



TTSHYD-2500

Hydraulic Pickup Spear

Troubleshooting Guide for KTI Hydraulic Unit

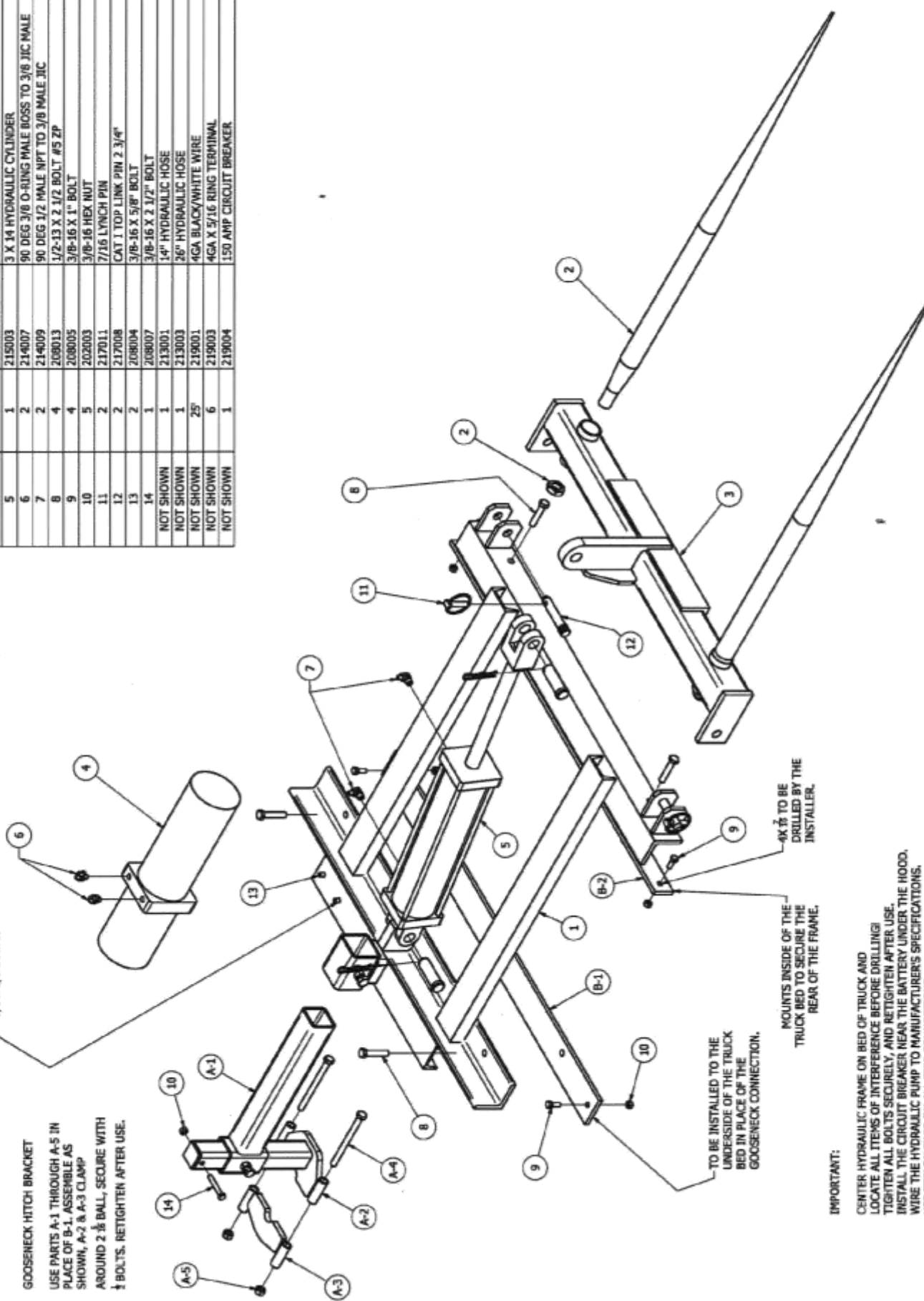


For questions on mounting your TTSHYD-2500 into the bed of your truck, see inside front cover, or call Tri-L at 417-581-8999.

