Hollister-Whitney Elevator Corporation

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Hollister-Whitney Elevator Corporation

Installation and Service Manual
GL100, GL115, GL130 and GL170
AC Permanent Magnet, Gearless Machines
Without Outboard Stand

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Further Support Documentation (GL Machine Prints) can be found under “Bulletins” at: https://www.hollisterwhitney.com/support/ Look for Bulletin 1146S.

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I. Introduction

Thank you for choosing a Hollister-Whitney, AC, permanent magnet, gearless machine!

The GL100, GL115, GLl30 and GL170 machines have all been designed for use in 2:1 roped, machine room and machine-room-less (MRL) applications with VVVF controls. Each machine is designed with 28 poles to provide smoother, quieter, cooler and longer lasting operation.

"L" models are designed to run at lower voltages but will require higher current supplies. (ex.: A GL100-15L requires 208 volts at 26 amps for a 3,000# capacity at 150 fpm elevator.) Some machines run at speeds up to twice as fast as those listed in Tables 1 & 2 when supplied with 440 volts, all while maintaining the same current. For higher speed machines consult Hollister-Whitney Engineering. (The maximum BTU/Hour output of the machine will be double the value shown in Tables 1 & 2.)

"H" models are designed to run at lower currents but will require higher voltage supplies. (ex.: A GL100-15H requires 460 volts at 13 amps for a 3,000# capacity at 150 fpm elevator.) These machines can also run at speeds down to half as fast as those listed in Tables 1 & 2 when supplied with 230 volts, all while maintaining the same current. (The maximum BTU/Hour output of the machine will be half the value shown in Tables 1 & 2.)

Hollister-Whitney machines are designed to perform in a tolerant machine space. The machine space working temperature should be held between 35°F & 104°F, (1.7°C & 40°C) and humidity should be held as low as possible, optimally 10 to 90 percent relative humidity, non-condensing.

II. Machine Specifications

Each Hollister-Whitney, GL series machine includes the following standard equipment:

- Ambient Temperature 35°F & 104°F, (1.7°C & 40°C), Humidity 10 to 90% Non-condensing, per above
- Sealed, maintenance-free bearings.
- De-mountable traction sheave (with 90° Undercut "U" grooves - standard.)
- Main and emergency disc brakes, each capable of holding 125% of the load.
- Brake switches (wired normally open - standard.)
- En-dat encoder and cable (20-meter encoder cable - standard.)
- Sheave guard and rope retainer.
- Hoisting eyebolts.

a. Duty Tables: If your specific Speed and Capacity are not shown, see our Duty Calculation Page (Section VII: Support Documentation) to estimate your Machine Data.

- Table 1 shows the maximum capacity for each machine, based on the following specifications:
  - 15" Traction sheave, 2:1 roping and 50% counterbalance

Model	Voltage (AC)	Current (Amps)	Capacity (lbs)	Capacity (kg)	Car Speed (ft/min)	Car Speed (m/sec)	RPM	Power		Torque		BTU/ Hour
								H.P.	kW	Ft/lbs	Nm	
GL100-15L	208	26	3000	1361	150	0.76	76.39	8.8	6.57	603	818	3346
GL100-15H	460	13	3000	1361	150	0.76	76.39	8.8	6.57	603	818	
GL100-20L	208	34	3000	1361	200	1.02	101.86	11.7	8.73	603	818	3680
GL100-20H	460	17	3000	1361	200	1.02	101.86	11.7	8.73	603	818	
GL115-35L	208	68	3500	1588	350	1.78	178.25	23.9	17.8	704	954	5288
GL115-35H	460	32	3500	1588	350	1.78	178.25	23.9	17.8	704	954	
GL115-50L	208	95	3500	1588	500	2.54	254.65	34.1	25.4	704	954	6531
GL115-50H	460	49	3500	1588	500	2.54	254.65	34.1	25.4	704	954	
GL130-20L	208	44	4000	1814	200	1.02	101.86	15.6	11.6	804	1090	4411
GL130-20H	460	22	4000	1814	200	1.02	101.86	15.6	11.6	804	1090	
GL130-35L	208	81	4000	1814	350	1.78	178.25	27.3	20.4	804	1090	5229
GL130-35H	460	38	4000	1814	350	1.78	178.25	27.3	20.4	804	1090	
GL170-35L	208	99	5000	2268	350	1.78	178.25	34.1	25.4	1005	1363	6531
GL170-35H	460	46	5000	2268	350	1.78	178.25	34.1	25.4	1005	1363	

Table 1

- Table 2 shows the maximum capacity for each machine, based on the following specifications:
  - 20" Traction sheave, 2:1 roping and 50% counterbalance

Model	Voltage (AC)	Current (Amps)	Capacity (lbs)	Capacity (kg)	Car Speed (ft/min)	Car Speed (m/sec)	RPM	Power		Torque		BTU/ Hour
								H.P.	kW	Ft/lbs	Nm	
GL100-15L	208	26	2250	1021	200	1.02	76.39	8.8	6.57	603	818	2509
GL100-15H	460	13	2250	1021	200	1.02	76.39	8.8	6.57	603	818	
GL100-20L	208	34	2250	1021	267	1.36	101.86	11.7	8.73	603	818	2767
GL100-20H	460	17	2250	1021	267	1.36	101.86	11.7	8.73	603	818	
GL115-35L	208	68	2625	1191	467	2.37	178.25	23.9	17.8	704	954	3961
GL115-35H	460	32	2625	1191	467	2.37	178.25	23.9	17.8	704	954	
GL115-50L	208	95	2625	1191	667	3.39	254.65	34.1	25.4	704	954	4903
GL115-50H	460	49	2625	1191	667	3.39	254.65	34.1	25.4	704	954	
GL130-20L	208	44	3000	1361	267	1.36	101.86	15.6	11.6	804	1090	3308
GL130-20H	460	22	3000	1361	267	1.36	101.86	15.6	11.6	804	1090	
GL130-35L	208	81	3000	1361	467	2.37	178.25	27.3	20.4	804	1090	3926
GL130-35H	460	38	3000	1361	467	2.37	178.25	27.3	20.4	804	1090	
GL170-35L	208	99	3750	1701	467	2.37	178.25	34.1	25.4	1005	1363	4903
GL170-35H	460	46	3750	1701	467	2.37	178.25	34.1	25.4	1005	1363	

Table 2

b. Maximum System Loads

- The maximum system loads shown in Table 3 (Imperial) and Table 4 (Metric) are based on 50% counterbalance and 2:1 roping.
- The overall system load is calculated by adding together the following items:
  - Total empty car weight + Total counterweight + Capacity + Total hoist rope weight + Total compensation weight + Total traveling cable weight

Maximum system loads (in lbs)				
Car Speed (fpm)	GL100	GL115	GL130	GL170
50	23500	24000	24500	25000
100	23500	24000	24500	25000
150	23500	24000	24500	25000
200	23500	24000	24500	25000
250	22700	24000	24000	25000
300	21500	23450	22800	25000
350	20500	22450	21800	25000
400	19700	21450	21000	25000
450	N/A	20850	20200	24700
500	N/A	20050	19600	24100
550	N/A	19650	19000	23300
600	N/A	19050	18400	22700
650	N/A	18650	18000	22100
700	N/A	18250	17600	21700
750	N/A	17850	N/A	N/A
800	N/A	17450	N/A	N/A
850	N/A	17250	N/A	N/A
900	N/A	16850	N/A	N/A
950	N/A	16650	N/A	N/A
1000	N/A	16250	N/A	N/A

Table 3

Maximum system loads (in kg)				
Car Speed (m/sec)	GL100	GL115	GL130	GL170
0.254	10660	10886	11113	11340
0.508	10660	10886	11113	11340
0.762	10660	10886	11113	11340
1.016	10660	10886	11113	11340
1.270	10297	10886	10886	11340
1.524	9752	10637	10342	11340
1.778	9299	10183	9888	11340
2.032	8936	9730	9526	11340
2.286	N/A	9458	9163	11204
2.540	N/A	9095	8891	10932
2.794	N/A	8913	8618	10569
3.048	N/A	8641	8346	10297
3.302	N/A	8460	8165	10025
3.556	N/A	8278	7983	9843
3.810	N/A	8097	N/A	N/A
4.064	N/A	7915	N/A	N/A
4.318	N/A	7825	N/A	N/A
4.572	N/A	7643	N/A	N/A
4.826	N/A	7552	N/A	N/A
5.080	N/A	7371	N/A	N/A

Table 4

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c. Brake Specifications

- 115 VDC model brake is supplied standard from the factory. Refer to Table 5.
- Brake Switch: Rating 250 VAC, 3A; Recommended Switching Current 24 VDC, 10to 50 mA (Minimum 12VDC 10mA).
- Switches can be wired: Normal Open – Black & Blue wires – as shipped
  Normal Closed – Black & Gray Wires

Brake Model:	Mayr 6 (GL100 & GL115)	Mayr 8 (GL130 & GL170)
Pick (Excitation) Voltage (VDC) 3 Seconds Max:	104@1.49A	104@2.27A
Pick Power (W):	155	236
Hold Voltage (VDC):	52@0.75A	52@1.14A
Hold Power (W):	39	59
Resistance (ohms)	69.8	45.8

Table 5

- The machine brakes may be mounted in 5 locations around the body of the machine to provide flexibility in machine placement and proximity to other equipment or walls. Refer to Figure 1 for the standard and optional brake mounting locations.

Figure 1

- If brakes need to be mounted, using either of the optional mounting locations shown in Figure 1, they should be requested at the time of ordering. Brakes may be relocated in the field when necessary. Contact Hollister-Whitney for instructions.

d. Machine Properties, Dimensions and Parts Lists can be found under "Bulletins" at:

https://www.hollisterwhitney.com/support/

Look for Bulletin 1146S

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III. Receipt, Handling, Storage and Commissioning

a. Receipt

- Upon delivery of the machine, inspect the machine for damage. If any damage due to transportation is noted, contact the carrier and Hollister-Whitney.
- Check the machine data tag to ensure the machine conforms to your order. (An example data tag is shown in Figure 10.)

