

**TECHNICAL MANUAL**

**Operator's, Organizational, Direct Support and  
General Support Maintenance Manual  
Including Repair Parts List  
for  
BEAD BREAKER, PNEUMATIC TIRE  
(STANDARD WHEEL AND RIM CO.)  
(NSN 4910-00-773-9341)**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY  
NOVEMBER 1980**

TECHNICAL MANUAL

No. 9-4910-595-14&P

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, DC, 30 November 1980

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Including Repair Parts List  
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BEAD BREAKER, PNEUMATIC TIRE  
(NSN 4910-00-773-9341)**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-MAS, Rock Island, IL 61299. A reply will be furnished to you.

**NOTE**

This manual is published for the purpose of identifying an authorized commercial manual for the use of the personnel to whom the bead breaker is issued. Repair parts should be ordered by manufacturer's part number as shown in the back of this manual. Model and serial number should be referenced when ordering replacement parts.

Manufactured by: Standard Wheel & Rim Co.  
200 South Cameron Street  
P. O. Box 1715  
Harrisburg, PA 17105

Procured under Contract No: DAAA09-75-C-6796

This technical manual is an authentication of the manufacturers' commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

INSTRUCTIONS FOR REQUISITIONING PARTS  
NOT IDENTIFIED BY NSN

When requisitioning parts not identified by National Stock Number, it is mandatory that the following information be furnished the supply officer.

- 1 - Manufacturer's Federal Supply Code Number - 73842
- 2 - Manufacturer's Part Number exactly as listed herein.
- 3 - Nomenclature exactly as listed herein, including dimensions, if necessary.
- 4 - Manufacturer's Model Number - NA
- 5 - Manufacturer's Serial Number (End Item)
- 6 - Any other information such as Type, Frame Number, and Electrical Characteristics, if applicable.
- 7 - If DD Form 1348 is used, fill in all blocks except 4; 5, 6, and Remarks field in accordance with AR 725-50.

Complete Form as Follows:

- (a) In blocks 4, 5, 6, list manufacturer's Federal Supply Code Number - \_\_\_\_\_ followed by a colon and manufacturer's Part Number for the repair part.
- (b) Complete Remarks field as follows:
 

Noun:	(nomenclature of repair part)
For: NSN:	4910-00-773-9341
Manufacturer:	Standard Wheel & Rim Co.
Model:	NA
Serial:	(of end item)

Any other pertinent information such as Frame Number, Type, Dimensions, etc.



### SAFETY TIPS

Never attempt to weld on an inflated tire/rim assembly.

Always exhaust all air from a single tire and from both tires of a dual assembly prior to removing any rim components, or any wheel components, such as nuts and rim clamps. Make sure to remove the valve core and exhaust all air from the tire. Check the valve stem by running a piece of wire through the stem to make sure it is not plugged. Remove valve cores from both tires of a dual assembly.

Check rim components periodically for fatigue cracks. Replace all cracked, badly worn, damaged and severely rusted components.

Clean rims and repaint to stop detrimental effects of corrosion. Be very careful to clean all dirt and rust from the lock ring gutter. This is important to secure the lock ring in its proper position. A filter on the air inflation equipment to remove the moisture from the air line prevents a lot of corrosion. The filter should be checked periodically to see that it is working properly.

Make sure correct parts are being assembled. Check your distributor or the manufacturer if you have any doubts.

Double check to make sure all components are properly seated prior to inflation.

Mixing parts of one manufacturer's rims with those of another is potentially dangerous. Always check manufacturer for approval.

Don't overload rims or over-inflate tire/rim assembly. Check your rim manufacturer if special operating conditions are required.

Don't reinflate a tire that has been run flat without first inspecting the tire, rim, and wheel assembly. Double check the lock ring for damage; make sure that it is secure in the gutter before inflation.

Never run a vehicle on one tire of a dual assembly. The carrying capacity of the single tire and rim is dangerously exceeded, and operating a vehicle in this manner can result in damage to the rim.

Don't be careless or take chances. If you are not sure about the proper mating of rim and wheel parts, consult a wheel and rim expert. This may be the tire man who is servicing your fleet, the rim and wheel distributor in your area, or the Motor Wheel Sales Engineer.

Don't use undersized rims. Use the right rims for the job.

Don't seat rings by hammering while the tire is inflated. Don't hammer on an inflated or partially inflated tire/rim assembly.

Don't inflate tire before all side and lock rings are in place. Check components for proper assembly again after inflating to approximately 5 PSI.

