LeTourneau MINING PRODUCTS

SERVICE INFORMATION LETTER

LOADERS

TA14388A

SIL 448.00 July 5, 2011

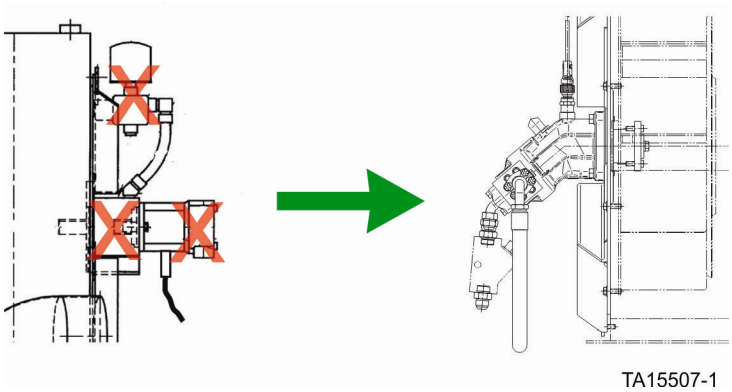
TO: **LeTourneau Technologies Dealers and Users**

FROM: **LeTourneau Technologies Product Support**

SUBJECT: **Blower Motor Product Improvement Kit P/N 427-0864**

MODELS: **L-1400, L-1800, L-950, L-1350, L-1850, and L-2350**

The purpose of this SIL is to provide information regarding a product improvement for the blower motor and load adapter. The existing blower motor, load adapter and breather is removed and replaced with a bent axis blower motor. The blower wheel mounts directly to the shaft of the new blower motor. The new blower motor incorporates a speed sensor port and speed gear for monitoring the blower motor RPM. Kit p/n 427-0864 has been created that will contain all the necessary items for this product improvement.



TA15507-1

OLD Blower Motor Improvement NEW

Background:

LeTourneau has received reports of premature failures of various components in the blower motor assembly. Several items have been identified that have had repeat premature failures:

- Load Adapters
  - Bearings, Seals
- Blower Motor
  - Bearings, Seals, Speed Rings
- Spline Adapters
  - Length, Lubrication, Wear

A bent axis motor with the fan positioned on the motor shaft provides a solution to the various problems listed above. Field testing has indicated that this product improvement has reduced down time and operational costs. This product improvement also eliminates two standard service items:

- breather filter hourly service change
- load adapter oil changes

Replacement Procedure:

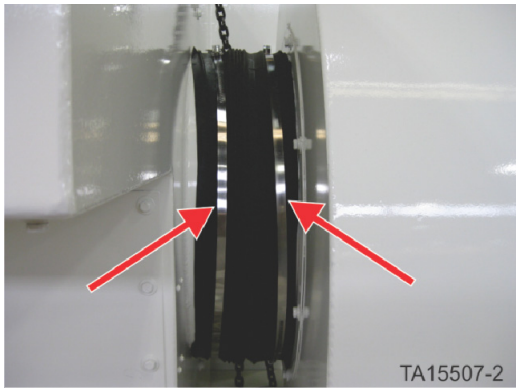
The following replacement procedure has been written primarily for the 50 series machines. Some of the earlier L-1400's and L-1800's have the blower mounted directly behind the cab. On these earlier machines, not all of these replacement steps will have to be completed.

1. Secure the machine using mine specific rules and regulations.
2. Depending on model and hood type, remove either the hood grating or the front hood section to gain access to the blower assembly.
3. Remove the air from the hydraulic reservoir.
4. Disconnect and cap the pressure, return and case drain hydraulic hoses at the blower motor. Disconnect the speed sensor cable from the speed sensor. Move the hydraulic hoses and speed sensor cables clear of the blower assembly.

NOTE

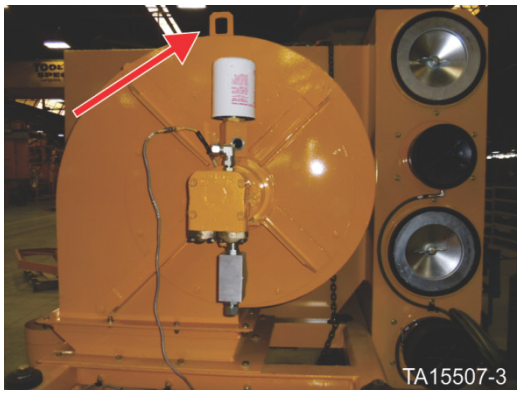
On L-1400's and L-1800's it may be possible to just remove the blower motor, load adapter, motor mount plate and blower wheel as an assembly from the blower housing. Skip to step #9.