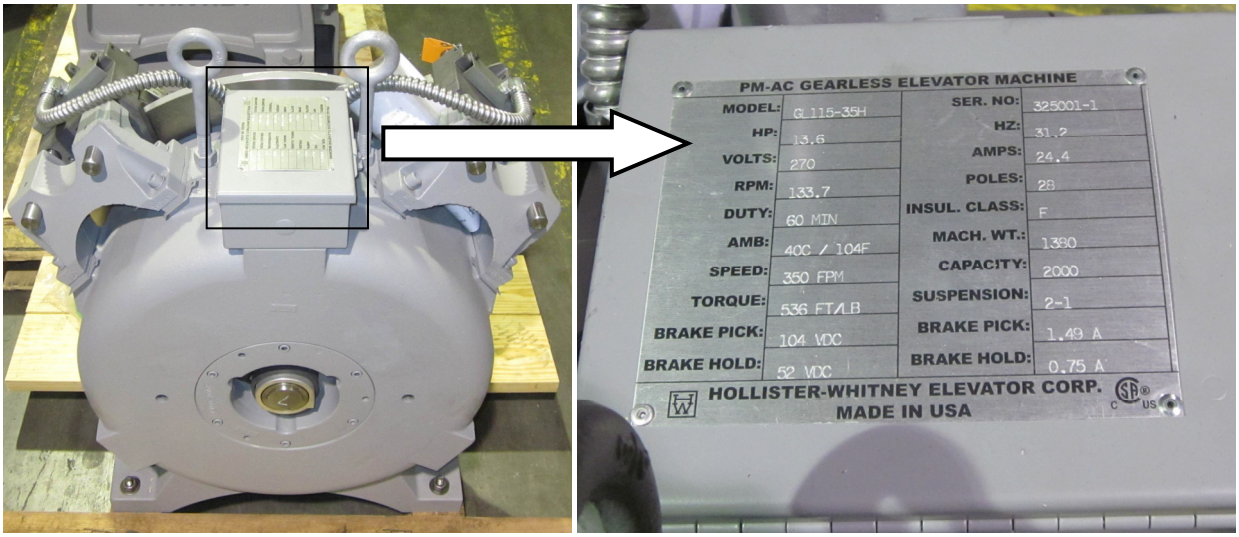

Figure 10

b. Handling

- The machine will be delivered on a wooden pallet. The machine may be left on the pallet and moved with standard fork truck or pallet jack equipment.
- When the machine is removed from the pallet, it must be moved by using the hoisting eyebolts provided at the top of the machine.
- When hoisting the machine, pull straight up on the hoisting eyebolts using a spreader beam or other suitable rigging apparatus to prevent damage to the eyebolts and possible failure which could result in dropping the machine. Refer to Figure 11 for the proper hoisting methods and Table 6 for the machine weights.

Machine Weight		
Model	**Weight (in lbs)**	**Weight (in kg)**
GL100	1350	608
GL115	1390	626
GL130	1640	740
GL170	1820	822

Table 6

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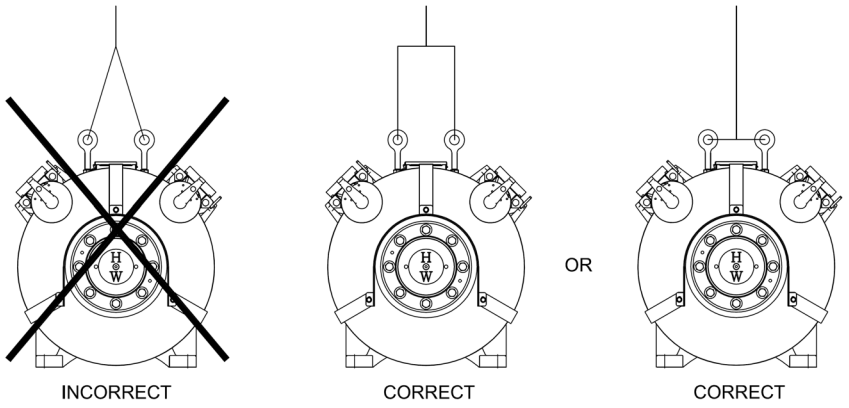

Figure 11

DO NOT USE ANY OTHER MACHINE COMPONENT TO LIFT THE MACHINE! USE ONLY THE HOISTING EYEBOLTS WHEN LIFTING AND MOVING THE MACHINE! HOISTING THE MACHINE BY ANY OTHER COMPONENT WILL RESULT IN DAMAGE TO THE MACHINE AND POSSIBLE FAILURE RESULTING IN THE MACHINE FALLING FROM THE HOISTING SYSTEM!

- Follow all the necessary safety precautions to avoid damage to the machine or risk to personnel when moving the machine.

c. Storage

i. Short-Term Storage

- For short-term storage, place the machine in a warm, dry and clean environment.
- Protect the machine from harsh weather conditions and temperature variations that can lead to condensation.
- Protect the machine from dust, dirt and metal shavings. Metal dust and shavings can be attracted into the machine by the magnets.

ii. Long-Term Storage

- For long-term storage, place the machine in a sealed, waterproof enclosure with a dehydrating packet that is sized for the enclosure volume and humidity level.
- Follow the same instructions as outlined in Section III.c.i - "Short-term storage."

d. Commissioning

- Before the machine is installed, and before any voltage is applied, check the machine for condensation or any evidence of condensation or water. If any evidence of wetness is found, contact Hollister-Whitney for drying instructions.
- If wetness has been found and the machine has been dried, it will be necessary to re-verify the insulation between each coil phase and earth ground.
  - Using an insulation tester (or megohm-meter), check the insulation resistance at 500 VDC. The resistance should be ***NO LESS*** than 100 Mohm.
- If the machine has gotten wet during transportation, contact the carrier and Hollister-Whitney.

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IV. Installation

a. Machine Mounting

- Before hoisting the machine into place, verify all the hoisting equipment is rated for the weight of the machine. Refer to Table 6.
- Refer to Section III.b - "Handling" for the proper hoisting and handling procedures.
- Provide a level, structural support rated for the load on the machine.
- Ensure there is proper clearance around the machine for maintenance and adjustments.
- These machine models are primarily intended to be mounted in traditional overhead and machine-room-less applications with down-pull on the traction sheave. They may also be used in a basement application as long as the machine is inverted to create the necessary down-pull on the traction sheave relative to the base mounting. These machine models (without outboard stands) are not designed to withstand direct up-pull.

i. Traditional Overhead and Machine-Room-Less Mounting

- Anchor the machine to the structural support using the 4 mounting hole locations in the base.
- The hardware required to anchor the machine to the support need to be 1" diameter, grade 5 (minimum) with standard washers for the 1" hardware. (Hardware adhering to ASTM A325 is also suitable.)
- Hollister-Whitney does not include the machine mounting hardware with the machine due to variations in structural machine support.

ii. Basement Set Mounting

- When used in a basement application, the machine must be **inverted** and mounted either within a specially designed tie-down frame supplied by H-W, or to the underside of substantial structural framing supplied by others.
- Refer to all applicable building codes and ASME A17.1 when selecting hardware to anchor the machine to the structural supports in an up-pull application.
- Use the more stringent criteria between the building codes, ASME A17.1 and the minimum hardware grades identified in Section IV.a.i - "Traditional overhead and machine-room-less mounting."

b. Electrical Connections

i. Machine Wiring

BEFORE PERFORMING ANY ELECTRICAL CONNECTIONS, MAKE SURE THAT POWER SUPPLY IS TURNED OFF. ONLY THEN PROCEED WITH CONNECTING ELECTRICAL LEEDS TO POWER SUPPLY. NEVER WORK IN MACHINES ELECTRICAL ENCLOSURE WHILE POWER SUPPLY IS ON!!!

- Thermal Protection Switch (TPS) is wired with leads labeled and supplied into the machine electrical enclosure. Refer to Figure 12.
- Consult your controller manufacturer for appropriate TPS connections.
- Verify the electrical supply from the elevator drive and brake power supplies match the machine data tag. Refer to Figure 10.
- Connect the U-V-W lines from the drive as shown in Figure 12.
- Earth Ground connects to the ground lug terminal inside the electrical enclosure.
- Connect the machine and emergency brakes where shown in Figure 12.
- The brake switches are wired normally open from Hollister-Whitney. To change the switches to function as normally closed, remove the blue wire from the terminal block in

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the electrical enclosure, and replace it with the spare gray wire coming from the brake switch.

- **Kits are available for field relocation of the electrical enclosure.** The electrical enclosure location can also be relocated at the factory at the time of machine assembly.

THE MACHINE AND EMERGENCY BRAKE COILS MUST BE INDEPENDENT!

IT IS THE RESPONSIBILITY OF THE USER TO CONNECT THE MOTOR IN ACCORDANCE WITH THE CURRENT LEGISLATION AND REGULATIONS IN THE COUNTRY OF USE. THIS IS PARTICULARLY IMPORTANT IN REGARDS TO WIRE SIZES USED TO CONNECT THE POWER AND EARTH GROUND AND THE TYPE AND SIZE OF FUSES.