Don't let anyone mount or demount tires without proper training.

Never sit on or stand in front of a tire and rim assembly that is being inflated. Use a clip-on chuck and make sure inflation hose is long enough to permit the person inflating the tire to stand to the side of the tire, not in front or in back of the tire assembly.

Do not, under any circumstances, attempt to rework, weld, heat, or braze any rim components that are cracked, broken or damaged. Replace with new parts, or parts that are not cracked, broken, or damaged and which are of the same size, type and make.

Inflate in a safety cage or use safety chains during inflation.

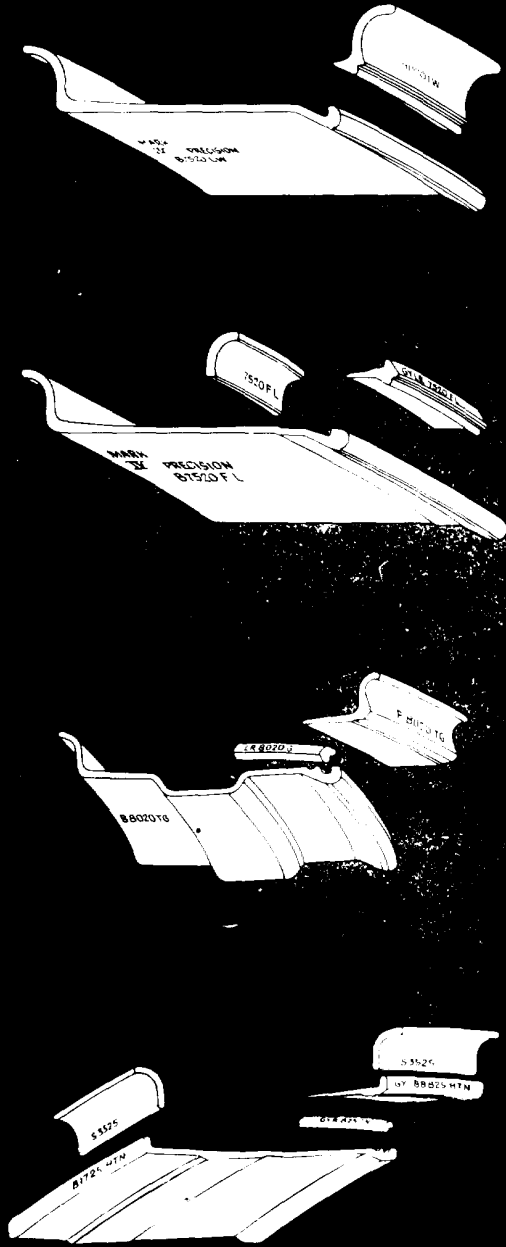
Regardless of how hard or firm the ground appears, put hardwood blocks under the jack.

Block the tire and wheel on the other side of the vehicle before you place the jack in position; always crib up with blocks just in case the jack may slip.

Remove the bead seat band slowly to prevent it from dropping off and crushing your toes. Support the band on your thigh and roll it slowly to the ground. This will protect your back and toes. Demounting tools apply pressure to rim flanges to unseat tire beads. Keep your fingers clear. Slant demounting bead tool about 10 to keep it firmly in place. If it slips off, it can fly with enough force to kill. Always stand to one side when you apply hydraulic pressure.

When using a cable or chain sling, stand clear; it might snap and lash out.

**safety aids**



**RIM PART NUMBER LOCATIONS**

Check part numbers of all rim components; the base, side ring, or flange and lock ring rims and components are stamped with their proper part number.

Be certain you have mated parts by checking the part number of all the rim components.

The location of these part numbers on the various rims can be found as shown in these typical examples:

**TWO-PIECE TRUCK RIMS**

Two-piece truck rims have rim base part number located as shown on inside diameter or wheel side of rim base adjacent to butt weld area of rim base. Side ring part number is stamped on outside face as shown 2" to 4" left of the split in side ring.

**THREE-PIECE TRUCK RIMS**

Three-piece truck rims have rim base part number located as shown on inside diameter or wheel side of rim base adjacent to butt weld area of rim base. The flange part number is stamped on the outside face as shown 2" to 4" to the right of the butt weld area of flange. Split bead ring part number is stamped on outside face of bead or lock ring 2" to 4" to the right of split in ring.

