MODEL UC-78B
BOOK No. 405
SERIAL No. _____

MACHINE SERIAL NUMBER

The machine serial number is on the serial number capacity plate, or on the Crane Rating Manual located inside the operator's cab. The serial number should always be furnished when ordering parts for the machine or when corresponding with the distributor or factory concerning the machine. Providing the serial number is the only way of ensuring the correct parts and/or information can be furnished.

In the event the serial number is not readable, a number is stamped on the upper revolving frame which can be used to identify the machine. On cable crane this number is located on the right hand boom foot mounting lug. On hydraulic cranes and excavators the number is stamped just below the boom hoist cylinder mounting lugs.

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Area 1 - Rubber Tire Carrier

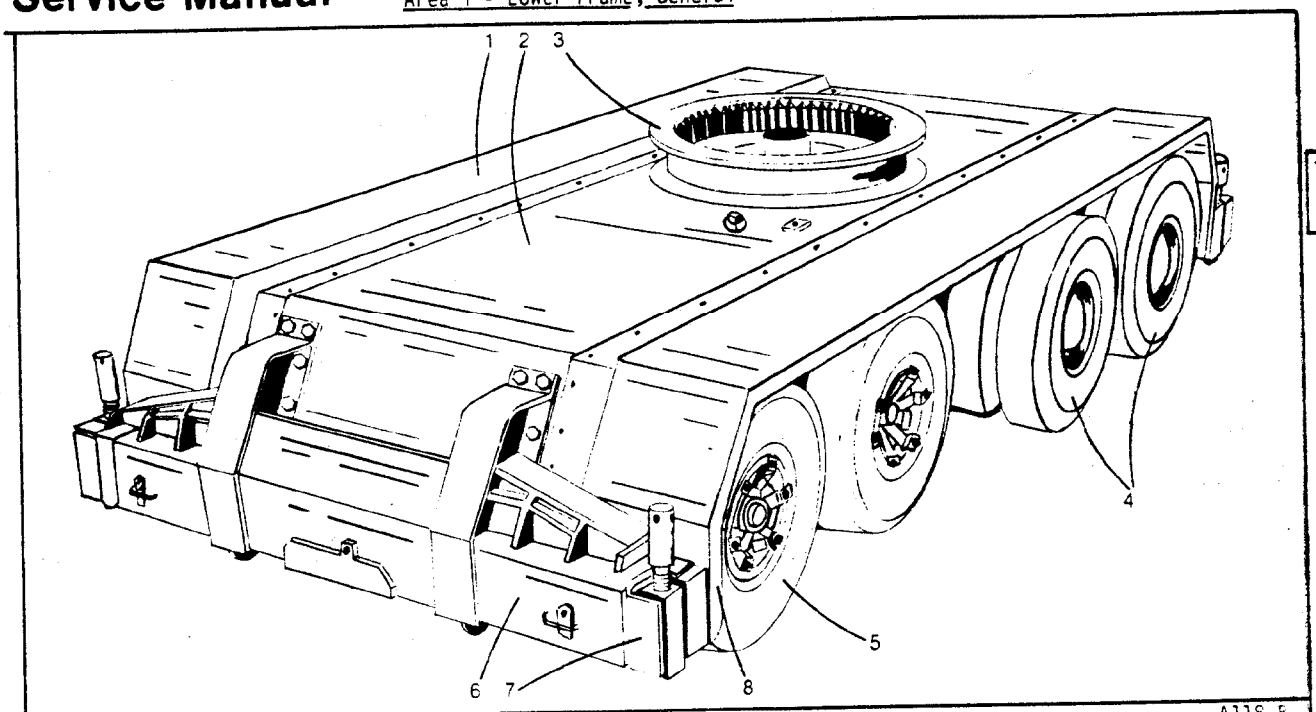


Fig. 1
UC Lower Frame
(1) Fender
(2) Deck Plate
(3) Ring Gear
(4) Rear Axles And Wheels
(5) Front Axles And Wheels
(6) Outrigger Box
(7) Outrigger Beam
(8) Fender

Lower Frame Assembly

The UC carrier is an 8X4 rubber tire carrier, designed and manufactured by FMC Corporation. The carrier uses a number of components manufactured by vendors, that have been specified and approved by our engineering department. Lubrication and maintenance instructions for vendor items are published through cooperation with the vendor.

The UC is a self propelled rubber tire mounted machine. It is driven by the upper engine through a reverse shaft and vertical shaft arrangement much the same as in a crawler mounted machine. The machine uses truck type front and rear axles. Power is transferred to the rear axles by a transmission and drive shaft arrangement in the same manner as a truck.