5. Remove the 24" flex ducting between the blower housing and the KLENZ box.



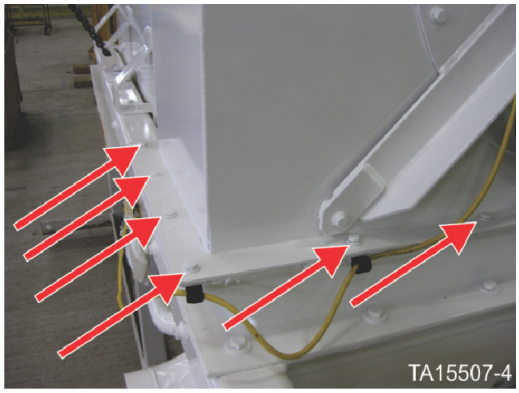
Flex Ducting

6. Attach a suitable lifting device to the lifting eye of the blower assembly.



Lifting Point

7. Remove the mounting bolts at the bottom of the blower assembly.

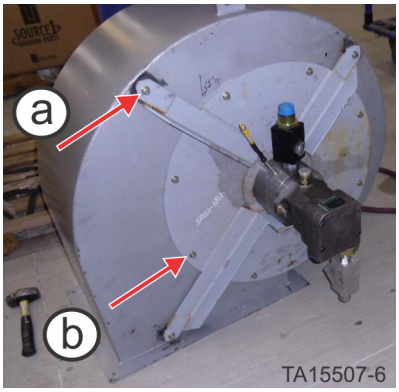


Typical Blower Mounting Bolt Locations (Not all shown)

8. Lift the blower from the machine and place in a suitable work area.

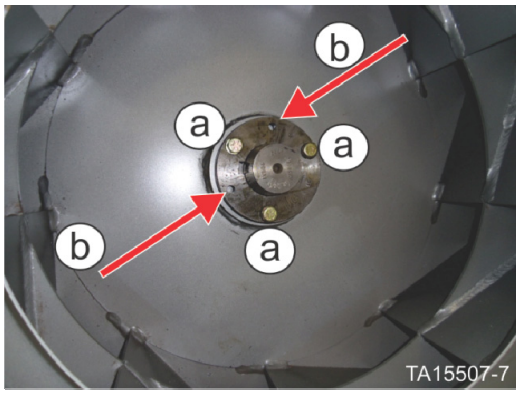
Removed and placed in work area

9. Remove the original motor, load adapter, mount plate, and blower wheel from the blower assembly. Remove the 11 bolts as indicated. Note: During original assembly, gasket material (silicon rubber) is used between the mount plate and the blower housing. The blower housing will need to be cleaned before re-assembly.



Mount Plate bolt removal
a. 3 capscrews typical
b. 8 capscrews typical

10. Remove the blower wheel from the load adapter shaft. To remove the split taper bushing:
    a. Remove the three cap screws.
    b. Insert two of them into the tapped holes in the bushing.
    c. Tighten the cap screws alternately and gradually until the bushing disengages from the hub.



