Hollister-Whitney
ELEVATOR CO. LLC

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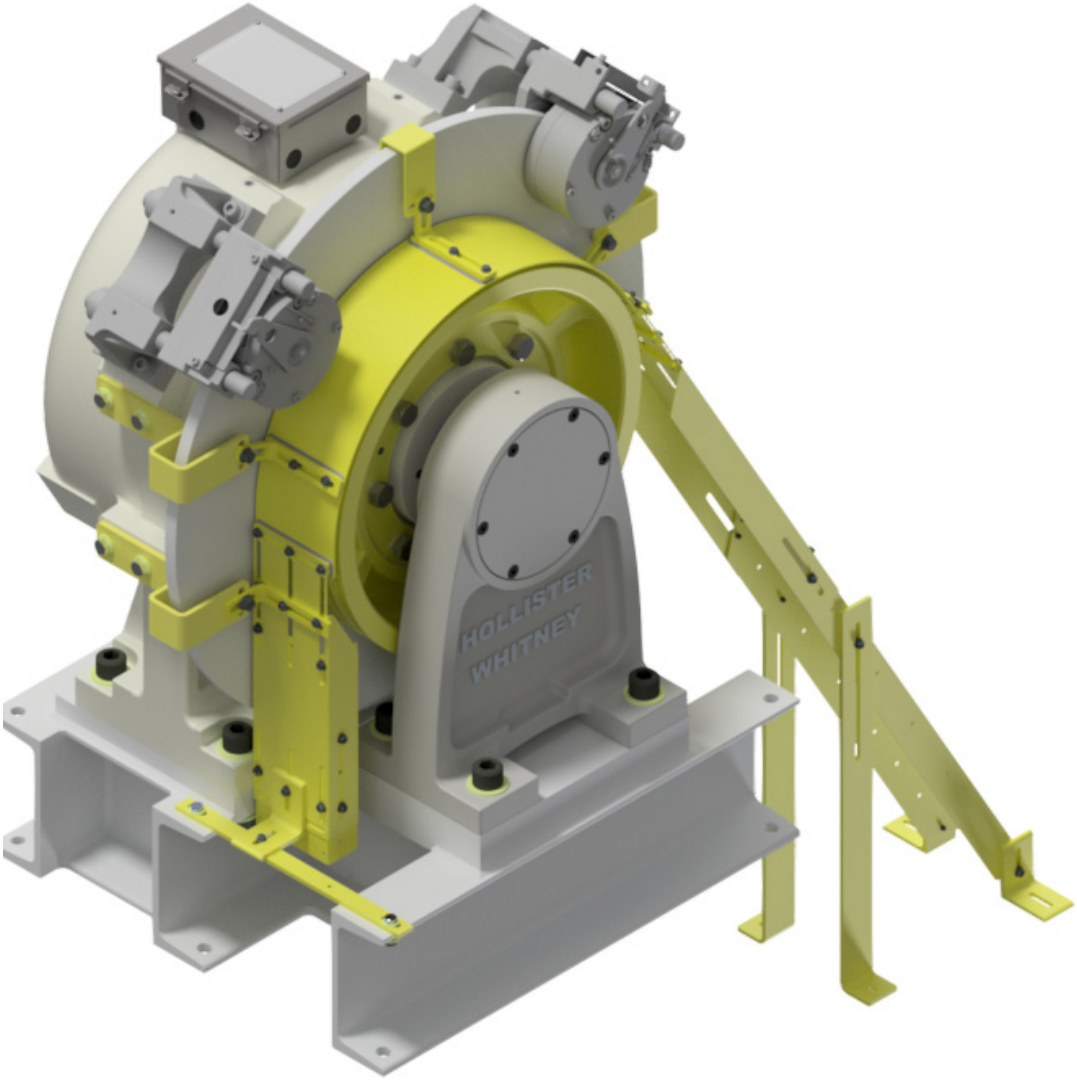
Hollister-Whitney Elevator Corporation

Installation and Service Manual
GL101, GL131, GL171, GL171X, GL130A, GL185 and GL260
AC Permanent Magnet, Gearless Machines
With Outboard Stands



GL171, 20" TW, GUARD

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Important Notice

#1) Hollister-Whitney does not recommend machine disassembly but recognizes there may be installation situations which make disassembly necessary. Prior to any machine disassembly contact Hollister-Whitney Technical Support for guidance.

#2) **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.

Further Support Documentation can be found at: https://www.hollisterwhitney.com/support/

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I. Introduction

Thank you for choosing a Hollister-Whitney, AC, Permanent Magnet Gearless Machine!

The GL101, GL131, GL171, GL171X, GL130A, GLl85 and GL260 machines have all been designed for use in machine room applications with VVVF controls. Machines are also designed with 28 or 40 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. Example: A GL171-20L, with 20" wheel, 2000# capacity, 200 fpm, requires 170V (208V supply) at 32 amps with 40% counter-balance weight. 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 & 3.)

"H" models are designed to run at lower currents but will require higher voltage supplies. Example: A GL171-20H, with 20" wheel, 2000# capacity, 200 fpm, requires 360V (440V supply) at 16 amps with 40% counter-balance weight. 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 & 3.)

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 wheel
- Groove profiles Calculated per application to maximize Wheel/Rope Life
- Main disc brakes, capable of holding 125% of the load. (Emergency brake available)
- Brake switches (wired normally open - standard.)
- En-dat Encoder & Cable (15 to 75-meter cable lengths available standard)
- Finishing Base Frame

Important Notice:

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#2) **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.

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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.

All actual or running voltage is job specific and can be found on the Machine Data Tag.
Low voltage machines can achieve greater than charted car speeds – consult HW engineering.

- Table 1 shows the maximum capacity for each machine, based on the following specifications:
  - **15" Traction Wheel** & 1:1 roping (50, 45, & 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(lbs)	Capacity 45%-(lbs)	Capacity 40%-(lbs)	Car Speed (ft/min)	Machine RPM	Power H.P.	Torque Ft-lbs	Est. BTU/Hour
GL101-15L	208	26	1500	1350	1250	300	76.39	8.8	603	3279
GL101-15H	460	13	1500	1350	1250	300	76.39	8.8	603	3309
GL101-20L	208	34	1500	1350	1250	400	101.86	11.7	603	3606
GL101-20H	460	16	1500	1350	1250	400	101.86	11.7	603	3569
GL131-20L	208	44	2000	1800	1650	400	101.86	15.6	804	4118
GL131-20H	460	22	2000	1800	1650	400	101.86	15.6	804	4070
GL131-35L	208	81	2000	1800	1650	700	178.25	27.3	804	5148
GL131-35H	460	39	2000	1800	1650	700	178.25	27.3	804	5228
GL171-70L	208	99	2500	2250	2000	700	178.25	34.1	1005	5642
GL171-70H	460	56	2500	2250	2000	700	178.25	34.1	1005	5544
GL171-20L	208	32	3325	3125	2925	150	38.2	9.9	1355	6934
GL171-20H	460	16	3325	3125	2925	150	38.2	9.9	1355	6934
GL171-40L	208	65	3325	3125	2925	300	76.39	19.7	1355	6937
GL171X-35H	460	29	4650	4225	3875	263	66.85	21.5	1692	7784

Table 1

- Table 2 shows the maximum capacity for each machine, based on the following specifications:
  - **15.75" Traction Wheel** & 1:1 roping (50, 45, & 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(lbs)	Capacity 45%-(lbs)	Capacity 40%-(lbs)	Car Speed (ft/min)	Machine RPM	Power H.P.	Torque Ft-lbs	Est. BTU/Hour
GL101-15L	208	26	1425	1275	1175	315	76.39	8.8	603	3279
GL101-15H	460	13	1425	1275	1175	315	76.39	8.8	603	3309
GL101-20L	208	34	1425	1275	1175	420	101.86	11.7	603	3606
GL101-20H	460	16	1425	1275	1175	420	101.86	11.7	603	3569
GL131-20L	208	44	1900	1725	1575	420	101.86	15.6	804	4118
GL131-20H	460	22	1900	1725	1575	420	101.86	15.6	804	4070
GL131-35L	208	81	1900	1725	1575	735	178.25	27.3	804	5148
GL131-35H	460	39	1900	1725	1575	735	178.25	27.3	804	5228
GL171-70L	208	99	2375	2150	1975	735	178.25	34.1	1005	5642
GL171-70H	460	56	2375	2150	1975	735	178.25	34.1	1005	5544
GL171-20L	208	32	3150	2975	2800	157.5	38.2	9.9	1355	6934
GL171-20H	460	16	3150	2975	2800	157.5	38.2	9.9	1355	6934
GL171-40L	208	65	3150	2975	2800	315	76.39	19.7	1355	6937
GL171X-35H	460	29	4425	4025	3700	276	66.85	21.5	1692	7784

Table 2

- Table 3 shows the maximum capacity for each machine, based on the following specifications:

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➢ **20" Traction Wheel** & 1:1 roping (50, 45, & 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(lbs)	Capacity 45%-(lbs)	Capacity 40%-(lbs)	Car Speed (ft/min)	Machine RPM	Power H.P.	Torque Ft-lbs	Est. BTU/hour
GL101-15L	208	26	1100	1000	900	400	76.39	8.8	603	3279
GL101-15H	460	13	1100	1000	900	400	76.39	8.8	603	3309
GL101-20L	208	34	1100	1000	900	500	101.86	11.7	603	3606
GL101-20H	460	16	1100	1000	900	500	101.86	11.7	603	3569
GL131-20L	208	44	1500	1350	1250	500	101.86	15.6	804	4118
GL131-20H	460	22	1500	1350	1250	500	101.86	15.6	804	4070
GL131-35L	208	81	1500	1350	1250	900	178.25	27.3	804	5148
GL131-35H	460	39	1500	1350	1250	900	178.25	27.3	804	5228
GL171-70L	208	99	1875	1700	1525	900	178.25	34.1	1005	5642
GL171-70H	460	56	1875	1700	1525	900	178.25	34.1	1005	5642
GL171-20L	208	32	2500	2325	2250	200	38.2	9.9	1355	6934
GL171-20H	460	16	2500	2325	2250	200	38.2	9.9	1355	6934
GL171-40L	208	65	2500	2325	2250	400	76.39	19.7	1355	6937
GL130A-20L	208	40	3125	2925	2750	200	38.2	11.4	1568	8671
GL130A-20H	460	20	3125	2925	2750	200	38.2	11.4	1568	8671
GL130A-40L	208	85	3125	2925	2750	400	76.39	22.8	1568	7917
GL171X-35H	460	29	3500	3175	2900	350	66.85	21.5	1692	7784
GL185-35L	208	78	4375	4100	3850	280	53.48	24.0	2357	6789
GL185-35H	460	38	4375	4100	3850	280	53.48	24.0	2357	6789
GL185-50L	208	105	4375	4100	3850	400	76.39	34.3	2357	9698
GL185-50H	460	50	4375	4100	3850	400	76.39	34.3	2357	9698
GL185-70L	208	148	4375	4100	3850	560	106.95	48.0	2357	13577

Table 3

- Table 4 shows the maximum capacity for each machine, based on the following specifications:

➢ **25" Traction Wheel** & 1:1 roping (50, 45, & 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(lbs)	Capacity 45%-(lbs)	Capacity 40%-(lbs)	Car Speed (ft/min)	Machine RPM	Power H.P.	Torque Ft-lbs	Est. BTU/hour
GL130A-20L	208	40	2500	2325	2200	250	38.2	11.4	1568	8671
GL130A-20H	460	20	2500	2325	2200	250	38.2	11.4	1568	8671
GL130A-40L	208	85	2500	2325	2200	500	76.39	22.8	1568	7917
GL185-35L	208	78	3500	3275	3075	350	53.48	24	2357	6789
GL185-35H	460	38	3500	3275	3075	350	53.48	24	2357	6789
GL185-50L	208	105	3500	3275	3075	500	76.39	34.3	2357	9698
GL185-50H	460	50	3500	3275	3075	500	76.39	34.3	2357	9698
GL260-35L	208	115	4500	4250	4000	350	53.48	32	3138	9038
GL185-70L	208	148	3500	3275	3075	700	106.95	48	2357	13577
GL260-35H	460	55	4500	4250	4000	350	53.48	32	3138	9038
GL260-50L	208	150	4500	4250	4000	500	76.39	45.7	3138	12911
GL260-50H	460	76	4500	4250	4000	500	76.39	45.7	3138	12911
GL260-70L	208	225	4500	4250	4000	700	106.95	63.9	3138	18076

Table 4

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b. Maximum System Loads

- The maximum system loads shown in Tables 5 & 6 are based on 50% counterbalance and 1:1 roping. Note: Speeds below are Car Speeds roped 1:1, Car Speed roped 2:1 are halved.
- 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
  - Consult HW engineering for specific Machine/Speed/Capacity combinations in highlighted boxes
  - Some Speed & Capacity combinations not yet available

	Not All Capacities Available at All Speeds. Shaded Boxes Represent Speeds Only Available After Over-Speeding a Low (L) Voltage Winding.							
Car Speed	**15" T.W.**				**15.75" T.W.**			
(fpm)	**GL101**	**GL131**	**GL171**	**GL171X**	**GL101**	**GL131**	**GL171**	**GL171X**
50	23000	24800	25700	25700	23000	24800	25700	25700
100	23000	24800	25700	25700	23000	24800	25700	25700
150	23000	24800	25700	25700	23000	24800	25700	25700
200	23000	24800	25700	25700	23000	24800	25700	25700
250	23000	24800	25700	25700	23000	24800	25700	25700
300	23000	24800	25700		23000	24800	25700	
350	23000	24800	25700		23000	24800	25700	
400	23000	24800	25700		23000	24800	25700	
450	22350	24800	25700		22600	24800	25700	
500	21650	24800	25600		21900	24800	25700	
550	21000	24800	24900		21300	24800	25200	
600	20500	24250	24200		20800	24600	24600	
650	20000	23650	23600		20300	24000	24000	
700	19550	23150	23100		19800	23500	23500	
750	19150	22650	22600		19150	23000	23000	
800	18800	22250	22200		18800	22500	22500	
850		21850	21800			21850	21800	
900		21450	21400			21450	21400	
950		21100	21100			21100	21100	
1000		20800	20800			20800	20800	

Table 5

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	Not All Capacities Available at All Speeds. Shaded Boxes Represent Speeds Only Available After Over-Speeding a Low (L) Voltage Winding.								
Car Speed	20" T.W.						25" T.W.		
(fpm)	GL101	GL131	GL171	GL171X	GL130A	GL185	GL130A	GL185	GL260
50	23000	24800	25700	25700	24750	23900	24750	23900	26700
100	23000	24800	25700	25700	24750	23900	24750	23900	26700
150	23000	24800	25700	25700	24750	23900	24750	23900	26700
200	23000	24800	25700	25700	24750	23900	24750	23900	26700
250	23000	24800	25700	25700	24750	23900	24750	23900	26700
300	23000	24800	25700	25700	24750	23900	24750	23900	26700
350	23000	24800	25700	25700	24750	23100	24750	23900	26700
400	23000	24800	25700		24750	22200	24750	23700	26700
450	23000	24800	25700		24750	21400	24750	22900	26700
500	23000	24800	25700		24750	20750	24750	22200	26700
550	22900	24800	25700		24750	20150	24750	21500	26700
600	22300	24800	25700		24750	19650	24750	21000	26700
650	21800	24800	25700		24750	19200	24750	20500	26700
700	21300	24800	25200		24750	18750	24750	20000	26700
750	20850	24700	24700		24750	18350	24750	19600	26700
800	20450	24250	24200		24750	18000	24750	19200	26500
850		23800	23800				24750	18900	26000
900		23400	23400				24750	18600	25600
950		23000	23000				24750	18300	25200
1000		22650	22600				24750	18000	24800

Table 6

c. Brake Specifications

- 115 VDC model brake is supplied standard from the factory. Refer to Table 7.
- Brake Switch: Rating 250 VAC, 3A; Recommended Switching Current 24VDC, 10 to 50 mA; (Minimum 12VDC, 10mA)
- Switches can be wired (H-W recommends brake switches be hooked up and working) :
  - Normal Open, - Black & Blue wires - as shipped from H-W
  - Normal Closed - Black & Gray wires

Brake Model:	Mayr 6 GL101, GL171, GL171X	Mayr 8 GL131, GL171, GL171X	Mayr 10 GL130A, GL185, & GL260
Pick (Excitation) Voltage (VDC) 3 Seconds Max:	104@1.49A	104@2.27A	104@3.62A
Pick Power (W):	155	236	377
Hold Voltage (VDC):	52@0.75A	52@1.14A	52@1.81
Hold Power (W):	39	59	94
Resistance (ohms)	69.8	45.8	28.8

Table 7

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- The machine brakes may be mounted in up to 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.

