WISDOM INDUSTRIES, INC.

REQUIRED INSPECTION NOTICE

MFG: WISDOM COMPANY
NAME: SIZZLER
TYPE: NON-KIDDIE

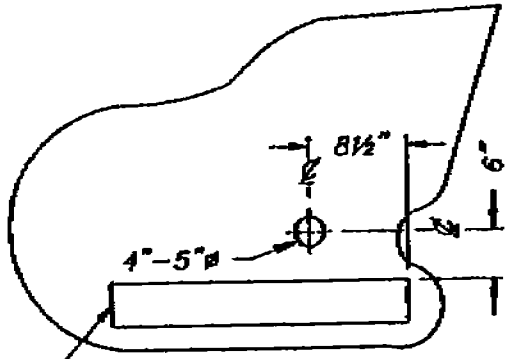
DATE: AUGUST 1994
RIDE: SIZZLER
SUBJECT: INSPECTION OF SEAT MOUNTING BOLTS

It has been determined by Wisdom Industries that the retaining bolts that fasten the internal car frame on the SIZZLER to the spindle sweep must be checked for tightness on a regular basis. If the fasteners become loose the seat can come loose resulting in possible serious injury to the passengers.

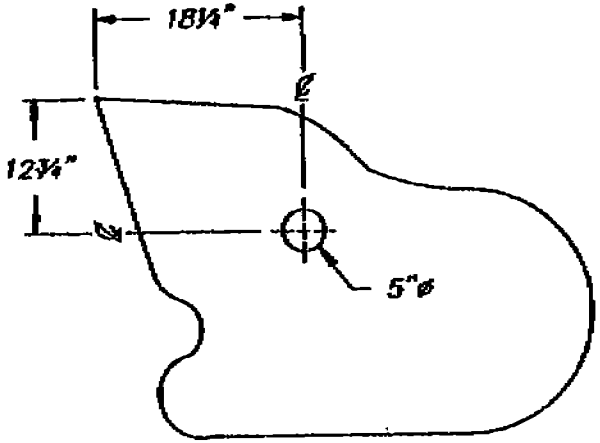
The owners of SIZZLER amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the enclosed page of this bulletin. Return certificate of compliance within 15 days of the receipt of this bulletin. Inspection must be performed within 1 week.

Immediately check seats for looseness by lifting the rear right side corner of the fiberglass body. If any looseness is noticed do not use that seat until the inspection is performed.

If there are any questions regarding the instructions on this inspection, contact Wisdom Industries.



LEFT SIDE OF SEAT



RIGHT SIDE OF SEAT

IF RIGHT SIDE INSPECTION HOLE IS DESIRED.

NOTE: 1 LEVEL TRAILER.
2 USE LEVEL FROM BACK CORNER OF SEAT TO MARK CENTER LOCATION.

WISDOM INDUSTRIES Merino, CO 80741		
SCALE: N.T.S	APPROVED BY:	DRAWN BY: MFK
DATE: 08-25-94		REVISED
DESCRIPTION: SEAT INSPECTION HOLE LOCATIONS		
EQUIPMENT: SIZZLER		DRAWING NUMBER: SEAT

AUG 25, 1994 - 16:00:18 < F:\SIZZ-DWG\SEAT >

WISDOM INDUSTRIES, Ltd.

August 25, 1994

SIZZLER SEAT INSPECTION COMPLIANCE NOTICE.

SIZZLER SERIAL NUMBER _____

DATE INSPECTED_____

OWNER COMPANY NAME_____
OWNER ADDRESS _____
_____
_____

NUMBER OF SEAT FRAME BOLTS LOOSE _____

NUMBER OF SEAT FRAME BOLTS BROKEN _____

NUMBER OF SEAT FRAME BOLTS MISSING _____

We no longer own this ride.

The Sizzler was sold to _____
address _____
_____
_____

INSPECTED BY (print name)_____

SIGNATURE_____

Return to Wisdom Industries
Box 5000
Sterling, CO 80751

P. O. Box 5000 — Sterling, Colorado 80751 — 303-522-7515 — Fax 303-522-2902

WISDOM INDUSTRIES, Ltd.

March 13, 1995

Carl Kimble, P.E.
Chief Inspector
Carnival & Amusement Rides
Illinois Department of Labor
One West Old State Capitol Plaza, Room 300
Springfield, IL 62701

Dear Mr. Kimble:

In answer to your questions on your letter dated March 9, 1995.

1. It is required that the SIZZLER cabbage head ears be mangnaflux inspected annually. Enclosed is the bulletin that pertains to that inspection.

2. Additional parts on the SIZZLER that require inspection are the bolts on the internal seat frames of each SIZZLER seat; a visual inspection of the seat sweep where it enters the fiberglass body for cracks; and a visual inspection on the welds of the main center pole shaft to trailer gusset weldment. An additional magnaflux test is required on the SIZZLER main center pole shaft if the rear end of the trailer had ever been dropped from the axle flipping out from underneath it.

3. The note has to do with a visual inspection of the cabbage head ears as you would any other part of the ride. There is no requirement at this time for an annual inspection of those ears. Enclosed is a notice clarifying the difference between the SIZZLER cabbage head single ears and the double ears.

If you have any questions, please feel free to give me a call.

Sincerely,

Victor Wisdom
Vice-President
Wisdom Industries

P. O. Box 5000 — Sterling, Colorado 80751 — 303-522-7515 — Fax 303-522-2902

WISDOM MANUFACTURING, INC

SIZZLER BULLETIN

DATE: JUNE1982
TO: ALL SIZZLER OWNERS
SUBJECT: SIZZLER MAIN CENTER POLE SHAFT-NDT

It has been determined that any time the rear of the trailer has been dropped by the axle flipping out from underneath it, there is a possibility that the main center pole shaft has been cracked. The ride must be removed from the main center pole shaft and the center pole shaft magnufluxed for cracks.

Step 1 Set up the ride.
Step 2 Turn off power to the ride.
Step 3 Remove the commutator brush and ring assembly.
Step 3 Remove the double nut center pole adjustment arrangement.
Step 4 Lift the ride with a crane from the center pole shaft.
Step 5 Magnaflux the center pole shaft at the base where the lower bearing support ring is located.
Step 6 Magnaflux the center pole gussets where they are welded into the trailer for cracks.

If the center pole is cracked, replacement of the entire pole is required.
If there are cracks found in the center pole gusset, they can be rewelded.

Step 7 It is recommended to inspect the lower main Sizzler bearing for wear, erosion or rust-pitting and replace if necessary prior to reassembly of the ride.
Step 8 Reassamble the ride.

For a more detailed instruction on how to disassemble the SIZZLER, contact Wisdom Manufacturing for instructions.

WISDOM MANUFACTURING, INC

SIZZLER BULLETIN

DATE: JUNE 3, 1985
TO: ALL SIZZLER OWNERS
SUBJECT: CABBAGE HEAD EARS

Due to reports of cracks in the cabbage head ears, it is required to annually Nondestructive Test the cabbage head ears for cracks.

INSPECTION OF THE EARS.

Step 1 Remove the cabbage head safety plates.

Step 2 Remove the paint in the area of the weld and contact areas for the magnaflux unit.

Step 3 Inspect the welds and ears for cracks.

Step 4 Repaint where the paint was stripped.

Step 5 Reinstall the cabbage head safety plates.

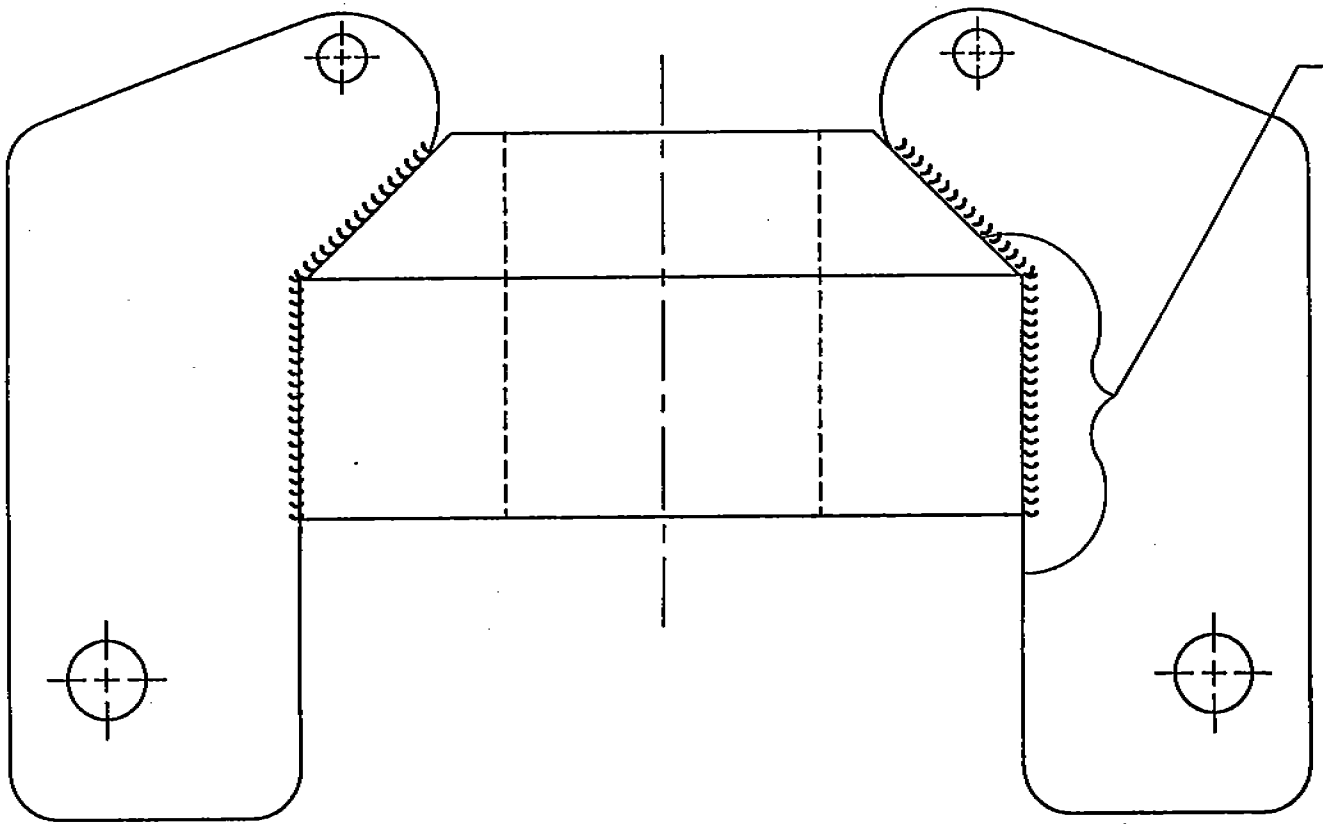
Any cracking that is discovered in the weld only can be grooved out and rewelded.

Any cracking in the ear requires replacement of the entire ear.

Perform this inspection on an annual basis.

Carrying passengers in a car with a cracked cabbage head ear is not allowed until the ear has been replaced or rewelded according to the above procedure.

Follow accepted procedures for operation of NDT Test equipment and for evaluating results. The above instructions are a guideline only. Consult you local qualified NDT Inspector for proper techniques in testing and reading results.