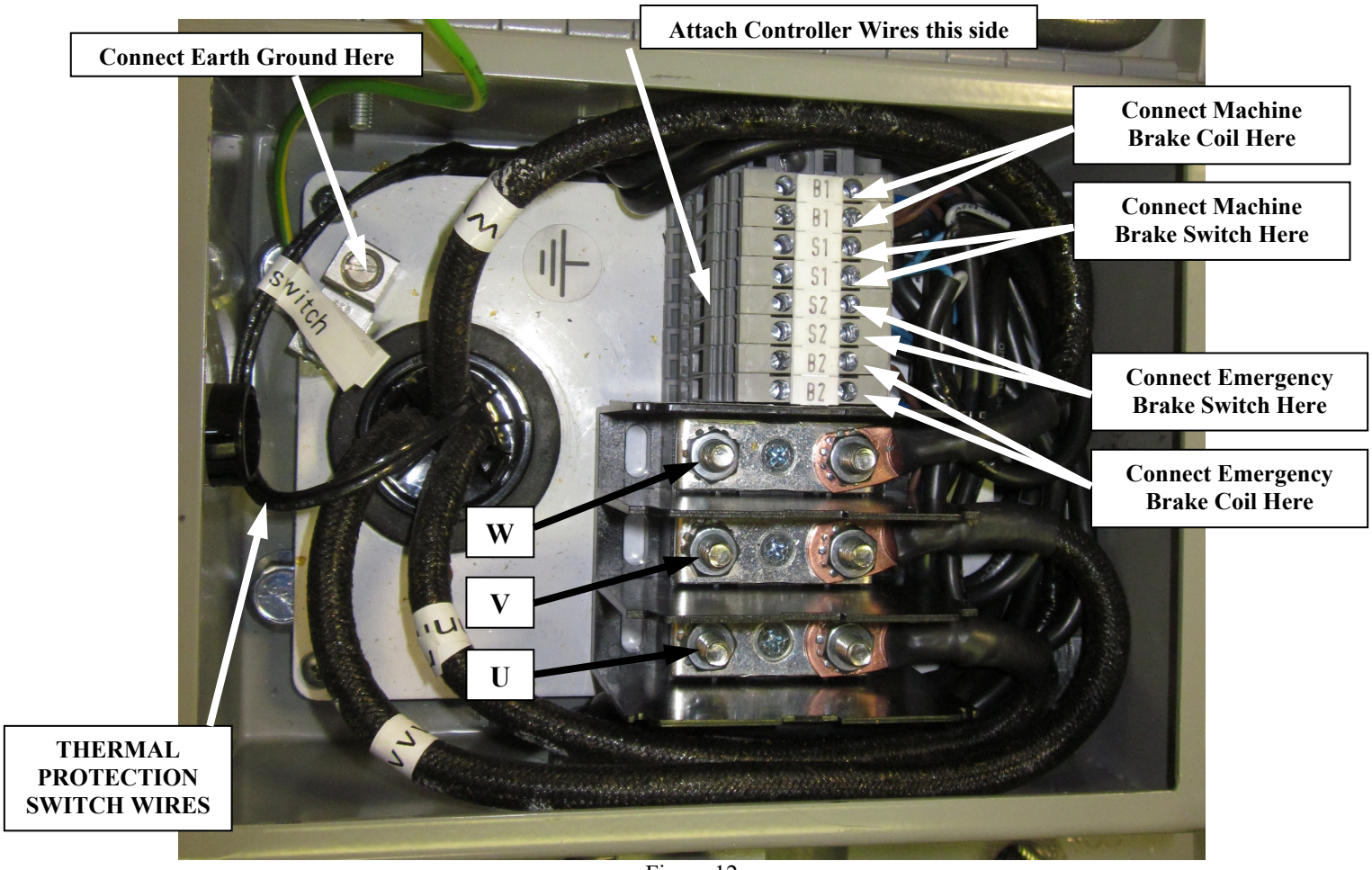

Figure 12

Note: Relocation of the electrical box is an available option. See Figures 23 & 24 for examples of some factory installed options, and consult H-W Engineering for available options. Field relocation is also possible at the various open brake locations (Figure 1) with a Field Relocation Kit. Consult H-W Engineering for information.

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ii. Encoder wiring

- Connect the supplied encoder cable to the encoder on the back of the machine. **NOTE:** An field relocation kit is available (Figure 22). Consult H-W engineering for information.
- When using a KEB drive, the encoder cable can be used "as-is."
- When using any other manufacturer's drive, consult control manufacturer for cable compatibility and availability. DO NOT modify the KEB cable without first consulting the control manufacturer. Any modification of the KEB cable voids its warranty.
- There are 2 cable classifications, and each has its own color coding per cable. See attachments in Section VII "Support Documentation" at end of manual of diagrams.
    i. 30m and under – 00.F5.0C1-4005 document
    ii. 40m and over – 00.F5.0C1-L005 document

c. Startup

- Verify all the motor related settings in the elevator controller match the information on the machine data tag. Refer to Figure 10.
- Verify that all the brake parameters match the information on the machine data tag. Refer to Figure 10.
- Remove any dirt, grease or rust that may have accumulated on the brake rotor during storage or installation. Use fine sandpaper or emery cloth with light pressure to remove rust from the rotor, taking care to keep the rust and metal dust out of the machine.
- Follow the controller manufacturer's procedure for alignment of the magnets.
- Briefly run the machine to verify the machine functionality and brake operation.
- Verify the drive sheave is plumb and aligned with the rope drop locations.

Note for Installing Ropes: **Never** drag ropes over an unprotected sheave. Ropes are typically harder than sheaves and can act as a flexible file, wearing flat spots and/or severely damaging sheave grooving. Always cover or otherwise protect sheaves while installing ropes.

- Install the hoist ropes, adjust the rope shackles and check the ropes for equal tension. The rope tension must be uniform, or it may cause vibration and premature wear on the traction sheave and hoist ropes.
- **Re-verify the traction sheave is plumb once the machine is fully loaded.**

d. Brake Burnishing

BRAKES MUST BE BURNISHED TO ACHIEVE FULL STOPPING TORQUE!

- Each brake on the machine must be burnished separately. Repeat the following procedure for each brake.
- Clamp the brake on the rotor. (De-energize the brake circuit.)
- Run the elevator in the direction of the load at 11 RPM for 1 minute
- If the overall travel of the elevator will not allow the burnishing time listed to be met on one pass, open (energize) the brake at the bottom of the hoist way, lift the load back to the top and repeat the run until the full burnishing time has been achieved.
- Stop occasionally to ensure the rotor and brake do not overheat.
- After burnishing, re-verify the air gap between the brake pads and the rotor. For brake check procedure and service follow Sections V.a. & V.c.
- Air gap should remain at approx. 0.020 inch

*** **NOTE:** **Air gap can surpass 0.020 inch but must not exceed 0.040 inch.** ***

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e. Manual Brake Release (Optional Equipment)

- The manual brake release handle and cable is optional equipment that should be specified at the time of ordering. The standard cable length is 8'. Other lengths are available by special order up to 50'. H-W does not recommend cable lengths greater than this.
- The brake release handle mounting plate may be mounted in any location that will be easily accessible to maintenance personnel. Care must be taken when routing of brake release cables so as to reduce the number of tight bends. Avoid "looping" extra cable length. Tight bends or looping the cable casing can restrict the movement of cable within the casing and can have an undesirable effect on the ability of the cable to activate the Brake Release mechanism. Best practice is to keep the cable run as straight as possible. Testing of the cable routing is prudent to assure proper operation. If proper operation is not possible with current routing and no other routing options are available, shortening the cable to remove the routing restriction(s) is recommended.
- The manual brake release handle must be removed from the mounting plate prior to normal elevator operation.
- To remove the handle, loosen nut "A" on the handle and unscrew the handle from the brake release system.
- Figure 14 shows the manual brake release handle in place and Figure 15 shows the handle removed. (Brake handle mounting plate attached to back of machine for display only)

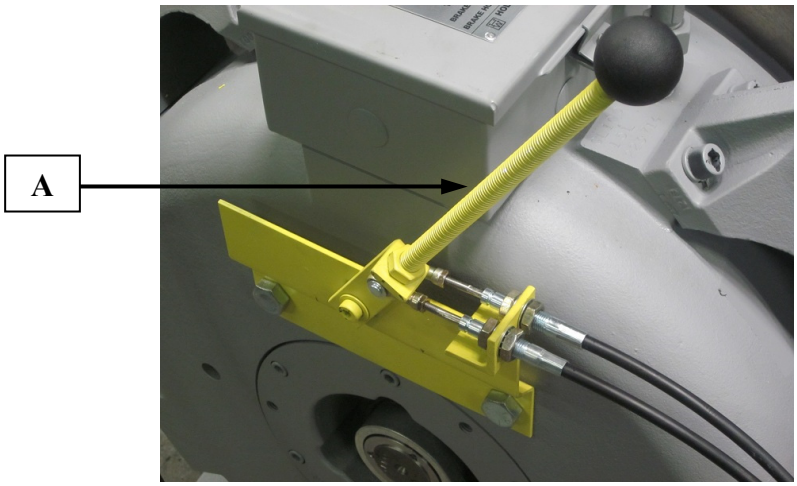

Figure 14

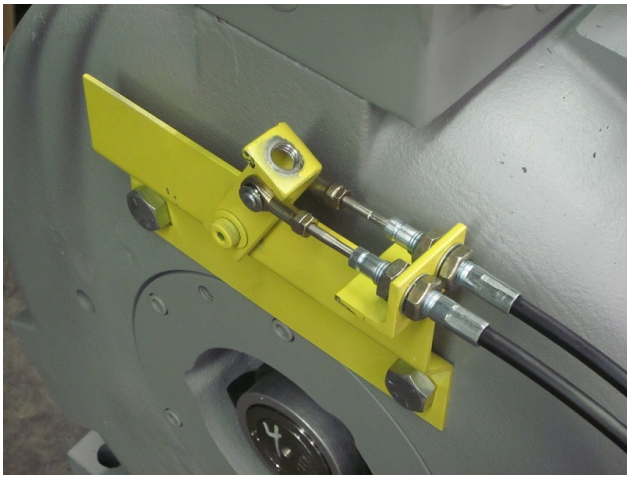

Figure 15: Brake Handle Removed

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V. Basic Service

- **Maintenance**

BEFORE PERFORMING ANY MAINTENANCE CHECKS ON EQUIPMENT, TAKE ALL THE NECESSARY SAFETY PRECAUTIONS TO IMMOBILIZE THE CAR AND COUNTERWEIGHT TO PREVENT ANY UNINTENDED MOVEMENT DURING THE MAINTENANCE PERIOD THAT MAY RESULT IN INJURY OR DEATH!

General

To keep equipment functioning efficiently, good maintenance practices must be established, observed and maintained. Systematic inspections of the equipment should be scheduled, and records kept of these inspections. Monitoring these records will indicate any sign of a potential issue.

Each installation has its own special conditions, so it is not possible for Hollister-Whitney to outline an overall plan for periodic maintenance. Hollister-Whitney would recommend, at a minimum, yearly inspections, but installation conditions may warrant a more frequent schedule. The maintenance contractor will need to make the final determination.

Some tips to aid in setting up your maintenance plan:

Bearings

Bearings have been sized for the maximum speeds, loads and capacities found in this manual, and are sealed with the maximum volume of grease recommended by the manufacturer. Bearings should be maintenance free for the L_{10} calculated life continuous use rating (based on speeds and loads) of approximately 15 years. Please note that installation conditions vary, so shorter or longer bearing life may be experienced.

Cleaning

Dirt, dust, excess lubrication, and moisture are the greatest enemies of electrical equipment and of maintenance teams in general. Dirt and dust layers on a machine can prevent heat dissipation, which can lead to overheating and eventual insulation breakdown. Many types of dust in an elevator machine room are electrically conductive and can also lead to insulation failure. Dust and dirt can draw moisture to unpainted surfaces such as brake rods causing oxidation that can cause brake faults. Excess lubrication can draw dust and dirt as well.

Dust and dirt can be removed from surfaces with a dry, lint-free cloth, or with suction. With suction, however, care must be taken to not build up or discharge static electricity while cleaning. Dry, compressed air (at less than 50psi) may also be used to remove dirt and dust, however, this must be closely monitored as the compressed air will re-suspend the dust and dirt in the machine room atmosphere.