**SEMI-DROP CENTER RIMS--GRADER and FRONT END LOADER TYPES**

Semi-drop center grader type or front end loader type rims have rim base part number stamped on inside diameter or wheel side of rim base as shown adjacent to the butt weld area of rim base. Side flange part number is stamped on outside face of side flange 2" to 4" to the left of the butt weld area of side flange. The split lock ring has the part number stamped inside of ring and cannot be seen when mounted. The part number is located on flat face as shown adjacent to the safety hump away from split in lock ring.

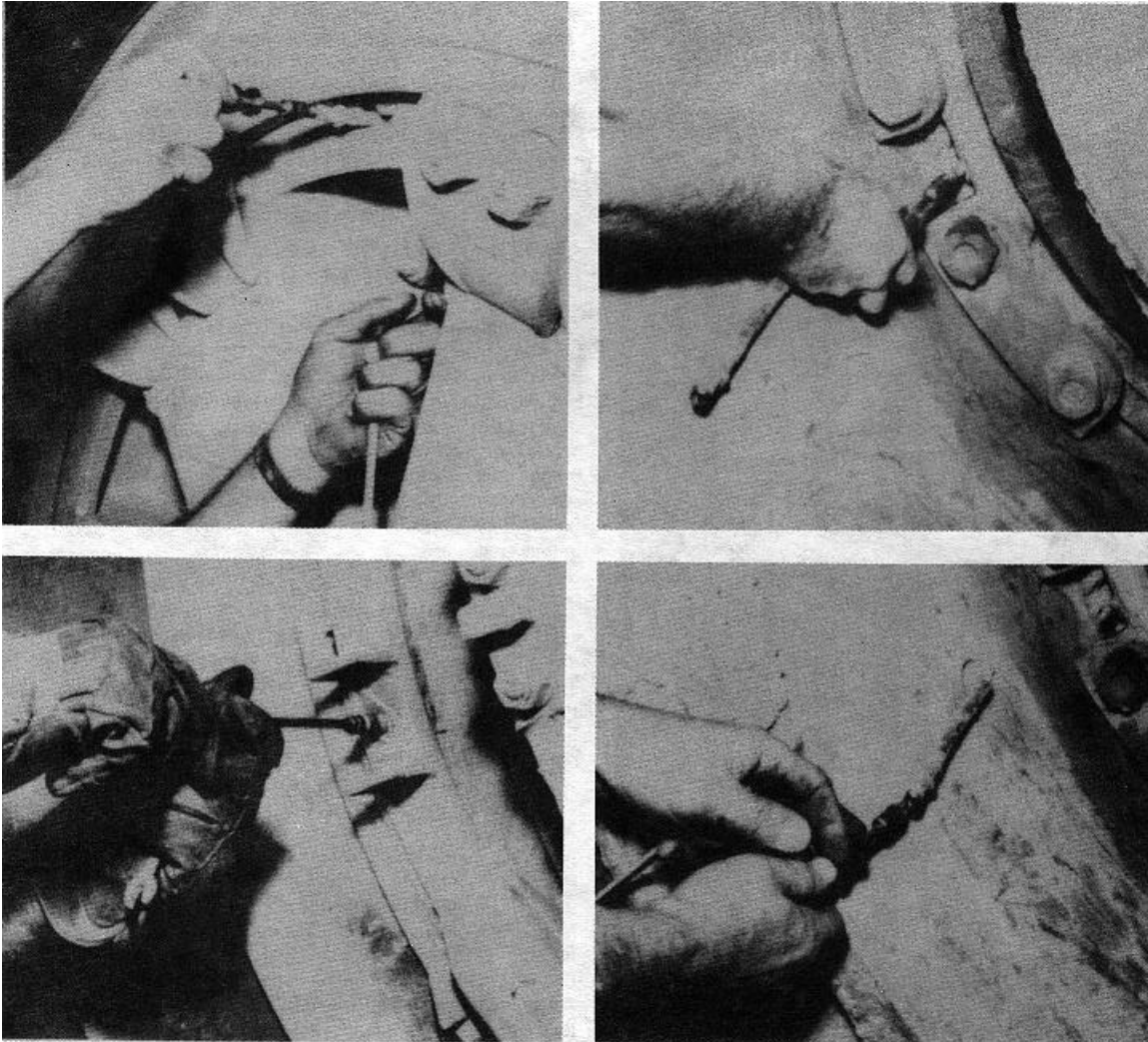
**MULTIPLE PIECE EARTHMOVER RIMS**

Earthmover multiple piece rims are stamped as follows: Rim base part number is stamped on upset back lip of rim base on outside face of rim base as shown to the right of the flange driver notch, Both inside and outside flanges must have the same part number, and this number is stamped on the outside face of each flange adjacent to the butt weld area of the flanges. The bead seat band (the long tapered five degree band) has the part number stamped on the outside of upset or lip portion of bead seat band midway between the pry bar pockets and 180° from driver or driver notch. The split lock ring part number is located on inside face of lock ring and cannot be seen when rim is mounted. The number is stamped on flat face of lock ring as shown 6" to 8" left of split in lock ring.

