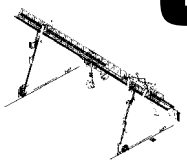
P&H

■ PORTAL CRANE SYSTEMS ■

MORRIS MATERIAL HANDLING

U P D A T E



Summer 1989

ANNOUNCING THE BIGGEST BREAKTHROUGH IN CONTROL TECHNOLOGY IN 25 YEARS - SMARTORQUE

Harnischfeger is pleased to introduce the first overhead handling control breakthrough since we introduced static stepless control in 1962. Now the only adjustable frequency control designed specifically for overhead handling equipment "Smartorque™". With Smartorque, Harnischfeger brings you the most advanced system for safety, precision and efficiency in critical load handling applications.

Smartorque is available on all new P&H portal cranes from 10 to 800 hp. And it's retrofitable on your existing AC and DC equipment.

This new control offers the following important advantages.

- Smartorque operates on cost efficient AC power to give you maximum return on your energy investment
- It operates with economical squirrel cage motors which provide rugged reliability with minimum maintenance
- Smartorque eliminates the need for an external load brake, which means reduced heat build up and reduced maintenance.
- Unique deviation detection circuitry and software assure positive load control and accurate load positioning.
- Versatile 40:1 speed range allows precision inching capability, out performing competitors 10:1 or 20:1 ranges.

The responsive Smartorque control gives you fast, accurate load positioning. Operator feel and sensitivity are even superior to costly and complete solid state variable voltage DC drives. This smooth performance minimizes shock effect on your important loads. Your equipment also receives less shock loading, thereby, increasing its life.

Designed for Safety

Smartorque was carefully designed to provide maximum safety for your personnel. It is the most inherently safe control on the market providing:

- Unique deviation detection circuitry and software give the operator exceptional control and accuracy for load handling. The system monitors all movements.
- Off position safety circuit. After a power interruption, the control will not restart unless returned to the "off" position. This protects against unexpected movement.
- Safe troubleshooting. The system provides power to thecontrol for troubleshooting while motor power is disconnected.
- Isolated control voltage. The controls operate at 120 volts, AC, so they are electrically isolated from the high voltage drive power.
- Precision positioning, Harnischfeger's unique memory module and program chip provide predictable load spotting for better operator control and safety.

Engineered for Cost Efficiency and Reliability

In keeping with the Harnischfeger tradition, Smartorque is cost efficient to operate and maintain while being extremely reliable. Some of the additional value added features and their benefits include:

- Interchangeable control components simplify service and reduce spare parts requirements.
- Self diagnostic capability means the system continually monitors itself and diagnoses any problems, minimizing downtime.
- Static reversing eliminates contactors and their repetitive maintenance requirements.
- Simple squirrel cage motors with brushless design, minimize maintenance costs while providing more torque per pound and greather reliability than DC motors or AC wound rotor motors.
- Optional EXPRESS SPEED™ speeds up your work cycle. Under heavy loads the drive runs at rated speed. But under no loads, up to 150% of rated speed is automatically available.

Replacement Wheel/Bearing Assemblies

By Frank Kemp

One of the more common maintenance jobs you experience on the portal crane is in the replacement and or repair of the gantry crane wheel assemblies. The purpose of this article is to pass on some of the practices we have found useful when carrying out this procedure. It is not meant to be a full fledged procedure and we would advise that you should request the assistance of a P&H service representative who will offer onsite procedural recommendations plus training your mechanics in the actual procedures involved.

First, you should have availabe a copy of the dirve truck assembly drawing which you will find in your service manual. It is strongly recommended that the truck assembly be steam cleaned before commencing any work.

Once you have removed the gear cover the idler gear can be easily removed by removing the retaining ring. The gear can be slipped off the shaft. To handle, pull out until a choker can be applied around the diameter of the gear and remove with a mobile crane.

Depending on whether an outside or inside wheel has to be removed, the truck should be jacked up so that the wheel is clear of the track. The truck is designed so that the wheel can be removed from the inside of the truck assembly. For ease of handling I would recommend the use of the P&H jack stand which will make the job easeir to handle and safer. If you have to replace both wheels on the truck assembly, you may wish to consider removing the whole truck assembly and carrying out the required work in a more convenient location other than the woodyard.

To remove the drive gear, it will be necessary to apply heat. The use of a temperature stick is recommended to verify a temperature of approximately 250ºF. When applying heat, it should be remembered that the coolest part of the torch flame is at the nozzle tip, indicated by the blue or unburnt-gasses. The hottest part of the flame should be applied to the outside of the gear so that the heat will soak into the middle: avoid overheating since the shaft will heat and expand. On reaching the desired temperature, it may be necessary to use a strongback and jack (25T).

The next step is to remove the retaining bolts on both bearing housings. The wheel and housing assembly should then drop down and roll clear of the recess in truck housing. It may at this stage be required to lift the truck up further to allow for the required clearance, approximately 1”.

The bearing housing can be pulled away from the inner bearing race, which will leave exposed the shaft and wheel assembly, complete with bearings. When replacing wheels it is good practice to replace the bearings also, so in this case the existing bearings can be cut away from the shaft.

To replace the wheel, press out the old shaft. You will probably need a press capable of at least 100 tons. Note that if there is a lip on the shaft, it will only press our one way.

Dress up the shaft. Always take measurements of the shaft diameter and wheel bore to determine fit - interference should be in the region of 2 to 3 thou. Use Neversieze or equivalent graphite grease when pressing shaft into wheel.

Fit the new bearings to the axle shafts, using a bearing heater. Heat bearing housings by placing them in oven or oil bath of 250ºF and drop over outer bearing race. if these housings are properly heated they will drop into place; do not force. The inner race is always a press fit, outer is always a slip fit.

Grease bearings and fit to truck. On some older types of bearing housings, allen head cap screws were used to fasten the bearing housings in place. These should be modified to Grade 5 hex head bols and a 4140 slug inserted where the housing was recessed to take the head.

When going back in with the Grade 5 hex head bolt, do not used any lubrication on bolt and it is recommended to tap out the existing threaded holes in the truck.

It is most important that the bearing housing bolts be torqued to the figure given on the drawing, generally 1500 ft. lbs. Failure to torque these bolts properly will result in them becoming loose. Once loose, there is not other fix than removing the gear assembly and starting over.

To replace the drive gear, check fit. Clearance should be approximately 2 thou. Dress up shaft and bore of gear. Apply Neversieze and heat to approximately 250ºF. If properly heated, the gear will slide on without any undue force being reqired. Replace idler and retaining clip.

Mead Paper, Federal Paper Board, Nekoosa Papers, Great Northern Paper, Stone Container Join User Group

In June/July we shipped two 40 ton capacity log boom crans to Mead Paper of Mahrt, Alabama. These cranes are now in the process of being erected and feature the new Smartorque control described elsewhere in this UPDATE. Federal Paper Board of Augusta, Georgia is also in the process of installing their 40 ton portal crane.

Other customers placing their orders with P&H for new poral cranes include Nekoosa Papers in Ashdown, Arkansas, Rust Engineering for Great Northern Paper in Millinocket, Maine and Stone Container Corporaiton in Hodge, Louisiana.