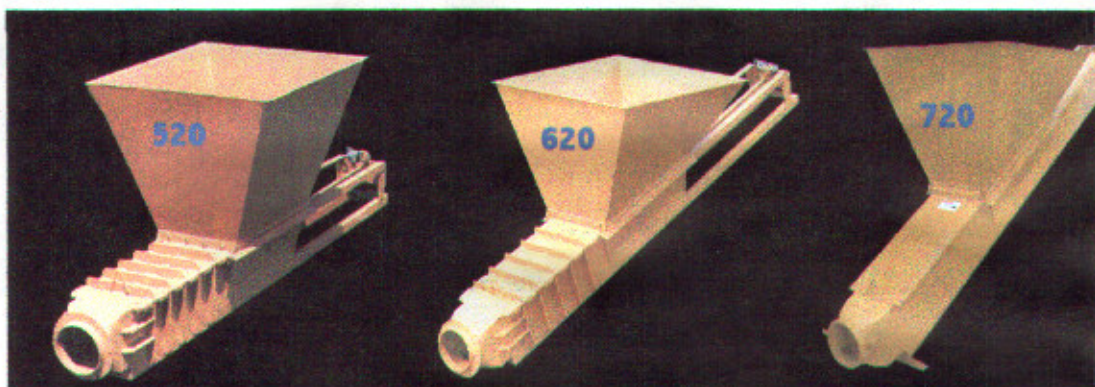


ZABEL EQUIPMENT, INC.

HYDRAULIC MANURE PUMP

INSTALLATION AND OPERATION MANUAL



MANUFACTURES OF MANURE PUMPS, BELT CONVEYORS AND BELT FEEDERS

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MAY 5, 2001


MODEL 520, 620, & 720 MANURE PUMPS

THE ZE MODELS 520, 620, & 720 MANURE PUMPS ARE DESIGNED TO PUMP SOLID, SEMI SOLID OR LIQUID MANURE OF ANY TYPE. THE ZE PUMPS ARE DESIGNED TO WORK IN BARNs, FREE STALL OPERATIONS, BARNYARD RUN OFFs, PACKINGHOUSES, VEGETABLE OPERATIONS AND COMMERCIAL FOOD WASTE PLANTS. THE SLANTED 620 & 720 PUMPS ARE DESIGNED TO PUMP AT A MORE GRAVITY EASY FLOW. THE MANURE SYSTEM CAN BE USED WITH STRAW, PAPER, AND SAND BEDDING. SAW DUST CAN BE USED WITH PROPER CONSISTANCE OF MANURE, DOESN'T ADD WATER TO SAWDUST OR IT WILL SWELL IN THE PIPE AND PLUG.

TO OBTAIN THE MAXIMUM SAFE PERFORMANCE FROM ANY OF THESE UNITS, PLEASE UNDERSTAND THE CAPABILITIES AND LIMITATIONS OUTLINED IN THIS MANUAL. WITH PROPER OPERATION AND MAINTANCE, AND OBEYING ALL SAFETY WARNINGS, THE UNIT YOU CHOOSE SHOULD PROVIDE YEARS OF RELIABLE SERVICE.

BEFORE ANY OPERATION OF THIS MANURE PUMP, THOROUGHLY READ AND UNDERSTAND THIS ENTIRE INSTALLATION AND OPERATING MANUAL. **PLEASE PAY STRICK ATTENTION TO THE SAFETY INFORMATION IN THIS BOOK.** COMPLETELY FAMILIARIZE YOURSELF WITH ALL CONTROL MECHANISMS FOR ANY OF THESE UNITS.

THE MANUFACTURER OF THIS EQUIPMENT RESERVES THE RIGHT TO MAKE CHANGES OR IMPROVEMENTS TO ITS PRODUCTS WITHOUT INCURRING ANY OBLIGATIONS IN RESPECTTO PRVIOUSLY MANUFACTURED PRODUCTS.

NEGLIGENT OPERATION MAY RESULT IN PERSONAL INJURY OR DEATH; **PLEASE OBEY ALL SAFETY PRECAUTIONS.** PAY STRICT ATTENTION WHEREVER THIS SAFETY SYMBOL APPEARS;  FAILURE TO DO SO; MAY RESULT IN PERSONAL INJURY. ALL OPERATORS MUST USE THEIR BEST JUDGEMENT AND FOLLOW GOOD GENERAL SAFETY PRACTICES IN THE SAFE OPERATION OF ANY MANURE PUMP OR ANY PIECE OF MACHINERY.



INSTALLATION OF THE ZE MANURE PUMP

- STEP 1:** DECIDE THE SIZE AND LOCATION OF WHERE THE STORAGE PIT WILL BE. DECIDE THE DISTANCE OR BEST ROUTE FOR THE PIPE, TRY PUTTING LOCATION OF STORAGE PIT WHERE THERE WILL BE THE LEAST AMOUNT OF ELBOWS.
- STEP 2:** IN THE BUILDING AREA WHERE YOU ARE GOING TO INSTALL PUMP, LOCATE THE DIRECTION OF WHICH THE PUMP BE WILL SET. AS YOU WILL SEE ON PAGE 5 OF THIS MANUAL, THERE ARE SEVERAL DIRECTIONS TO INSTALL PUMP. WHEN CHOOSING THE LOCATION FOR THE PUMP, BE SURE TO LOCATE WHERE THE POWER PACK AND CONTROLL BOX WILL SIT AND OUT OF THE WAY. MAKE SURE YOU KEEP IN MIND THAT THERE NEEDS TO BE ENOUGH ROOM BEHIND PUMP TO REMOVE THE CYLINDER WHEN NEEDED.
- STEP 3:** DIG THE HOLE UNDER THE BARN CLEANER FOR THE PUMP TO SET IN. MAKE SURE TO USE THE DIGGING GUIDE ON PAGE 8 TO HELP YOU GET THE PROPER DEPTH, DEPENDING ON MODEL OF PUMP. IT WILL ALSO BE HELPFUL TO REFER TO PAGE 6 TO SEE THE CEMENT SPECIFICATIONS.
- STEP 4:** IF INSTALLING A 620 CEMENT-IN OR 720 CEMENT-IN, MAKE SURE TO POSITION THE PUMP EVENLY, SO YOU WILL BE ABLE TO GET CEMENT AROUND ALL SIDES.
- STEP 5:** INSTALL THE FITRST SECTION OF PVC PIPE ON END OF PUMP AS DICTED ON PAGE 10.
- STEP 6:** NOW SET ANY FORMS NEEDED FOR CONCRETE IN PROPER POSITION. IF THE POWER PACK IS IN A REMOTE AREA, IT IS RECOMMENDED TO RUN 4" PVC PIPE IN CONCRETE FOR HYDRAULIC HOSES.
- STEP 7:** POUR CONCRETE AROUND PUMP, MAKING SURE THE CONCRETE GETS AROUND THE ENTIRE PUMP AT LEAST 5" THICK.

INSTALLING MANURE PIPE

START BY INSTALLING MANURE PIPE FROM PUMP TO THE PIT AREA. FOR PIPE INSTALLATION INSTRUCTIONS; PLEASE REFER TO PAGES 10 AND 11.

ALL ELBOWS NEEDED, NEED TO BE CLEANED, AND GLUED, THEN ATTACHED TO PIPE. FINISH BY GLUEING ALL PIPE AND THE CONCRETE AROUND ALL ELBOWS BEING USED.

IF THE STORAGE PIT UNIT IS LOCATED ABOVE THE LEVEL OF THE PUMP, THERE MUST BE A SHUT OFF GATE INSTALLED (F431-A INLINE GATE VALVE). THE INLINE GATE VALVE SHOULD BE INSTALLED AS NEAR TO THE STORAGE PIT AREA. YOU MAY WANT TO PUT IN A STORAGE CHECK VALVE (F431) IN THE PIT AREA FOR EXTRA PRECAUTION.

ASSEMBLY OF PUMP & POWER PACK

- STEP 1:** PUT THE POWER PACK IN POSITION OF WHERE IT IS TO BE INSTALLED.
- STEP 2:** FILL THE POWER PACK WITH # 20 NON-DETERGENT HYDRAULIC OIL. USE 20 GALLONS OF A GOOD GRADE OF NONFOAMING HYDRAULIC OIL. THERE IS A DIP STICK ON FILLER PIPE COVER ON POWER PACK.
- STEP 3:** INSTALL THE $\frac{3}{4}$ " HOSES (SIZES 4", 6", OR 10") FROM PARKER VALVE TO CYLINDER. HOSE ONE GOES FROM FRONT OF CYLINDER TO PORT A ON PARKER VALVE. HOSE TWO GOES FROM BACK OF CYLINDER TO PORT B ON PARKER VALVE. PLEASE REFER TO PAGE 19 FOR MORE INFORMATION.
- STEP 4:** INSTALL THE PRESSURE GAUGE AND NEEDLE VALVE ON TOP OF THE RELIEF VALVE. THERE IS A PIPE NIPPLE INSIDE THE PARTS BOX NEEDED TO INSTALL THE GAUGE AND VALVE. REFER TO PAGE 17 FOR MORE INFORMATION.
- STEP 5:** PUT THE 7S COUPLINGS ON POWER PACK PUMP AND MOTOR. NEXT ATTACH THE 7JE SLEEVE TO THE COUPLING ON THE PUMP. MOTOR SHOULD BE PUT ON THE POWER PACK & ATTACHED WITH THE BOLTS & NUTS PROVIDED. CHECK THE COUPLINGS FOR ALIGNMENT, THEN TIGHTEN MOTOR BOLTS AND REPLACE THE SHIELD. PLEASE REFER TO PAGE 13 FOR MORE INFORMATION.

CONTINUE OF PUMP & POWER PACK ASSEMBLY

STEP 6: WIRE THE MANURE PUMP AND LIMIT CIRCUITS. BEFORE WIRING POWER PACK, BE SURE TO CONSULT YOUR ELECTRICIAN FOR PROPER FUSUNG. WHEN WIRING THE MODEL 720 PUMP, IT IS RECOMMENDED THAT TWO SEPRATE MAGNETICSWITCHES BE USED. ONE SWITCH WILL BE FOR THE MOTOR AND ONE IS FOR THE LIMIT CIRCUIT. **PLEASE NOTE:** THAT THE SEQUENCE USED TO TURN OFF THE PUMP SHOULD BE AS FOLLOWS:

- 1) TURN OFF MOTOR POWER
- 2) WAIT ABOUT 30 SECONDS
- 3) TURN OFF LIMIT SWITCH POWER

NOTE TO THE ELECTRICIAN—THERE MUST BE POWER TO THE LIMIT SWITCH AFTER THE MOTOR POWER IS TURNED OFF. PLEASE WIRE BOTH THE PUMP AND POWER PACK ACCORDINGLY, SEE WIRING DIAGRAM SHOWN ON PAGE 18.