The frame is heavy steel weldment, with a center pin and roller path welded to the upper frame plate. There is a steel fender bolted to each side of the lower frame. The fenders run the entire length of the lower frame. The transmission and bevel gear housing are bolted to the underside of the upper frame plate.

The steering mechanism, which is similar to a truck, is hydraulically actuated from the upper revolving frame.

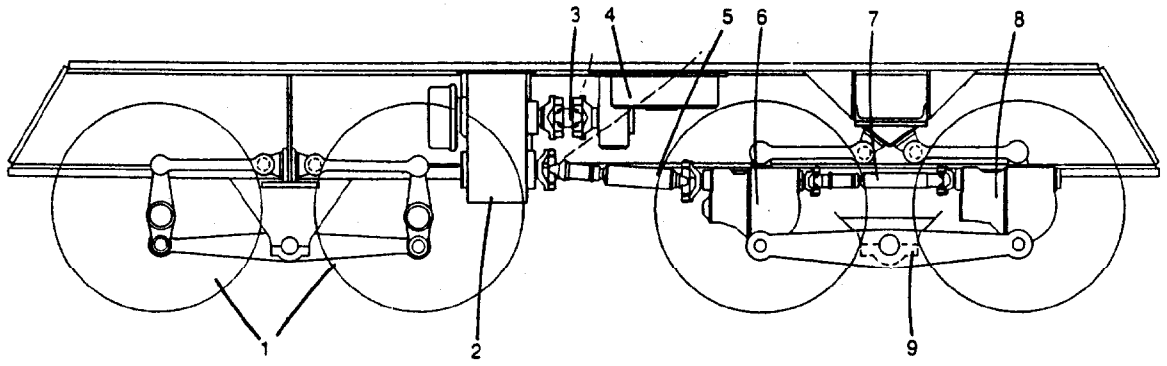
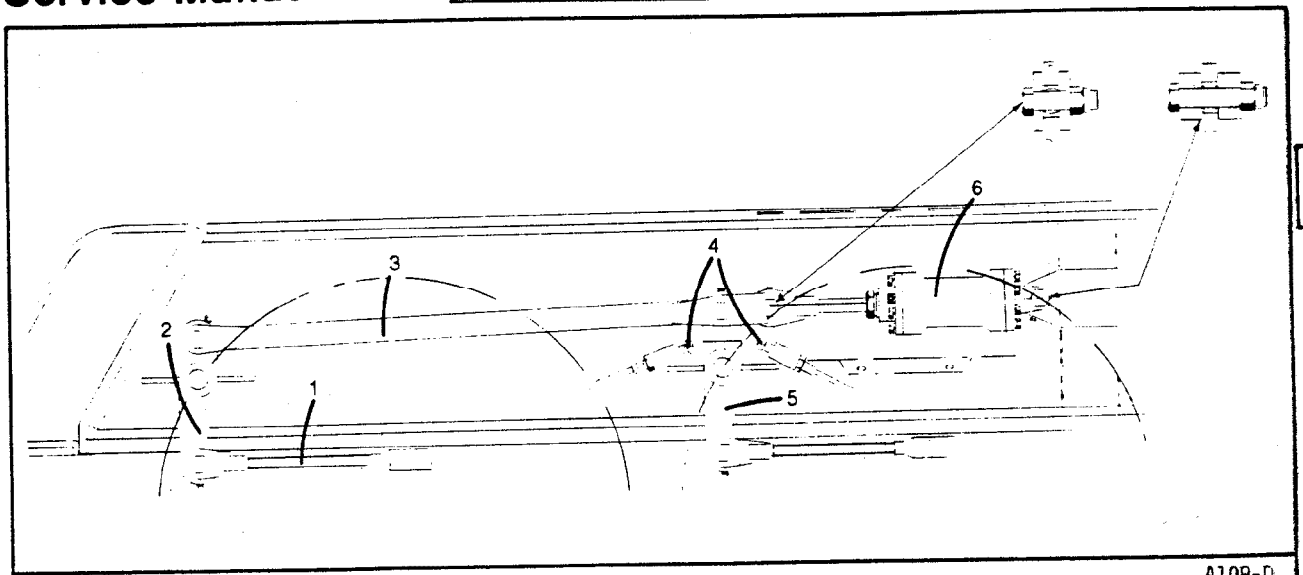


Fig. 2
Carrier Drive Train
A112-D

(1) Front Axles
(2) Transmission
(3) Drive Shaft
(4) Bevel Gear Transmission
(5) Drive Shaft
(6) Front Rear Axle
(7) Drive Shaft
(8) Rear Rear Axle
(9) Equalizer Beams



A109-D

Fig. 1
Steering Linkage
(1) Drag Link
(2) Front Wheel Steer Arm
(3) Steering Rod
(4) Stop Bolts
(5) Rear Wheel Steer Arm
(6) Steering Cylinder

Front Axles

The tandem front axles are mounted to the carrier by means of two equalizing beams - one on each side. The equalizing beams serve two purposes: they reduce each bump or road irregularity and they distribute the load between the two axles. Shock loadings can transfer from one axle to the other.