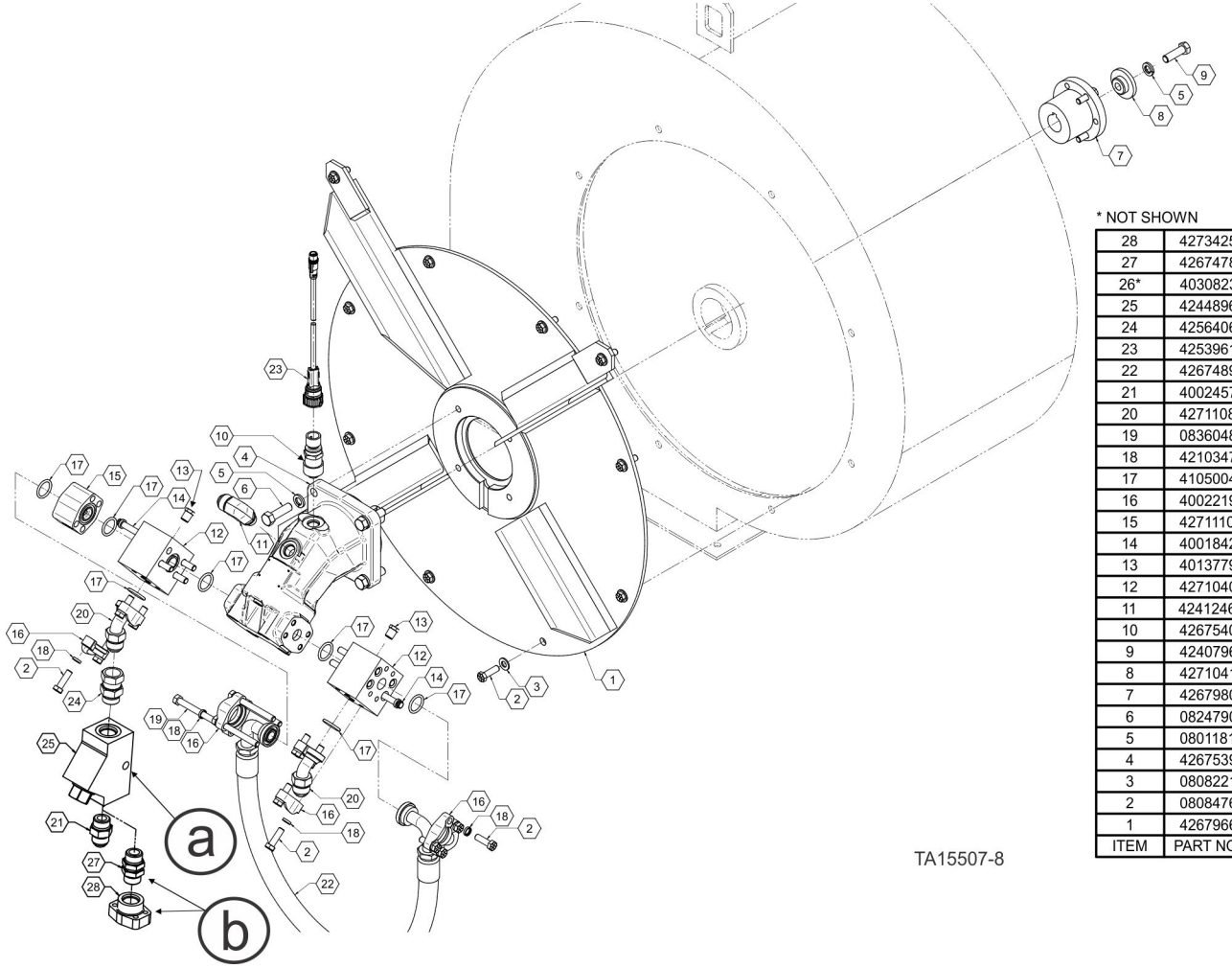
Blower wheel hub removal
a. Cap Screws
b. Tapped Pusher Holes

11. Discard the motor, load adapter, and mounting plate. Clean the silicon rubber from the mating surface of the blower housing and motor mount plate.

NOTE

While the blower assembly is disassembled, a thorough crack inspection should be performed on the blower wheel, blower housing, and KLENZ structure. If cracks are found in the blower wheel, the wheel should be replaced. Cracks found in the blower housing or KLENZ structure should be repaired prior to re-installation.

