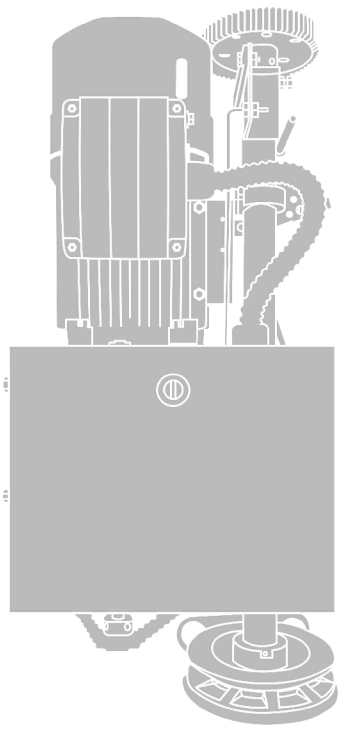
Pro-FDG



Automation for high performance industrial doors

Instructions and Warnings for Installation and Use

Nice

Contents

Warranty

Nice North America warrants that materials and workmanship are free from defects for a period of four (4) years. The start of the warranty will be determined by the date of invoice. Materials returned to Nice deemed defective after examination will be returned at the option of Nice with repaired, new, or re-manufactured parts.

Nice North America will not be responsible for any charges incurred in the process of returning defective material. All returned material must be received pre-paid, or it will not be accepted.

This warranty is limited, and in lieu of all other warranties expressed or implied. There is no expressed liability due on the part of the seller.

Important Safety Instructions

WARNING: To reduce the risk of injury or death:

- READ AND FOLLOW ALL INSTRUCTIONS
- Never allow children to operate or play with door controls. Keep the remote control (where provided) away from children.
- Personnel should keep away from a door in motion and keep the moving door in sight until it is completely closed or opened. NO ONE SHOULD CROSS THE PATH OF A MOVING DOOR.
- Test the door's safety features at least once a month. After adjusting the limit of travel, retest the door operator's safety features. Failure to adjust the operator properly may cause severe injury or death.
- For products having a manual release, if possible, use the manual release only when the door is closed. Use caution when using this release when the door is open. Weak or broken springs may cause the door to fall rapidly, causing severe injury or death.
- KEEP DOORS PROPERLY OPERATING AND BALANCED. See Door Manufacturer's Owner's Manual. An improperly operating or balanced door could cause severe injury or death. Have trained door systems technician make repairs to cables, spring assemblies, and other hardware.
- Press the "OPEN" device or use emergency disconnect mechanism if a person is trapped under the door.
- SAVE THESE INSTRUCTIONS. The owner or users must understand the safety and operation of door system. Insure that this installation manual be located close to the door system.

Important Installation Instructions

- READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS
- Commercial door operators are never to be installed on a residential installation
- Install only on a properly operating and balanced door. A door that is operating improperly could cause severe injury. Have qualified service personnel make repairs to cables, spring assemblies, and other hardware before installing the operator.
- Remove all pull ropes and remove, or make inoperative, all locks (unless mechanically and/or electrically interlocked to the power unit) that are connected to the door before installing the operator.
- Install the door operator at least 8 feet or more above the floor if the operator has exposed moving parts.
- Do not connect the operator to the source of power until instructed to do so.
- Locate the control station: (a) within sight of the door, (b) at a minimum height of 5 feet so that small children cannot reach it, and (c) away from all moving parts of the door.
- Install the Entrapment Warning Placard next to the control station in a prominent location.
- For products having a manual release, instruct the end user on the operation of the manual release.
- Install non-contact entrapment protection devices (photocells) and/or contact entrapment protection devices (reversing edges). **NOTE:** photocells should be installed at no more than 6" from the floor. Edges should be installed on the leading edge of the door.

Electrical Connections

IMPORTANT

- EACH INDIVIDUAL COMMERCIAL DOOR OPERATOR MUST HAVE IT'S OWN DEDICATED POWER SUPPLY
- NICE HIGHLY RECOMMENDS THAT EACH INDIVIDUAL COMMERCIAL DOOR OPERATOR HAVE AN EXTERNAL CIRCUIT BREAKER OR FUSED DISCONNECT

⚠ WARNING ⚠

COMPARE AVAILABLE POWER SUPPLY VOLTAGE TO OPERATOR NAMEPLATE PRIOR TO ELECTRICAL CONNECTION. FAILURE TO CONNECT APPROPRIATE POWER SUPPLY VOLTAGE MAY CAUSE SERIOUS DAMAGE TO OPERATOR.

Refer to electrical diagrams inside control box cover or at the end of this manual prior to connection of power supply or control station.

⚠ WARNING ⚠

TO REDUCE THE RISK OF INJURY OR DEATH:

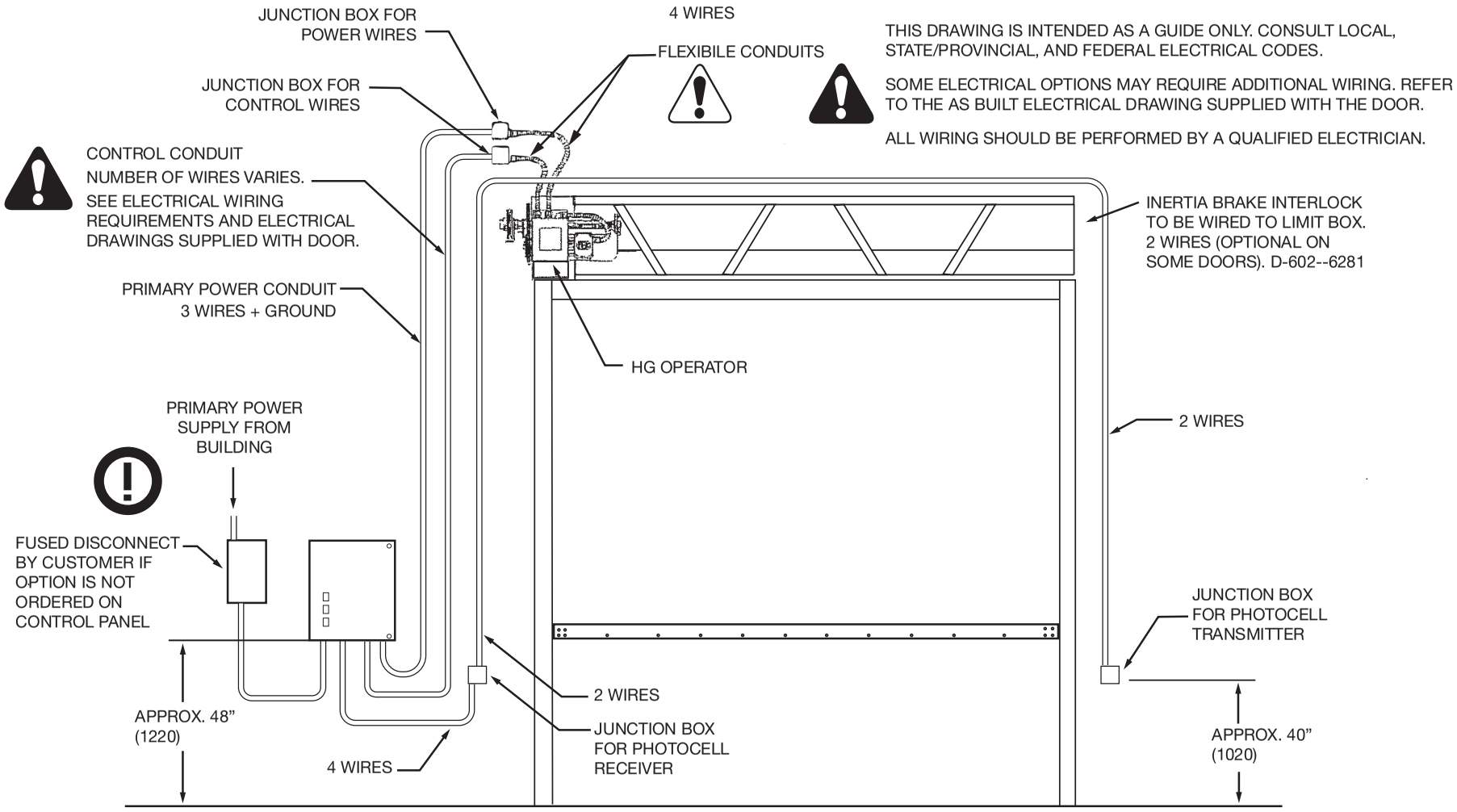
ALL ELECTRICAL CONNECTIONS SHOULD BE MADE BY A QUALIFIED SERVICE PERSON

DO NOT ATTEMPT TO MAKE ELECTRICAL CONNECTIONS TO OPERATOR UNLESS POWER SUPPLY HAS BEEN DISCONNECTED AT FUSE BOX.