**IMPORTANT!  
THIS IS THE FIRST STEP IN  
ALL DEMOUNTING OPERATIONS**

For safety's sake, always remove the valve core and exhaust all air from a single tire and from both tires of a dual assembly prior to removing any rim components, or any wheel components, such as nuts and rim clamps.

Check the valve stem by running a piece of wire through the stem to make sure it is not plugged.



**READ AND FOLLOW THE SAFETY TIPS. FAILURE TO DO SO COULD RESULT IN  
SERIOUS INJURY.**

**DEMOUNTING TIRES ON A VEHICLE**

**TOOL REQUIRED: TO-100**

**NOTE: Before making any attempt at demounting, be sure that the tire and rim assembly has been completely deflated. Always remove valve core and check to insure clear passage through stem.**



Figure 1.

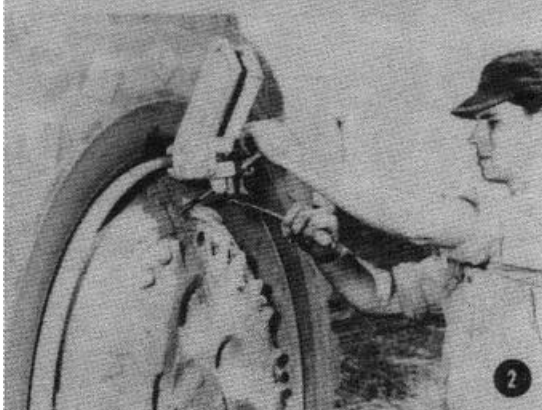


Figure 2.

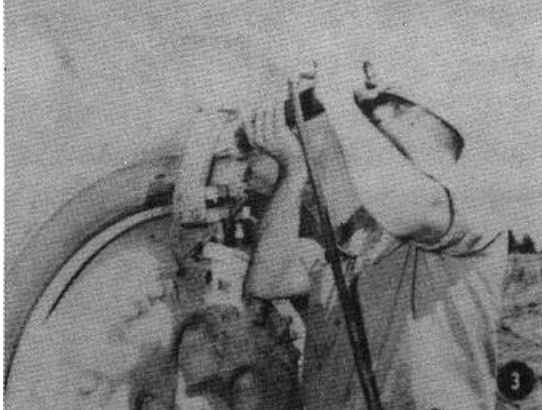


Figure 3.



Figure 4.

1. Attach the TO-100 frame assembly to the outer rim flange by slipping the clamping jaws over the outer edge of the flange (fig. 1)
2. Securely tighten adjusting screws at bottom of jaws. Set hand screw against lock ring and adjust until jaw assembly is in a right angle position to the plane of the flange (fig. 2)
3. With spade tip down and ram in retracted position, insert spade and ram assembly between open sides of frame. Place spade tip between tire bead and rim flange (fig. 3)
4. Lift ram until trunion engages frame shoulder and move stop screw into support ram. Apply pressure to ram and spade by means of pump until spade has moved tire bead toward center of rim assembly far enough to permit the placing of a bead wedge between bead and flange on each side of the tool (fig. 4)
5. Release pump pressure. Remove spade and ram assembly from frame. Loosen clamping jaw bolts and remove from flange.
6. Move to spot approximately 90° from first application (either direction) and repeat entire procedure. Repeat procedure until tire bead is free. Four to five applications usually accomplishes this.



## MOUNTING TIRES ON A VEHICLE

1. Clean and inspect all rim components, especially the lock ring groove and O-ring groove areas. Coat the rim with paint or a rust inhibitor. Also check the tire for water or foreign matter.
2. Place the back flange on the rim base and position the tire on the rim base using a boom truck or tire handler. (fig. 5)
3. Position the front flange on the rim base with the help of the boom. (fig. 6)
4. Place the bead seat band on the rim base with the help of the boom. Be sure driver pocket on bead seat band lines up with pocket on rim base. (fig. 7)
5. Using the boom to hold the rim components back out of the way, insert a lubricated O-ring into the O-ring groove, then lubricate the entire O-ring groove area with an approved vegetable-base lubricant. (fig. 8)
6. Work the lock ring into the lock ring groove. (fig. 9)
7. Install GY-31E Driver in driver pockets. Inflate the assembly, standing to the side of the rim. A slight tap on each component when there is about 5 PSI in the tire will insure proper seating. Replace the valve core and inflate to the proper pressure.