12. Install the bent axis motor onto the new mounting plate as shown in the attached 427-0864 print.



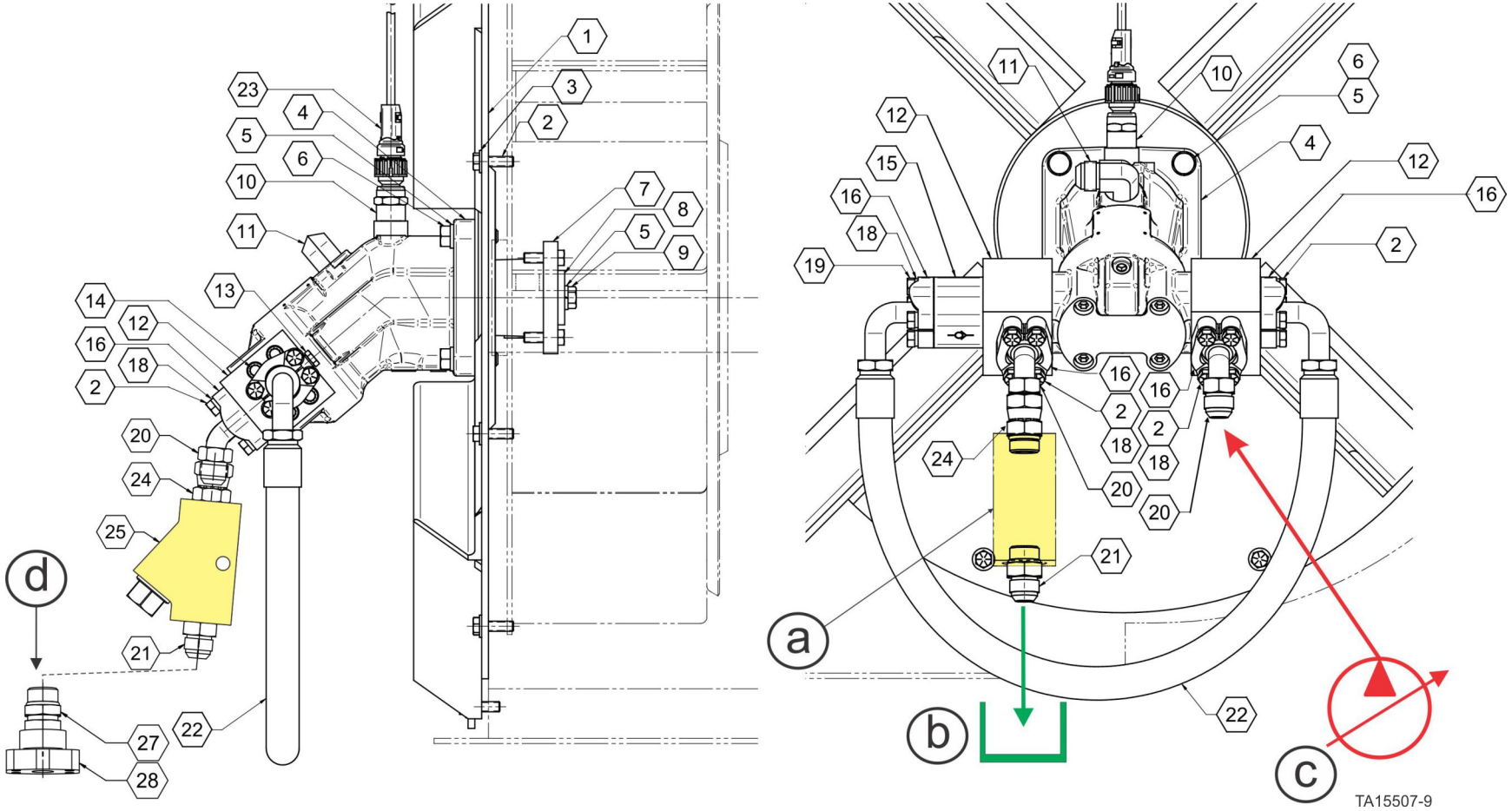
* NOT SHOWN

ITEM	PART NO.	QTY	DESCRIPTION
28	4273425	1	ADAPTER 3/4 SF C61 TO 3/4 SAE
27	4267478	1	FTG HYD 0 12 MO 12 MO
26*	4030823	1	ADHESIVE DOW 732 RTV CART
25	4244896	1	VALVE CHECK #12 100 PSI
24	4256406	1	FTG HYD 0 12 MO 12 FJ
23	4253961	1	ASSY BLOWER SPD SENSOR CABLE 10 FT
22	4267489	1	HOSE 4000 12 33.0 90F 90F
21	4002457	1	FTG HYD 0 12 MJ 12 MO
20	4271108	2	FTG HYD 45 12 SF 12 MJ
19	0836048	4	BOLT HX .375 3.50 NC G8
18	4210347	16	WASHER FLAT .375 .56 .13 HRD
17	4105004	7	O-RING .139 .984 95D PY
16	4002219	8	HYD SPLIT FLANGE HALF 3/4 CPL
15	4271110	1	CHECK VALVE 3/4 SPLIT FLGE
14	4001842	8	CSCR FH .375 3.00 NC G8
13	4013779	2	PIPE PLUG 1/4 NPT HEX HEAD
12	4271040	2	MANIFOLD BLOCK MOTOR OUTLET
11	4241246	1	FTG HYD 90 12MJ 8MO
10	4267540	1	SPEED SENSOR INDUCTIVE
9	4240796	1	BOLT, M12 X 1.75 X 40 (1.58) LG
8	4271041	1	WASHER - RETAINER
7	4267980	1	SPLIT TAPER BUSHING 30 MM
6	0824790	4	BOLT HX .500 1.750 NC G8
5	0801181	5	WASHER LOCK SPR .500 .873 .125
4	4267539	1	MTR-PSTN-45 CC W/SPD SNSR PROD
3	0808221	11	WASHER FLAT .375 .81 .08
2	0808476	23	BOLT HX .375 1.250 NC G8
1	4267966	1	STR MOUNT BLOWER MOTOR

Bent Axis Blower Motor Kit P/N 427-0864 (1 of 2)

a. Existing Check Valve (50 Series machines) P/N 424-4896

b. Earlier machines will use parts # 27 and 28 (discard if not needed)