OPERATOR MUST BE CONNECTED IN ACCORDANCE TO LOCAL ELECTRICAL CODES AND GROUNDED TO GREEN GROUND LUG LOCATED INSIDE CONTROL BOX.

RECOMMENDED CONDUIT LAYOUT

DIMENSIONS IN PARENTHESIS ARE IN MILLIMETERS



THIS DRAWING IS INTENDED AS A GUIDE ONLY. CONSULT LOCAL, STATE/PROVINCIAL, AND FEDERAL ELECTRICAL CODES.

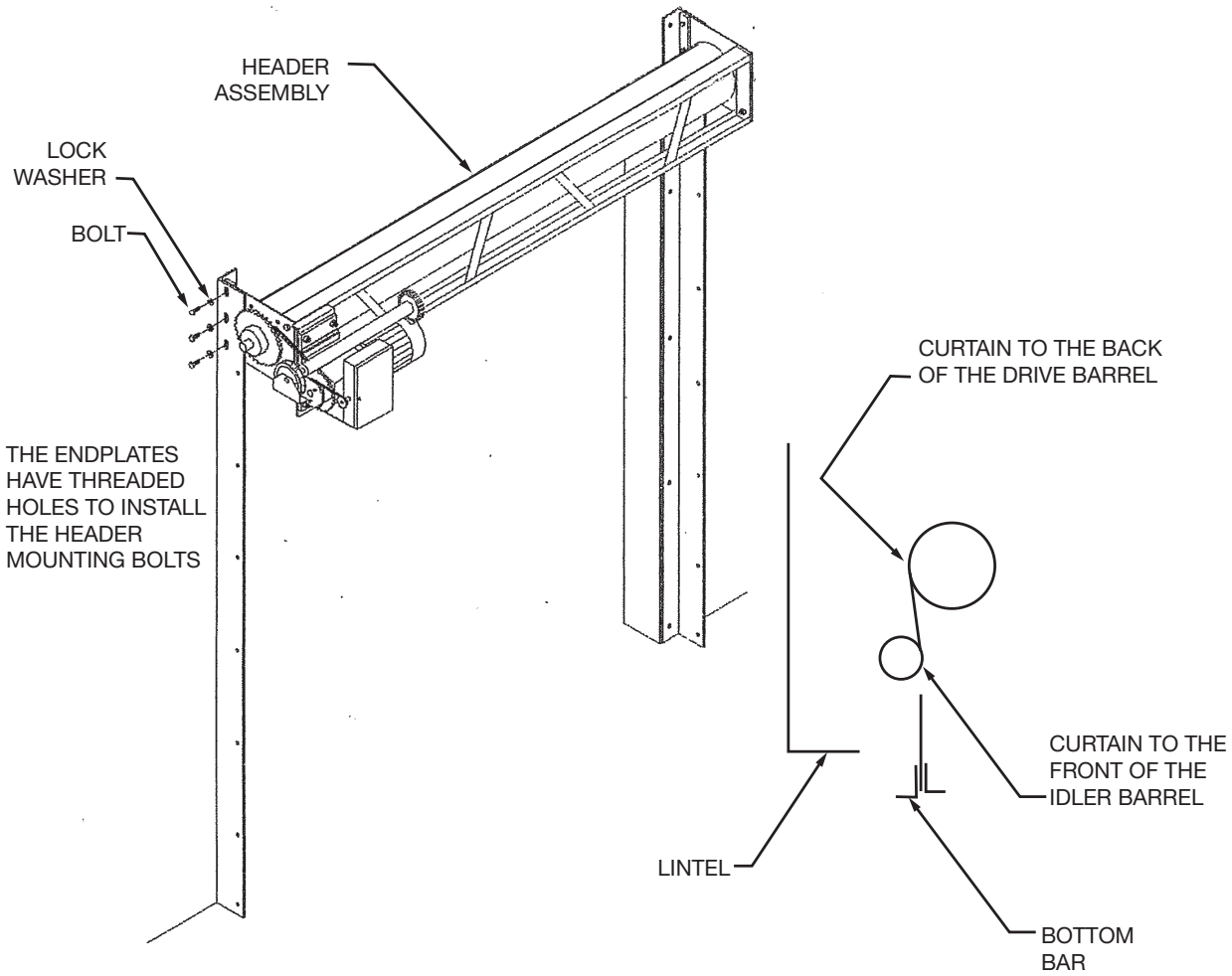
SOME ELECTRICAL OPTIONS MAY REQUIRE ADDITIONAL WIRING. REFER TO THE AS BUILT ELECTRICAL DRAWING SUPPLIED WITH THE DOOR.

ALL WIRING SHOULD BE PERFORMED BY A QUALIFIED ELECTRICIAN.

Header Assembly Installation

Dimensions in Parenthesis are in millimeters

(left hand door shown)



DOOR MUST BE RIGGED BY SLINGING THE DRIVE BARREL. DO NOT LIFT THE DOOR BY THE ENDPLATES.

THE BOTTOM BAR MUST BE ROTATED SLIGHTLY TOWARDS THE TRUSS WHEN RIGGED FOR LIFTING.

(i) POSITION THE HEADER ASSEMBLY ON THE FLOOR IN FRONT OF THE OPENING.

(ii) RIG AND LIFT THE HEADER ASSEMBLY INTO POSITION AND FASTEN TO THE DOOR MOUNTING ANGLE USING HARDWARE KIT 210-0003. INSTALL THE BOLTS ON THE OUTSIDE TO PREVENT CURTAIN CONTACT, THE ENDPLATES ARE THREADED. ALLOW THE ENDPLATES TO SETTLE INTO THE LOWEST POSITION OF THE SLOTS AND PLACE A LEVEL ON THE DRIVE BARREL TO ENSURE THE HEADER IS INSTALLED LEVEL. IF UN LEVEL RAISE OR LOWER THE ENDPLATES IN THE SLOTS AS NECESSARY AND TIGHTEN FASTENERS TO ENSURE THE HEADER IS LEVEL.

(iv) POSITION BOTTOM BAR AT THE BOTTOM OF THE DRIVE BARREL WHEN REMOVING THE RIGGING STRAPS.

(v) INSTALL THE HAND CHAIN AND DISCONNECT LEVER.