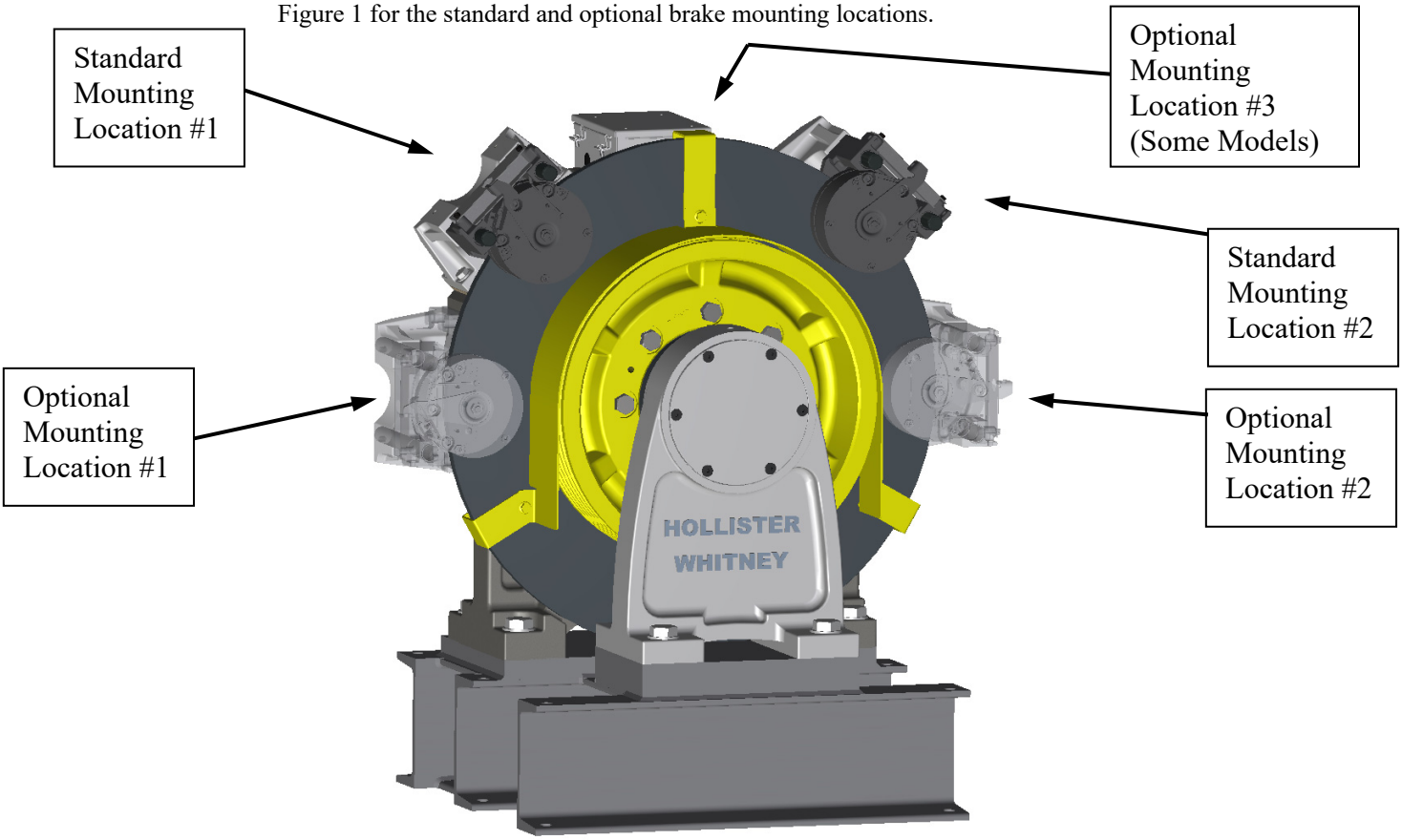

Figure 1 (4 brakes shown as representation only)

- **<u>Top mount - Optional mounting location #3</u>** – Only available on some machines – Consult Hollister-Whitney Engineering.
- If brakes are to be mounted using either of the optional mounting locations shown in Figure 1, mounting positions should be requested at the time of ordering. Brakes may be relocated in the field when necessary. Contact Hollister-Whitney for instructions.
- Depending on capacity, dual machine brakes may be used on some machines GL171 and GL171X to function as a single primary brake. Optional locations for additional brakes may therefore be limited in those situations.

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

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

Look for Bulletin 1162S.

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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 2.)

Figure 2

b. Handling

- The machine will be delivered on wooden boards. The machine may be left on boards and moved with standard fork truck or pallet jack equipment.
- When the machine is removed from boards, it must be moved by hoisting through holes provided in machine base. Figure 3
- When hoisting the machine, mount and use hoisting rigging so that it does not rest against the machine. This will reduce the damage that might be cause during movement and installation.
- Use Table 7 to determine your specific machine weight. Weights are approx., since other options might be added by customer, (extra brakes, rope gripper, etc.). Also consult shipping documents and see supplemental information in Bulletin 1162S found at:

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

Machine Weight (all weights approximate)			
Model	**Weight**	**Weight**	**Minimum Lifting Eyebolt**
GL101	2000 lbs.	910 kg	5/8
GL131	2300 lbs.	1040 kg	
GL171	2400 lbs.	1100 kg	
GL130A	3900 lbs.	1770 kg	3/4
GL185	4300 lbs.	1950 kg	
GL260	4800 lbs.	2200 kg	

Table 8

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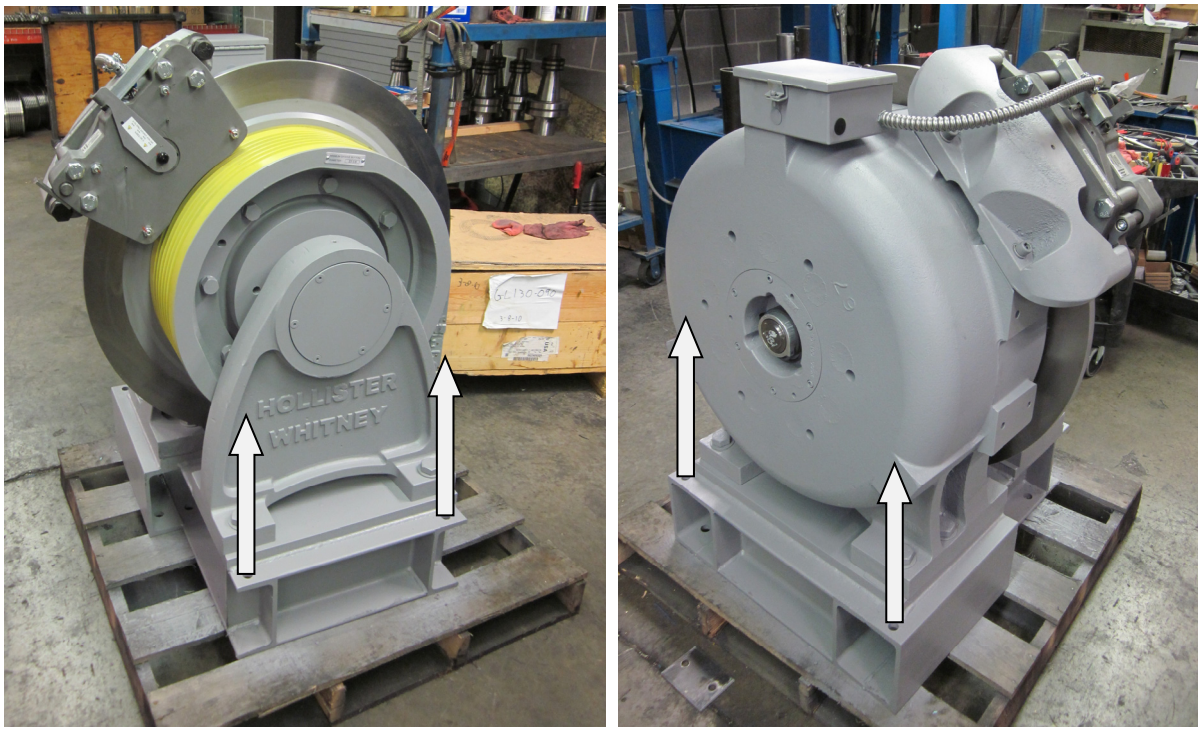

Figure 3

DO NOT USE ANY OTHER MACHINE COMPONENT TO LIFT THE MACHINE! USE ONLY THE MACHINE BASE 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. Disassembly / Reassembly (Disassembly of Machine is not recommended!)

Important Notice: Hollister-Whitney does not recommend machine disassembly but recognizes there may be installation situations which make disassembly necessary. Prior to any disassembly contact Hollister-Whitney Technical Support for guidance and follow the procedure below.

The goal in the following steps is to slide the outboard stand off the bearing as straight as possible. Failure to take care with these steps will damage the bearing seals and shorten bearing life.

NOTE: Shims are present under Outboard Stand; take care during the following procedures to mark their location, orientation and quantity accordingly. These shims MUST be replaced in the same locations, to correctly align Outboard Stand to Motor upon reassembly.

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- **Step 1: Remove End Cap** (See Figure 4)
  - Use a hex wrench, remove (6) outboard stand end cap bolts, and remove End Cap
  - Slide the interior bearing cap against the rotor for ease of access in next step.

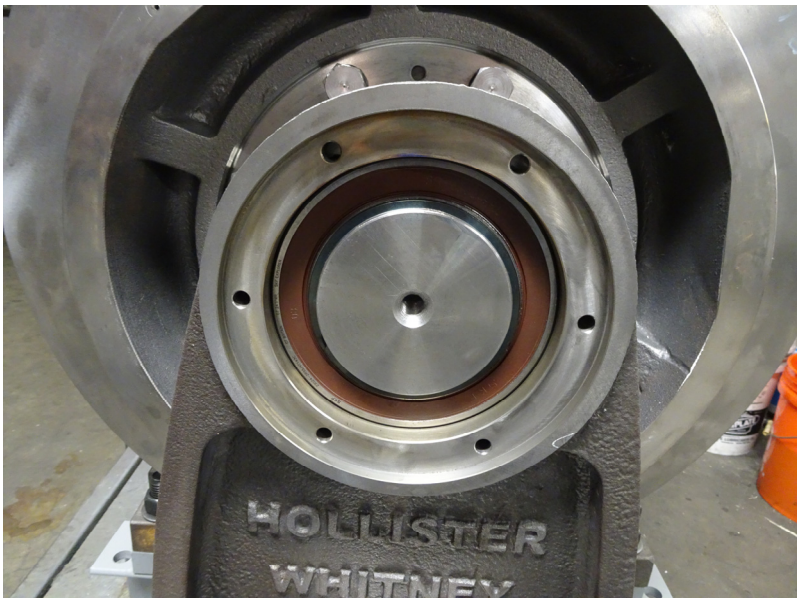

Figure 4

- **Step 2: Install All-Thread Guide Rods** (See Figure 5)
  - Obtain 4X 3/8"-16UNC all-thread rods and 8X 3/8" UNC nuts.
    - 7" Length all-thread for GL101 thru GL185
    - 9" Length all-thread for GL260

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- Install two nuts on the end of each rod to act as turning devices. Jam the two nuts together to lock them onto the end of the rod.
- Insert the all-thread assemblies through the outboard stand holes and thread them into interior bearing cap until the rods bottom out against the rotor/traction wheel. This will bring the traction wheel side bearing cap up tight against the outboard stand.

