

RHX[®]
HEAVY DUTY COMMERCIAL OPERATOR

NEMA 7/9

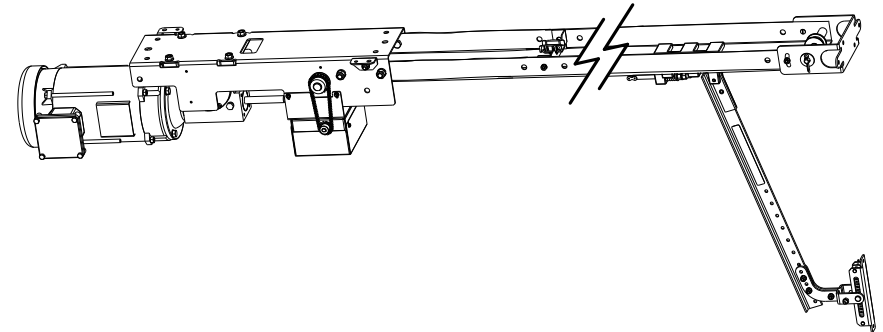
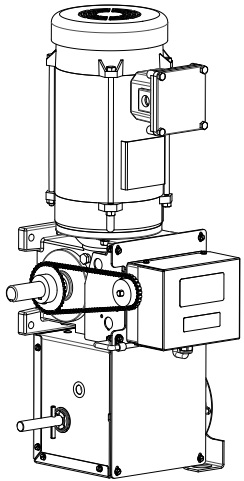
The Genuine. The Original.
OVERHEAD DOOR[®]

HOIST



TROLLEY

WITH EXCLUSIVE FEATURES:
CLASSES:
FLAMMABLE GASES
CLASS 1, DIVISION 1, GROUP D, T2C
COMBUSTIBLE DUST
CLASS II, DIVISION 1, GROUP F & G, T2C

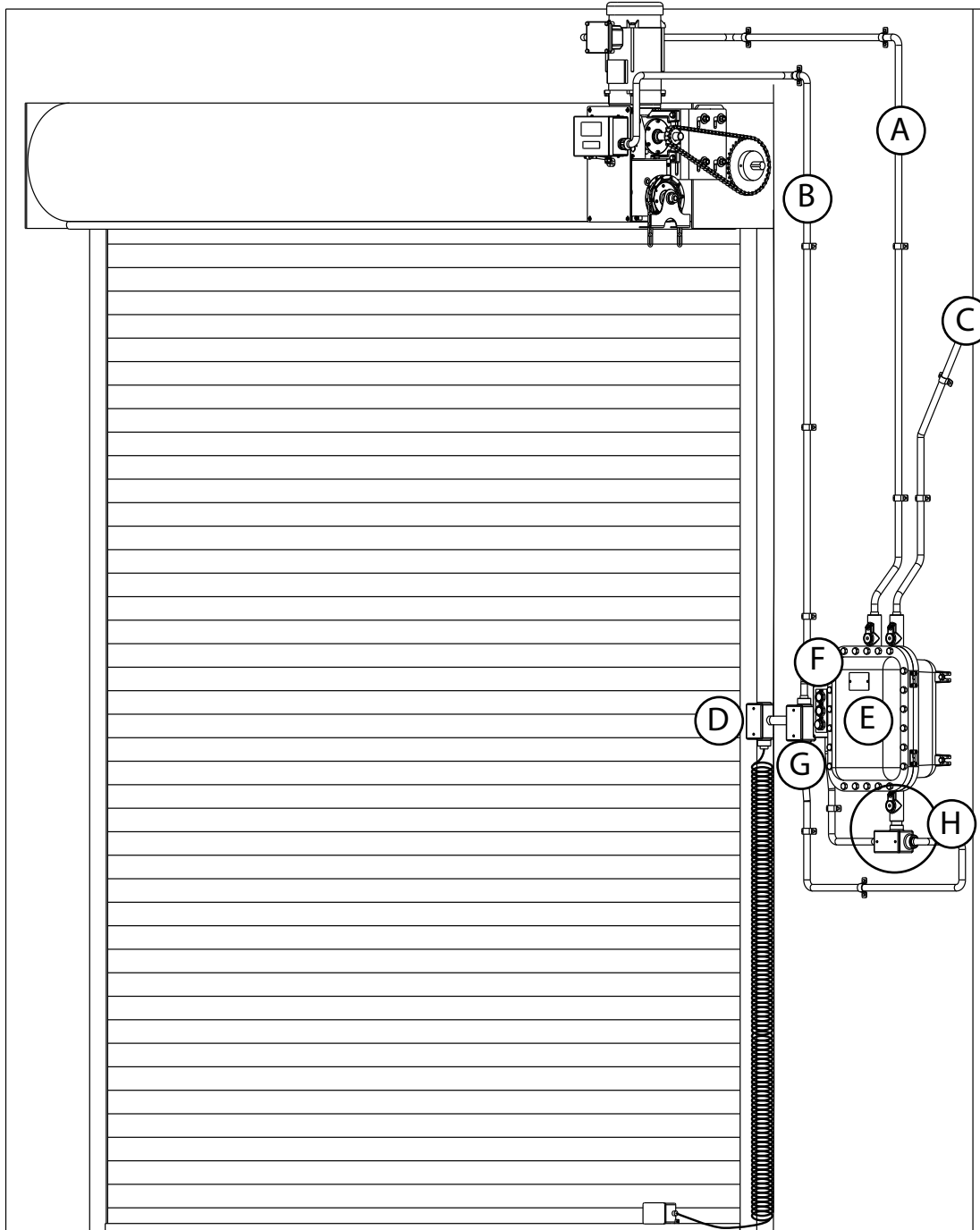


| PROPER APPLICATION | | |
|------------------------------|---|--------------------|
| Door Type | Operator Type | HP/Max Door Weight |
| Sectional (All Types) | Hoist (Sidemount, Centermount, Chain or Direct Couple) | 1/2HP = 1310 lbs. |
| | | 1HP = 1650 lbs. |
| Rolling Steel (All Types) | Hoist (Front of Hood, Top of Hood, or Bench Mount) | 3HP = 3696 lbs. |

| PROPER APPLICATION | | |
|--|---|--------------------|
| Door Type | Operator Type | HP/Max Door Weight |
| Sectional (Standard or Low Headroom Track Only) | Trolley (Standard, Sidemount or Dual Trolley) | 1/2HP = 1310 lbs. |
| | | 1HP = 1650 lbs. |

NOT FOR RESIDENTIAL USE

This Installation Manual provides the information required to install, troubleshoot and maintain an RHX[®] NEMA 7/9 Commercial/Industrial Door Operator.