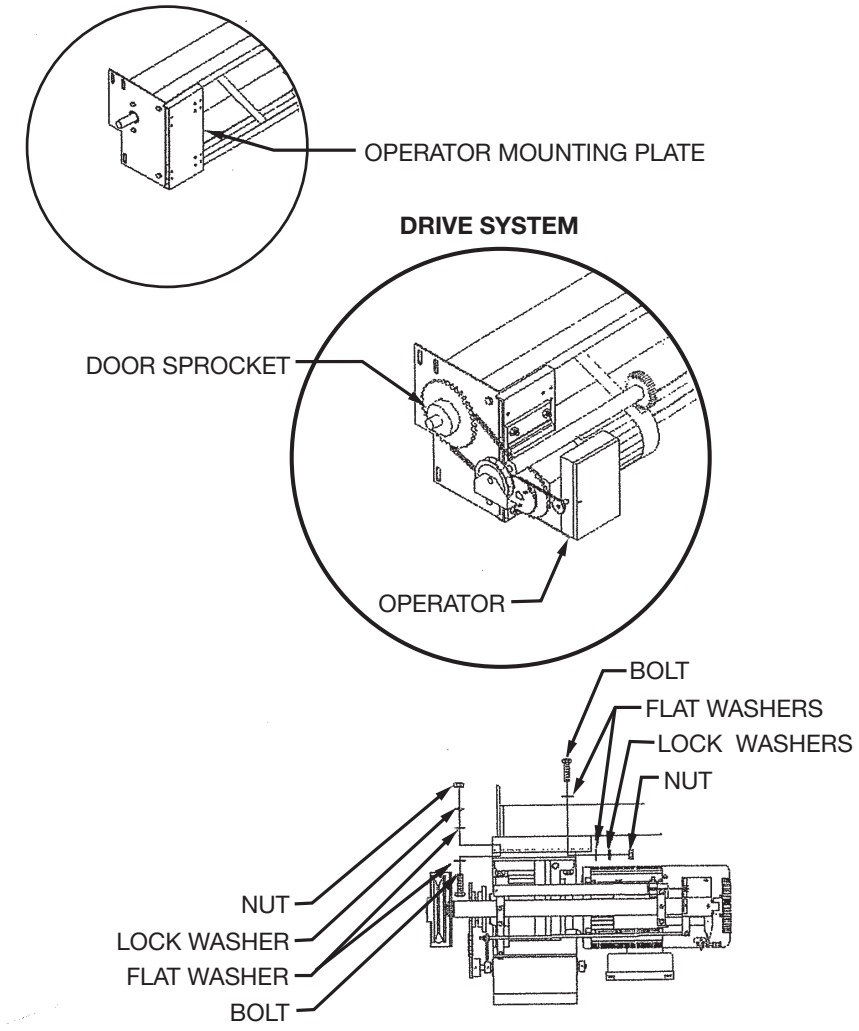
(vi) INSTALL THE "J" BOLT ON THE DOOR MOUNTING ANGLE (HOLE PROVIDED) ABOUT 48" (1220) FROM THE FLOOR. THE "J" BOLT IS TO PROTRUDE AWAY FROM THE DOOR OPENING TO ALLOW THE HAND CHAIN TO BE HELD CLEAR OF THE DOOR DURING ELECTRICAL OPERATION.

(vii) REMOVE THE ROPES SECURING THE CURTAIN TO THE DRIVE BARREL. REMAIN CLEAR OF THE BOTTOM BAR AS IT FALLS INTO POSITION AGAINST THE FORWARD SIDE OF THE IDLER BARREL.

Install Operator

Dimensions in Parenthesis are in millimeters

(left hand door shown)



(i) POSITION AND BOLT THE OPERATOR TO THE MOUNTING PLATE ON THE LOWER SLOT/HOLE SET CLOSEST TO THE ENDPLATE. TIGHTEN THE MOUNTING BOLTS WITH THE OPERATOR COMPLETELY RAISED IN THE ADJUSTMENT SLOTS.

(ii) MOUNT THE DOOR SPROCKET WITH KEYSTOCK TO THE DRIVE BARREL SHAFT WITH THE HUB AWAY FROM THE ENDPLATE. FOR QD SPROCKETS SEE “INSTALLING QD SPROCKETS”.

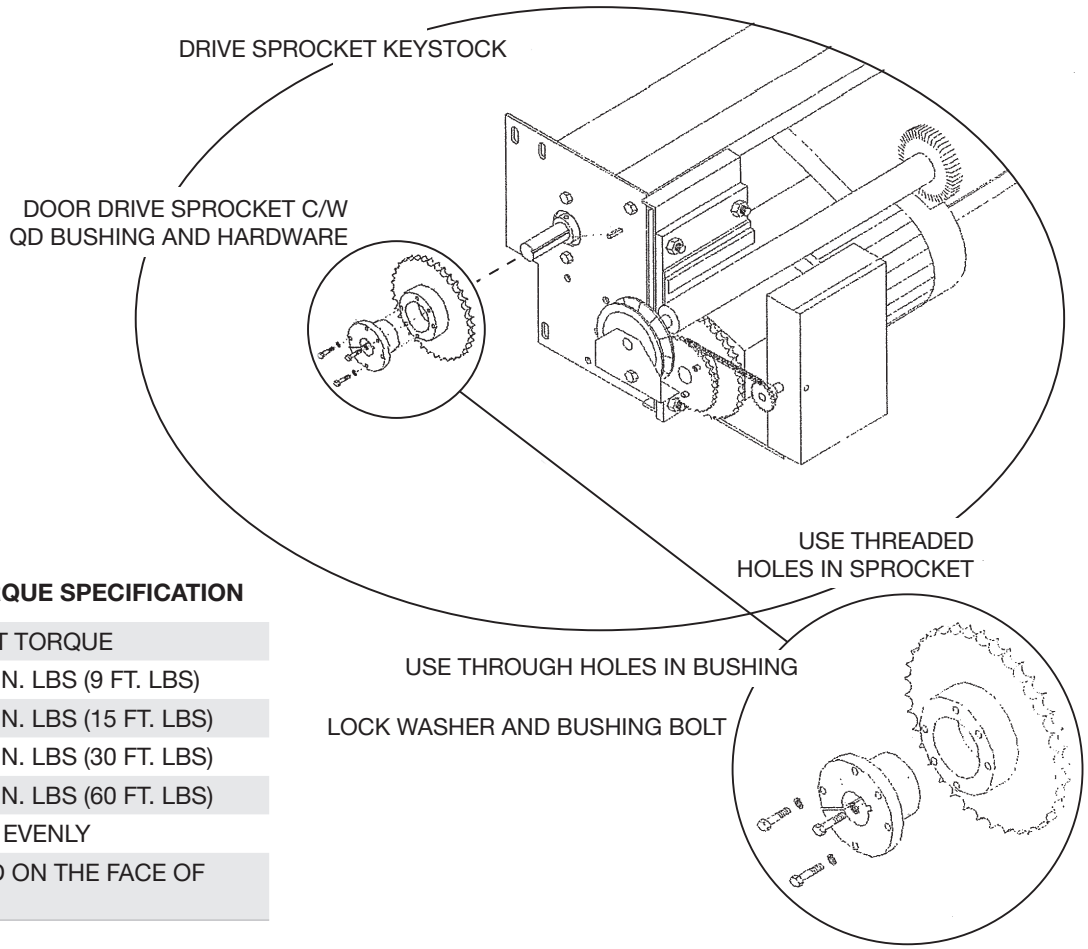
(iii) IF NOT PRE-MOUNTED, MOUNT THE OPERATOR SPROCKET ON THE OPERATOR OUTPUT SHAFT. ALIGN THE SPROCKETS TO EACH OTHER AND AS CLOSE AS POSSIBLE TO THE ENDPLATE. ENSURE ADEQUATE CLEARANCE BETWEEN CHAIN AND MOUNTING PLATE. TIGHTEN SETSCREWS.