WISDOM INDUSTRIES Merino, CO 80741

SCALE: 3"=1'-0"	APPROVED BY:	DRAWN BY: JLC
DATE: 3-3-94		REVISED

DESCRIPTION

CABBAGE HEAD EAR & CABBAGE HEAD

EQUIPMENT:	DRAWING NUMBER
SIZZLER	01 100

MAR 04, 1994 - 10:03:09 -< F:\SIZZ-DWG\0110001 >

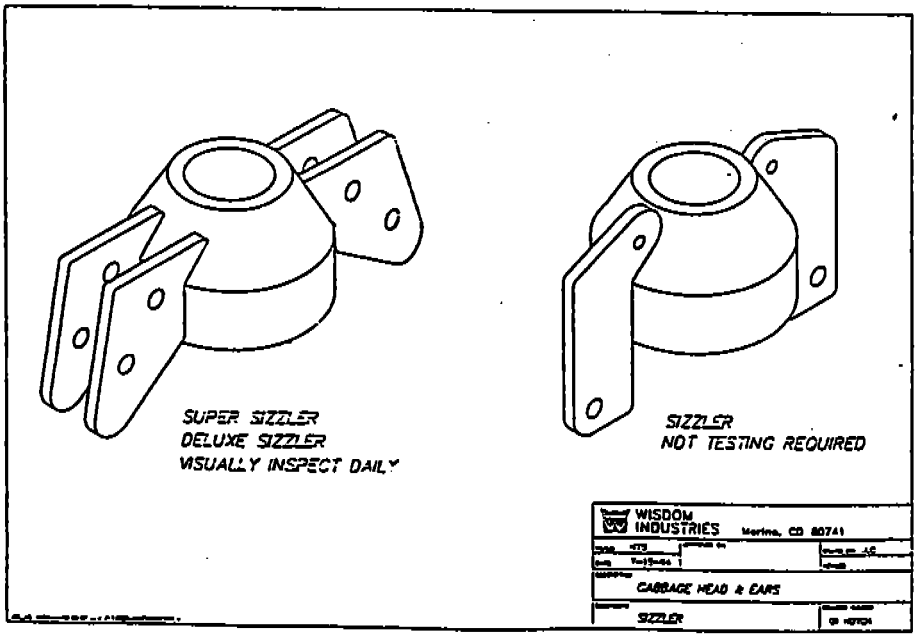
WISDOM INDUSTRIES, INC.

NOTICE

DATE: JULY 1994
RIDE: SIZZLER
SUBJECT: CABBAGE HEAD EARS

Magnaflux, ultrasonic or dye penetrant Non-Destructive Testing is required on the Cabbage Head Ears on the SIZZLER. The DELUXE SIZZLER or the SUPER SIZZLER requires a daily visual inspection for cracks of these ears prior to operation.

Refer to the drawing to identify the SIZZLER Cabbage Head style requiring magnaflux, dye penetrant, or ultrasonic testing outlined in the bulletin dated June 3, 1985.



WISDOM INDUSTRIES, INC.

REQUIRED INSPECTION NOTICE

DATE: AUGUST 1994
RIDE: SIZZLER
SUBJECT: INSPECTION OF SEAT MOUNTING BOLTS

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The owners of SIZZLER amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the enclosed page of this bulletin. Return certificate of compliance within 15 days of the receipt of this bulletin. Inspection must be performed within 1 week.

Immediately check seats for looseness by lifting the rear right side corner of the fiberglass body. If any looseness is noticed do not use that seat until the inspection is performed.

If there are any questions regarding the instructions on this inspection, contact Wisdom Industries.

THE INSPECTION OF THE SIZZLER RIGHT SIDE SEAT INTERNAL FRAME MOUNTING BOLTS.

SIZZLERS WITH THE PLASTIC "S" PANEL OR THE FIBERGLASS COVERS OVER THE SEAT UNLOCKING SOLENOIDS.

1. Remove the "S" panel or the fiberglass cover on the right side of the car.
2. Reach down into the seat and check to see that the two mounting bolts in the frame are tight. If the bolts are loose, broken, or missing remove them and reinstall using Loctite to secure the bolts.
3. If you are unable to reach the bolts through the hole, follow the steps; "FOR SIZZLER THAT DO NOT HAVE "S" PANELS."

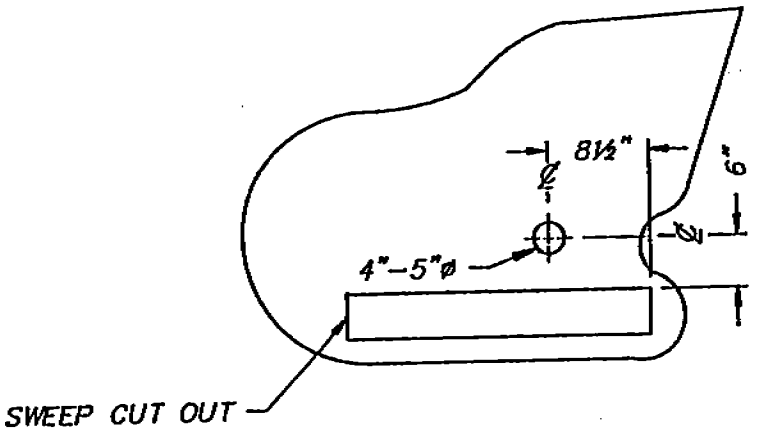
FOR SIZZLERS THAT DO NOT HAVE "S" PANELS

1. Remove the two bolts holding the seat lock brass to the side of the car.
2. Slide out the quarter side panel and check the two internal frame mounting bolts for tightness. Replace if they are loose or broken and use Loctite.

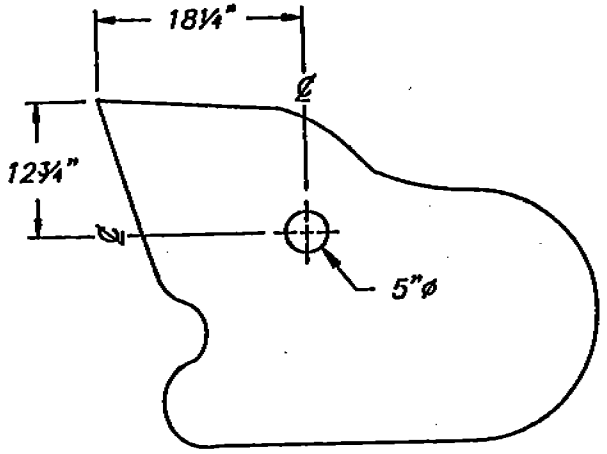
FOR INSPECTION OF THE LEFT SIDE SEAT IRON

1. Remove seat liner **OR** cut a hole in the left side of the car body using a hole saw. Review the enclosed drawing for the location of the hole. Using a minimum of a 3" hole saw up to 5" diameter.
3. Locate the hole, drill the hole through the fiberglass and inspect the two mounting bolts. If you would like a cover for this hole. Contact us and we will provide inspection covers for these holes.
4. Check the bolts for looseness, missing bolts or sheared bolts and replace with grade 5-7/16" fine thread bolts and Loctite if needed.

Please notify Wisdom Industries following this inspection and notify us to the status of the bolts on your ride. Following this inspection, please return the enclosed compliance sheet. If you have any questions, please contact Wisdom Industries.



LEFT SIDE OF SEAT



RIGHT SIDE OF SEAT

IF RIGHT SIDE INSPECTION HOLE IS DESIRED.

NOTE: 1 LEVEL TRAILER.
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WISDOM INDUSTRIES Merino, CO 80741		
SCALE: N.T.S	APPROVED BY:	DRAWN BY: MFK
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EQUIPMENT: SIZZLER		DRAWING NUMBER: SEAT

AUG 25, 1994 – 16:00:18 < F:\SIZZ–DWG\SEAT >

M E M O R A N D U M

DATE: April 15, 1996

TO: All Inspectors and Supervisors

FROM: Ron Safford

SUBJ: **DELUXE SIZZLER CRITERIA AND INSPECTION PROCEDURE FOR MANDATORY OVERSIZING SWEEP PIN**

<><><><><><><><><><><><><><><><><><><><>

Enclosed is one copy of a memo from Wisdom on the above. After the repair, the clearance must exceed 4 inches.

RS/sm
Attachments

FACSIMILE COVER SHEET

FROM: WISDOM INDUSTRIES, LTD.

P.O. Box 5000
Sterling, CO 80751
Telephone: 970-522-7515 *800-634-8097*
Fax #: 970-522-2902

RECEIVED
APR 09 1996
BUREAU OF
FAIR RIDES INSPECTION

904/586-2102

TO: State of Florida Attn: Mr. Safford

Fax #: 904 488-9023

RE: Deluxe Sizzler - Hildebrand Shows

Number of pages sent including this page is 2

If you did not receive all pages clearly, please call Victor Wisdom

Date Sent: 4-9-96

REMARKS:

Wisdom Industries, Ltd. has 79 years of amusement industry and 26 years of ride manufacturing experience, we have focused this acquired knowledge toward producing attractions that will maximize action, excitement, capacity and profits.

A sampling of our rides include:

Roller Coasters - Miner Mike, Dragon Wagon and Flying Dragon
Cars - Cruisin and Badlands Express 4 x 4 (also Motorcycles)
Obstacle Course - Raiders or Super Raiders
Roundabout Ride - Jolly Choo Choo, Umbrella Top Road Race
Train - Golden Spike
Carousel - the Family Favorite
Thrill - Starship 2000, Gravitron, Super Sizzle, Arctic Circle and Gee Wizz!!

Dependable, durable and profitable, Wisdom rides are just what you need for a successful entertainment formula.

WISDOM INDUSTRIES, Ltd.

904/586-2102

April 9, 1996

BUREAU OF FAIRS AND EXPOSITIONS
State of Florida
Department of Agriculture
3125 Conner Blvd.
Tallahassee, Fl 32399

Fax 904-488-9023

RECEIVED
APR 09 1996
BUREAU OF
FAIR RIDES INSPECTION

RE: DELUXE SIZZLER:
CRITERIA AND INSPECTION PROCEDURE FOR
MANDATORY OVERSIZING SWEEP PINS.

Turn the spindle so that two cars are perpendicular to the main sweep.

Place two passengers in ONE of the cars that are perpendicular to the sweep. One passenger can stand on the nose of the foot tub.

Turn the main center so that the foot tub of the car with the passengers in it is over the gooseneck of the trailer.

Measure the distance from the bottom of the foot tub to the top of the gooseneck of the trailer.

If this measurement is less than 4 inches, the holes must be reamed and fitted for oversize pins.

If this dimension is over 4 inches the DELUXE SIZZLER is acceptable to operate.

NOTE: If the dimension is close to 4 inches but over, realize it may only be a short time before the holes must be oversized.

Check for each seat on that spindle to find the lowest seat.

WISDOM INDUSTRIES, Ltd.

September 08, 1997

James Murphy
BLUE GRASS SHOWS

RE: Sizzler Seat Iron Bolts.

Dear Mr. Murphy:

The 4 main 7/16 inch seat iron bolts (2 each iron) should be torqued to 30 foot pounds. The nuts that are under the seat sweep frame can be tack welded to the seat sweep frame to facilitate tightening the bolts and checking the torque in the future.

Access to the nuts would be by removing the seat liner from inside the car. There is no need to remove the foot tub to perform this procedure.

The nuts would have to be removed to remove the seat body from the frame in the future.

The 2 center ½ inch bolts have their nuts already tacked when assembled here. The torque for the ½ inch bolts is 40 foot pounds.

If you have any questions about this procedure please contact me at 800-634-6097.

Sincerely,

Victor Wisdom V.P.

Victor Wisdom
Vice President
Wisdom Industries, Ltd.

