ALLAN HERSCHELL

CHANCE
MANUFACTURING CO., INC.

Number: 57
Date: 7-24-73

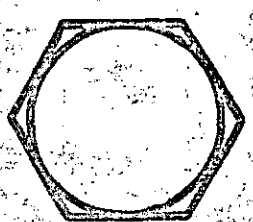
Supercedes:
Number:
Date:

Service Information

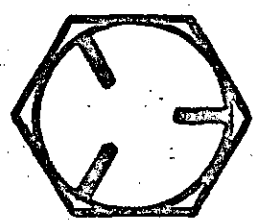
Ride: ALL RIDES **Subject:** SUB-STANDARD BOLTS

During recent inspections of rides returning to the factory, we have noticed a number of sub-standard bolts being used.

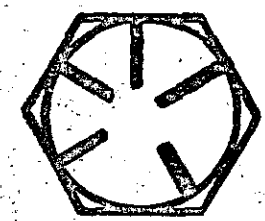
Chance Manufacturing Company uses only Grade 5 or better bolts. Bolts are identified by the markings on the bolt head. Bolts without markings are generally a Grade 2 or 3 (common hardware store variety) and are not strong enough to be used on amusement rides.



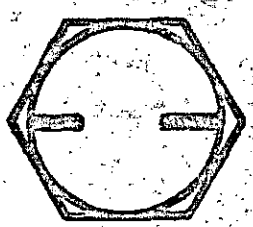
GRADE 0 THROUGH 2
No markings
on head



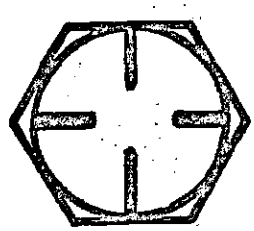
GRADE 5 BOLT
Notice head has
three raised marks.



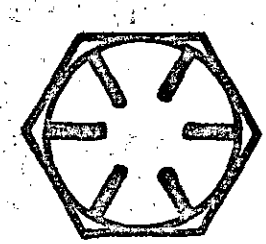
GRADE 7 BOLT
5-raised marks



GRADE 3
2-raised marks



GRADE 6 BOLT
4-raised marks



GRADE 8 BOLT
Head has six
raised marks.

When replacing any bolt, always use an equivalent or stronger bolt. Higher number equals stronger bolt.

Grades 0 through 3 are not suitable for use on amusement rides.

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Sales Office: 1103 Ross Ave., Dallas, Texas 75202 Area Code (214) 742-3802

CHANCE MANUFACTURING CO., INC.

Number: 90-148A
Date: 4-17-78

Supersedes: #90-148/
Number: 2-6-78
Date: #57/7-24-73

America's Largest Manufacturer of Amusement Rides

Service Information

Effective Serial Numbers: ALL RIDES

Ride: ALL RIDES

Subject: REPLACEMENT & TORQUING OF BOLTS

Service Information Bulletins number 57 and 90-148, having been superceded by this bulletin are no longer in effect and should be destroyed.

REPLACEMENT OF BOLTS

During normal maintenance practices, it is usually necessary to replace some bolts. They work loose because they have not been checked periodically, or they become lost when they are removed to repair some component. The point we wish to stress is the following.

Chance Manufacturing Company uses only Grade 5 or better bolts. Bolts are identified by the markings on the bolt head. Bolts without markings are generally a Grade 2 or 3 (common hardware story variety) and are not strong enough to be used on amusement rides.

When replacing any bolt, always use an equivalent or stronger bolt. Higher number equals stronger bolt.

NOTE: There are some bolts available above a Grade 8; however, these bolts are not to be used for general purposes. They are extremely brittle, and are designed for special applications.

If trouble is encountered with bolts working loose, check the tightness according to the torque chart.

If certain bolts continue to work loose, remove the bolts and inspect the threaded holes. If threads are in good condition, clean hole out with a non-oil base solvent. Blow dry and apply "Green Loctite" to threads. Install new lock washer and bolt and torque per chart.

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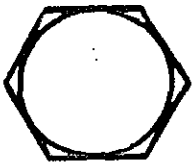
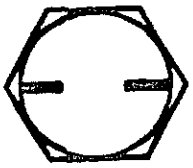
Sales Office: 1103 Ross Ave., Dallas, Texas 75202 Area Code (214) 742-3802

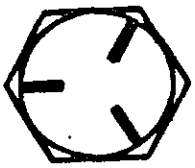


GRADE 0 THROUGH 2
No markings on head



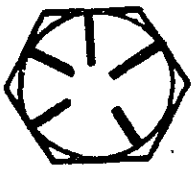
GRADE 3 BOLT
2 raised marks

Grades 0 through 3 are not suitable for use on amusement rides.



GRADE 5 BOLT
3 raised marks

GRADE 6 BOLT
4 raised marks



GRADE 7 BOLT
5 raised marks

GRADE 8 BOLT
6 raised marks

TORQUE METHODS (NO TORQUE WRENCH)

LEVERAGE METHOD

The average 200-225 lb. mechanic, while standing on his feet, can apply a steady pull with his good arm (right arm if right-handed, etc.) of between 100 and 110 pounds. This pull is obtained without bracing his feet or free hand against any solid object such as work bench or machinery being worked on. If a torque of any given value is desired, it becomes a simple matter of leverage. If the mechanic in question is tightening a 7/8" UNC thread bolt which recommends 520 ft. lbs. of torque, this value can be reached by using a heavy duty socket wrench and slipping a 5 ft. length of pipe over the handle of the wrench.

Thus, if the mechanic can exert a 100 lb. pull, 5 ft. times 100 lbs. would equal 500 ft. lbs. If he exerted a 110 lb. pull, it would result in 5 times 110 or 550 ft. lbs. Any other desired torques can be reached by simply dividing the desired torque value by approximately 110 to determine the length of pipe or "Cheater bar" that is needed.

TURN OF THE NUT METHOD

This method applies only to bolts with UNC threads. If the bolt is shorter than eight times its diameter, tighten the nut until the pieces being joined are snugged up, put a reference mark on the nut or the socket wrench being used and tighten the nut, while preventing the bolt from turning, until the nut has been turned an additional one-half of a turn. If the bolt is longer than eight times its diameter, proceed as before but tighten the nut an additional two-thirds of a turn. This will apply a preload to the bolt that will be very close to the same value that would be achieved if a torque wrench had been used.

BOLT TORQUE CHART

CAUTION: TORQUE VALUES ARE GIVEN FOR STEEL BOLTS IN STEEL THREADED HOLES ONLY. BE CERTAIN THREADED PARTS ARE NOT ALUMINUM, BRASS, OR OTHER SOFT ALLOY.

BOLT SIZE DIA. & THREADS	SAE GRADE 5 DRY - LUBRICATED VALUES IN INCH LBS.		SAE GRADE 8 DRY - LUBRICATED VALUES IN INCH LBS.	
1/4 - 20	72	54	108	81
1/4 - 28	84	63	132	99
	ALL VALUES BELOW IN FOOT LBS.		ALL VALUES BELOW IN FOOT LBS.	
5/16 - 18	11	8	17	13
5/16 - 24	13	10	20	15
3/8 - 16	24	18	36	27
3/8 - 24	27	20	42	32
7/16 - 14	36	27	55	41
7/16 - 20	43	32	66	50
1/2 - 13	55	41	85	60
1/2 - 20	65	49	100	75
9/16 - 12	80	60	123	92
9/16 - 18	86	65	132	99
5/8 - 11	105	79	162	122
5/8 - 18	125	94	192	144
3/4 - 10	180	135	277	208
3/4 - 16	220	165	338	254
7/8 - 9	310	233	477	358
7/8 - 14	360	270	554	416
1 - 8	430	323	662	497
1 - 12	510	383	784	588
1 1/8 - 7	550	413	846	635
1 1/8 - 12	650	488	1000	750
1 1/4 - 7	700	525	1077	808
1 1/4 - 12	820	615	1262	947
1 3/8 - 6	962	722	1481	1111
1 3/8 - 12	1109	831	1708	1281
1 1/2 - 6	1365	1024	2100	1575
1 1/2 - 12	1540	1155	2372	1780

CHANCE MANUFACTURING CO., INC.