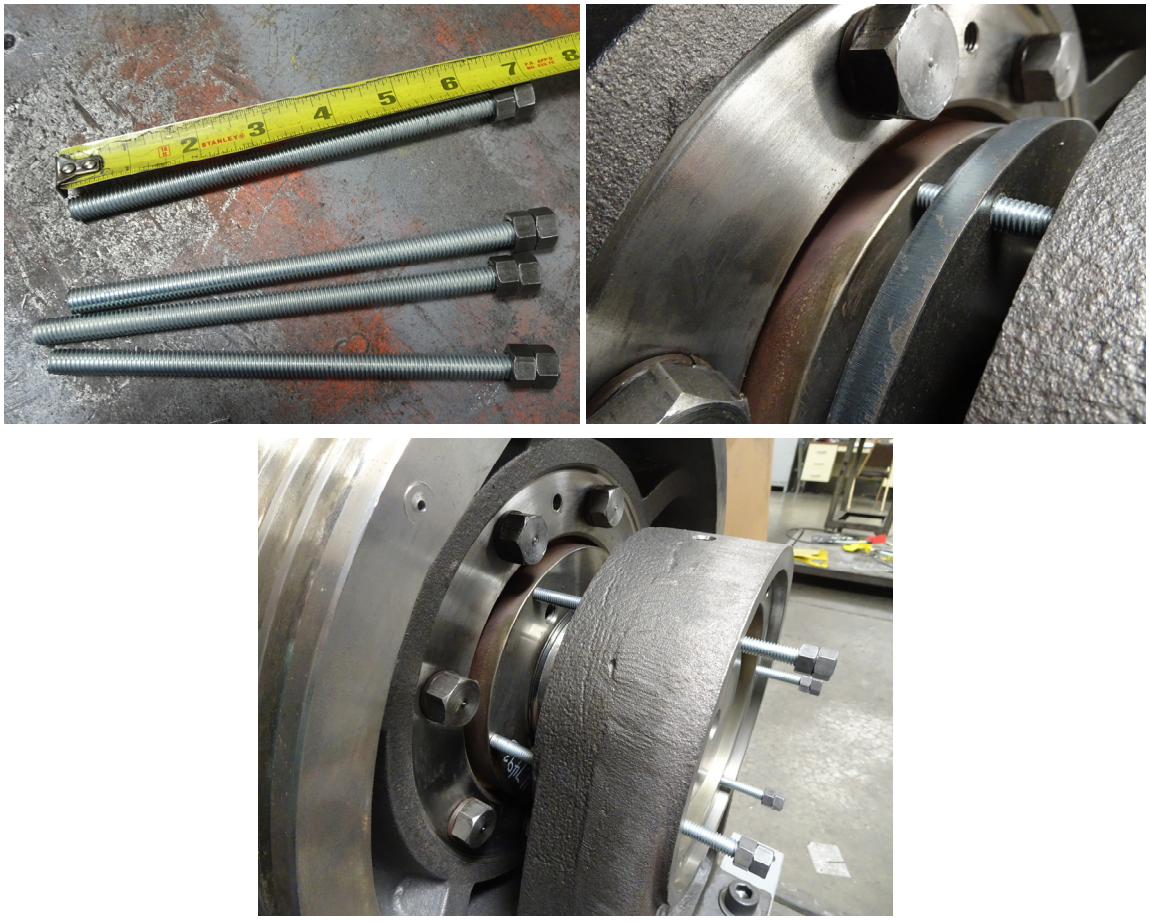

Figure 5

- **<u>Step 3: Remove Outboard Stand</u>** (See Figure 6)
  - <u>Mark front side of Outboard Stand</u>. It is important to reassemble the outboard stand with the same side facing out.
  - <u>Mark the edge of the feet of the outboard stand on the base fabrication.</u> When you reassemble the machine you will be moving the outboard stand back to this mark.
  - Remove Outboard Stand mounting bolts. (See Figure 6)

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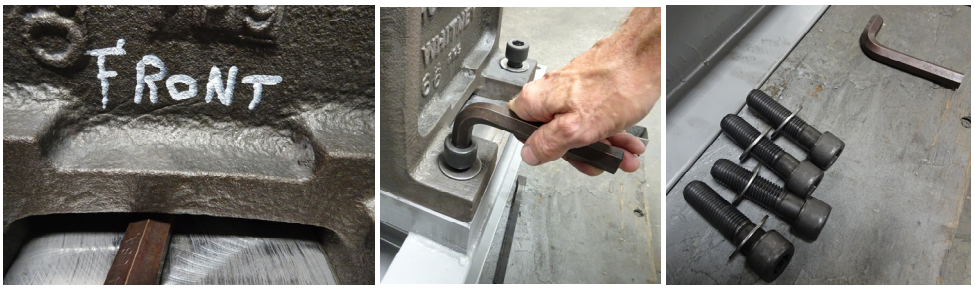

Figure 6

- Using all-thread assemblies previously installed, begin slowly moving the outboard stand away from the motor. The interior bearing cap will move the outboard stand away from the rotor until;
  - On GL101/131/171 it is brought up against the bearing inside lock ring, or
  - On the GL130A/185/260 it is brought up against the bearing itself.
- Snug down the all-thread assemblies and remove the jam nuts.
- Using a pry bar to gently lift the outboard stand, remove a shim or two from the set under one of the feet. Shim removal will help relieve pressure and help ease the movement of the stand. **NOTE: It will be convenient to mark the location of the shims at this point**. (See Figure 7)

Figure 7

- Continue sliding the Outboard Stand off the base. ***Do not force or put Outboard Stand in a bind, as this will cause damage to the Outboard Stand Bearing.*** All shims must be marked at this point. (See Figure 8)
  - On the GL101/131/171/171X machines, the all-thread will aid in taking the outboard stand off the base straight, but care will still need to be taken to keep the stand straight.
  - On the GL130A/185/260, the bearing is now secure so while care is still important, the chance of bearing damage is greatly reduced.

Figure 8: Base Clear of Bearing, and all Shims Marked

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- With the Outboard Stand off the base, place the bearing end cap onto the all-thread and snug the nuts down. This not only helps protect the bearing, but is a convenient storage for the extra parts. (See Figure 9)

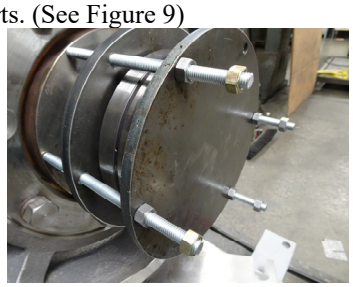

Figure 9

- **Step 4: Remove Motor from Base Fabrication**
  - Mark Edge of Motor Feet on Machine Base Fabrication for later reassembly
  - Loosen and remove bolts holding Motor Housing to Base Fabrication.
  - Remove plugs from top of Motor Housing, insert Hoisting Eye Bolts, lift Motor using eye bolts and pull straight up with spreader, or other rigging apparatus. (See Figure 10) ***Use eye bolts to lift motor ONLY, not complete machine assembly***

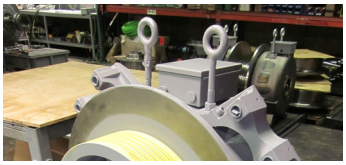

Figure 10: 2 lifting eye bolts installed (example)

- **Step 5: Move Machine in appropriate manner to final Installation Location**
- **Step 6: Reassemble Machine on Base Fabrication**
  - Generally follow the reverse order of the disassembly steps to reassemble the machine.
  - Hoist Motor onto Base Fabrication. Line up motor feet to previously scribed base lines.
  - Tighten bolts through Fabricated Base.
  - Remove end cap from all-thread (Figure 9), making sure that all-thread keeps the interior bearing cap tight.
  - Place marked shims in appropriate positions, remembering that 1 or two less shims on one side may help with sliding the outboard stand onto the bearing.
  - Note the Front of the outboard stand and hoist outboard stand onto Base Fabrication. The all-thread rods are still in place to help with outboard stand placement and positioning. (Figure 8)
  - Carefully begin sliding the outboard stand onto the machine.
  - ***When installing Outboard Stand use extreme care when sliding Stand over Bearing so that you don't bind the Outboard Stand Bearing in any way***. When the interior bearing cap is encountered, loosen the all-thread evenly to allow the base to be moved into its original position, marked in Step 3. Confirm all shims were returned to original position!

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- **Step 7: Check alignment of Outboard Stand to Motor**
  - Use a Dial Indicator mounted on a Magnetic Base. Set Magnetic Base on Motor Shaft and rest Indicator against Outboard Stand Bolting rim. Check Outboard Stand is in Alignment with Motor by turning motor by hand. Adjust Outboard stand as necessary prior to removing indicator. (See Figure 11)
  - Tighten Outboard Stand Bolts.
  - Double check final alignment is within 0.002" and adjust as necessary.


Figure 11

- **Step 8: Install Caps:**
  - Slide Bearing End Cap against back of Outboard Stand. Install Front Bearing End Cap on Front of Outboard Stand. Bolt 2 End Caps together.

d. 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.d.i - "Short-term storage."

e. 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.

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 8.
- Refer to Section III.b - "Handling" for the proper hoisting and handling procedures.

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- 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 intended to be mounted in traditional overhead applications with down-pull on the traction sheave, or in basement set application with up-pull on the traction sheave. Special Machine Base fabrications are available for basement set applications. See Machine Prints in Section VII: Support Documentation.

i. Traditional Overhead

- Anchor the machine base to the structural support using the mounting hole locations in the base.
- The bolts and washers required to anchor the machine base to the support, when not provided, should be Grade 5 minimum (Bolts adhering to ASTM A325 are also suitable), and of sufficient size and quantity to secure the machine from movement, with consideration for adherence to all applicable building codes and ASME A17.1.
- Hollister-Whitney does not typically include the machine mounting hardware with the machine due to variations in structural machine support.

ii. Basement Set Mounting

- Basement Set Machines are available, machine base fabrications and mounting plates specially designed for up-pull applications.
- Mounting plates are available for New Pour applications, and for adapting to Existing Structures.
- Refer to all applicable building codes and ASME A17.1 when selecting hardware (or other anchoring systems) to anchor the machine mounting plates to the structural supports in an up-pull application.
- Use the more stringent criteria between the building codes, ASME A17.1 and the minimum bolt grades identified in Section IV.a.i.

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 13. Contacts are Normally Closed, opening if an overheat condition exists, and will close again after the machine has cooled to safe operating temperatures.
- 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 2.
- Connect the U-V-W lines from the drive as they correspond to motor. See Figure 13.
- Earth Ground connects to the ground lug terminal inside the electrical enclosure.
- Connect the machine and emergency brakes where shown in Figure 13.
- 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 the electrical enclosure, and replace it with the spare gray wire coming from the brake switch.
- **NOTE** – The GL171 and GL171X dual brakes are to be wired together to function as a single machine brake. The rope gripper (or second set of brakes) acts as the emergency brake.
- **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.

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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 REGARD TO WIRE SIZES USED TO CONNECT THE POWER AND EARTH GROUND AND THE TYPE AND SIZE OF FUSES.

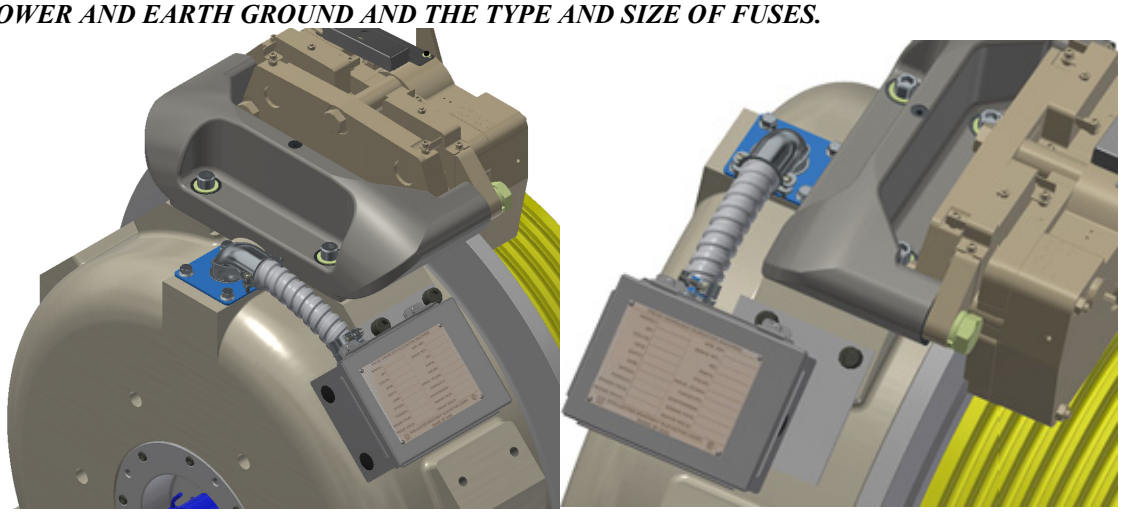

Figure 12: Relocation of electrical box is an available option. Factory Installed Relocation Kit Shown, Field Kit Available. Can be located at any open (see Figure 1) Brake Mounting position.

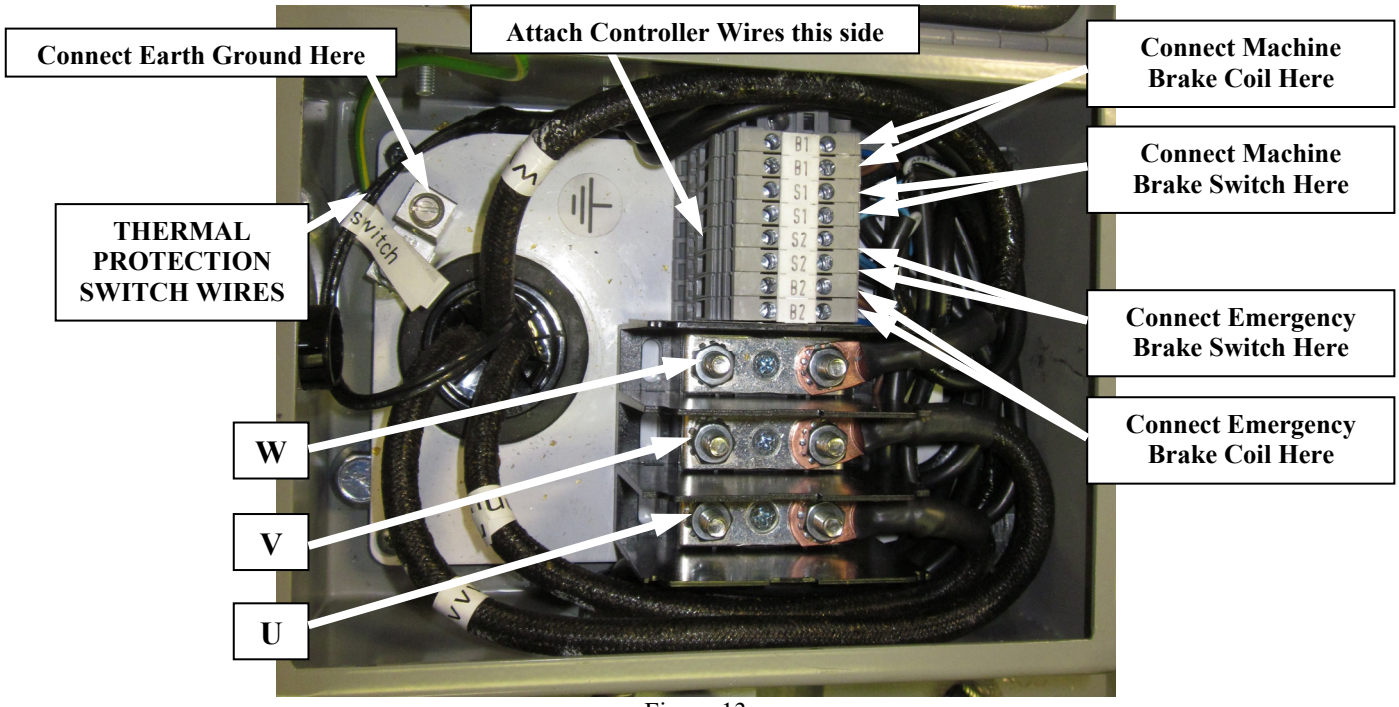

Figure 13

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ii. Encoder wiring

- Connect the supplied encoder cable to the encoder on the back of the machine.
- 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 the warranty.
- There are 2 cable classifications, and each has its own color coding per cable. See attachments in Section VIII "Support Documentation" at end of manual for diagrams.
  - 30m and under – 00.F5.0C1-4005 document
  - 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 Figures 2.
- Verify that all the brake parameters match the information on the machine data tag. Refer to Figures 2.
- 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.

