

MFG: HRUBETZ
RIDE: PARATROOPER

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FRANK HRUBETZ & CO., INC.

RIM DRIVE PARATROOPER

Assembly, operation and
service instructions with
parts list.

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INSTRUCTIONS TO ASSEMBLE THE RIM DRIVE PARATROOPER

The Rim Drive Paratrooper is the result of years of design and development to produce a machine of mechanical excellence, maximum portability and esthetic beauty. We believe that all of these objectives have been accomplished and that with proper care and maintenance this ride will take its place as a leader and will give many years of trouble-free and profitable service.

Please refer to the accompanying drawing, titled Assembly Arrangement, Hydraulic Rim Drive Paratrooper.

The first step to assemble the Paratrooper is to select a location. The ride requires a space 55 feet wide by 45 feet deep, and the trailer should be positioned in the center of the space laterally, with the back end of the trailer 16 feet from the Midway front.

Before disconnecting the tractor from the trailer, lower the front dollies (1) until they accept a large percentage of the weight. Solid blocking at least 12 inches square should be placed under each dolly shoe. The trailer should then be checked for level, crosswise. If it proves to be unlevel, the dollies can be lifted and the proper shims inserted to bring the ride to level laterally.

Remove the ticket booth from the rear of the trailer and assemble.

Remove the two loading platforms from the side of the trailer. One of these (2) is used to form a working platform at the rear of the trailer. Two brackets will be found on the sides of the sign which will accept the 2 x 4 on one side of the platform and two pipe standards (3) about six feet long will be found to support the opposite side of the platform.

The board (4) on the front of the trailer is hinged and can be let down to approximate level and supported by two pipe standards (5) of about five feet in length. This provides a working platform at the front of the trailer.

The ten cars must be removed from their hangers and set aside.

The folded wheel assembly (6) should then be unlocked by loosening the four turnbuckle hooks which secure it to the spoke support frames. This will permit the spokes to be sniped off of the support frames after which the frames should be removed. Since two opposite spokes are not hinged it will be necessary to shift them off of the supports in unison with one man working the front and one the rear platform.

The wheel is now ready to be unfolded. Working from the rear platform, lift the inner end of the car support bow (7) from its socket on the side of the right hand spoke and bring it outward until it can be inserted in the end socket of the next spoke. Continue this successively until the circle has been completed. As the support bows are assembled the safety chains should also be assembled by inserting the bolt through the end link of the opposite chain and then through the hole in end of the spoke. No nuts are required on these safety bolts.

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As the support bows are assembled, the support bow braces (8) can also be installed. These are the 1½" pipes about three feet long with 1-inch stubs welded at either end. Note that these are left and right hand and connect the fitting at the bend of the bow to the fitting on the top of the spoke. Insert safeties as you go.

The driving rim (9) can now be assembled to the wheel spokes. It will be found stored on the front of the trailer and can be assembled from that position. Pin the rim sections to the 'C' shaped mountings on the spokes using the 3/4" x 7" pins. The sections can be assembled in any order. No further adjustment is needed after the rim sections are in place.

Beginning with the 1970 models the tie rods (10) are no longer used since spokes have been modified to eliminate the need for them. However, for models with tie rods, they can now be swung from their carrying supports to the adjacent spoke where the ends of the rods fit over the pin in the center of the spoke channel. All of the rods should be assembled loosely and then tightened evenly. Do not subject the rods to excessive tension. It is recommended that they all first be snugged up by hand alone and then tightened with a lever not over six inches in length.

The plastic panels (11) can now be installed. You will note that they fit on top of the spokes at the center with the inner and under a socket and the outer ends secured with a safety pin key.

Inflate the friction drive tires (12) to 24 P.S.I. Loosen the two bolts on the underside of the drive wheel support. When tightening the drive unit, position a spoke between the tires (12). Turn the cranks (13) until both tires are just touching the rim. Turn each crank six more turns to get the proper tire contact with the rim. Retighten the support bolts.

The control stand should now be connected. Note that for gasoline engine drives, the stand is equipped with a control lever, a throttle control, ignition switch, start button and brake switch. All of the electric controls are contained in a single cable and connection to the ride is made by a six-way connector plug. The long lever is the hydraulic pump control lever, which is used to start and stop the ride. Through the flexible control cable it should be connected to the hydraulic pump control at (14). This control is the small lever (about 2"), which will be found on the right side of the pump, near the bottom. On Continental engines the control cable attaches directly under the valve control and works vertically. On Allis-Chalmers engines it connects to the 'U' shaped fitting on the same side as the valve control lever and works horizontally. An inspection will show where the throttle controls are connected.