Number: 90-149
Date: 2-14-78

Supersedes:
Number:
Date:

America's Largest Manufacturer of Amusement Rides

Service Information

Effective Serial Numbers: ALL RIDES

Ride: ALL RIDES

Subject: OPERATOR SELECTION AND INSTRUCTION

The following is a list of General Guidelines for Operator Selection and instruction.

1. Select competent mature operators, capable of understanding the function and use of amusement rides and their control.

2. Instruct each operator fully in the proper use and function of the ride he is to supervise, including:
   A. Controls and procedures for normal and emergency operation.
   B. Manufacturer's recommended maximum speed and load.
   C. Manufacturer's recommended length of ride time and frequency of repeat rides.
   D. Any forseeable misuse of the ride as determined by the manufacturer or owner, or by special conditions such as weather, location or crowds.
   E. Each operator must have immediate availability of a manufacturer's operator's manual for the ride he supervises.

3. Require each operator to inspect the ride he supervises, each day of operation.
   A. Determine that no portion of the ride is damaged, omitted, or worn in such a manner that it is unsafe or that may develop into an unsafe condition.
   B. Report any irregularities to superintendent or owner.
   C. Do not operate irde if any irregularities are found until such condition is corrected.

4. Instruct the operator to allow no passenger to ride who is visably ill, or under the influence of drugs or alcohol.

5. Instruct operators and attendants on the proper methods of securing passengers in the ride. Do not allow a passenger in the ride that cannot be properly secured due to passenger size or malfunction of the securing device.
   A. Stop the ride immediately if any passenger is observed tampering with any restraining device or behaving dangerously, such as standing up.

6. Advise the operator against starting or operating the ride while any person (passenger, spectator, or employee), is in an endangered or unsafe position on the ride or within the ride area.

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Sales Office: 1103 Ross Ave., Dallas, Texas 75202 Area Code (214) 742-3802

7. Insist that each operator remain in full control of the operating controls during operation of the ride, and give his full attention to the ride and its passengers.

8. Instruct operator to allow no other person, other than another trained operator, to operate the controls of the ride, excepting portions of the ride that are designed to be controlled by the passenger.

9. Instruct operator and attendants fully as to the proper method of assembly and disassembly of portable rides and supply adequate personnel and equipment to do it safely.

   A. Restrict spectators from the area.

10. Instruct operator to inspect and correct or replace damaged, lost or worn parts that are unsafe or that may develop into unsafe parts simultaneously with assembly or disassembly.

11. Advise operator that factory-installed safety devices are not to be tampered with or removed.

12. Advise operator of owner/supervisor procedure for assisting ill or injured passengers.

13. Instruct operators and attendants that patrons are required to secure all articles, such as keys, change, eye glasses, etc., which may become loose while riding.

CHANCE MANUFACTURING CO., INC.

Number: 90-150
Date: 2-14-78

Supersedes:
Number:
Date:

America's Largest Manufacturer of Amusement Rides

Service Information

Effective Serial Numbers: ALL RIDES

Ride: ALL RIDES **Subject:** PREVENTATIVE MAINTENANCE

The following is a list of a few general selected rules which should be adhered to by everyone.

Remember that in the long run the key to a Safe and Successful Operation is to have well-trained and well-supervised employees.

GENERAL SAFETY GUIDELINES

1. All work must be done by competent qualified mechanics capable of understanding the function of the parts and their proper installation.

2. Inspect ride, each day of operation, to determine that no portion of the ride is damaged, omitted or worn in such a manner that it is unsafe, or that unsafe conditions may develop.

3. Perform manufacturers recommended maintenance procedures at intervals and in manner specified by operation and maintenance manual, in the following general areas:
   - A. Lubrication
   - B. Air, Hydraulic and Electrical Systems
   - C. Torquing of Bolts
   - D. Wear of Bolted or Pinned Joints
   - E. Adjustment and Care of Mechanical Components such as Brakes, Clutches, and Air Compressors
   - F. Passenger Securing Devices
   - G. Crowd Control Devices
   - H. Operating and Emergency Controls
   - I. Factory Installed Safety Devices.

4. Study each job carefully to determine all hazards so that necessary safeguards can be taken.

5. Examine safety devices, tools, ladders, etc., before they are used to make sure they are in good conditon. Ladders should be clean and unpainted.

6. Use the proper tool or equipment for each job. Ground all hand electric power tools before use.

7. Wear close-fitting comfortable clothing when working on or close to mechanical apparatus or live electrical circuits. Avoid finger rings, jewelry or other articles which may be caught in moving parts or come in contact with electrical circuits.

8. Protect your eyes by wearing approved Safety Glasses or Goggles.

9. Wear hard hats at all times. When working in elevated areas, use a safety belt.

10. Where work to be performed is hazardous such as live electrical circuits, at least two men shall work together.

11. If guards must be removed from equipment, make sure they are replaced before leaving the job.

12. Clean up after each job disposing of surplus materials.

13. Keep a record of parts replaced and date of replacement. Inform manufacturer of any replacement requirements that are frequent or cause unsafe conditions.

14. Make modifications and additions as outlined in manufacturers service and safety bulletins.

PREVENTATIVE MAINTENANCE

Preventative maintenance is the best assurance for a successful operation. The ride operator should clean and inspect the ride daily. Lubrication should be performed at recommended intervals.

MAINTENANCE - FIRST TWO WEEKS OF OPERATION

The ride has been completely serviced and tested before leaving the factory. However, during the first two weeks of operation, the ride operator should be especially observant and watch for possible hydraulic leaks, etc. During the first two weeks, all bolts and nuts should be checked daily for tightness. After the first two weeks, they should be checked at least monthly.

HYDRAULIC FILTER

There is a hydraulic filter located in the return line going into the hydraulic reservoir. This filter has a replaceable filter element which should be changed after the first two weeks of operation. Thereafter, it should be changed at least semi-annually, and whenever the hydraulic fluid becomes contaminated for any reason. "Contamination" refers to any foreign matter such as dirt, sand, water, or other liquid other than the recommended hydraulic fluid.

CHANCE MANUFACTURING CO., INC.

America's Largest Manufacturer of Amusement Rides

Number: 90-151
Date: 2-14-78

Supersedes:
Number:
Date:

Service Information

Effective Serial Numbers: ALL RIDES

Ride: ALL RIDES

Subject: WEAR OF JOINTS

WEARING OF BOLTED OR PINNED JOINTS

Any bolted or pinned joint, whether designed to be stationary or moving, will be subject to stresses causing wear.

Wear will become evident on the fastener, walls of the hole or both. A certain amount of wear is expected and can be considered normal. It is impractical to specify the amount of wear or slop that should be tolerated on every joint. Therefore, the following general guidelines can be used as a guide only.

If in doubt about the condition of a bolt, pin or hole, consult Chance Manufacturing Company.

NEW RIDES

Some joints will appear to wear rapidly on new rides. This is usually a result of the holes not aligning in the mating parts. When this condition occurs it results in what is termed as "Point Contact". A joint with this condition will generally wear rapidly until the lead is distributed evenly over the fastener and the parts.

Once the joint has worn enough to have what is termed "Full Surface Contact" it should wear very slowly and evenly from then on.

If joint continues to wear rapidly, contact Chance Manufacturing Company.

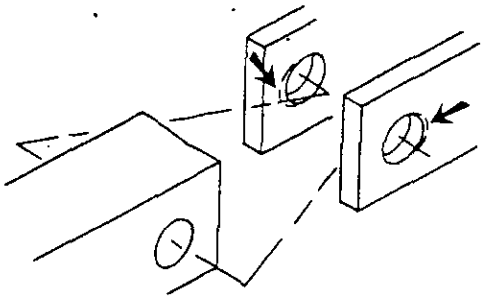
STATIONARY JOINTS (NO BEARINGS)

Generally encountered with Walkways, Stands, etc.