P. O. Box 5000 — Sterling, Colorado 80751 — 970-522-7515 — Fax 970-522-2902

SIZZLER

WMI Industries, Ltd.
P.O. Box 5000
Sterling, CO 80751
303-522-7515

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Hydraulic Pump Specifications
Ross Motor Exploded Diagram
Char-Lynn Motor Exploded Diagram

THE SIZZLER

INTRODUCTION

This "Operation Manual" has been written for the benefit of the ride operator and owner. WMI Industries, Ltd. advises all ride operators and owners to read this book before operation.

INTENDED USE

The equipment herein described is intended to be used by a commercial operator to provide a service to the buyer's customers. As a commercial operator, the buyer agrees to operate and maintain the equipment for its intended use in a professional and competent manner as per WMI recommendations and instructions, industry and governmental standards, and good commercial practices, using professional and competent mechanics and operators. If at any time, and for any reason the equipment cannot be adequately and safely operated for its intended use, the buyer agrees not to operate the equipment until proper repairs or corrections are made.

The SIZZLER is designed to be a teen-age adult thrill ride. It is not recommended that small children, 11 or younger ride by themselves. They must be accompanied by a responsible adult.

SPECIFICATIONS

CAPACITY	24 Large adults or 36 small adults. (600 per hour)
ROTATION	11 RPM of main center pole.
SET UP AREA	50' circle minimum
LIGHTS	48 6' Florescent tubes Two quartz lights 230 bulbs
MOTOR POWER	15 HP
ELECTRICAL	20 KW

SAFETY CHECKS FOR SIZZLER

A. On the small outside spindles, where the seat sweeps cross, check the channels for cracks. If found call the factory for instructions to repair.

B. Check the donut around the small spindle shaft for cracks where the ears are welded to the donut. This ear has two seat sweep pipes bolted to it. If cracked, call for instructions.

C. Check the top sweeps of the ride for cracks near the center pole. These cracks are made once in a while by the way the top sweeps are folded for travel. If they are in a bind when folded, and are forced into place by tightening the turnbuckles, they can crack. When the ride is opened and the sweeps pinned into place they are safe in operation, but the cracks should be repaired as soon as possible.

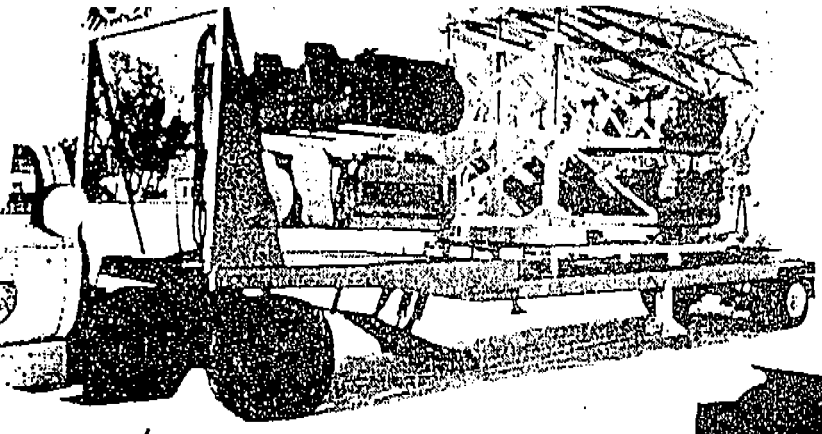
D. There should be a turnbuckle between the moveable seat sweeps, running from the bottom bolt to the other bottom bolt on both sides of the spindle. If you do not have these turnbuckles, order them now. They will take any side slop out of the moveable seat sweeps.

E. The bottom sweeps that pin into the main center pole should be checked for wear. This wear can be noticed by a thumping sound as the ride rotates. If found the holes should be reamed to 1 5/16 and repinned.

SIZZLER

OPERATOR'S INSTRUCTIONS

1. Turn on power to the hydraulic pump.
2. Be sure all the seat bars are open so the customer can enter the ride easily.
3. Collect all tickets as the customers enter on one side of the trailer.
4. If necessary, help customers into seats and be sure the HEAVY, or LARGE PERSON IS TO THE RIGHT SIDE OR THE OUTSIDE OF THE SEAT. Due to the centrifugal force of the ride the passenger is pushed to the outside of the seat. It is much more comfortable for them if the largest person is on the outside of the seat.
5. Check all safety bars to see that they are locked properly.
6. Be sure the seat lock switch is in the OFF position. This seat lock turns off automatically by a timer after 20 seconds, but, turn it off manually before the ride starts up.
7. Be sure the area around the ride is clear of passengers and assistants, or any item that may be hit by the seats as the ride rotates.
8. Push the button, or pull the handle to start the ride.
9. As the ride gets up to speed, WATCH THE PASSENGERS. If any of them try to stand up, change positions with another passenger or start crying, STOP the ride immediately and take them off the ride.
10. The start switch and start handle are both designed to be held by the operator at all times during the ride. When the operator takes his finger off of the button or lets go of the handle the ride will stop. DO NOT BYPASS OR IN OTHER WAYS DEFEAT THIS MECHANISM. IT IS FOR YOUR SAFETY AS WELL AS YOUR PASSENGERS.
11. After the ride has stopped, turn on the seat lock switch. This will unlock the seats and allow the customer to push the handle bar down and exit from the seat. HELP ANY PASSENGER THAT SEEMS TO BE HAVING TROUBLE.
12. Turn off the seat lock switch.
13. Start loading your next load of passengers.



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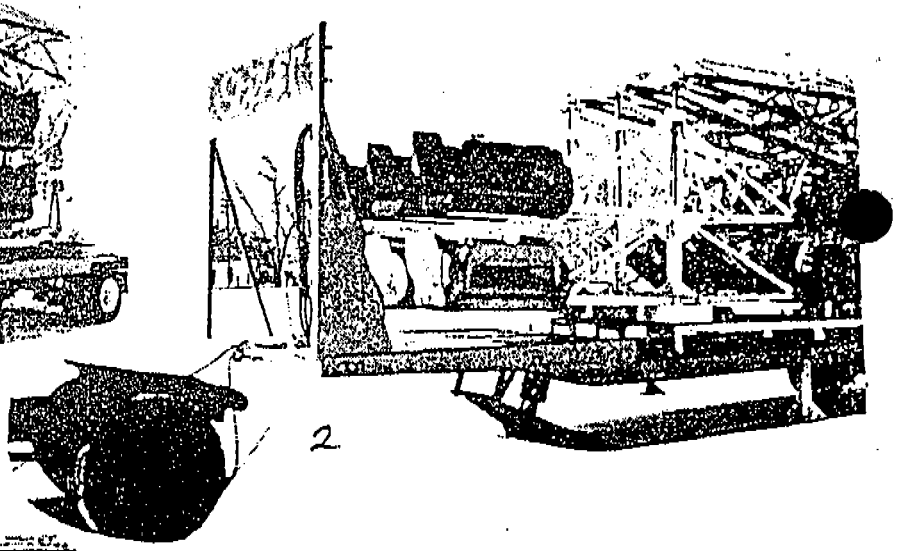

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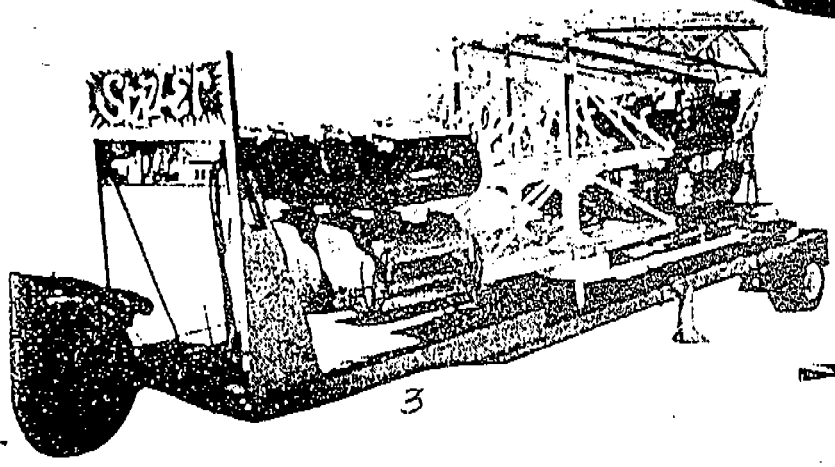

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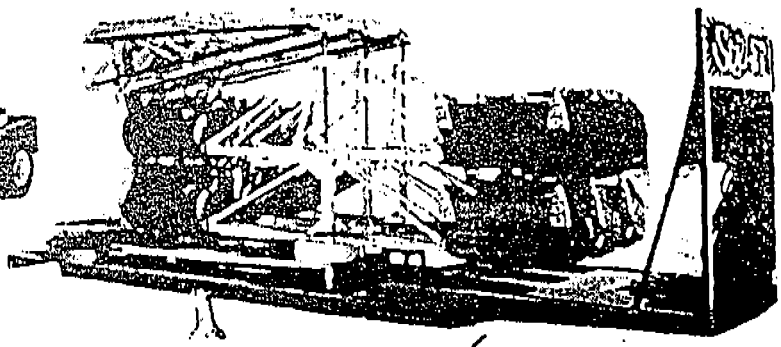

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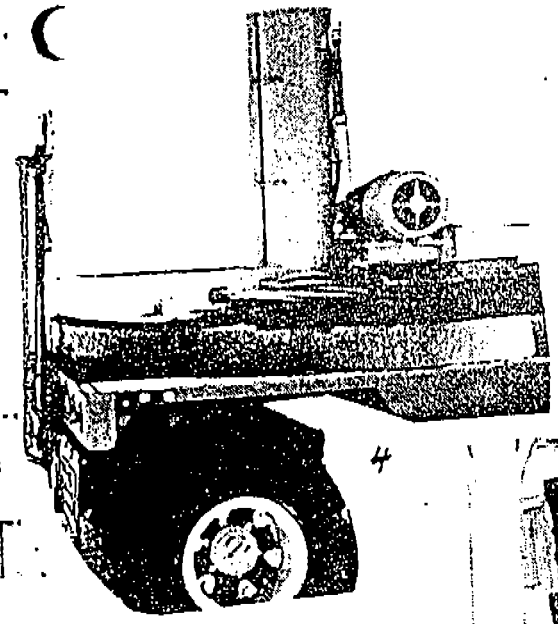

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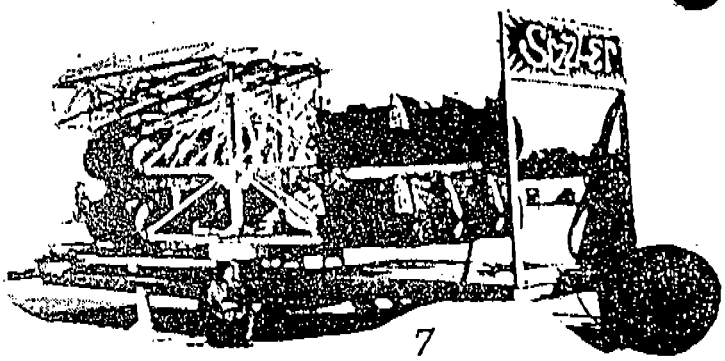