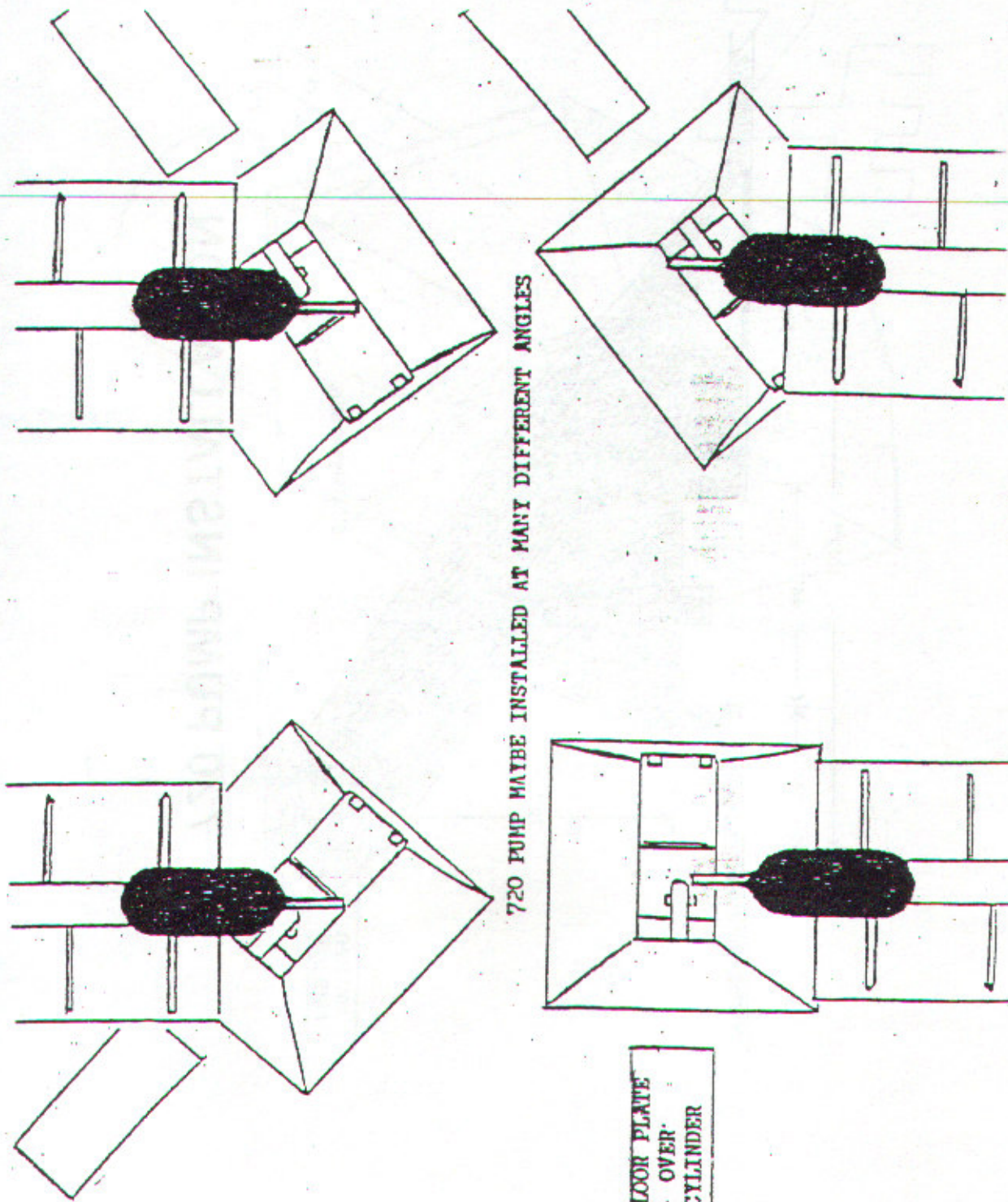
STEP 7: BEFORE STARTING MANURE PUMP THERE MUST BE A RAIL BUILT AROUND THE HOPPER. THE RAIL IS TO KEEP PERSONNEL, CHILDREN, AND LIVESTOCK FROM ACCIDENTLY FALLING INTO THE HOPPER.



CAUTION

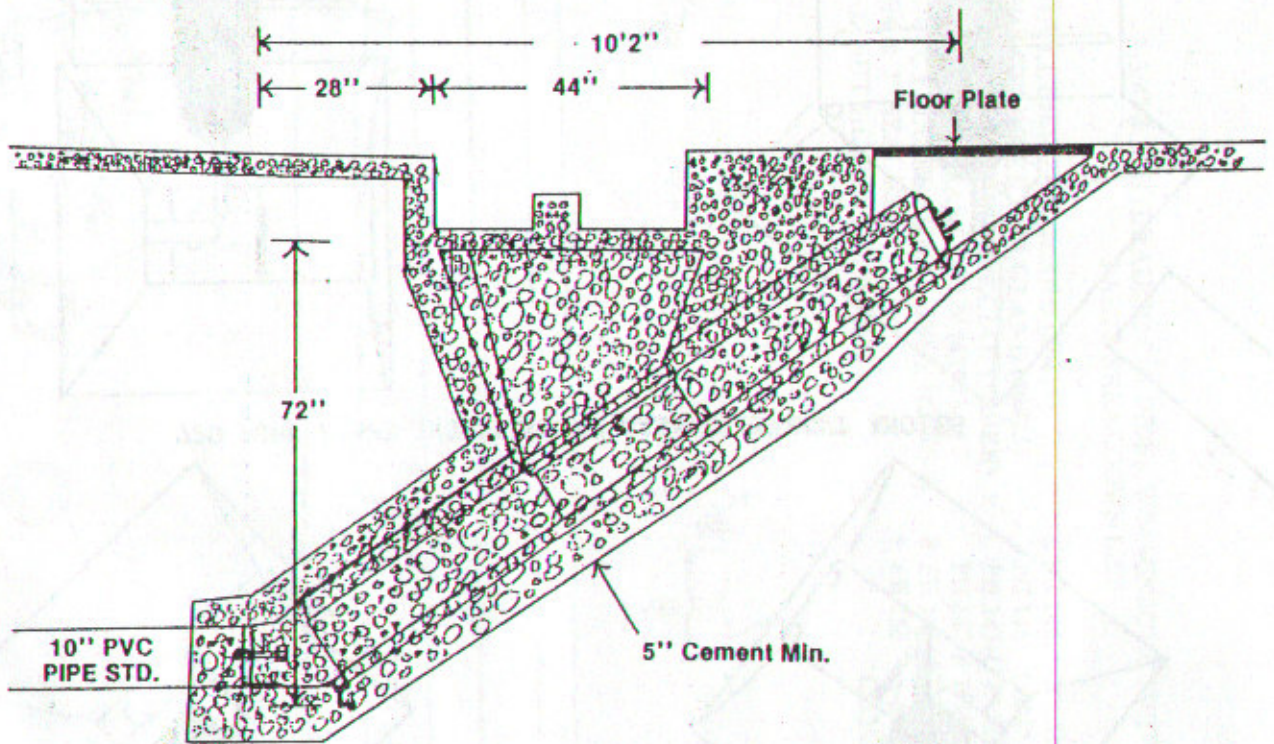


AFTER PUMP INSTALLATION IS COMPLETE, SAFETY PRECAUTIONS MUST BE TAKEN TO PREVENT HUMANS OR ANIMALS FROM FALLING INTO THE HOPPER AND OR PIT. WE SUGGEST A RAILING OF PIPE OR WOOD TO BE PLACED AROUND THE PIT AREA, OR THE PIT MAYBE ENCLOSED WITH A WOODEN OR STEEL STRUCTURE. A RAILING AROUND THE HOPPER AREA SHOULD ALSO BE HIGHLY CONSIDERED. PLEASE FOLLOW ALL SAFETY PRECAUTIONS TO AVOID ANY IMJURY.

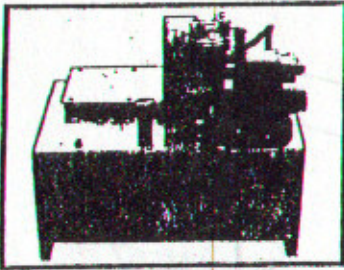


720 PUMP MAYBE INSTALLED AT MANY DIFFERENT ANGLES

FLOOR PLATE
OVER
CYLINDER



720 PUMP INSTALLATION



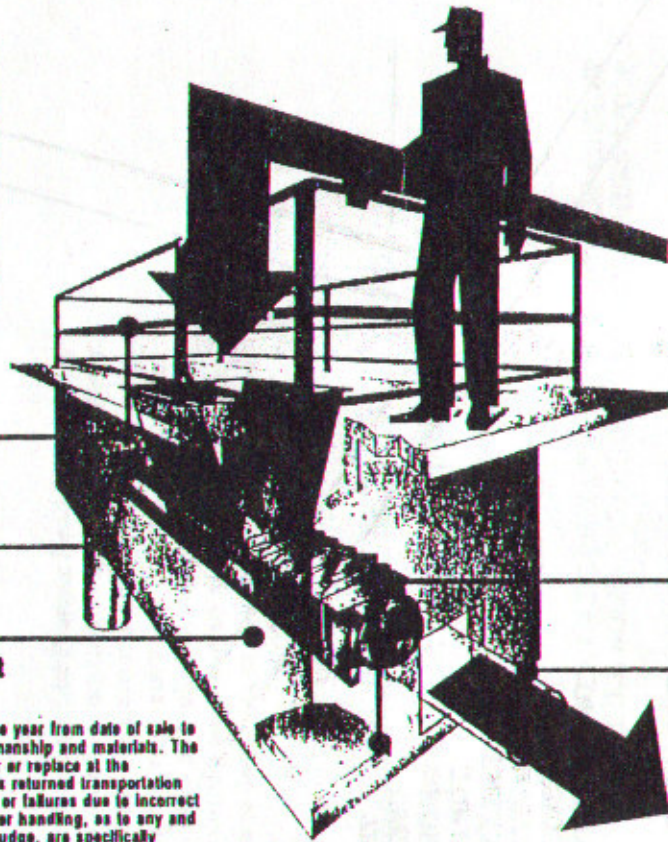
1. Power pack can be located outside of pit.

2. Protective rail is highly recommended for manure pump pit.

3. Sump pump pit.

4. Cement pit is easily constructed from manual included with Zabel Equipment Manure Pumps.

WARRANTY: This product is guaranteed for one year from date of sale to the original consumer against defects in workmanship and materials. The manufacturer's only obligation shall be to repair or replace at the manufacturer's option this product provided it is returned transportation prepaid to the factory within one year. Defects or failures due to incorrect installation, improper voltage, improper usage or handling, as to any and all of which the manufacturer will be the sole judge, are specifically excluded from this warranty. No other liability of any kind, arising from the use of the product, whether or not defective, is assumed.



5. Manure ingress from barn cleaner or other type of moving facilities.

6. Optional pit lip helps to keep area clean, provides good footing and helps to withhold ground water.

7. Pit construction, one of many possibilities.

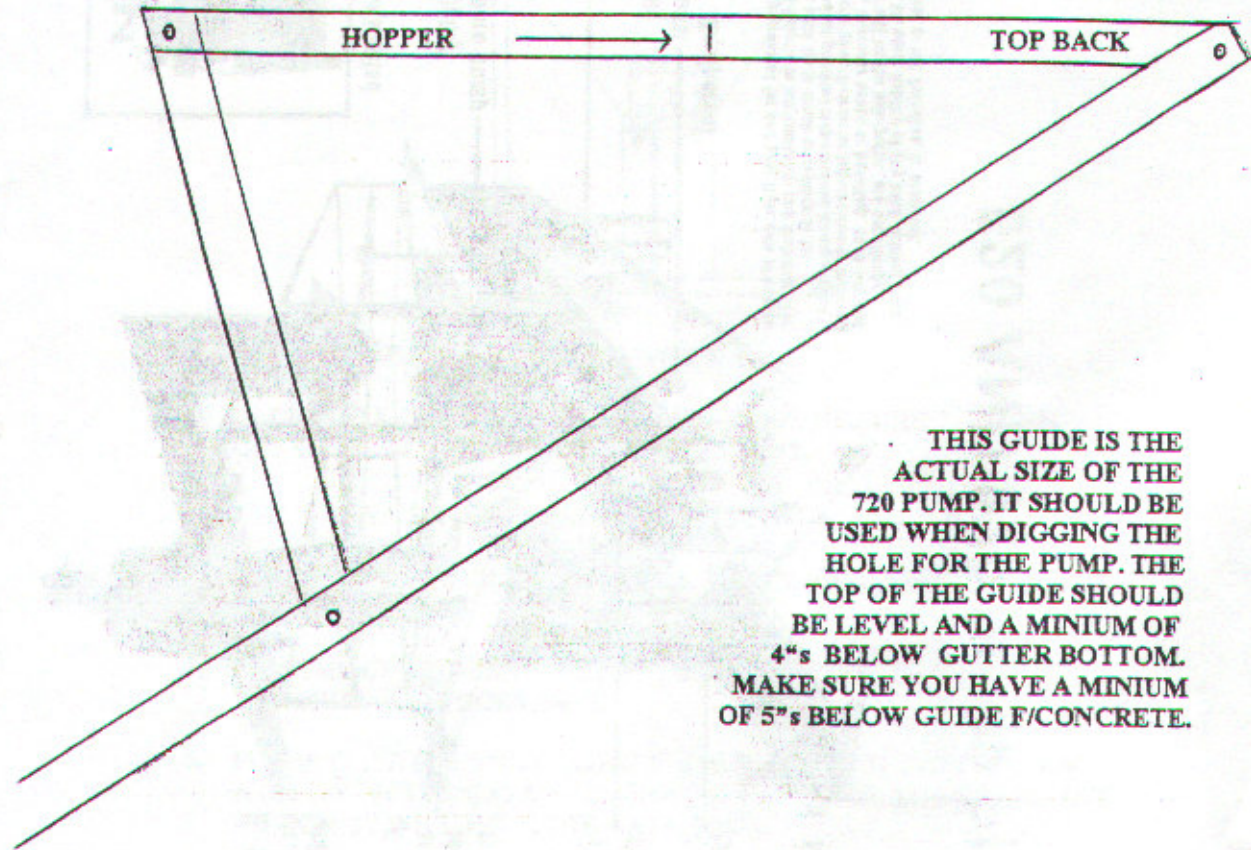
8. 10" PCV pipe to storage facility can be any length.