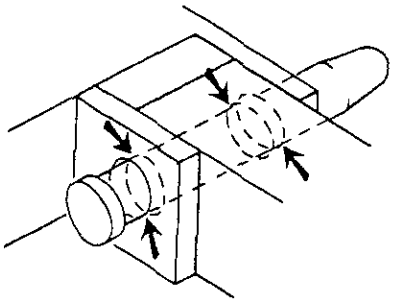
When holes become noticeably egg shaped or sloppy enough to wobble pin around, parts should be align drilled and oversize pins installed.

When using oversize pins, do not jump more than one size.

in doubt, consult Chance Manufacturing Company.



Stationary Joint Wear



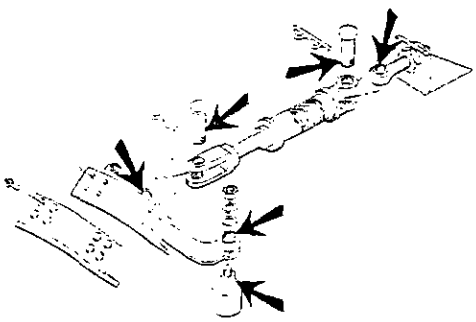
Stationary Joint-Misaligned Holes Resulting in Point Contact

MOVING JOINTS (BEARING OR BUSHING)

Any moving joint that has a bushing or bearing generally is involved with ride action.

Replace any worn parts as soon as detected.

Keep moving joints lubricated.

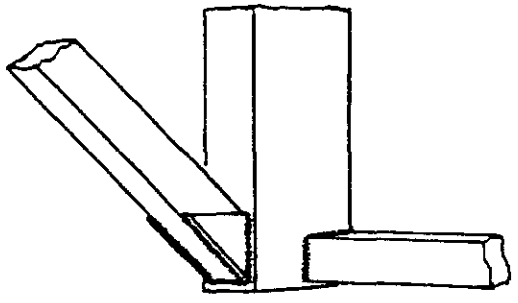


Moving Joints

WELDED JOINTS

Structural joints should be checked on a regular basis for visual signs of cracking or fatiguing. Joints that have gusset plates should be checked more frequently.

Consult factory if above conditions are present.



Welded Joints

CHANCE MANUFACTURING CO., INC.

America's Largest Manufacturer of Amusement Rides

Number: 90-152
Date: 2-14-78
Supercedes:
Number:
Date:

Service Information

Effective Serial Numbers: ALL RIDES

Ride: ALL RIDES USING CABLES **Subject:** CABLE INSPECTION

CABLE REPLACEMENT (NO LONGER SERVICEABLE)

The following guidelines will allow an economical and reasonable service life, while maintaining a high degree of safety as far as preventing damage to the ride or possible injury to the passengers.

Replace cables if any of the following conditions exist. If more than one cable is used, cables must be replaced as a set.

1. General evidence of severe corrosion.
   A. Rust appearing to stem from interior of cable.
   B. Cable appears clean at present but previous corrosion is evident from pitted condition of wires.

2. Severe stretching occurring in a short section of cable, indicated by a marked reduction in the diameter of the cable.

3. Severe physical damage such as "kinging", "crushing", or "bird caging".

4. One strand being 75% broken through.

5. A number of wires, equal to the number in a strand, being broken in the length of one rope lay.

"Lay" as a unit of measure

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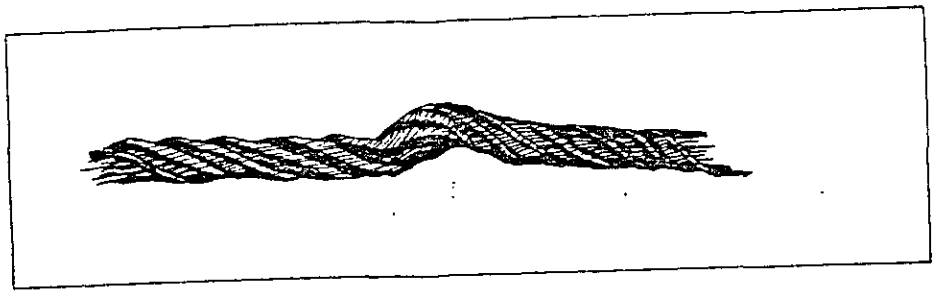
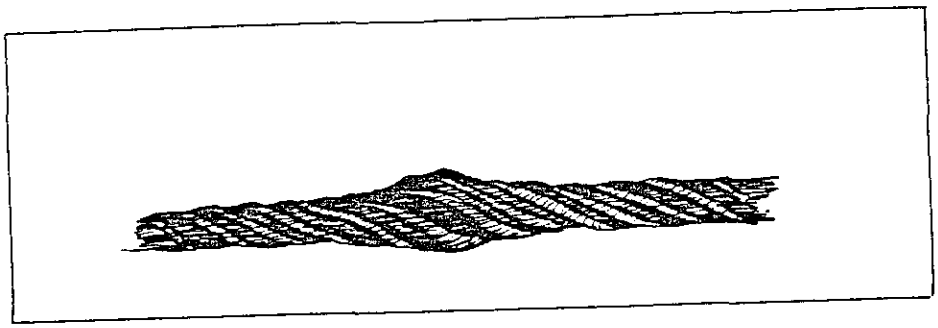
Sales Office:

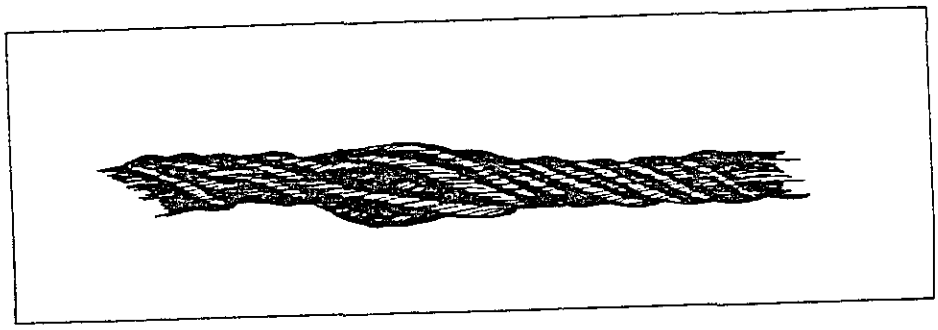
Cable Terms



Kinking



Crushing



Bird Caging

CHANCE MANUFACTURING CO., INC.

Number: 90-154
Date: 2-16-78

Supersedes:
Number:
Date:

America's Largest Manufacturer of Amusement Rides

Service Information

Effective Serial Numbers:

Ride: ALL RIDES

ALL RIDES

Subject: ARTIFICIAL RESUSCITATION

ARTIFICIAL RESUSCITATION

The Mouth-to-Mouth Method of Resuscitation should be known by everyone.

A few minutes practice from time to time, will master the technique, the knowledge of which may save a life.

QUICK action is imperative. Start resuscitation at once, even though many minutes have passed; the victim may still be alive.

(a) In electric shock, quickly shut off power or break contact with the victim by use of a dry stick or other non-metallic material (belt, clothing, rope, board). In asphyxiation from gas, move patient quickly to fresh air. Start resuscitation at once.

(b) Stop resuscitation procedure, turn your head to the side and listen for the return of air that indicates air exchange. Repeat the blowing effort at the rate of about 12 breaths per minute for adults and 20 per minute for children.

(c) When breathing is restored, keep patient quiet; do not let him walk. Keep him warm and move him on a stretcher.

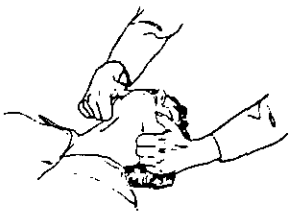
(d) Should breathing stop, after being restored, start resuscitation again.

(e) Send for the nearest Doctor as soon as the accident is discovered.

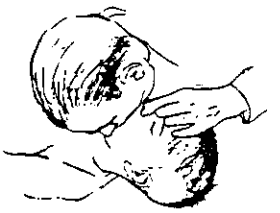
The pictured "mouth-to-mouth" technique of artificial respiration has been approved unanimously by the National Academy of Sciences and the American Red Cross as the most practical method for emergency ventilation of an individual of any age.