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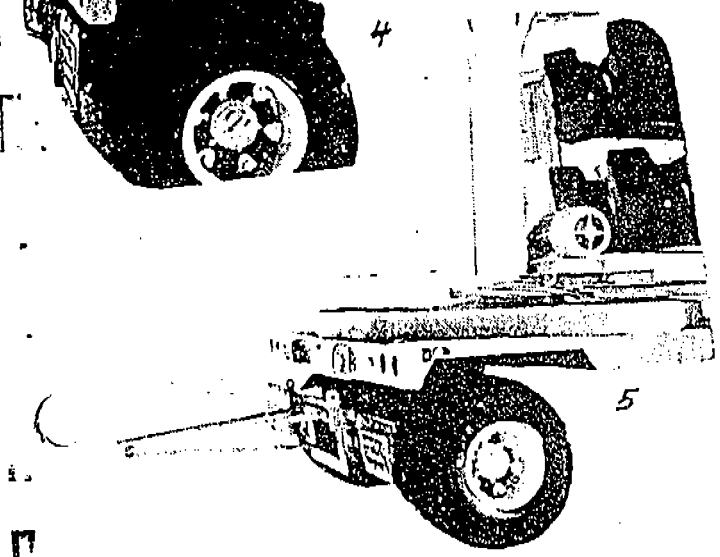

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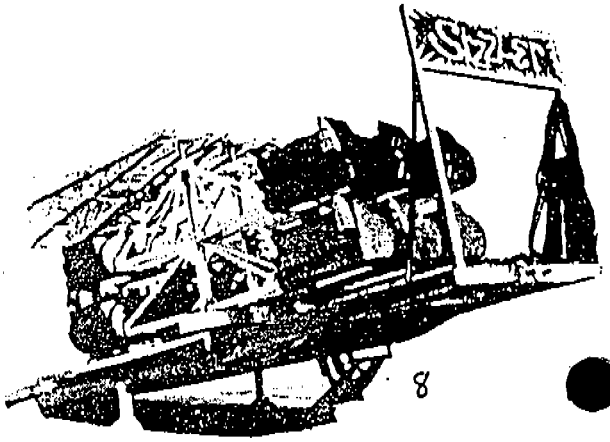

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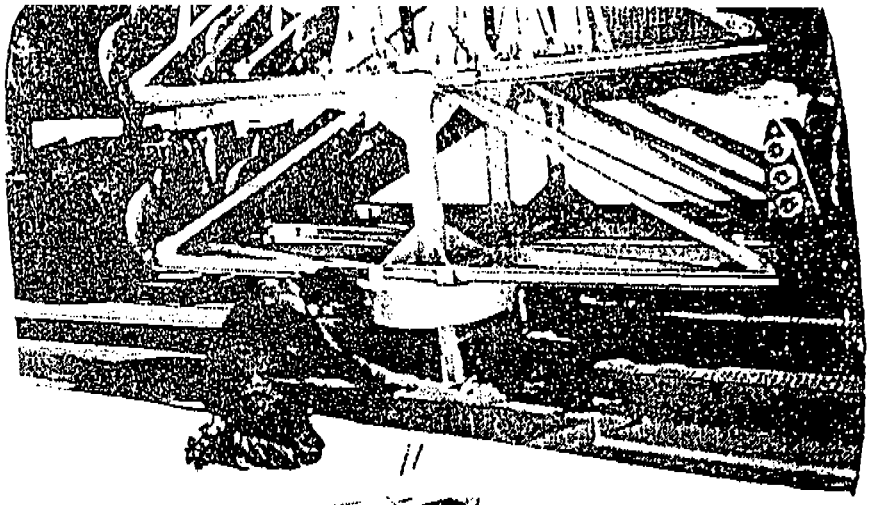

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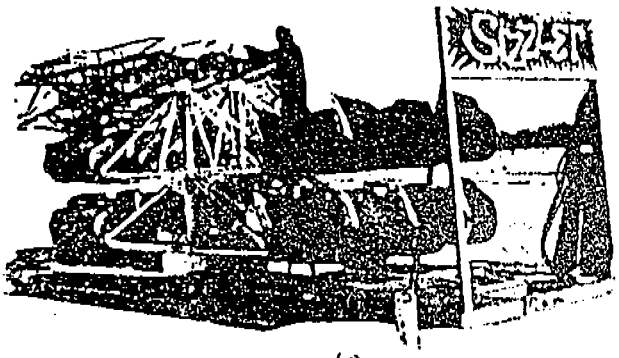

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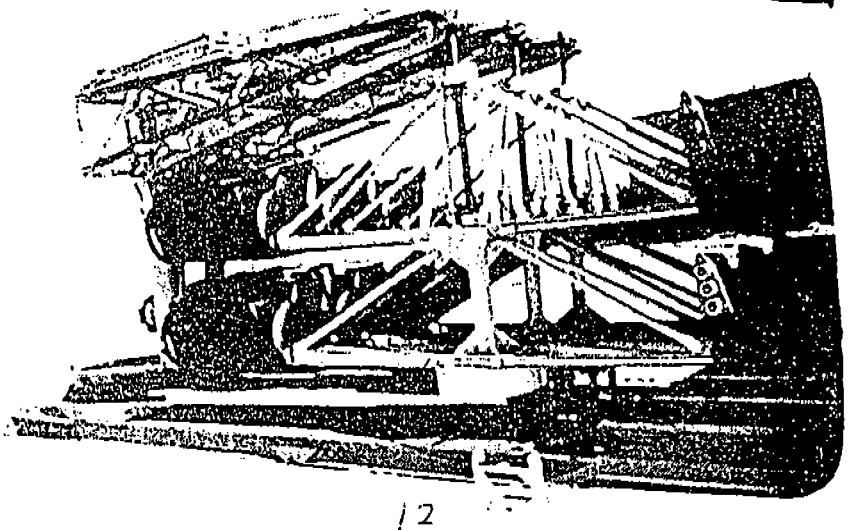

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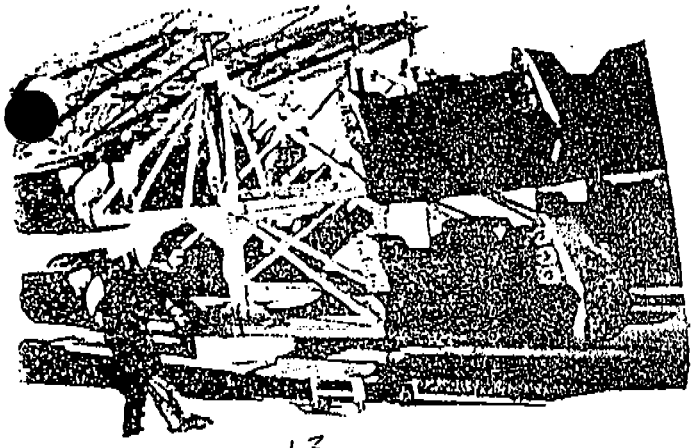

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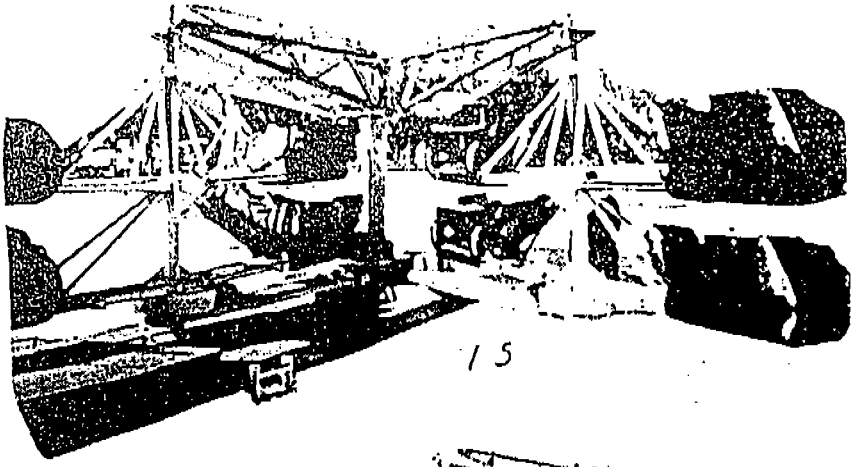

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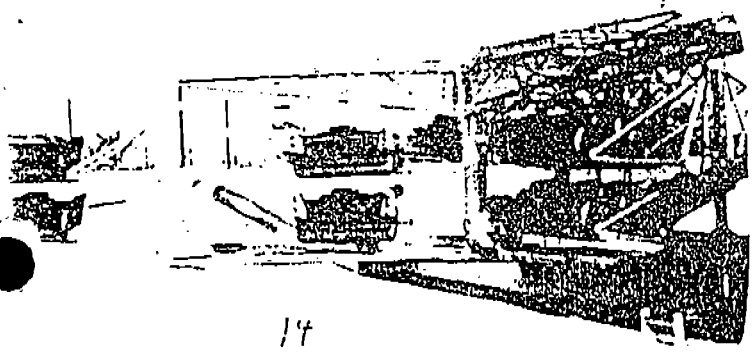

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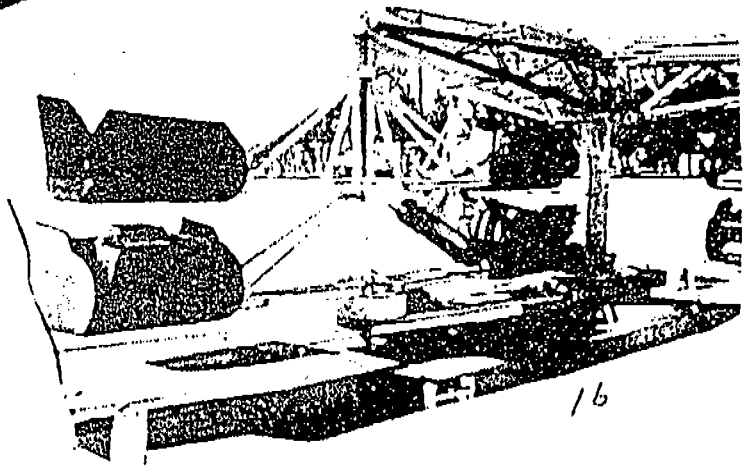

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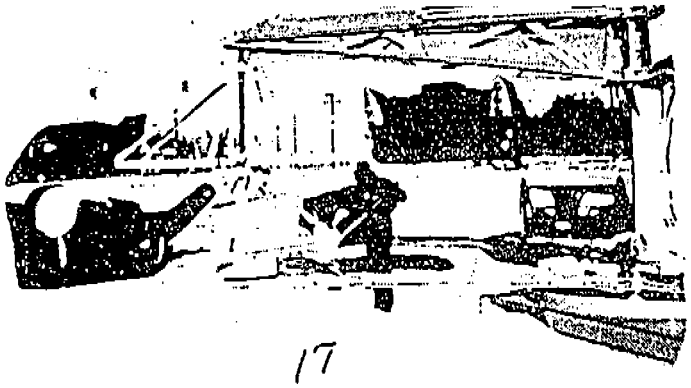

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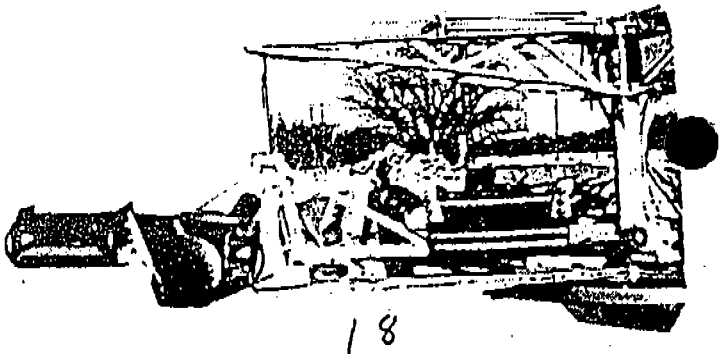