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- After burnishing, re-verify the air gap between the brake pads and the rotor. For brake check procedure and service follow Sections V.a. thru V.c. or VI.a. thru VI.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. *****

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'. For Mayr #6 and #8 Brakes, other lengths are available by special order up to 30'. Mayr #10 Brakes are limited to 8' length. H-W does not recommend cable lengths greater than those noted.
- 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 to reduce the number of tight bends in the cable casing. 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, replacing the cable with shorter length 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 jam nut on the handle and unscrew the handle from the brake release system.
- Figure 14 shows the manual brake release handle fully assembled and Figure 15 shows the handle removed. (Brake handle mounting plate attached to back of machine for display only)
- Depending on capacity, dual machine brakes may be used on some GL171 and GL171X machines to function as a single primary brake. It will be necessary to have one set of brake releases for each pair of brakes.
- Mayr #10 brakes require 1 Brake release per brake.

Figure 14: left is for Mayr #6 and #8, right is for Mayr #10

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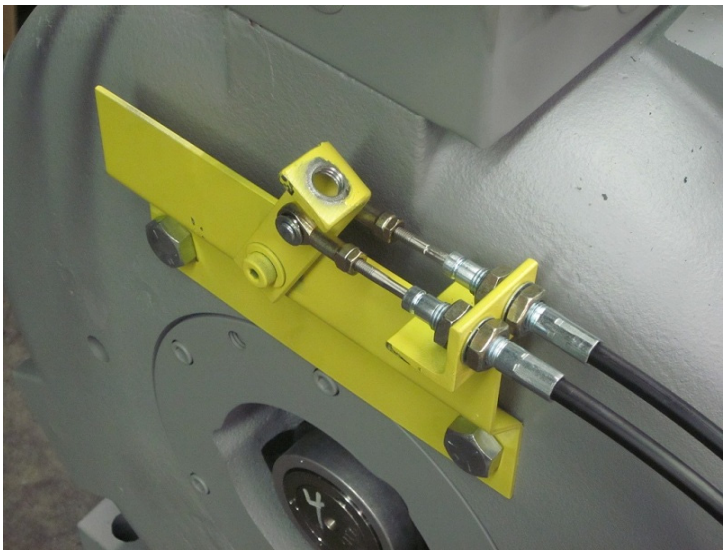

Figure 15: Brake Handle Removed.

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.

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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, consult Hollister-Whitney. Brake pad shims may be available for the Mayr #6 and #8 brakes. Some newer models of the Mayr #10 Brake are equipped with Pad-Wear shims to allow more wear while maintaining proper air gap. Consult Hollister-Whitney for Brake Pad replacement and/or shimming options.
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.

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.

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!

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- **Machine Brake Procedures**
  - **Mayr 6 (GL101, GL171, GL171X) &**
  - **Mayr 8 Brakes (GL131, GL171, GL171X)**

NOTE: GL171 & GL171X, depending on Capacity, may use one (1) Mayr #8, two (2) Mayr #6, or two (2) Mayr #8 brake(s) as Service Brake. Consult H-W Engineering for configuration.

(Example Machine Shown with Mayr 6 Model Brakes)

a. Brake Air Gap Check Procedure

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

- Tools required – feeler gauge set.
- The air gap on the brakes is preset from the factory at approximately 0.020 inch.
- 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
- 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. (Figure 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.d.
Brake Wear - Check Procedure

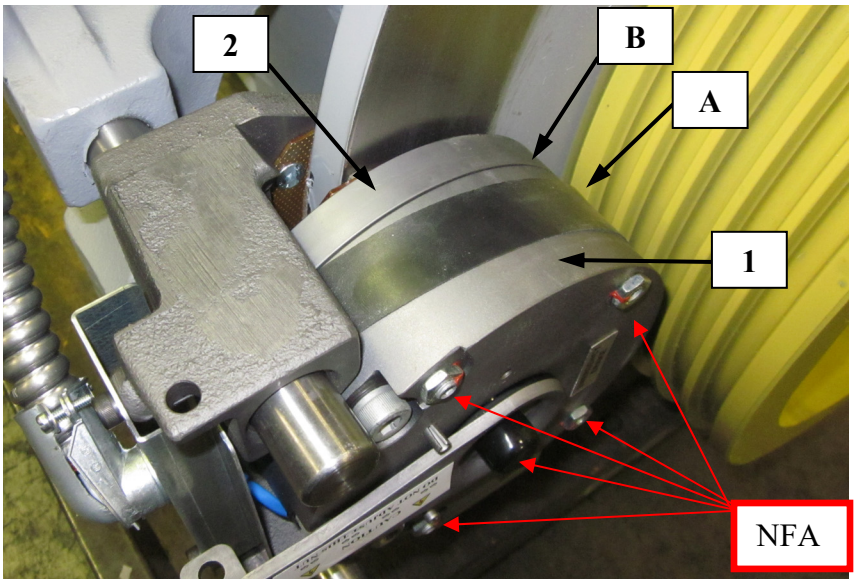

Figure 16

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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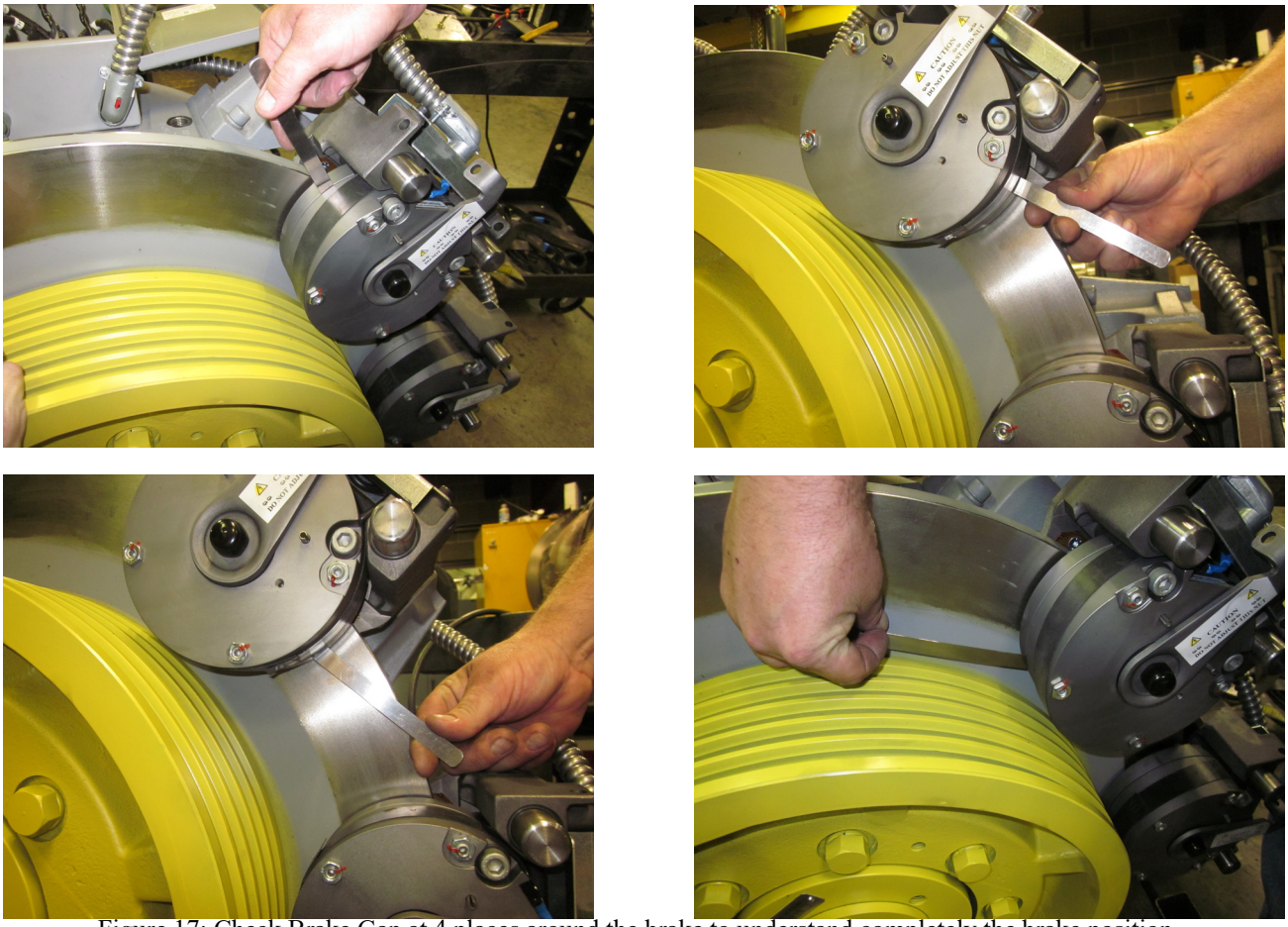

Figure 17: Check Brake Gap at 4 places around the brake to understand completely the brake position.

b. Brake Adjustment

(Machine Shown with Mayr 6 Model Brakes, Mayr 8 similar)

i. Side-to-Side Adjustments – *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 "ARROWS". Shown in Figure 18
- After the air gap is set, re-tighten the socket head screws.
- **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!!***

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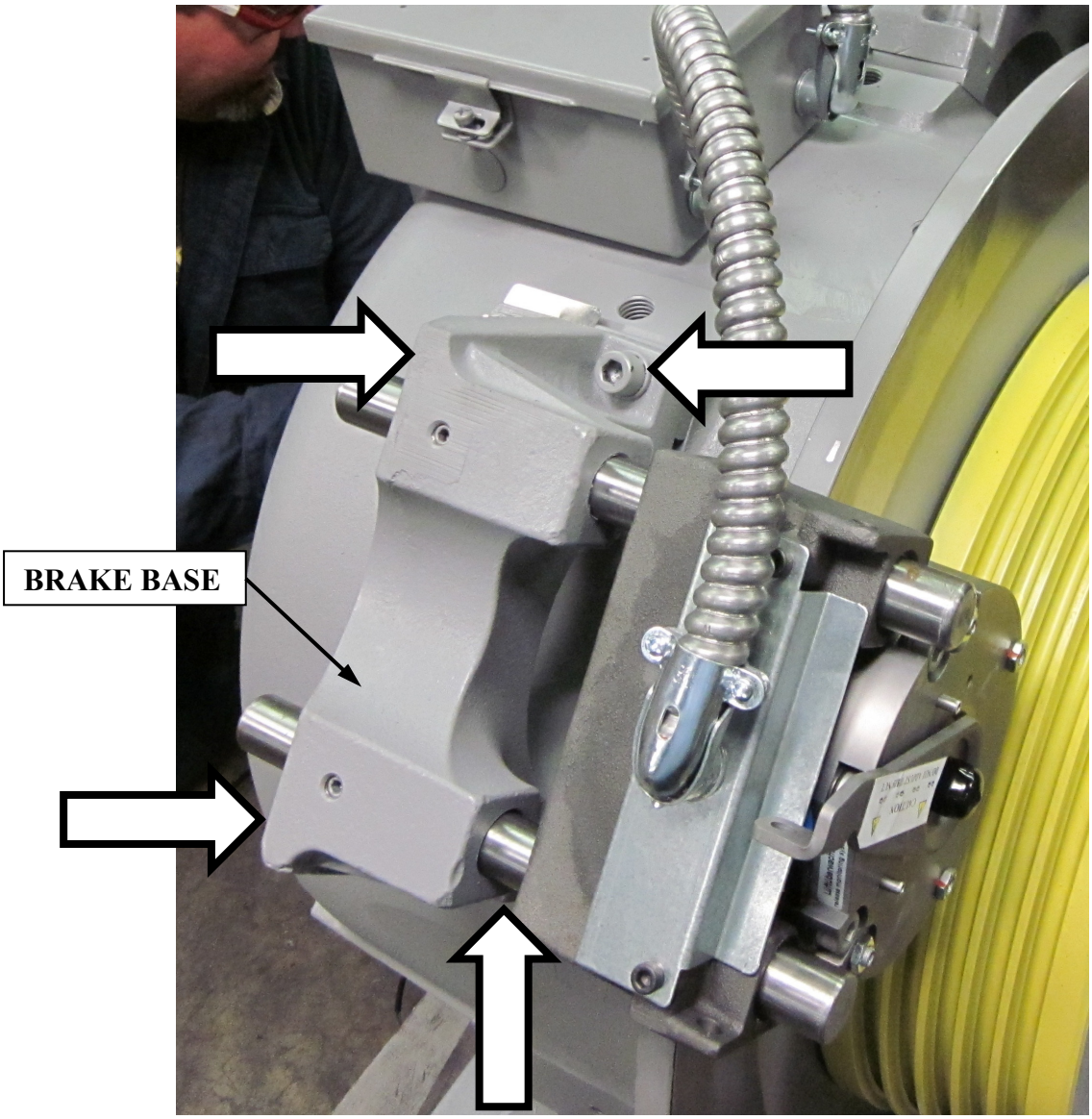

Figure 18

ii. **Top-to-Bottom Adjustments – *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. See Figure 19.
- If air gap is less near the top of Brake, add shims under back of Brake Base "E"
- If air gap is less near bottom of Brake, add shims under front of Brake Base "F"

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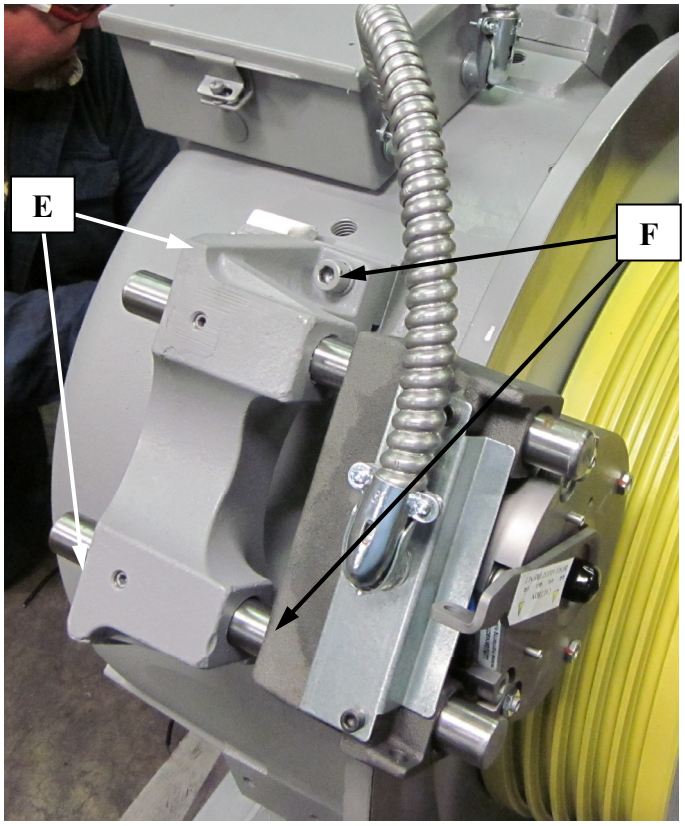

Figure 19

c. **Manual Brake Release Adjustments (if so equipped) -** See Figure 20

- 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.