Bent Axis Blower Motor Kit P/N 427-0864 (2 of 2)

a. Existing Check Valve (50 Series Machines)

b. Return Oil

c. Pressure In

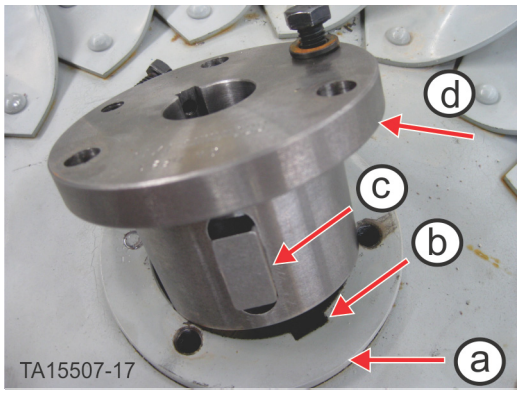
d. Earlier machines will use parts # 27 and 28 (discard if not needed)

13. Install the blower wheel onto the motor shaft.
14. Install the split taper bushing using the following procedure:

NOTE

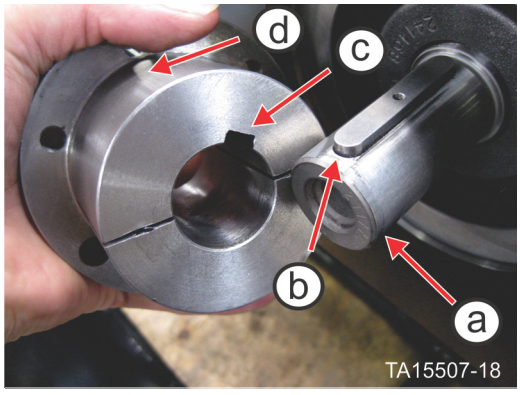
Photos in this portion were taken with an auxiliary oil cooler fan blade. However, the hub assembly is the same for the blower wheel.

a. Check all surfaces are free of burrs, paint, etc.
b. Position the blower wheel hub so the keyway in the bore of the blower wheel is aligned with the external (barrel) key in the bushing.



Bushing to Hub installation
a. Hub
b. Hub keyway groove
c. Bushing barrel key
d. Bushing

c. Align the shaft key seat with the bushing bore keyway and install the key.

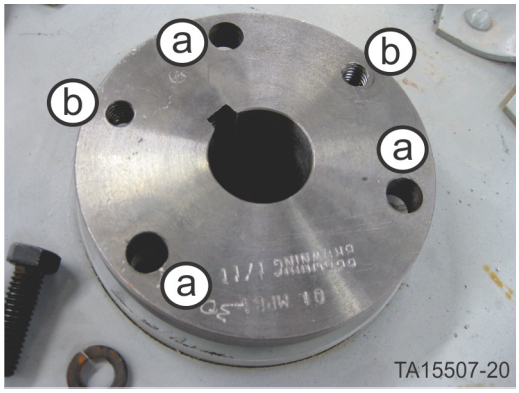


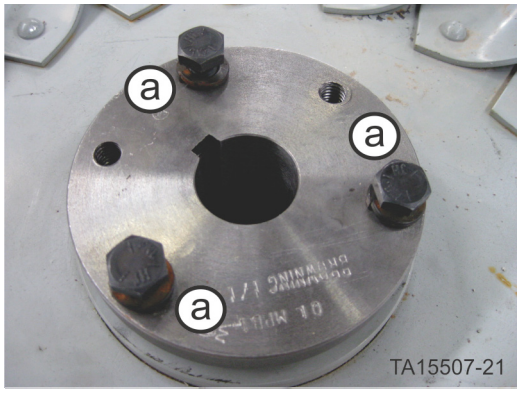
Blower Wheel Bushing Installation (blower wheel removed for clarity)
a. Motor Shaft
b. Shaft Key
c. Bushing bore keyway
d. Bushing

d. Install the blower wheel capture bolt assembly. Torque the bolt to 50 Ft-lbs lubed.

Blower Wheel Bushing Capture Bolt

e. Insert the cap screws through the non-threaded holes in the bushing flange and thread them by hand into the blower wheel. Turn them in three or four turns.