9. Manure egress.

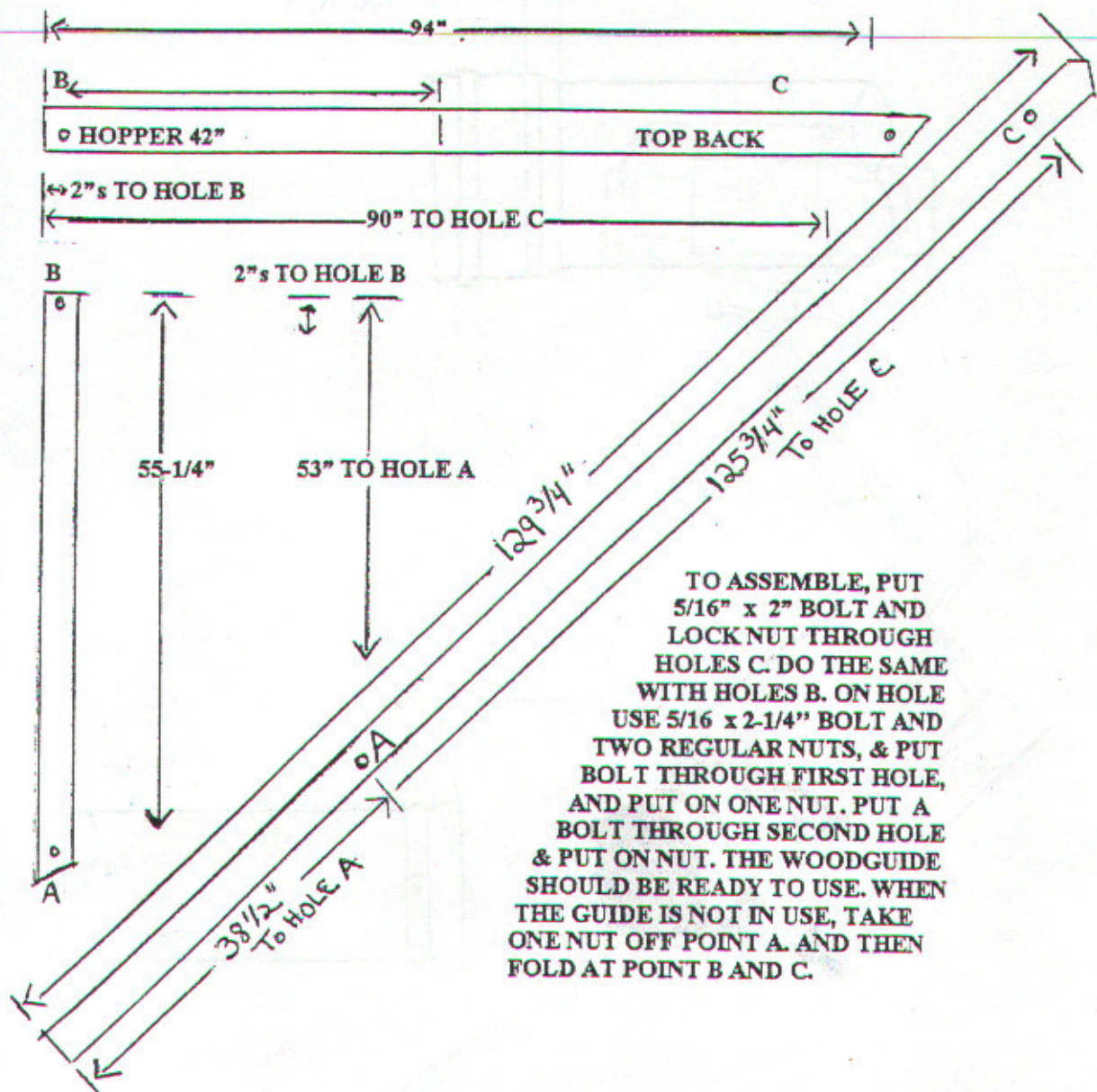
520 AND 620 PUMP PIT.

DIGGING GUIDE

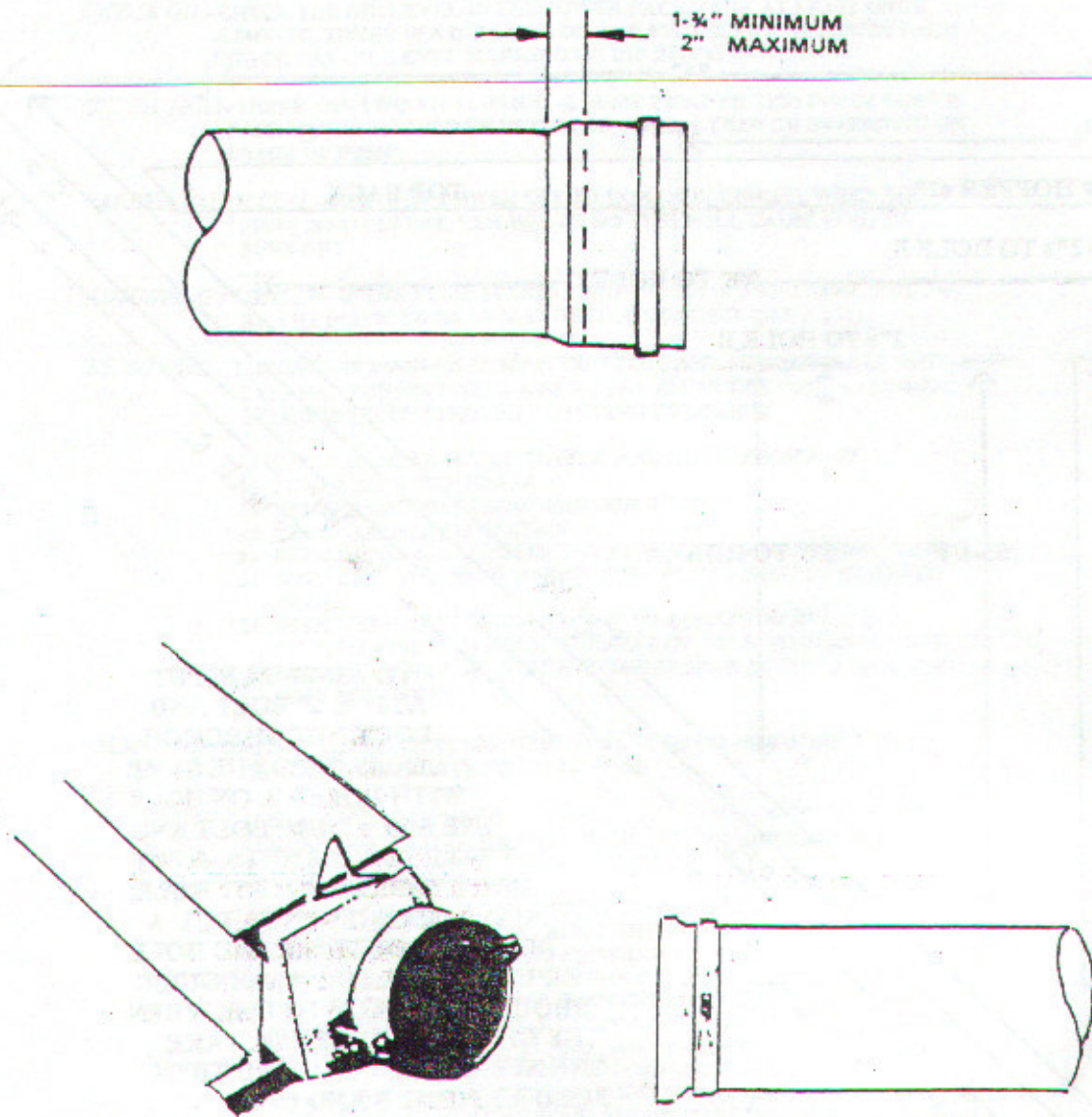
LEVEL TOP



THIS GUIDE IS THE
ACTUAL SIZE OF THE
720 PUMP. IT SHOULD BE
USED WHEN DIGGING THE
HOLE FOR THE PUMP. THE
TOP OF THE GUIDE SHOULD
BE LEVEL AND A MINIMUM OF
4" BELOW GUTTER BOTTOM.
MAKE SURE YOU HAVE A MINIMUM
OF 5" BELOW GUIDE F/CONCRETE.



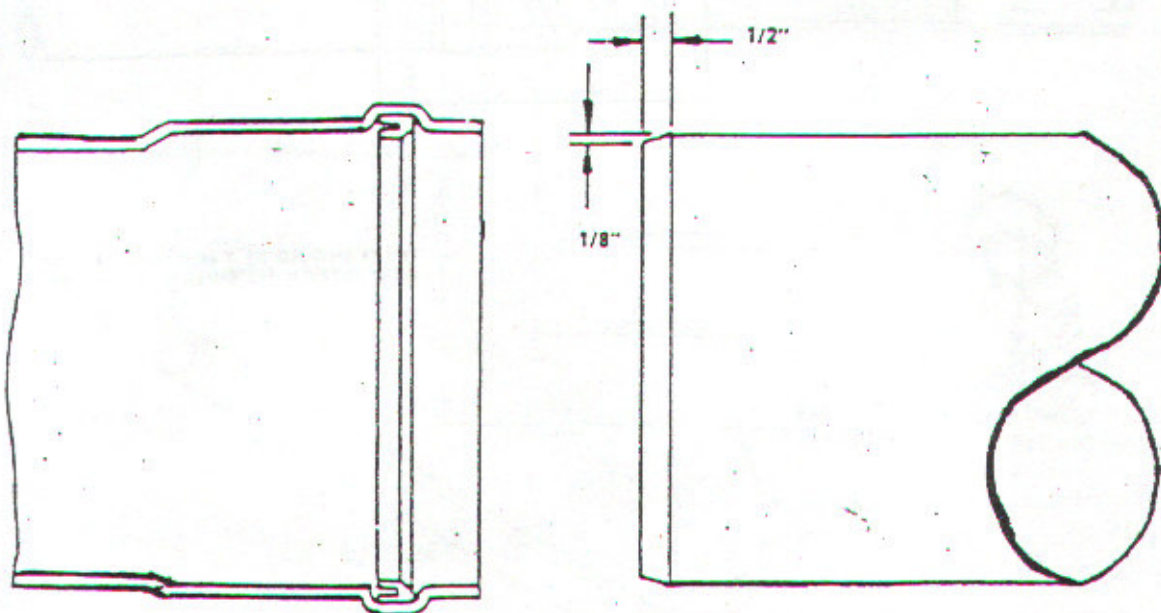
PROPER INSTALLATION AND CONNECTION OF PVC PIPE TO MANURE PUMP

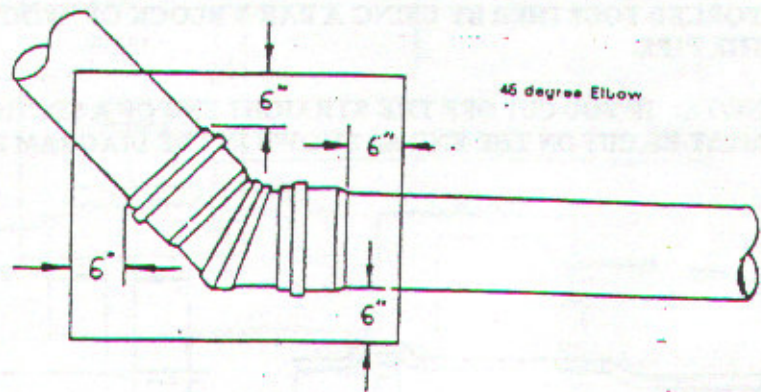
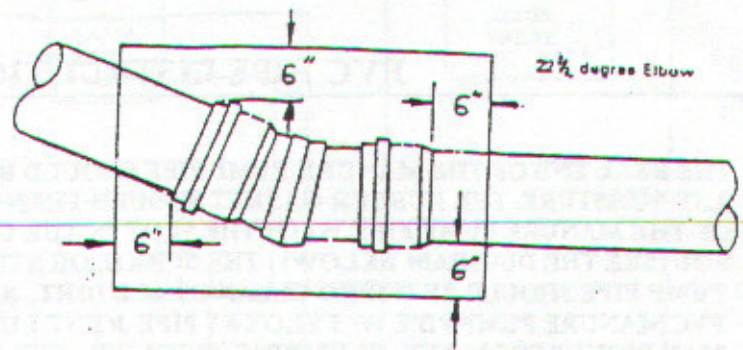


PVC PIPE INSTRUCTIONS

THE BELL END OF THE MANURE PUMP PIPE SHOULD BE WIPED CLEAN OF ALL DIRT AND MOISTURE. THE RUBBER GASKET SHOULD THEN BE PLACED IN THE BELL END OF THE MANURE PUMP PIPE WITH THE SLOT IN THE GASKET FACING AWAY FROM YOU (SEE THE DIAGRAM BELOW) . THE SPIGOT OR STRAIGHT END OF THE MANURE PUMP PIPE SHOULD BE WIPED CLEAN OF ALL DIRT, SAND & MOISTURE. COAT THE PVC MANURE PUMP PIPE W/ TYLOX #7 PIPE JOINT LUBRICANT PROVIDED, OR YOU MAY PICKUP FROM ANY PLUMBING SUPPLIER. THE PIPE SECTIONS CAN THEN BE FORCED TOGETHER BY USING A BAR & BLOCK OF WOOD & TAPPING THE END OF THE PIPE.