The front axles are each supported by four torque rods - two on each side. These rods resists the tendencies of the axles to twist forward or backward due to starting or stopping inertia.

The machine is steered hydraulically, from the upper, by Speed-o-Matic pressure. The operation is controlled by a lever on a valve, mounted to the right of the operator below the control panel. Oil is directed through the rotating joint by the steer valve. The oil enters the steering cylinder, and starts to move tne piston within it. Oil returning from the other side of the steer cylinder piston is directed back up the rotating joint, through the steer valve, and to the sump tank.

To turn the machine in the opposite direction, reverse the position of the control lever in the upper cab. Oil now flows into the other end of the cylinder. Again, the oil on the other side of the piston is returned through the rotating joint and the steer valve, to the sump tank.

The wheels will not return to center automatically. If the steer valve is returned to the neutral position, the wheels will remain in whatever position they were in, when the steer valve was returned to neutral.

The steer cylinder piston rod puts force on a steer rod that is tied to two steering arms. One of these arms actuates the front front axle and the other actuates the rear front axle. There is a drag link running from each steering arm to the axle that it actuates. These drag links are adjustable for wheel alignment purposes.

Resistance Valve: A resistance valve is incorporated in the Speed-o-Matic system on self propelled, rubber tire mounted machines. Speed-o-Matic oil cannot flow through this valve to the steering and parking brake controls (machines with hydraulic brakes), until 775 PSI (5344 kPa) of pressure is build up in the Speed-o-Matic system. This valve has three main functions.

(a) The parking brake cannot be released, and the steering controls will not operate, until the Speed-o-Matic pressure is built up. This is necessary because the machine is steered hydraulically, and at least 775 PsI (5344 kPa) pressure is needed to effectively steer the machine.
(b) If the steering lines should break during a steering operation, the S-o-M system pressure will drop and when it reduces to 775 PSI (5344 kPa), the parking brake will automatically apply and the resistance valve will close and stop the flow of oil to the lower hydraulic system, maintaining operating pressure in the machine upper.
(c) During normal travel, with the parking brakes released, the resistance valve will automatically close if a combination of steering and upper S-o-M controls are operated at the same time to effectively

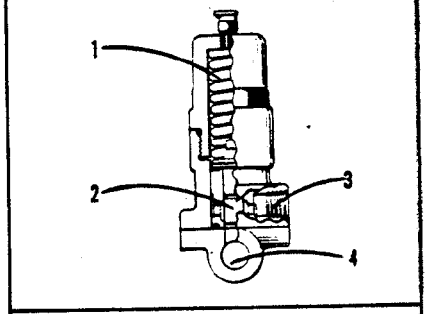


Fig. 2
Resistance Valve

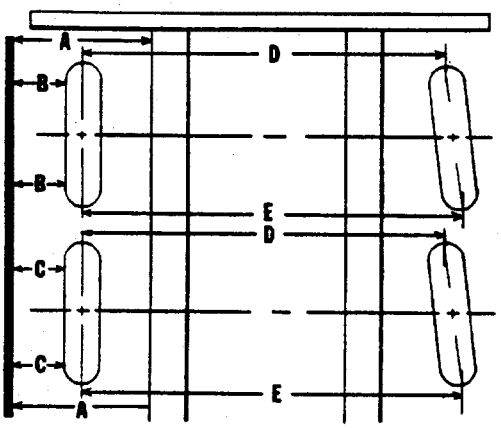


Fig. 3
Front Wheel Alignment
LA234-A

lower the system pressure below 775 PSI (5344 kPa) and thus lock this pressure in the parking brake system to effectively hold the parking brake released and prevent a sudden application of the parking brakes which would result in a sudden, abusive stopping of the machine.

On machine with air brakes, a pressure switch is included in the S-o-M system. The park/emergency brakes won't release until S-o-M pressure is built up to 775 PSI (5344 kPa). At this point the pressure switch actuates a solenoid valve which disengages the brakes.