(iv) SIZE AND INSTALL THE DRIVE CHAIN. TOTAL SLACK IN THE DRIVE CHAIN IS NOTED IN THE CHART ABOVE. THE SLACK NEEDS TO BE IN THE SECTION OF CHAIN AT THE BOTTOM OF THE SPROCKETS. THE SECTION OF CHAIN AT THE TOP OF THE SPROCKETS SHOULD BE TAUGHT. LOOSEN THE MOUNTING BOLTS AND LOWER THE OPERATOR TO SET CHAIN TENSION. ENGAGE THE ECH AND TURN IT IN BOTH DIRECTIONS TO HELP LOWER THE OPERATOR PROPERLY. TIGHTEN THE OPERATOR MOUNTING BOLTS. DO NOT REMOVE THE ROPES SECURING THE RUBBER CURTAIN TO THE DRIVE BARREL UNTIL INSTRUCTED TO DO SO.

Install QD Sprockets

Dimensions in Parenthesis are in millimeters

(left hand door shown)



"QD" BUSHING BOLT TORQUE SPECIFICATION

"QD" BUSHING SIZE	BOLT TORQUE
SDS	108 IN. LBS (9 FT. LBS)
SK	180 IN. LBS (15 FT. LBS)
SF	360 IN. LBS (30 FT. LBS)
E	720 IN. LBS (60 FT. LBS)
BOLTS MUST BE DRAWN IN EVENLY	
BUSHING TYPE IS STAMPED ON THE FACE OF THE BUSHING	

(i) SET THE KEY STOCK INTO THE KEYWAY ON THE DOOR SHAFT.

(ii) (LOOSELY ASSEMBLY THE BUSHING AND SPROCKET SO THAT THE THROUGH HOLES IN THE BUSHING ALIGN WITH THE THREADED HOLES IN THE SPROCKET. THE BUSHING BOLTS GO THROUGH THE HOLES IN THE BUSHING AND THREAD INTO THE HOLES IN THE SPROCKET.

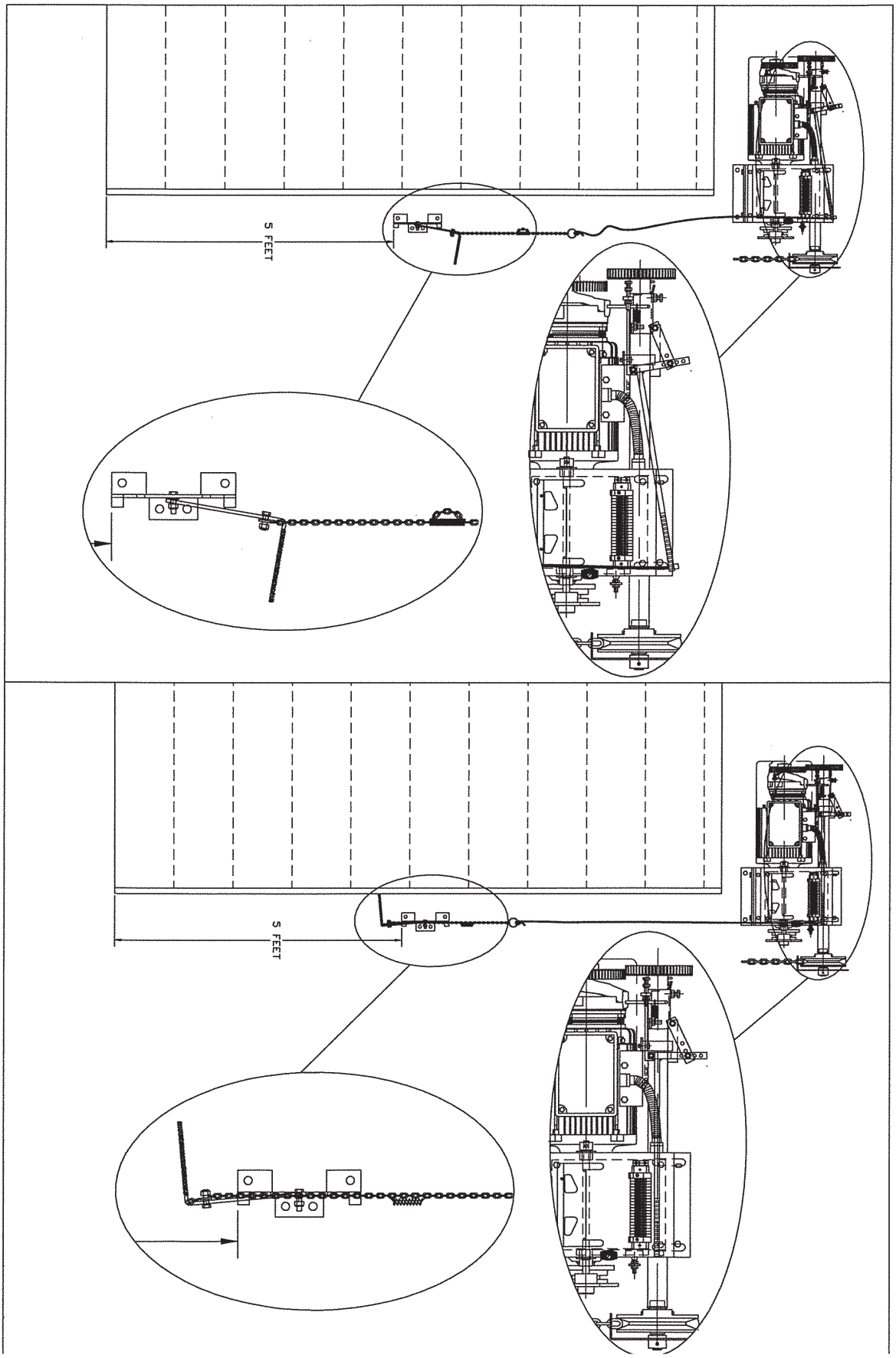
(iii) POSITION THE BUSHING AND SPROCKET ON THE DOOR SHAFT SO THAT THE SPROCKET IS OFFSET TOWARDS THE ENDPLATE 1/8" - 3/16" (3-5) FROM THE OPERATOR SPROCKET. AS THE BUSHING BOLTS ARE TIGHTENED THE SPROCKET WILL MOVE TOWARDS THE END OF THE DOOR SHAFT. THE BUSHING WILL NOT MOVE.

(iv) TIGHTEN THE BUSHING BOLTS IN A CIRCULAR PATTERN DRAWING THE SPROCKET ONTO THE BUSHING EVENLY UNTIL THE SPROCKET STOPS DRAWING ONTO THE BUSHING. YOU WILL NEED TO REPEAT THIS PROCESS A FEW TIMES BEFORE YOU CAN TIGHTEN THE BOLTS TO THEIR PROPER TORQUE. TORQUE SPEC'S ARE IN THE CHART ABOVE. FAILURE TO PROPERLY TORQUE THE BUSHING BOLTS CAN RESULT IN THE BOLTS BREAKING OVER TIME AND THE DOOR FREE FALLING.

(v) CHECK THE ALIGNMENT BETWEEN THE DOOR AND OPERATOR SPROCKETS. PROPER ALIGNMENT IS CRUCIAL TO CHAIN LIFE AND PERFORMANCE. IMPROPER ALIGNMENT CAN CAUSE THE CHAIN TO SKIP TEETH OR FAIL. A MALFUNCTIONING DRIVE CHAIN CAN RESULT IN DAMAGE TO THE DOOR AND PROPERTY AS WELL AS INJURY OR DEATH.