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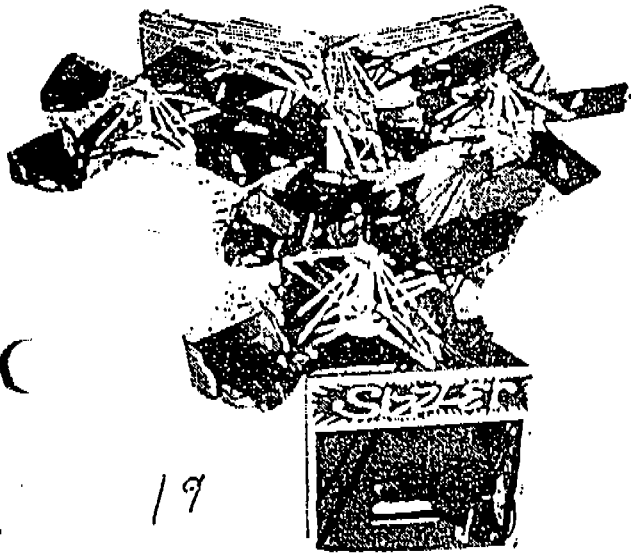

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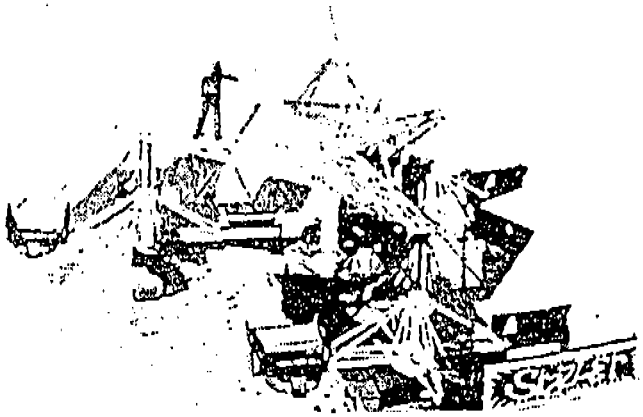

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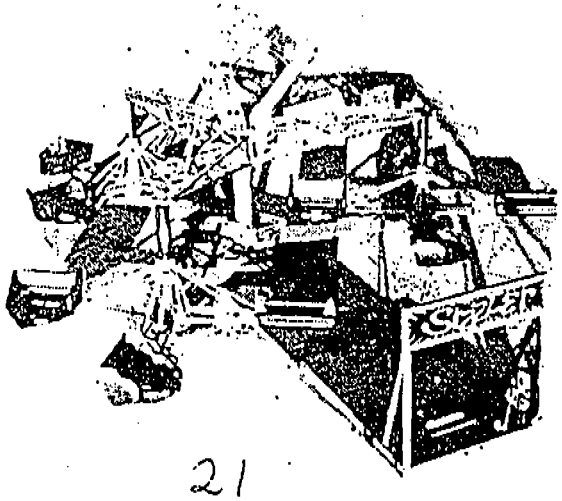

21

SETTING UP THE SIZZLER

Step 1 -- Pull trailer on location and place pivot legs in proper position on the trailer. They pin about the center of the trailer as in the picture. Hook up the 12 volt lines from the trailer to the battery on the tractor. Start the twelve volt pump and lower the hydraulic hoist to the ground.

Step 2 -- After the jack has reached the ground and lifted some weight off of the tractor, disconnect the air hoses, light plug and pull fifth pin connection. Drive tractor out from under the trailer just far enough for the back of the tractor to clear the nose of the trailer.

Step 3 -- Leave the 12 volt lines connected to the tractor and turn on the 12 volt pump and lower the nose of the trailer to the ground.

Step 4 -- Move to the back of the trailer and pull the pin holding the tongue of the trailer into position and lower it so it can be used to pull the axle from under the trailer.

Step 5 -- Disconnect the boomer under the front of the axle. Knock out the two pins on the back of the trailer and reach up underneath and disconnect the two air lines. Be sure all the air has been bled out of the air tank. Pull the axle out from under the trailer and about thirty feet away from the ride.

Step 6 -- At this time the trailer will be balanced on the center pivot legs and the nose.

Step 7 -- Raise the trailer nose.

Step 8 -- Continue raising the nose of the trailer until the pivot legs are off of the ground. Raise it no higher. Take the pins out of the two pivot legs and move them clear of the trailer.

Step 9 -- Lower the trailer to the ground, blocking as necessary to make it stable.

Ref. No.	Part No.	Description	No. Req.	Price Per Part
1	38080	Electric motor MHN 4001 12V (std.)	1	$ 83.50
	38086	Electric motor MHP 4003 24V	1	117.15
		— includes the following:		
2	37625	⅜ - 24 hex nut	1	.10
3	37781	⅜ lock washer	1	.03
4	37738	⅛ - 20 x 6½ hex head cap screw	2	.80
5	37737	¼ star washer	4	.03
6	37795	¼ lock washer	2	.03
7	32318	Motor to base bearing	1	5.60
	38079	Electric motor MHN 4002 12V	1	108.70
		— includes the following:		
2	37625	⅜ - 24 hex nut	1	.10
2A	37625	⅜ - 24 hex nut	1	.10
3	37781	⅜ lock washer.	2	.03
4	37738	¼ - 20 x 6½ hex head cap screw	2	.80
5	37737	¼ star washer	4	.03
6	37795	¼ lock washer	2	.03
7	32318	Motor to base bearing	1	5.60
	38082	Electric motor MFX-4003 12V	1	135.60
		— includes the following:		
2	37638	⅜ - 16 hex nut	1	.15
3	37783	⅜ lock washer	1	.03
4	37743	¼ - 20 x 7½ hex head cap screw	2	1.10
5	37737	¼ star washer	4	.03
6	37795	¼ lock washer	2	.03
7	32318	Motor to base bearing	1	5.60
8	32412	Pump and base assembly M-304 w/05 gears (std)	1	88.30
	32413	Pump and base assembly M-304 w/42 gears	1	88.30
	32414	Pump and base assembly M-304 w/51 gears	1	88.30
	32415	Pump and base assembly M-304 w/47 gears	1	96.75
	32416	Pump and base assembly M-310 w/05 gears (std)	1	88.30
	32417	Pump and base assembly M-310 w/42 gears	1	88.30
	32418	Pump and base assembly M-310 w/51 gears	1	88.30
	32419	Pump and base assembly M-310 w/47 gears	1	96.75
		— includes the following:		
9	32295	Drive shaft 05 gears (std)		9.90
	32280	Drive shaft 42 gears		9.10
	32298	Drive shaft 51 gears		9.10
	32293	Drive shaft 47 gears		10.65
11	32454	Base assembly M-304		41.25
	32455	Base assembly M-310		40.30
		— includes the following:		
12	30075	Ball check valve assembly (option on M-310)	1	1.05
		— includes the following:		
13	37660	⅛ - 13 x ⅜ thru broach screw	1	.60
14	30130	Spring (check valve)	1	.35
15	30126	Ball ⅜	1	.20
16	32330	Seal w/gasket	1	2.35
17	32250	Base M-304 and M-310	1	30.40
18	32317	Needle bearings	2	1.45
19	32222	Relief valve assembly	1	2.15
		— includes the following:		
21	30129	Cone	1	.85
22	32221	Spring (RV)	1	.35
23	37640	¼ - 16 special RV screw	1	.60
24	32350	⅛ NPT allen flush plug	1	.35
25	30120	O-ring ½ x ⅝ x ⅛	1	.40
26	30116	O-ring 2¼ x 2⅜ x ⅛	3	.95
27	32335	Wear plate	1	6.20
28	32351	Alignment pins	2	.35
29	32272	Cylinder plate 05 gears (std)	1	7.10
	32270	Cylinder plate 42 gears	1	7.10
	32279	Cylinder plate 51 gears	1	7.10
	32271	Cylinder plate 47 gears	1	12.70
31	32339	Keeper rings	4	.40
32	32306	Keys 05 gears (std)	2	.35
	32364	Keys 42 gears	2	.40
	32366	Keys 51 gears	2	.40
	32367	Keys 47 gears	2	.45
33	32371	Idler shaft 05 gears (std)	1	6.95
	32374	Idler shaft 42 gears	1	6.95
	32372	Idler shaft 51 gears	1	6.95
	32373	Idler shaft 47 gears	1	7.70
34	32303	Gears 05 (std)	Set	7.85
	32307	Gears 42	Set	7.85
	32314	Gears 51	Set	7.85
	32308	Gears 47	Set	10.25
35	31281	Thrust ball ⅜	1	.20
36	32317	Needle bearings	2	1.45
37	32340	Suction plate w/bearings	1	10.50
38	37745	⅛ - 20 x 2 socket head cap screws	8	.35
39	31209	Filler nipple ⅜ NPT (plastic)	1	1.35
40	31134	Filter screen (suction)	1	.95
41	32352	O-ring 4 x 4¼ x ⅛	1	1.20
42	37703	10-24 x ⅜ self tapping screws	6	.10
43	32350	¼ - NPT allen flush plug	1	.35
44	36661	Tank 4½ dia. x 8 (std) — 76 cu. in. usable	1	21.85
	36663	Tank 4½ dia. x 10 — 102 cu. in.	1	24.15
	36665	Tank 4½ dia. x 12 — 127 cu. in.	1	26.45
	36668	Tank 4½ dia. x 15 — 163 cu. in.	1	29.90
45	31143	Plastic vent plug	1	.95
46	31329	Plate to base adapter	1	1.70
47	32238	Base plate (MHN-MHP motor)	1	9.80
	31289	Base plate (MFX motor)	1	10.90
48	37795	¼ lock washer	2	.03
49	37763	¼ - 20 x 1¼ socket head cap screw	2	.30
51	31349	Connecting contact	1	1.20
52	37683	10 - 32 x ⅛ round head machine screw	2	.05
53	33336	Solenoid switch 12V 3 post (std)	1	8.40
	33340	Solenoid switch 12V 3 post waterproofed	1	9.90
	33335	Solenoid switch 12V 4 post	1	10.80
	33342	Solenoid switch 12V 4 post waterproofed	1	12.30
	33343	Solenoid switch 24V 3 post	1	10.75
	33344	Solenoid switch 24V 3 post waterproofed	1	12.25
54	31318	Pump valve adapter 2½		3.15
55	30874	4-way condenser valve w/handle No. 57 (std)	1	57.80
56	30893	4-way condenser valve w/No. 84 and No. 85	1	58.40
		— includes the following:		
57	30163	Handle	1	3.15
58	37754	10 - 24 x 1½ socket head cap screw	2	.30
59	37677	No. 10 lock washer	2	.03
60	37688	10 - 24 x 1¾ socket head cap screw	6	.30
61	30027	Pin	3	.30
62	37780	⅜ special washer	2	.10
63	30018	Torsion spring	1	.90
64	30016	Bushing	1	.20
65	30214	Manifold	1	16.80
66	30007	O-ring ¼ x ⅜ x ⅜	2	.25
67	30221	Valve shaft M-310	1	4.45
68	30028	Rotor	1	9.90
69	30002	O-ring 1⅜ x 1¾ x ⅜	2	.90
71	30026	Cylinder	1	8.65
72	30193	Back plate M-310	1	8.05
73	37671	Mica insulator	1	.35
74	33323	Contact - condensor assy.	1	4.50
75	37706	No. 10 star washer	1	.03
76	37774	10 - 24 x ¼ round head screw	1	.05
77	30188	Contact finger	1	1.05
78	37720	10 - 32 x ⅜ socket set screw	1	.15
79	37707	10 - 24 x ¾ plastic screw	2	.15
81	32354	O-ring 2⅜ x 2½ x ⅛	1	.95
82	30068	Contact cover M-310	1	4.30
83	37711	10 - 24 x 1⅛ truss head machine screw	2	.20
84	31327	Adapter (rod control applications)	1	1.45
85	30172	Handle assembly	1	4.15
		— includes the following:		
86	31157	Plastic ball	1	.85
87	31326	Valve rod	1	.95
88	30173	Handle base — torsion spring	1	2.75
89	31225	Brass elbow ⅛ NPT x ⅜ tube	1	1.05
90	31294	Return tube for 4½ dia. tank M-310 (std)	1	2.05
	31295	Return tube for 5 x 5 tank M-310	1	2.25
	31296	Return tube for 6¼ x 7 tank M-310	1	2.25
91	31303	Brass elbow w/return nipple M-310	1	2.90
92	36678	Tank 5 x 5 x 10 w/2¾ collar — 211 cu. in.	1	33.15
	36685	Tank 5 x 5 x 12 w/2¾ collar — 249 cu. in.	1	36.00
	36686	Tank 5 x 5 x 15 w/2¾ collar — 306 cu. in.	1	40.00
93	36634	Tank 6¼ x 7 x 7 — no tabs — 250 cu. in.	1	43.70
	36639	Tank 6¼ x 7 x 7 — 2 tabs — 250 cu. in.	1	43.70
	36640	Tank 6¼ x 7 x 12 — 4 tabs — 445 cu. in.	1	53.50
	36641	Tank 6¼ x 7 x 15 — 4 tabs — 562 cu. in.	1	59.50

IMPORTANT! — ALWAYS SPECIFY SERIAL NUMBER WHEN ORDERING REPAIR PARTS — IMPORTANT!