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	407001	PICKUP FRAME
2	2	FST-49	FST-49 BALE SPEAR
3	1	407005	SPEAR FRAME
4	1	216001	HYDRAULIC PUMP
5	1	215003	3 X 14 HYDRAULIC CYLINDER
6	2	214007	90 DEG 3/8 O-RING MALE BOSS TO 3/8 JIC MALE
7	2	214009	90 DEG 1/2 MALE NPT TO 3/8 MALE JIC
8	4	208013	1/2-13 X 2 1/2 BOLT #5 ZP
9	4	208005	3/8-16 X 1" BOLT
10	5	202003	3/8-16 HEX NUT
11	2	217011	7/16 LYNCH PIN
12	2	217008	CAT 1 TOP LINK PIN 2 3/4"
13	2	208004	3/8-16 X 5/8" BOLT
14	1	208007	3/8-16 X 2 1/2" BOLT
NOT SHOWN	1	213001	14" HYDRAULIC HOSE
NOT SHOWN	1	213003	26" HYDRAULIC HOSE
NOT SHOWN	25'	219001	4GA BLACK/WHITE WIRE
NOT SHOWN	6	219003	4GA X 5/16 RING TERMINAL
NOT SHOWN	1	219004	150 AMP CIRCUIT BREAKER

FASTEN HYDRAULIC UNIT WITH 3/8 X 5/8 BOLTS.

GOOSENECK HITCH BRACKET
 USE PARTS A-1 THROUGH A-5 IN PLACE OF B-1. ASSEMBLE AS SHOWN, A-2 & A-3 CLAMP AROUND 2 1/8 BALL, SECURE WITH 1/2 BOLTS. RETIGHTEN AFTER USE.



TO BE INSTALLED TO THE UNDERSIDE OF THE TRUCK BED IN PLACE OF THE GOOSENECK CONNECTION.

MOUNTS INSIDE OF THE TRUCK BED TO SECURE THE REAR OF THE FRAME.

4K TO BE DRILLED BY THE INSTALLER.

IMPORTANT:

CENTER HYDRAULIC FRAME ON BED OF TRUCK AND LOCATE ALL ITEMS OF INTERFERENCE BEFORE DRILLING! TIGHTEN ALL BOLTS SECURELY, AND RETIGHTEN AFTER USE. INSTALL THE CIRCUIT BREAKER NEAR THE BATTERY UNDER THE HOOD. WIRE THE HYDRAULIC PUMP TO MANUFACTURER'S SPECIFICATIONS. USE TEFLON TAPE ON ALL PIPE CONNECTIONS. USE OIL RECOMMENDED BY MANUFACTURER. CAUTION! TRANSPORTING BALES MAY BLOCK THE TAIL-LIGHTS ON YOUR TRUCK.

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USER: _____
 Description: HYDRAULIC PICKUP SPEAR
 Part #: TTSHYD-2500



Valve Installation Guide

Proper valve installation is important to insure that valve will function correctly. All O-rings must be lubricated on valve cartridge O.D. to insure that the O-rings can be installed into valve cavity without being damaged.

1. Insure there is no foreign objects or contamination in valve cavity
 2. Lubricate O-rings on O.D. of valve
 3. If necessary insert orifice disc into valve cavity, insure that orifice disc is flush with bottom of cavity
 4. Insert valve into valve cavity And **Hand Tighten** valve into valve cavity.
 5. Use torque wrench to tighten valve cartridge to **Maximum 20 FT/LBS.**
- Failure to oil valves will cause O-rings to spin on valve assembly which could cause to O-ring slice length wise, cut or tear. **Use Hydraulic fluid to lubricate O-rings**, Do Not use any type of grease or motor oil. Grease or motor oil could cause valve failure when the hydraulic fluid mixes with foreign substance and gum up valves.
 - Over torquing on valves could cause the cage of valve assembly to distort. Distortion could cause valve to not properly open and/or close, which could simulate contamination issues.