Brake Disc (rotor) surfaces should be examined and cleaned of all foreign material. Use only Isopropyl Alcohol (IPA) for brake cleaning. ***DO NOT* use Commercial Brake Cleaning products** to clean the brakes or brake rotors as these products may affect the brake pad (friction lining) materials. Never spray liquids of any kind directly on Hollister-Whitney equipment. Apply IPA to a clean, lint-free cloth prior to wiping the brake clean. Brake Guide Rods/Pins (Mayr #6 and #8 Brakes) can be cleaned in the same way.

Wear Items

Traction Wheels, Brake Shoes, and Brake Discs are typically the only items that will exhibit any wear. Of these, the Brake Disc is the least likely to exhibit wear. Brake Shoes are also unlikely to wear but can be monitored using feeler gages. Consult the Brake Section of this manual for brake inspection procedures. In general;

1. Check Brake(s) for maximum air gap. If air gap is greater than .040 inch, replace brake pads.
2. With Brake(s) energized, push then pull on Brake Caliper, Brake should slide free on rods (pins). If Brake(s) do not move, clean or replace Brake pins and or Brake Caliper.
3. Check Brake Rotor surface for rust. If rust is present, it can be removed with fine sandpaper (suction must be used to remove sanded material). Moisture causing the rust must be eliminated.

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www.hollisterwhitney.com

Traction Wheels are the most likely item on the Hollister-Whitney PMAC machines to wear. Periodic measurements of rope depth and the evenness of wear for all ropes (groove depth should wear evenly) should be monitored. Cable should not be more than 0.125 inch (1/8") below the outer rim of the Traction Wheel. If Cable(s), are below 0.125 inch, replace Traction Wheel and Cables.

Finally, Check Machine Guarding/Rope Retainers for clearance and attachment hardware for tightness. Adjust as necessary.

- **Machine Brake Procedures**

BEFORE PERFORMING ANY MAINTENANCE ON THE MACHINE BRAKES, TAKE ALL THE NECESSARY SAFETY PRECAUTIONS TO IMMOBILIZE THE CAR AND COUNTERWEIGHT TO PREVENT ANY UNINTENDED MOVEMENT DURING THE MAINTENANCE PERIOD THAT MAY RESULT IN INJURY OR DEATH!

a. Brake Adjustments – (Machine Shown with Mayr 6 Model Brakes)

*****Brake air gap must be checked with brake de-energized*****

- Tools required – 3/8" hex key and 0.020 inch feeler gauge.
- The air gap on the brakes is preset from the factory at approximately 0.020 inch.
- Gap should be **equal** all the way around. See Figures 17
- Before you check or adjust the brake air gap, clamp the brake on the rotor (de-energize.) All adjustments and measurements will be made with the brake clamped on the rotor (de-energized.)
- Move rubber dust shield "A" to expose Air Gap "B". See Figure 16

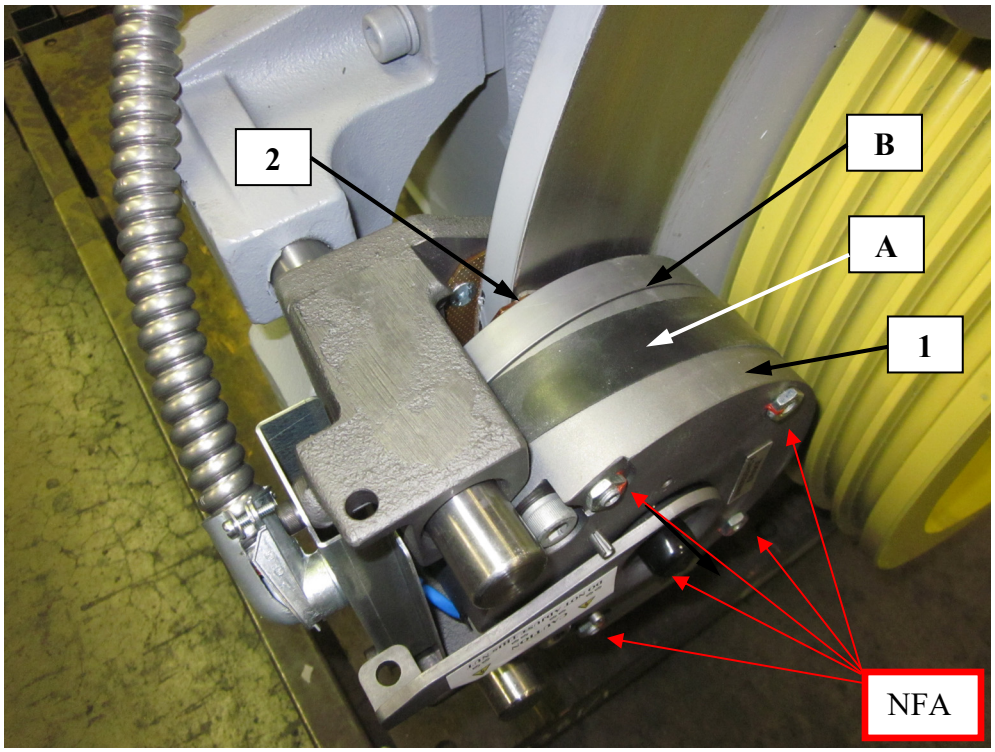

Figure 16

IMPORTANT NOTE – Items NFA: Brake Holding Capacity is Factory Set and Sealed and is NOT FIELD ADJUSTABLE (NFA)! Do not attempt to adjust these nuts and screws.

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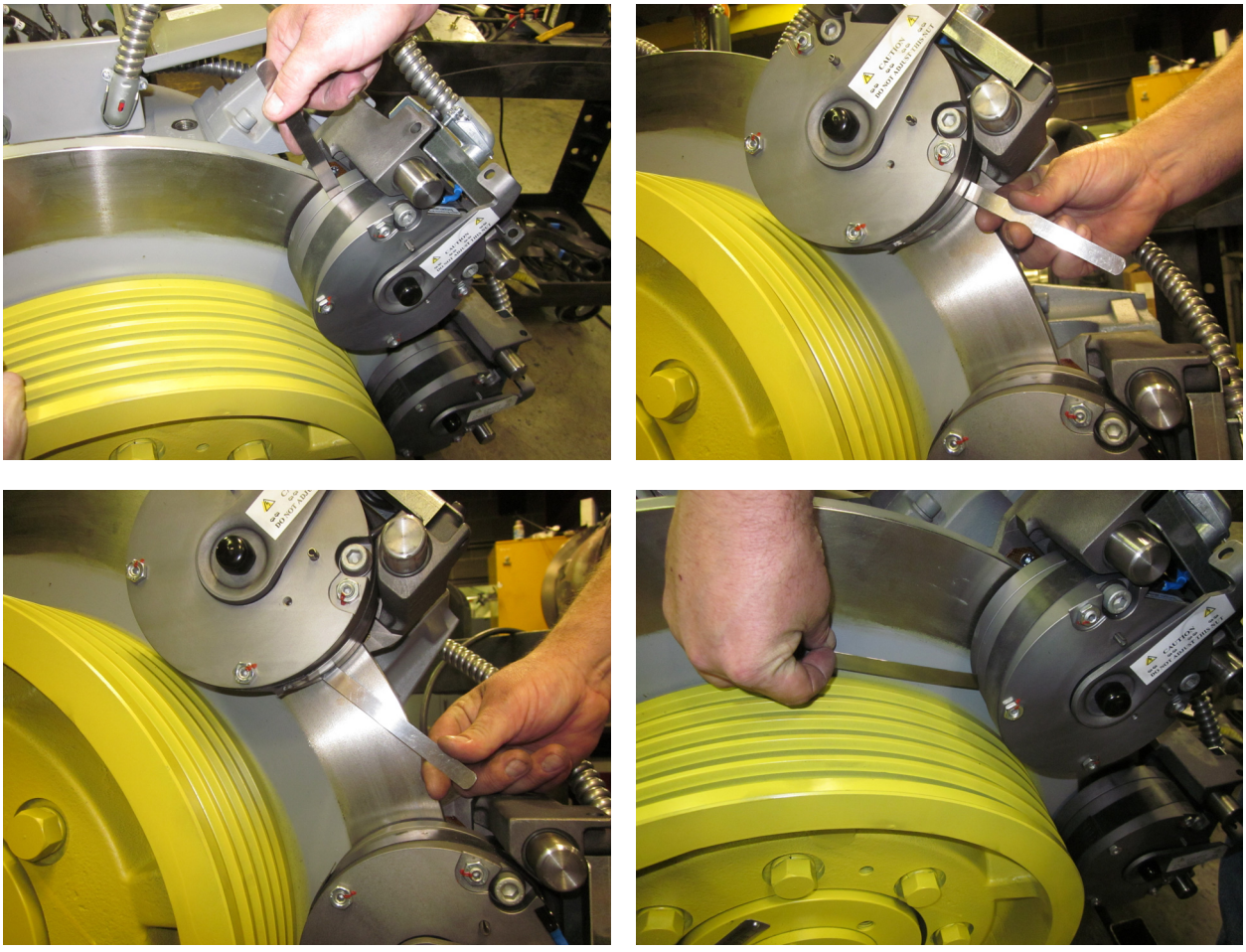
- Check Air Gap (between Coil Carrier Assembly "1" and Armature Disc "2") at "B", approx. 0.020 inch gap should be **equal** all the way around. (Figures 17)

*****IMPORTANT!!! Air gap can surpass 0.020 inch, but must not exceed 0.040 inch.*****

If Brake air gap meets or exceeds 0.040 inch see Section V.c.
Brake Wear - Check Procedure



Figures 17: Check Brake Gap at 4 places around the brake to understand completely the brake position.