Typical Installation HOIST

A=Motor Feed
*Up to 7 Wires. Explosion Proof
Conduit not included.*

B=Limit Switch/Interlock
*Low Voltage Intrinsically Safe
Feed. Up to 5 wires.*

C=Power Input Feed
*Up to 4 Wires. Explosion Proof
Conduit not included.*

D=Safety Feed
*Low Voltage Intrinsically Safe
Feed. 2 wires.*

**E=NEMA 7/9 Explosion
Proof Enclosure**

F=3-Button Station
*Low Voltage Intrinsically Safe
Feed. 4 wires.*

**G=Limit Switch/Safety
Feed Junction Box**
*Low Voltage Intrinsically
Safe Feed*

**H=Factory Installed
Intrinsically Safe Control
Wire Junction Box.**

⚠ WARNING

End User/ Installer **MUST** follow applicable
NEC requirements along with Local
requirements for Hazardous Wiring.

⚠ AVERTISSEMENT

Il appartient à l'utilisateur final / installateur de
respecter les exigences du NEC et les exigences
locales pour le câblage en site dangereux.

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Section 1: How to use this Manual

The 10 sections of this Installation Manual provide the information required to install, troubleshoot and maintain an RHX® NEMA 7/9 commercial/industrial door operator.

Section 2

Provides important defining information related to safety terminology used throughout this manual, as well as safety related instructions which must be followed at all times while doing any steps/tasks/instructions detailed in this manual.

Section 3

Details pre-installation concerns/issues/decisions that are recommended to be considered and/or resolved prior to beginning any commercial door operator installation.

Sections 4-6

Provides step by step installation and set-up instructions for the NEMA 7/9 commercial door operator. Each section is written such that it must be followed in a step by step order to complete a successful installation.

⚠ WARNING
Failure to correctly perform all steps in sections 4-6 can result in serious injury or death.

⚠ AVERTISSEMENT
Ne pas effectuer correctement toutes les étapes dans les sections 4-6 peut entraîner des blessures graves voire la mort.


Section 7

Details important features and troubleshooting information for typical installation and normal operations that may occur.

Sections 8-10

Provides related information on service and maintenance items, operator drawings for use in troubleshooting and service activities, along with important warranty and returned goods policy information.




Section 2: Safety Information and Instructions



WARNING

Overhead Doors are large, heavy objects that move with the help of springs under high tension and electric motors. Since moving objects, springs under tension, and electric motors can cause injury, your safety and the safety of others depend on you reading the information in this manual. If you have any questions or do not understand the information presented, call your nearest service representative. For the number of your local Overhead Door Dealer, call 800-929-3667, and for **Overhead Door Factory Technical Advice, call 800-275-6187.**

In this manual the words Danger, Warning, and Caution are used to stress important safety information. The word:







-  **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
-  **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
-  **CAUTION** indicates potentially hazardous situation which, if not avoided, may result in injury or property damage.

The word **NOTE**, is used to indicate important steps to be followed or important considerations.

IMPORTANT

READ PRIOR TO ANY DOOR OPERATION

1. Read manual and warnings carefully.
2. Keep the door in good working condition. Periodically lubricate all moving parts of door.
3. If door has a sensing edge, check operations monthly. Make any necessary repairs to keep it functional.
4. AT LEAST twice a year, manually operate the door by disconnecting it from the operator. The Door should open and close freely. If it does not, the door must be taken out of service and a trained service representative must correct the condition causing the malfunction.
5. The Operator Motor is protected against overheating by an internal thermal protector. If the motor protector is tripped, a trained service technical may be needed to correct the condition which caused the overheating. When the motor has cooled, thermal protector will automatically reset and normal operation can be resumed.
6. In case of power failure, the door can be operated manually by pulling the release cable to disconnect the operator drive system.
7. Keep instructions in a prominent location near the pushbutton.




| POTENTIAL HAZARD | EFFECT | PREVENTION |
|---|--|--|
| MOVING DOOR  |  WARNING Could result in Serious Injury or Death | Do Not operate unless the doorway is in sight and free of obstructions. Keep people clear of opening while door is moving. Do Not allow children to play with the door operator. Do Not change operator control to momentary contact unless and external reversing means is installed. Do Not operate a door that jams or one that has a broken spring. |
| ELECTRICAL SHOCK  |  WARNING Could cause Serious Injury or Death | Turn off electrical power before removing operator cover. When replacing the cover, make sure wires are not pinched or near moving parts. Operator must be electrically grounded. |
| HIGH SPRING TENSION  |  WARNING Could cause Serious Injury or Death | Do Not try to remove, repair or adjust springs or anything to which door spring parts are fastened, such as wood block, steel bracket, cable or any other structure or like item. Repairs and adjustments must be made by trained service representative using proper tools and instructions. |

Section 2: Safety Information and Instructions







AVERTISSEMENT

Les portes basculantes sont de gros objets lourds qui fonctionnent à l'aide de ressorts soumis à une haute tension et de moteurs électriques. Dans la mesure où les objets en mouvement, les ressorts sous tension et les moteurs électriques peuvent entraîner des blessures, votre sécurité et celle des autres exigent que vous preniez connaissance des informations stipulées dans ce manuel. Si vous avez des questions ou si vous ne comprenez pas les informations ci-inclues, veuillez contacter le représentant de service le plus près. Pour obtenir le numéro du revendeur Overhead Door local, appelez le +1 (800) 929-3667, et pour **obtenir des conseils techniques de l'usine Overhead Door, appelez le +1 (800) -275-6187.**

Dans ce manuel, les mots Danger, Avertissement, et Attention sont utilisés pour faire ressortir d'importantes informations relatives à la sécurité. Le mot :

-  **DANGER** signale une situation dangereuse imminente qui si elle n'est pas évitée, risque d'entraîner des blessures graves, voire mortelles.
-  **AVERTISSEMENT** signale une situation potentiellement dangereuse qui, si elle n'est pas évitée, risque d'entraîner la mort ou des blessures graves.
-  **ATTENTION** signale une situation potentiellement dangereuse qui, si elle n'est pas évitée, risque d'entraîner des blessures ou des dommages matériels.