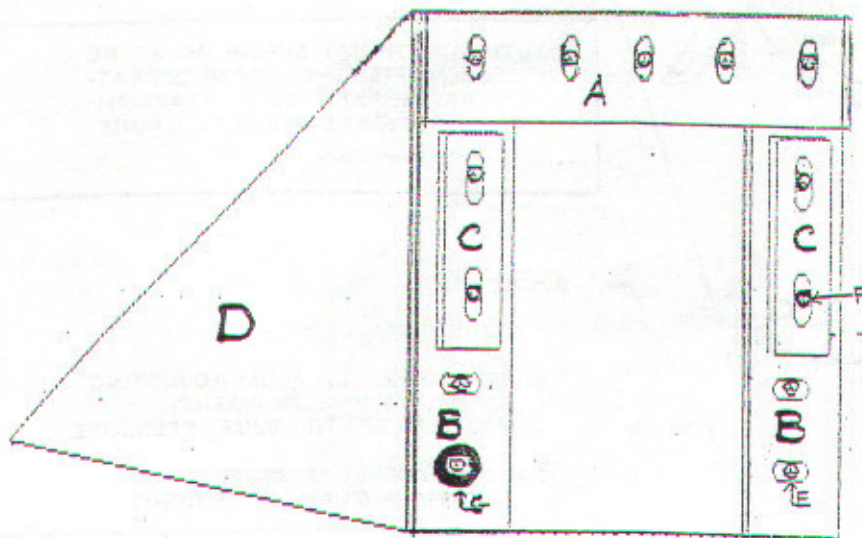
NOTE: IF YOU CUT OFF THE STRAIGHT END OF A SECTION OF PIPE, A CHAMBER MUST BE CUT ON THE END AS SHOWN IN THE DIAGRAM BELOW TO MAKE PIPE FIT.





THERE SHOULD BE A MINIMUM OF 6" OF CONCRETE ON ALL SIDES OF EACH ELBOW

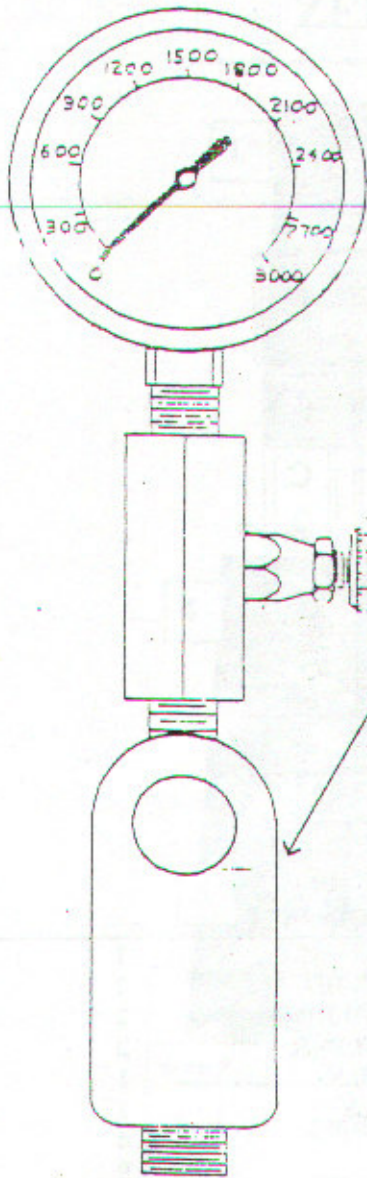
2" PLUNGER wo/RAILS
ZEF420-A



ITEM	PART #	DESCRIPTION	QUANTITY
A	ZEF429	TOP CUTTER BAR ONLY	1
B	ZEF430	SIDE WEAR PLATES F/LR HD	2
B-1	ZEF428	SIDE WEAR PLATES F/WR HD	2
C	ZEF429-A	CUTTER BAR PLATE HOLDER	2
D	ZEF420-A	PLUNGER COMP. wo/RAILS	1
D-1	ZEF420-B	PLUNGER COMP. w/RAILS	1
E	ZEPM410	3/8"x1" S.S. BOLT	4
F	ZEPM411	3/8"x1-1/4" S.S. BOLT	9
G	ZEPM412	3/8" GRADE 8 WASHER	26

NOTE: WHEN PUTTING IN A ADJUSTABLE HEAD, MAKE SURE TO SET THE FRONT SWITCH BACK 3/4" TO ALLOW FOR THE EXTRA THICKNESS ON THE HEAD.

RELIEF VALVE AND PRESSURE ADJUSTMENT



THE PRESSURE GAUGE IS NOT
MANUFACTURED FOR CONSTANT USE

TO OBTAIN A PRESSURE READING ON
THE GAUGE, OPEN THE THUMB SCREW

THUMB SCREW

CAUTION: THUMB SCREW MUST BE
CLOSED AFTER THE PROPER OPERAT-
ING PRESSURE HAS BEEN ESTABLISH-
ED TO PREVENT DAMAGE TO GAUGE.

RELIEF VALVE

TO ADJUST PRESSURE:

1. REMOVE HEX CAP FROM ADJUSTING
SCREW. A 5/16 ALLEN WRENCH
MUST BE USED TO ADJUST PRESSURE.
- 2-A. TO INCREASE PRESSURE, TURN
SCREW IN (TURN TO THE RIGHT).

CAUTION: THE PRESSURE MUST NOT
EXCEED 3000 PSI OR THE PUMP COULD
BE DAMAGED.

B. TO DECREASE PRESSURE, TURN
SCREW OUT (TURN TO THE LEFT).

THE PRESSURE MUST BE ADJUSTED HIGH
ENOUGH SO THAT THE PUMP PISTON DOES
NOT SLOW DOWN ON THE FORWARD OR
PRESSURE STROKE.

WASHER →

HEX CAP →

HYDRAULIC POWER UNIT

CAUTION

IMPORTANT

The power unit is shipped from the factory without oil. Before operation you must fill the power unit tank with twenty (20) gallons of a good grade of non-foaming hydraulic oil. Check oil level on dip stick before operation.

RELIEF VALVE AND PRESSURE ADJUSTMENT

THE PRESSURE RELIEF VALVE IS PREADJUSTED BY THE MANUFACTURER. ADDITIONAL ADJUSTMENT, WHEN REQUIRED, MUST BE MADE WITH EXTREME CAUTION & SAFETY.

WARNING: IMPROPER ADJUSTMENT OF THE RELIEF VALVE WILL VOID WARRANTY OF THE SYSTEM.

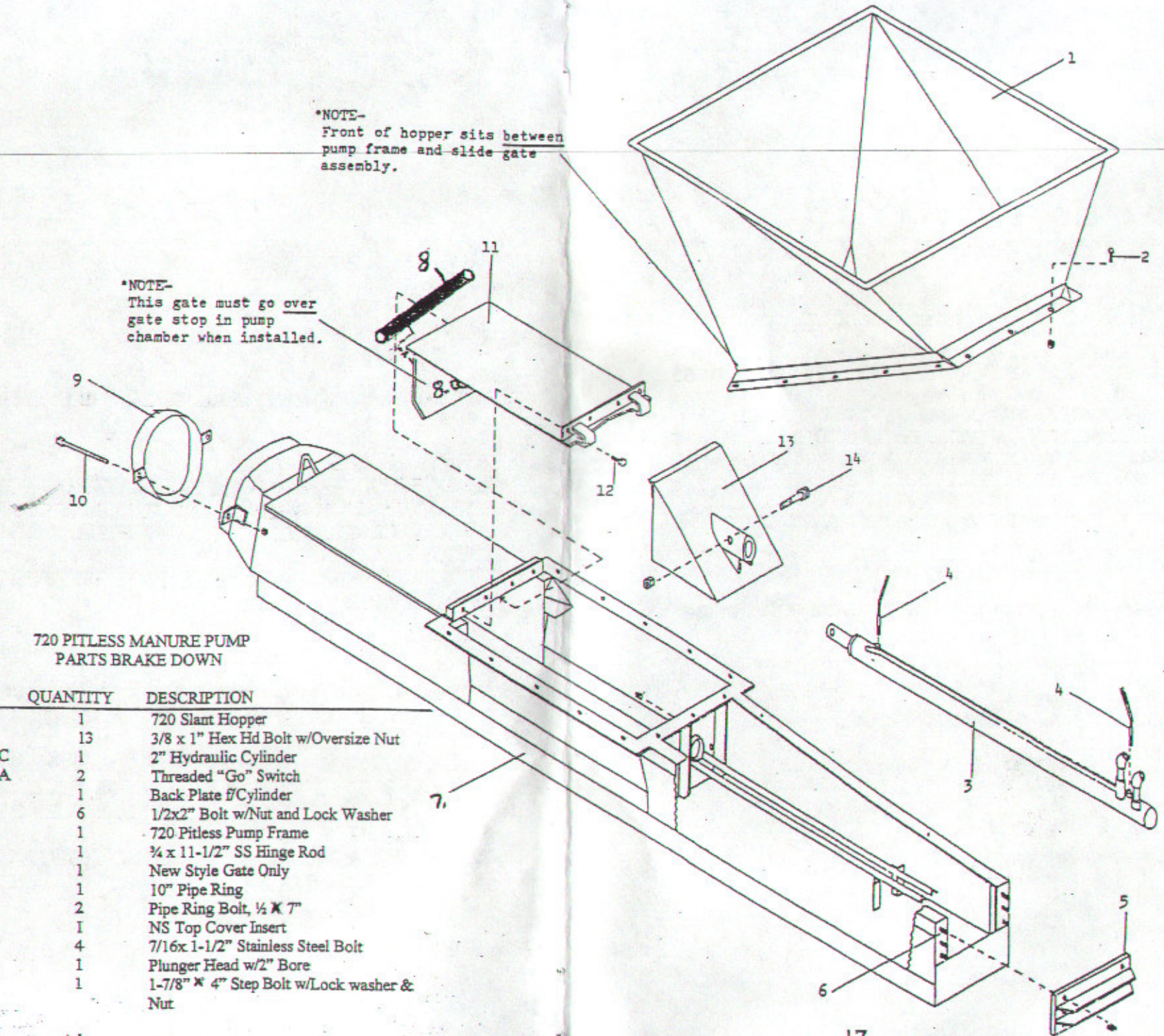
IF RELIEF VALVE ADJUSTMENT IS REQUIRED, THE FOLLOWING PROCEDURE MUST BE FOLLOWED.

1. TURN OFF POWER TO SYSTEM
2. REMOVE HEX CAP AND WASHER LOCATED ON BOTTOM OF RELIEF VALVE.
3. INSERT 5/16 ALLEN WRENCH AND TURN TO THE RIGHT UNTIL RELIEF SPRING IS COMPRESSED. (THIS MEANS THAT YOU CAN NO LONGER TURN THE ALLEN WRENCH)
4. TURN ALLEN WRENCH TO THE LEFT THREE (3) FULL TURNS.
5. APPLY POWER TO SYSTEM.
6. PLACE MANURE IN PUMP AND PLACE PUMP IN OPERATION.
7. PLUNGER HEAD SHOULD COMPLETE AT LEAST ONE POWER STROKE AND RETURN.
8. IF PLUNGER HEAD DOES NOT COMPLET THE POWER STROKE-TURN OFF POWER ; INCREASE PRESSURE $\frac{1}{4}$ OF A TURN. (TURN SCREW IN TO THE RIGHT.)
9. REPEAT STEPS 5, 6, 7, AND 8 UNTIL PLUNGER HEAD MOVES THE MANURE OUT WITHOUT THE PUMP SQUEALING OR STALLING THE MOTOR.
10. SHOULD MOTOR STALL, LOWER THE PRESSURE BY TURNING THE SCREW OUT. (TURN TO THE LEFT.)
11. THE RELIEF VALVE SHOULD BE SET NO TIGHTER THAN TWO (2) COMPLETE TURNS OPEN, OR DAMAGE TO THE HYDRAULIC PUMP COULD RESULT.

FOR ADDITIONAL INFORMATION CONTACT THE LOCAL DEALER OR FACTORY.

*NOTE-
Front of hopper sits between
pump frame and slide gate
assembly.

*NOTE-
This gate must go over
gate stop in pump
chamber when installed.