FLUIDS

KTI recommends using top-quality hydraulic fluids with ISO VG 22 – 68 (19.8 – 74.8 cSt, 97 – 347 SUS at 40°C) to ensure optimum performance and system life. Fluids should have anti-wear properties, rust and oxidation inhibitors. If using synthetic fluids, consult the factory for alternative seal material requirements.

Fluid Temperature Range	ISO Viscosity Grade (ISO VG)
-5°F to + 140°F -21°C to + 60°C	22
+5°F to + 170°F -15°C to +77°C	32
+15°F to + 190°F -9°C to + 88°C	46
+30°F to +210°F -1°C to + 99°C	68

Do not operate Power Unit above recommended Fluid Temperature Range.

Premium hydraulic oil with proper ISO Viscosity Grade and additives such as Chevron EP, Mobile DTE 10, DTE 20 series, or Shell Tellus would be acceptable.



INSTALLATION RECOMMENDATIONS

- 1) To avoid contamination, do not remove plastic port plugs until fittings are to be installed.
- 2) Power Unit mounting flange must make full contact with equipment mount; do not use the mounting bolts to force alignment of the power unit on to the equipment mount.
- 3) If pump fails to prime, remove Cartridge Check Valve and start the power unit until hydraulic oil flows from the valve cavity and reinstall the Cartridge Check Valve.
- 4) Reservoir temperature should not exceed 150°F. System reliability and component service life will be reduced when system is operated at higher temperature.

INLET CONDITIONS

- 1) Positive pressure must be available at the pump inlet while it is operating. If overrunning load causes the motor to rotate faster than the pump can fill it, cavitations will occur. Consult the factory for inlet pressure requirements and speed limitation.

FILTRATION

- 1) For maximum pump and system component life, the system should be protected from contamination at a level not to exceed 125 particles greater than 10 microns per milliliter of fluid (SAE Class 4 / ISO 16/13).

SERVICE

- 1) Clean fluid = improved system reliability and longer component service life.
- 2) It is recommended that every 4,000 operating hours or once a year, whichever occurs first, the air filter / breather cap and suction strainer should be replaced.
- 3) Every 2,000 operating hours, or every 6 months, whichever occurs first, drain hydraulic oil from the reservoir and remove the reservoir from Universal Manifold (end plate). Use WD-40 or similar product to wipe down and remove all debris inside the reservoir and check the magnet for signs of metal particles. Lubricate Manifold O-ring with bearing grease. Remount the reservoir.
- 4) For TEFC motors, remove fan casing and wipe fan blade and casing.
- 5) For other service, please consult factory for proper procedures.



KTI DC POWER UNIT TROUBLE SHOOTING GUIDE

General Instructions for 12V DC Systems

- 1) Check battery voltage. If voltage is 9 Volt or less, do not operate power unit. Charge battery to 12 Volts.
- 2) Check to see that the motor is wired correctly to starter switch and all other control wires have tight connections.
- 3) Check ground wire for good connection.
- 4) Check reservoir oil level.
- 5) Do not tamper with relief valve. Factory preset to specified pressure and wired. Cutting this wire voids warranty.

SYMPTOMS

- Unit will not start (see causes 1, 2, 7)
- Unit drifts when power is off (see causes 3, 4, 5)
- Slow cylinder travel (see causes 1, 2, 4, 5)
- Unit will not lower (see causes 2, 3)

PROBABLE CAUSE

- 1) Improper voltage to motor (see solutions A, D, E)
- 2) Improper ground (see solutions A, F, G)
- 3) Improper voltage to valves (see solutions A, F)
- 4) Leakage thru solenoid valves (see solutions C, D)
- 5) Internal leakage at cylinder (see solutions D, E)
- 6) Insufficient oil to pump inlet (see solutions B, C, E)
- 7) Pump seized or locked (see solutions (D, E)

POSSIBLE SOLUTION

- A) Check wiring to insure that all connections are tight.
- B) Keep oil reservoir full and clean
- C) Flush and clean cartridge valves and / or hydraulic system.
- D) Replace components.
- E) Return for necessary repair.
- F) Check for clean, tight, metal-to-metal contact on wire connections.
- G) Make sure nut on top of solenoid valve coil is tight to 40 inch / Lb maximum.

