR OF...
I	2	TAILGATE LOCK
J	2	DANGER, STAND CLEAR WHEN...
K	2	DANGER, TAILGATE PROP MUST...
L	2	DANGER, ALWAYS USE SAFETY PROP...
M	2	CAUTION, STOP ENGINE AND REMOVE...
N	2	DANGER, STAND CLEAR WHEN...
O	2	DRAIN DAILY
P	2	EMERGENCY STOP
Q	2	MUST CLEAN BEHIND...
R	2	OVERHEAD CLEARANCE...
S	2	CAUTION, DO NOT... (Body General)



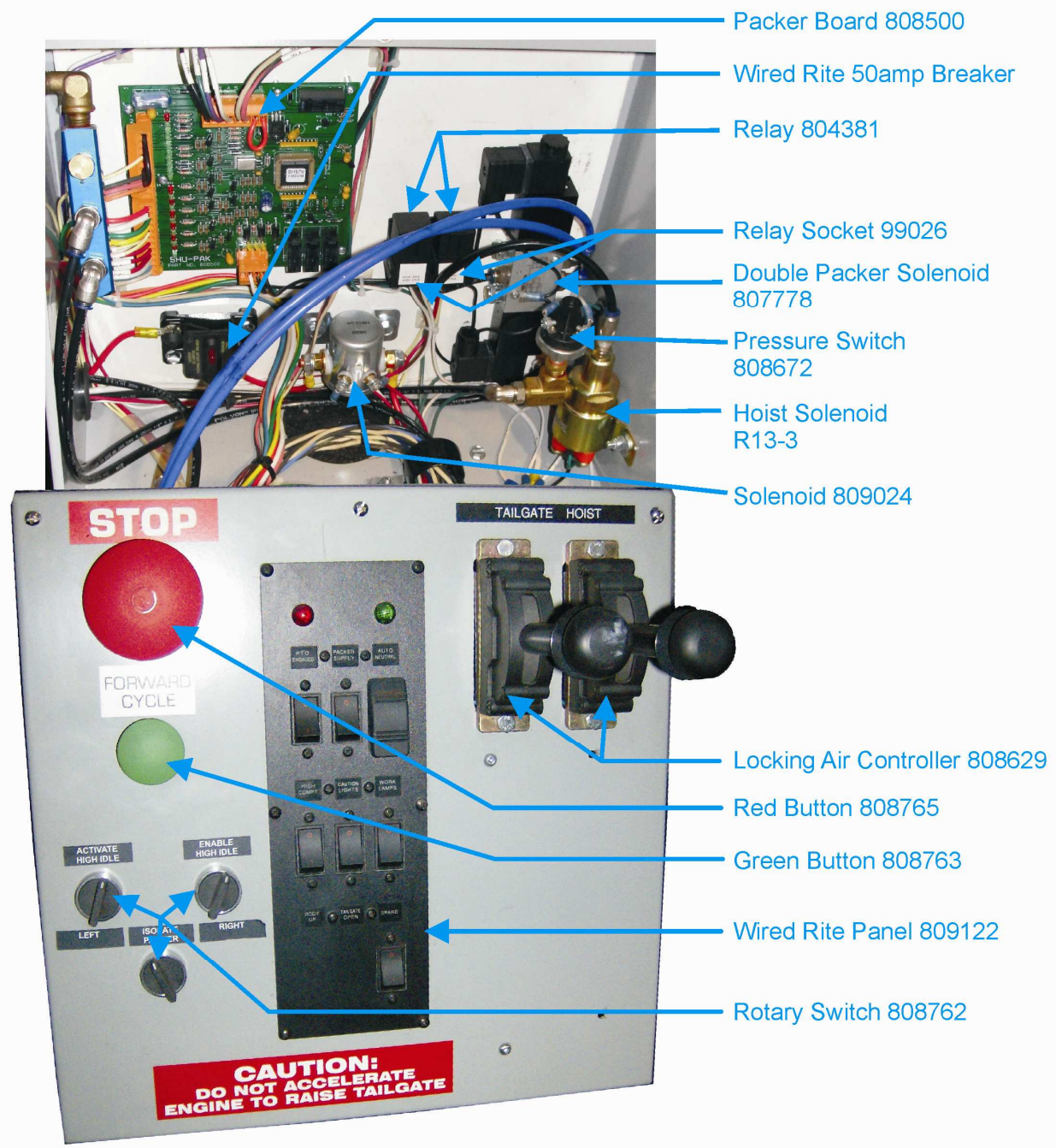
**SECTION 5. AIR & ELECTRICAL**

**PNEUMATICS OVER HYDRAULIC CIRCUIT**

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	807638	Air Control Joystick	1
2	807778	Solenoid Valve	2



# IN-CAB MECH BOX



Packer Board 808500

Wired Rite 50amp Breaker

Relay 804381

Relay Socket 99026

Double Packer Solenoid 807778

Pressure Switch 808672

Hoist Solenoid R13-3

Solenoid 809024

Solenoid 809024

Locking Air Controller 808629

Red Button 808765

Green Button 808763

Wired Rite Panel 809122

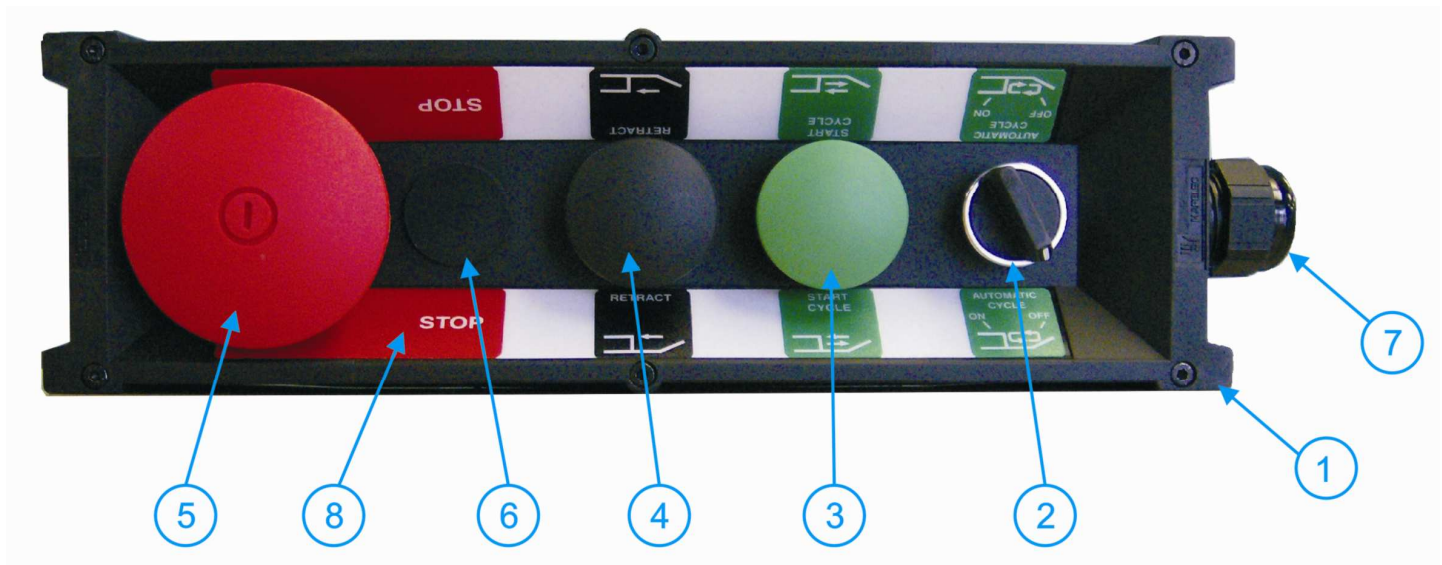
Rotary Switch 808762

**CAUTION:**  
DO NOT ACCELERATE  
ENGINE TO RAISE TAILGATE



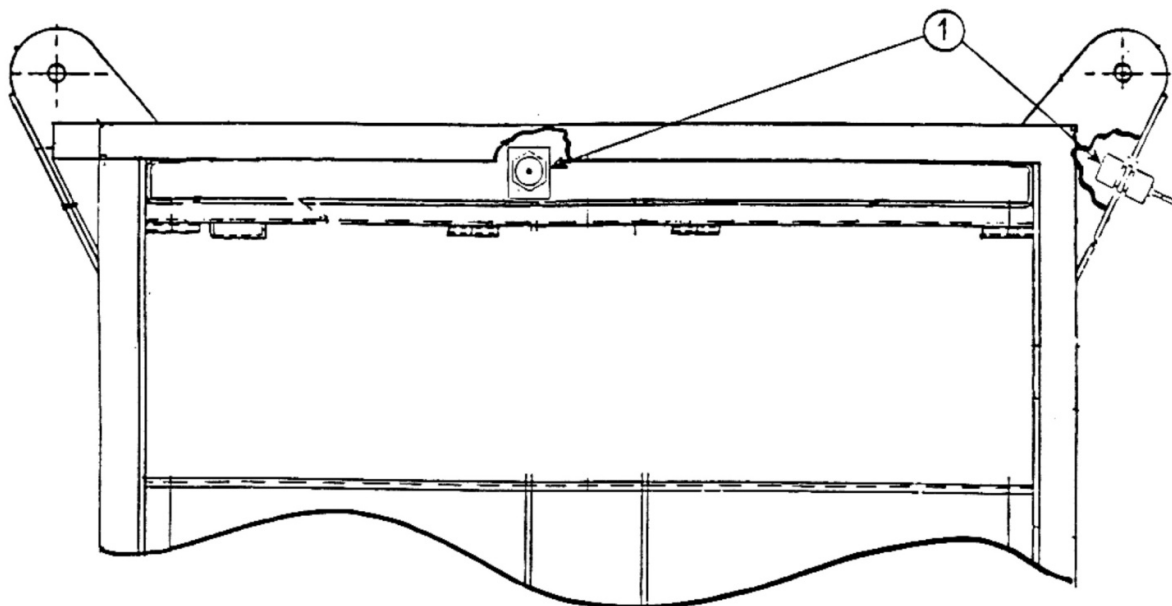
# PACKER EXTERNAL CONTROLS

ITEM	PART NUMBER	DESCRIPTION	QTY
	808760	PACKER CONTROL STATION	
1	808761	CONTROL BOX	1
2	808762	ROTARY SWITCH (CYCLE)	1
3	808763	GREEN BUTTON	1
4	808764	BLACK BUTTON	1
5	808765	RED BUTTON	1
6	808766	PLUG	1
7	808767	STRAIN RELIEF	1
8	808768	LABEL	2