1. If there is foreign matter visible in the mouth, wipe it out quickly with your fingers.

2. Tilt the head back so the chin is pointing upward.



3. Pull or push the jaw into a jutting-out position.



4. Open your mouth wide and place it tightly over victim's mouth. At same time pinch victim's nostrils shut.

4A. Or close the nostrils with your cheek.

4B. Or close the victim's mouth and place your mouth over the nose.

5. Blow into the victim's mouth or nose. If you are not getting air exchange, recheck the head and jaw position (see drawings above).

6. If you still do not get air exchange, quickly turn the victim on his side and administer several sharp blows between the shoulder blades in the hope of dislodging foreign matter.

Resume breathing procedure.

CHANCE MANUFACTURING CO., INC.

Number: 90-153
Date: 2-20-78

Supersedes:
Number:
Date:

America's Largest Manufacturer of Amusement Rides

Service Information

Effective Serial Numbers: All Rides

Ride: All Rides

Subject: Tire Safety - Mounting & Demounting

The following guidelines and safety precautions are intended to be used for reference only. Procedures will vary for different types of rims and tire mounting equipment. If at any time an uncertainty exists about the method of assembly or component parts or use of equipment, consult specific equipment manual.

The following precautions apply generally for all types of tires. In addition, each section emphasizes specific precautions for each particular type of tire.

WARNING: FAILURE TO OBSERVE THE PRECAUTIONS OUTLINED IN THIS SECTION MAY RESULT IN FAULTY POSITIONING OF THE TIRE AND/OR RIM PARTS, CAUSING THE ASSEMBLY TO BURST WITH EXPLOSIVE FORCE SUFFICIENT TO CAUSE SERIOUS PHYSICAL INJURY OR DEATH.

CORRECT PROCEDURES
DO IT THIS WAY

1. Respect the potential power and explosive force of air under pressure. Serious accidents have resulted from lack of awareness of the explosive potential of compressed air. Respect it as you would DYNAMITE!

2. Make sure all tools are in good condition for use--not damaged, dented or deformed.

3. Remove valve core and exhaust all air from the tire (or tires, in the case of a dual assembly), before demounting. Probe the valve stem with a wire as a final check to make sure valve is not plugged. Do not stand in front of valve opening, as dirt particles may be blown into eyes.

4. Block vehicle in a positive manner so it cannot roll forward or backward after it is jacked up.

5. Place large hardwood blocks under the jack, regardless of how hard or firm the ground appears.

6. Place safety jacks--or crib up with blocks--at an appropriate spot under the vehicle, in case the jack slips.

7. Check rim diameter to be sure it exactly matches rim diameter molded on tire. If rim is multiple piece, check component parts to see if made by the same manufacturer.

8. Clean and inspect used rim parts thoroughly.

9. Use new tubes and new flaps in new tires.

10. Inspect inside of tire for loose cords, cuts, penetrating objects or other carcass damage. Scrap tires that are damaged beyond simple repair. Remove dirt, debris and liquids from inside of tire before tube is installed.

11. Lubricate with approved rubber lubricant, such as thin vegetable oil soap solution or "RUGLYDE".

12. Use a clip-on chuck and extension hose with remote control valve and pressure gauge, long enough to allow you to stand to one side--not in front of the assembly--during inflation.

13. Center tire properly on rim before inflating.

14. Securely lock wheel down, or place assembly in safety cage or portable safety device before attempting to inflate tire to seat beads.

15. Check for proper flange and lock ring seating.

16. Adjust air pressure to manufacturer's recommended cold operating pressure, after beads have been seated.

17. Inspect valve cores for proper air retention. Replace damaged or leaky cores.

FAULTY PROCEDURES
DO NOT DO IT THIS WAY

1. Don't work on tire and rim assemblies until you have reviewed safety practices and procedures.

2. Don't loosen lug nuts on duals until all air is exhausted from both tires. A broken or cracked rim part under pressure could blow apart and seriously injure or kill if lugs are removed before air is exhausted.

3. Don't ever apply heat or do repair work on an inflated tire, rim and wheel assembly. Heat can increase air pressure to a level sufficient to burst the tire or rim.

4. Don't reinflate a tire that has been run flat or seriously underinflated without demounting that tire and checking the tire and tube for damage.

5. Don't mix rim parts of different manufacturers unless such use is approved by those manufacturers.

6. Don't attempt, under any circumstances, to rework, weld, heat or braze rim parts. Replace damaged parts with same size, type and make.

7. Don't reuse tubes or flaps that have buckled or creased.

8. Don't use a tube in a tire larger or smaller than that for which the tube was designed.

9. Don't inflate beyond recommended bead seating pressure. Don't stand over tire when inflating.

10. Don't transport fully inflated tires mounted on multi-piece rims. Inflate only enough (10-15 PSI) to keep rim parts in place. Inflate tires to correct operating pressure only after tire and rim assembly have been fastened in place, all lug nuts properly torqued, and rim parts rechecked for proper fit.

11. Do not substitute petroleum-based lubricants, silicone or anti-freeze for "RUGLYDE" or other approved rubber lubricant.

PASSENGER CAR-TYPE TIRES

1. Machine Method

A. Demounting - After tire is removed from vehicle, remove all balance weights. Remove valve core to deflate tire.

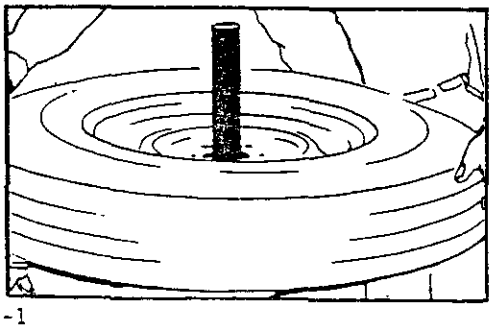


Fig. 1-1

Place tire and wheel assembly on tire changer, narrow ledge up (Fig. 1-1), and make sure stub on changer fits into one of the bolt holes of the wheel.

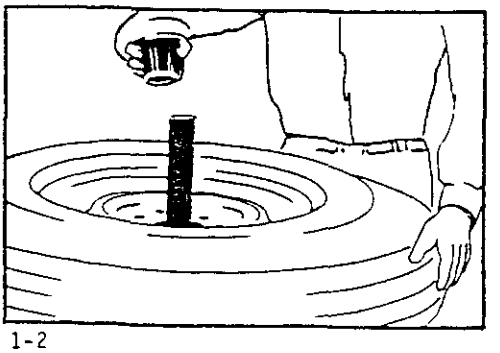


Fig. 1-2

Fasten wheel securely onto changer with hold-down device (usually a threaded cone) (Fig. 1-2). Loosen tire beads from rim flange using bead unseating tool. If beads do not separate readily, tire assembly should be loosened, tire and wheel rotated, hold-down mechanism retightened, and unseating tool tried at another point on tire to free beads from rim.

After beads are loosened, use brush or swab to lubricate with RuGlyde or other approved rubber lubricant. NEVER use anti-freeze, silicone or petroleum-based lubricants.

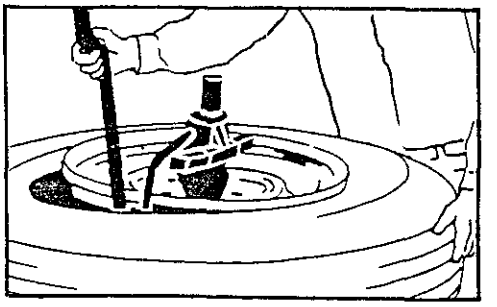


Fig. 1-3

Push top bead into rim well at one point, and at a point 180° opposite use a tire iron to lift bead over rim flange onto rotating finger of tire changer (Fig. 1-3). Holding tire iron in position, engage changer, and rotating finger will lift bead over rim flange. If tire is tube-type, the tube should now be removed.