720 PITLESS MANURE PUMP PARTS BREAK DOWN

ITEM #	PART #	QUANTITY	DESCRIPTION
1	ZEF417	1	720 Slant Hopper
2	1BHS381	13	3/8 x 1" Hex Hd Bolt w/Oversize Nut
3	ZEPH147-C	1	2" Hydraulic Cylinder
4	ZEPH149-A	2	Threaded "Go" Switch
5	ZEF446	1	Back Plate f/Cylinder
6	1BHS122	6	1/2x2" Bolt w/Nut and Lock Washer
7	ZE720	1	720 Pitless Pump Frame
8	ZEF4021	1	3/4 x 11-1/2" SS Hinge Rod
8-A	ZEF4022	1	New Style Gate Only
9	ZEF418	1	10" Pipe Ring
10	ZEF445	2	Pipe Ring Bolt, 1/2 x 7"
11	ZEF4023	1	NS Top Cover Insert
12	ZEPH320	4	7/16x 1-1/2" Stainless Steel Bolt
13	ZEF420-A	1	Plunger Head w/2" Bore
14	ZEF401	1	1-7/8" x 4" Step Bolt w/Lock washer & Nut

WOOD'S SURE-FLEX COUPLINGS INSTALLATION INSTRUCTIONS

THERE ARE TWO DIFFERENT SIZES OF RUBBER COUPLERS (6JE OR 7JE), WHICH ARE ON YOUR POWER PACK. IT IS VERY IMPORTANT TO MAKE SURE THAT THE MOTOR AND PUMP ARE IN PERFECT ALIGNMENT. IF MOTOR AND PUMP ARE NOT ALIGNED THE RUBBER COUPLER WILL WEAR OUT PREMATURELY, AND CAUSE POWER PACK TO NOT WORK.

TO ALINE PROPERLY, USE A SHORT STRAIGHTEDGE TO CHECK THE PARRALLEL ALIGNMENT BY PLACING THE STRAIGHTEDGE ACROSS THE TWO COUPLING FLANGES TO CHECK THE OFFSET. THE COUPLING ALLOWANCE SHOULD BE NO MORE THAN .005.. MAKE SURE TO CHECK BOTH TOP AND SIDE ALIGNMENT.

MOVE THE MOTOR OR SHIM THE PUMP TO OBTAIN ALL PROPER ALIGNMENT.

NOTE: BEFORE RUNNING PUMP, REPLACE COUPLING GUARD.

NOTE: FOR ADDITIONAL INFORMATION REFER TO THE SPECIAL INSTRUCTION IN WOODS SURE -FLEX COUPLING INSTALATION.



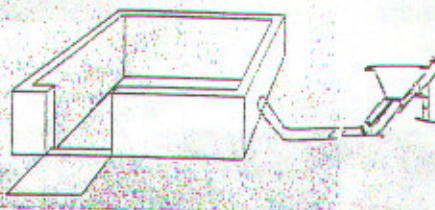


Zabel Equipment Pumps adapt to many various manure storage designs in your particular area, or soil condition

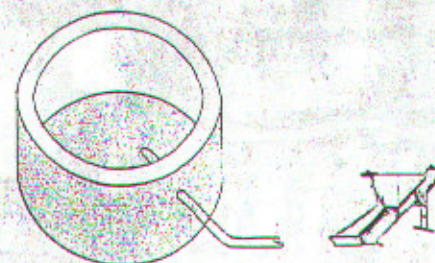
ASCS design & cost sharing available in many counties and states



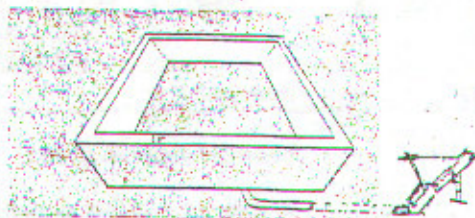
Treated Wood Side Walls With Concrete Floor



Concrete Above Ground Storage



Steel or Concrete Round Storage

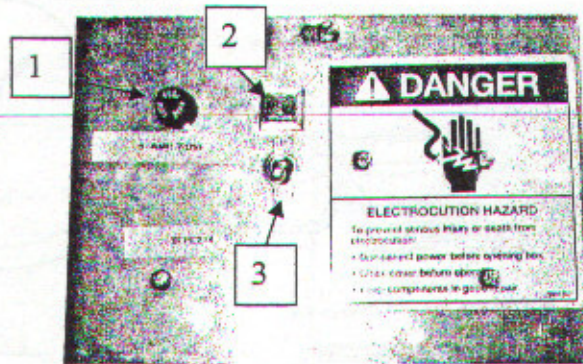


Complete Earthen In-ground Storage



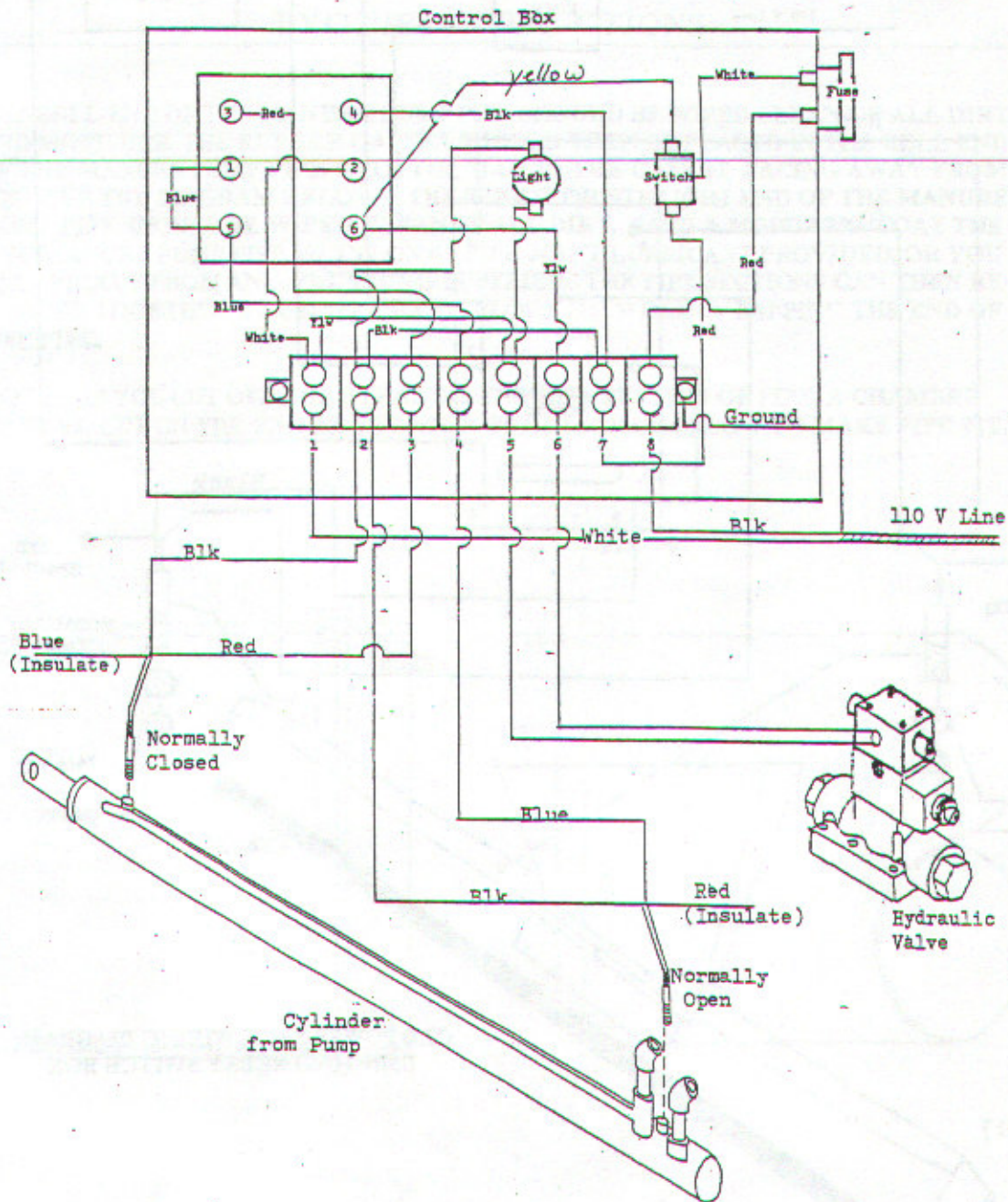
Slope Bottom With Short Concrete Walls And Earth Sides

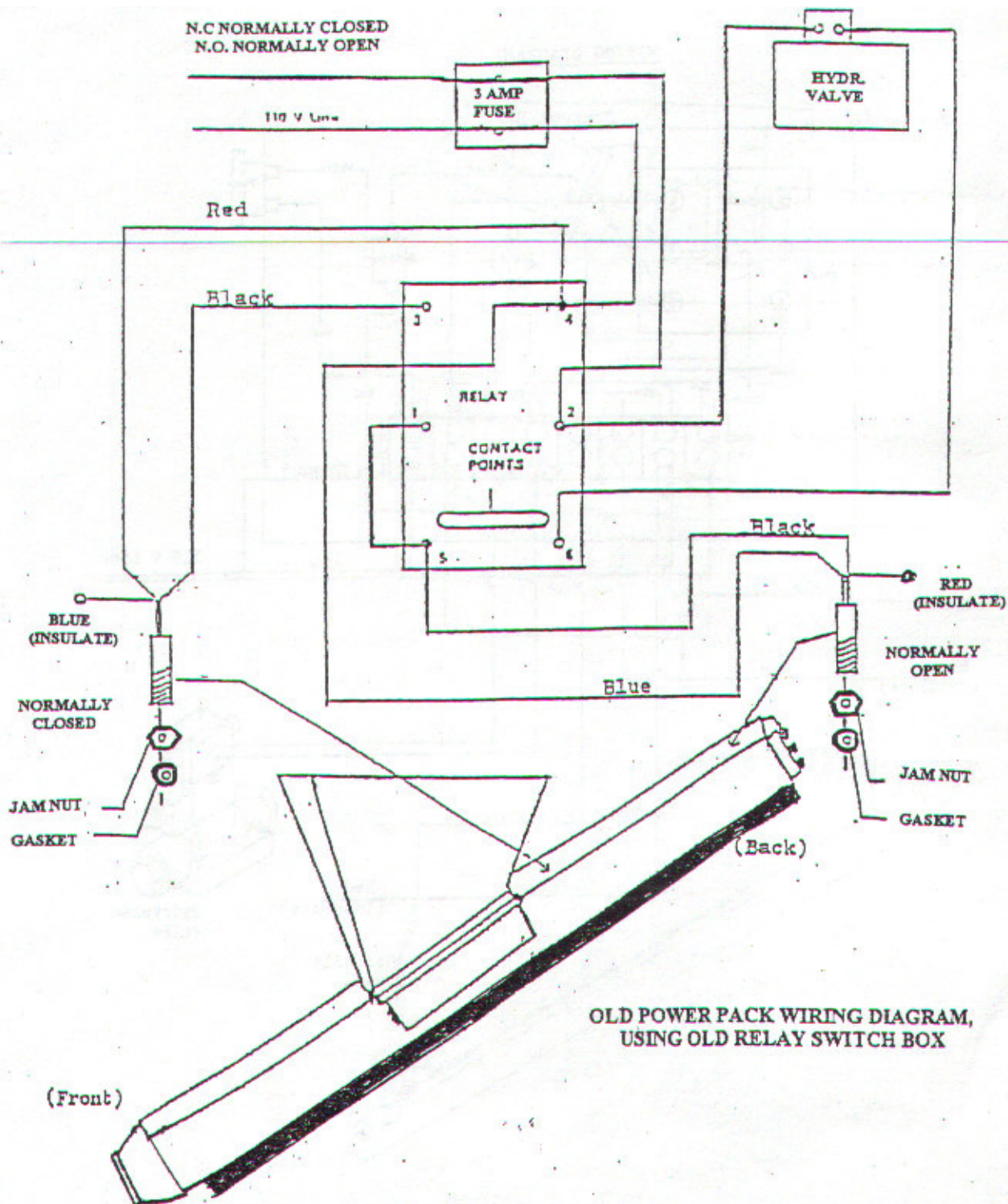
ZEPE214 Control Box



Item #	Part #	Description
1	EMR916	Panel Mount Fuse Holder
2	ZEPE215	Indicator Light (red or amber)
3	EMR909-A	Toggle Switch
4	ZEPE204	Relay
5	EMR912	8-Gang Terminal Block
6	EMR918	5-amp Fuse (spare)