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On electric-powered units the control stand is equipped with the valve-operating control lever, a push button for starting and stopping the motor, and a brake control switch. All electrical connections are made through a single cable with disconnect plug. The Valve Control Cable connects on the right side of the pump to a "U"-shaped fitting and works horizontally.

The ride is now ready to elevate to its operating position. On the right side of the trailer will be found a hydraulic valve (15) which, when opened, operates the two elevating cylinders (16). First, start the engine, or the electric motor, then push the valve lever away from you and the ride should begin to elevate. Elevate the ride until the rear sign is vertical, then unpin the support struts (17) from their carrying position at the rear and swing them forward until they can be attached to the fittings (18) at the rear end of the gooseneck. If you find that you are unable to align these holes, it is because the frame is in a twist. This can be corrected by adjusting the front and rear jacks, to bring the holes into alignment. After the struts are in place the two tie rods should be detached from their carrying position and swung across to form an "X" brace. Insert the pins and tighten the rods snugly.

The next step is to stabilize the back end of the trailer. This is done by lowering the individually-controlled jacks (19) to foundation blocks which should be at least 12 inches square. Take the load off of the tires and at the same time level the frame horizontally. The frame should also be leveled lengthwise. However, it is not necessary to be perfect in this direction. The side stabilizers (20) should now be swung down from their carrying position at the side of the frame. Connect the bottom fitting on the pipe stabilizer to the fitting under the main frame with $1\frac{1}{2}$ " turnbuckles and tighten snugly with a bar. The ground pads should rest on wood blocks about 12 inches square. Next there is provided two $7/8$ " turnbuckles (22) which are used to connect from the jack shoes to the bottom of the frame in a lengthwise direction. Similar side stabilizers (20) will be found to attach to the front end of the trailer just behind the gooseneck.

Next assemble and position the loading platform. This consists of three parts: a center board in the shape of a truncated triangle, and two rectangular side boards fitted with adjustable jacks at the outer ends. These two boards attach to the center section with $\frac{1}{2}$ " hinge pins. The center of the center section should be directly under the center of a car when it is in its lowest position. The ends of the side sections should be about 10 to 12 inches higher than the center section.

The domes (21) may now be assembled to the car hangers with the horseshoe clips provided. Note that the angles inside the domes are drilled on one end. This end must be to the left to fit the shock link.

Next the curved car hangers are attached under the domes and the shock links connected to the dome angles. Be sure the safety loop on top of the hanger is secured with the $3/8$ " bolt provided.

The cars then can be attached to the hanger and secured with the 1" nut provided. This completes the assembly.

OPERATION OF RIM DRIVE PARATROOPER

As the name suggests, the final drive of the Rim Drive Paratrooper consists of two pneumatic tires running against the driving ring of the wheel. Thus there is no solid connection between the driving mechanism and the wheel itself. The friction wheels are driven by a hydraulic motor which, in turn, is driven by a variable delivery hydraulic pump directly connected to the engine or electric motor. The principle involved is to circulate oil from the pump through the motor and back. The amount of oil circulated determines the speed of the motor and since the pump can be varied from zero to maximum volume, the speed of the motor can be varied from zero to maximum.

The pump is so constructed that the oil flow may be reversed and thus reverse the motor and the rotation of the ride.

The operation of the ride is simplicity in itself. Release the brake, start the motor or engine; if an engine, accelerate with the hand throttle on the control lever and slowly move the lever toward you. This will cause the ride to rotate counterclockwise, which is the normal direction of operation. Continue to move the lever to its limit at which point the ride will be up to speed. (12.5 R.P.M.) To stop the ride, move the lever away from you and the ride will decelerate, since the hydraulic system acts as its own brake. When the lever has been returned to neutral the ride will stop. To reverse the ride, move the lever away from you and the same sequence will be reversed. When the ride is brought to a stop for loading, the brake switch should be moved to "on". This will lock the wheel and prevent drifting from unbalanced loads. Never start the ride with the brake on or apply the brake when the ride is in motion.

In loading the ride, care should be taken to keep it as nearly balanced as possible. This will prevent unnecessary unbalanced loads and will maintain smooth operation.

Care should be taken by the operator to start and stop the ride gently since rough operation will cause excessive swinging of the cars which is hard on the bearings, sockets, etc., and also is unpleasant to the riders. Our years of experience indicates that more repeat business will be gained by smooth operation than from a rough ride.