Figure 5.

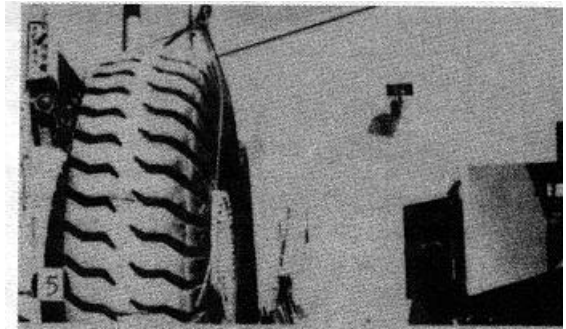


Figure 6

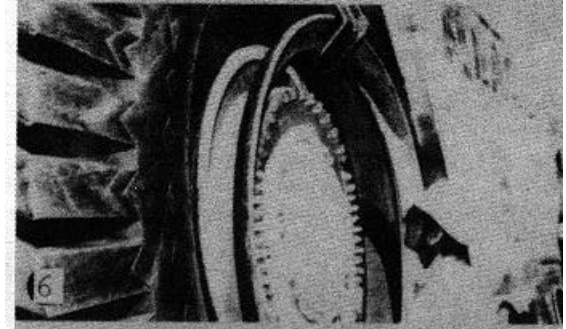


Figure 7.

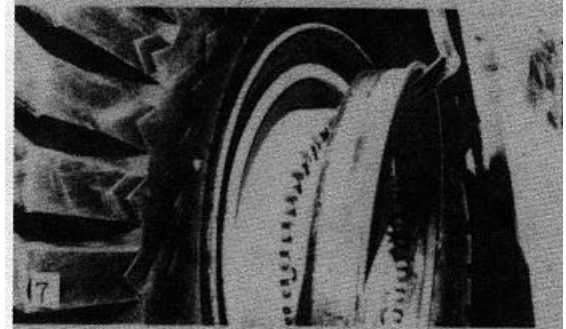


Figure 8.

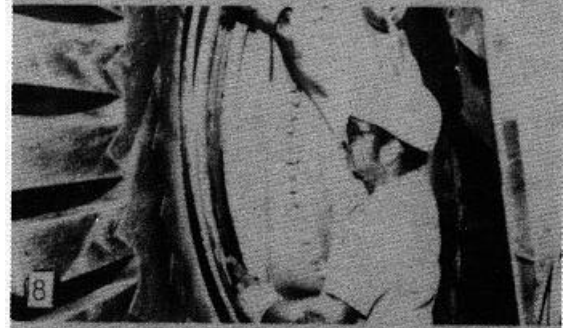
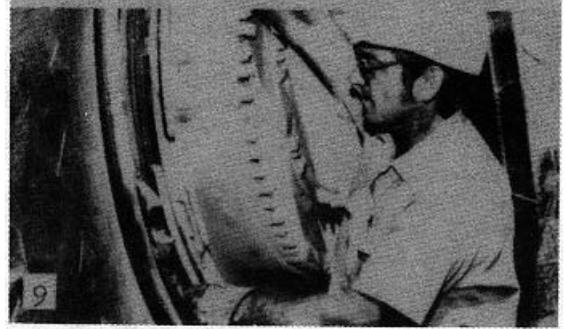


Figure 9.



MAINTENANCE:

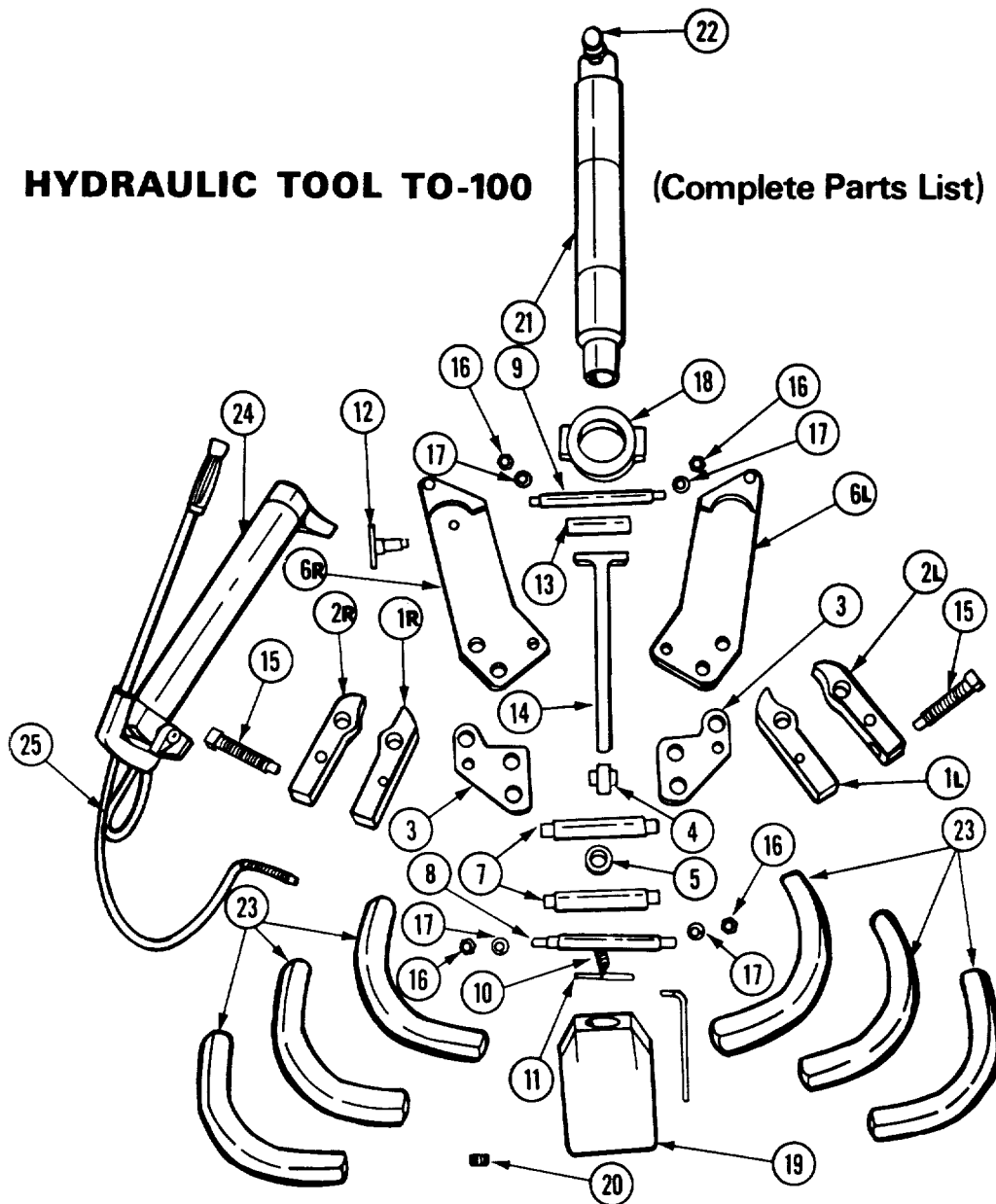
Protect this piece of equipment from excessive dirt, rust and moisture by cleaning the screen filter periodically. Sluggish valve operation or slow cylinder operation indicates when this should be done. Check for leaks and replace worn parts when necessary.

Where moisture is present in air lines, lines should be drained. Blow out the air lines thoroughly.

Lubricate all moving parts as required. Periodically place a few ounces of good grade motor oil in each cylinder. Once each year wash out the cylinder with kerosene or fuel oil. This will keep the rust from injuring the cylinder wall. After this cleaning operation, be sure to again install several ounces of motor oil in each cylinder as outlined above before operating.

Operate this piece of equipment for its intended use only.