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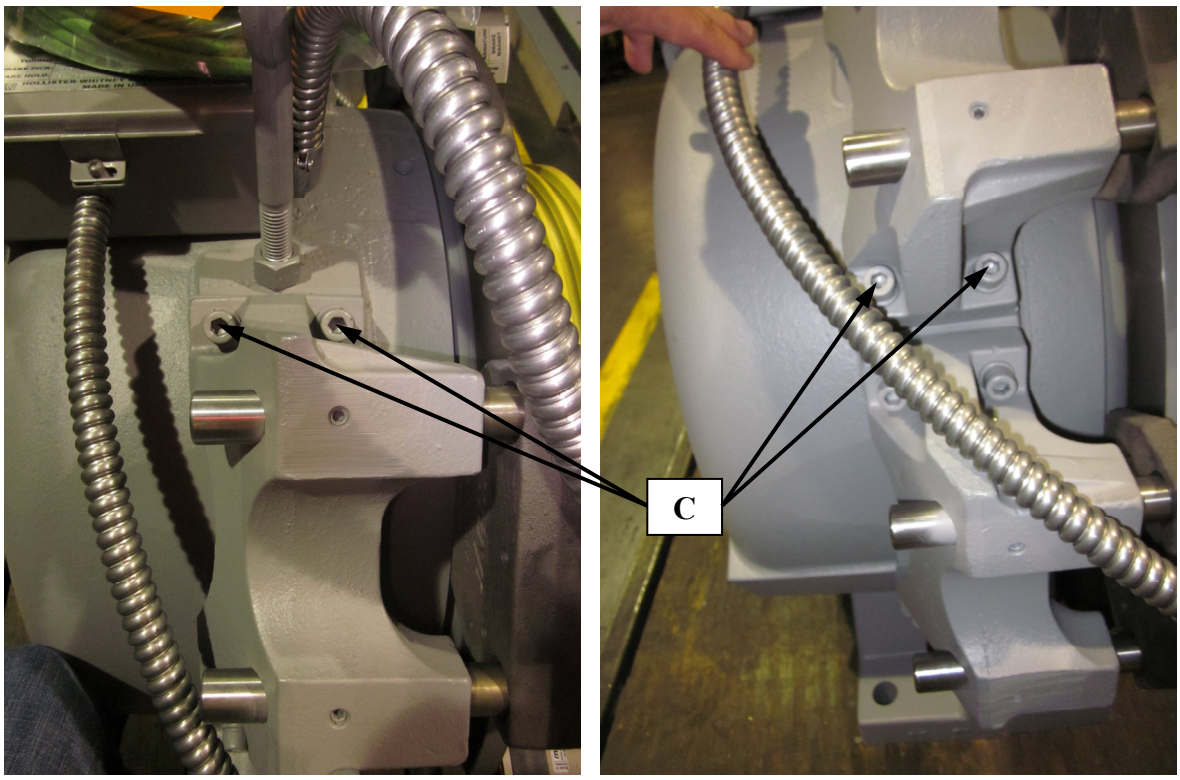
- Side-to-Side air gap adjustment - ***ONLY AS NECESSARY*** - With the Brake clamping the rotor (de-energized) Use a 3/8" Hex Wrench to loosen (4 per brake) socket head screws "C". Shown in Figures 18
- After the air gap is set, re-tighten the socket head screws, "C".
- **NOTE:** It may be necessary to lightly tap the brake base to obtain equal air gap.
- ***DO NOT USE A STEEL HEAD HAMMER, USE A BRASS, LEAD, OR HARD PLASTIC HEAD. DO NOT HAMMER THE GUIDE RODS! ONLY TAP ON BRAKE BASE!!***



Figures 18

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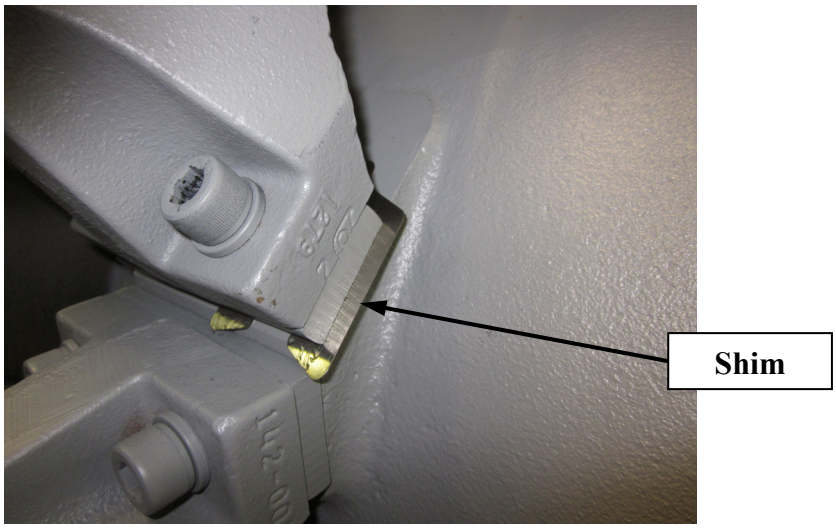
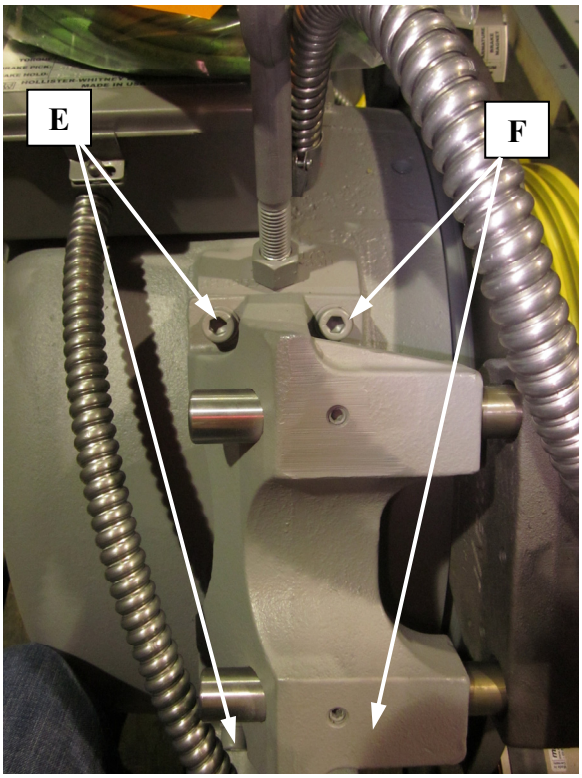
- Top-to-bottom air gap adjustment – ***ONLY AS NECESSARY*** – Air gap can be adjusted by shimming under Brake Base. With the Brake clamping the rotor (de-energized) Use a 3/8" Hex Wrench to loosen (2 per side) socket head screws per instructions as follows.
- If air gap is less near the top of Brake, add shims under back of Brake Base "E" (2 locations)
- If air gap is less near bottom of Brake, add shims under front of Brake Base "F" (2 locations)
- See Figures 19 Below





Figures 19

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b. Manual Brake Release Adjustments (if so equipped)

- Tools required – 18mm & 3/8" wrench (or adjustable wrench)
- Leave the manual brake release handle in the "at-rest" position.
- With the brake release handle un-actuated, adjust nut, "D" to allow enough cable to protrude through brake arm to attach washer and 2 nuts.
- Adjust nut “B” to allow about 1/16” space between brake arm and washer, then tighten jam nut “A” against “B”.
- Actuate the manual brake release handle to ensure the brake opens manually, and returns to the clamped position when the handle is returned to the "at-rest" position.