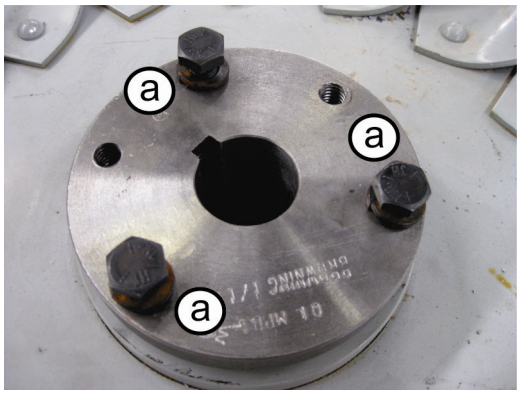
Blower Wheel Bushing Bolt Locations

a. Non Thread through holes

b. Threaded pusher bolt holes

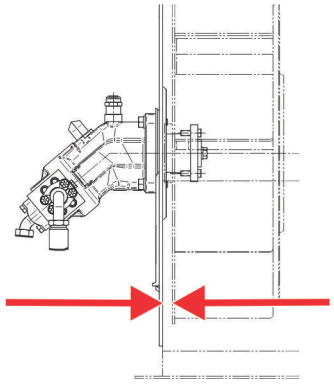
f. The blower wheel should be positioned with the bushing pulled tight against the capture bolt washer.

g. Using a torque wrench and appropriate socket, tighten the cap screws sequentially until each is tightened to 348 in-lbs (29 Ft-lbs, 39.3 N-M). When the cap screw torque is at recommended torque, make at least two more sequential rounds to assure all cap screws are at the 348 in-lbs. torque value.



Blower Wheel Bushing bolts to torque

h. Verify that the blower wheel has clearance between the wheel and the motor mount plate. The clearance should be approximately 3/16” inch (4.75 mm)



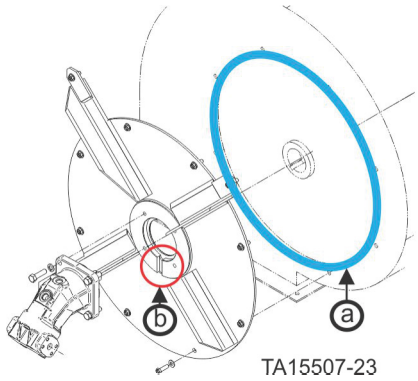
Blower Wheel Clearance

i. Check installation gap – There must be a gap (> 1/16” inch (1.5mm)) between the bushing flange and the blower wheel hub. If there is no gap between them, disassemble the parts (following procedure in step # 10) and determine the reason(s) for the faulty assembly.
j. Rotate the blower wheel and verify that the wheel does not rub on the motor mount plate.

15. Apply a bead of silicon rubber (p/n 403-0823 RTV Silicon Rubber Clear) on the blower housing where the motor mount plate mates to the housing. Apply sufficient silicon to provide a complete seal.

NOTE

Do Not apply silicon rubber to the motor mount flange. In the event that the shaft seal on the motor leaks, the leaking oil will drain out the bottom of the mount plate through a machined groove. This groove must remain unblocked.

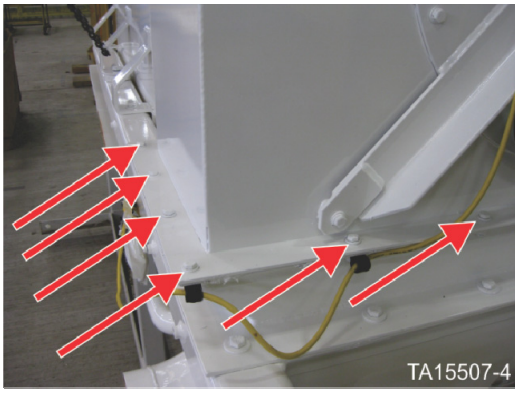


Silicon Rubber Placement

a. Bead of silicon rubber between blower housing and motor mount plate

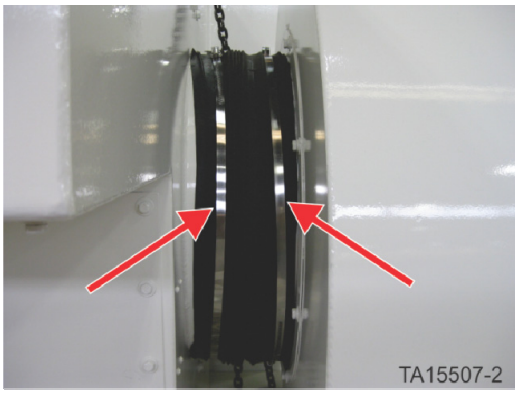
b. Insure this area is unobstructed.

16. Install the blower wheel, motor mount and motor to the blower housing. Secure with cap screws previously removed in step #8. Rotate the blower wheel and verify clearance between the wheel and the inlet plenum.
17. Assemble hydraulic components according to the attached diagrams.
18. Apply a bead of silicon rubber (p/n 403-0823 RTV Silicon Rubber Clear) on the outlet flange of the blower housing. Apply sufficient silicon to provide a complete seal.
19. Install the blower assembly onto the KLENZ structure on the machine.