**HYDRAULIC TOOL TO-100 (Complete Parts List)**

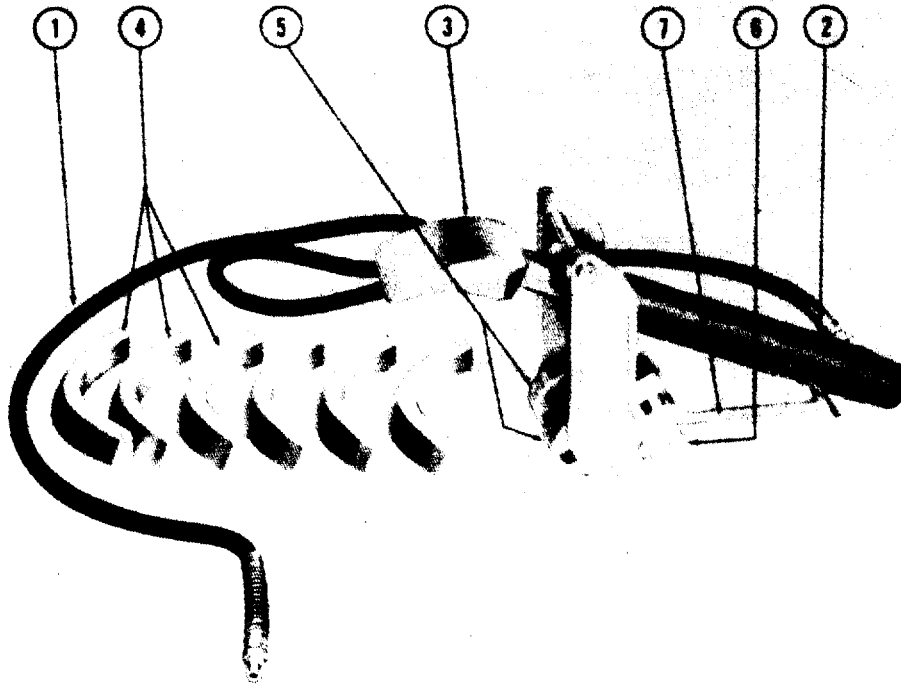


TO-100 COMPLETE PARTS LIST

Key No.	Part NO.	Description	Key No.	Part NO.	Description
1-L	TO-100-1L	Bottom Clampjaw-Left	12	TO-100-12	Stop Screw
1-R	TO-100-1R	Bottom Clampjaw - Right	13	TO-100-13	Spacer
2-L	TO-100-2L	Top Clamp Jaw - Left	14	TO-100-14	Hand Screw
2-R	TO-100-2R	Top Clamp Jaw - Right	15	TO-100-15	Square Head Set Screw
3	TO-100-3	Center Link	16	TO-100-16	Hex Nut
4	TO-100-4	Swivel Nut	17	TO-100-17	Lock Washer
5	TO-100-5	Spacer	18	TO-100-18	Trunion
6-R	TO-100-6R	Right Hand Side Plate	19	TO-100-19	Spade
6-L	TO-100-6L	Left Hand Side Plate	20	TO-100-20	Headless Set Screw
7	TO-100-7	Hinge Pin	21	TO-100-21	Ram
8	TO-100-8	Clamp Jaw Pin	22	TO-1600-RC	Female Coupler
9	TO-100-9	Tie Bolt	23	TO-100-23	Wedge
10	TO-100-10	Spring	24	TO-100-P	Pump
11	TO-100-11	Spring Pin	25	TO-100-L	Hose W/Half Coupler

**rim accessories**

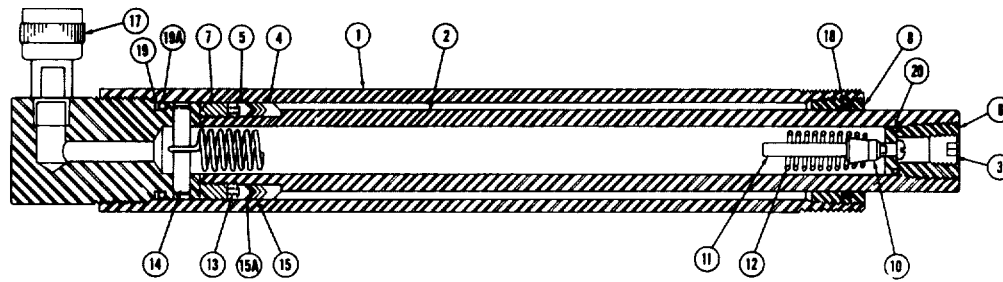
**HYDRAULIC TOOL TO-100**



Designed and developed specifically for unseating tire beads on small sizes of earthmover rim assemblies.