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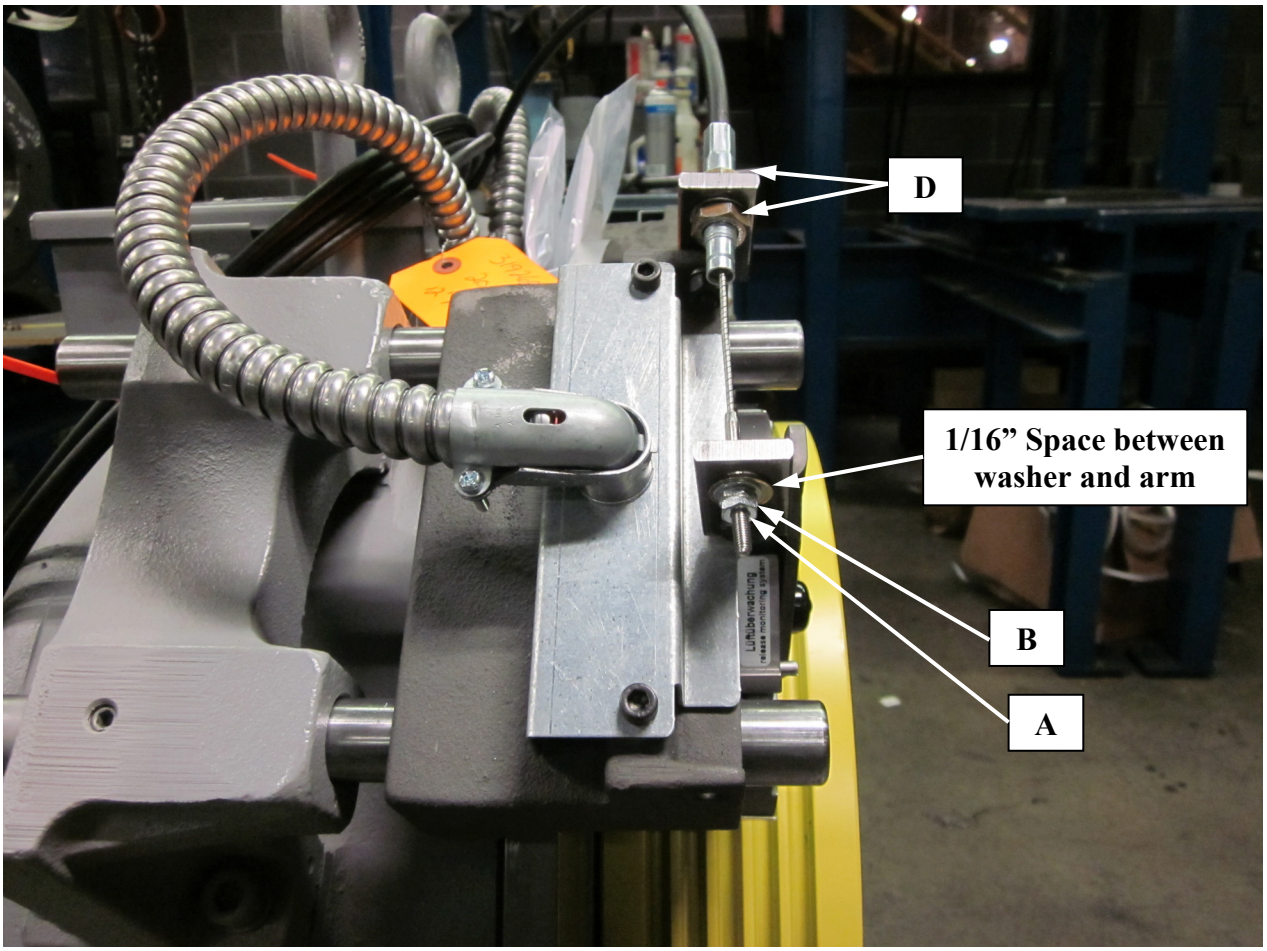

Figure 20

d. Brake Wear – Check Procedure (Car in service)

- **(Machine Shown with Mayr 6 Model Brakes, Mayr 8 similar)**
  - **IMPORTANT:** With Brake de-energized - move rubber dust shield "A" to expose Air Gap "B". See Figure 21 below. Air Gap at "B" should be less than .040". Brake under pressure from counterweight load may exhibit uneven air gap. Check air gap at 4 places around brake and average the readings. If average air gap measures greater than .040", consult Hollister-Whitney.
  - Mayr Brakes suggests that no excessive wear on brake shoes should occur for a long period of time. If excessive wear is observed contact Hollister-Whitney.

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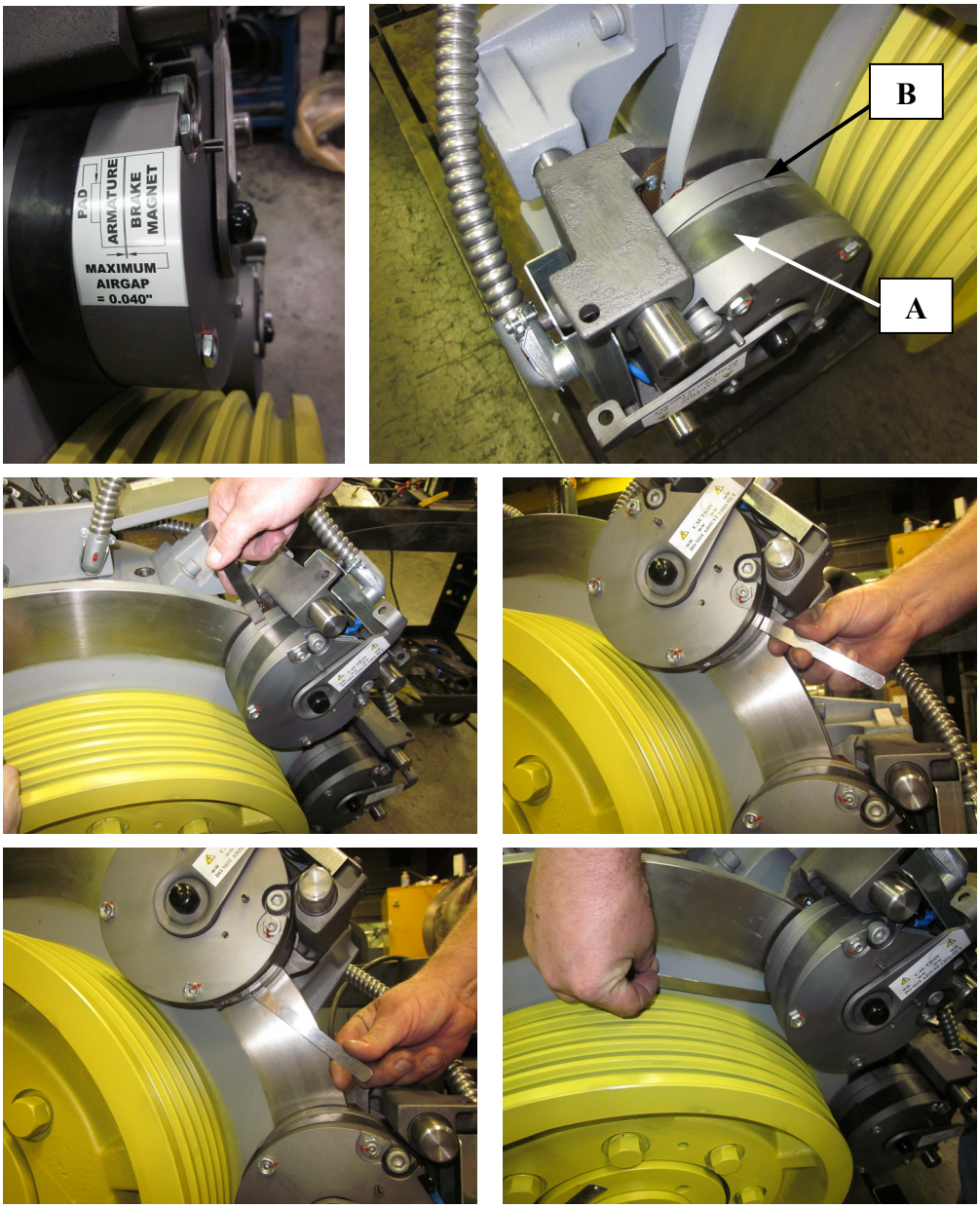

Figure 21: ***IMPORTANT!!! Brake average air gap must not exceed 0.040 inch. ***

- **Machine Brake Procedures – Mayr 10 Brakes – GL130A, GL185, & GL260**

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!

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a. Brake Air Gap Check Procedure

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

- Tools required – feeler gauge set.
- The air gap on the brakes is preset from the factory at approximately 0.020 inch.
- In new condition, air gap should be **equal** all the way around. See Figures 22.
- 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.)
- Check Air Gap at "B" between Coil Carrier Assembly "1" and Armature "2". The approximate 0.020 inch gap should be **equal** all the way around. (Figure 22)

*****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 VI.c.: Brake Wear - Check Procedure

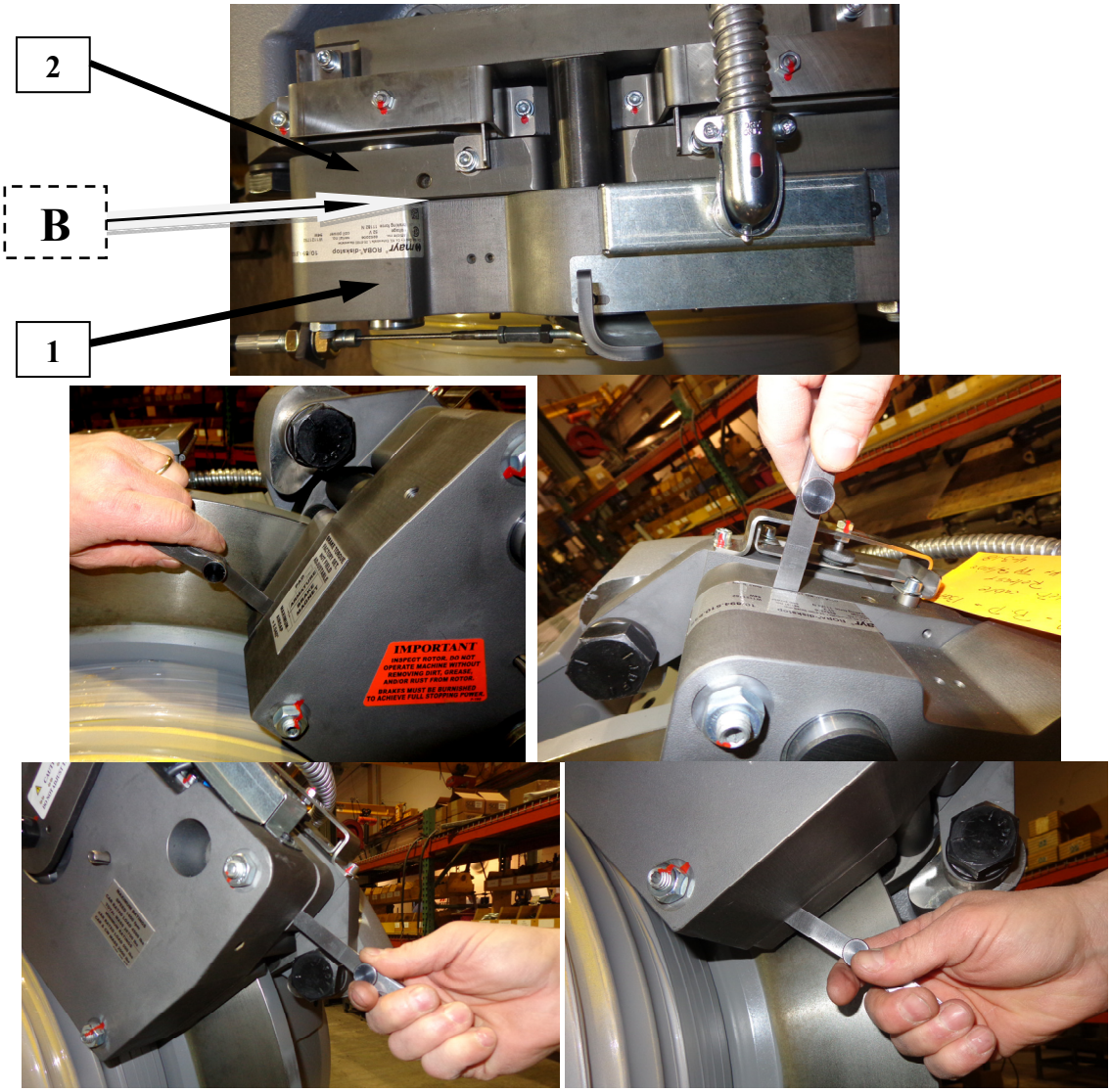

Figure 22

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b. Brake Adjustment

i. Side-to-Side Adjustments – ***ONLY AS NECESSARY***

- With the Brake clamping the rotor (de-energized) Use a 1/2" Hex Wrench to loosen (4 per brake) socket head screws "E" & "F" shown in Figure 23.
- **NOTE:** It may be necessary to lightly tap the brake base to obtain equal air gap.
- ***ONLY TAP ON BRAKE BASE!! DO NOT USE A STEEL HEAD HAMMER; USE ONLY A BRASS, LEAD, OR HARD PLASTIC HEAD.***
- After the air gap is set, re-tighten the socket head screws, "E" & "F".

ii. Top-to-Bottom Adjustments – ***ONLY AS NECESSARY***

- With the Brake clamping the rotor (de-energized) Use a 1/2" 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".
- If air gap is less near bottom of Brake, add shims under front of Brake Base "F".