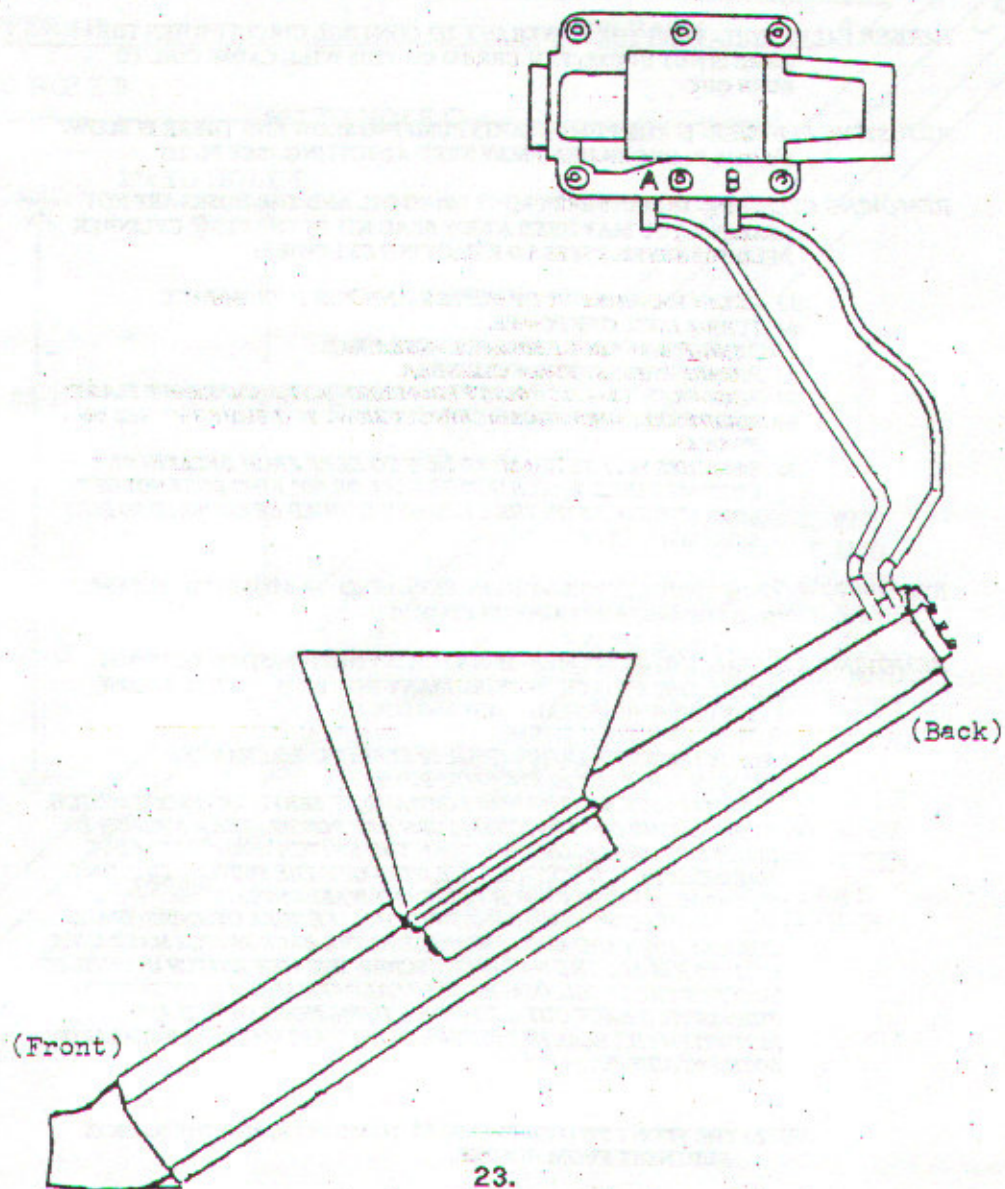
WIRING DIAGRAM





OLD POWER PACK WIRING DIAGRAM,
USING OLD RELAY SWITCH BOX

PROPER HOSE INSTALLATION



MAINTENANCE OF A ZE MANURE PUMP

"CAUTION"- SHUT OFF AND LOCK OUT MAIN POWER SOURCE BEFORE ENTERING THE HOPPER OF THE PUMP FOR ANY REASON.

CHECK OIL- CHECK THE OIL LEVEL IN THE POWER PACK TANK AT LEAST ONCE A MONTH. THERE IS A DIP STICK ON THE FILLER PIPE OF POWER PACK WHICH HAS OIL LEVEL MARKING ON DIP STICK.

OIL FILTERS- THERE ARE TWO FILTERS (OIL & SUMP PUMP FILTER) INSIDE POWER PACK WHICH SHOULD BE REPLACED ONCE A YEAR OR DEPENDING ON USAGE OF PUMP.

PARKER VALVE COIL- TURN THE POWER OFF TO CONTROL CIRCUIT WHEN THE PUMP IS NOT IN USE, FAILURE TO DO THIS WILL CAUSE COIL TO BURN OUT.

ADJUSTING PLUNGER- IF THE PUMP STARTS PUMPING SLOW AND THERE IS BLOW-BY, THE PLUNGER HEAD MAY NEED ADJUSTING. (SEE PG.21)

REMOVING CYLINDER- IF MANURE PUMP IS USING OIL AND THE HOSES ARE NOT LEAKING, YOU MAY NEED A NEW SEAL KIT IN THE PUMP CYLINDER. BELOW IS SEVEN STEPS TO REMOVING CYLINDER:

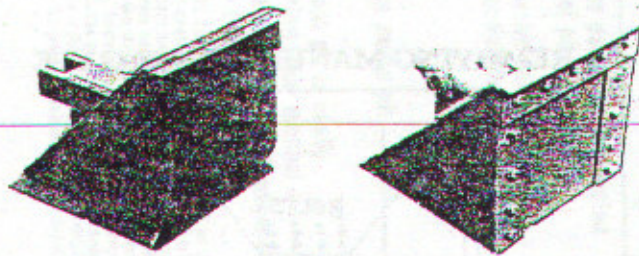
- 1.) CLEAN MANURE OUT OF HOPPER AND RUB 1' FROM BACK.
- 2.) TURN & LOCK OFF POWER.
- 3.) REMOVE 7/8" BOLT FROM PLUNGER HEAD.
- 4.) REMOVE HOSES FROM CYLINDER.
- 5.) REMOVE THE 6- 1/2" BOLTS FROM END PLATE AND REMOVE PLATE.
- 6.) SLIDE CYLINDER BACK MAKING SURE NOT TO BUMP SWITCHES ON FRAME.
- 7.) SWITCHES MAY BE REMOVED NOW TO KEEP FROM BREAKIN OR CUTTING WIRES. WATCH SO THE SEAL OR "O" RING DOES NOT GET LOST. THE HOLES ON THE CYLINDER SHOULD BE COVERED SO DIRT DOES NOT GET IN.

REMOVING GATE- IF THE GATE NEEDS TO BE REPLACED OR ADJUSTED, PLEASE READ THE INSTRUCTIONS ON PAGE 22.

REMOVING & INSTALLING SWITCHES- IF A BACK & FORTH MOTION DOSE NOT ACCURE, ONE SWITCH OR WIRE MANY NOT BE WORKING. BELOW IS FIVE STEPS TO INSTALL NEW SWITCH (S):

- 1.) RUN PLUNGER HEAD OUT UNTIL IT STARTS INTO CHAMBER
- 2.) REMOVE THE BACK PLATE FROM PUMP.
- 3.) RUN CYLINDER ALL THE WAY FORWARD, IF SERVICING FRONT SWITCH,
- 4.) WHEN TAKING OUT SWITCHES, TURN OFF POWER,, USE A WRENCH TO UNSCREW THE SEALING NUT, TURN THE SWITCH COMPLETELY OUT. MAKING SURE NOT TO TWIST THE WIRE OFF THE SWITCH, TWISTING THE WIRE OFF THE SWITCH VOIDS ANY WARRENTY.)
- 5.) WHEN REPLACING THE FRONT SWITCH MAKE SURE CYLINDER IS ALL THE WAY FORWARD AND IF REPLACING THE BACK SWITCH MAKE SURE CYLINDER IS ALL THE WAY BACK. SCREW THE NEW SWITCH IN UNTIL IT TOUCHES THE SPOOL, (MAKE SURE SEALING WASHER IS ON SWITCH.) TURN SWITCH BACK OUT 1/4 TO 1/2 OF A TURN, HOLD SWITCH AND RETIGHTEN THE SEAL NYT SECURELY, (ALWAYS MAKE SURE SEAL IS ON BOTH SWITCHES).

NOTE: THE FRONT SWITCH IS CLOSET TO HOPPER, AND THE BACK IS FURTHEST FROM HOPPER.



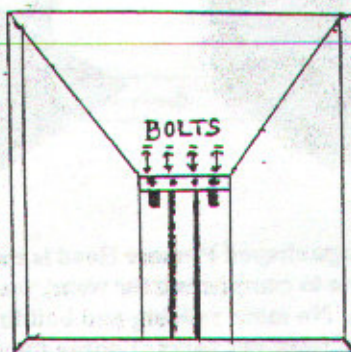
The wedge shaped Plunger Head is completely adjustable to compensate for wear, years down the road. No more welding and building up or replacing worn out parts. Loosen the stainless steel bolts and adjust for wear. The face plates and cutting edge can be replaced should they become damaged, or the cutting edge becomes dull.

ADJUSTING PLUNGER



- 1.) RUN MANURE OUT OF HOPPER, THEN LEAVING THE HEAD ALL THE WAY BACK.
- 2.) *TURN OFF POWER AND LOCK OFF.*
- 3.) LOOSEN THE BOLTS ON FACE OF HEAD. TAP SIDES OUT AND TOP EDGE UP ABOUT $\frac{1}{4}$ ". TIGHTEN CORNER BOLTS JUST ENOUGH TO HOLD SIDES & TOP.
- 4.) TURN POWER BACK ON, THEN RUN PLUNGER HEAD AHEAD TO THE EDGE OF CHAMBER. TURN OFF POWER AND LOCK OFF.
- 5.) CHECK FOR CLEARANCE OF PLUNGER ON THE EDGES OF CHAMBER. IF CLEARANCE IS GOOD, THEN GO TO STEP 6, IF NOT GO BACK TO 1-5 AND REPEAT STEPS OVER.
- 6.) TURN POWER BACK ON. RUN HEAD BACK TO BACK OF PUMP, TURN POWER OFF AND LOCK
- 7.) TIGHTEN ALL BOLTS ON FACE OF HEAD AND RUN AS USUAL.

REMOVING MANURE PUMP GATE



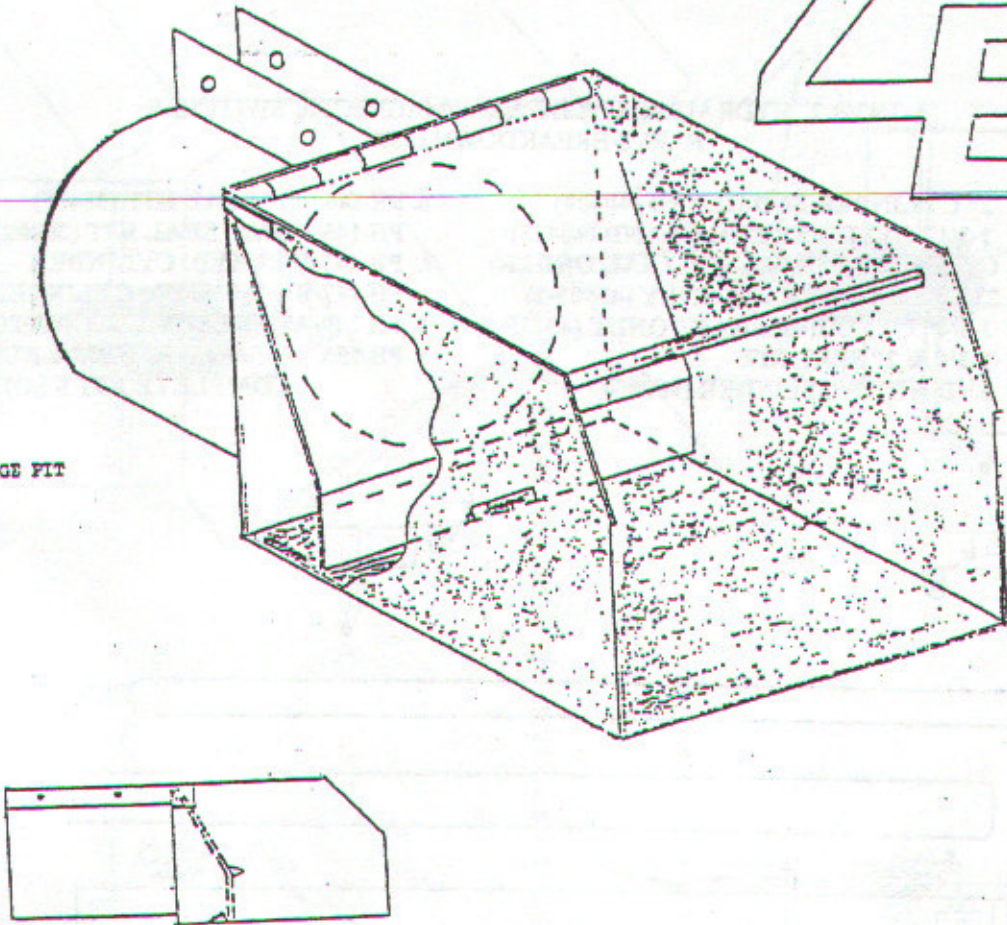
- 1.) RUN CYLINDER ALL THE WAY FORWARD.
- 2.) IF LIQUID SYSTEM IS ABOVE PUMP LEVEL, BE SURE TO TURN OFF GATE VALVE IN PIPE AT HOLDING PIT.