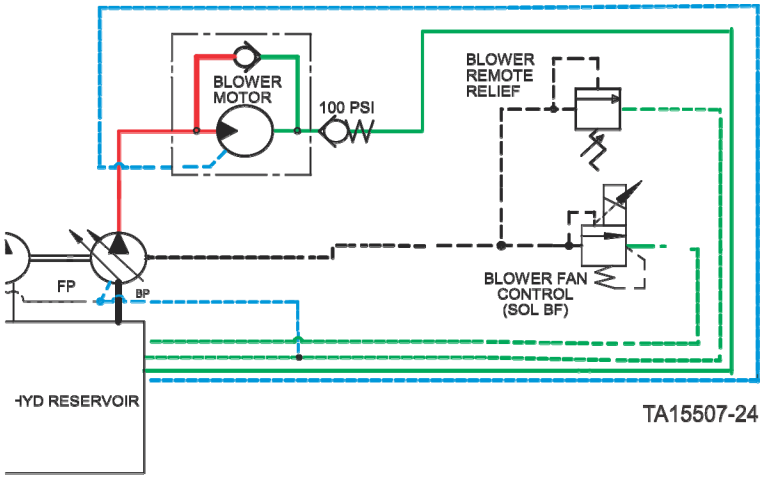
Typical Blower Mounting Bolt Locations (Not all shown)

20. Install the flexible ducting between the KLENZ box and the blower inlet plenum.



Flex Ducting

21. Connect all the hydraulic hoses.



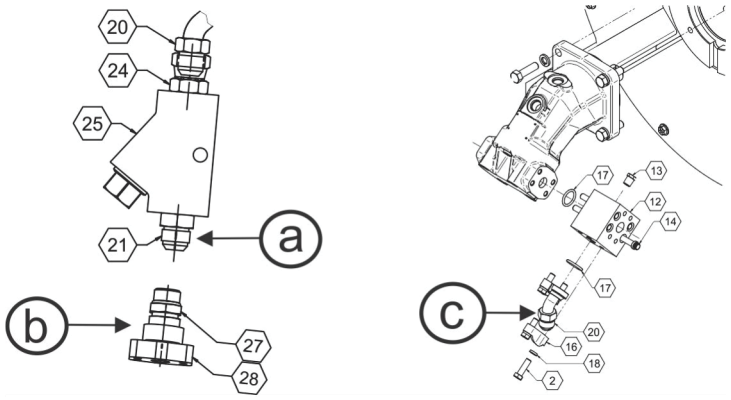
Blower Motor Hydraulic Plumbing
Green is Return
Blue is Case Drain
Red is pump pressure
Black is LS Control

NOTE

Some early L-1400's and L-1800's may not have the outlet check valve. This check valve purpose is to maintain back pressure on the blower motor so cavitation does not occur when the motor spins down. The check valve was included in the motor kit for use on the older machines. Newer machines will already have the check valve. If the machine has the check valve it may be re-used. Or the new check valve can be installed. (Part number 424-4896)

NOTE

Early production machines do not have JIC hose fittings at the blower motor connection points they have #12 split flange connectors. The kit includes extra hydraulic fittings to accommodate these differences. Discard fittings not required.



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Hydraulic Connection Fittings (Return and Inlet)

a. Current production machines uses JIC Male fitting item # 21.

b. Early production machines will use Split Flange Adapter and union (items # 27 and # 28), discard item # 21.

c. Early production machines will NOT use the 45° Split Flange to JIC male adapter (item # 20) at this location.

22. Connect the blower motor speed sensor. Because of three generations of machines that this kit will fit on, there are three different possibilities on the connection of the blower motor speed sensor. Please select which generation applies to your machine.

    a. **Early L-1400's and L-1800's:** These machines did not use a speed sensor. It is the choice of the installer whether to install the sensor or not. If the sensor is installed, a multi-meter set on the Hz (hertz) scale can be used to read motor RPM. The motor speed sensor gear has 45 teeth. If the sensor is installed, the speed sensor cable should be coiled up and properly secure on the blower housing for future use.

NOTE

The new blower motor speed sensor gear has fewer teeth than the blower load adapter on the previous blower motor. THEREFORE, on LINCS machines, the master software must be updated to properly read motor RPM's. The new LINCS software will need to be LINCS 1.2R3. Other items may also have to be updated when this software is installed. Contact your local dealer or LeTourneau Product Support Department for additional information.