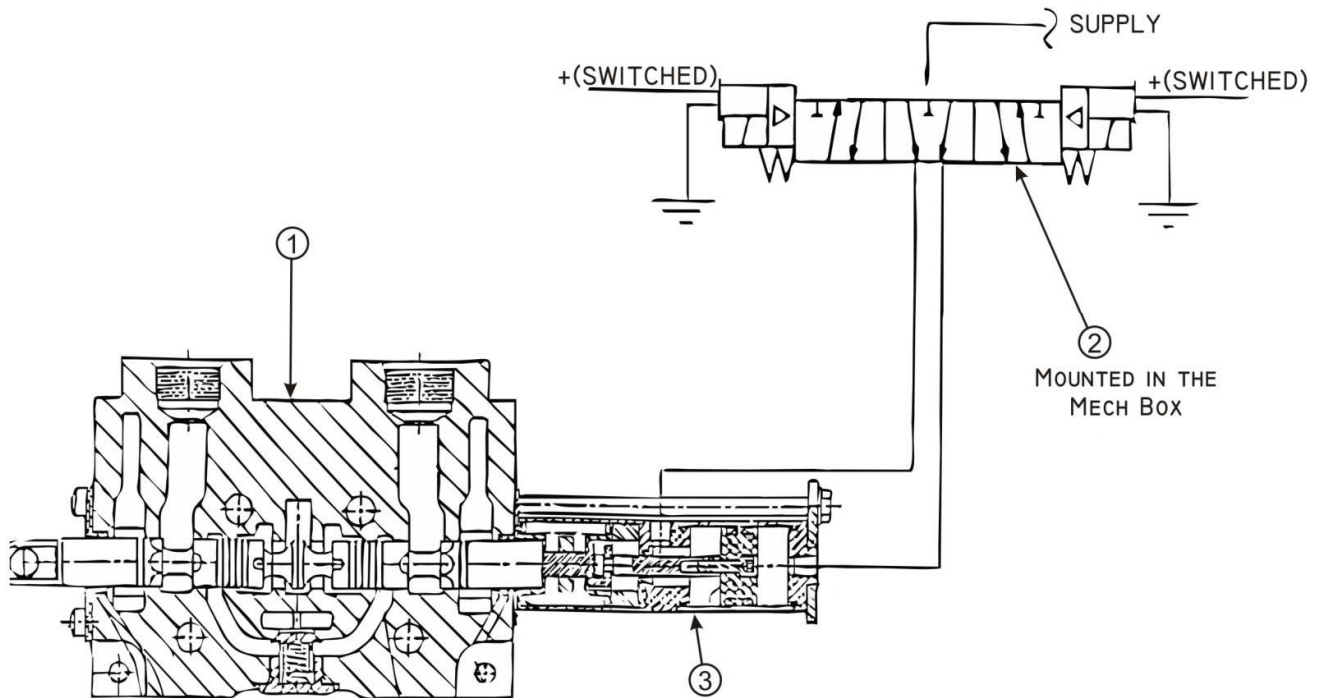
## PACKER PROXIMITY SENSORS

ITEM	PART NUMBER	DESCRIPTION	QTY
1	808795	PROXIMITY SWITCH	2



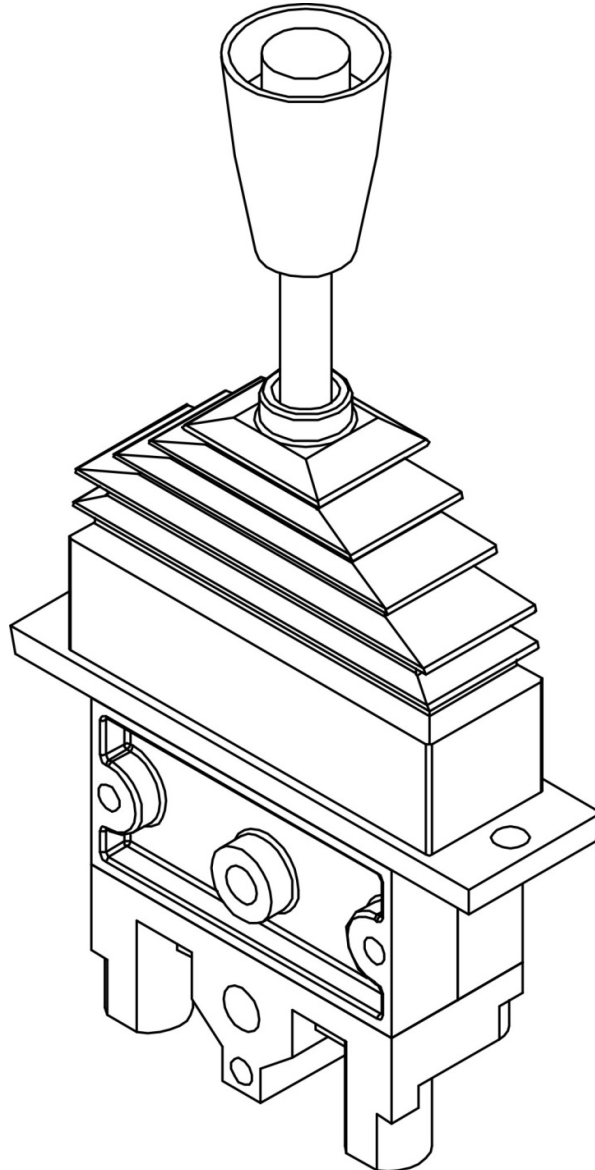
**ELECTRIC OVER AIR CONTROL**  
**FOR PACKER SYSTEM**

ITEM	PART NUMBER	DESCRIPTION	QTY
1		Packer Valve Section	
2	807778	Solenoid Pilot Air Valve	1
3	808204	Air Shift Kit	



**AIR CONTROLLER**

ITEM	PART NUMBER	DESCRIPTION	QTY
1	807638	Air Controller	As Req'd
	808629	Air Controller W/Lock	As Req'd



# SHU-PAK ELECTRONIC PACKER CONTROL

## L.E.D. Interpretation P.L.C Board P/N 808500

TB1

-1	Red	Power to Reverse Limit Switch
-2	Green	Input from Reverse Limit Switch
-3	Red	Power to Forward Limit Switch
-4	Green	Input from Forward Limit Switch
-5	Red	Power to Activate High Idle (Manually)
-6	Green	Activated when on
-7	Red	Power to Enable High Idle (Dash Switch)
-8	Green	Enabled when on
-9	Red	Power to Neutral Relay (or Neutral Switch)
-10	Green	Neutral when on
-11	Red	Power to Cycle Selector Toggle Switch
-12	Green	Three Cycle When On - One Cycle When Off

TB2

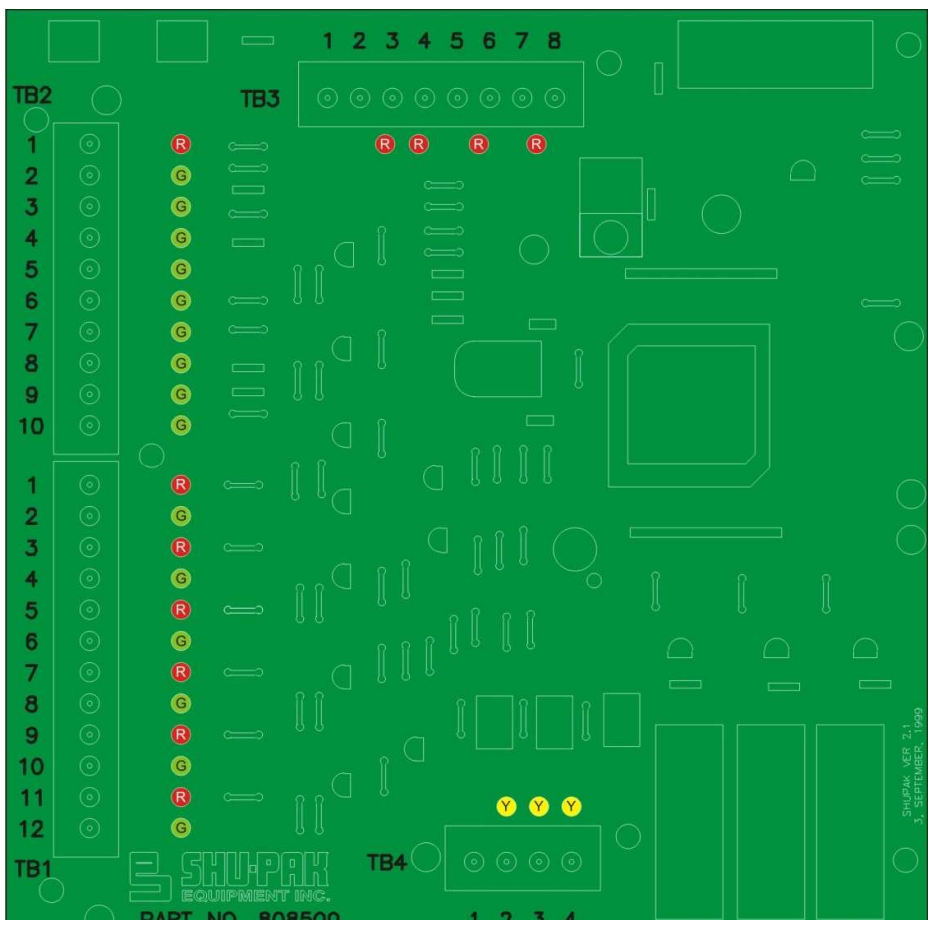
-1	Red	Power to Selector Switch (Optional)
-2	Green	Input from Roadside Selector
-3	Green	Power to Roadside Green and Black Button
-4	Green	Input from Roadside Green Button
-5	Green	Input from Roadside Black Button
-6	Green	Input from Curbside Selector
-7	Green	Power to Curbside Green and Black Button
-8	Green	Input from Curbside Black Button
-9	Green	Input from Curbside Green Button
-10	Green	Not Used

TB3

-1		Battery Ground
-2		(12) Volt DC from Battery
-3	Red	Red E-Stop (#1) In Cab
-4	Red	Red E-Stop (#1) In Cab
-5	Red	E-Stop (#2) Outside Controls
-6	Red	Red E-Stop (#2) Outside Controls
-7		Spare E-Stop (#3)
-8	Red	Spare E-Stop (#3)

TB4

-1		Not Used
-2	Yellow	Power to High Idle System
-3	Yellow	Power to Reverse Packer Solenoid
-4	Yellow	Power to Forward Packer Solenoid