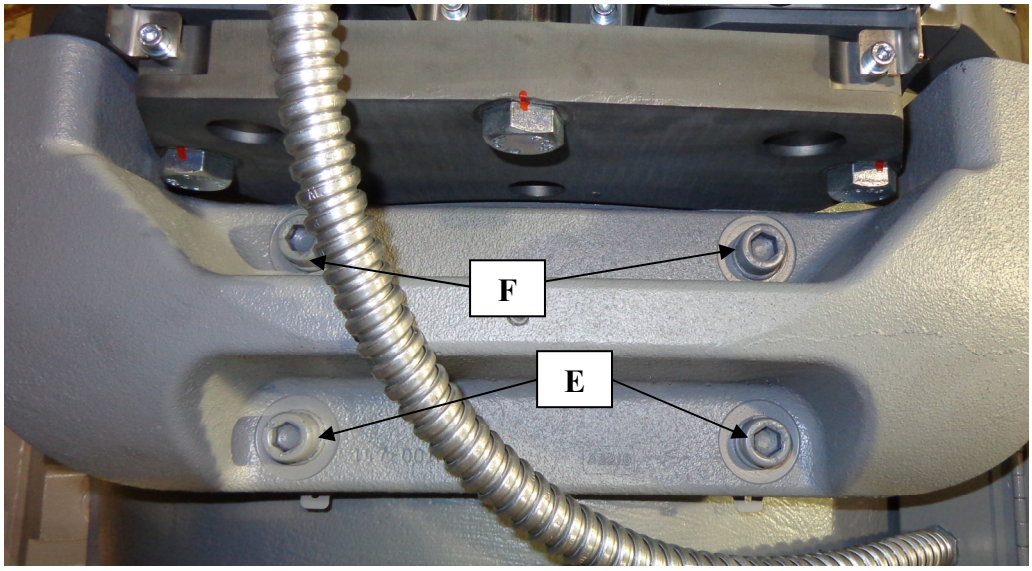

Figure 23

c. Manual Brake Release Adjustments (if so equipped)

- Tools required – 18mm & 3/8" wrench (or adjustable wrenches)
- Leave the manual brake release handle in the "at-rest" position.
- See Figure 24. With the brake release handle un-actuated, adjust nuts "A" to allow enough cable to protrude through actuator arm "B" to attach 1 washer and 2 jam nuts "C" to threaded end of cable.
- Adjust coupling nuts "A" and jam nuts "C" so that Actuator Arm should have about 1/8" free play after adjustment. Then tighten all Nuts.
- 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.

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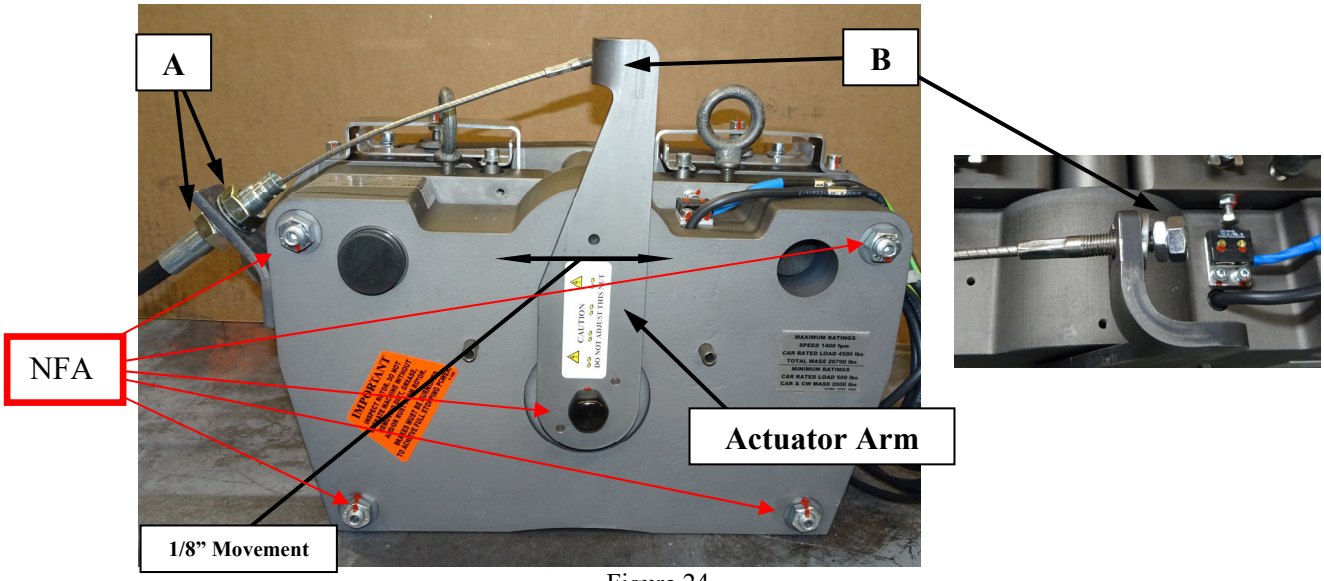

Figure 24

<u>IMPORTANT NOTE</u> – 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.

d. Brake Wear – Check Procedure

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

- **IMPORTANT:** With Brake de-energized - See Figure 25 below. Air Gap "B" between Coil Carrier Assembly "1" and Armature "2" should be less than .040". Note: Brake under pressure from counterweight load may exhibit uneven air gap. Check air gap at 4 places (See Figure 26) around brake and calculate the average the readings. If average air gap measures greater than .040", consult Hollister-Whitney.
- Mayr Brakes suggests that no excessive wear on brake shoes should occur for a long period of time. If excessive wear is observed contact Hollister-Whitney.

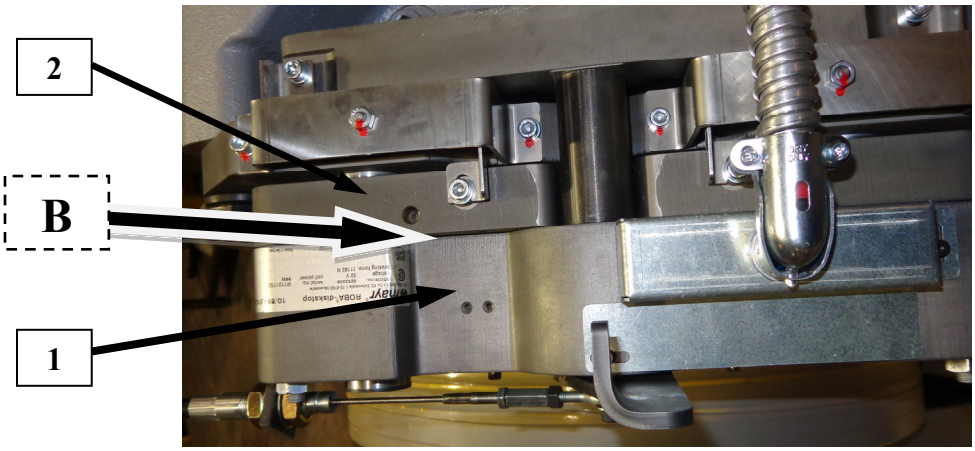

Figure 25: Position not specific, shown to Illustrate Air Gap between parts

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Figure 26: Air Gap readings 4 places around brake.

VI. Warranty and Repair 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 1162S – GL Machine Prints and Parts Lists
  Bulletin 1165 - Replacement Manual - Outboard Stand Bearing
  Bulletin 1156 - Traction Sheave Replacement
  Bulletin 1157 - Main Shaft Bearing Replacement
  Bulletin 1158 - Mayr Brakes
- For free technical support, contact Hollister-Whitney at 217-222-0466 or send an e-mail to info@hollisterwhitney.com

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VII. Support Documentation

Metric - Duty Tables

All actual or running voltage is job specific and can be found on the Machine Data Tag.

- Table 1M shows the maximum capacity for each machine, based on the following specifications:
  - 15" Traction sheave & 1:1 roping (50, 45, & 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(kg)	Capacity 45%-(kg)	Capacity 40%-(kg)	Car Speed (m/sec)	Machine RPM	Power kW	Torque Nm	Est. BTU/Hour
GL101-15L	208	26	680	612	567	1.5	76.39	6.6	817.51627	3279
GL101-15H	460	13	680	612	567	1.5	76.39	6.6	817.51627	3309
GL101-20L	208	34	680	612	567	2.0	101.86	8.7	817.51627	3606
GL101-20H	460	16	680	612	567	2.0	101.86	8.7	817.51627	3569
GL131-20L	208	44	907	816	748	2.0	101.86	11.6	1090.0217	4118
GL131-20H	460	22	907	816	748	2.0	101.86	11.6	1090.0217	4070
GL131-35L	208	81	907	816	748	3.6	178.25	20.4	1090.0217	5148
GL131-35H	460	39	907	816	748	3.6	178.25	20.4	1090.0217	5228
GL171-70L	208	99	1134	1021	907	3.6	178.25	25.4	1362.5271	5642
GL171-70H	460	56	1134	1021	907	3.6	178.25	25.4	1362.5271	5544
GL171-20L	208	32	1508	1417	1327	0.8	38.2	7.4	1837.039	6934
GL171-20H	460	16	1508	1417	1327	0.8	38.2	7.4	1837.039	6934
GL171-40L	208	65	1508	1417	1327	1.5	76.39	14.7	1837.039	6937
GL171X-35H	460	29	2109	1916	1758	1.3	66.85	16.0	2293.9262	7784

Table 1M

- Table 2M shows the maximum capacity for each machine, based on the following specifications:
  - 15.75" Traction sheave & 1:1 roping (50, 45, & 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(kg)	Capacity 45%-(kg)	Capacity 40%-(kg)	Car Speed (m/sec)	Machine RPM	Power kW	Torque Nm	Est. BTU/Hour
GL101-15L	208	26	646	578	533	1.6	76.39	6.6	818	3279
GL101-15H	460	13	646	578	533	1.6	76.39	6.6	818	3309
GL101-20L	208	34	646	578	533	2.1	101.86	8.7	818	3606
GL101-20H	460	16	646	578	533	2.1	101.86	8.7	818	3569
GL131-20L	208	44	862	782	714	2.1	101.86	11.6	1090	4118
GL131-20H	460	22	862	782	714	2.1	101.86	11.6	1090	4070
GL131-35L	208	81	862	782	714	3.7	178.25	20.4	1090	5148
GL131-35H	460	39	862	782	714	3.7	178.25	20.4	1090	5228
GL171-70L	208	99	1077	975	896	3.7	178.25	25.4	1363	5642
GL171-70H	460	56	1077	975	896	3.7	178.25	25.4	1363	5544
GL171-20L	208	32	1429	1349	1270	0.8	38.2	7.4	1837	6934
GL171-20H	460	16	1429	1349	1270	0.8	38.2	7.4	1837	6934
GL171-40L	208	65	1429	1349	1270	1.6	76.39	14.7	1837	6937
GL171X-35H	460	29	2007	1826	1678	1.4	66.85	16.0	2294	7784

Table 2M

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- Table 3M shows the maximum capacity for each machine, based on the following specifications:
  - 20" Traction sheave & 1:1 roping (50,45,& 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(kg)	Capacity 45%-(kg)	Capacity 40%-(kg)	Car Speed (m/sec)	Machine RPM	Power kW	Torque Nm	Est. BTU/Hour
GL101-15L	208	26	499	454	408	2.0	76.39	6.6	818	3279
GL101-15H	460	13	499	454	408	2.0	76.39	6.6	818	3309
GL101-20L	208	34	499	454	408	2.5	101.86	8.7	818	3606
GL101-20H	460	16	499	454	408	2.5	101.86	8.7	818	3569
GL131-20L	208	44	680	612	567	2.5	101.86	11.6	1090	4118
GL131-20H	460	22	680	612	567	2.5	101.86	11.6	1090	4070
GL131-35L	208	81	680	612	567	4.6	178.25	20.4	1090	5148
GL131-35H	460	39	680	612	567	4.6	178.25	20.4	1090	5228
GL171-70L	208	99	850	771	692	4.6	178.25	25.4	1363	5642
GL171-70H	460	56	850	771	692	4.6	178.25	25.4	1363	5642
GL171-20L	208	32	1134	1055	1021	1.0	38.2	7.4	1837	6934
GL171-20H	460	16	1134	1055	1021	1.0	38.2	7.4	1837	6934
GL171-40L	208	65	1134	1055	1021	2.0	76.39	14.7	1837	6937
GL130A-20L	208	40	1417	1327	1247	1.0	38.2	8.5	2126	8671
GL130A-20H	460	20	1417	1327	1247	1.0	38.2	8.5	2126	8671
GL130A-40L	208	85	1417	1327	1247	2.0	76.39	17.0	2126	7917
GL171X-35H	460	29	1588	1440	1315	1.8	66.85	16.0	2294	7784
GL185-35L	208	78	1984	1860	1746	1.4	53.48	17.9	3196	6789
GL185-35H	460	38	1984	1860	1746	1.4	53.48	17.9	3196	6789
GL185-50L	208	105	1984	1860	1746	2.0	76.39	25.6	3196	9698
GL185-50H	460	50	1984	1860	1746	2.0	76.39	25.6	3196	9698
GL185-70L	208	148	1984	1860	1746	2.8	106.95	35.8	3196	13577

Table 3M

- Table 4M shows the maximum capacity for each machine, based on the following specifications:
  - 25" Traction sheave & 1:1 roping (50,45,& 40% counterbalance - Capacity in chart)

Model	Line Voltage (AC)	Current (Amps)	Capacity 50%-(kg)	Capacity 45%-(kg)	Capacity 40%-(kg)	Car Speed (m/sec)	Machine RPM	Power kW	Torque Nm	Est. BTU/Hour
GL130A-20L	208	40	1134	1055	998	1.3	38.20	8.50098	2126	8671
GL130A-20H	460	20	1134	1055	998	1.3	38.20	8.50098	2126	8671
GL130A-40L	208	85	1134	1055	998	2.5	76.39	17.00196	2126	7917
GL185-35L	208	78	1588	1486	1395	1.8	53.48	17.8968	3195	6789
GL185-35H	460	38	1588	1486	1395	1.8	53.48	17.8968	3195	6789
GL185-50L	208	105	1588	1486	1395	2.5	76.39	25.57751	3195	9698
GL185-50H	460	50	1588	1486	1395	2.5	76.39	25.57751	3195	9698
GL260-35L	208	115	2041	1928	1814	1.8	53.48	23.8624	4254	9038
GL185-70L	208	148	1588	1486	1395	3.6	106.95	35.7936	3195	13577
GL260-35H	460	55	2041	1928	1814	1.8	53.48	23.8624	4254	9038
GL260-50L	208	150	2041	1928	1814	2.5	76.39	34.07849	4254	12911
GL260-50H	460	76	2041	1928	1814	2.5	76.39	34.07849	4254	12911
GL260-70L	208	225	2041	1928	1814	3.6	106.95	47.65023	4254	18076