Note: M-304 units contain items 1 - 49; M-310 units contain items 1 - 90 except where noted.
For Motor Parts and Breakdown see form #2011

MONARCH ROAD MACHINERY COMPANY
1363 Michigan Street, N.E. • Grand Rapids, Michigan, U.S.A. • 49503
P.O. Box 1764 • Grand Rapids, Michigan, U.S.A. • 49501
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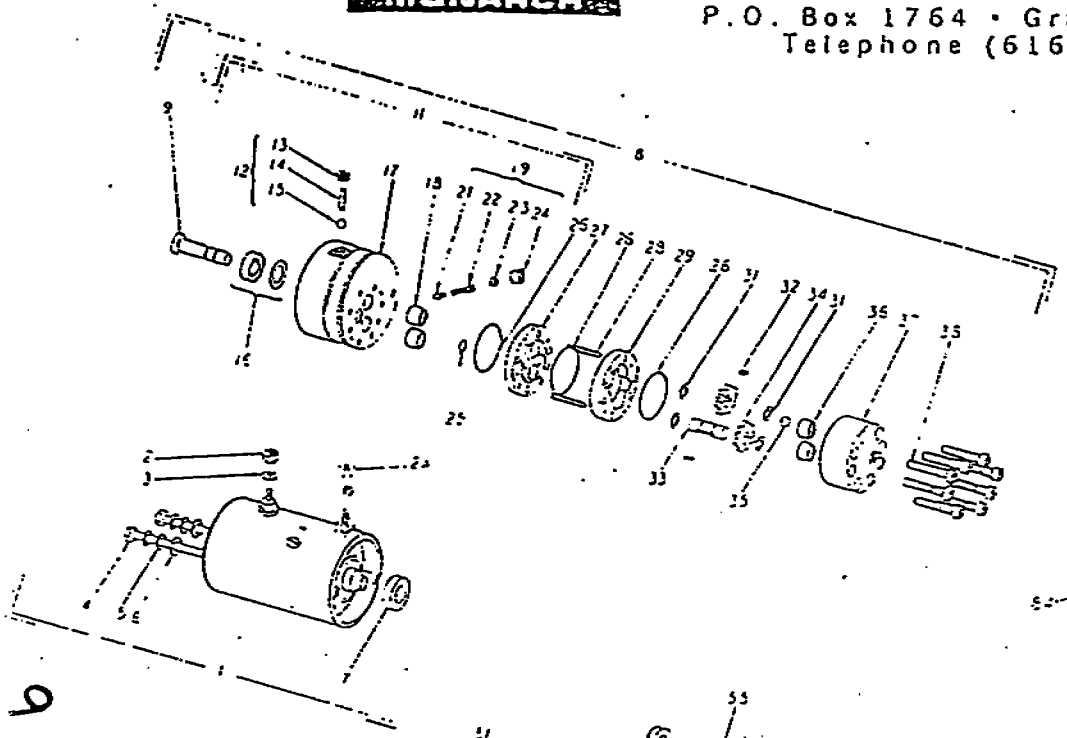

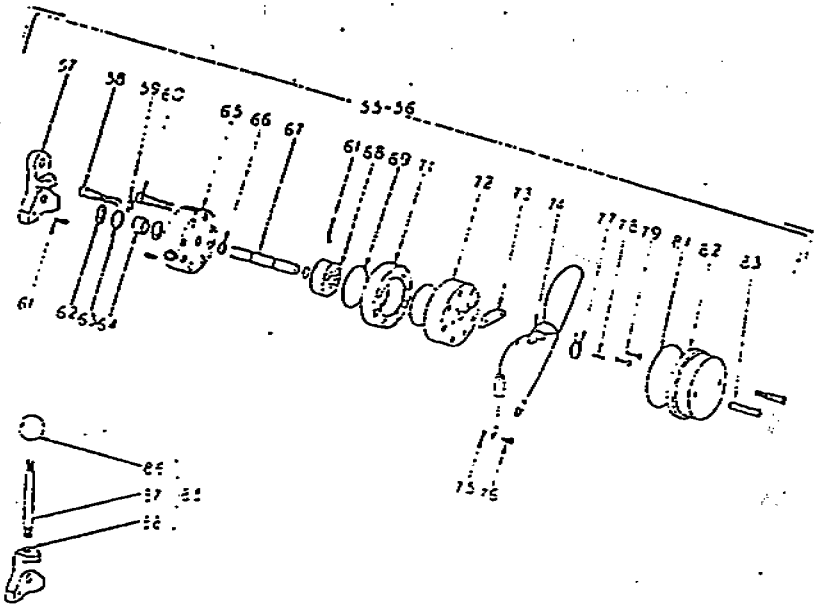

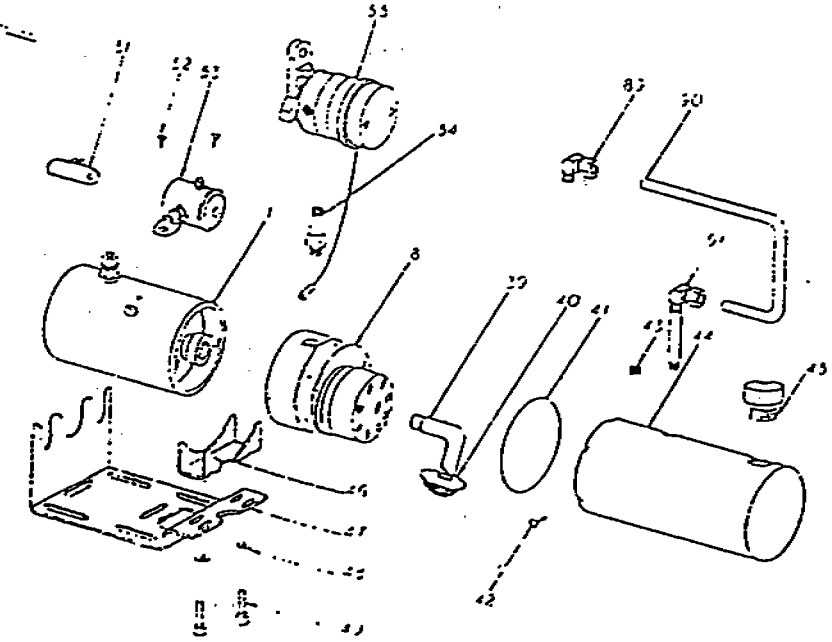

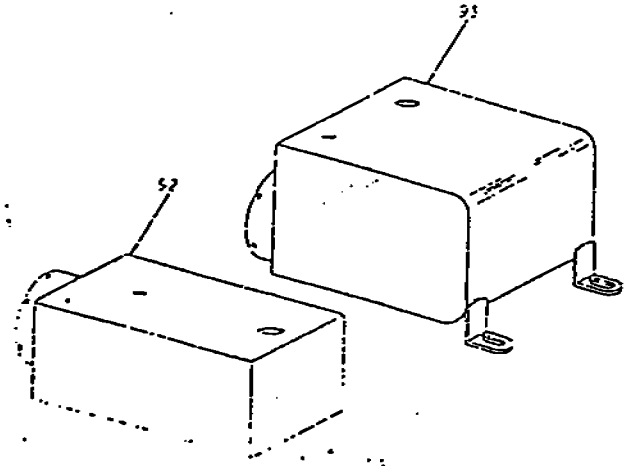

M-304 and M-310
Parts List

THE OPERATION OF THE SIZZLER

The Sizzler has been designed for portability, customer attractiveness, and ease of operation. We have attempted to design a piece of equipment that can be operated with a Carnival or in an Amusement Park. One major asset of the Sizzler is it's futuristic style seats, beautiful lighting and it's extreme portability. After setting up the Sizzler, a few things should be checked. First, that all the moveable sweeps are plugged in, and that the seat locks are operating properly on each tub. If the seat lock pin does not stick in approximately 1/4 inch into the brass seat iron, the pin should be removed and the alan set screw hole re-drilled to allow plenty of penetration into the seat iron slot.

Check with each seat lock pin to make sure that it moves in and out freely. If it should be gummed up, use WD-40 or a silicone lubricant to clean and lubricate the seat lock pin.

The Sizzler is equipped with a pneumatic time relay for the seat locks. This relay is set for 15 seconds on, generally this is time enough for everyone to push on their handlebar and get out of the seat. The reason for the relay is that an operator does not have to remember to shut off the seat locks, it will shut itself off. Only after the switch has been turned off and back on will the seat locks come back on. This prevents accidently leaving the seat locks on during the operation of the ride.

Each time the Sizzler is started with the load, the operator should hand check each handlebar, to make sure that the handlebar is locked securely. Also make sure that the larger person sits towards the outside of the seat. This is important as an adult can hurt a child while the ride is running, due to centrifugal force.

Next check that the hydraulic pump is rotating in the proper direction. Generally if the pump runs unusually quiet, it is rotating in the wrong direction. To reverse the electric motor, switch two (2) power legs to the motor and this will reverse the pump rotation.

Slowly rotate the ride to make sure that all objects clear all of the tubs and sweeps, especially the fence and the axle that has been removed from under the Sizzler trailer.

If during the operation of the Sizzler, one of the tubs strike an object such as the axle or the fence, check and make sure that sweep, where it fastens to the spindle, has not been damaged in any way. Occasionally after striking an object the sweep will not show immediate failure and should be checked periodically for fractures on the welding or structural members of that seat and sweep.

After setting up the ride, make sure that the alan screws are adjusted on the moveable sweeps to take out any slack that is apparent. This is very important, especially due to the fact that the structural integrity of the short sweeps can be affected by the constant banging back and forth of bearings which is used to raise and lower the moveable sweeps and can be damaged and need replacement. A modification is available for the older model Sizzlers, which consists of two turnbuckles on each sweep to remove this slack. This modification is available by contacting our shop. If turnbuckles are used, just snug is all the tightening it needs to hold the sweeps in place. These turnbuckles are an easy way to make sure that the ride has been properly set up.

SIZZLER WARNINGS

1. Each time the ride is operated, the operator should hand check each handlebar to make sure that the seat lock pin is fully engaged in the seat iron. If a seat lock pin is sticking, please clean and re-lubricate.