## WIRED RITE GENERAL NOTES :

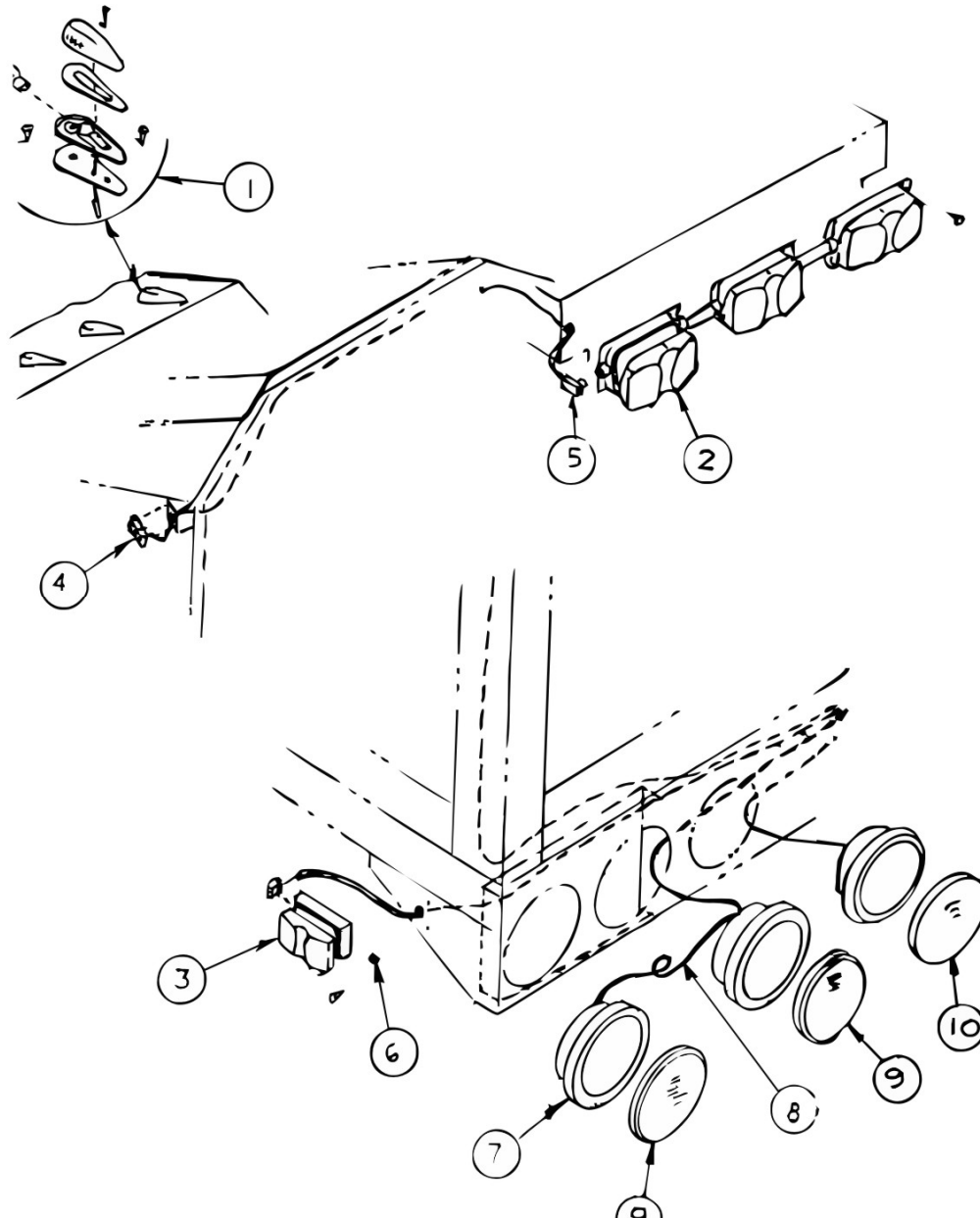
- 1 ON WIRED RITE PANEL (809122) BODY UP & TG OPEN ALARMS ARE POWERED FROM THE BUSS BUT THEIR INDICATOR LIGHTS ARE POWERED BY TBL. IF TBL CICUIT IS POWERED BY THE PARK LAMP CIRCUIT, INDICATOR LIGHTS WILL ONLY WORK WHEN PARK LIGHT CIRCUIT ENERGIZED.
- 2 BACK-UP ALARM CIRCUIT IS ENERGIZED IF EITHER BODY-UP OR TG OPEN LIMIT SWITCHES ARE TRIGGERED.
- 3 SUPPLY 12 V. TO 'HIGH COMPACT' SOLENOID, 'JOYSTICK CONTROL' SOLENOID, UP TO 10 CLEARANCE LIGHTS OR 'SPARE' SWITCH. LEGENDS CAN BE CHANGED AS REQUIRED.
- 4 LOCATE 50 AMP. CIRCUIT BREAKER (CWB-1080) ON INSIDE OF THE MEC BOX.
- 5 LOCATE SOLENOID (809024) GEARBOX STYLE ON INSIDE OF THE MEC BOX.
- 6 REFER TO DWG. 809052 FOR AUTO-NEUTRAL SCHEMATIC.
- 7 REFER TO DWG. 810261 FOR PACKER BOARD WIRING.
- 8 REFER TO DWG. 810262 FOR PANEL WIRING.

Crct	Wire GA.	Colour	Imprint	Switch	Indicator Light	FUNCTION
1	10 Ga	Red	Buss			MAIN POWER FEED TO WIRE-RITE PANEL
2	16 Ga	Wht	GND			WIRED-RITE PANEL GROUND
3	16 Ga	Yel-Red	TBL	SPST	AMBER	PANEL LIGHT SIGNAL FROM DASH
4	14 Ga	Grn-Red	PTO	SPST	AMBER	SUPPLY 12V 15 AMP MAX WHEN ON. LIGHT ON WHEN PTO SWITCH TO GROUND
5	14 Ga	Grn-Blu	Packer	SPST	AMBER	SUPPLY 12V TO PACKER CIRCUIT BOARD
6	14 Ga	Yel-Brn	H Compact	SPST		SUPPLY 12V. SEE NOTE # 3
7	14 Ga	Brn-Yel	Caution	SPST	AMBER	SUPPLY 12V. TO STROBE CONTROL PANEL
8	14 Ga	Yel	Work Lgt		RED	SUPPLY 12V. TO 3 FLOOD LIGHTS
9	16 Ga	Grn-Wht	PTO IND		AMBER	SUPPLY 12V TO JOYSTICK SUPPLY SOLENOID
10	16 Ga	Gry-Red	Tg Open		AMBER	SUPPLY 12V SIGNAL . LIGHT ON WHEN CIRCUIT IS GROUNDED VIA LIMIT SWITCH (BUZZER = YES)
11	16 Ga	Grn-Wht	Body Up			SUPPLY 12V SIGNAL. LIGHT & BUZZER ON
12	14 Ga	Red	12V AUX	SPST	AMBER	SUPPLY 12V TO STROBE. & AUTO-NEUTRAL
13	14 Ga	Grn	Spare			SPARE 12V TO 'SPARE'
14	14 Ga	Gry-Org	B Up Alarm	DPST	GREEN	BACK UP ALARM. SEE NOTE # 2
15	16 Ga	Blk	161B	DPST		AUTO-NEUT. - GROUND FROM PRESSURE SWITCH # 1
16	16 Ga	Grn	Black 1			AUTO-NEUT. - FROM ALLISON WIRE 117
17	16 Ga	Gry	Black 2			AUTO-NEUT. - FROM PRESSURE SWITCH # 2
18	16 Ga	Yel	114			AUTO-NEUT. - INDICATOR FROM ALLISON/NAV 114.
19	16 Ga	Vio	123			AUTO-NEUT. - MANUAL NEUTRAL SIGNAL
20	16 Ga	Wht-Yel	TB1#10			AUTO-NEUT. - SIGNAL TO TB1 # 10
21	16 Ga	Red	TB1#9			AUTO-NEUT. - SIGNAL FROM TB1 # 9



LIGHTS – STOP, TURN AND SIGNAL

ITEM	NUMBER	DESCRIPTION	QTY.
1	L01-37	Amber Running Lights	3
2	L01-6	Light - Triple Red	1
3	L01-82	Red Clearance	2
4	L01-83	Amber Clearance	2
5	G06-501	Connector	5
6	R16-211-2	Plug - 1/8 Pipe	5
7	807224	Red Combination Lamp	4
8	807225	Pigtail	4
9	807209	Closed Back Grommet	4



SECTION 6



# HYDRAULICS

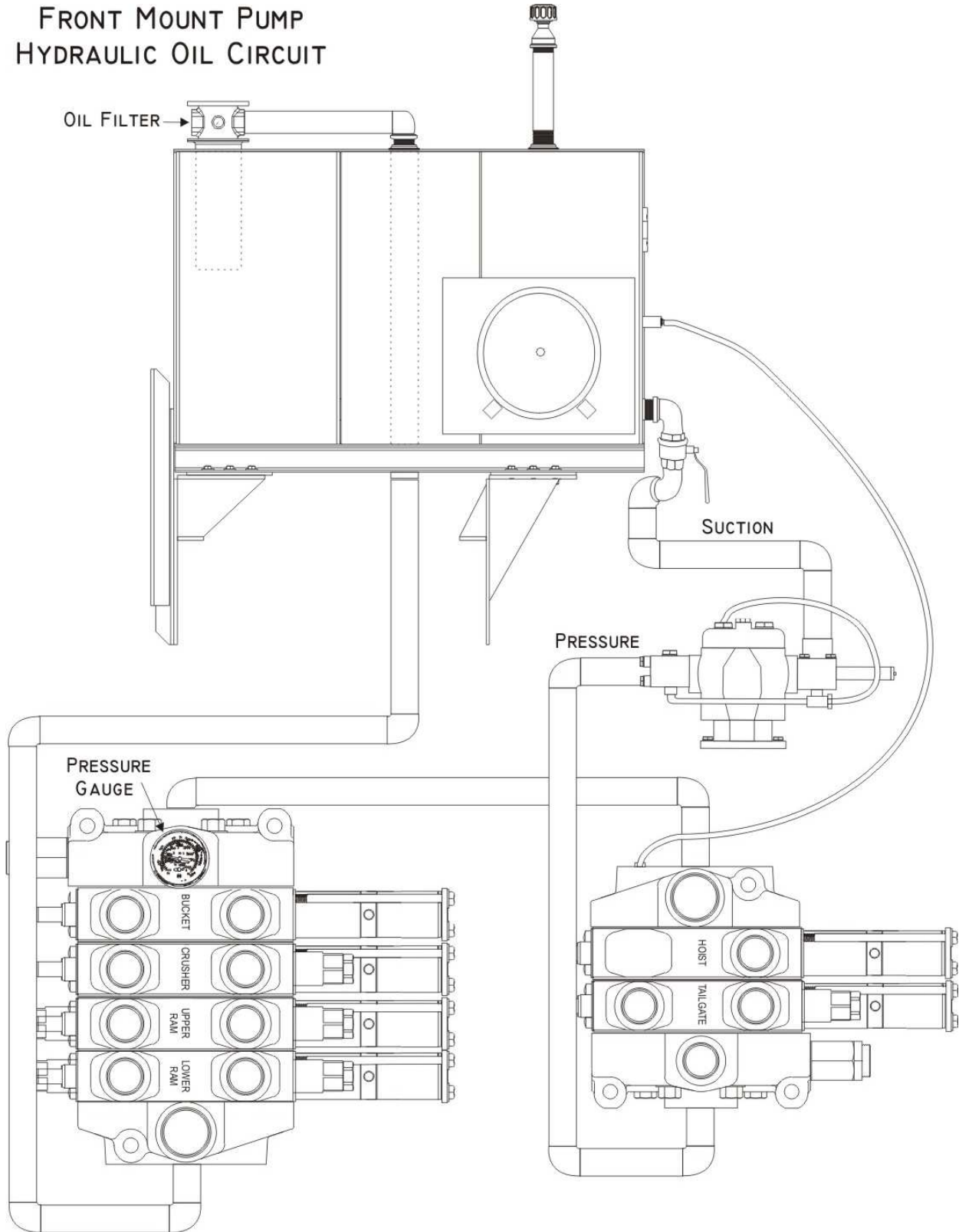
FRONT PUMP INSTALLATION

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	807637	Front Pump	1
2	807737	Beaded Elbow 90°	1
3	804444	2" Hose	30
4	H41-88DB-32	Clamp	2
5	807138	Suction Manifold	1
6	807736	Flange Kit	1
7	807735-1	Hose 1 1/4 - Valve	1
8	807735-2	Hose 3/4 - By-pass	1
9	807735-3	Hose 1/2 - Pilot	1
10	806742	Pump Drive Shaft	1
11	803879	Guard Drive Shaft	1
12	806747-1	Guard Pump	1