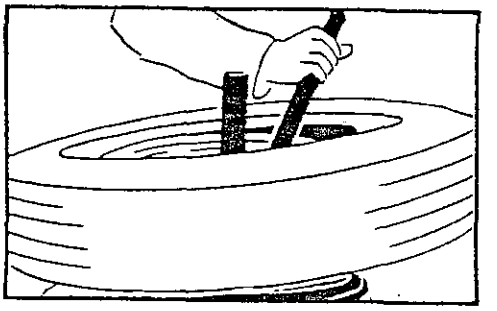


Fig. 1-4

Tilt tire and push bottom bead into rim well. Again use tire iron to lift bottom bead over rotating finger of tire changer (Fig. 1-4). Again holding tire iron in position, engage changer, and rotating finger will lift bead over rim flange.

5. Mounting

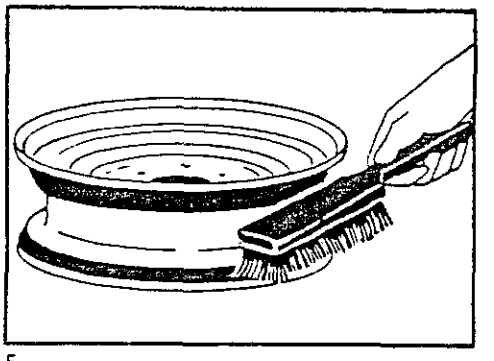


Fig. 1-5

The rim should be inspected for any damage or abuse. If it has been repair-welded or brazed, the rim should be discarded. Make sure the rim area is clean and free of rust, corrosion and debris. The entire area of rim and shoulder well should be wirebrushed (Fig. 1-5).

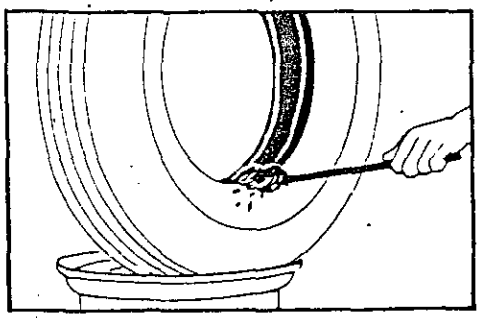


Fig. 1-6

Place wheel on tire changer, narrow ledge up, and fasten securely with hold-down device. Inspect snap-in valve and replace if it shows signs of cracking, checking or deterioration. Before seating new valve, it should be lubricated with RuGlyde or other approved lubricant to insure its being seated firmly against the rim surface.

The casing should be inspected prior to mounting and any debris removed from inside of tire. Use brush or swab to lubricate both beads of the tire with RuGlyde or other approved rubber lubricant (Fig. 1-6). Before placing tire over wheel, also lubricate both rim flanges and bead ledges.

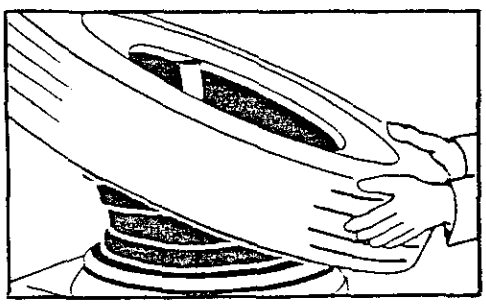


Fig. 1-7

Push bottom bead into rim well and hold it there with your hip or hand. Engage changer while holding tire in this position. Rotating finger will push bead over rim flange (Fig. 1-7). At this point, if tire is tube-type, the tube should be inserted into the tire. Tube should be partially inflated to a limp, round shape, valve inserted into valve hole, and tube stuffed into tire. DO NOT PERMIT TUBE TO BULGE OUT BEYOND BEADS.

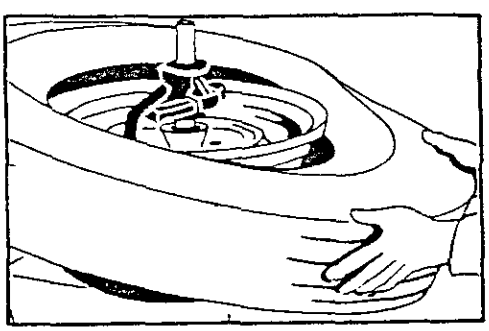


Fig. 1-8

Push top bead of tire into rim well by tilting tire (Fig. 1-8), and engage changer while holding tire in this position. Rotating finger will then push bead over rim flange.

Be sure hold-down device is securely locked in place. Insert valve core and clip-on extension hose with remote control valve and pressure gauge. Carefully center tire in horizontal position, stand back from tire, and inflate to seat beads (Fig.

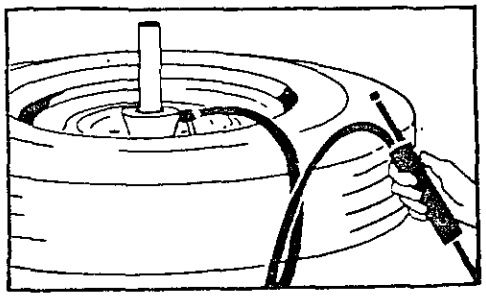


Fig. 1-9

UNDER NO CIRCUMSTANCES SHOULD 40 PSI BE EXCEEDED. If beads still do not seat at 40 PSI, tire should be completely deflated, beads relubricated, tire rotated 90° and recentered in horizontal position, and inflation procedure repeated.

If tire is mounted on a machine that does not have a positive lock-down device to hold the wheel, inflation should be done in a safety cage.

After seating beads, adjust inflation to auto manufacturer's recommended operating pressure and install valve cap.

2. Hand Tool Method

Demounting -

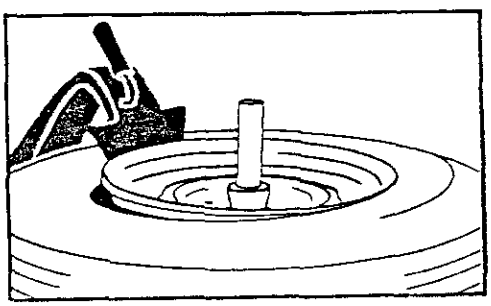


Fig. 1-10

Remove valve core and completely deflate tire. If tire beads cannot be unseated from rim by foot pressure, use any commercial-type bead unseating tool (Fig. 1-10). Do not use hammer or tire irons to loosen beads. Do not damage the beads. After beads are loosened, use brush or swab to lubricate with RuGlyde or other approved lubricant. NEVER use anti-freeze, silicone or petroleum-based lubricants.

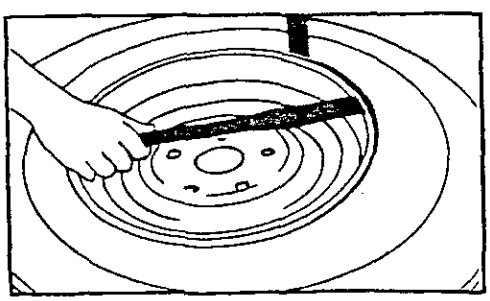


Fig. 1-11

Use clean, smooth tire irons. With narrow rim ledge up, force the top bead into the well 180° opposite the valve. Start removal of the top bead at the valve. Carefully insert one tire iron between the tire bead and rim flange and then pry bead wards over the flange with the second iron (Fig. 1-11). Taking small "bites" carefully work around the rim, prying the bead over the rim flange until bead is completely removed from rim. If tire is tube-type, the tube should now be removed.

Turn tire over and use two irons, one between rim flange and tire bead to pry rim upward and the other iron to pry outward between bead seat and tire bead. Start removal at valve to eliminate any possibility of bead catching on valve base (Fig. 1-12). A soft-faced hammer may be substituted for one tire iron in this operation.