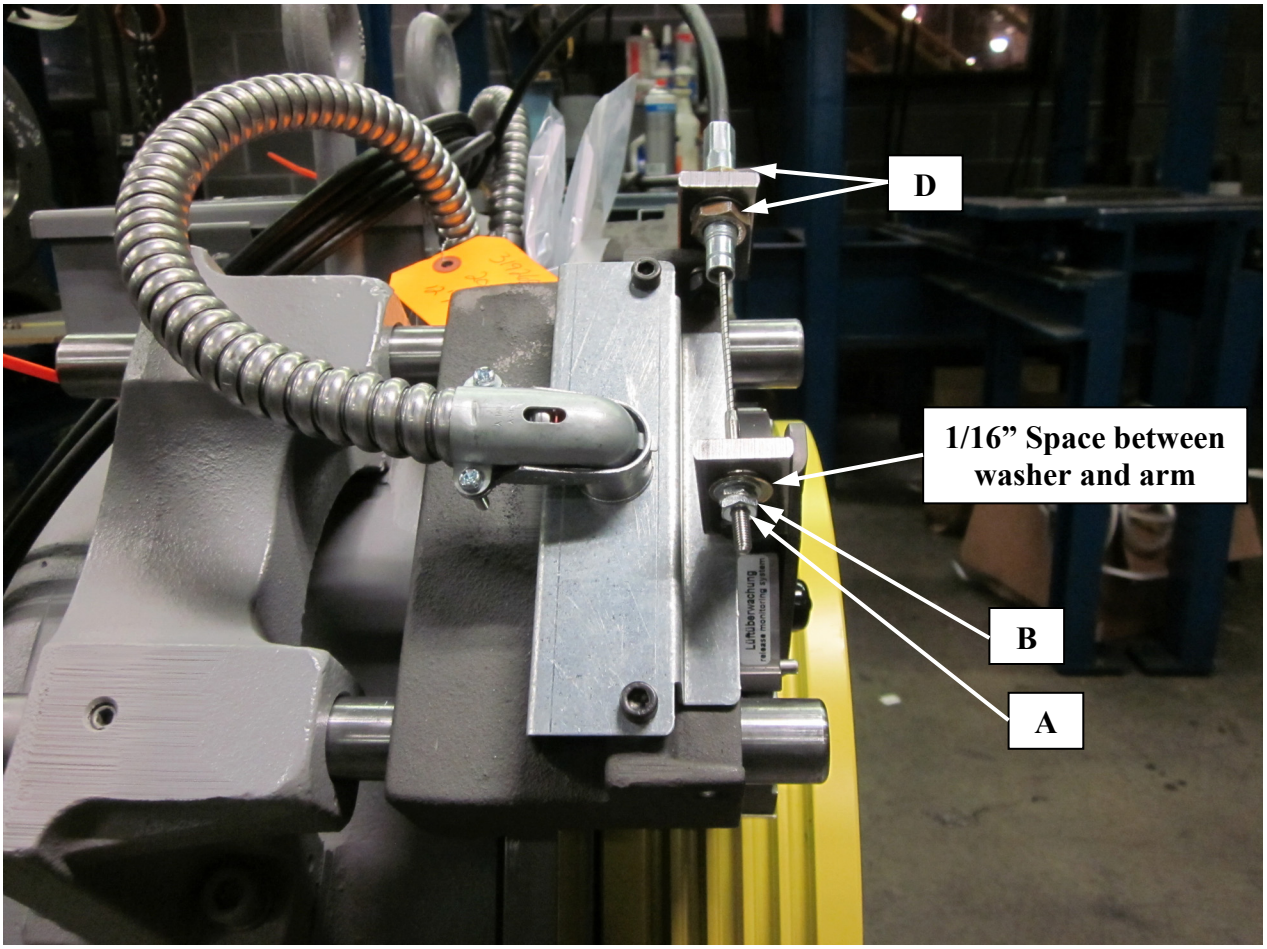

Figure 20

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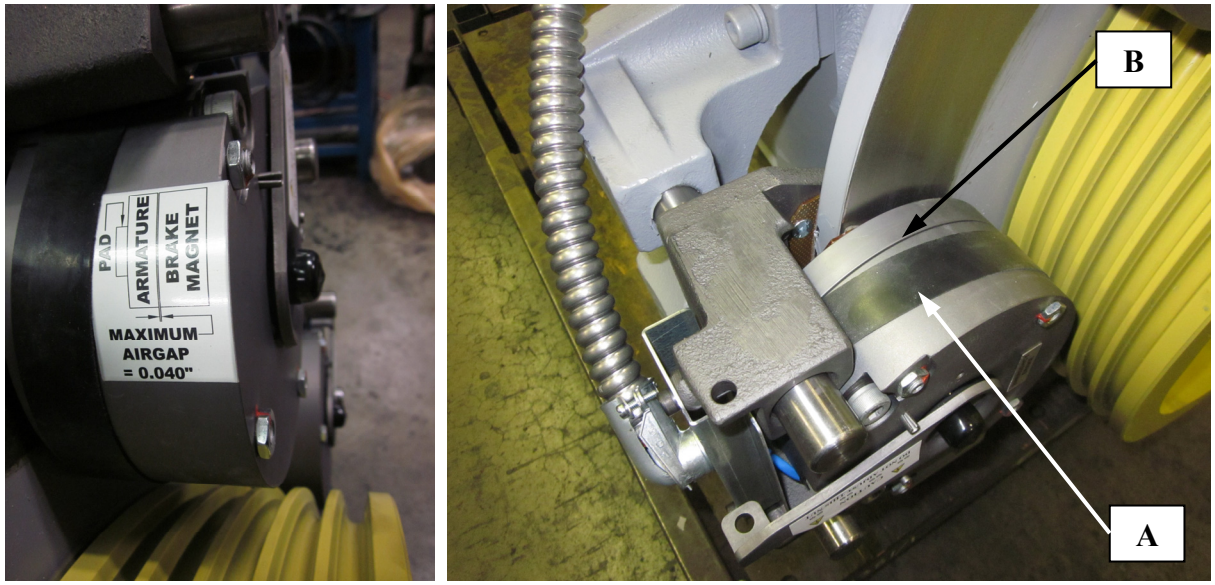
c. Brake Wear – Check Procedure

*****IMPORTANT!!! Brake air gap must not exceed 0.040 inch.****

- **IMPORTANT:** With Brake de-energized - move rubber dust shield "A" to expose Air Gap "B". See Figures 21 below. Air Gap at "B" should be less than .040". If air gap measures greater than .040", consult Hollister-Whitney
- At this time Mayr Brakes suggests that no excessive wear on brake shoes should occur. If excessive wear is observed contact Hollister-Whitney.



Figures 21

VI. Warranty Information

- All parts and equipment manufactured by Hollister-Whitney Elevator Corporation are guaranteed against defects in material and workmanship for a period of one (1) year from the date of shipment. Warranty covers only the repair or replacement of parts, F.O.B. our factory, upon determination by inspection at our factory that warranty is applicable. Equipment and components not of our manufacture are warranted only to the extent of the original manufacturer's warranty. Our warranty specifically does not include any other incidental liability or expense such as transportation, labor, and unauthorized repairs.
- Repair Information can be found at:
  https://www.hollisterwhitney.com/support/

  Bulletin 1146S – GL Machine Prints and Parts Lists
  Bulletin 1156 - Traction Sheave Replacement
  Bulletin 1157 - Main Shaft Bearing Replacement
  Bulletin 1158 - Mayr Brakes
  Bulletin 1159 - Warner Brakes (If Applicable)

- For free technical support, contact Hollister-Whitney at 217-222-0466 or send an e-mail to info@hollisterwhitney.com

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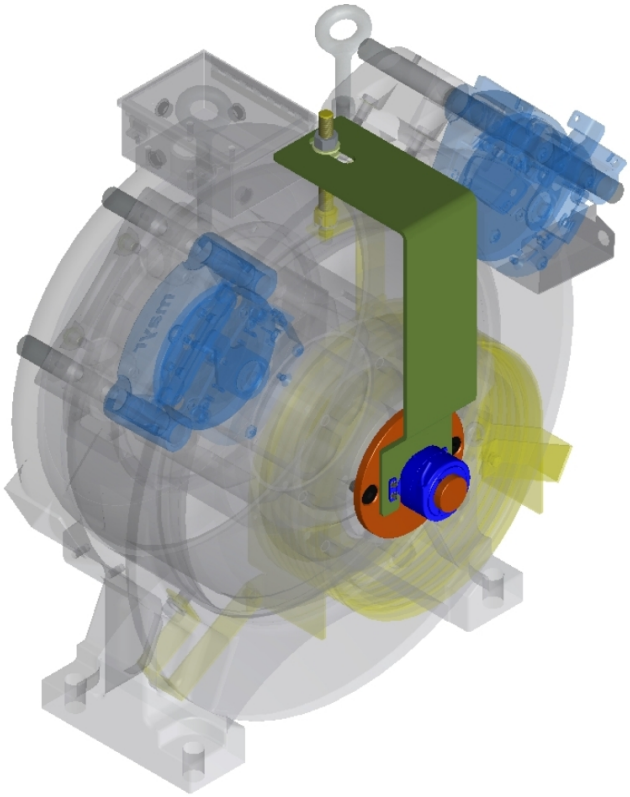

Figure 22: Encoder Field Relocation Kit

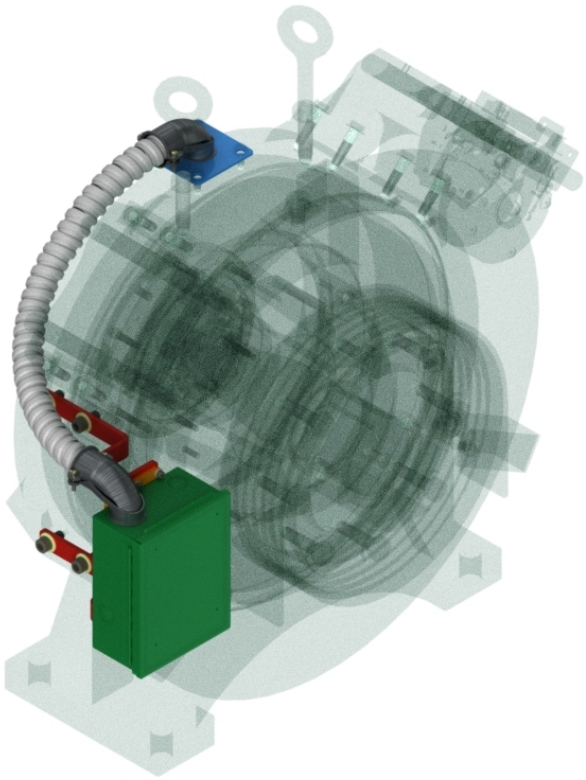

Figure 23: Factory Front Mount Electrical Box Relocation Example. Field Kit Available.

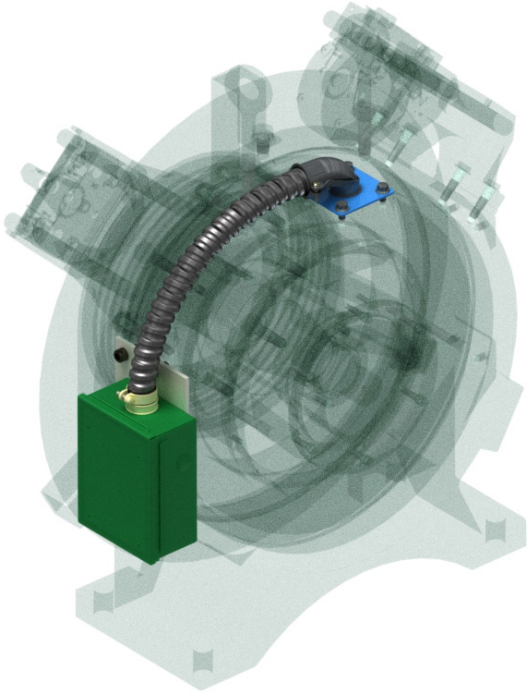

Figure 24: Factory Side Mount Electrical Box Relocation Example. Field Kit Available

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VII. Support Documentation

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Calculation Supplement to Duty Tables

Procedure:

1) Find the Machine Duty that most closely relates to your Application.
- Example: Speed is 300 fpm, Roping is 2:1, ½" Rope, and Capacity is 2500.
2) What Machine is Closest?
- From the Duty Charts, pick GL115-35H, noting that typically a "H" machine is slowed from design speed.
3) Calculate the Estimated Data based on the designed machine and what the actual duty:
- Note the following relationships:
    - Capacity relates directly to Amps & Torque,
    - Speed relates directly to Volts, Hertz, RPM,
    - Final Speed and Final Capacity relates/calculates the final HP
    - Low Voltage (208 Line) machines are designed to run at 170 volts and High Voltage (460 Line) machines are designed to run at 360 volts.

Formulae:

Rated Amps*Requested Capacity/Rated Capacity = Final Amps = FA

Rated Torque *Requested Capacity/Rated Capacity = Final Torque = FT

Rated Volts*Requested Speed/Rated Speed = Final Volts = FV

Rated Frequency*Requested Speed/Rated Speed = Final Frequency = FF

Rated RPM*Requested Speed/Rated Speed = Final RPM = FRPM

Final Torque* Final RPM/5250 = Final Horsepower = FHP

Therefore: GL115-35H 20" Wheel, wants to use it for 2500 lb Cap at 300 fpm.