Table 4M

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Maximum System Loads (in kg)

- The maximum system loads shown in Table 4M are based on 50% counterbalance and 1:1 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
  - Consult HW engineering for specific Machine/Speed/Capacity combinations in highlighted boxes
  - Some Speed & Capacity combinations not yet available

	Not All Capacities Available at All Speeds. Shaded Boxes Represent Speeds Only Available After Over-Speeding a Low (L) Voltage Winding.							
Car Speed	15" T.W.				15.75" T.W.			
(fpm)	GL101	GL131	GL171	GL171X	GL101	GL131	GL171	GL171X
0.25	10433	11249	11657	11657	10433	11249	11657	11657
0.51	10433	11249	11657	11657	10433	11249	11657	11657
0.76	10433	11249	11657	11657	10433	11249	11657	11657
1.02	10433	11249	11657	11657	10433	11249	11657	11657
1.27	10433	11249	11657	11657	10433	11249	11657	11657
1.52	10433	11249	11657		10433	11249	11657	
1.78	10433	11249	11657		10433	11249	11657	
2.03	10433	11249	11657		10433	11249	11657	
2.29	10138	11249	11657		10251	11249	11657	
2.54	9820	11249	11612		9934	11249	11657	
2.79	9525	11249	11294		9662	11249	11431	
3.05	9299	11000	10977		9435	11158	11158	
3.30	9072	10727	10705		9208	10886	10886	
3.56	8868	10501	10478		8981	10659	10659	
3.81	8686	10274	10251		8686	10433	10433	
4.06	8528	10092	10070		8528	10206	10206	
4.32		9911	9888			9911	9888	
4.57		9730	9707			9730	9707	
4.83		9571	9571			9571	9571	
5.08		9435	9435			9435	9435	

Table 5M

	Not All Capacities Available at All Speeds. Shaded Boxes Represent Speeds Only Available After Over-Speeding a Low (L) Voltage Winding.								
Car Speed	20" T.W.						25" T.W.		
(fpm)	GL101	GL131	GL171	GL171X	GL130A	GL185	GL130A	GL185	GL260
0.25	10433	11249	11657	11657	11226	10841	11226	10841	12111
0.51	10433	11249	11657	11657	11226	10841	11226	10841	12111
0.76	10433	11249	11657	11657	11226	10841	11226	10841	12111
1.02	10433	11249	11657	11657	11226	10841	11226	10841	12111
1.27	10433	11249	11657	11657	11226	10841	11226	10841	12111
1.52	10433	11249	11657	11657	11226	10841	11226	10841	12111
1.78	10433	11249	11657	11657	11226	10478	11226	10841	12111
2.03	10433	11249	11657		11226	10070	11226	10750	12111
2.29	10433	11249	11657		11226	9707	11226	10387	12111
2.54	10433	11249	11657		11226	9412	11226	10070	12111
2.79	10387	11249	11657		11226	9140	11226	9752	12111
3.05	10115	11249	11657		11226	8913	11226	9525	12111
3.30	9888	11249	11657		11226	8709	11226	9299	12111
3.56	9662	11249	11431		11226	8505	11226	9072	12111
3.81	9457	11204	11204		11226	8323	11226	8890	12111
4.06	9276	11000	10977		11226	8165	11226	8709	12020
4.32		10795	10795				11226	8573	11793
4.57		10614	10614				11226	8437	11612
4.83		10433	10433				11226	8301	11431
5.08		10274	10251				11226	8165	11249

Table 6M

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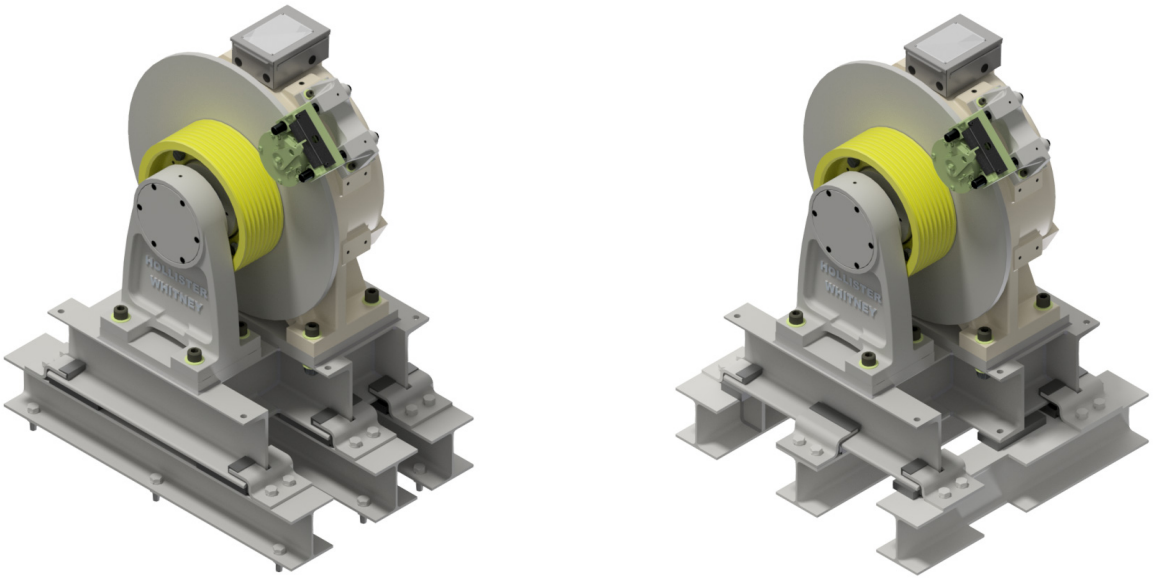
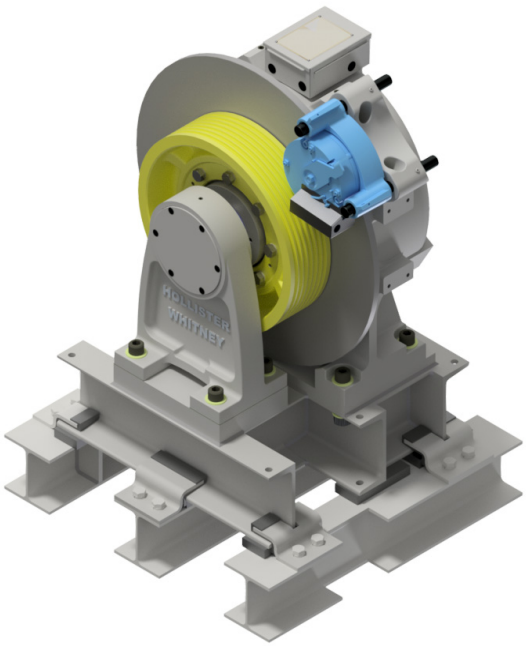
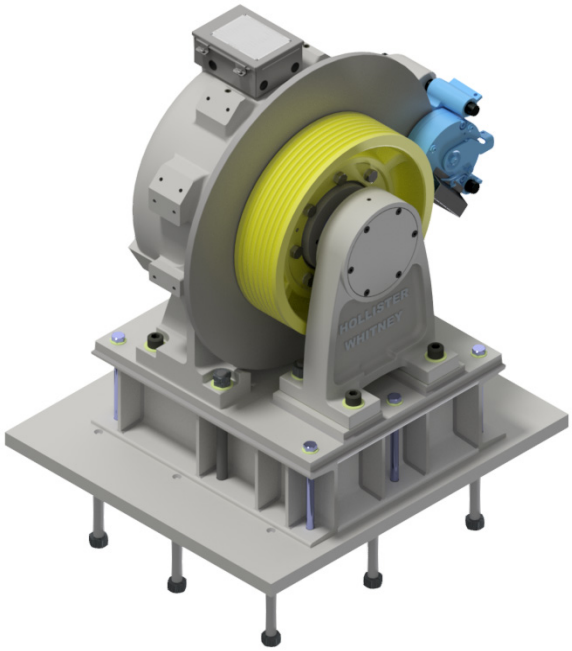
GL Machine – Examples of Optional Configuration Images



GL101 Machine, 15” TW, Standard Base, Isolation Style 1 and 2



GL131, 20” TW, Standard Base, Isolation



GL131, 20” TW, Basement Set Base, Plate & Anchors

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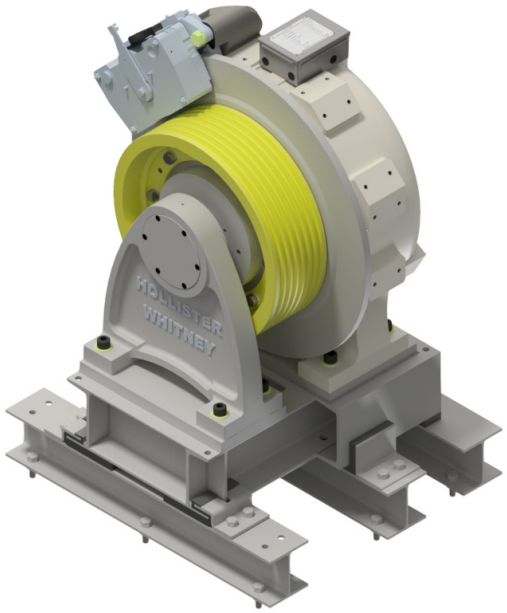
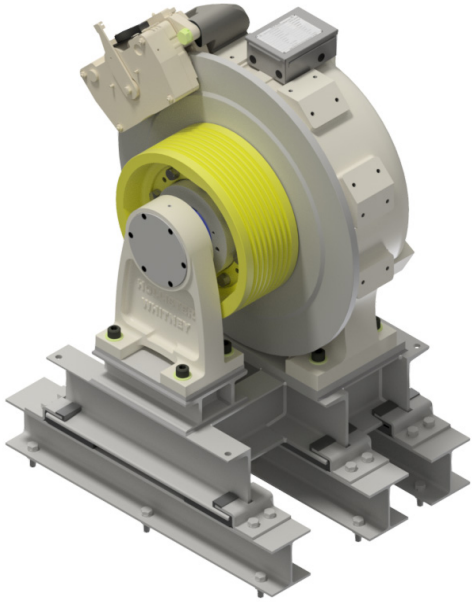
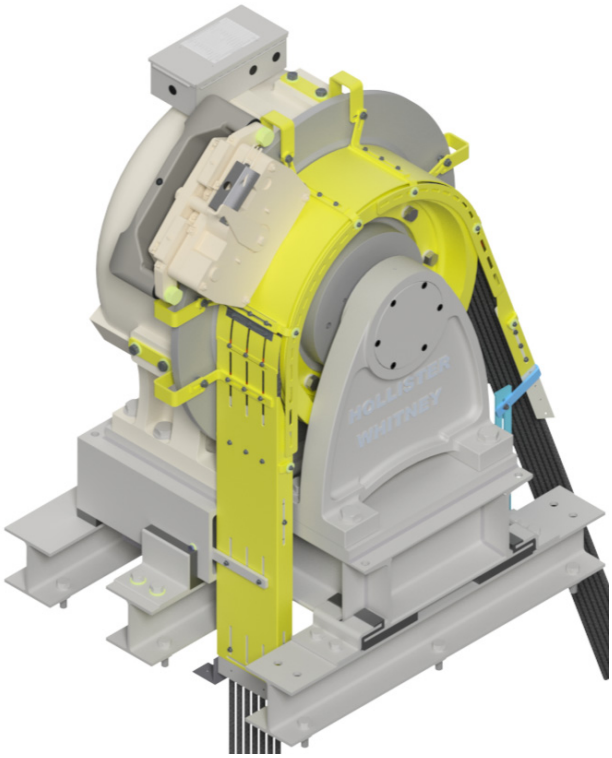


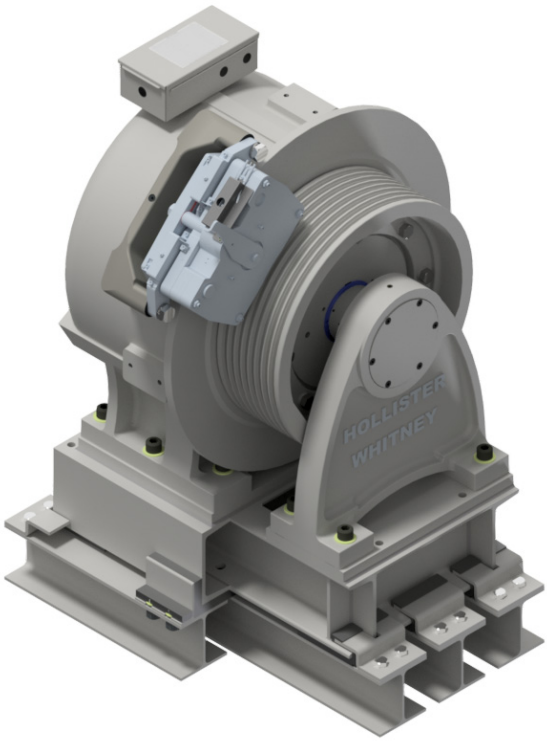
GL130A, 25” TW, Standard Base, Isolation



GL130A1, 20” TW, Standard Base, Isolation



GL185, 25” TW, Standard Base, Isolation 1, Guarding



GL260, 25” TW Standard Base, Isolation 2

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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 1:1, 5/8" Rope, and Capacity is 2500.
2) What Machine is Closest?
- From the Duty Charts, pick GL185-35H, noting that typically a "H" machine is slowed from design speed.
3) Calculate the Estimated Data based on the designed machine and the desired 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	=	38*2500/3000	=	31.7 A		
FT	=	2357*2500/3000	=	1964 Ft-lbs		
FV	=	360*300/350	=	309V		
FF	=	17.83*300/350	=	15.3 Hz		
FRPM	=	53.48*300/350	=	45.8 RPM		
FHP	=	FT*FRPM/5250	=	1964*45.8/5250	=	17.1 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

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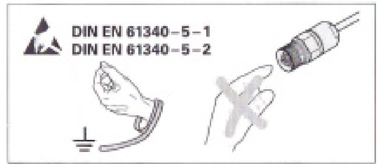