Le terme **REMARQUE** est utilisé pour signaler les étapes importantes à suivre ou d'importants éléments à prendre en considération.

| DANGER POTENTIEL | EFFET | PRÉVENTION |
|--|---|--|
| <p>PORTE EN MOUVEMENT</p>  | <p> AVERTISSEMENT Pourrait entraîner des blessures graves voire la mort</p> | <p>Utiliser uniquement si la porte est en vue et libre de tout obstacle. Ne laisser personne se tenir dans l'ouverture de la porte pendant qu'elle est en mouvement. Ne pas permettre aux enfants de jouer avec l'opérateur de la porte. Ne pas modifier la commande de l'opérateur à contact momentané à moins qu'un moyen d'inversion externe soit installé. Ne pas faire fonctionner une porte qui bloque ou dont le ressort est cassé.</p> |
| <p>CHOC ÉLECTRIQUE</p>  | <p> AVERTISSEMENT Pourrait entraîner des blessures graves voire la mort</p> | <p>Couper le courant avant d'enlever le couvercle de l'opérateur. Lorsque le couvercle doit être remplacé, s'assurer que les fils ne sont ni coincés ni près des pièces mobiles. L'opérateur doit être correctement mis à la terre.</p> |
| <p>TENSION ÉLEVÉE RESSORT</p>  | <p> AVERTISSEMENT Pourrait entraîner des blessures graves voire la mort</p> | <p>Ne pas essayer d'enlever, réparer ni ajuster les ressorts ou toute autre pièce à laquelle le ressort de la porte est attaché, y compris blocs de bois, supports en acier, câbles ou autres articles semblables. Les réparations et les réglages doivent être effectués par technicien qualifié qui se sert d'outils appropriés et qui respecte les instructions.</p> |

Section 3: Critical Installation Information

Job Site Issues to Consider/Concerns

The following list of items should be considered prior to selecting an operator for a given job site.

1-Available power supply. 2-Type of door. 3-Potential operator mounting obstructions. Reversal of Limit Box (4.18). Items to consider include, but are not limited to: side room, room above door shaft, room below door shaft, available mounting surface integrity, power supply location, and convenient chain hoist and release cable positioning. 4-Size of door for appropriate operator torque and door travel speed selection. 5-Door activation needs/requirements. Examples include 3 button control stations, 1 button control stations, pull cords, key switches. 7-Interlock switches are required under certain conditions for doors with pass doors and door locks. See Section 5.7. 8-Accessory equipment. Examples include reversing edges which are required for doors set to operate as momentary contact, etc. See "Entrapment Protection" section below.


ENTRAPMENT PROTECTION

The installation of a monitored external reversing edge is required on all momentary contact electronically operated commercial doors. If such a reversing device is not installed, the operator will revert to a constant contact control switch for operation (Closing only).

The Reversing Devices currently UL Approved are:

- 1). **MillerEdge® MET2 and MT T2 Series monitored edge sensors.**

 **WARNING:** DO NOT apply line voltage until instructed to do so.

 **AVERTISSEMENT:** NE PAS mettre sous tension tant que l'instruction n'est pas donnée de le faire.

Section 3: Critical Installation Information

CAUTION: Check working condition of door before installing the operator. Door must be free from sticking and binding. If equipped, deactivate any door locking device(s). Door repairs and adjustments, including cables and spring assemblies **MUST** be made by a trained service representative using proper tools and instructions.

ATTENTION: Vérifiez l'état de fonctionnement de la porte avant d'installer l'opérateur. La porte doit pouvoir bouger librement et ne pas coincer. Désactivez tous les dispositifs de verrouillage de la porte (si équipés). Les réparations et les réglages de porte, plus particulièrement pour les câbles et les ressorts **DOIVENT** être effectués par un technicien qualifié qui se sert d'outils appropriés et qui respecte les instructions.

IMPORTANT INSTALLATION INSTRUCTIONS

WARNING To reduce the risk of severe injury or death:

1. READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS.
2. 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.
3. Remove all pull ropes and remove, or make inoperative, all locks (unless mechanically and/or electronically interlocked to the power unit) that are connected to the door before installing the operator.
4. Install the door operator at least 8 feet above the floor if the operator has exposed moving parts.
5. Do not connect the door operator to the power source until instructed to do so.
6. Locate the control station: (a) within sight of the door, (b) a minimum of 5 feet above the floor so that small children cannot reach it, and (c) away from all moving parts of the door.
7. Install the Entrapment Warning Placard next to the control station and in a prominent location.
8. For products having a manual release, instruct the end user on the operation of the manual release.

IMPORTANT INSTRUCTIONS D'INSTALLATION

AVERTISSEMENT

Pour réduire les risques de blessures graves ou de mort :

1. LIRE ET RESPECTER TOUTES LES INSTRUCTIONS D'INSTALLATION.
2. Installez uniquement sur une porte fonctionnant correctement et bien équilibrée. Une porte qui fonctionne mal peut provoquer des blessures graves. Demandez à un technicien qualifié d'effectuer les réparations des câbles, des ressorts et de toute autre quincaillerie avant de procéder à l'installation de l'opérateur.
3. Retirez toutes les cordes de traction ainsi que tous les verrous ou rendez-les inopérants (à moins qu'ils ne soient mécaniquement et/ou électroniquement interverrouillés à l'unité motrices) qui sont connectés à la porte avant de procéder à l'installation de l'opérateur.
4. Installez l'opérateur de la porte à 2,4 m minimum au-dessus du sol lorsque des pièces mobiles de l'opérateur sont exposées.
5. Ne pas raccorder l'opérateur de la porte à la source d'alimentation avant que l'instruction ne soit donnée de le faire.
6. Installez la station de commande : (a) en vue de la porte, (b) à 1,5 m minimum au-dessus du sol pour que les jeunes enfants ne puissent pas l'atteindre, et (c) à l'écart de toutes les pièces mobiles de la porte.
7. Installez le poster d'avertissement de pincement à côté de la station de commande à un endroit bien en vue.
8. Pour les produits ayant un déclenchement manuel, indiquez à l'utilisateur comment déclencher manuellement.

Section 3: Critical Installation Information

IMPORTANT SAFETY INSTRUCTIONS

WARNING-
To reduce the risk of severe
injury or death:

- 1) READ AND FOLLOW ALL INSTRUCTIONS.
- 2) Never let children operate or play with door controls. Keep the remote control (where provided) away from children.
- 3) 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.
- 4) Test the door's safety features at least once a month. After adjusting either the force or the limit of travel, retest the door operator's safety features. Failure to adjust the operator properly may cause severe injury or death.
- 5) For products having a manual release, if possible, use the manual release only when the door is closed. Use caution when operating the release while the door is open. Weak or broken springs may cause the door to fall rapidly, causing severe injury or death.
- 6) KEEP DOOR PROPERLY OPERATING AND BALANCED. See Door Manufacturer's Owner's Manual. An improperly operating or improperly balanced door could cause severe injury or death. Have only trained door systems technicians make repairs to cables, spring assemblies, other hardware and any wooden blocks or like items to which they may be attached.
- 7) SAVE THESE INSTRUCTIONS.