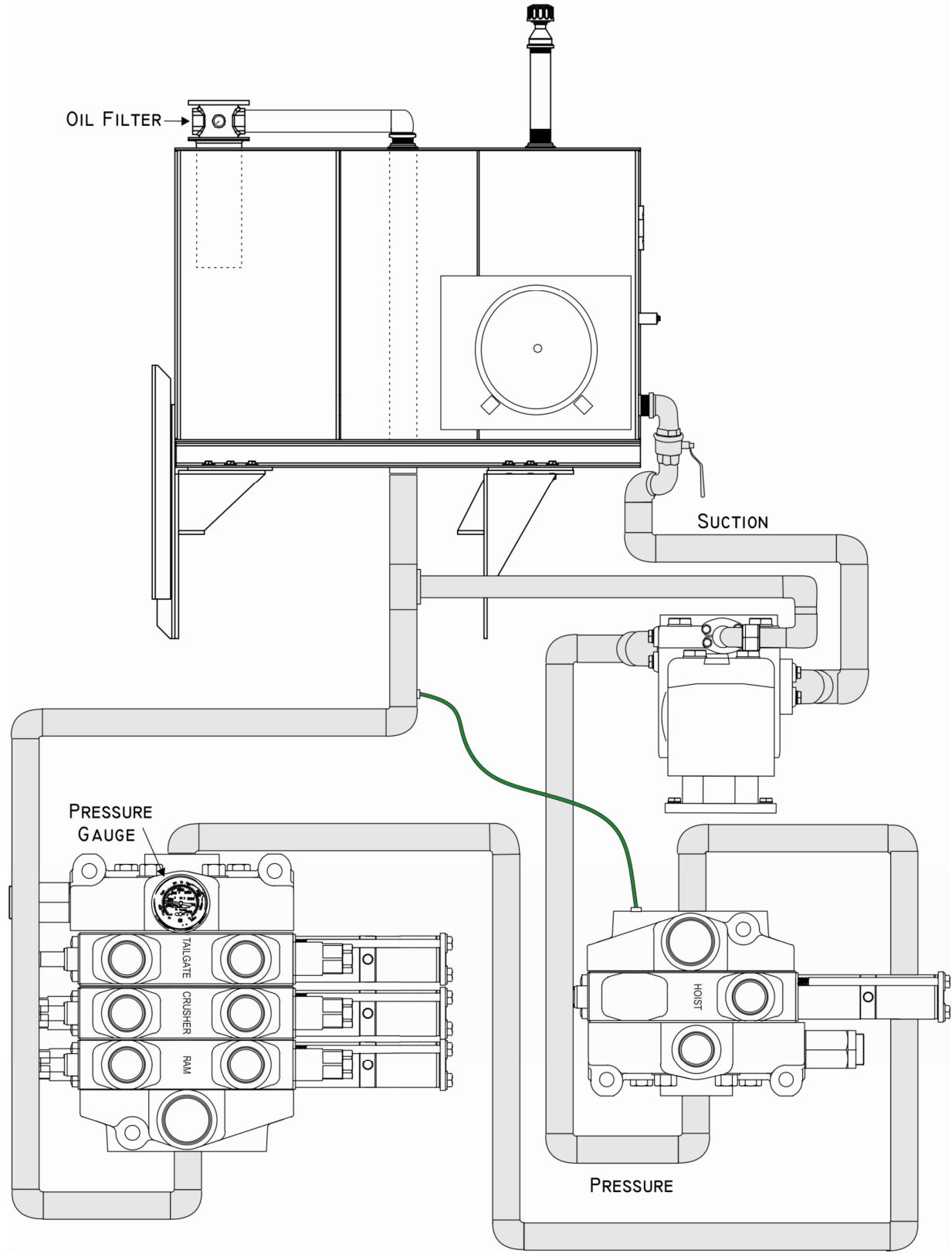


# Town & Country Circuit

## FRONT MOUNT PUMP HYDRAULIC OIL CIRCUIT



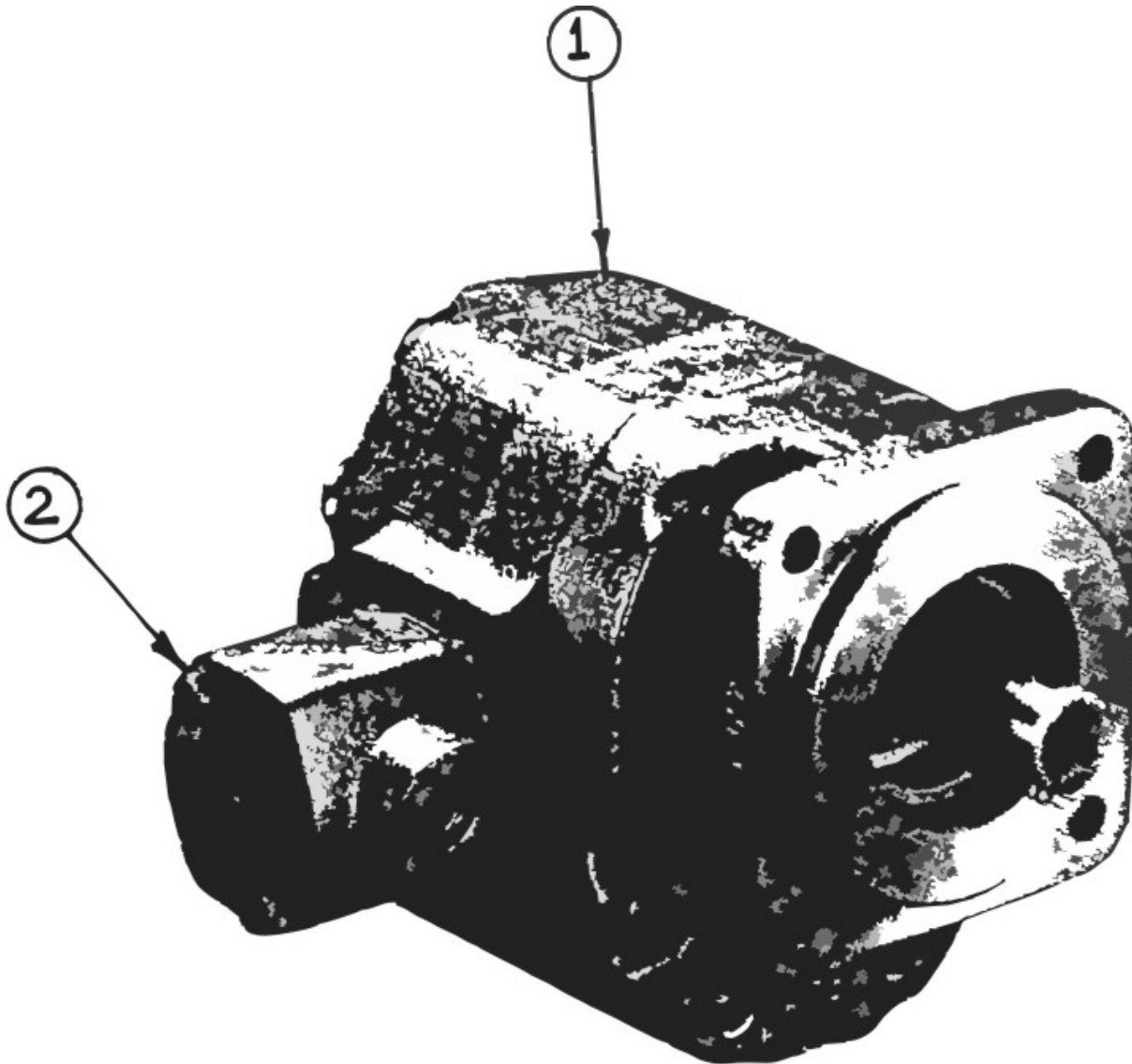
### MUNCIE LIVE PAK - FRONT MOUNT PUMP HYDRAULIC OIL CIRCUIT



PERMCO FRONT PUMP

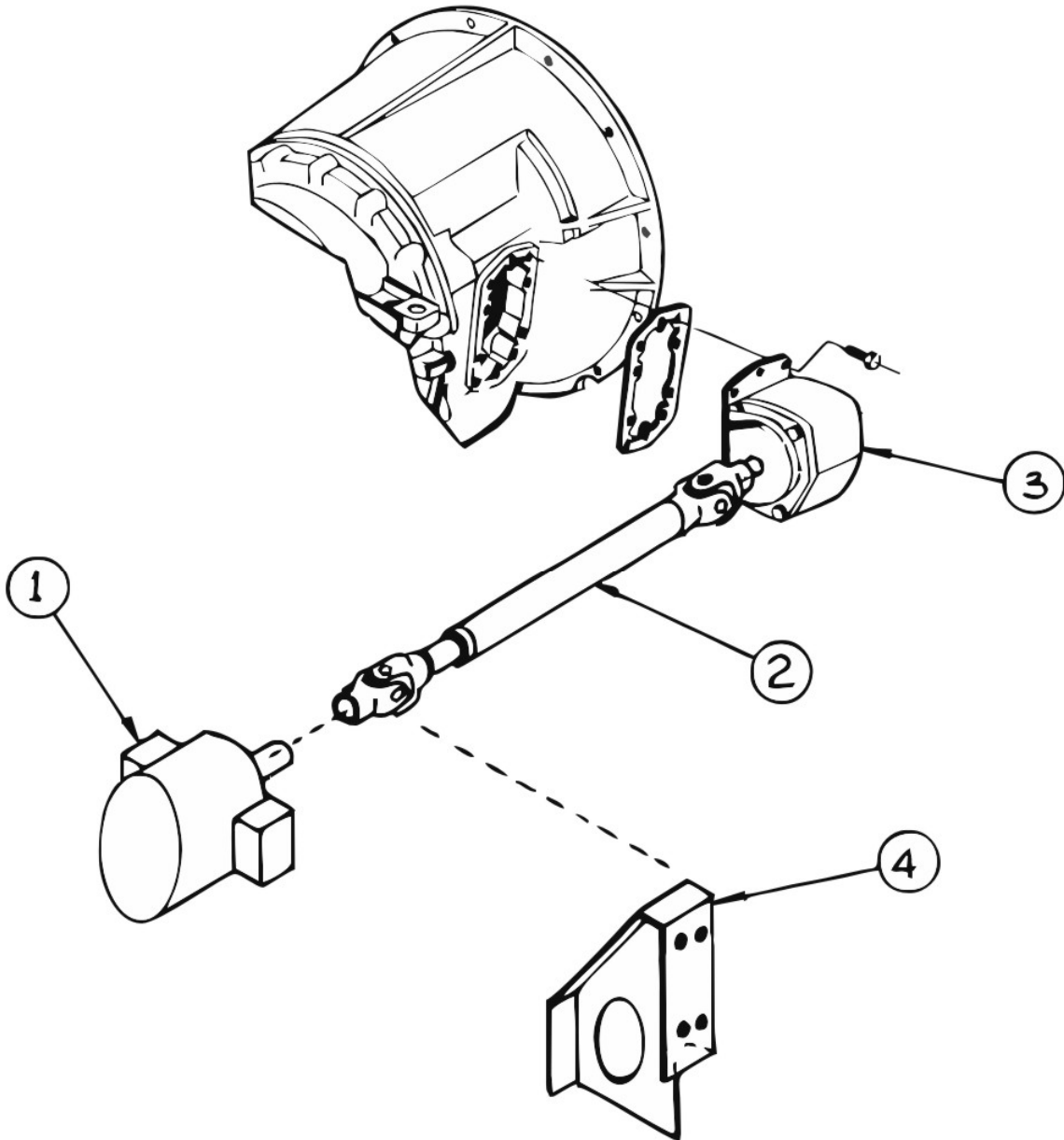
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	807637	L.H. Gear Pump	1
2	316 9414 017	Flow Control Valve (Part of Item 1)	1