FA = 33*2500/2625 = 31.4 A
FT = 704*2500/2625 = 670 Ft-lbs
FV = 360*300/467 = 231V
FF = 41.59*300/467 = 26.7 Hz
FRPM=178.25*300/467 = 114.5 RPM

FHP = FT*FRPM/5250 = 670*114.5/5250 = 14.6 HP

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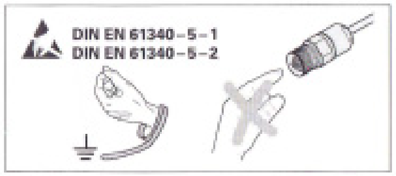
ECN 113 [ExN 100]

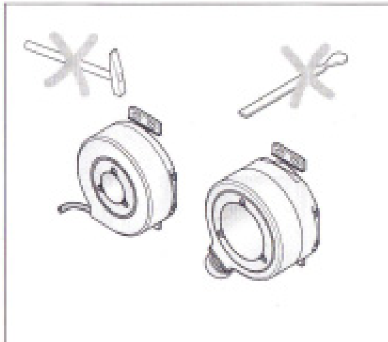
Rotary encoder with mounted stator coupling
Hollow through shaft up to Ø 50 mm

Size	87 mm
Bearing	With integral bearing
Measuring procedures	Absolute (singleturn)
Mounting	Mounted stator coupling
Absolute position values	EnDat 2.2
Order designation	EnDat 01
Positions per rev	8192 (13 bits)
Electrically permissible speed/Deviations	600 min^{-1}/±1 LSB n_{max}/±50 LSB
Processing time t_{cal}	≤ 0.25 µs
Incremental signals	1 V_{SS}
Line counts	2048
Cutoff frequency -3dB	≥ 200 kHz
System accuracy	± 20"
Power supply	5V± 5 %
Current consumption (w/o load)	≤ 180 mA
Electrical connection	Cable
Electrical connection	1 m with M23 coupling -
Shaft	Hollow through shaft
Shaft diameter	[50] mm -
Mech. permissible speed n	D > 30 mm: ≤ 4000 min^{-1} D ≤ 30 mm: ≤ 6000 min^{-1}
Starting torque (at 20 °C)	D > 30 mm: ≤ 0.2 Nm D ≤ 30 mm: ≤ 0.15 Nm
Moment of inertia of the rotor	D = 50 mm: 220 x 10^{-6} kgm^2 D = 38 mm: 350 x 10^{-6} kgm^2 D = 25 mm: 95 x 10^{-6} kgm^2 D = 20 mm: 100 x 10^{-6} kgm^2
Permissible axial motion of measured shaft	± 1.5 mm
Vibration 55 to 2000 Hz	≤ 200 m/s^2 (IEC 60 068-2-6)
Shock (6 ms)	≤ 1000 m/s^2 (DIN IEC 86-2-27)
Max. operating temperature	100 °C
Min. operating temperature	Rigid configuration: -40 °C For frequent flexing: -10 °C
Protection IEC 60529	IP 64
Weight	0.60 kg to 0.90 kg depending on the hollow shaft version



HEIDENHAIN

Montageanleitung
Mounting instructions
Instructions de montage
Istruzioni di montaggio
Instrucciones de montaje



ECN 113 EnDat01

WELLA1: 42A, B, C, D, H
KUPPA1: 30A
ANELA1: 01, 03S17, 27S17, 35S17, 16S15
BELEA1: 58

12/2009

CE

Achtung: Die Montage und Inbetriebnahme ist von einer Fachkraft für Elektrik und Feinmechanik unter Beachtung der örtlichen Sicherheitsvorschriften vorzunehmen.
Die Steckverbindung darf nur spannungsfrei verbunden oder gelöst werden.
Der Antrieb darf während der Montage nicht in Betrieb gesetzt werden.

Note: *Mounting and commissioning is to be conducted by a specialist in electrical equipment and precision mechanics under compliance with local safety regulations.*
Do not engage or disengage any connections while under power.
The drive must not be put into operation during installation.

Attention: Le montage et la mise en service doivent être réalisés par une personne qualifiée en électricité et mécanique de précision dans le respect des règles de sécurité locales.
Le connecteur ne doit être branché ou débranché que hors tension.
L'entraînement ne doit pas être mis en route pendant le montage.

Attenzione: *far eseguire montaggio e messa in servizio da un tecnico specializzato in impianti elettrici e meccanica di precisione in ottemperanza alle disposizioni di sicurezza locali.*
Collegare o staccare i collegamenti soltanto in assenza di tensione.
L'azionamento non deve essere messo in funzione durante il montaggio.

Atención: El montaje y la puesta en marcha deben ser realizados por un especialista en electricidad y mecánica de precisión, observando las prescripciones locales de seguridad.
Conectar o desconectar el conector sólo en ausencia de tensión.
El accionamiento no debe estar en marcha durante el montaje.

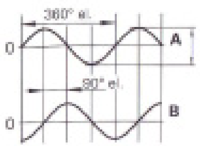
DR. JOHANNES HEIDENHAIN GmbH
Technical support, measuring systems ☎ +49 8669 31-3104 · E-mail: service.ms-support@heidenhain.de

538 365-92 · Ver01 · 20 · 12/2009 · H · Printed in Germany

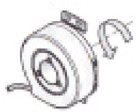
Spannungsversorgung
Power supply
Tension d'alimentation
Tensione di alimentazione
Tensión de alimentación

U_P = 5 V ± 5%
am Gerät, *at encoder,* sur l'appareil, *integrato,* en el aparato
I max. 180 mA
ohne Last, *Without load,* sans charge, *senza carico,* sin carga
EN 50 178
PELF ⏚ EN 60204-1

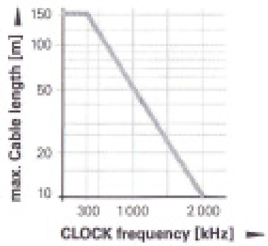
Ausgangsignale
Output signals
Signaux de sortie
Segnali in uscita
Señales de salida



A, B: 0.8 ... 1.2 V_{SS}
(≈ 1 V_{SS})



steigende Codewerte
Rising code values
valeurs codées croissantes
valori assoluti crescenti
valores codificados ascendentes

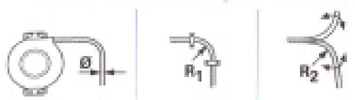


ohne Laufzeitkompensation
without delay compensation
sans compensation de la durée du signal
senza compensazione del tempo di ciclo
sin compensación del tiempo de propagación

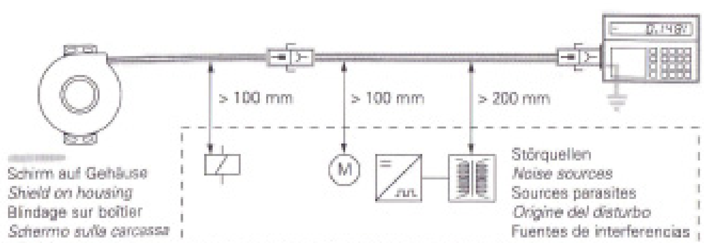
Allgemeine Hinweise
General Information
Informations générales
Informazioni generali
Información general

Siehe auch HEIDENHAIN Katalog: **Allgemeine elektrische Hinweise.**
See also ***General Electrical Information*** *in the HEIDENHAIN brochure.*
Cf. Également le catalogue HEIDENHAIN: **Généralités électriques.**
Vedi anche catalogo HEIDENHAIN: ***informazioni generali elettriche.***
Consultar también el catálogo de HEIDENHAIN: **Información eléctrica general.**

Biegeradius **R**
Bending radius ***R***
Rayon de courbure **R**
Piegatura ***R***
Radio de curvatura **R**,



Ø 6 mm	R_1 ≥ 20 mm	R_2 ≥ 75 mm



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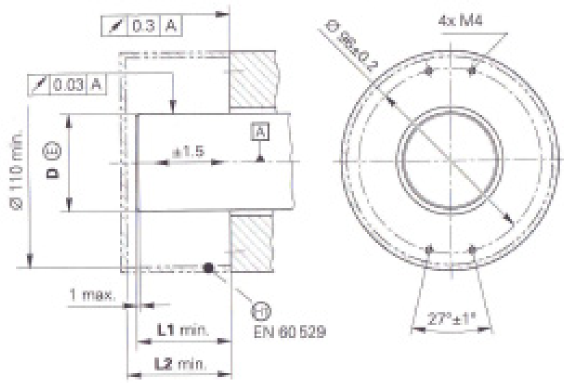
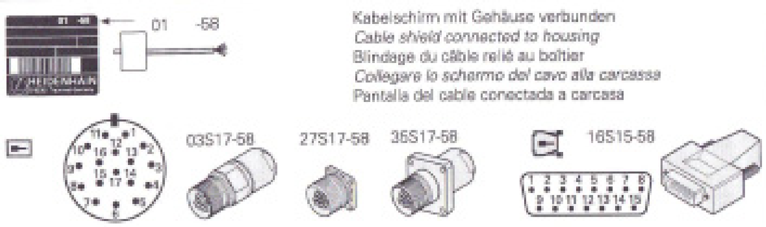
Kundenseitige Anschlussmaße (mm)
Required mating dimensions (mm)
Conditions requises pour le montage (mm)
Quote per il montaggio (mm)
Cotas de montaje requeridas (mm)

Ⓗ = Auf Berührungsschutz achten.
Protect against contact.
Veiller à la protection contre les contacts directs.
Prestare attenzione alla protezione.
Tener en cuenta la protección ante contacto.



A = Lagerung
Bearing
Roulement
Cuscinetto
Rodamiento

D	L1	L2
Ø 20h7	41	43.5
Ø 25h7	41	43.5
Ø 30h7	41	43.5
Ø 38h7	56	58.5
Ø 50h7	56	58.5



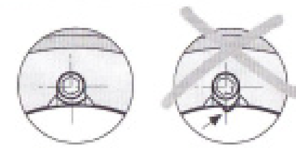
Kabelschirm mit Gehäuse verbunden
Cable shield connected to housing
Blindage du câble relié au boîtier
Collegare lo schermo del cavo alla carcassa
Pantalla del cable conectada a carcasa

(pin)	7	1	10	4	15	16	12	13	14	17	8	9	11
(pin)	4	12	2	10	1	9	3	11	5	13	8	15	6
	U_P	Sensor U_P	0 V	Sensor 0 V	A+	A–	B+	B–	DATA	$\overline{DATA}$	CLOCK	$\overline{CLOCK}$	1)
(wire)	BNGN	BU	WHGN	WH	GNBK	YEBK	BUBK	RDBK	GY	PK	VT	YE	

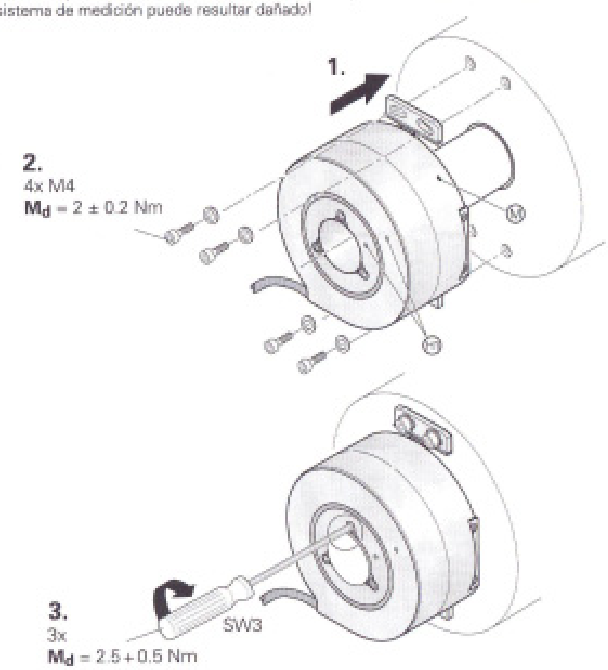
Nichtverwendete Pins oder Litzen dürfen nicht belegt werden!
Vacant pins or wires must not be used!
Les plots ou fils non utilisés ne doivent pas être raccordés!
I pin o i fili inutilizzati non devono essere occupati!
¡No conectar los pins o hilos no utilizados!