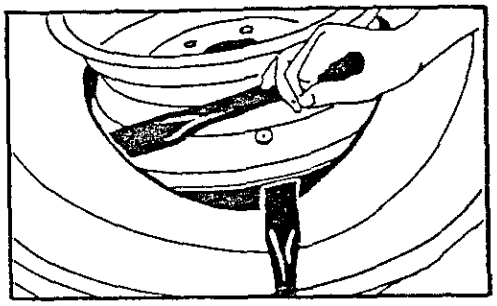


Fig. 1-12

B. Mounting - Prepare the tire and rim for mounting the same as in machine method above. (Figs. 1-5, 1-6).

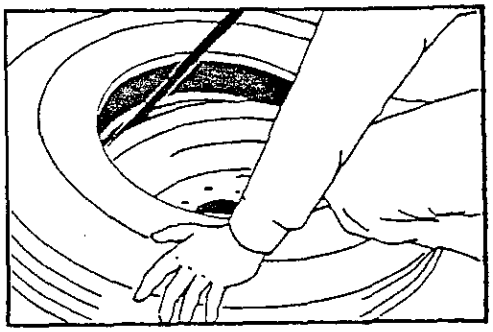


Fig. 1-13

Place rim on floor with narrow ledge up. Force bottom bead of tire into well and hold with knee. Taking small "bites" with the tire irons, carefully pry the bead over the rim flange until bottom bead is on the rim. (Fig. 1-13). At this point, if tire is tube-type, the tube should be inserted as described in Fig. 1-7.

Mount the top bead in the same manner as the bottom bead. Apply portion of bead nearest valve last. A soft-faced hammer may be substituted for one tire iron in this operation. (Fig. 1-14)

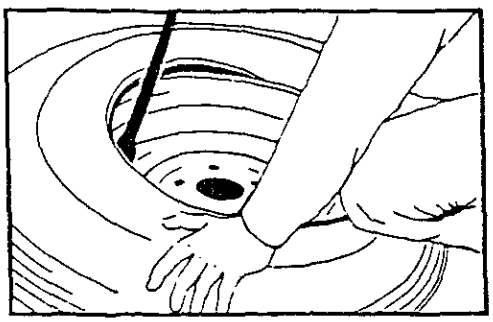


Fig. 1-14

Insert valve core and clip-on extension hose with remote control valve and pressure gauge. Place tire in safety cage or portable safety device, being careful to center tire in a horizontal position.

Stand back from tire, and inflate to seat beads. If beads do not seat at 30 PSI, slowly go to 40 PSI. UNDER NO CIRCUMSTANCES SHOULD 40 PSI BE EXCEEDED. If beads still do not seat at 40 PSI, tire should be completely deflated, beads relubricated, tire rotated 90° and recented in horizontal position, and inflation procedure repeated.

After seating beads, adjust inflation to auto manufacturer's recommended operating pressure and install valve cap.

TRUCK TIRES
TUBE-TYPE

There are so many different types of nulti-piece truck tire rim assemblies that it is impossible to cover all types in this manual. This manual contains only general examples, with particular emphasis on safety. For specific procedures for each type of rim, reference must be made to the rim manufacturer's instructions for the assembly of the various parts.

1. Demounting

IMPORTANT SAFETY PRECAUTION

Before removing tire and rim assembly from vehicle, the tire must be completely deflated. If dualed, both tires must be deflated before mounting bolts are loosened.

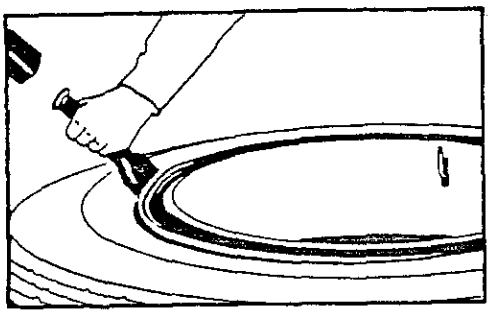


Fig. 2-1

Remove tire and rim assembly from truck and lay on floor with loose ring flange up. Drive wedges around tire between rim and top bead to unseat bead from rim flange. Continue this procedure until bead is free from side ring. (Fig. 2-1).

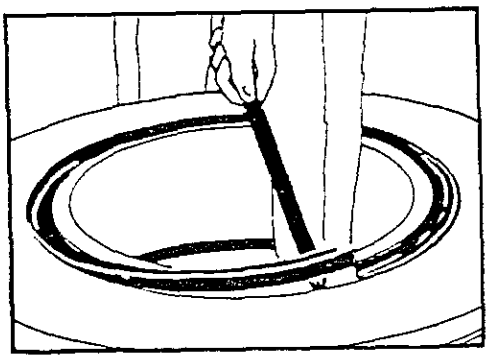


Fig. 2-2

Insert tapered end of tire iron into prying notch of lock ring near split in ring, and pry lock ring free from the gutter groove in which it lies (Fig. 2-2). Remove loose side flange.

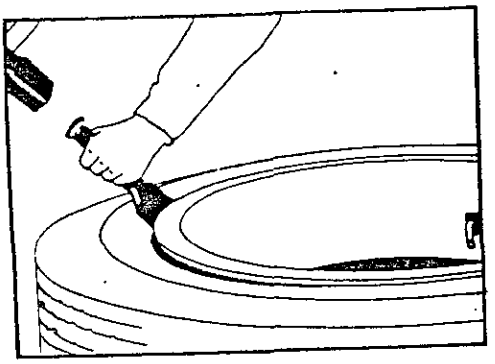


Fig. 2-3

Turn assembly over, lay face down on floor and unseat remaining bead from rim in same manner, using wedges. (Fig. 2-3)

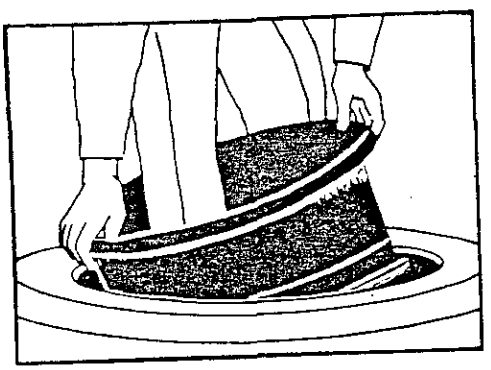


Fig. 2-4

Lift rim from tire (Fig. 2-4). Remove flap and tube.

2. Mounting

IMPORTANT SAFETY PRECAUTIONS
FOR ALL TYPES OF TRUCK RIMS

Use only MATCHED rim parts as specified by manufacturer's handbooks. NEVER MIX RIM PARTS of different manufacturers unless such mixing is approved by those manufacturers' handbooks. Tire, tube, flap and rim parts should be checked carefully for signs of abuse, repairs, scale, rust or corrosion. All parts MUST be in good condition. Discard all parts that are cracked, welded or damaged. Clean all metal parts thoroughly by wire-brushing. The inside of the casing must be free of debris, liquid and foreign material. Always use a new tube in a new tire.

GENERAL PROCEDURE FOR MULTI-PIECE RIMS*

*NOTE: Consult rim manufacturer's manuals for detailed instructions on assembly of specific multi-piece rim types.

Insert tube and flap into casing, positioning valve stem at red mark on tire. Partially inflate tube to a limp round shape. Apply RuGlyde or other approved rubber lubricant to both beads and the area of flap that lies between the beads.

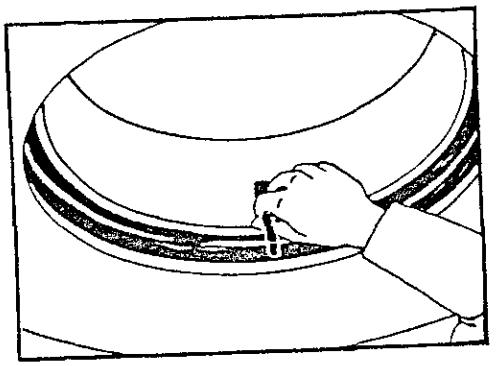


Fig. 2-5

Lay rim base flat on floor with valve slot up. Place tire on rim and insert valve through valve slot (Fig. 2-5).