42



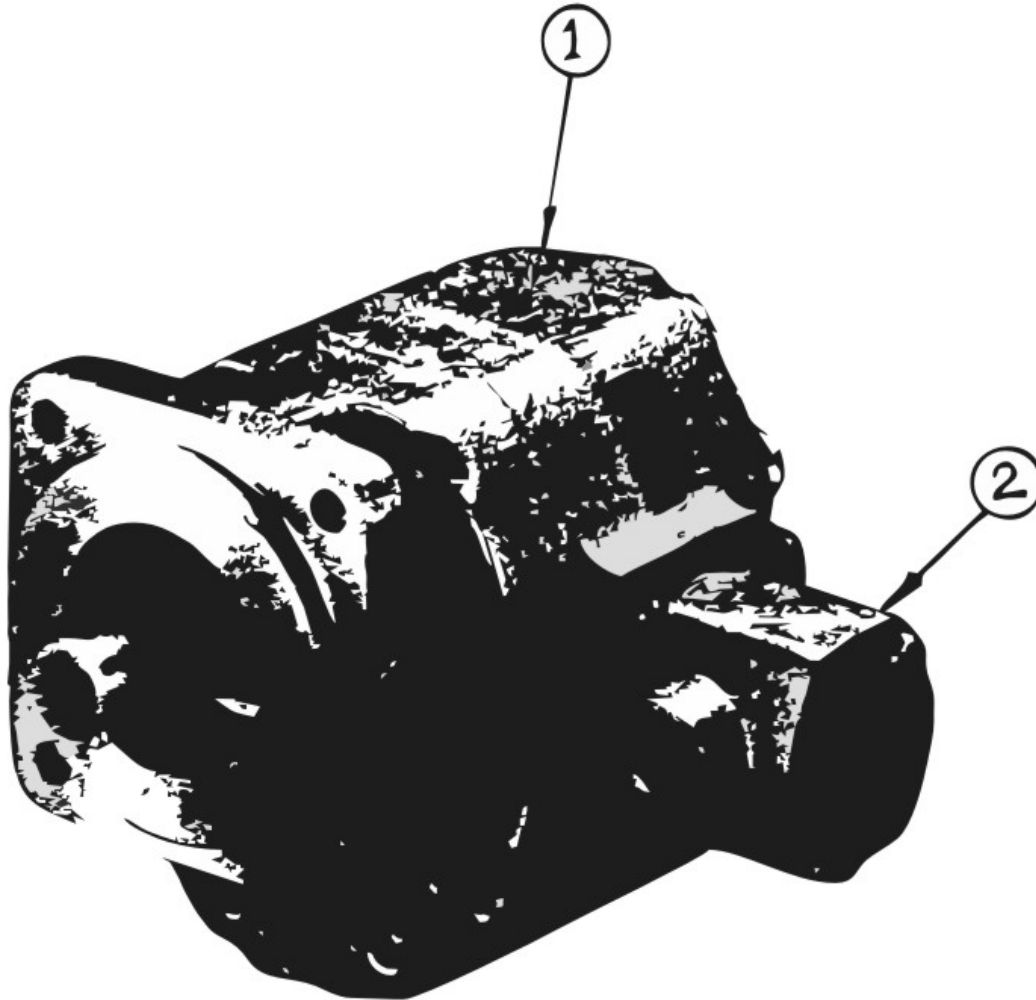
TRANSMISSION PUMP INSTALLATION

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	808107	Transmission Pump	1
2	806742	Drive Shaft	1
3	807464	PTO	1
4	807920	Pump Mount Bracket R.H.	1



TRANSMISSION PUMP

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	808107	R.H. Gear Pump	1
2	316 9414 017	Flow Control Valve (Part of Item 1)	1



## Pump Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY.
1		Snap Ring	
2		Spacer or Outboard Bearing	
3		Seal Retainer	
4		"O" Ring	
5		Seal	
6	316 5033 202	Shaft End Cover	
7		Check Assemblies or Plug	
8		Ring Seals	
9		Roller Bearings	
10		Pocket Seals	
11		Thrust Plates	
12		Integral Drive Shaft & Gear Set	
13		Gasket Seals	
14		Gear Housing	
14A		Dowel Pins (P76 only)	
15		Connecting Shaft	
16		Bearing Carrier	
17		Matched Gear Set	
18	316 8020 234	Gear Housing	
18A		Dowel Pins (P76 only)	
19		Plug	
20	316 3100 315	Port End Cover (Front Pump)	
20	316 3100 367	Port End Cover (Xmsn Pump)	
21		Name Plate	
22		Drive Screws	
23		Washers	
24		Studs or Cap Screws	
25		Nuts	

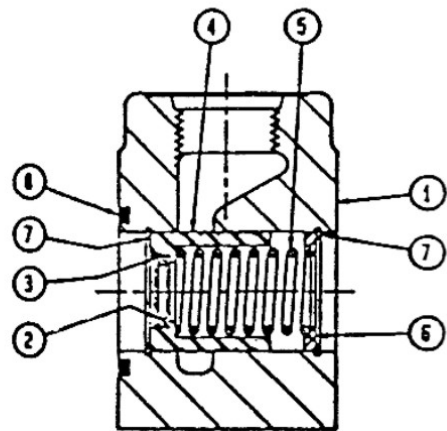
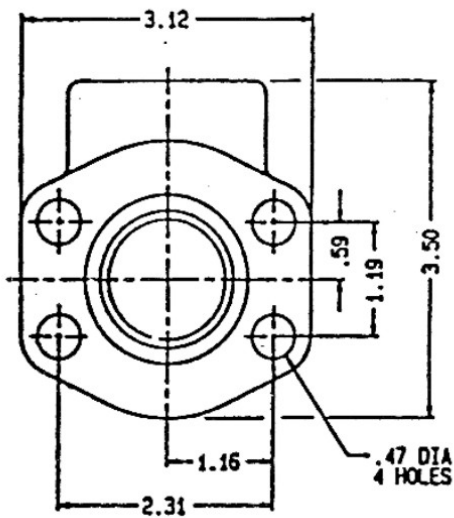
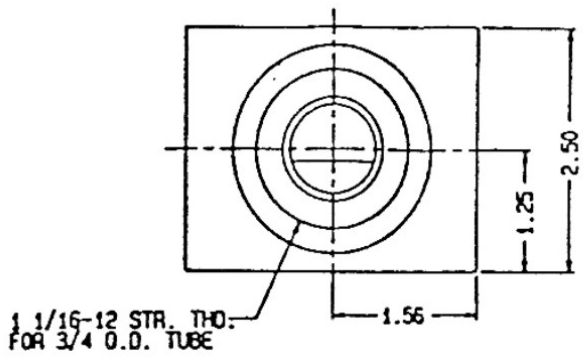
Plug 7 in position B gives clockwise rotation (Xmsn Pump).

Plug 7 in position A gives counterclockwise rot. (Front Pump).

Check valves in both positions give bi-directional rotation.

**FLOW CONTROL VALVE ASSEMBLY**

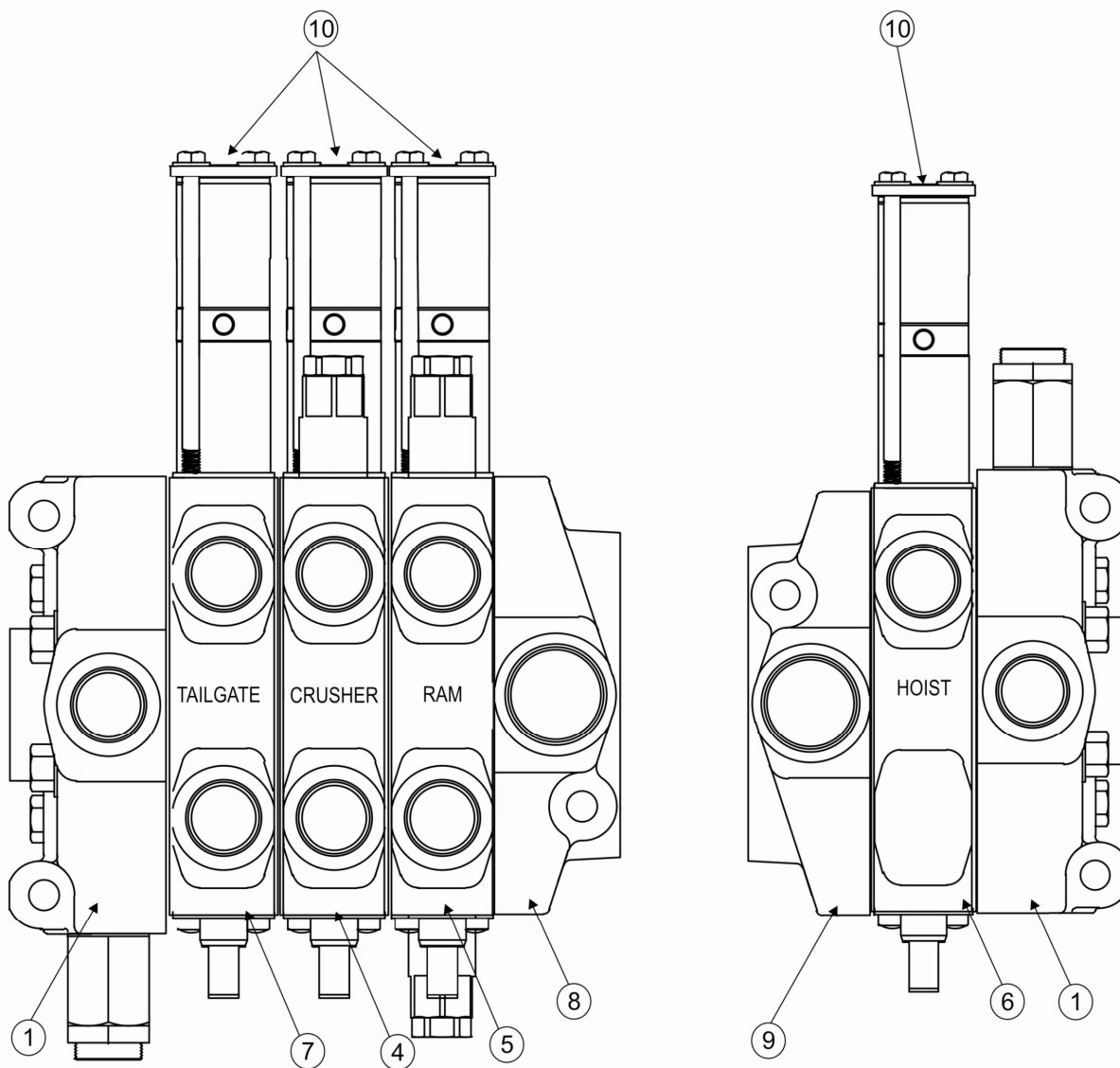
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	316 4000 205	Housing	1
2	391 3762 157	Orifice	1
3	391 2685 097	Snap Ring	1
4	316 4000 002	Spool	1
5	391 3581 777	Spring	1
6	391 3782 139	Spring Retainer	1
7	391 2661 478	Snap Ring	2
8	391 2881 100	O-Ring	1



VALVE BANKS

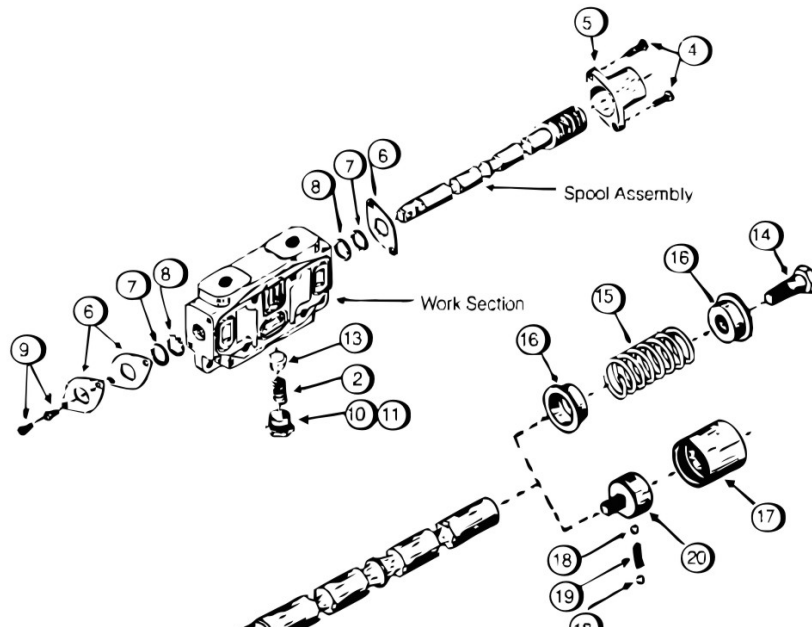
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	348 9105 186	Inlet	2
4	348 9102 065	Parallel Sect. (Crusher)	1
5	348 9102 861	Parallel Sect. (Packer/Low)	1
6	348 9102 065	Parallel Sect. (Hoist)	1
7	348 9102 284	Tailgate	1
8	348 9102 284	Outlet	1
9	348 9106 188	Power Beyond Outlet	1
10	808204	Air Cylinder Kit	6