1) Innenschirm
Internal shield
Blindage interne
Schermo interno
Blindaje interno

Montage
Assembly
Montage
Montaggio
Montaje



Achtung: Exzenter nur bei montiertem Messgerät festziehen, Messgerät kann beschädigt werden!
Caution: *To avoid damage to the encoder, do not tighten the eccentric screw until the encoder is mounted!*
Attention: Ne serrer l'excentrique qu'une fois le système de mesure monté. Celui-ci ne doit pas être endommagé!
Attenzione: *Fissare gli eccentrici solo con il sistema montato, il sistema può venire danneggiato.*
Atención: Sujetar la excéntrica sólo durante el montaje del sistema de medición. ¡El sistema de medición puede resultar dañado!



Ⓗ = Markierung der 0° Position ±15°
0° position index ±15°
Index position 0° ±15°
Tacca della posizione 0° ±15°
Marcación de la posición 0° a ±15°

Ⓜ = Messpunkt Arbeitstemperatur
Measuring point for operating temperature
Point de mesure température de travail
Punto di misura – temperatura di esercizio
Punto de medición de la temperatura de trabajo

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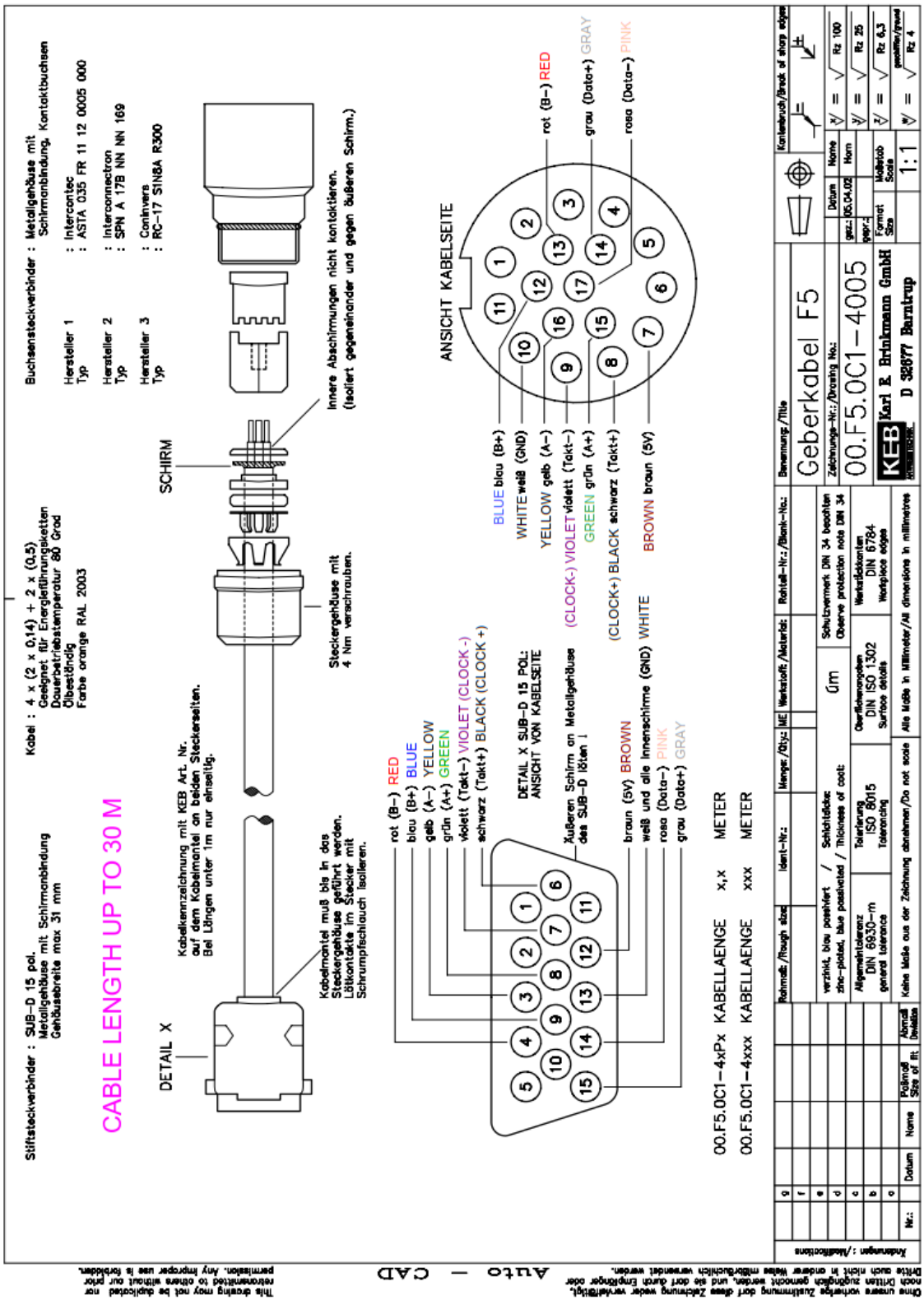

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#1 Glenayre Way
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Phone: 217-222-0466

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e-mail: info@hollisterwhitney.com
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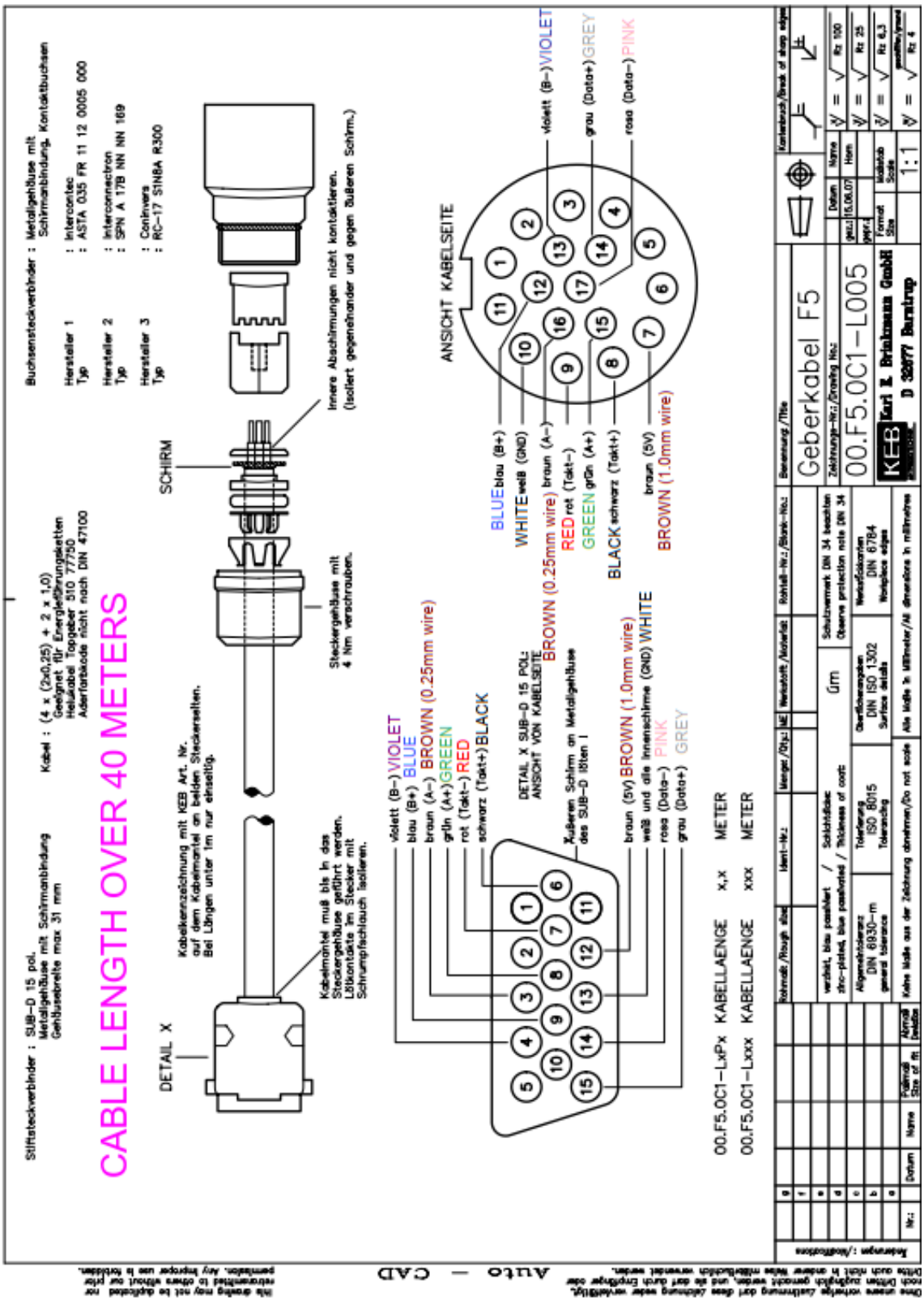

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GERMAN	ENGLISH
ROT	RED
BLAU	BLUE
GELB	YELLOW
GRÜN	GREEN
VIOLETT	VIOLET
SCHWARZ	BLACK
BRAUN	BROWN
WEIβ	WHITE
ROSA	PINK
GRAU	GREY

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Notes and Observations	Date	Initials