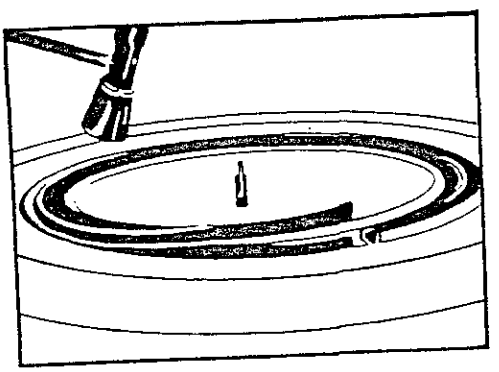


Fig. 2-6

Place loose side flange on rim base. Place leading end of lock ring into gutter groove of rim base. Using soft faced mallet, progressively "tap" lock ring into place (Fig. 2-6). CHECK RING TO INSURE THAT IT IS FULLY AND PROPERLY SEATED IN GROOVE.

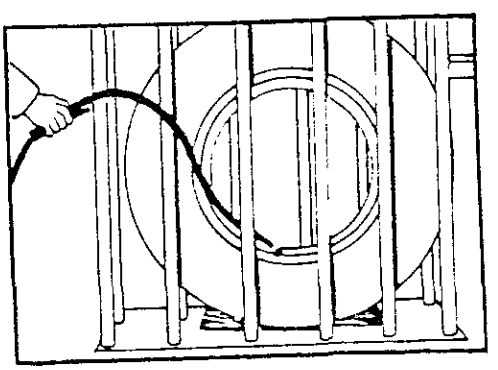


Fig. 2-7

Place assembly in safety cage and attach clip-on chuck with extension hose, remote control valve and pressure gauge. Inflate to 10 PSI. Check ring for proper seating by tapping it with a mallet (Fig. 2-7). Completely deflate tire, then reinflate to recommended PSI before removal from safety cage.

TRUCK TIRES
TUBELESS

1. Demounting and Mounting - 5° Drop Center Rims

For 5° drop center rims for light truck tires, follow the same procedure as described for passenger tires in Section 1.

CAUTION: Never use rubber snap-in valves if required operating pressure exceeds 50 PSI.

2. Demounting - 15° Drop Center Rims

IMPORTANT SAFETY PRECAUTION

Before removing tire and rim assembly from vehicle, the tire must be completely deflated. If dualed, both tires must be deflated before the mounting bolts are loosened.

Remove tire and rim assembly from truck and unseat beads using a bead unseating tool.

After beads are loosened, use brush or swab to lubricate beads with RuGlyde or other approved lubricant. NEVER use anti-freeze, silicone or petroleum-based lubricants.

Place rim flat on floor, wide side down, and force the top bead into the well 180° opposite the valve. Start removal of the top bead at the valve. Carefully insert one tire iron between the bead and rim flange and then pry bead upwards over the flange with the second iron. Taking small "bites," carefully work around the rim, prying the bead over the rim flange until completely removed from rim. (Fig. 2-8)

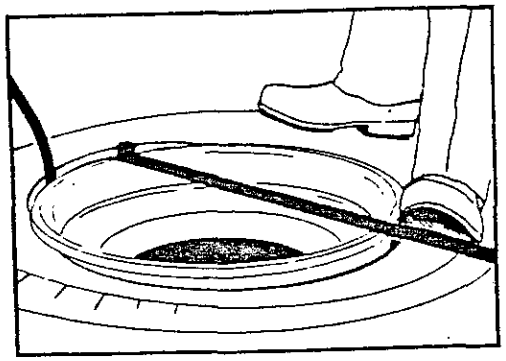


Fig. 2-8

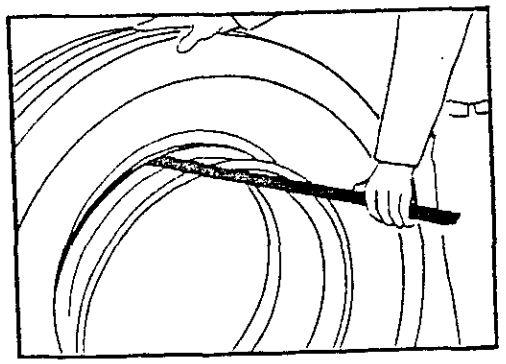


Fig. 2-9

Stand tire and rim in vertical position with valve on top. Insert tire tool over second flange between rim and bead. Lean tire toward you and rock bead over rim flange (Fig. 2-9). Tire is then completely demounted.

3. Mounting - 15° Drop Center Rims

Examine rim for visible problem areas such as dents, rust, welds, etc. If rim is rusty, it should be replaced. Inside of casing should also be inspected prior to mounting, to insure removal of dirt and debris and to prevent the mounting of injured tires.

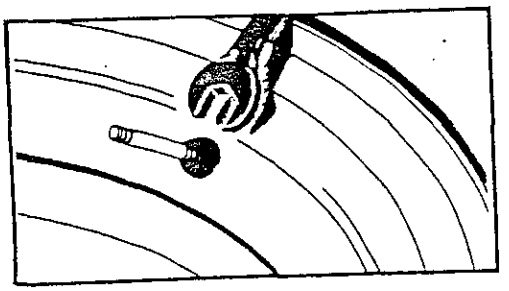


Fig. 2-10

Place valve stem with rubber washer through valve hole from rim well side (Fig. 2-10). Screw on valve nut from opposite side, and make sure bushing and metal collar or nut are centered and fit snugly into valve hole. Tighten nut with wrench.

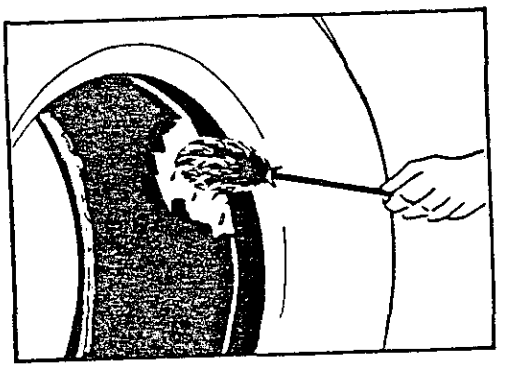


Fig. 2-11

Place rim on floor, wide side down, and lubricate both bead seats of rim and tire beads (Fig. 2-11).

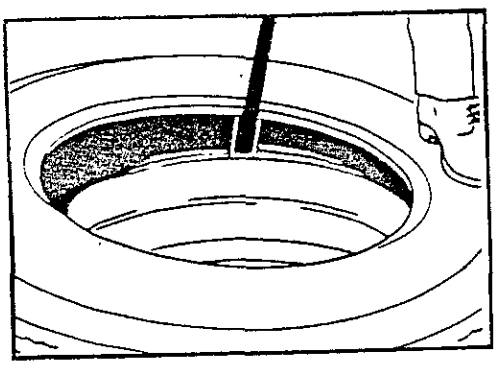


Fig. 2-12

Lay casing over rim, and push bottom bead over flange and into rim well (Fig. 2-12). Taking small "bites" with tire irons, carefully work circumference of bead into remainder of rim well.

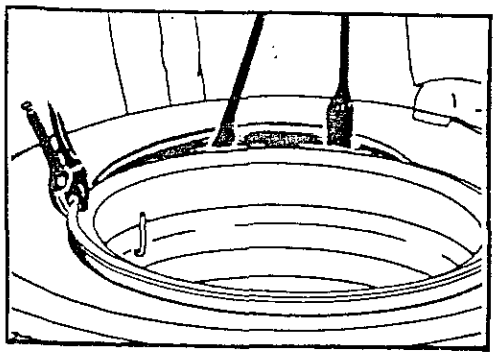


Fig. 2-13

Start top bead into rim well. Insert tire irons between bead and rim flange, and force bead into rim well by shifting one iron in small "bites" around perimeter of rim flange (Fig. 2-13).