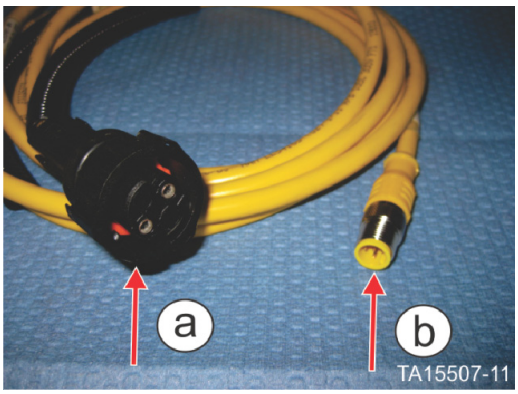
To calculate the blower fan speed with a multi-meter, use the following formula:

Hz x (60/45) = RPM

    b. **Early L-1350's L-1850's and L-2350's:** A few of the first production machines had remote modules that were hard wired to each individual device. These machines are commonly referred to as "non Turck" machines. On these early

machines, the speed sensor cable supplied in the kit will have to be “hard wired” in.

i. The “M12” connector on the speed sensor cable will have to be cut off. (The “M12” connector is the smaller euro style connector)



“Non Turck” wiring

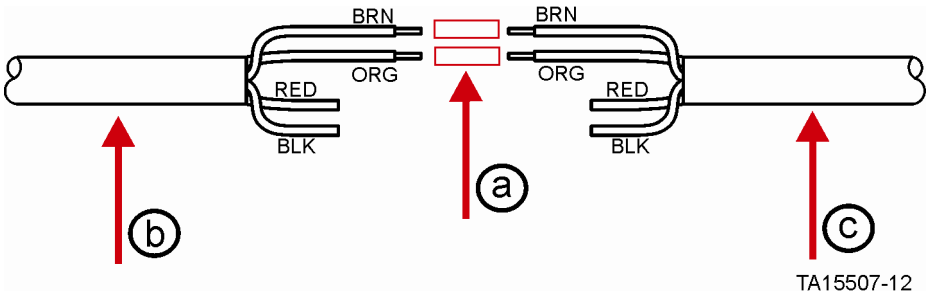
a. Speed Sensor Connector

b. “M12” connector to be removed

ii. The Brown (BRN) wire from the remote and the Brown (BRN) wire from the speed sensor cable will need to be connected together (soldered or butt spliced).

iii. The Orange (ORG) wire from the remote and the Orange (ORG) wire from the speed sensor cable will need to be connected together (soldered or butt spliced).

iv. The other two wires, red and black (RED and BLK), in both cables, will need to be insulated out.



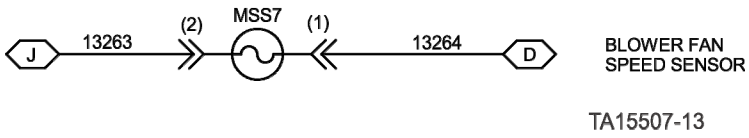
“Non Turck” wiring connections

a. Solder Joint or Butt Splice

b. Cable from the Remote Module

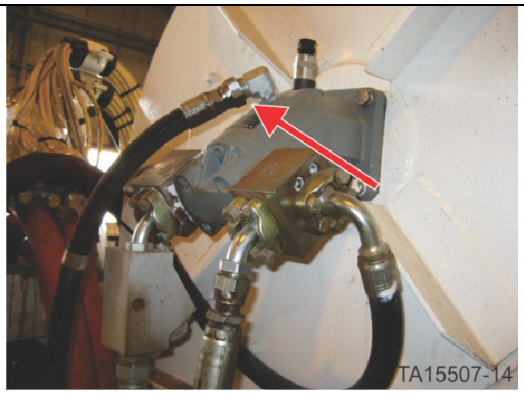
c. Speed Sensor Cable “M12” connector removed

c. **Current L-950’s, L-1350’s, L-1850’s and L-2350’s:** The speed sensor cable on all current production machines (Turck machines), will simply be reconnected on the Turck break out box that the original cable was removed from.



Standard Schematic Wiring (Turck and Non Turck)

23. Install the hood or hood grating that was removed.
24. Pressurize the hydraulic reservoir and bleed all the pumps. Bleed the case drain line on the new blower motor.



Motor Case Drain

25. Start the machine using mine specific rules and regulations.
26. Adjust the blower speed following the machine specific settings and adjustment procedures.
27. Return the machine to service.

REVISION HISTORY			
Revision	Description	Created or Modified By:	Date
.00	Release	Tech Pub	07/05/2011