47



TYPICAL VALVE SECTION

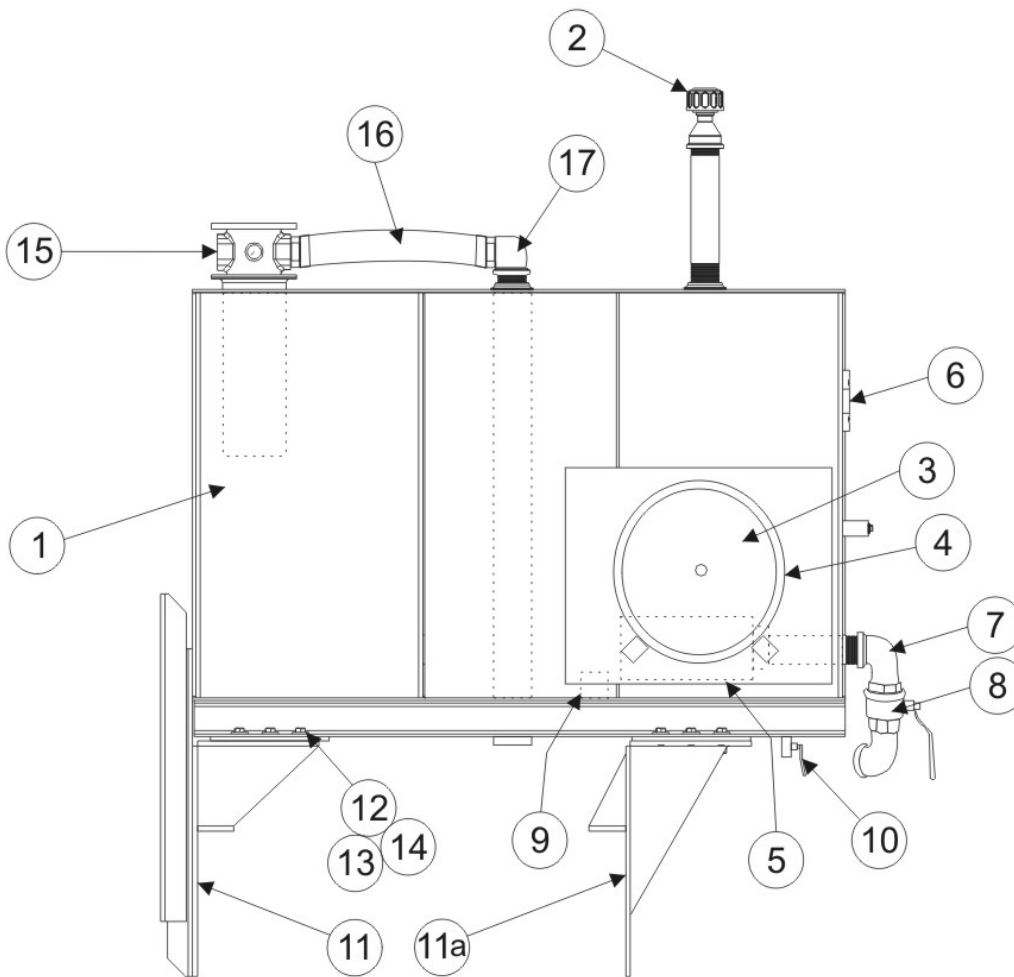
ITEM	PART NUMBER	DESCRIPTION	Q
Parallel Section Seals* (Typical)			
1	391-2881-200	Square Seal	3
2	391-2881-403	Square Seal	1
Series Section Seals (Section 2 Only)			
1	391-2881-200	Square Seal	2
3	391-2881-628	Square Seal	1
4	391-1433-009	Back Cap Screw	2
5	342-6000-100	Back Cap	1
6	391-2183-005	Retainer Plate	3
7	391-2681-426	Backup Ring	2
8	391-2887-212	Spool Seal	2
9	391-1433-002	Retainer Plate Screw	2
10	391-0581-044	Check Valve Cap	1
	391-2281-015	or Valve Cap (F.I.N.)	1
11	391-2881-204	** "O" Ring Seal	1
12	391-3581-713	** Check Spring	1
13	391-2481-069	** Check Valve Poppet	1
14	391-1432-021	Stripper Bolt	1
15	391-3581-633	Centering Spring	1
16	391-1642-013	Spring Guide	2
17	391-3283-008	Detent Sleeve	1
18	391-0282-009	Detent Ball	2
19	391-3581-015	Detent Spring	1
20	391-2583-006	Detent Poppet Retainer	1



## HYDRAULIC OIL TANK ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QTY
1	808222	RESERVOIR	1
2	H17-42	BREATHER CAP	1
3	H17-43	CLEAN OUT COVER	1
4	H17-45	CLEAN OUT COVER GASKET	1
5	H39-14	SUCTION STRAINER	1
6	807222	SITE GAUGE	1
7	BV-32	2" STREET ELBOW	1
8	807283-4	2" BALL VALVE	1
9	H17-46	MAGNET	1
10	BV-12	GATE VALVE	1
11	807159	MOUNTING BRACKET Left (11a Right)	1ea
12	B-229	1/2" X 1 1/2" BOLT	22
13	W-213	1/2" FLAT WASHER	22
14	N-202	1/2" LOCK WASHER	22
15	810227	RETURN INTANK FILTER ASS'Y	1
16		FILTER CONNECTING HOSE	1
17	2024-24-24	FITTING	1

49



HYDRAULIC - TAILGATES

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	807992	Cross Tube	4
2	807993-3	Tube - Vertical	4
3	807735-5	Hose Assembly 3/8	4
4	807735-4	Hose Assembly 3/8	4
5	807453	Check Valve	1
6	R16-215-4	Nipple	1
7	807399	Adaptor	1
8	807735-6	Hose Assembly 1/4	4
9		Hose Assembly 3/8	2
10	2021-6-6	Adaptor	8
11	807724	Tailgate Cylinder	4

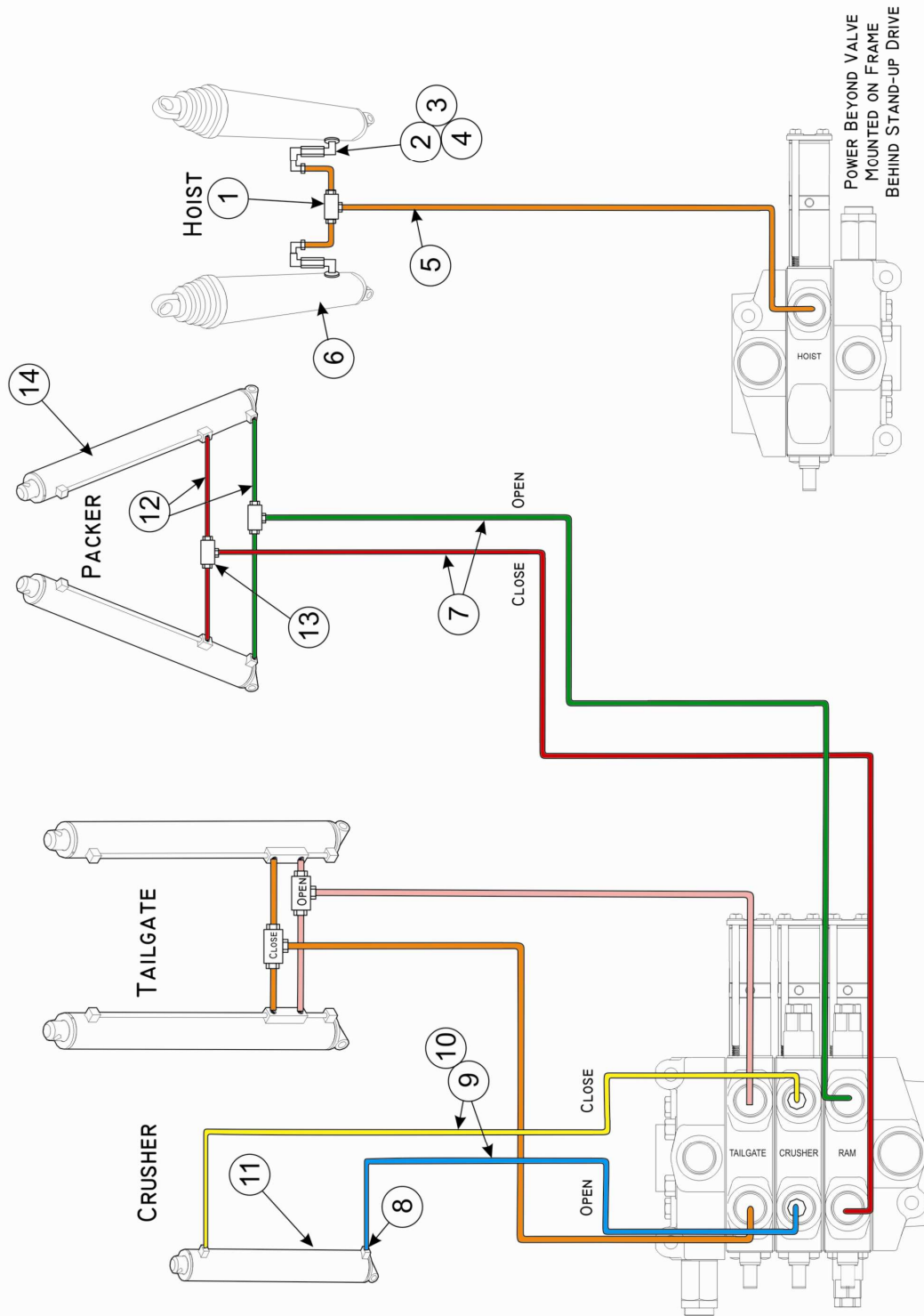
50

HYDRAULICS HOPPER

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	H41-2021T-8-8	Adaptor	2
2	H41-2024-8-8	Adaptor	2
3	806606-8	Hose 1/2	2
4	806606-7	Hose 1/2	2
5	807476	Tube	1
6	807475	Tube	1
7	806606-6	Hose 1/2	2
8	H41-2047-6-6S	Fitting	2
9	806606-4	Hose 3/8	1
10	806606-3	Hose 3/8	1
11	H41-2024-12-12	Adaptor	4
12	806606-2	Hose 3/4	4
13	807747-2	Adaptor	4
14	806606-1	Hose 3/4	
15	807156	5" Packer Cylinder	2
16	807468	5" 2-Stage Hoist Cylinder	2
17	802385	2.5" Crusher Cylinder	1