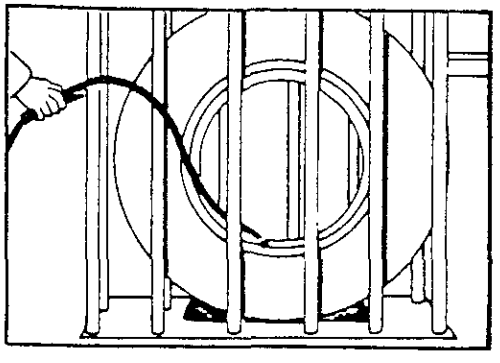


Fig. 2-14

Place tire and rim in safety cage. Attach clip-on chuck with extension hose, remote control valve and pressure gauge. Inflate tire to seat beads (Fig. 2-14). NEVER ALLOW PRESSURE TO EXCEED 40 PSI during bead seating operation. If beads do not seat, tire must be deflated, repositioned, relubricated and reinflated.

SMALL INDUSTRIAL TIRES
SPLIT-RIMS

A. Demounting - Remove tire from installation and deflate by removing valve core.

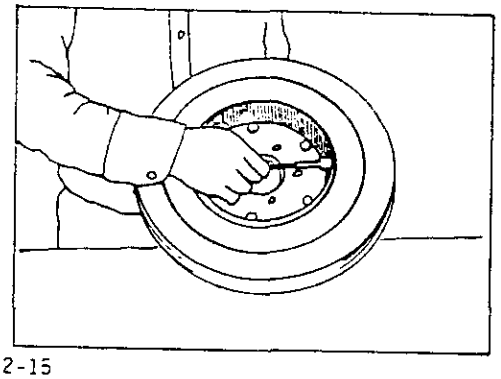


Fig. 2-15

Make sure all air is exhausted by probing valve stem with a wire, etc., to make sure it is not clogged by dirt (Fig. 2-15).

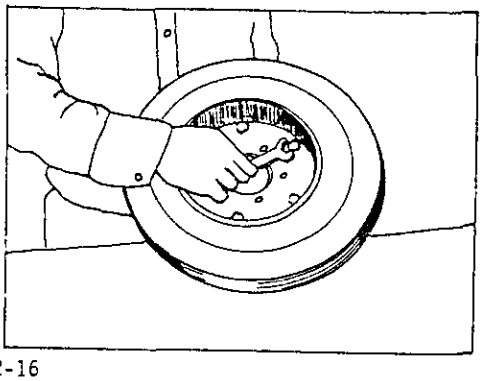


Fig. 2-16

Loosen and remove nuts and bolts securing wheel halves together (Fig. 2-16).

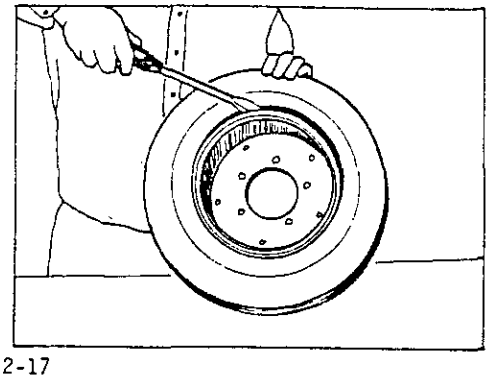


Fig. 2-17

Separate wheel halves, using care not to damage tire bead or tube (Fig. 2-17).

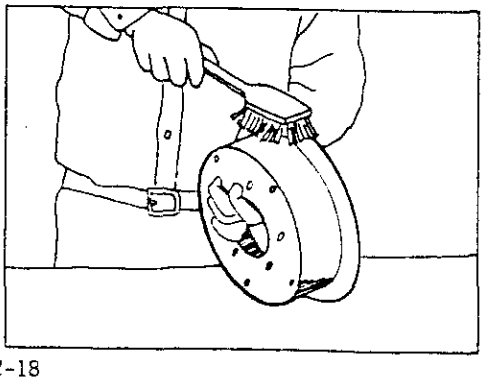


Fig. 2-18

Inspect all pieces and clean rim halves with a wire brush (Fig. 2-18).

Repair or replace tire or tube.

B. Mounting - Inspect inside of tire and remove any debris.

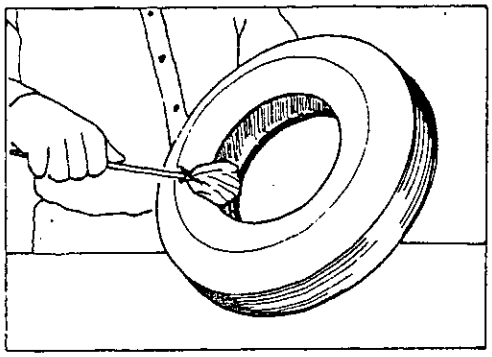


Fig. 2-19

Lubricate both beads of tire with "RUGLYDE" or other approved lubricant (Fig. 2-19). Install tire on rim half which has hole for valve stem. Insert tube into tire and align valve stem in hole in rim. Tube should be partially inflated to a limp, round shape to prevent being pinched between rim halves. Inspect bolts and nuts, disregarding any that are rusted, corroded or damaged, and discard any that are not at least a Grade 5 bolt. Install remaining rim half with bolts and nuts and torque per chart.

Inflate tire to recommended pressure and check valve stem for leaks.

CHANCE MANUFACTURING CO., INC.

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90-148A
90-148
57

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: ALL PRODUCTS

Ride: ALL PRODUCTS

Subject: REPLACEMENT AND TORQUE REQUIREMENT FOR FUNCTIONAL LOAD CARRYING CAP-SCREWS

SERVICE BULLETIN NUMBERS 57, 90-148, 90-148A, and 90-148B ARE SUPERSEDED BY THIS BULLETIN. THEY ARE NO LONGER IN EFFECT, AND ALL COPIES SHOULD BE DESTROYED.

ADDITIONALLY, THIS BULLETIN SUPERSEDES ALL INFORMATION PREVIOUSLY PUBLISHED BY CHANCE MANUFACTURING.

Capscrews used by CHANCE MANUFACTURING are classified as functional load carrying capscrews if:

-They are used as tension members in the erection or operation of a ride

and/or

-They are required to resist shear through friction-type connections in the erection or operation of a ride

Capscrews are selected with consideration to grade, size and quantity, using joint capacities based on tightness torques of 60% of rated yield and group joint efficiency of 62.5%.

Torque Requirements

Capscrews must be tightened to the torque values listed in the Torque Chart. These values were selected to produce a tightening torque range of 60% to 70% of proof load, when tightened with a hardened washer under the locknut or capscrew head (whichever is accessible for tightening). When the capscrew is tightened from the head end, apply anti-seize lubricant to

he shank of the capscrew. When the threads are lubricated, use 10% less torque to tighten the capscrew.

DO NOT TIGHTEN CAPSCREWS OVER THE RECOMMENDED TORQUE. This can damage the capscrew, due to variances in coefficients of friction and torque wrench accuracy.

Always use a torque wrench. It is impossible to accurately measure the tightness of a capscrew by other methods. Torque wrenches must be checked for accuracy twice each operating season.

Capscrew Grades

CHANCE MANUFACTURING uses only Grade 5 or better capscrews and Grade 8 locknuts, with A325 hardened washers for functional loads. The Grade Markings Chart shows the capscrew markings to be found on Chance rides. The manufacturers identification symbols must be present on all functional load carrying capscrews.

CHANCE MANUFACTURING recommends the use of cold-formed hex head capscrews with rolled threads. Hex bolts and hot-formed hex head capscrews are not recommended because they may have machined threads, and can have die seams along the shank.

NEVER REPLACE CAPSCREWS OR LOCKNUTS WITH PARTS OF A LESSER GRADE, OR OF DIFFERENT LENGTHS THAN THOSE SHOWN IN THE CHANCE PARTS CATALOG.

Replacement of Capscrews and Locknuts

When permanently installed capscrews and locknuts are disassembled for repair or adjustment, they must be replaced if they have been in service over five (5) years. Corrosion or other damage can require over-torquing for removal, and therefore make replacement necessary. If a torque wrench is not used to measure excessive removal torques, the capscrews and locknuts must be replaced.

Capscrews and locknuts which are frequently disassembled for portability must be replaced each operating season. If the capscrews and locknuts become damaged, corroded or require excessive torque for removal, they must be replaced. If a torque wrench is not used to measure excessive removal torques, the capscrews and locknuts must be replaced.