CONSIGNES DE SÉCURITÉ IMPORTANTES

AVERTISSEMENT-
Pour réduire les risques de
blessures graves ou de mort :

- 1) LIRE ET RESPECTER TOUTES LES INSTRUCTIONS.
- 2) Ne jamais permettre aux enfants d'actionner ni de jouer avec les commandes de la porte. Tenir les télécommandes (si fournies) hors de la portée des enfants.
- 3) Le personnel doit se tenir à l'écart d'une porte en mouvement et garder bien en vue une porte en mouvement jusqu'à ce qu'elle soit complètement fermée ou ouverte. PERSONNE NE DOIT TRAVERSER LA TRAJECTOIRE D'UNE PORTE EN MOUVEMENT.
- 4) Testez les fonctionnalités de sécurité de la porte au moins une fois par mois. Après avoir réglé la force ou la limite de la course, retestez les éléments de sécurité de l'opérateur de la porte. Un mauvais réglage de l'ouvre-porte peut entraîner des blessures graves voire la mort.
- 5) Pour les produits ayant un déclenchement manuel, dans la mesure du possible, utilisez le déclenchement manuel uniquement lorsque la porte est fermée. Prenez toutes les précautions nécessaires lors de l'utilisation du déclenchement manuel alors que la porte est ouverte. Des ressorts faibles ou brisés peuvent faire descendre la porte rapidement ce qui peut entraîner des blessures graves voire la mort.
- 6) VEILLER À CE QUE LA PORTE SOIT CORRECTEMENT ÉQUILIBRÉE ET FONCTIONNE BIEN. Consultez le manuel de l'utilisateur du fabricant de la porte. Une porte déséquilibrée ou fonctionnant incorrectement pourrait entraîner de graves blessures voire la mort. Seuls des techniciens formés sur systèmes de portes peuvent effectuer des réparations aux câbles, aux ressorts, aux autres matériels et aux blocs de bois ou éléments semblables auxquels ces éléments peuvent être attachés.
- 7) CONSERVER CES CONSIGNES.

Section 3: Critical Installation Information

| RHX® Sectional Door Chart (Sq. Ft.) HOIST | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|--|------------------------|-------------------|-----------------------------|--------------------|------------------------------|--------------------|------------------------------|----------------------------|--------------------------------------|---------------------|-----------------|---------------------|---------------------------|--------------------------|-----------------|----------------|-----|-----|------------|--|--|--|--|----------|--|
| Model | HP | Commercial Steel Insulated & Non-Insulated | | | | | | | | | | | | | | | | | | | Thermacore | | | | | Aluminum | |
| | | Door Series -> | | 416 | 418 | 420 | 422 | 424 | 426 | 430 | 432 | 591 | 592 | 593 | 594 | 596 | 598 | 599 | 511 | 521 | | | | | | | |
| | | Mounting Type | Max. Door Weight (Lbs) | 16GA. Flush Steel | 16GA. Flush Steel Insulated | 20GA. Ribbed Steel | 20GA. Ribbed Steel Insulated | 24GA. Ribbed Steel | 24GA. Ribbed Steel Insulated | Nominal 24GA. Ribbed Steel | Nominal 24GA. Ribbed Steel Insulated | Ribbed Steel 1 5/8" | Ribbed Steel 2" | Ribbed Steel 1 3/8" | Raised Panel Steel 1 3/8" | 20GA. Flush Steel 1 5/8" | Ribbed Steel 1" | Flush Steel 2" | | | | | | | | | |
| RHX® | 1/2 | SC | 1310 | 330 | 262 | 406 | 330 | 448 | 366 | 326 | 326 | 490 | 448 | 326 | 326 | 380 | 200 | 448 | 326 | 406 | | | | | | | |
| RHX® | 1 | SC | 1650 | 448 | 366 | 536 | 448 | 632 | 490 | 326 | 326 | 632 | 584 | 326 | 326 | 501 | 200 | 448 | 326 | 526 | | | | | | | |
| RHX® 14 RPM - Direct Couple Kit | 1 | SC | 2400 | 490 | 406 | 684 | 536 | 792 | 584 | 326 | 326 | 792 | 736 | 326 | 326 | 632 | 200 | 448 | 326 | 526 | | | | | | | |
| RHX® 14 RPM - Direct Couple Kit | 3 | SC | 3696 | 701 | 588 | 1020 | 821 | 1020 | 821 | 326 | 326 | 1164 | 1020 | 326 | 326 | 888 | 200 | 448 | 326 | 526 | | | | | | | |

S= Jackshaft, Side Mount, C= Jackshaft, Center Mount

NOTE: Side/Center direct couple kit output speed is 26RPM for 1/2 and 1 HP. For larger doors use 14 RPM output speed direct couple kit on 1HP and 3HP RHX® operators.

NOTE: Total door weight, and not the square footage, is the critical factor in selecting the proper operator. Square foot measurements are based on "Square Doors". (Example = 16' X 16')

NOTE: Doors that require special wind loading and wide doors normally require strutting(reinforcement). Strutting doors can significantly increase door weight beyond maximum weight shown. Consult factory

| RHX® Rolling Steel Door Chart (Sq. Ft.) | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|---------------------|-------|---------|-------|-------|-------|-------|-------|-------|-------------|------------------------------------|-------|-------|-------|--------------|---------------|-------|---------|-------|-------|-----|------|------|-----|
| Model | HP | Rolling Steel Doors | | | | | | | | | | Rolling Fire Doors / Fire Shutters | | | | | Counter Doors | | Grilles | | | | | | |
| | | 600 | 610 | 610/620 | | | 625 | | | | 630/631/634 | | | | | 640/641 | 650/651/652 | | 670 | 671 | | | | | |
| | | Coilaway | 24GA. | 22GA. | 20GA. | 18GA. | 24GA. | 22GA. | 20GA. | 18GA. | 24GA. | 22GA. | 20GA. | 18GA. | 22GA. | 22GA. / Alum | Alum | Steel | | | | | | | |
| RHX® | 1/2 | 256* | 465 | 403 | 351 | 268 | 247 | 215 | 199 | 169 | | | | | | | | 172** | 168** | 351** | 268** | N/A | ALL* | 540 | 240 |
| RHX® | 1 | 256* | 690 | 600 | 523 | 399 | 367 | 320 | 297 | 252 | | | | | | | | 172** | 168** | 480** | 399** | N/A | ALL* | 700 | 340 |
| RHX® | 3 | 256* | N/A | 1137 | 945 | 867 | 798 | 696 | 645 | 548 | | | | | | | | 172** | 168** | 576** | 696** | N/A | ALL* | 1080 | 888 |

Note: Door chart represents max. door height of 24ft., over 24ft high consult factory.