If S-o-M pressure is lost, contacts in the pressure switch open, deenergizing the solenoid valve. The valve dumps air from the rear brake actuators allowing springs within the actuators to apply the rear wheel brakes.

Front Wheel Alignment: To obtain maximum tire life, the front wheels must be kept in proper alignment. Front wheel alignment should be checked periodically, and corrected if necessary. This is more critical on a tandem axle machine than on a single axle machine. If the wheels are not properly aligned, the tires will "fight" each other, causing abnormal tire wear. This is caused by one set of tires pointing in a slightly different direction than the other set of tires. To correct, or check front wheel alignment the following procedure Should be followed: (See Fig. 3.)

(a) Jack up the carrier until all four wheels clear the ground. Block the machine in this position.
(b) Operate the steering until the two left wheels are in line with each other, and straight ahead with respect to the carrier frame. This may be checked as illustrated in Fig. 3. Place a straight edge next to the wheels. Make sure it is parallel to the frame by measuring at (A). When the straight edge is in position, measure from it, to the milled area where the tire lugs are located. This is indicated by (B) and (C) in Fig. 3. When the wheels are in line with each other, (B) should equal (B), and (C) should equal (C), but (B) does not have to equal (C). A drag link adjustment may be necessary to correct any misalignment.
(c) Once the front left tires are in alignement the toe-in must be checked. Toe-in may be checked by scribing a chalk link around the circumference of each wheel, at the center of thread. The different between the distance (D) on the front of the tire, and (E) on the back of the tire indicates the amount of toe-in. The measurement of (D) Should be 1/8" ± 1/32" (3.175mm) less than the measurement at (E). This may be changed by adjusting the length of the tie rod.
(d) The front wheels must be checked for interference with the lower frame when turned to their extreme position in either direction. Adjust stop bolts to limit wheel movement.

Wheel Bearing Adjustment: Wheel bearing adjustment should be checked occasionally. The rollers and races must be in proper contact to assure maximum bearing life. The wheel bearings can be adjusted in the following manner:
(a) Jack up one end of the axle till the wheel clears the ground.

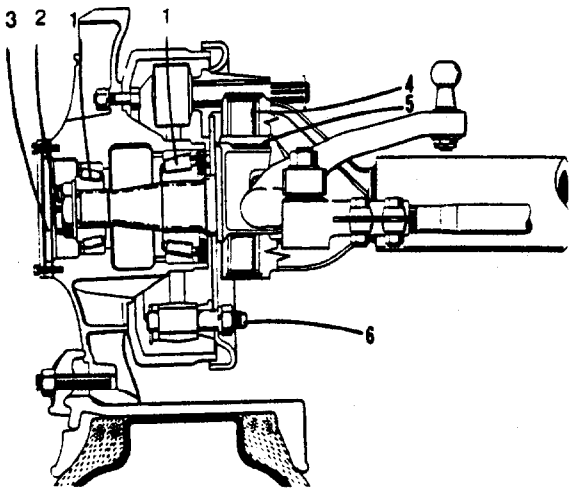


Fig. 4
Front Axle Assembly
A164-C
(1) Bearings
(2) Nut
(3) Hub Cap
(4) Bushing
(5) Thrust Bearing
(6) Anchor Pin

(b) Remove the hub cap, and wipe excess grease from end of spindle.
(c) Remove cotter pins from end of spindle.
(d) Tighten the adjusting nut, while rotating the wheel back and forth, until a slight bind is felt.
(e) Back off the adjusting nut to the nearest locking hole, or enough to allow the wheel to rotate with .001" to .010" (.025 to .25mm) end play.
(f) Replace the cotter pin.
(g) Replace the hub cap.

Wheel Bearing Repacking

At the interval specified in Section 2 of the Operator's Manual the wheel bearings must be removed, cleaned with kerosene, diesel fuel, or some similar approved solvent, repacked with grease, and adjusted as explained earlier in this SM. Use only wheel bearing grease that meets or exceeds the specifications listed in Section 2 of the Operator's Manual. Pack the cap, and the hub between the the two bearing cups with grease to the level of the cups smallest diameter. The seal which retains grease in the inner bearing should be examined, and replaced if worn or damaged.

The tapered roller bearings, whenever removed from the axle, should be handled with great care and kept free from dirt or water. When reassembling, caution should be used to prevent any foreign material from allowing metal to metal contact between the roller bearing cups and cones, the spindles on which they ride, and the shoulders against which they are intended to fit.

Wheel Torque Procedure: See SM1-69-2.0.