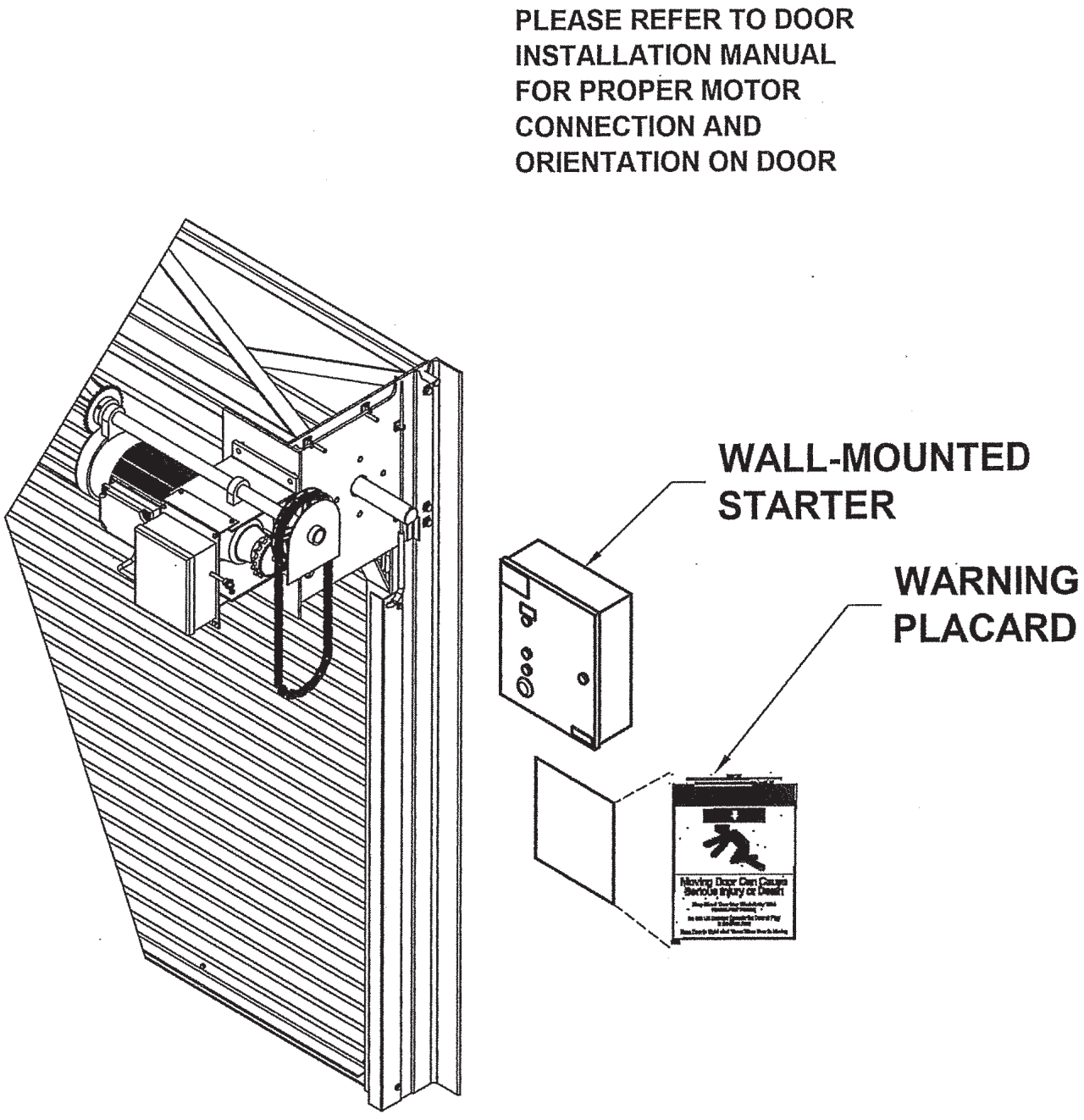
(vi) ONCE THE SPROCKETS ARE PROPERLY ALIGNED TIGHTEN THE SET SCREWS. DO NOT LOWER THE DOOR USING THE CHAIN HOIST UNTIL THE SPRINGS HAVE BEEN CHARGED (IF APPLICABLE).

Floor Level Disconnect Pro-FDG Assembly



Moving Door Warning Placard

Install Moving Door Warning Placard in the conspicuous place near Open/Close/Stop station as indicated.



Operator Maintenance

⚠ WARNING ⚠

TO REDUCE THE RISK OF INJURY OR DEATH:

DO NOT ATTEMPT TO SERVICE THE OPERATOR UNLESS POWER SUPPLY HAS BEEN DISCONNECTED.

- Inspect manual function of the door every 3-months. Make sure that door runs smoothly. If door does not manually open or close freely, have a qualified service person make repairs. Do not attempt to electrically operate a malfunctioning door.
- Every 3 months:

1. Verify that door area is kept clean. Remove any obstructions that would prevent proper door operation.
2. Check for any excessive slack in chains. If chain adjustment is required verify and adjust limit switches, if necessary.
3. Verify and adjust clutch and brake (Do not lubricate).
4. Lubricate chains, bearings and limit shaft.
5. Verify that motor, solenoid and operator runs smoothly and quietly.

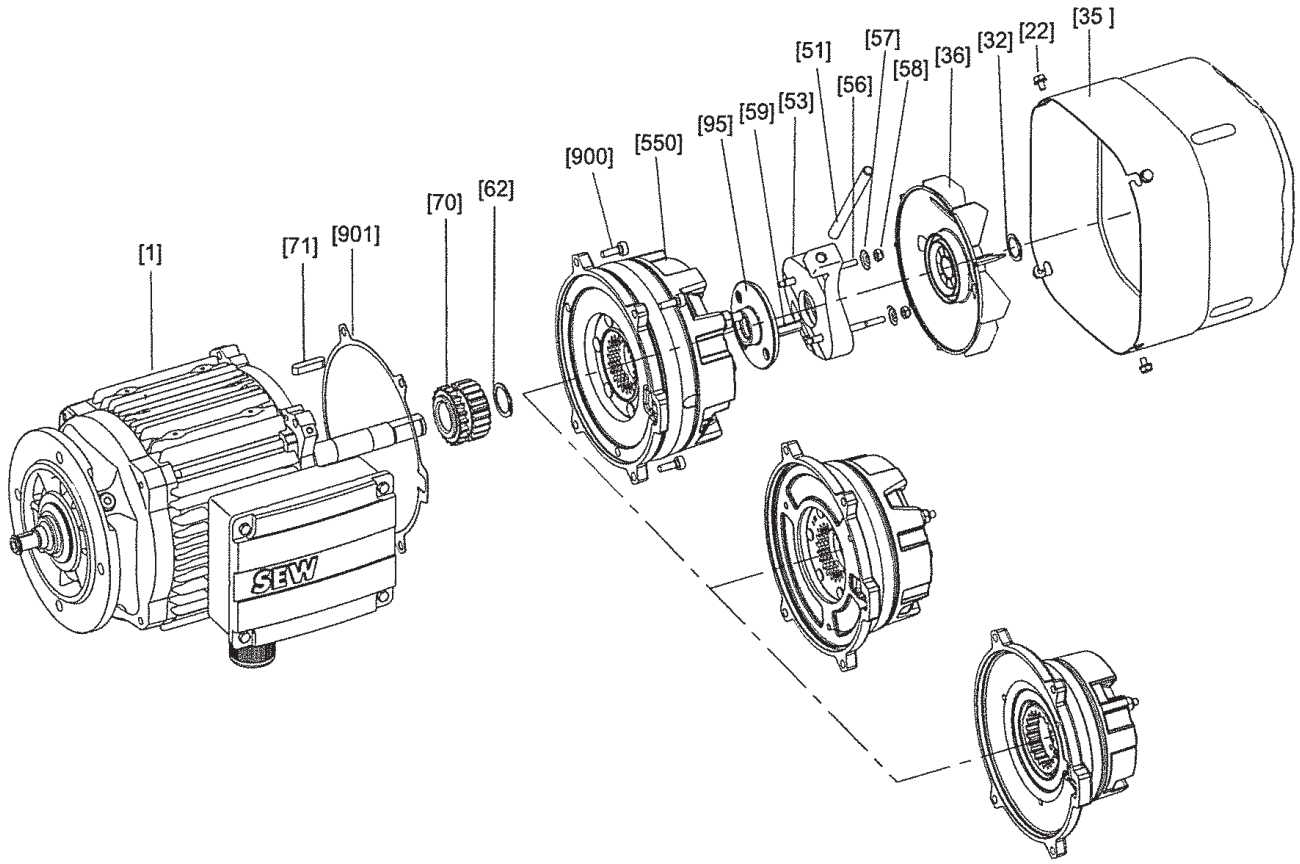
- Every 6 months:

1. Verify tightness of all fasteners and set screws.
2. Verify that operator is properly secured.
3. Inspect manual disconnect.
4. Verify tension and condition of V-belt.