* Operator must be wall mounted.

| RHX® Trolley Sectional Door Chart (Sq. Ft.) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|--|-------------------|-----------------------------|--------------------|------------------------------|--------------------|------------------------------|----------------------------|--------------------------------------|---------------------|-----------------|---------------------|---------------------------|--------------------------|-----------------|----------------|-----|-----|-----|------------|--|--|--|--|----------|--|
| Model | HP | Commercial Steel Insulated & Non-Insulated | | | | | | | | | | | | | | | | | | | Thermacore | | | | | Aluminum | |
| | | | | 416 | 418 | 420 | 422 | 424 | 426 | 430 | 432 | 591 | 592 | 593 | 594 | 596 | 598 | 599 | 511 | 521 | | | | | | | |
| | | Max. Door Weight (Lbs) | 16GA. Flush Steel | 16GA. Flush Steel Insulated | 20GA. Ribbed Steel | 20GA. Ribbed Steel Insulated | 24GA. Ribbed Steel | 24GA. Ribbed Steel Insulated | Nominal 24GA. Ribbed Steel | Nominal 24GA. Ribbed Steel Insulated | Ribbed Steel 1 5/8" | Ribbed Steel 2" | Ribbed Steel 1 3/8" | Raised Panel Steel 1 3/8" | 20GA. Flush Steel 1 5/8" | Ribbed Steel 1" | Flush Steel 2" | | | | | | | | | | |
| RHX® | 1/2 | 1310 | 330 | 262 | 406 | 330 | 448 | 366 | 326 | 326 | 490 | 448 | 326 | 326 | 380 | 200 | 448 | 326 | 406 | | | | | | | | |
| RHX® | 1 | 1650 | 448 | 366 | 536 | 448 | 632 | 490 | 326 | 326 | 632 | 584 | 326 | 326 | 501 | 200 | 448 | 326 | 526 | | | | | | | | |

NOTE: Total door weight, and not the square footage, is the critical factor in selecting the proper operator. Square foot measurements are based on "Square Doors". (Example = 16' X 16')

NOTE: Doors that require special wind loading and wide doors normally require strutting(reinforcement). Strutting doors can significantly increase door weight beyond maximum weight shown. Consult factory

Section 4: Installation - Hoist

Rolling Steel - Front of Hood & Top of Hood Mount Weld Plate Attachment

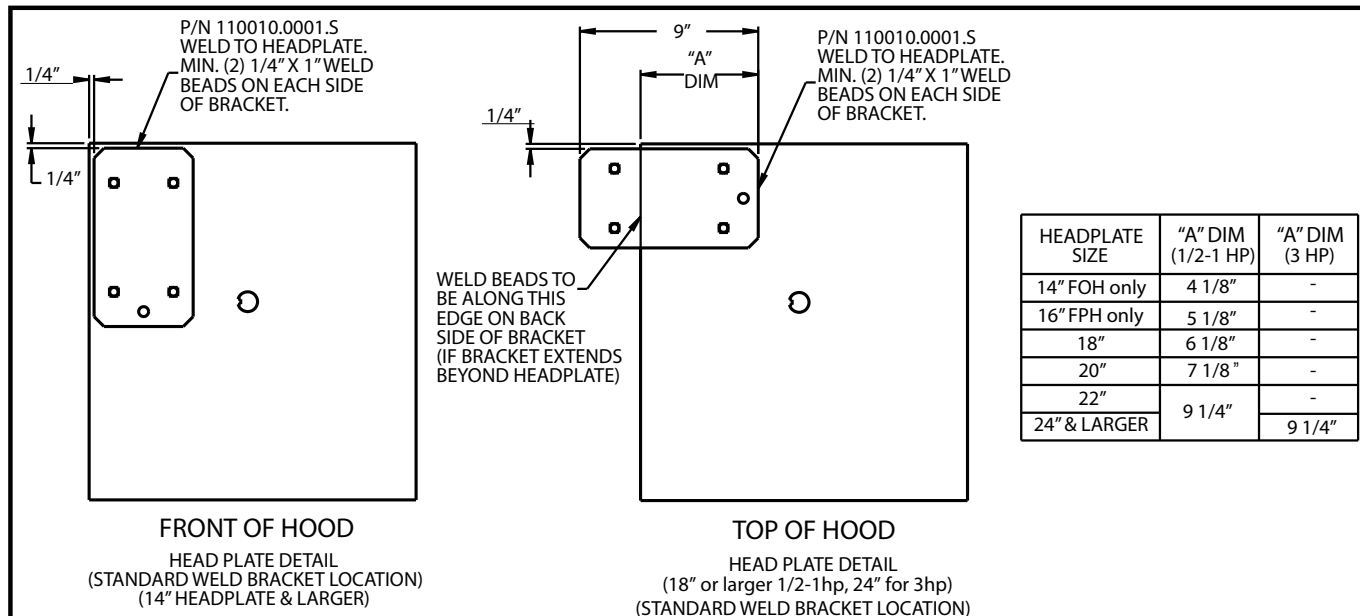
| HP | REQUIRED MOUNTING KIT | PART NUMBER |
|--------|-------------------------|--------------|
| 1/2, 1 | ROLLING STEEL - FOH-TOH | OPMKRSHX.S |
| 3 | ROLLING STEEL - FOH-TOH | OPMKRSHX3HPS |

NOTE: If installation will require the reversal of the limit box, refer to page 4.18

- 1) Determine operator mounting location, including desired hoist and release location and release cable routing.
- 2) Weld the Rolling Door weld plate assembly to the door headplate, a minimum of two 1" weld beads are required on each side of the weld plate for proper attachment. See Fig 1 for proper placement.

REFER TO SHOP DRAWINGS FOR
SPECIFIC DIMENSIONING INFORMATION

Figure 1 WELD PLATE ATTACHMENT



Section 4: Installation - Hoist

Rolling Steel - Front of Hood & Top of Hood Mount

The RHX® Rolling Steel Operators are factory assembled for right-hand mounting (shown). Each model can also be converted to left-hand mount See page 4.7 for instructions.