TO-100 PARTS LIST		
Key No.	Part NO.	Description
1	TO-100-L	Hose W/Half Coupler
2	TO-100-21	Ram
3	TO-100-19	Spade
4	TO-100-23	Wedges
5	TO-100-1	Clamp Jaws
6	TO-100-15	Square Head Set Screw
7	TO-10014	Hand Screw

REPAIR PARTS LIST FOR TO-100 TIRE TOOL RAM



Effective October 3, 1966

No.	Part No.	Description	No. Req'd
1	TO-100-21-1B	Cylinder	1
2	TO-100-21-2	Piston Tube	1
3	TO-100-21-3	1/4" Pipe Plug (flex Socket)	1
4	TO-100-21-4	Female Packing Ring	1
5	TO-100-21-5	Male packing Ring	1
6	TO-100-21-6	Threaded Plug	1
7	TO-100-21-7	Packing Nut	1
8	TO-100-21-8	Threaded Bushing	1
9	TO-100-21-9A	End Plug	1
10	TO-100-21-10	Spring Nut	1
11	12513NP	1/4"-20 NC x 3" Long Round Head Machine Screw	1
12	TO-101-21-12	Ram Return Spring	1
13	TO-100-21-13	Spring	4
14	TO-100-21-14	Pin	1
15	TO-100-21-15	Leather "V" Packing S-10-24	2
15A	TO-100-21-15A	Rubber "V" Packing S-2-24	1
18	TO-100-21-18	1/8" x 1/8" Felt Wiper Ring	1
19	TO-100-21-19	Leather Backup Washer S-17-27	1
19A	TO-100-21-19A	"O" Ring S-7-27	1
20	TO-100-21-20	"O" Ring S-7-13	1
17	TO-1600-HC	Ram Half Coupler	1
	TO-100-L	8 Foot Long Hose with H1ose Half Coupler (3/8" NPT)	
21A	TO-100-21A	10" Stroke Ram Assembly (Without Half Coupler)	

**CAUTION**

**This is a 10-Ton Capacity Unit. If other pumps are used, DO NOT exceed 8300 PSI pressure.**

**PARTS LIST**

Item No.	Part No.	No. Req'd	Description
1	11127	1	Dry Seal Pipe Plug
2	11088*	1	Retaining Ring
3	11089*	1	SAE Washer
4	11451*	1	Spring
5	10375*	1	Ball
6	41151	1	Pump Body
7	21643	1	Release Valve Handle
8	10267*	1	"O" Ring
9	10556	1	Socket Set Screw
10	27596	1	Release Valve Screw
11	11090	1	Roll Pin
12	30726	1	Pump Handle Casting
13	11094	1	Instruction Decal
14	21704	1	Valve Screw
15	10901*	1	Washer, Brass
16	10377*	1	Ball
17	11084	1	Hex Socket Pipe Plug
18	21652	1	Handle
19	10904	1	Flex Grip Handle
20	30720	1	End Bell
21	10479	1	Hex Socket Pipe Plug
22	10271*	1	"O" Ring
23	21641	1	Tie Rod Cap Nut
24	27703	1	Name Plate - Model "C"
25	10575	2	Rd. Hd. Drive Screw
26	10840*	2	"O" Ring
27	30741	1	Reservoir Tube- 16" LG.
28	21650	1	Tie Rod - 15" LG.
29	21278	1	Relief Valve
30	10841*	1	Spring
31	11083*	1	Screen Filter
32	21648	1	Screen Retainer Clip
33	10374*	1	Ball
34	11451*	1	Spring
35	11087*	1	Male Adapter
36	10839*	2	"V" Packing
37	10542*	1	"V" Packing
38	21647	1	Piston Packing Nut
39	10415	1	Roll Pin
40	21644	1	Piston
41	21645	1	Wrist Pin

24113 Reservoir Tube 6" LG.  
 30742 Reservoir Tube - 10" LG.  
 24127 Tie Rod - 5 1/4" LG.  
 21651 Tie Rod - 9 1/8" LG.

\*Part numbers marked with an asterisk (\*) are contained in Repair Kit #27702

By Order of the Secretary of the Army:

Official:

J. C. PENNINGTON  
*Major General, United States Army*  
*The Adjutant General*

E. C. MEYER  
*General, United States Army*  
*Chief of Staff*

☆U.S. GOVERNMENT PRINTING OFFICE: 1993 0 - 342-421 (80214)

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



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CAREFULLY TEAR IT OUT, FOLD IT  
AND DROP IT IN THE MAIL.*

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BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE
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## The Metric System and Equivalents

### Linear Measure

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 dekameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

### Weights

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigrams = .035 ounce  
 1 decagram = 10 grams = .35 ounce  
 1 hectogram = 10 decagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

### Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

### Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

### Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

## Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

### Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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PIN : 047705-000