The ride cycle we recommend lasts from one to one and one-half minutes, depending on the crowd. First rotate the ride forward (counterclockwise) for about two-thirds of the cycle, then reverse the direction for the balance of the ride. We do not recommend excessively long rides even in slack times.

MAINTENANCE OF RIM DRIVE PARATROOPER

The Paratrooper has been designed to operate with a minimum of care and maintenance. However, some care is required.

Hydraulic Drive System

The hydraulic drive system is a sealed system and requires no maintenance. Under normal conditions the oil should never have to be changed and there should be no reason to open the system to the atmosphere. If, however, this becomes necessary and oil must be added, use automatic transmission oil which can be found at any service station.

TYPE "A"

USE ONLY FOR SUNTAN AND TANKS ONLY! FOR CHAC-LYNN PUMP & MOTOR USE 10W-40 MOTOR OIL ONLY!

The system works under a normal pressure of about 1800 pounds per square inch. However, during the braking cycle surges may develop to substantially increase this. If, for any reason, a pressure hose must be replaced, it should be at least 4-braid, with a pressure rating of 5,000 pounds per square inch.

The hydraulic elevating system also should require no attention. It is filled with the same oil and operates at about 2,000 pounds per square inch.

Main Spindle

The main spindle hub is fitted with a large Timken thrust bearing at the bottom and a single row ball bearing at the top. These should be greased with an alemite or zerk gun about once monthly. Fittings will be found at the bottom and at the top.

Car Hanger Pins

These pins are drilled and grooved to carry the grease directly to the wearing surface. Grease daily with alemite gun (2 pins per car).

Elevating Boom Hinge

Use alemite gun once monthly.

Shock Links

Do not let shock links deteriorate or operate when they become ineffective. Replace when they fail to function.

Trailer

Use normal highway trailer maintenance procedure.

Engine

Manufacturer's specifications for maintenance should be followed.

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FRANK HRUBETZ & CO., INC.
STANDARD PARATROOPER RIDE

Assembly, operation and
service instructions with
parts list.

CARNYTTOWN.COM

FRANK HRUBETZ & CO., INC.

Salem, Oregon

INSTRUCTIONS TO ASSEMBLE THE PARATROOPER PARK MODEL

The first step to assemble the Paratrooper is to lay out the center in the space available. This can be done by referring to the space diagram, which is enclosed with these instructions. Note that the size of the space should not be less than 55 feet in width and 50 feet in depth. Spot the center of the column 30 feet from the front line-up.

Next, back the trailer into the space in such a manner that when the lower section of the column is hinged down it is over the center spot. The mud sills can then be assembled as shown in diagram No. 1. Care should be taken to locate the sill with the extra fitting A opposite the trailer. This provides an anchor for the rope tackle. The mud sill tie rods (P-101) can now be assembled and tightened evenly to keep the sills in line on opposite sides of the column. Next level the lower section of the column by blocking and stake the sills down through the holes provided near the outer end. The gin pole, gin pole tie rod and the rope tackle can now be assembled as shown in Diagram No. 1. To elevate the column pull the trailer out from under the ride. Secure the column by installing the column flange bolts. Then the side sway braces. (P-97)

Next, install the engine mount (P-91) and (P-93), the engine and the V-belts. The V-belts should be adjusted so that they can be moved up and down one inch with two fingers. Now install the control column and connect the clutch control linkage, and the brake cable. Adjustments are provided in these to cause the levers to work within the quadrants.

To provide a working platform, the trailer may now be backed toward the ride in such a position that the wheel spokes are accessible from the trailer bed.

The next step is to assemble the wheel spokes. To accomplish this, attach the small rope tackle set to the central hub extension, as shown in the diagram. Assemble two 96" slimline strips, less globes, to the spoke by engaging the attachment clips. Connect the two with the cord connector and insert safety pin at inner end of spoke. With one man on the column platform, one man on the rope tackle, and one man on the outer end of the spoke, elevate the spoke to position and drive the wheel spoke pin.

The procedure to follow is to install one spoke, then with the engine, rotate it to the uppermost position and install opposite spoke. Proceed in this manner until all spokes are assembled. Next, install inter-spoke angle struts, one flange down, as shown in the diagram. These can be installed successively,

The car support bows should now be assembled to the end of the wheel spokes. First, engage the balls in the spoke sockets with the bow upside down and tighten the screwed ball sockets until they are snug. Assemble the bow braces to the bow fittings, noting that the braces come in right and left.