- 1) Attach operator to main mounting bracket using the four 3/8"-16 x 1-1/2" bolts, hex nuts, and lock washers. See **Fig 2**.

NOTE: For 3 HP units, 1/2"-13 x 2-1/2" bolts are required.

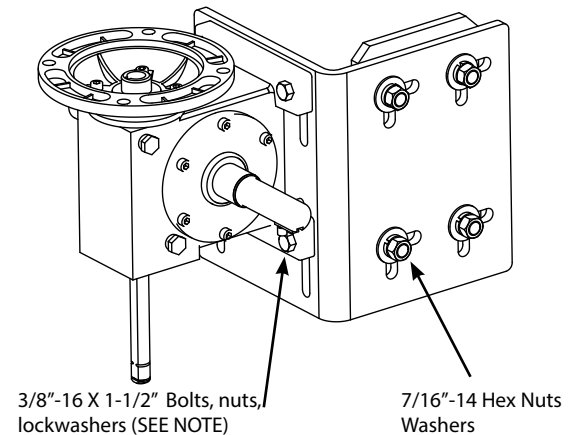
- 2) Mount the operator to the weld plate using the 7/16"-14 hex nuts. Hand tighten bracket to weld plate nuts.

Attach Operator to Door: **Fig. 3**.

- 3) Attach 12 tooth sprocket to operator output shaft.
- 4) Align keyways and insert key into sprocket and output shaft keyway. Do not tighten set screw at this time.
- 5) Attach door sprocket to door shaft. Align keyway and insert key. Do not tighten set screws at this time.
- 6) Assemble chain using chain master link.
- 7) Place assembled chain over door shaft sprocket and around the 12 tooth sprocket and align.
- 8) Raise or lower operator to remove slack from the chain. Be certain operator output shaft is parallel with door shaft.
- 9) While applying tension to chain, tighten operator mounting bracket nuts.
- 10) Tighten sprocket set screws.
- 11) Proceed to page 4.7

REFER TO SHOP DRAWINGS FOR
SPECIFIC DIMENSIONING INFORMATION

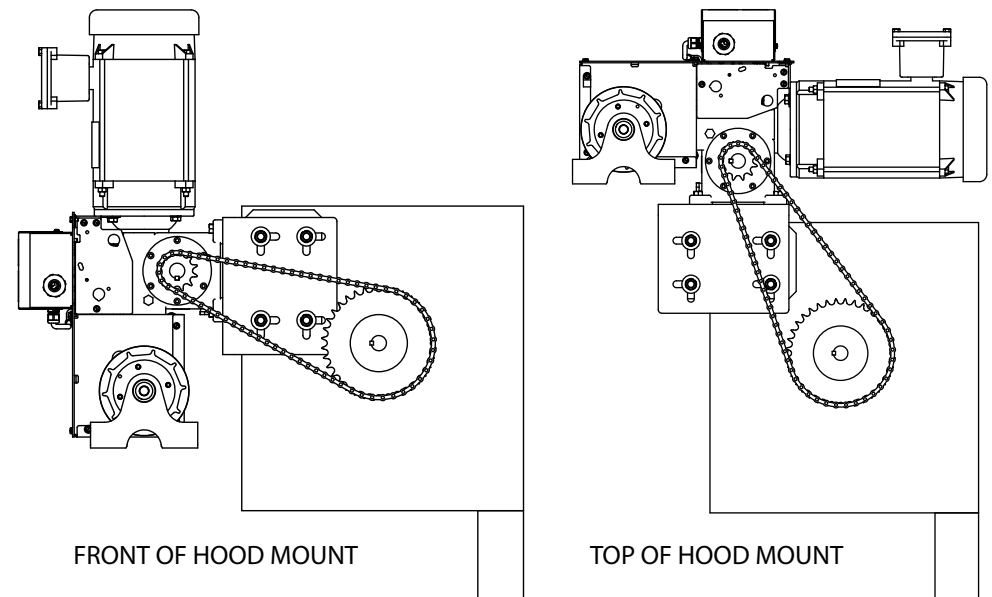
Figure 2



3/8"-16 X 1-1/2" Bolts, nuts,
lockwashers (SEE NOTE)

7/16"-14 Hex Nuts
Washers

Figure 3



FRONT OF HOOD MOUNT

TOP OF HOOD MOUNT

Section 4: Installation - Hoist

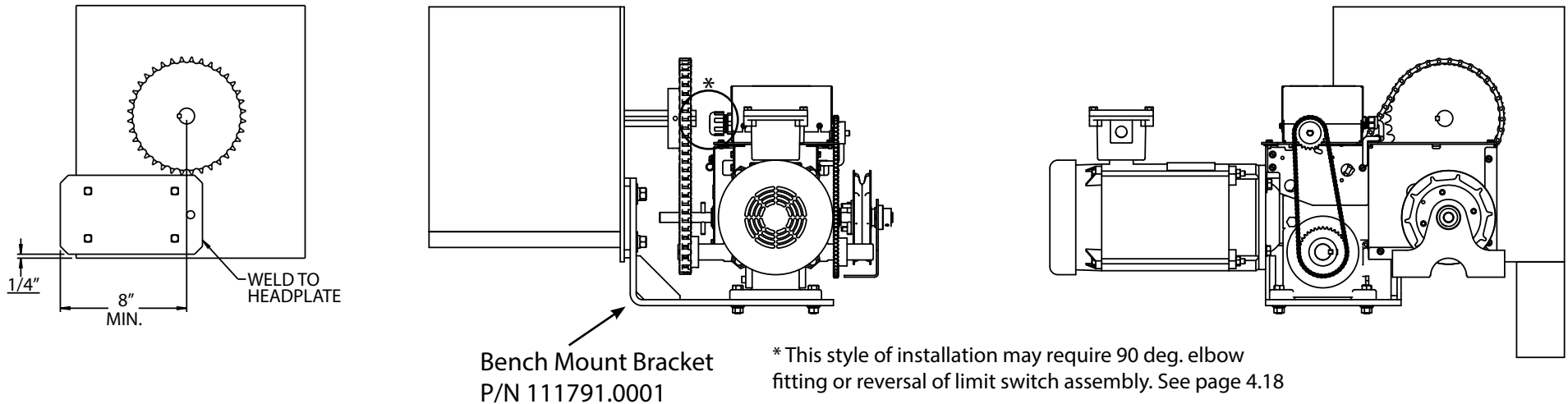
Rolling Steel - Bench Mount

| HP | REQUIRED MOUNTING KIT | PART NUMBER |
|--------|-----------------------------|-----------------|
| 1/2, 1 | ROLLING STEEL - BENCH MOUNT | OPMKRSBMHX.S |
| 3 | ROLLING STEEL - BENCH MOUNT | OPMKRSBMHX3HP.S |

The RHX® Rolling Steel Operators are factory assembled for right-hand mounting (shown). Each model can also be converted to left-hand mount See page 4.7 for instructions.