51

# TYPICAL PAC-KING | HYDRAULIC CIRCUIT

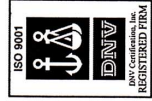
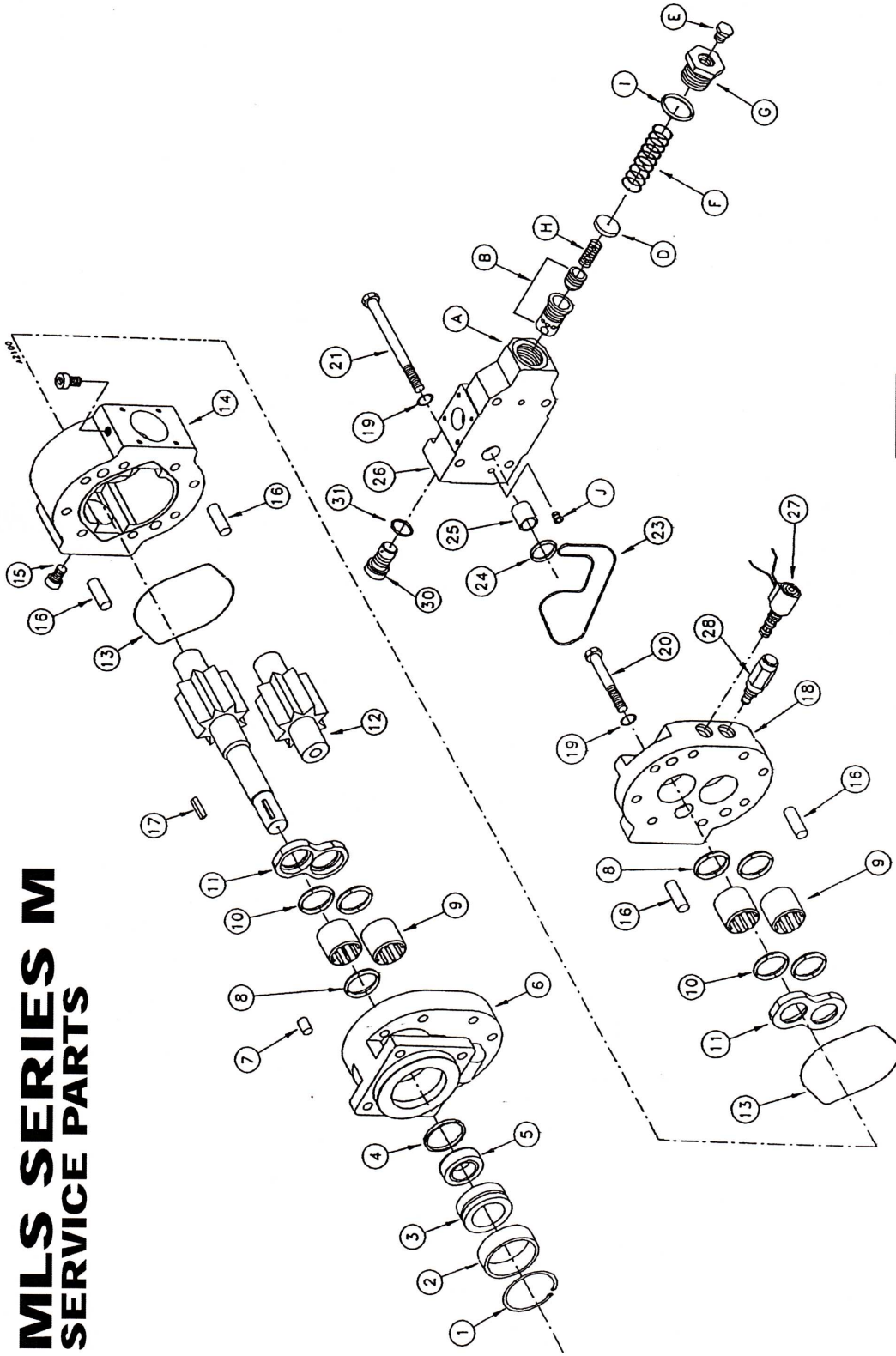


# MLS SERIES M SERVICE PARTS

Item	Description	Qty	Muncie Number
1	O. B. Snap Ring	1	PM-1001
2	Spacer	1	PM-1002D
3	Seal Retainer	1	PM-1003M
4	Retainer O-Ring	1	PM-1004
5	Shaft Seal	1	PM-1005
6	Front Cover (SAE C 4 Bolt) (SAE C 2 Bolt) (SAE B 4 Bolt)	1	PM-1007-DC PM-1007-DL PM-1007-DK
7	Check Assembly	2	PS1010
8	Ring Seal	3	PM-1008-011
9	Bearing	4	PM1013
10	Pressure Balance Seal	4	PM-1009M
11	Wear Plate	2	PM-1014M
12	Gear Sets 1 1/4 RND 27 GPM 1 1/4 RND 27 GPM 1 1/4 RND 31 GPM 1 1/4 RND 35 GPM 1 1/4 RND 40 GPM 1 1/4 RND 44 GPM 1 1/4 14T 22 GPM 1 1/4 14T 27 GPM 1 1/4 14T 31 GPM 1 1/4 14T 35 GPM 1 1/4 14T 40 GPM 1 1/4 14T 44 GPM	1	PM-1016K-22-2 PM-1016K-27-2 PM-1016K-31-2 PM-1016K-35-2 PM-1016K-40-2 PM-1016K-44-2 PM-1016S-22-2 PM-1016S-27-2 PM-1016S-31-2 PM-1016S-35-2 PM-1016S-40-2 PM-1016S-44-2
13	Body Seal	2	PM-1015
14	Body (Standard Spl. Fig.) 22 GPM 27 GPM 31 GPM 35 GPM 40 GPM 44 GPM	1	PM-1025-22-LPV PM-1025-27-LPV PM-1025-31-LPV PM-1025-35-LPV PM-1025-40-LPV PM-1025-44-LPV
15	Test Port Plug (-6 ODT)	2	HHBP-6
16	Dowel Pin	4	PM-1024
17	Key	1	PM-1017
18	Rear Cover	1	PM-1026-LPV
19	Washer	8	PL-1029
20	Cap Screw 22 GPM 27 GPM 31 GPM 35 GPM 40 GPM 44 GPM	4 4 4 4 4 4	PM-1028-22 PM-1028-27 PM-1028-31 PM-1028-35 PM-1028-40 PM-1028-44
21	Cap Screw 22 & 27 GPM 31 & 35 GPM 40 & 44 GPM	4 4 4	PM-1028-700 PM-1028-706 PM-1028-351
23	O-Ring (Rear Cover Channel)	1	PM-1032-235
24	O-Ring Seal (Hollow Dowel)	1	PM-1032-618
25	Hollow Dowel Pin	1	PM-1024-515
26	Valve Body Assy. (Includes Items Below) A) Valve Housing B) Poppet & Metering Spool C) Washer (.031 Orifice) D) Plug (-6 ODT) E) Metering Spring F) Spool End Cap G) Poppet Spring H) Poppet Spring I) O-Ring (Cap Plug) J) Plug (-4 ODT (.078))	1	PM-1040-LPV PM-1040-LPV001 PM-1040-LPV003A PM-1040-LPV004 HHBP-6 PM-1040-LPV006 PM-1040-LPV007 PM-1040-LPV008 PM-1040-LPV009 PM-1040-LPV005
27	Solenoid Assy.	1	35T37427
28	Solenoid Coil	1	35M35874B
28	Relief Valve (Fixed)	1	35T37435
30	Relief Valve Blanking Plug	1	25T37436
30	Orifice Plug (Size) 22 GPM (No End Hole) 25 GPM (.0935) 30 GPM (.1562) 35 GPM (.2031) 40 GPM (.2188) 45 GPM (.2500) 50 GPM (.2812) 55 GPM (.3120) 60 GPM (.3438) 65 GPM (.3750) 70 GPM (.3906) 75 GPM (.4130)	1	25T37469-000 25T37469-093 25T37469-156 25T37469-203 25T37469-218 25T37469-250 25T37469-281 25T37469-312 25T37469-343 25T37469-375 25T37469-390 25T37469-413
31	Orifice Plug O-Ring	1	12T37473
NS	Seal & O-Ring Kit Retainer O-Ring Pressure Balance Seal Body Seal Shaft Seal O-Ring O-Ring	1 1 4 3 1 1	GSK-PM-LPV PM-1004 PM-1009M PM-1015 PM-1005 PM-1032-235 PM-1032-618
NS	Rebuild Kit Wear Plates Retainer O-Ring Ring Seal Pressure Balance Seal Body Seal Shaft Seal O-Ring	1 2 1 3 2 3 1 1	RBK-PM-LPV PM-1014M PM-1004 PM-1008-011 PM-1009M PM-1015 PM-1005 PM-1032-235 PM-1032-618
NS	Bearing Kit Bearing	1 4	PM-1013K PM-1013

NOTE: Torque Cap Screws to 200 ft. lbs.  
Torque Orifice Plug to 85 ft. lbs.  
Torque Solenoid and Relief Cartridge to 20 ft. lbs.  
Torque Solenoid Coil Nut to 5 ft. lbs.

# MLS SERIES M SERVICE PARTS



Muncie Power Products, Inc. General Offices & Distribution Center • P.O. Box 548 • Muncie, IN 47308-0548  
 (765) 284-7721 • FAX (765) 284-6991 • E-mail info@munciepower.com • Web http://www.munciepower.com  
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# Hydraulic Pump

## TROUBLESHOOTING GUIDE



Condition	Likely Cause	Correction	
No oil flow from pump.	No oil in reservoir.	Fill reservoir with approved fluid.	
	Closed shut-off valve.	Open valve.	
	Air lock in pump inlet hose.	Use compressed air to pressurize reservoir while running pump or fill inlet hose with oil from the pump end.	
	Pump is wrong rotation for application.	Replace or re-configure pump to correct rotation.	
	Hoses are reversed.	Change inlet and pressure hose locations.	
	PTO not engaged.	See "PTO Troubleshooting"	
	Pump worn or damaged.	Repair or replace pump.	
Pump will not build/hold pressure.	Relief valve improperly set.	Adjust relief valve to manufacturers specification.	
	Relief valve stuck open.	Remove, clean, and re-set to specification.	
	Pump worn or damaged.	Repair or replace pump.	
Pump is noisy.	Aeration ( <i>air in system</i> ).	See "Oil foaming".	
	Cavitation ( <i>Cavitation is caused by excessive vacuum at the pump inlet. Test with a vacuum gauge at the inlet port. Gauge should register under 5 Hg/in. at normal operating speed and temperature.</i> )	Increase inlet hose size. Re-route inlet hose. Check for kinked or collapsed inlet hose. Check for clogged reservoir breather or strainer. Inlet hose should be S.A.E. type 100R4 hose only.	
<b>PUMP LEAKS:</b> At shaft seal.	Dirt under seal.	Replace seal. Examine pump shaft for scoring.	
	Damaged seal or pump body.	Replace seal or body section.	
	Improperly fitted seal.	Replace seal.	
	At body section.	Damaged o'ring or body.	Replace o'ring or body section.
		Improper torquing of bolts.	Torque to specification.
	At pump port. ( <i>DO NOT use Teflon tape on pipe thread fittings!</i> )	Loose fitting.	Tighten fitting.
		Damaged fitting.	Replace fitting.
Damaged pump body.		Replace body section.	
Pump is hot. ( <i>Oil temperature should not exceed 140° F (60° C)</i> )	Low oil level.	Fill reservoir.	
	Reservoir too small.	Increase reservoir size.	
	Dirty oil.	Replace oil and filter.	
	Relief valve stuck open.	Remove, clean, and re-set.	

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# Hydraulic Pump

TROUBLESHOOTING GUIDE - PAGE 2



Condition	Likely Cause	Correction
Pump is hot <i>(continued)</i>	Relief valve improperly set.	Adjust relief valve to manufacturer's specification.
	Pump too large for application.	Review application. Replace with correct model.
	Undersized system component.	Review application. Replace with correct model.
	Improper weight oil.	Replace with correct oil.
	Low oil level.	Fill reservoir.
Oil foaming	Loose inlet fitting.	Tighten fitting.
	Damaged shaft seal.	Replace seal.
	Leak in inlet hose.	Replace hose.
	Improper tank baffle.	Install baffle or diffuser.



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General Offices and Distribution Center • P.O. Box 548 • Muncie, IN 47308-0548  
(765) 284-7721 • FAX (765) 284-6991 • E-mail [info@munciepower.com](mailto:info@munciepower.com)  
Web site <http://www.munciepower.com>

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# NEW OR REPLACEMENT PUMP INSTALLATION INSTRUCTIONS

## NEW PUMP INSTALLATION?

If you are setting up a new hydraulic system, please read and follow the instructions below.