2. Never allow anyone to stand in the Sizzler seat while the ride is operating.

3. Never unlock the seats while the ride is turning.

4. Never allow anyone to stand on the ride while it is operating.

5. Never allow anyone to trade seat positions while the ride is operating.

6. The ride is equipped with a spring return push button for the rotation of the ride. The operator should not be allowed to jam this button down, or wire in a toggle switch or change anything that will allow the operator to leave the ride while it is running.

7. Always flip the seat lock switch to the OFF position before the ride is started.

8. Oil the hinge bolts on the nose of the Sizzler seats. This will prevent rust from building up and also after the ride has been moved from winter storage, will prevent the nose tub from being frozen into position and possibly causing the hinge bolt to be sheared off when the nose is forced down into the operating position.

9. Check each hinge bolt and nut weekly. If the nut is loose replace as soon as possible with a new lock nut.

10. Any tub in which the seat lock or hinge bolts are malfunctioning should be closed and not be used until that tub has been repaired.

11. On all older model Sizzlers, the axle is held on in front by two (2) clips for highway use. These clips should always be fastened going down the road, as the axle can flip out from underneath the trailer when the brakes are applied at highway speeds.

OPERATING AMUSEMENT DEVICES - OPERATOR INSTRUCTIONS

The following are the correct loading (balance) procedures for amusement devices:

1. Every amusement ride must always be operated with a balanced load of passengers at all times.

2. The balancing rule is to ensure an even load on the ride's structure and mechanical drive, which in turn will cause less wear and tear and ensure a safer, longer life of the structure with less down time for adjustments and repairs.

3. In practical terms, consider the difference in driving a motor vehicle with balanced wheels as against unbalanced wheels, which causes vibrations and eventually wear and tear. The majority of operators have experienced driving a car with unbalanced wheels and the consequent results. Amusement devices are mostly large wheels that react the same as an automotive wheel when out of balance.

4. Although the out of balance load on some devices cannot be felt by the passengers or operator, it is still essential for the ride to be balanced.

5. On an extremely fast moving ride, it is essential that the ride be accurately balanced at all times.

6. Although it may not be strictly essential to balance slower revolving rides, it is still most desirable to achieve a balanced load, in the interests of the passengers and the owner of the ride, for increased safety and less "wear and tear".

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OPERATOR RESPONSIBILITIES

1. **HANDICAPPED PERSONS** - Persons who are physically handicapped must not be allowed to ride violent or fast moving rides. If the management of the amusement area allow handicapped to ride certain slow rides, the operator must ensure that the handicapped person is under the full control of an adult person who will ride with them and provide supervision during the ride.

2. **PROHIBITED PASSENGERS** - Operators should not allow a passenger on the ride who cannot be properly secured due to his size or if there is a malfunction to the securing device. Similarly, they must refuse service to a pregnant woman, or a passenger who is visibly ill, or under the influence of alcohol or drugs.

3. **CLEARANCE PRECAUTION** - Before operating the ride, it is important to ensure that there are no personnel around the ride structure or any exposed electrical components or other areas where there could be a risk of injury.

4. **ON-DUTY ATTENTION** - Insist that each operator remain in full control of the operating controls during operation of the ride with complete attention to the ride and passengers. Under no circumstances should the operator leave his or her position while the ride is in operation.

   If it does become necessary for the operator to leave his post at the controls, he must turn the ride off completely to ensure it does not accidentally start and injure passengers or staff.

5. **INSPECTION/CHECK LIST** - Operators must inspect the ride and complete a General Check List before each day's operation.

6. **DAILY WARM-UP** - The operator must always run the ride through several cycles before the first passengers are loaded. This warm-up without passengers is necessary to make sure the ride is safe and there are no problems mechanically not detected previously.

7. **PRECAUTIONS BEFORE AND DURING THE RIDE** - Never start the ride unless the operator or assistant is facing the ride and is in a position to observe the whole area because:
   - Patrons have been known to jump fences.
   - Patrons have been known to try to change positions while the ride is running.
   - Patrons have been known to "skylark" causing their own safety and that of others to be put in jeopardy.
   - The operator's assistant may wish to make a lasts minute adjustment and be put in a dangerous position when the operator puts the ride in motion.

8. **SMOKING** - Smoking is not allowed in the Sizzler.

9. **LOOSE ITEMS** - The area inside the Sizzler seats must be clear of any items that can fly out of the ride when it gets up to speed.

10. **FOOD AND DRINK** - It is recommended that no food or drink be allowed onto the ride.

OPERATOR SELECTION AND INSTRUCTION

1. Select competent, mature operators, capable or 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 foreseeable misuses 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 Operation Manual for the ride he supervises.

3. Require each operator to inspect the ride he supervises, each day of the operation:

   a) Determine that no portion of the ride is damaged, omitted or worn in such a manner that it is unsafe or that it may develop into an unsafe condition.
   b) Report any irregularities to the superintendent or owner.
   c) Do not operate the ride if any irregularities are found until such condition has been corrected.

4. Instruct the operator to allow no passengers to ride who are visibly 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 to board a ride if he cannot be properly secured because of his size or because there is a malfunction of the securing device.

   STOP the ride immediately if any passenger is observed moving from their seat, turning upside down, 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.

7. Insist that each operator remain in full control of the operating controls during operation of the ride, and gives his full attention to the ride and it's passengers.

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

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

10. Advise the operator of owner/supervisor procedures for assisting ill or injured passengers.

11. 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.

SAFETY REQUIREMENTS

The key to safety is well trained and supervised employees. Make certain that all employees know how the ride operates. The employees should have a good attitude towards safety and common sense.

REMEMBER, SAFETY MUST ALWAYS COME BEFORE REVENUE.

Do not neglect the employee's safety. Before starting the ride, be certain there are no personnel inside the fences or on the ride structure. BE certain all electricity is turned off whenever an employee might come into contact with electrical connectors or components. Safety helmets should be worn by all personnel when erecting or disassembling a ride.

GENERAL SAFETY GUIDELINES

The following is a list of a few general 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.

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

2. Inspect the 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 manufacturer's recommended maintenance procedures at intervals and in the manner specified by the 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) All parts are present and installed
   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 condition.

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

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

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

12. Clean up each job and dispose of surplus materials.

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

14. Make modifications and additions as outlined in the manufacturer's Service and Safety Bulletins.

ELECTRIC MOTOR WILL NOT START.

The main areas to check when experiencing electric motor starting problems are:

1. Loss of 220 Volt three phase power.
2. Magnetic switch problems.
3. Bad coupling or frozen pump.
4. Commutator brushes worn or broken.
5. Broken or shorting wire.

The most frequent cause of a motor not starting is due to loss of three-phase power. The basic testing technique used to test for 220 Volt three-phase power is outlined on page 22 of the electrical section. The testing for loss of a power line should follow this sequence:

1. Test at top and bottom of fuses in the main fuse box. If a line is missing, replace the bad fuse or get 220 Volt power for the ride.
2. After pushing the motor start switch, check the output of the magnetic switch. Once it is determined that the problem is in the magnetic switch, usually all that is needed is to clean the contacts and replace them if necessary.
3. Check at the center-pole commutator rings. If a line is missing here and the brushes are in good shape, then a line has been cut. When moving down the road, blocking or fence feet can fall into the hole at the base of the center-pole and cut up a line. Splicing will correct the problem.
4. Check at the box mounted on the motor. If power is present and the pump is not frozen, then the motor is bad and must be replaced.

A few things that will make trouble-shooting easier are:

1. When the motor hums and the pump is not frozen one line is missing.
2. If there is no clicking sound when the magnetic switch is engaged, the switch is not getting power or is faulty.

ELECTRIC MOTOR RUNS AND THEN STOPS.

When an electric motor shuts off after 10 or 15 minutes of operation and can be started a few minutes later, then the overload protectors are kicking the magnetic switch off. If this happens when the ride is delivered and a 15 HP 220 Volt motor is installed, the problem is either the overload protectors are too small or the ride is not getting the full 220 Volts required for operation. Measure across any two lines while the ride is running. Some generators produce 208 Volts and cause the motor to work harder to produce the same amount of horsepower. If the voltage cannot be turned up, a low voltage motor can be installed at the factory upon request.

It is possible that too light of overload protectors were installed and kick out too easily. These should be replaced with the proper sized ones. Another indication of too small overload protectors is when the ride is started in the morning it stops several times but later runs fine. This indicates one of two possibilities, either the overload protectors are too small and as the hydraulic oil warms up it requires less power to run the pump or that the hydraulic oil is too heavy for the climate that the ride is being used in.

Care should be taken before deciding to install larger overload protectors. The operation of a motor with too large of protectors can cause the motor to burn up if the problem is not enough power or too heavy of hydraulic oil.

PROCEDURE FOR 220 VOLT THREE-PHASE POWER CHECK.

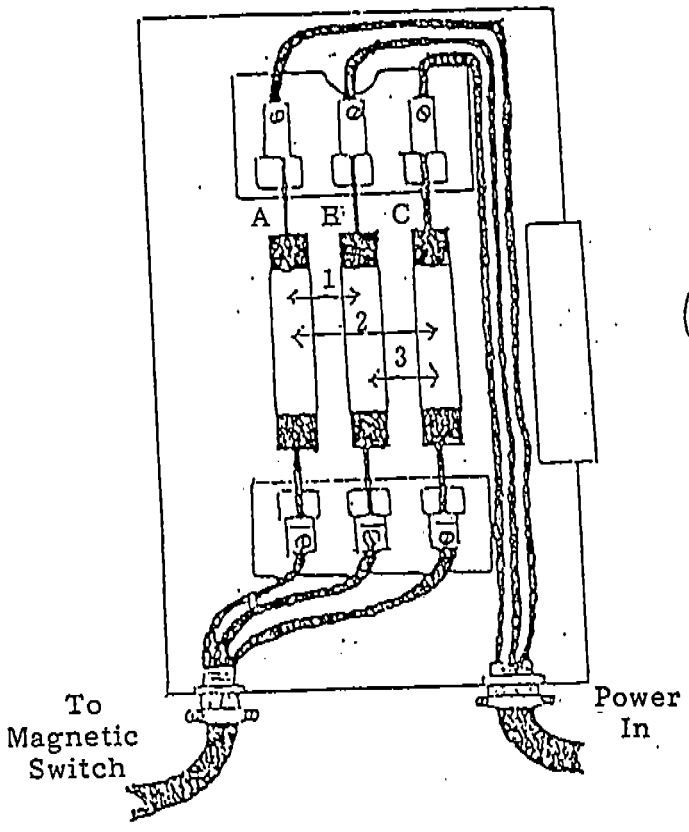
1. Check for 220 Volts between lines A-B.
2. Repeat step 1 for lines A-C.
3. Repeat step 1 for lines B-C.

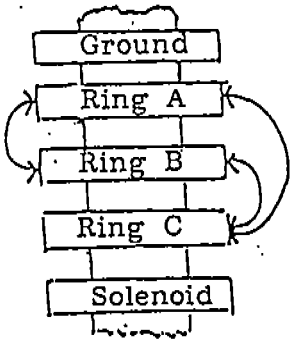
A reading of 110 Volts indicated that one of the two lines being measured is missing. The determination of which line is missing is done by completing all three steps of the power check. The common line between the two 110 Volt readings is the missing line.

For example:

A-B 220 Volt	A-B 220 Volt
A-C 110 Volt	A-C 220 Volt
B-C 110 Volt	B-C 110 Volt
Line "C" is missing.	Line "B" is missing.

Power at the center pole commutator ring is checked in the same manner.