- 1) Determine operator mounting location, including desired hoist and release location and release cable routing.
- 2) Weld the Rolling Door weld plate assembly to the door headplate, a minimum of two 1" weld beads are required on each side of the weld plate for proper attachment. See **Fig. 4** for proper placement.
- 3) Attach operator to main mounting bracket using the four 3/8"-16 X 1-1/2" bolts, hex nuts, and lock washers. (For 3HP use 1/2"-13 x 2 1/2" bolts)
- 4) Mount the operator to the weld plate using the 7/16"-18 hex nuts. Hand tighten bracket to weld plate nuts.
- 5) Attach 12 tooth sprocket to operator output shaft.
- 6) Align keyways and insert key into sprocket and output shaft keyways. DO NOT tighten set screw yet.
- 7) Attach door sprocket to door shaft. Align keyway and insert key. DO NOT tighten set screw yet.
- 8) Assemble chain using master link.
- 9) With mounting bolts/nuts loosened, shift the position of the operator in order to remove slack from the chain.
- 10) While applying tension, fully tighten mounting bolts/nuts.
- 11) Tighten sprocket set screws.
- 12) Proceed to page 4.7

Figure 4 BENCH MOUNTING



Section 4: Installation - Hoist

Rolling Steel - Wall Mount & Sectional Side Mount

| HP | REQUIRED MOUNTING KIT | PART NUMBER |
|--------|-----------------------|---------------|
| 1/2, 1 | WALL MOUNT | OPMKWMHX.S |
| 3 | WALL MOUNT | OPMKWMHX3HP.S |

The RHX® Hoist Operators are factory assembled for right-hand mounting (shown). Each model can also be converted to left-hand mount See page 4.7 for instructions.

- 1) Attach optional wall mount bracket to operator (if needed) using the 4 mounting bolts and nuts supplied. Fully tighten. Position the operator with the bracket as shown.
- 2) Attach 12 tooth sprocket to operator output shaft.
- 3) Align keyways and insert key into sprocket and output shaft keyway. Do not tighten set screw at this time.
- 4) Attach door sprocket to door shaft. Align keyway and insert key. Do not tighten set screw at this time.
- 5) Assemble chain using chain master link.
- 6) Position operator near door shaft with sprockets aligned.
- 7) Place assembled chain over door and operator sprockets.
- 8) Lift or lower the operator as needed to tension drive chain.
- 9) Secure operator to wall.
 - You **MUST** use the LOCK DOWN HOLES (at least 2) to prevent the unit from becoming misaligned during operation. **Fig. 5.**
- 10) Check vertical alignment of the drive chain/sprockets and tighten sprocket set screws.
- 11) Proceed to page 4.7.