- 1) Be sure that this pump is of the correct displacement (flow rate) and pressure rating to operate your equipment.
- 2) Thoroughly clean out your hydraulic system. The reservoir should be completely wiped clean. Before installation the hydraulic lines and hoses must be cleaned as well.
- 3) Fill the reservoir with clean new hydraulic oil of the correct viscosity for your operating environment.
- 4) If this is other than a dump pump, find the main relief valve and back it all the way out counter clockwise.
- 5) Install a 0 - 3,000 PSI pressure gauge tee'd into the outlet of the pump.
- 6) Make sure that the reservoir is full of oil and if there is a shut-off valve, insure that it is opened to allow full flow to the pump. Crack the fitting at the pump inlet until the flow of oil reaches the pump and then re-tighten fitting.
- 7) Start the engine and engage the PTO if so equipped. Gradually increase engine speed to the maximum engine RPMs that could be seen during equipment operation. While constantly monitoring the pressure gauge, engage control valve to move a cylinder. The cylinder should not move because the relief valve is completely open. While engaging the control valve, gradually turn relief valve in (clock-wise) while monitoring the pressure gauge until the cylinder moves. Wait until the cylinder reaches end of stroke before further adjustment of the relief valve. Now adjust the relief valve until you reach the correct maximum pressure for your system (see your equipment manufacturer's specifications). Remember, for a pressure relief valve to protect all the components in your system it must be set below the maximum rating of the lowest rated component in your system. Once you have reached the proper setting, lock the relief adjustment.
- 8) Cycle all the cylinders and motors several times to flush all of the lines. Change the filter element. Check the reservoir oil level and add oil if necessary.
- 9) Change the filter again after the first week of service and thereafter according to the indicator gauge on the filter.

**NOTE:** Some hydraulic valves contain one or more work sections that have work port reliefs. If you have difficulty in reaching the desired maximum relief valve setting once again back out the relief valve adjustment and engage another valve section that does not have a work port relief.

---

## REPLACEMENT PUMP?

If you are replacing a failed pump in an existing system, please read and follow the instructions below.



- 1) Be sure that this replacement pump is of the correct displacement (flow rate) and pressure rating to operate your equipment. Substituting a larger pump for the smaller original pump may only compound your problems and result in early failure. If the replacement pump is smaller the operating speed of your equipment may be affected.
- 2) Be sure to completely clean the hydraulic system. The oil should be drained and the reservoir should be completely wiped clean. The filter should be changed and the hydraulic lines cleaned.
- 3) Fill the reservoir with clean new hydraulic oil of the correct viscosity for your operating environment.
- 4) If this is other than a dump pump, find the main relief valve and back it all the way out counter clockwise.
- 5) Install a 0 - 3,000 PSI pressure gauge tee'd into the outlet of the pump.
- 6) Make sure that the reservoir is full of oil and if there is a shut-off valve, insure that it is opened to allow full flow to the pump. Crack the fitting at the pump inlet until the oil reaches the pump then re-tighten fitting.
- 7) Start the engine and engage the PTO if so equipped. Gradually increase engine speed to the maximum engine RPMs that could be seen during equipment operation. While constantly monitoring the pressure gauge, engage control valve to move a cylinder. The cylinder should not move because the relief valve is completely open. While engaging the control valve, gradually turn relief valve in (clock-wise) while monitoring the pressure gauge until the cylinder moves. Wait until the cylinder reaches end of stroke before further adjustment of the relief valve. Now adjust the relief valve until you reach the correct maximum pressure for your system (see your equipment manufacturer's specifications). Remember, for a pressure relief valve to protect all the components in your system it must be set below the maximum rating of the lowest rated component in your system. Once you have reached the proper setting, lock the relief adjustment to.
- 8) Cycle all the cylinders and motors several times to flush all of the lines. Change the filter element again. Check the reservoir oil level and add oil if necessary.
- 9) Change the filter again after the first week of service and thereafter according to the indicator gauge on the filter.

**NOTE:** *Some hydraulic valves contain one or more work sections that have work port reliefs. If you have difficulty in reaching the desired maximum relief valve setting once again back out the relief valve adjustment and engage another valve section that does not have a work port relief.*



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General Offices and Distribution Center • P.O. Box 548 • Muncie, IN 47308-0548  
(765) 284-7721 • FAX (765) 284-6991 • E-mail info@munciepower.com  
Web site <http://www.munciepower.com>

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# MLS SERIES M PUMP

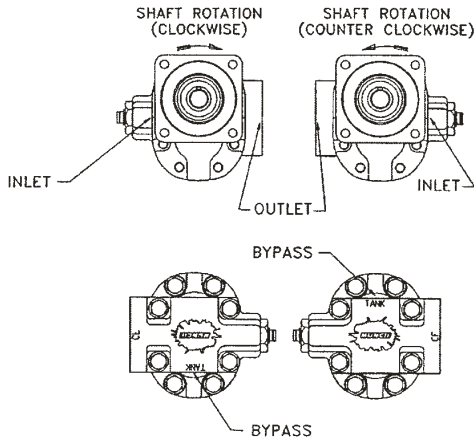
For Live Pak Installations

## INSTALLATION INSTRUCTIONS

These instructions provide recommendations and tips on the installation and hook up of the Muncie MLS pump. Never work on a raised body without proper body props and supports.



### PUMP ROTATION AND PORTING



PORT SIZES / TYPE		
MODEL	INLET	OUTLET
22 thru 27	1-1/2	1-1/4
31 thru 44	2	1-1/4
Bypass (All)	1-1/4 Split Flange	
Test Ports (All)	-6 Str. Thd.	

**Note: Internal Drain Line**

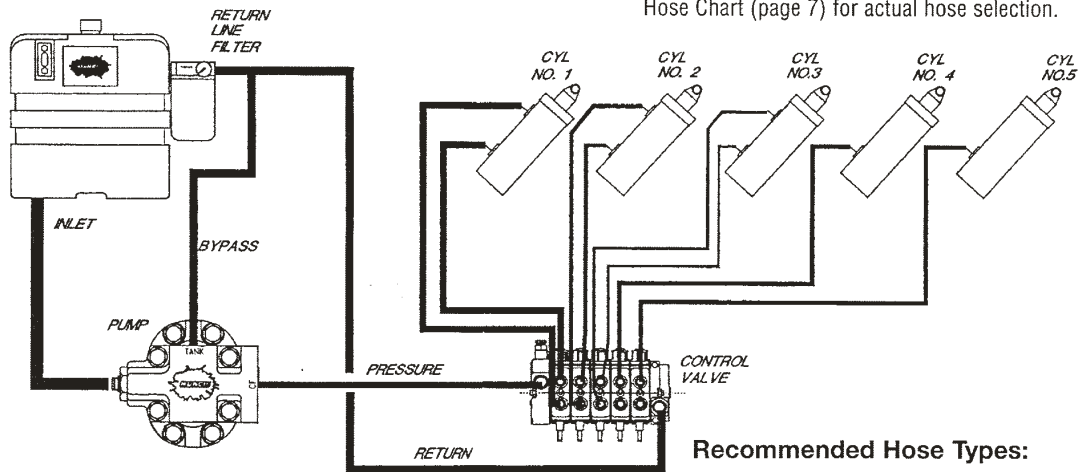
### TYPICAL PLUMBING DIAGRAM

Note: Circuit shown is generic and for reference only.  
Internal sense passage and drain.

Hose sizes will be affected by flow requirements and should be sized for the following fluid velocities.

- Inlet Line.....4 Ft. Sec.
- Pressure Line .....15 Ft. Sec.
- Return Line.....8 Ft. Sec.

Reference hose manufacturing catalog or Muncie Hose Chart (page 7) for actual hose selection.

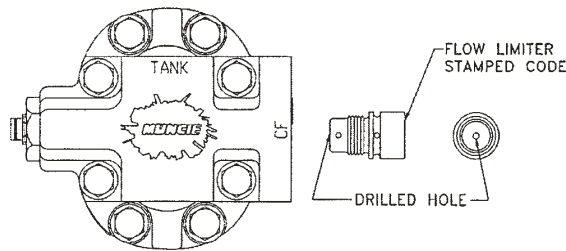


#### Recommended Hose Types:

- A. SAE 100R4 .....Inlet Line
- B. SAE 100R2 or higher....Pressure Line
- C. SAE 100R1 .....Return/Bypass Line
- D. SAE 100R2 or higher....Application Line
- E. SAE 100R2 or higher....Application Line

## FLOW LIMITER

The LPV Valve is easily set up with a Flow Limiter to control the desired amount of flow to the system. The orifice screws in at the pressure port and can easily be changed out or drilled to a larger size for increased capacity.



FLOW LIMITER SIZES		
FLOW GPM (LPM)	STAMP CODE	DRILL SIZE
25 ( 94)	B	.0935
30 (113)	D	.1562
35 (132)	F	.2031
40 (151)	G	.2188
45 (170)	I	.2500
50 (189)	K	.2812
55 (208)	L	.3120
60 (227)	M	.3438

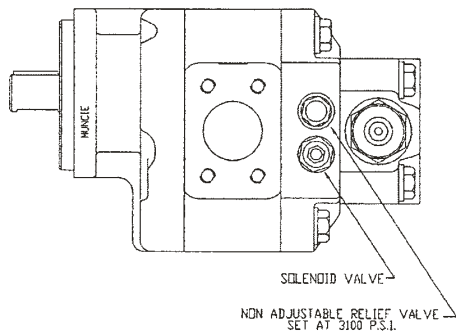
**TORQUE TO 1000 IN.LBS.**

60

## PRESSURE RELIEF ADJUSTMENT

This pump has been built with a fixed non-adjustable relief which has been preset at 3100 PSI. This is not to be used as the system's primary circuit protection. A main system relief is still required that is adjusted to the desired setting for proper protection. Individual port reliefs are still required if a particular function requires a lower pressure than what the system main relief is set for. Contact Muncie Power Products with additional questions.

DO NOT EXCEED MAXIMUM PUMP RATINGS.



PUMP PRESSURE RATINGS	
MODEL	MAX. PSI (BAR)
MLSM*-22	3000 (207)
MLSM*-27	3000 (207)
MLSM*-31	3000 (207)
MLSM*-35	2750 (190)
MLSM*-40	2750 (190)
MLSM*-44	2500 (170)

## MISCELLANEOUS

Proper mounting of the pump is critical to achieve maximum pump and driveline life. The pump is to be mounted parallel to the engine crankshaft within 1.5°. Universal joints need to be in phase and driveline should be balanced to a speed equal to maximum engine RPM. Shaft offset should be at 3-7°.

Direct mount units should have anti-seize grease applied to the splines and should be reapplied annually or sooner for severe use (new PTOs from Muncie will already have this lube applied).

Maximum inlet vacuum is 5 In.Hg. (.17 BAR).

Maximum oil temperature is 200°F (93°C).



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(765) 284-7721 • FAX (765) 284-6991 • E-mail info@munciepower.com  
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## LUBRICATION

### RECOMMENDED LUBRICANTS:

#### *HYDRAULIC OIL*

- ISO 22 AW R&O
- Viscosity 22.2 cST @ 40° C (140° F) and 4.3 @ cST 100° C (212° F)
- Must contain anti-wear and anti-foam additives, rust and corrosion inhibitors, superior water shedding.

When oils with different additive chemistry are mixed, there is always a risk of additive drop-out. *NEVER MIX DIFFERENT BRANDS OF HYDRUALIC OILS. IF YOU NOT SURE WHAT'S IN YOUR SYSTEM, DRAIN AND REPLACE THE OIL.*

#### *GREASE*

- Use an all-purpose Lithium-Base LB-LA/GA-GB No.2 grease on all packer body grease fittings.