CAUTION: MAYBE PRESSURE IN THE PIPE AGAINST GATE.

- 3.) REMOVE THE FOUR BOLTS INSIDE THE HOPPER THAT HOLD THE GATE IN PLACE.
- 4.) RUN THE CYLINDER TO THE BACK SLOWLY, RELEASING THE PRESSURE AS IT GOES BACK.
- 5.) IF THE GATE DOES NOT COME BACK, YOU MAY HAVE TO HOOK A CHAIN ON THE GATE AND AROUND THE HEAD. TURN PUMP OFF AND ON, IT WILL PULL THE GATE BACK.
- 6.) BEFORE PUTTING IN THE NEW GATE, MAKE SURE THE MANURE IS OUT OF CHAMBER PAST THE GATE STOPS.
- 7.) WHEN THE NEW GATE IS PUT IN, MAKE SURE IT IS OVER THE GATE STOPS. MAKE SURE NEW GATE HAS GREASE /OIL COMBINATION ON TOP SIDE FOR EASE IN CHAMBER.
- 8.) TIGHTEN DOWN THE FOUR BOLTS , RUN WITH EASE, (MAY NEED ADJUSTMENT) UNTIL GATE SWINGS FREE, AND NO RUBBING FROM PLUNGER HEAD.

ZE

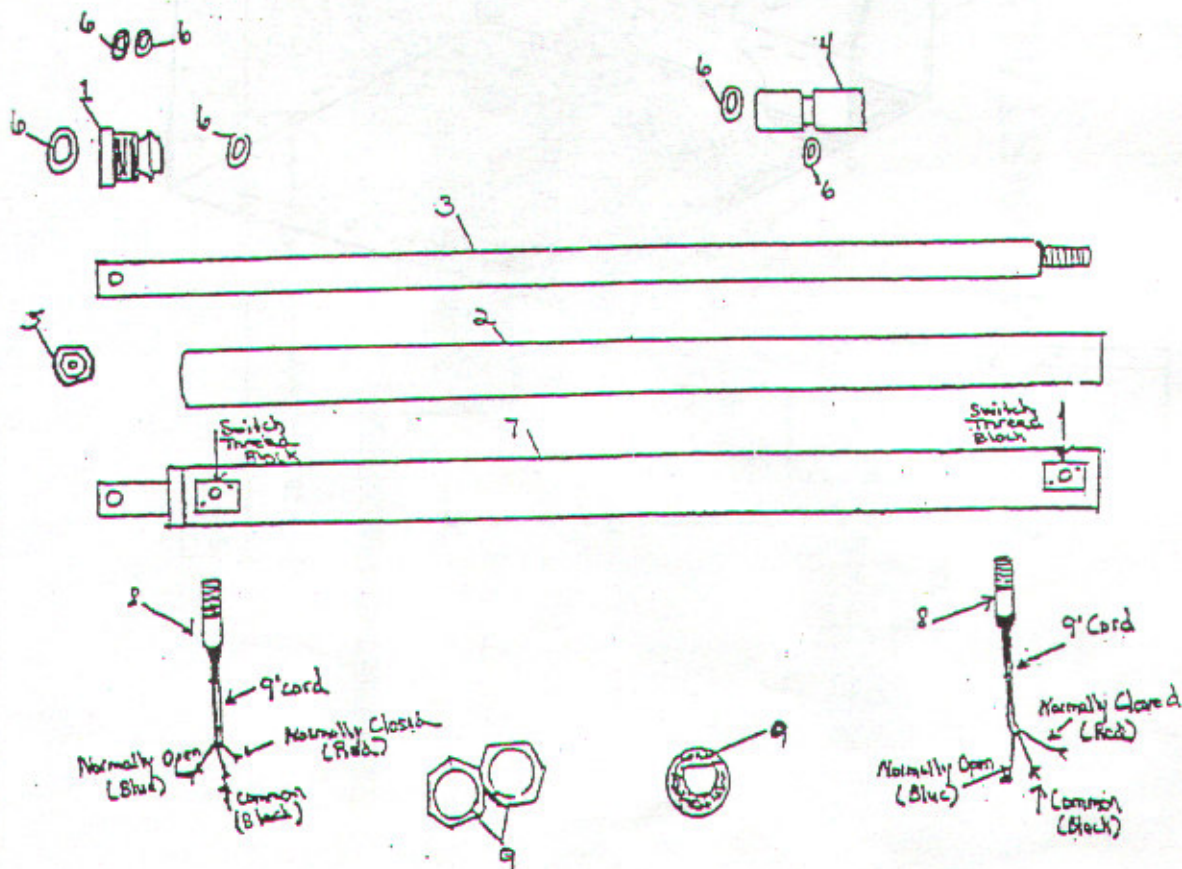
ALVE FOR STORAGE FIT



$\frac{1}{4}$ "

1-3/4" & 2" HYDRAULIC CYLINDER W/MAGNETIC SWITCHES PARTS BREAKDOWN LIST

- | | |
|---|--------------------------------|
| 1. PH 141 2" CYLINDER END GLAND (40429) | 6. PH 146 2" SEAL KIT (20477) |
| PH 103 1-3/4" CYLINDER END GLAND (40423) | PH 145 1-3/4" SEAL KIT (20482) |
| 2. PH 142 CYLINDER BARREL (SPECIAL ORDER) | 7. PH 147-C 2" HYD. CYLINDER |
| 3. PH 143 2" CYLINDER SHAFT ONLY (43903-1) | PH 147-B 1-3/4" HYD. CYLINDER |
| PH 142 1-3/4" CYLINDER SHAFT ONLY (43775-2) | 8. PH 149-ATHREADED GO SWITCH |
| 4. PH 144 1-3/4" & 2" SEAL KIT | 9. PH 155 S-S007 WASHER & NUTS |
| 5. PH 138 END NUT F/CYLINDER (96006) | COMPLETE KIT S SOLD |



PROCEDURE TO REMOVE AND INSTALL "GO" SWITCHES

NOTE: THE FRONT SWITCH IS NEAREST TO HOPPER, AND THE BACK SWITCH IS FURTHEST FROM HOPPER.

STEP 1: RUN CYLINDER ALL THE WAY FORWARD (FOR SERVICING THE FRONT SWITCH) OR ALL THE WAY BACK (FOR SERVICING THE BACK SWITCH).

STEP 2: WHEN TAKING OUT SWITCHES FOLLOW THESE PROPER INSTRUCTIONS:

- 1.) TURN OFF THE POWER.
- 2.) UNSCREW THE SEAL NUT.
- 3.) TURN SWITCH COMPLETELY OUT, MAKING SURE NOT TO TWIST WIRE OFF AT SWITCH. (**NOTE:** TWISTING OFF WIRE AT SWITCH VOIDS ANY WARRENTY OF THIS PRODUCT.)

STEP 3: WHEN REPLACING MANURE PUMP SWITCHES:

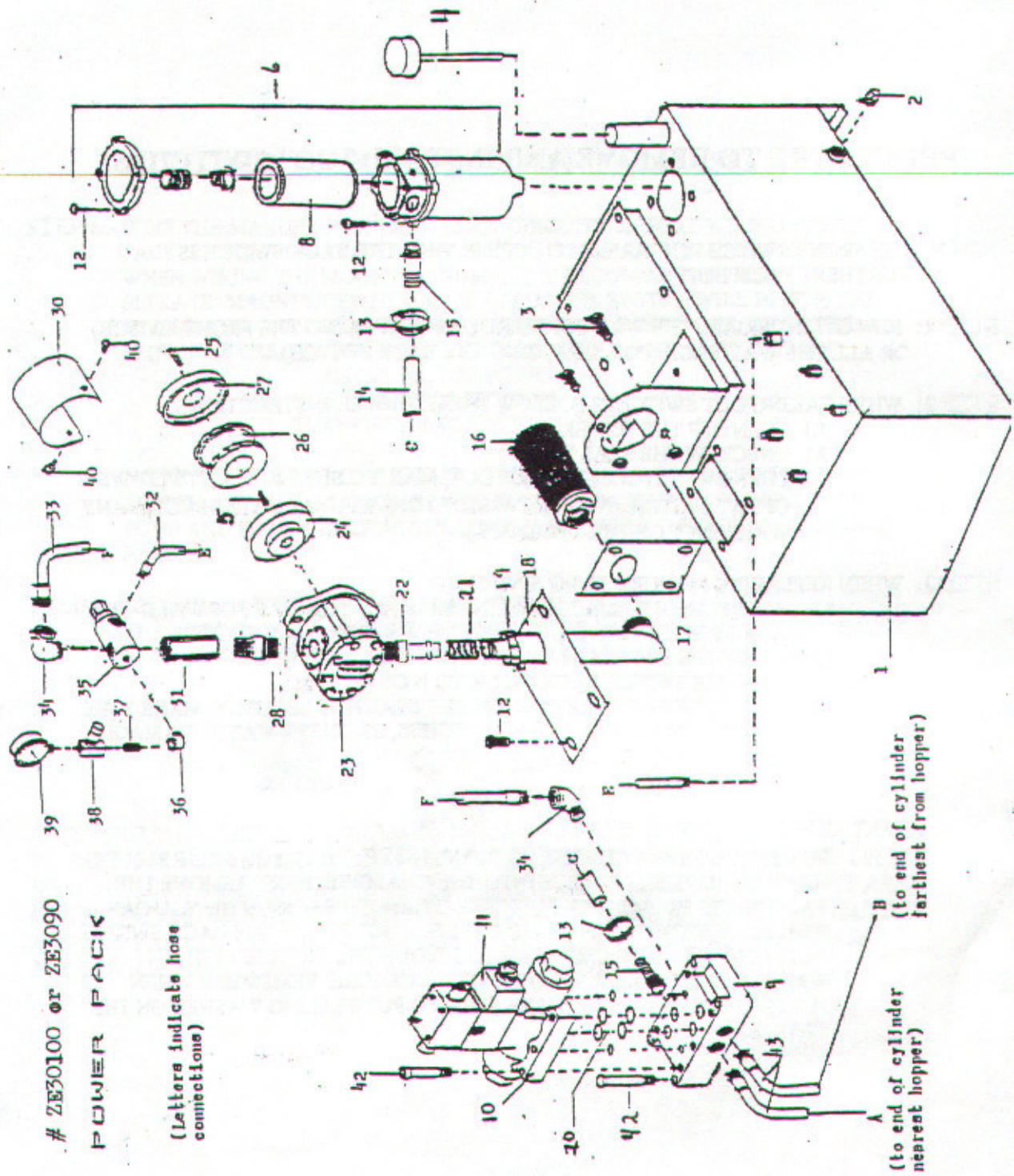
- 1.) MAKE SURE HYDRAULIC CYLINDER IS ALL THE WAY FORWARD (FOR FRONT SWITCH) OR ALL THE WAY BACK (FOR BACK SWITCH).
- 2.) SCREW THE SWITCH IN UNTIL IT TOUCHES THE SPOOL.
- 3.) TURN THE SWITCH BACK OUT $\frac{1}{4}$ TO $\frac{3}{4}$ OF A TURN.
- 4.) HOLD SWITCH AND RETIGHTEN THE SEAL NUT SECURLY. MAKE SURE THAT THE SEAL IS ON BOTH SWITCHES, OR THERE MAYBE DAMAGE TO THE SWITCHES.

FOR SERVICEING A CEMENT- IN PUMP, **NOTE:** THAT YOU MUST RUN THE HEAD OUT UNTIL IT STARTS INTO THE CHAMBER. NEXT REMOVE THE BACK PLATE FROM PUMP. PULL THE CYLINDER BACK UNTIL YOU CAN REACH THE FRONT SWITCH. BE CAREFUL NOT TO HIT THE BACK SWITCH AS IT GOES BY THE PUMP FRAME. REMOVE THE SWITCH WITH A WRENCH AND FOLLOW THE ABOVE PROCEDURE. REMEMBER WHEN PUTTING ON A NEW SWITCH BE SURE TO PUT SEALING WASHER ON THE SWITCH.