- Every 12 months:

1. Perform a complete service check.
2. Verify that inside of control box is clean and that grounding wires, terminations and power terminations do not show signs of corrosion.
3. Verify tightness of all terminal strip screws and electrical connections.
4. Verify power supply, voltage of input terminals during operation.
5. Verify that current consumption of operator corresponds to nameplate information.

Basic Structure



[1]	Motor w/brake endshield	[56	Stud	[95]	Sealing ring
[22)	Hex head screw	[57]	Conical coil spring	[550]	Pre-assembled brake
[32)	Circlip	[58]	Setting nut	[900)	Screw
[35]	Fan guard	[59]	Parallel pin	[901)	Sealing
[36]	Fan	[62]	Circlip		
[51)	Hand lever	[70]	Carrier		
[53]	Releasing lever	[71]	Key		

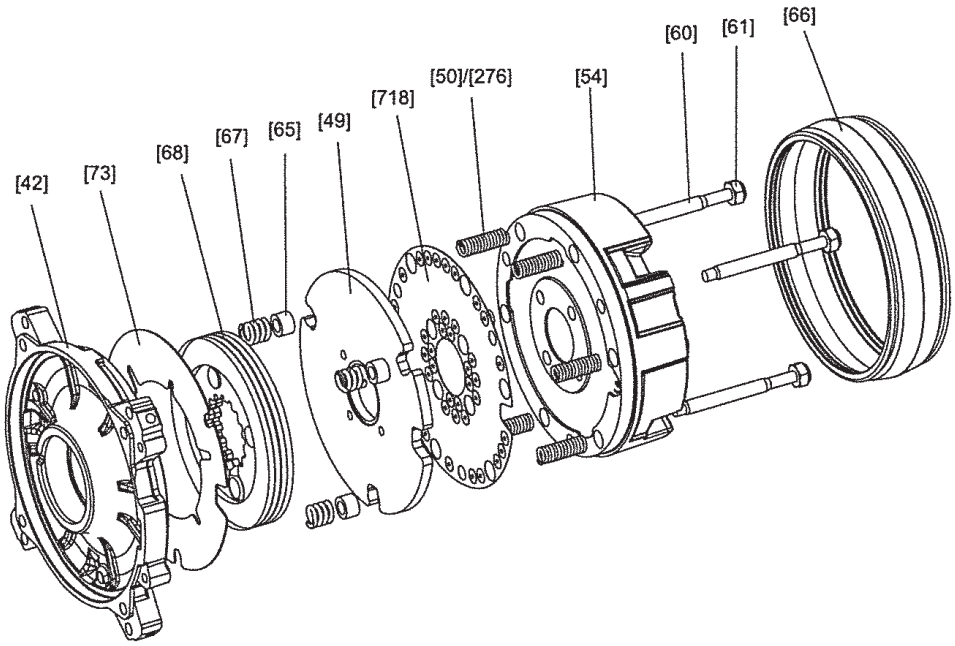
Inspection Steps

WARNING: Risk of crushing if the drive starts up unintentionally. Severe or fatal injuries.

- Isolate the motor, brake, and forced cooling fan, if installed, from the power supply before starting work, safeguarding them against unintentional re-start.
- Carefully observe the steps described below.

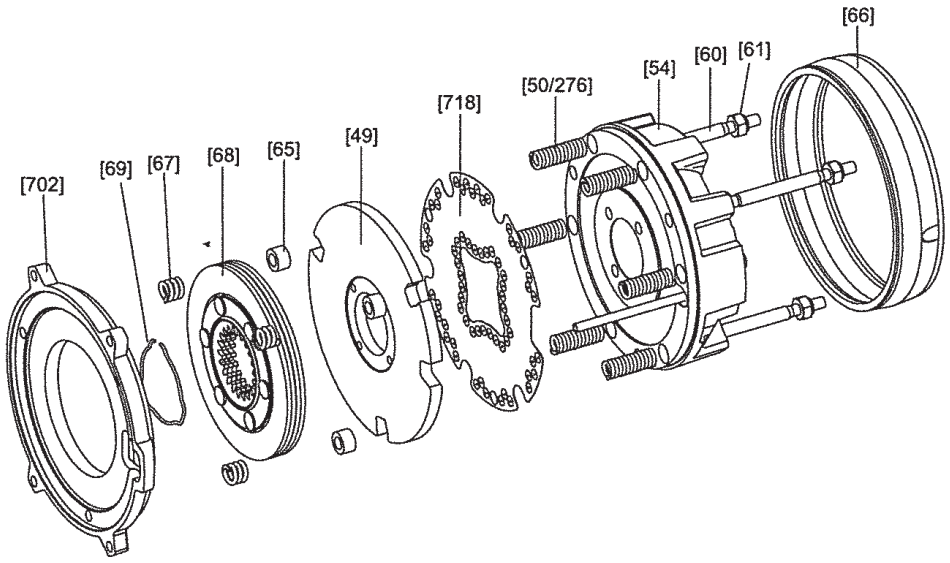
1. Remove forced cooling fan and incremental encoder (if installed). See section "Motor and brake maintenance - preliminary work" (page 79).
2. Remove fan guard [35] and fan [36].
3. Remove stator:
   - » Size DR.71-DR.132: Remove machine screws [13] from flanged endshield [7] and brake endshield [42]. Remove stator [16] from flanged endshield [7].
   - » Size DR.160-DR.180: Loosen hex head screw [19] and remove brake endshield [42]. Loosen hex head screw [15] and remove stator from flanged endshield.
   - » Size DR.200-DR.225:
   - Loosen hex head screw [15] and remove the flanged endshield [7] from the stator.
   - With gearmotors: Remove oil flinger [107]
   - Loosen hex head screw [19] and remove the complete rotor [1] together with the brake endshield [42].
   - Loosen hex head screw [25] and remove the complete rotor [1] from the brake endshield [42].
4. Remove the brake cable:
   - » BE05-BE11: Remove the terminal box cover and unfasten the brake cable from the rectifier.
   - » BE20-BE32: Loosen safety screws of the brake plug connector [698] and remove plug connector.
5. Push the brake off the stator and carefully lift it off.
6. Pull the stator back by about. 3 to 4 cm.
7. Visual inspection: Is there any moisture or gear unit oil inside the stator?
   - » If not, proceed with step 10.
   - » If there is moisture, proceed with step 8
   - » If there is gear oil, have the motor repaired by a specialist workshop
8. If there is moisture inside the stator:
   - » With gearmotors: Remove the motor from the gear unit
   - » With motors without a gear unit: Remove the A-flange
   - » Remove the rotor [1]
9. Clean the winding, dry it and check it electrically [see chapter "Drying the motor" (page 23)].
10. Replace the grooved ball bearings [11], [44] with permitted ball bearings.
11. See section”Permitted rolling bearing types” (page 137). Reseal the shaft:
    - » A-side: Replace the oil seal [106]
    - » 8-side: Replace the oil seal [30] Coat the sealing lip with grease (Kluber Petamo GHY 133).
12. Reseal the stator seat:
    - » Seal the sealing surface with duroplastic sealing compound (Operating temperature - 40 °C ... +180 °C) e.g. “Hylomar L Spezial”.
    - » For size DR.71-DR.132: Replace sealing [392].
13. Size DR-160-DR.225: Replace the O-ring [901] between the brake endshield [42] and the pre-assembled brake [550]. Install the pre-assembled
14. Install the motor, the brake and accessory equipment.