BILL OF MATERIAL

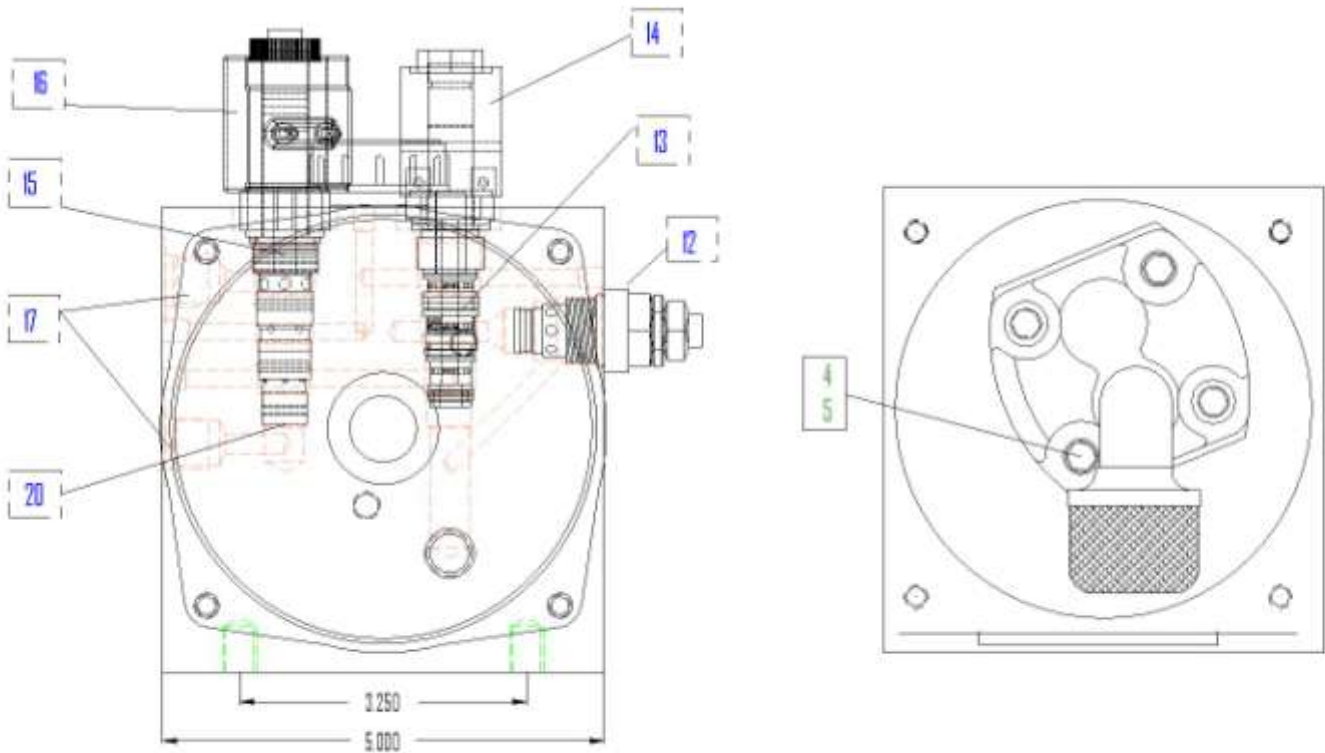
CHECK LIST			PROJECT INFO.		COLOR KEY
ORIGINAL DATE:	10-12-05		POWER UNIT NUMBER:	DC 430B	MOTOR: RED PUMP: GREEN MANIFOLD: BLUE RESERVOIR: ORANGE MISC.: BLACK
REVISION DATE:	XX-XX-XX		CUSTOMER NUMBER:	00036	
MOTOR POSITION MOUNT:		NA	PRODUCTION UNIT:	Y	
SOLENOID POSITION MOUNT:		C	SPECIAL INSTRUCTIONS:	Y	
CIRCUIT NUMBER:	10		ORIGINAL TO:	BOM ENCEP	
KEY NOTE QTY.	PART NUMBER	TOTAL PARTS/ KIT	PART DESCRIPTION		
1	345-1	1	OVERRIDE/STOP/BACK/RETRACT		
2	1-21	1	1/2" TUB NIPPLE 3/8" DIA. x 1/2"		
3	10-21	1	O-RING 1/2" ID x 1/4" THK. (NIPPLE)		
4	08-101-005	2	1/4" x 1/4" x 1/4" PUMP CAP SCREW		
5	08-101	2	1/4" x 1/4" NUTS		
6	34-08	1	1/4" NPT PLASTIC 1/2" TUBING		
7	07-0	1	1/4" NPT PLASTIC TUBING		
8	08-101-000	1	1/4" NPT PLASTIC 1/2" x 1/4" JUMPS (100)		
9	08-101-008	1	1/4" NPT PLASTIC 1/2" x 1/4" TUBING		
10	117-0	1	BLACK HOSE 1/4" x 1/2"		
11	1000-000	1	MANIFOLD (CUSTOMER)		
12	100-100	1	CAPTOR BALL VALVE 1/4" x 1/4" (2-PORT)		
13	050-080-400	1	4-WAY 2-POSITION DIRECTIONAL CONTROL VALVE (2-PORT)		
14	05-04-0-00	1	OIL BYPASS VALVE (2-PORT)		
15	100-100-0-00	1	1/4" 2-WAY VALVE (DIRECTIONAL EXTENDED) HOSE 1/2" (2-PORT)		
16	05-04-0-00	1	DIRECTIONAL CONTROL VALVE (2-PORT)		
17	05-0	2	1/4" x 1/4" PLASTIC SHIMMING JOBS (2" x 1/4" x 1/4")		
18	000	4	O-RING SHIMMING JOBS		
19					
20	07-0	1	1/4" NPT FILTER		
21	000-100-0-000	1	O-RING (1/4" x 1/4")		
22	02-400	1	RESERVOIR (2" DIA.)		
23	08-101-000	4	1/4" x 1/4" x 1/4" PUMP CAP SCREWS		
24	07-0	1	1/4" NPT PLASTIC TUBING		
25	000	1	O-RING		
26	001-0	1	O-RING (1/4" x 1/4")		
27	000-0	1	O-RING (1/4" x 1/4")		
28	04-0	1	1/4" x 1/4" x 1/4" PUMP CAP SCREW		
29	021-0	1	ELECTRIC CABLE (1/4" x 1/4")		
30	021-0	2	ELECTRIC CABLE (1/4" x 1/4")		
31	021-0	2	ELECTRIC CABLE (1/4" x 1/4")		