ZE30100 or ZE3090

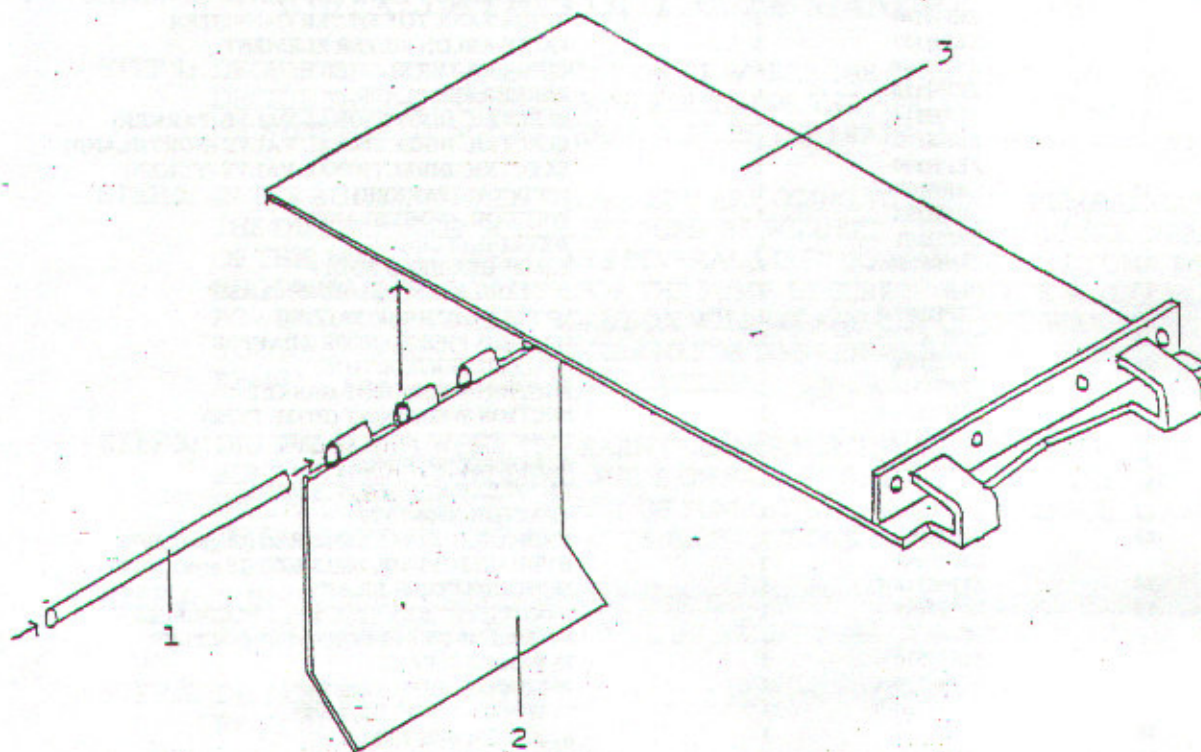
POWER PACK

(Letters indicate hose connections)



POWER PACK PARTS LIST
ZE3090/ZE30100

ITEM #	PART #	QUANTITY	DESCRIPTION
1	ZEF432	1	POWER PACK TANK ONLY
2	P009	1	½" PIPE PLUG
3	1BHS716112	2	7/16"x1 ½" HEX BOLT & NUT
4	ZEPM351	1	DIP STICK
5	ZEPM413	1	3/16"x3/16"x1" KEY
6	ZEPH156	1	FAIRY-ARLON TANK TOP FILTER CANNISTER
	ZEPH164	1	ZINGA TANK TOP FILTER CANNISTER
8	ZEPH157	1	FAIRY-ARLON FILTER ELEMENT
	ZEPH164	1	ZINGA FILTER ELEMENT
9	ZEPH115	1	PARKER SUB-PLATE
10	ZEPH114	1	ELECTRIC DIRECTIONAL VALVE (PARKER)
	ZEPH162	1	ELECTRIC DIRECTIONAL VALVE (NORTHLAND)
	ZEPH200	1	ELECTRIC DIRECTIONAL VALVE (YUKEN)
11	ZEPE207	1	WET COIL (PARKER)
	ZEPH163	1	WET COIL (NORTHLAND)
	ZEPH201	1	WET COIL (YUKEN)
12	1BHS5161	12	5/16x1" HEX HEAD BOLTS
13	P149	2	1" STAINLESS STEEL HOSE CLAMP
14	ZEPH107-A	1	¾" FLEXVAC HOSE, 9" LONG
15	P101-A	2	¾" GALV. PIPE TO HOSE ADAPTOR
16	ZEPH124	1	SUMP FILTER (SUCTION)
17	ZEPM346-A	1	SUCTION WELDMENT GASKET
18	ZEPH124-B	1	SUCTION WELDMENT (HOSE TYPE)
19	ZEPM415	2	1 5/16" TO 2 ½" HOSE CLAMP
20	ZEPM350	1	SET OF SIX "O" RINGS
21	ZEPM352	1	1 ¼" FLEXVAC HOSE, 4" LONG
22	ZEPH117-F	1	ADAPTOR, 4604-16-20
23	ZEPH158	1	HYDRAULIC PUMP, 26011-RZC (13 gpm), 3090
	ZEPH159	1	HYDRAULIC PUMP, 26013-RZC (15 gpm), 30100
24	ZEPM316-C	1	7S WOODS COUPLER, ¾"
25	ZC162545	1	1/4X1/4X2 ½" KEY STOCK (1 1/8" COUPLER)
	ZF229	1	3/8x3/8x1 ¾" KEY STOCK (1-3/8" COUPLER)
26	ZEPM315	1	7S WOODS SLEEVE
27	ZEPM316-A	1	7S WOODS COUPLER, 1 1/8"
	ZEPM316-B	1	7S WOODS COUPLER, 1 3/8"
28	ZEPH161	1	ADAPTOR, 6401-10-12
30	ZEPH157	1	POWER PACK MOTOR SHIELD
31	ZEPH160	1	CHECK VALVE, MET-FC-10
32	ZEPH110-A	1	¾"x24" HYDRAULIC HOSE ASSEMBLY
33	ZEPH110-B	1	¾"x21" HYDRAULIC HOSE ASSEMBLY
34	ZEPM359	2	¾" STREET ELBOW, BLACK
35	ZEPH122-C	1	¾" RELIEF VALVE
36	ZEPM373-A	1	¾" STREET ELBOW, BLACK
37	ZEPM356	1	¾" CLOSE-UP NIPLE, BLACK
38	ZEPH111	1	NEEDLE VALVE
39	ZEPH118	1	PRESSURE GUAGE
40	1BHS51634	2	5/16x3/4" HEX HEAD BOLT
42	ZEPM339	8 (6)	1/2x2 ½" SOCKET HEAD CAP SCREW
	1BHS383	4	3/8x3" HEX HEAD BOLT
			(SUB PLATE IS ONLY A 4 BOLT MOUNT)
43	ZE (4, 6, OR 10)	2	¾" HYD.HOSE ASSY. (SPECIFI LENGTH)



MANURE PUMP GATE INSERT ASSEMBLY

ITEM #	PART #	DESCRIPTION
1.	ZEF4021	3/4"x11-1/2" STAINLESS ROD
2.	ZEF4022	GATE ONLY (SPECIFI- SHORT OR LONG)
3.	ZEF4023	TOP COVER INSERT

ZABEL EQUIPMENT, INC. MANURE PUMP TROUBLE SHOOTING GUIDE

USE TROUBLE SHOOTING GUIDE ONLY AFTER PUMP IS DETERMINED NOT TO BE PLUGGED. IF PUMP IS PLUGGED, FIRST TRY TURNING UP PRESSURE UNTIL MOTOR STALLS. THEN WORK ON UNPLUGGING PUMP. PUMPS WILL GENERALLY PLUG AT AN ELBOW.

SYMPTOM	PROBLEM	SOLUTION
TURN PUMP ON, MOTOR RUNS BUT HEAD DOESN'T MOVE	WRONG MOTOR ROTATION	REVERSE MOTOR ROTATION
	LOW OIL LEVEL	ADD OIL
	SECTION LINE AIR LEAK	TIGHTEN QUICK COUPLER (NEW STYLE POWER PACKS) CHECK RUBBER HOSE & HOSE CLAMPS REPLACE WHERE NEEDED (OLD STYLE POWER PACKS)
	RUBBER COUPLER STRIPPED	REPLACE COUPLER
	BAD PUMP	REPLACE PUMP
TURN PUMP ON, MOTOR RUNS & RELIEF VALVE SQUEALS PLUNGER HEAD ALL THE WAY BACK	SWITCH OFF TO CONTROL BOX	TURN ON SWITCH
	BLOWN FUSE	REPLACE FUSE
	BAD WIRE CONNECTION TO PARKER VALVE	REPAIR OR REPLACE WIRES
	LOOSE WIRE(S) ON RELAY	TIGHTEN SCREWS
	BROKEN WIRE TO BACK SWITCH	REPAIR OR REPLACE
	OBSTRUCTION BEHIND HEAD	REMOVE OBSTRUCTION
	BAD RELAY	REPLACE RELAY
	IMPROPER BACK SWITCH CLEARANCE (NEW STYLE PUMPS)	RESET BACK SWITCH
	BAD BACK SWITCH	CHANGE SWITCH
	TRIP FINGER MISSED BACK MICRO-SWITCH FINGER (OLD STYLE PUMPS)	TRIP MICRO-SWITCH BY HAND REPLACE MICRO FINGER IF NEEDED
TURN PUMP ON, MOTOR RUNS PLUNGER HEAD GOES ALL THE FORWARD & RELIEF VALVE SQUEALS	WIRE TO BACK OR FRONT SWITCH SHORTING ACROSS	REPAIR OR REPLACE WIRES
	RELAY STUCK DOWN	REPAIR OR REPLACE RELAY
	BACK SWITCH WIRED NORMALLY CLOSED	CHANGE WIRING TO NORMALLY OPEN
CONTINUE ON NEXT PAGE		

ZABEL EQUIPMENT, INC.
MANURE PUMP TROUBLE SHOOTING GUIDE

SYMPTOM	PROBLEM	SOLUTION
<i>CONTINUED FROM OTHER PAGE</i>	METAL FLAKE ON REAR SWITCH	REMOVE SWITCH & REMOVE METAL FLAKE
	IMPROPER FRONT SWITCH CLEARANCE (NEW STYLE PUMPS)	RESET FRONT SWITCH
	BAD FRONT SWITCH	CHANGE SWITCH
	TRIP FINGER MISSED FRONT MICRO-SWITCH FINGER (OLD STYLE PUMPS)	TRIP MICRO-SWITCH BY HAND REPLACE MICRO FINGER IF NEEDED
PLUNGER HEAD SHORT CYCLES IN REAR POSITION	BROKEN WIRE TO FRONT SWITCH	REPAIR OR REPLACE WIRE
	METAL FLAKE ON FRONT SWITCH (NEW STYLE PUMPS)	REMOVE SWITCH & REMOVE METAL FLAKE
	BAD CONNECTION ON RELAY	TIGHTEN SCREWS
	FRONT SWITCH WIRED NORMALLY OPEN	CHANGE WIRING TO NORMALLY CLOSED
	BAD FRONT SWITCH	REPLACE FRONT SWITCH
PUMP OPERATES NORMALLY, BUT WILL NOT EMPTY HOPPER, OR PUMPS SLOWLY	PLUNGER HEAD BLOW-BY	ADJUST WEAR PLATES (NEW STYLE) BUILD-UP HEAD OR REPLACE (OLD STYLE)
	MANURE TO LIQUID	ADD BEDDING TO SEAL HEAD & GATE
	GATE STUCK OPEN	BROKEN SPRING(S) (OLD STYLE) REMOVE OBSTRUCTION FROM GATE
	BROKEN GATE	REPLACE GATE
PLUNGER HEAD WILL NOT GO INTO CHAMBER	OBSTRUCTION IN PUMP	REMOVE OBSTRUCTION
	TOP CUTTER BAR OUT OF ALIGNMENT	REALIGN TOP CUTTER BAR
	BROKEN TOP GUIDE CLIP ON SLIDE GATE (NEW STYLE PUMPS) HOPPER PLATE (OLD STYLE PUMPS)	REPAIR CLIP

*IF TOP GUIDE CLIPS SHOW EXCESSIVE WEAR, CHECK HEAD FOR DISTORTION, OR IF CYLINDER SHAFT IS BENT.
 IF HEAD IS DAMAGED, REPLACE. IF CYLINDER SHAFT IS BENT, ROTATE UPSIDE DOWN TO PUT PRESSURE DOWNWARD.*