BE05-BE2 brakes (DR.71-DR.80) - Basic Structure



[42] Brake bearing end shield
[49] Pressure plate
[50] Brake spring (normal)
[54] Magnet, complete
[60] Stud 3x
[61] Hex nut
[65] Pressure ring
[66] Rubber sealing collar
[67] Counter spring
[68] Brake disk
[49) Pressure plate
[68] Brake disk
[73] Terminal disk
[276) Brake spring (blue)
[718] Dampening plate

BE1-BE11 brake (DR.90-DR.160) - Basic Structure



[49) Pressure plate
[50] Brake spring (normal)
[54] Magnet, complete
[60) Stud 3x
[61) Hex nut
[65] Pressure ring
[66] Rubber sealing collar
[67] Counter spring
[68] Brake disk
[69] Circular spring
[276] Brake spring {blue)
[702] Friction disk
[718] Dampening plate

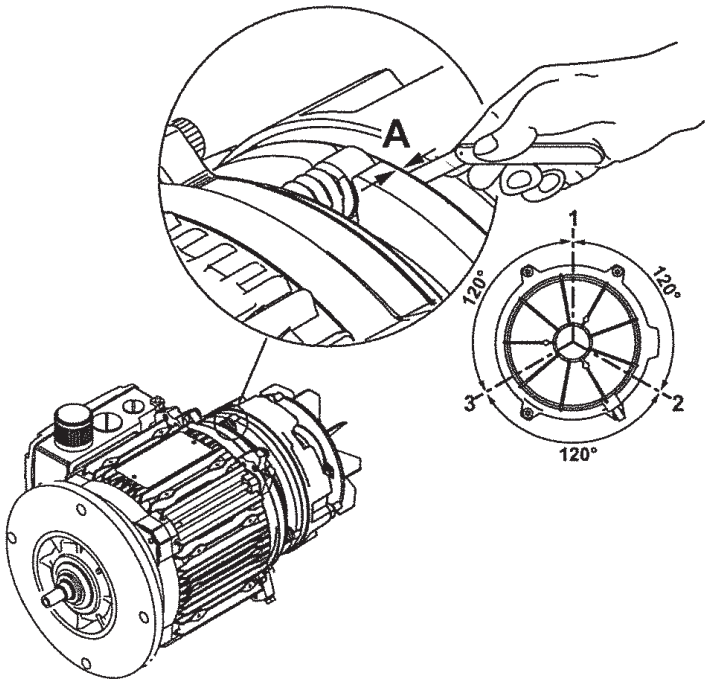
Setting the working air gap of BE05-BE32 brakes

WARNING: Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

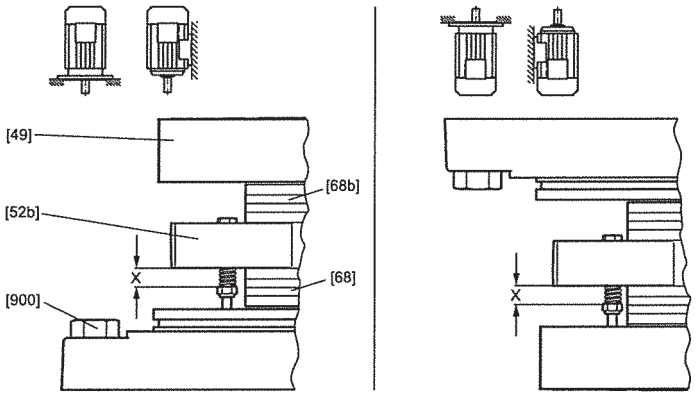
- Isolate the motor, brake, and forced cooling fan, if installed, from the power supply before starting work, safeguarding them against unintentional re-start.
- Carefully observe the steps described below.

1. Remove the following:
   - » Forced cooling fan and incremental encoder (if installed) See section "Motor and brake maintenance - preliminary work" (page 79).
   - » Flange cover or fan guard [35]
2. Push the rubber sealing collar [66] aside,
   - » Release the clamping strap, if necessary
   - » Sucking off any abrasion
3. Measure the brake disk [68]:
   - » Minimum brake disk thickness see chapter "Technical Data" (page 125).
   - » Replace brake disk if necessary, see chapter "Replacing the brake disk of BE05-BE32 brakes" (page 100).
4. BE30-BE32: Unfasten the setting sleeves [67] by turning it towards the brake endshield.
5. Measure the working air gap A (see the following figure)
   (use a feeler gauge and measure at three points offset by 120°):
   - » for BE05 - 11: between the pressure plate [49] and damping plate [718]
   - » for BE20 - 32: between the pressure plate [49] and brake coil body [54]



6. BE05-BE20: Tighten the hex nuts [61] until the working air gap is set correctly, see chapter "Technical Data" (page 125)
   BE30-BE32: Tighten the hex nuts [61] until the working air gap is 25 mm.
7. If you are mounting the BE32 in a vertical position, set the 3 springs on the brake stationary disk to the following measurement:

Mounting position	XIn[mm]
Brake at the top	7.3
Brake at the bottom	6.5



[49) Pressure plate
[52b] Brake lining (BE32 only)
[68) Brake disk
[68b] Brake disk (BE32 only)
[900] Hex nut

8. BE30-BE32: Tighten the setting sleeves [67]
   » towards the magnet
   » until the working air gap is set correctly, see chapter "Technical Data" (page 125).
9. Put the rubber sealing collar back in place and re-install the dismantled parts.

Replacing the brake disk of BE05-BE32 brakes

In addition to the brake elements listed in column "BE brake", see chapter "Inspection and maintenance intervals" (page 76), check the hex nut nuts [61] for wear when you replace the brake disk. You must always replace the hex nuts [61] when you replace the brake disk.

WARNING: Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

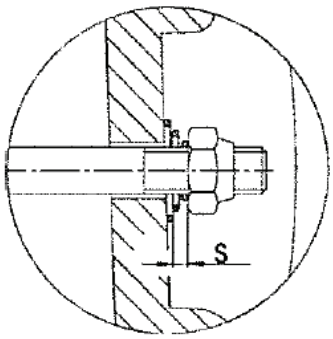
- Isolate the motor, brake, and forced cooling fan, if installed, from the power supply before starting work, safeguarding them against unintentional re-start.
- Carefully observe the steps described below.

INFORMATION

- The brake of DR.71-DR.80 motor sizes cannot be removed from the motor because the BE brake is directly installed on the brake endshield of the motor.
- The brake of DR.90 - DR.225 motor sizes cannot be removed from the motor for replacing the brake disk because the BE brake is pre-installed on the brake endshield of the motor with a friction disk .

1. Remove the following:
   » Forced cooling fan and incremental encoder (if installed)
   See section "Motor and brake maintenance - preliminary work" (page 79).
   » Flange cover or fan guard [35], circlip [32/62] and fan [36]
2. Remove the brake cable
   » BE05-BE11: Remove the terminal box cover and unfasten the brake cable from the rectifier.
   » BE11-BE32: Loosen safety screws of the brake plug connector [698] and remove plug connector.
3. Remove the rubber sealing collar [66]
4. Loosen hex nuts [61], carefully pull off the magnet [54] (brake cable!) and take out the brake springs [50].
5. BE05-BE11: Remove the damping plate [718], pressure plate [49] and brake disk [68]
   BE20-BE30: Remove pressure plate [49] and brake disk [68]
   BE32: Remove pressure plate [49], brake disk [68] and [68b]
6. Clean the brake components
7. Install a new brake disk(s).
8. Re-install the brake components,
   » Except for the fan and the fan guard, because the working air gap has to be set first, see chapter "Setting the working air gap of the BE05-BE32 brakes" (page 98).