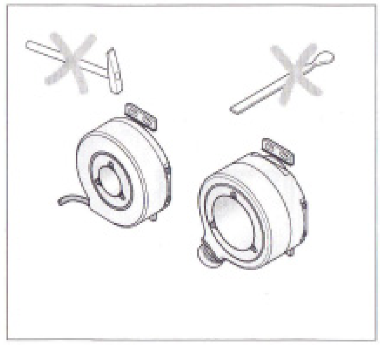

HEIDENHAIN

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

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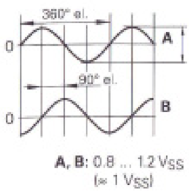
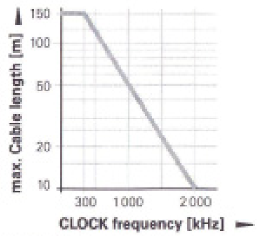
Spannungsversorgung
Power supply
Tension d'alimentation
Tensione di alimentazione
Tensión de alimentación

Up = 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 50178
PELF ⏚ EN 60204-1

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



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

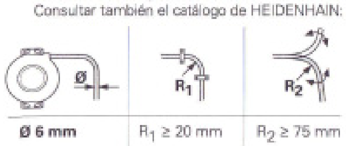


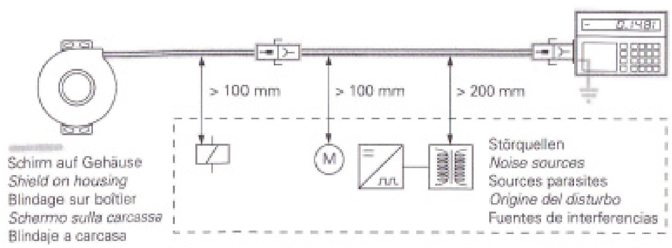
ohne Laufzeitkompensation
without delay compensation
sans compensation de la durée du signal
senza compensazione del tempo di ciclo
sin compensación del tiempo de propagación

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**,





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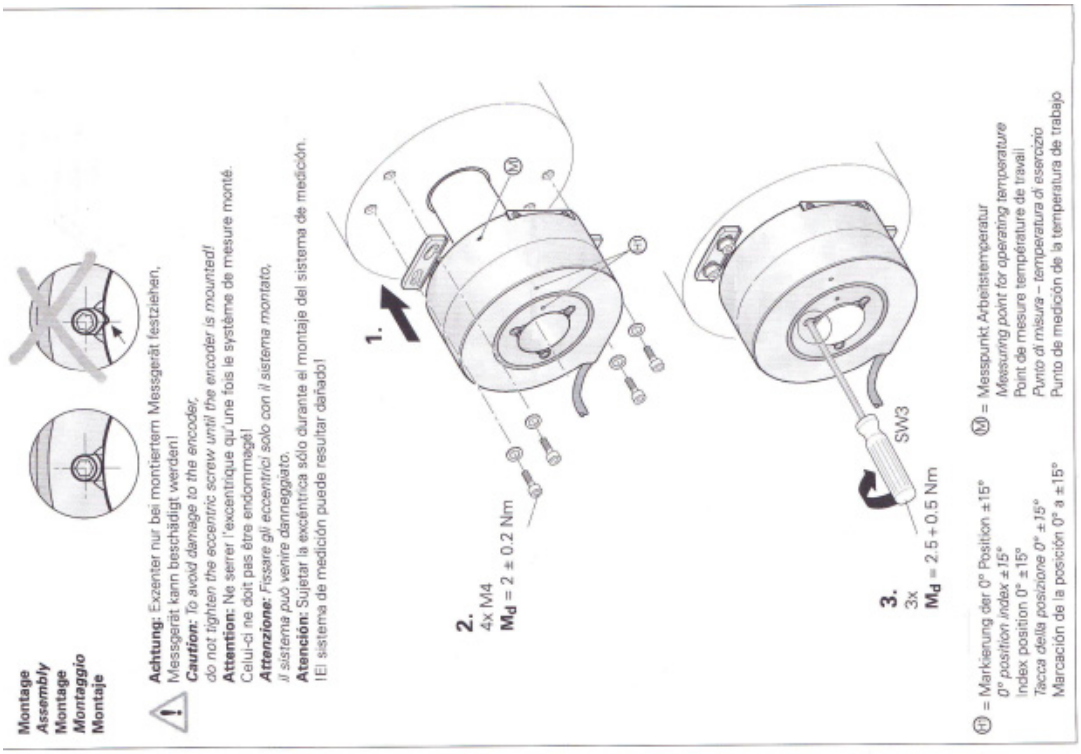

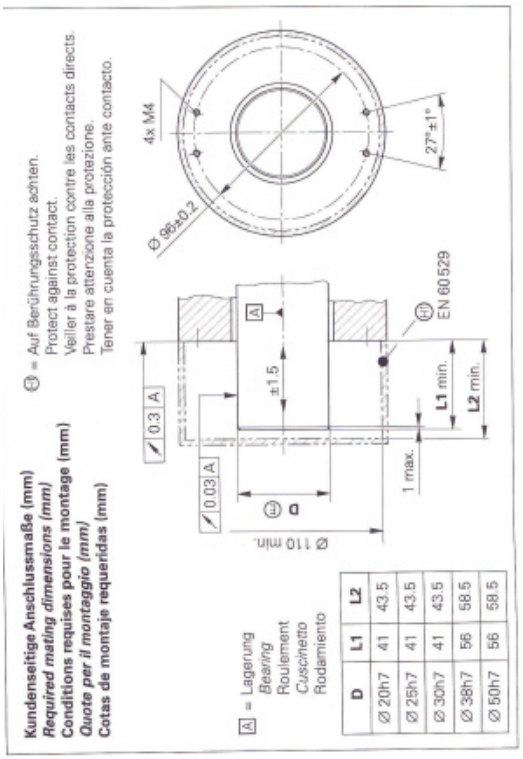

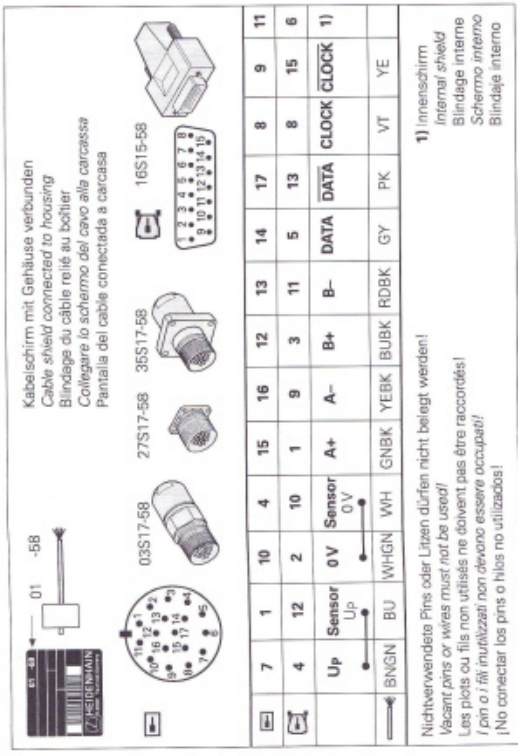

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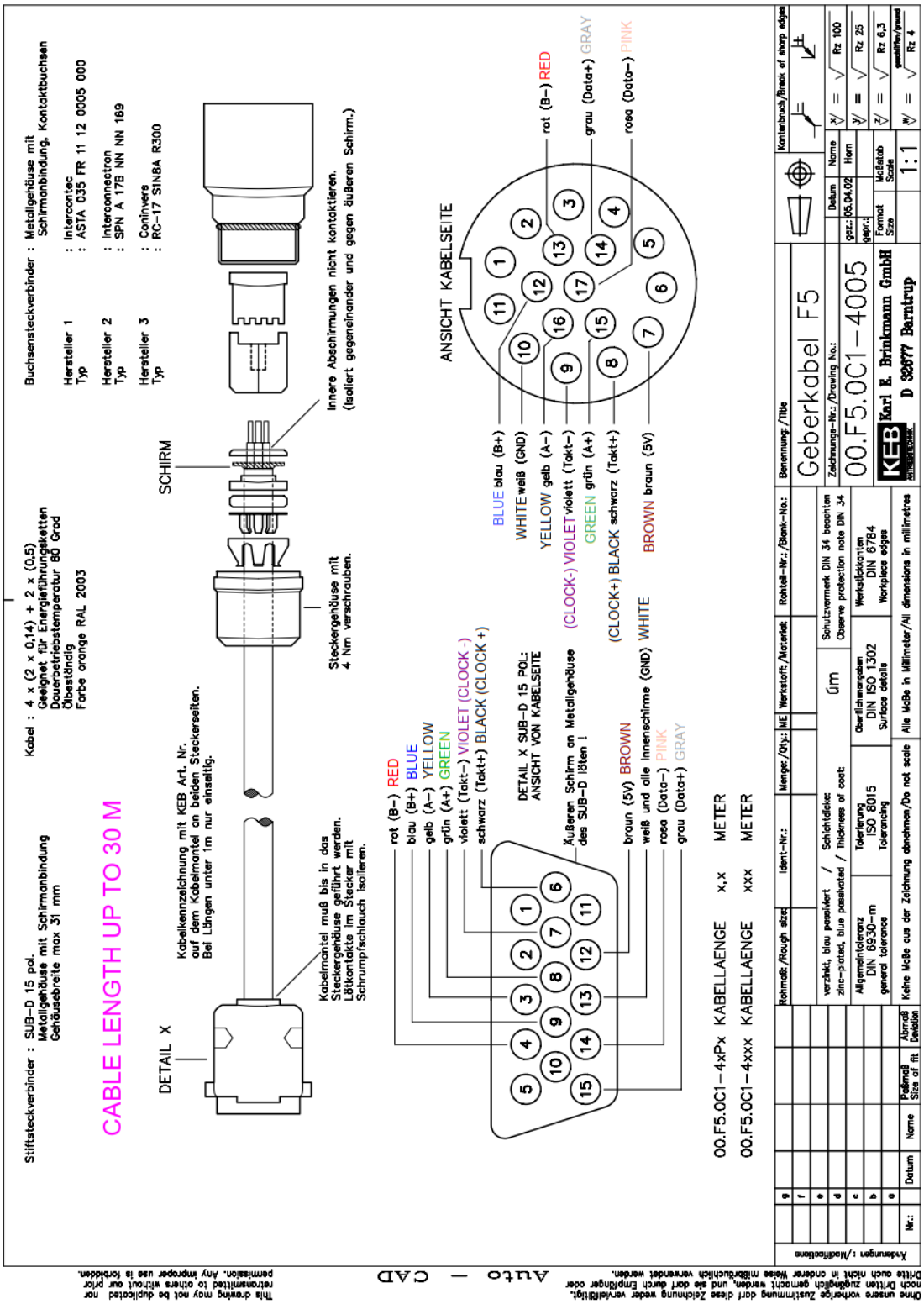

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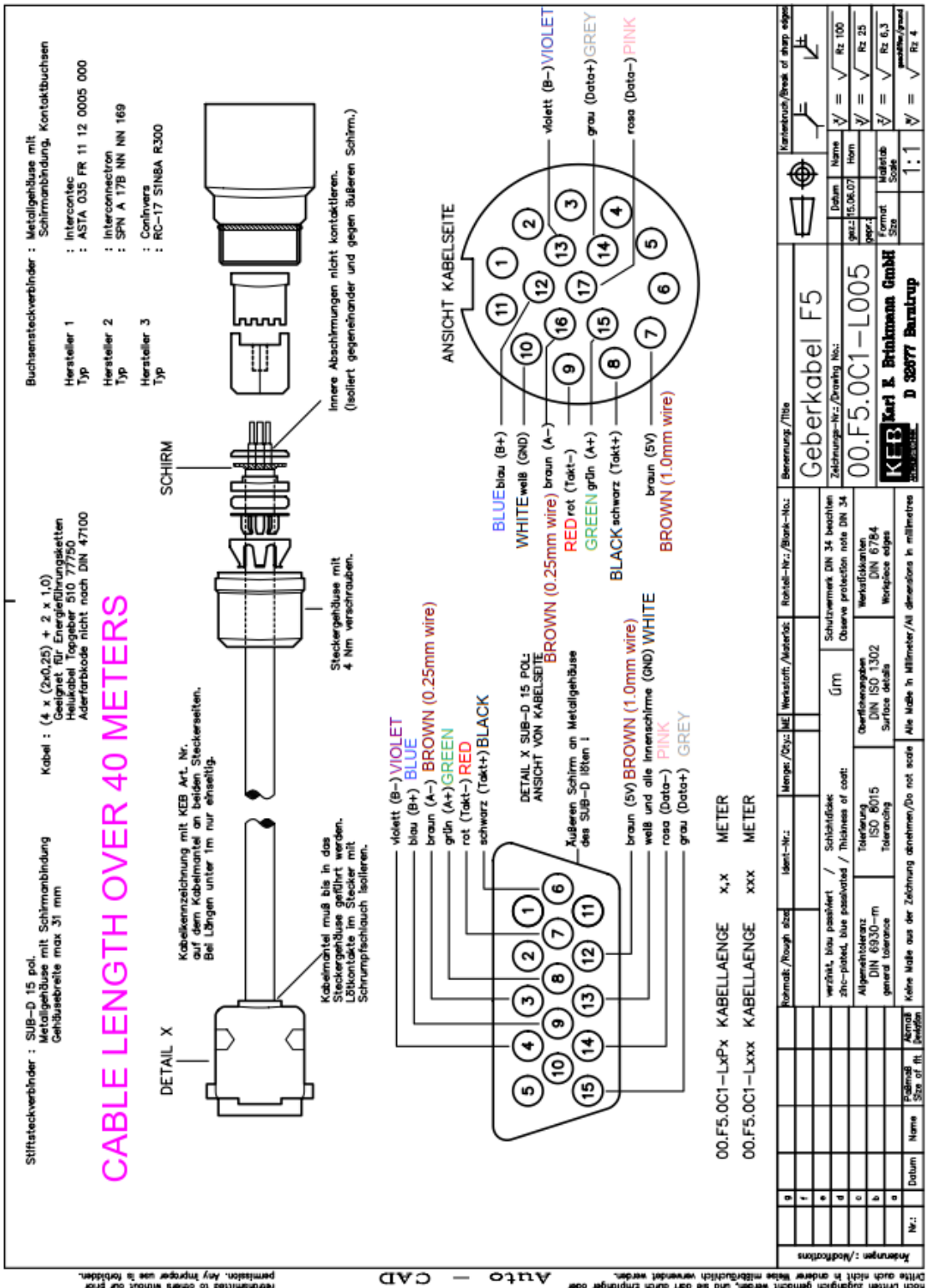

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GERMAN	ENGLISH
ROT	RED
BLAU	BLUE
GELB	YELLOW
GRÜN	GREEN
VIOLETT	VIOLET
SCHWARZ	BLACK
BRAUN	BROWN
WEIβ	WHITE
ROSA	PINK
GRAU	GREY

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Notes and Observations	Date	Initials