If the circuit-breaker does not turn off, the problem is in the seat wiring or commutator ring. A bad transformer will not cause a circuit-breaker to turn off. Usually the wiring has been cut. Disconnect all the seats until the bad wire is found to be good and if the problem still persists, the seat light commutator ring is shorting to the spindle shaft. This only happens when the top brush is used for the seat lights. Re-wire the top brush and ring for equipment ground and the bottom brush and ring for seat lights.

SEAT LIGHTS DO NOT WORK OR ONE SIDE DOES NOT WORK.

FIRST, check that the bulbs are not burnt out. Replace a suspect bulb with a known good one. After a particularly rough move an entire set of bulbs can be broken.

If one side is not working normally, the vibration during a move can cause the ground wire to loosen up. In one of the light bases mounted on the tail fin, a rivet holds a grounding wire to the back side of the light base. Soldering the rivet to the base will correct the problem. After these checks reveal that the problem is elsewhere, a check of the transformer is required. Remove the three bolts holding the brass seat lock plate in place and slide out the seat liner side panel. This will expose the transformer. If the transformer is bad, usually the paper core will be discolored and scorches. Check the input to the transformer for 110 Volts. Then check the output for 12 Volts. When the transformer is known to be good, check the lines to the lights. A tug on the ground wire and power line will check the connection on the tail-fin. To re-connect the wire tot he tail-fin remove the three pop rivets holding the fin on and hook up the wire.

SEAT LOCKS DO NOT WORK.

When a seat lock fails to work, check to see if the lock hums when engaged. If it does not hum and all the other locks work properly, a wire has been broken off the solenoid. Remove the seat liner side panel and re-connect the wire. If the lock hums but does not extend, remove the panel and check for free movement of the lock plunger. When free movement is achieved and the side panel is replaced, screw out the plunger wih an alan wrench, while the seat lock is on until the plunger is even with the edge of the brass striker plate.

If none of the seat locks work, the problem is in the push pull switch or in the wiring. To check the wiring, consult the wiring diagram furnished with the ride. Disconnect the wire on the output side of the pneumatic time delay relay (left terminal) and touch to power. If the locks work, the push pull switch should next be jumped across its two terminals. If the locks work, the push pull switch is bad. If no result, the pneumatic time delay relay is bad and needs to be replaced. For operation until a replacement can be installed, put a jumper across the two connections on the relay. CAUTION!! If the seat locks are left on for extended periods during loading and unloading, damage can result to the solenoids due to over heating.

HOUSE PUMP WILL NOT START.

First, check the connections to the 12 Volt battery. The ground to the truck frame must be good. If the pump still will not run, short across the switch terminals. If the motor starts, replace the switch. When this does not s tart the motor, consult the "Operators Notebook" furnished at the back of this manual, for the troubleshooting procedure for the 12 Volt motor.

HOIST WILL NOT LIFT THE TRAILER.

One of three things can cause the problem.

1. Low on oil.
2. Pressure-relief valve out of adjustment.
3. Pump going out.

First, measure the oil level with a stick or tape. The oil should not be lower than two inches below the top of the tank.

If the hoist will raise the ride part way but can not quite make it high enough, the pressure relief needs to be adjusted. The procedure for adjustment is on page 27. If the valve has to be adjusted several times, the pump is going out and the "Operators Manual" should be consulted for rebuilding procedure of the pump section.

When working on the hoist, have the tractor hooked up in case a pressure line is cut or disconnected and causes the nose of the trailer to fall. Restrictors have been placed in the bottom of the hoist cylinders to keep the nose from falling too fast in case this should happen. Do not lower the nose of the trailer without the hoist pump on. This will cause the cylinders to draw in air and effect the later operation of the hoist.

RIDE WILL NOT RUN.

First make sure all circiut-breakers are on. Check rotation of the pump. Most of the factory installed pumps turn counter-clockwise, looking from the shaft end. To reverse the electric motor rotation switch any two power lines.

Measure the oil level in the tank. The oil level should not be lower than two to three inches from the top of the tank. Check for oil turned on.

Remove the large hydraulic system cover-plate. With the pump off, check for operation of the electric solenoid valve. A dull clicking sound should be heard each time the valve is energized. If not, check for power at the bottom center-pole ring, when the start-push button is pressed. If power is not found, check for a faulty push button or bad wiring. If this is operating properly, check the wiring from the center-pole ring to the solenoid. One side of the valve is not used and the electric valve activators can be switched if one is burnt out. Occasionally the brush will not make contact on the

commutator ring due to wear of the brush and the brush pressure arm being too tight. The typical result is sporadic operation of the ride. Usually a tap on the brush pressure arm will correct the problem.

RIDE MAKES A HIGH PITCHED SQUEAL WHEN RUNNING.

Two things can cause the squeal: air being drawn into the system, or a restriction after the pump. When air is being drawn into the system, it is usually caused by too low of an oil level in the tank. Measure the oil level. If foam is found in the oil, this would indicate that the level is too low. A restriction is caused by some part of the hydraulic system breaking loose and lodging in a line. This is very rare. If a pump should disintegrate, clean and inspect all lines from the pump to the filter. Disassemble the filter and check all openings for foreign particles. The only other component that can cause a restriction is the one-way valve used on older rides. The check part of the old-type valve was made of a phenolic material which could break out and lodge in the return line. If everything checks out all right, disconnect one end of the check valve and see if anything is in the center If not, clean out the line from the faulty check valve to the check valve on the return line. The ride can be operated without this check valve until a new one can be put on.

RIDE DOES NOT RUN AT FULL SPEED.

When a ride docs not run at full speed, the following things should be checked:

1. Measure the level of oil in the tank.
2. Check filter for amount of dirt and replace if necessary.
3. Check restrictor, placed in the lower left filter of the cushion valve, for foreign matter.
4. Check pressure setting when the ride is started for a reading of 14-1500 PSI. Adjust pressure relief to this pressure.
5. If a pressure of 14-1500 PSI cannot be set then the pump is going bad and should be replaced. For a temporary repair, try removing the restrictor to bring the ride back up to the 11 - 12 RPM.
6. Check for a restriction u sing the procedure previously described.
7. The internal seals of the hydraulic motors can wear and causes internal leakage and loss of power. The installation of the seal kit can be done by any competent hydraulic repair shop. Exploded diagrams are furnished for this.

FITTING LEAKS.

When the ride is first delivered, all fittings should be tightened up. Do not tighten the swivel fitting excessively. One quarter turn after snug is plenty. After the first 300 miles of moving, all fittings should be checked again.

HOSES ARE WEARING

Wrap all the wear spots with a piece of inner-tube and clamp with a hose clamp.

ADJUSTMENT OF PRESSURE RELIEF VALVE.

Remove acorn cap. Loosen the locking nut. To increase the pressure, screw the stud in and out to reduce the pressure.

BROKEN ROLLER BEARINGS.

The roller bearing outer race can break and drag on the spindle pipe as the seats are raised for moving down the road. Repair calls for replacement of the bearing and adjustment of the eccentric nut to push the sweep about an eighth of an inch away from the spindle pipe. The cause of the bearing breaking is due to slack in the adjustment bolt that holds the sweep snugly against the spindle pipe. Adjust these bolts each time the ride is moved.

SEAT NOSE PLUGS POP OUT.

The reason for the chromed hole plugs popping out is normally vibration. The other reason is, the bolt that the nose hinges on has loosened. Tighten the bolts as soon as possible. The bolts can work out and let the nose drop down causing a great deal of damage during operation of the ride.

GREASING THE RIDE.

There are three places to be greased on the center pole. One in the top bearing under the top weather protector plate, one halfway down the center-pole next to the side cover plate, and one at the base of the center-pole next to the pressure relief valve. The top bearing should be greased with one shot of grease every other week, and the other two should get a few shots every week.

All pillow block bearings at each end of the spindle shafts, should get one shot every other week. These are sealed bearings and do not need to be filled with grease.

REPLACEMENT OF BOLTS

During normal maintenance practices, it is 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 points we wish to stress are the following:

WMI Industries, Inc. uses only grade 5 bolts or better.

Bolts are identified by markings on the bolt head. Bolts without markings are generally grade 2 or 3 (common hardware store variety) and are not strong enough to be used on amusement rides in high stress areas.

When replacing any bolt, always use an equivalent or stronger bolt. Higher numbers mean stronger bolts.

NOTE: There are some bolts available above 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 the hole out with a non-oil base solvent and blow dry and apply "loctite" to the threads. After doing this, install new washer and bolt and torque as per the chart.

BOLT TENSIONING TORQUE

1. All tensioning pressures are for grade 5 bolts which have a tensile strength of 50 tons per square inch.

2. Bolts that are used continuously for portable ride erection should not be tensioned to maximum torque unless instructed to do so or they are in a high stress area.

3. Bolts tensioned to maximum torque should not be continuously re-used and should be replaced with new bolts of equivalent strength.

4. Caution should be exercised in applying torque because in some cases, it may not be possible to utilize all the torque a bolt will stand because of distorting surrounding parts.

5. Lubricate bolts when using with SAE 30 oil or an approved anti-seize compound.

CAUTION! Torque valves are given for steel bolts and steel nuts screwed into threaded holes in steel. Be certain threaded parts are not aluminum, brass or other soft alloys.

BOLT TORQUE CHART

Bolt Size Grade 5	Max Torque	Recommended Torque Reusable Bolt	Recommended Torque Permanent Bolt
U.N.C.	ft. lbs.	ft. lbs.	ft. lbs.
3/8	27	24	26-28
1/2	66	55	60-66
5/8	130	95	125-130
3/4	230	180	220-230
7/8	370	290	360-370
1	560	480	540-560

Maximum torque listed is 65% proof load of bolt.

NOTE: It is important to note the necessity of lightly oiling bolt before use as outlined above.

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 lbs. This pull is obtained without bracing his feet or free hand against any solid object such as a work bench or the 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 feet times 100 lbs. would equal 500 ft. lbs. Any other torque desired can be reached by simply dividing the desired torque value by approximately 110 to determine the length of the 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 it's diameter, tighten the nut until the pieces being joined are snugged up. Put a reference mark on the nut or socket wrench being used and tighten the nut, while preventing the bolt from turning, until the nut has been turned an additional 1/2 of a turn. If the bolt is longer than eight times it's diameter, proceed as above but tighten the nut 3/4 of a turn. This will apply a pre-load to the bolt that will be very close to the same value that would be achieved if a torque wrench had been used.

PNEUMATIC TIRES
ON AMUSEMENT DEVICES AND SUPPORT VEHICLES

* It is strongly recommended to carry a quality spare tire and wheel for every type you have in operation, and inflated to pressure.

* Check pressures regularly on all tires in operation and maintain to manufacturer's recommendations.

* Unless unavoidable, it is strongly recommended that repairs or the fitting of new tires to rims be carried out by experts at recognized tire dealers using correct equipment.

***CAUTION**

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.

The following pages of guidelines, safety precautions and procedures of tire changing are included to make all operators aware of the dangers that can be encountered by neglecting care and safety in handling tires and compressed air.

TIRE SAFETY - MOUNTING/DEMOUNTING

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

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

2. 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 the valve is not plugged. Do not stand in front of a valve opening as dirt particles may be blown into your eyes.

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

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

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

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

7. Clean and inspect used rim parts thoroughly.

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

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

10. Lubricate with approved rubbre lubricant, such as thin vegetable oil soap solution.

11. 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.

12. Center tire properly on rim before inflating.

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

14. Check for proper flange and lock ring seating.

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

16. 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 re-inflate a tire that has been run flat or seriously under-inflated without demounting the tire and checking the tire and tube for damage.

5. Don't mix rim pats 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 the same size, type and make.

7. Don't re-use 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 the 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 re-checked for proper fit.

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