Now, swing the bow upward until the bow braces can be engaged to the spoke fittings as shown in the diagram. Because the bows are rather heavy, the first bow should be rotated to its uppermost position and the opposite bow then installed. Proceed in this manner until all bows are assembled.

INSTRUCTIONS TO ASSEMBLE THE PARATROOPER PARK MODEL

Note that on one end of one bow, the ball is adjustable. This bow should be assembled last and, if necessary, the ball adjusted to fit the space.

The spoke tie rods can now be assembled successively, as shown with the turn-buckles to the outside. Assemble all rods without tension at first and then tighten evenly, until all are snug. This completes the assembly of the wheel with the exception of the light globes, which should now be installed, after which the working platforms can be removed.

The domes, car hangers, and cars can now be assembled in that order. An examination of these parts will clearly indicate the procedure.

Now place the loading platforms in position. Note that the center section or small section rests over the control column on the ground and directly under the hanging car. The left-hand section of the platform is equipped with a frame and foot lever, which raises and lowers the outer end. The right-hand section is equipped with adjustable jacks. This permits the loading of two cars at a time and the left-hand adjustable platform provides a safety factor of additional foot clearance.

OPERATION

The operation of the Paratrooper is not complicated, and only a few basic rules should be followed. The control stand consists of a left-hand lever which is the brake, a right-hand lever for the engine clutch, a throttle control at the top of the stand and switches for the ignition and the engine starter.

To start the ride, disengage the engine clutch, by pulling the right-hand lever to you. Release the brake by pulling the left-hand lever to you. Start the engine and apply about one-fourth throttle, then slowly engage the engine clutch by moving the lever forward until it is completely engaged. Bring ride up to speed with the throttle. To stop the ride, disengage the engine clutch and apply the brake.

To operate the ride in service, we recommend that the engine clutch be disengaged for each stop, to prevent excessive heating of the fluid drive.

In using the brake, care should be exercised to slow the ride down evenly and at not too rapid a rate. Slowing the ride too rapidly causes excessive swinging of the cars, which is undesirable to the passengers.

Try to slow the ride at such a rate as not to cause the cars to swing against the rubber bumpers.

In loading, the ride should be as nearly balanced as possible. The same principles apply to the Paratrooper as to a wheel. By keeping the ride as nearly in balance as possible, the operation is smoother and more pleasant to the passengers and, of course, does not subject the structure to heavy strains.

We find that the best operating speed is 12 to 13 RPM for the older age groups, and 9 to 10 RPM for the moppets, and it has been our experience that excessive use of the throttle and the brake to create a wild ride is extremely undesirable for the reason that it frightens too many passengers and reduces the amount of re-rides. The ride should always be accelerated and decelerated slowly and evenly.

MAINTENANCE

The Paratrooper has been designed to require a minimum of attention and with reasonable care, should give trouble-free service for many years.

- Brake - The 44-inch diameter brake, which operates directly on the wheel hub, is designed with an excess of surface, to give extra long life. However, in service, the surface may become glazed, causing the brake to squeak. To prevent this, the braking surface should be treated with powdered graphite.
- Bull Gear - The Bull Gear and pinion should be greased with a heavy grease, such as Marfak No. 3 or any grease that will adhere to the gear teeth. Inspect and grease weekly.
- Main Spindle Hub - This hub is equipped with two alemite fittings, as shown on the diagram. To grease both upper and lower bearings, use alemite gun weekly.
- Pinion Bearings - At the top of the column, an alemite fitting and a pipe carries the grease to these bearings. Use alemite gun weekly.
- Gear Case - In the bottom of the column, the gear case is fitted with a grease filler pipe. The case requires 7 pounds of differential compound and has been filled at the factory. Unless a leak develops, this should require no attention for one year. After this time, it should be changed. Where the ride is moved weekly, the upper bearing of the gear case gets oiled when the column is lowered and requires no further attention. For park service, however, this bearing should be greased weekly with an alemite gun, through a fitting, in the case, just under the lower chain coupler.
- Outboard Bearing - This is the bearing that supports the 24-inch diameter V-belt pulley. This is a sealed bearing and should be greased lightly once a week. Do not exert excessive pressure with the grease gun, since this will destroy the grease seals. When greasing remove the lower pipe plug and allow the grease to flow through the bearing.
- Car Hanger Pins - These pins are drilled and grooved to carry the grease directly to the wearing surface. Grease daily with alemite gun.
- Engine - Manufacturer's specifications for maintenance should be followed.

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