9. **With manual brake release:** Use setting nuts to set the floating clearance "s" between the conical coil springs {pressed flat) and the setting nuts {see following figure).
   This floating clearance "s" is necessary so that the pressure plate can move up as the brake lining wears. Otherwise, reliable braking is not guaranteed.



Brake	Floating clearance s (mm)
BE05, BE1, BE2	1.5
BE5, BE11, BE20, BE30, BE32	2

10. Put the rubber sealing collar back in place and re-install the dismantled parts.

INFORMATION

- The lockable manual brake release {type HF) is already released when resistance is encountered when operating the grub screw.
- The self-reengaging manual brake release {type HR) can be operated with normal hand pressure.
- In brake motors with self-reengaging manual brake release, the manual brake release lever must be removed after startup/ maintenance! A bracket is provided for storing the lever on the outside of the motor.

INFORMATION

Important: After replacing the brake disk, the maximum braking torque is reached only after several cycles.

Changing the braking torque of BE05-BE32 brakes

The braking torque can be altered in stages.

- by changing the type and number of brake springs
- by changing the complete magnet (only possible for BE05 and BE1)
- by changing the brake (from motor size DR.90).
- by changing to a two-disk brake (BE30 only)

For the possible braking torque steps, please refer to section "Technical Data" (page 125).

Changing the brake spring of BE05-BE32 brakes

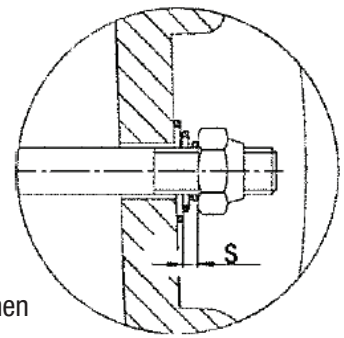
WARNING: Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Isolate the motor, brake, and forced cooling fan, if installed, from the power supply before starting work, safeguarding them against unintentional re-start.
- Carefully observe the steps described below.

1. Remove the following:
   - » Forced cooling fan and incremental encoder (if installed)
     See section "Motor and brake maintenance - preliminary work" (page 79).
   - » Flange cover or fan guard [35], circlip (32/62] and fan [36]
2. Remove the brake cable
   - » BE05-BE11: Remove the terminal box cover and unfasten the brake cable from the rectifier.
   - » BE20-BE32: Loosen safety screws of the brake plug connector [698] and remove plug connector.
3. Remove the rubber sealing collar [66] and the manual brake release:
   - » Setting nuts [58], conical coil springs [57], studs [56], releasing lever [53], spiral dowel pin [59]
4. Unfasten hex nuts [61] and pull off the magnet [54]
   - » by approx. 50 mm (watch the brake cable)
5. Change or add brake springs [50/276]
   - » Arrange brake springs symmetrically
6. Re-install the brake components
   - » Except for the fan and the fan guard, because the working air gap has to be set first, see chapter "Setting the working air gap of the BE05-BE32 brakes" (page 98).
7. With manual brake release: Use setting nuts to set the floating clearance “s” between the conical coil springs (pressed flat) and the setting nuts (see following figure).
   This floating clearance “s” is necessary so that the pressure plate can move up as the brake lining wears. Otherwise, reliable braking is not guaranteed.

Brake	Floating clearance s (mm)
BE05, BE1, BE2	1.5
BE5, BE11, BE20, BE30, BE32	2



8. Put the rubber sealing collar back in place and re-install the dismantled parts.

INFORMATION

The lockable manual brake release {type HF) is already released when resistance is encountered when operating the grub screw.

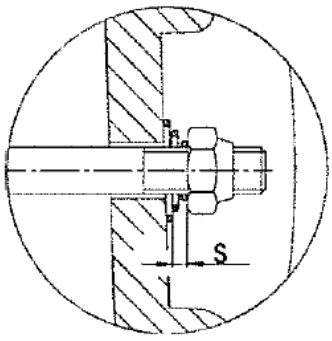
Changing the magnet of BE05-BE32 brakes

WARNING: Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Isolate the motor, brake, and forced cooling fan, if installed, from the power supply before starting work, safeguarding them against unintentional re-start.
- Carefully observe the steps described below.

1. Remove the following:
   » Forced cooling fan and incremental encoder (if installed)
   See section "Motor and brake maintenance - preliminary work" (page 79).
   » Flange cover or fan guard [35], circlip [32/62] and fan [36]
2. Remove the rubber sealing collar [66] and the manual brake release:
   » Setting nuts [58], conical coil springs [57], studs [56], releasing lever [53], spiral dowel pin [59]
3. Remove the brake cable
   » **BE05-BE11:** Remove the terminal box cover and unfasten the brake cable from the rectifier.
   » **BE20-BE32:** Loosen safety screws of the brake plug connector (698] and remove plug connector.
4. Unfasten hex nuts [61], remove complete magnet [54], remove brake springs [50/276].
5. Install new magnet with brake springs. For the possible braking torque steps, please refer to section “Technical Data” (page 125).
6. Re-install the brake components
   » Except for the fan and the fan guard, because the working air gap has to be set first, see chapter”Setting the working air gap of the BE05-BE20 brakes” (page 98).
7. With manual brake release: Use setting nuts to set the floating clearance “s” between the conical coil springs (pressed flat) and the setting nuts (see following figure).
   This floating clearance “s” is necessary so that the pressure plate can move up as the brake lining wears. Otherwise, reliable braking is not guaranteed.



Brake	Floating clearance s (mm)
BE05, BE1, BE2	1.5
BE5, BE11, BE20, BE30, BE32	2

8. Put the rubber sealing collar back in place and re-install the dismantled parts.
9. Replace brake controller in the event of an interturn short circuit or a short circuit to frame.

INFORMATION

Replace setting nuts [58] and hex nuts [61] if the removal procedure is repeated.

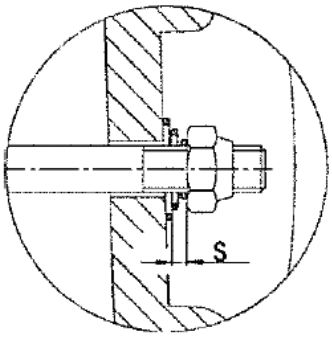
Replacing the brake of DR.90-DR.225

WARNING: Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Isolate the motor, brake, and forced cooling fan, if installed, from the power supply before starting work, safeguarding them against unintentional re-start.
- Carefully observe the steps described below.

1. Remove the following:
   - » Forced cooling fan and incremental encoder (if installed)
     See section "Motor and brake maintenance - preliminary work" (page 79).
   - » Flange cover or fan guard [35], circlip [32/62] and fan [36]
2. Remove the brake cable
   - » BE05-BE11: Remove the terminal box cover and unfasten the brake cable from the rectifier.
   - » BE20-BE32: Loosen safety screws of the brake plug connector [698] and remove plug connector.
3. Unfasten screws [900] and remove brake from brake endshield.
4. DR.90- DR.132: Observe the alignment of the sealing [901].
5. Connect brake cable.
6. Align the cam of the friction disk.
7. Mount oil seal [95].
8. With manual brake release: Use setting nuts to set the floating clearance "s" between the conical coil springs (pressed flat) and the setting nuts (see following figure).
   This floating clearance "s" is necessary so that the pressure plate can move up as the brake lining wears. Otherwise, reliable braking is not guaranteed.



Brake	Floating clearance s (mm)
BE05, BE1, BE2	1.5
BE5, BE11, BE20, BE30, BE32	2

Notes

Notes

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