BILL OF MATERIAL



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CHECK LIST	PROJECT INFO.	COLOR KEY
ORIGINAL DATE: 10-12-05 REVISION DATE: 0X-0X-0X MOTOR POSITION MOUNT: NA SOLENOID POSITION MOUNT: C CIRCUIT NUMBER: 110	POWER UNIT NUMBER: DC 4088 CUSTOMER NUMBER: 00098 PRODUCTION UNIT: Y SPECIAL INSTRUCTIONS: Y ORIGINAL TO: EOM BINDER	MOTOR: RED PUMP: GREEN MANIFOLD: BLUE RESERVOIR: ORANGE MISC.: BLACK



BILL OF MATERIAL

CHECK LIST

ORIGINAL DATE: 10-12-05
 REVISION DATE: XX-XX-XX
 MOTOR POSITION MOUNT: NA
 SOLENOID POSITION MOUNT: 12:00 @CLOCK
 CIRCUIT NUMBER: 110

PROJECT INFO.

POWER UNIT NUMBER: DC 4388
 CUSTOMER NUMBER: 00008
 PRODUCTION UNIT: Y
 SPECIAL INSTRUCTIONS: Y
 ORIGINAL TO: EOM BINDER

COLOR KEY

MOTOR: RED
 PUMP: GREEN
 MANIFOLD: BLUE
 PRESSURE: BROWN
 MISC.: BLACK