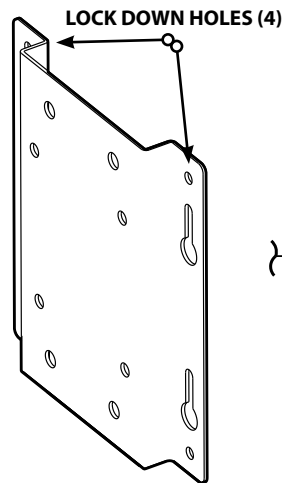


Figure 5
WALL MOUNT
BRACKET

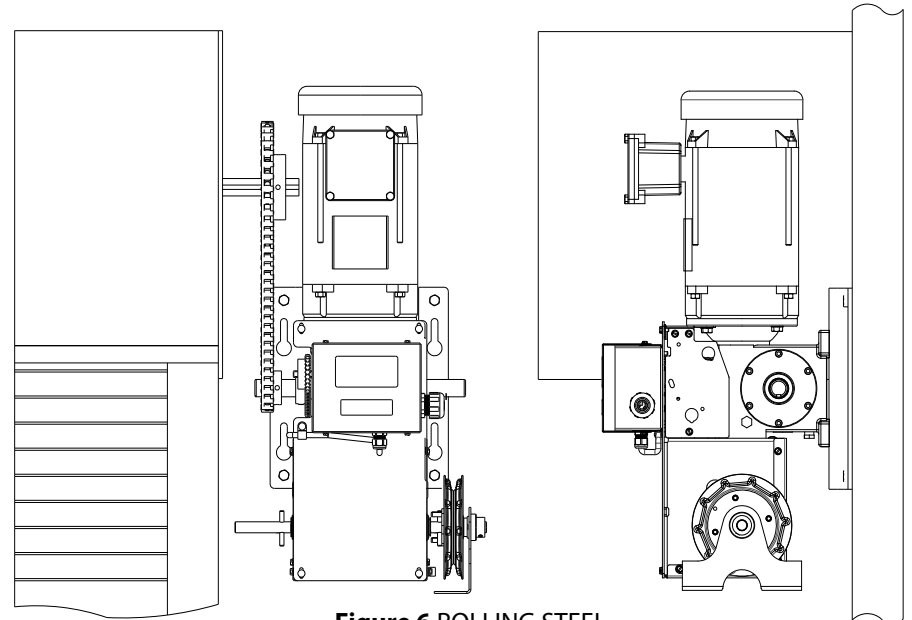


Figure 6 ROLLING STEEL

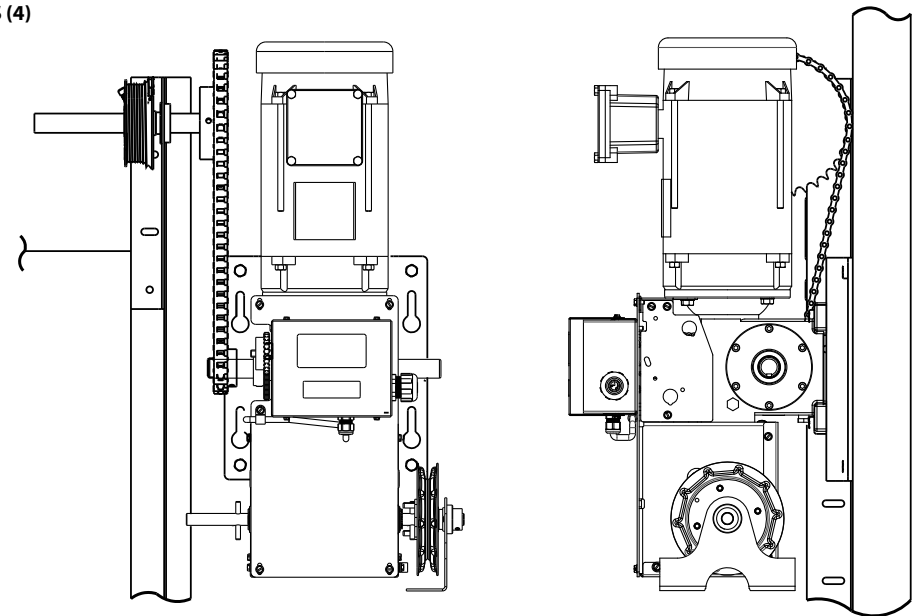


Figure 7 SECTIONAL

Section 4: Installation - Hoist

Sectional Doors - Direct Couple (Right hand unit shown)

| HP | REQUIRED MOUNTING KIT | PART NUMBER |
|--------|-----------------------|-----------------|
| 1/2, 1 | DIRECT COUPLE - 26RPM | OPMKDC26HX.S |
| 1/2, 1 | DIRECT COUPLE - 14RPM | OPMKDC14HX.S |
| 3 | DIRECT COUPLE - 14RPM | OPMKDC14HX3HP.S |

The RHX® Hoist Operators are factory assembled for right-hand mounting (shown). Each model can also be converted to left-hand mount See page 4.7 for instructions.

NOTES:

- 1) A clearance of 8" should be allowed for access to all electric connections.
- 2) Average door travel speed varies per drum used.
- 3) Operator mounting brackets mount to wall.

Refer to Direct Couple Supplemental Instruction (Included with Direct Couple Kit)

SIDEMOUNT 14 RPM DIRECT COUPLE

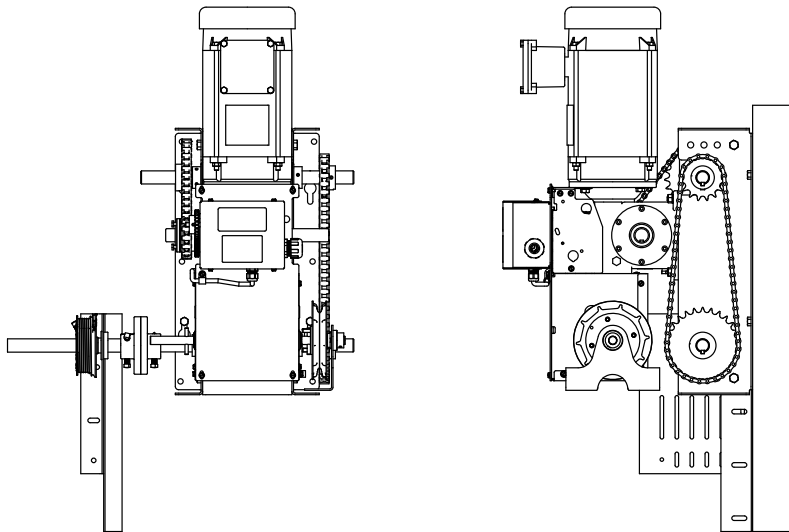
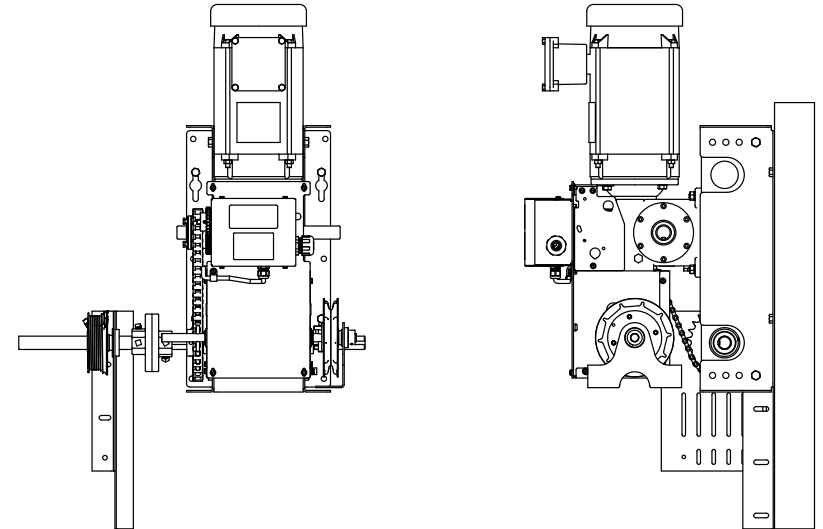


Figure 8

SIDEMOUNT 26 RPM DIRECT COUPLE



Section 4: Installation - Hoist

Sectional Doors - Center Mount Direct Couple *(Right hand unit shown)*

| HP | REQUIRED MOUNTING KIT | PART NUMBER |
|--------|-------------------------|----------------|
| 1/2, 1 | CENTER MOUNT VERTICAL | OPMKCMVHX.S |
| 1/2, 1 | CENTER MOUNT HORIZONTAL | OPMKCMHHX.S |
| 3 | CENTER MOUNT VERTICAL | OPMKCMVHX3HP.S |
| 3 | CENTER MOUNT HORIZONTAL | OPMKCMHHX3HP.S |

| HP | REQUIRED MOUNTING KIT | PART NUMBER |
|--------|-----------------------|-----------------|
| 1/2, 1 | DIRECT COUPLE - 26RPM | OPMKDC26HX.S |
| 1/2, 1 | DIRECT COUPLE - 14RPM | OPMKDC14HX.S |
| 3 | DIRECT COUPLE - 14RPM | OPMKDC14HX3HP.S |

The RHX® Hoist Operators are factory assembled for right-hand mounting (shown). Each model can also be converted to left-hand mount See page 4.7 for instructions.

NOTES:

- 1) A clearance of 8" should be allowed for access to all electric connections.
- 2) Average door travel speed varies per drum used.
- 3) Operator mounting brackets mount to wall.

Refer to Direct Couple Supplemental Instruction, (Included with Direct Couple Kit)
 Refer to Center Mount Supplemental Instruction, (Included with Center Mount Kit)
14 RPM UNIT SHOWN

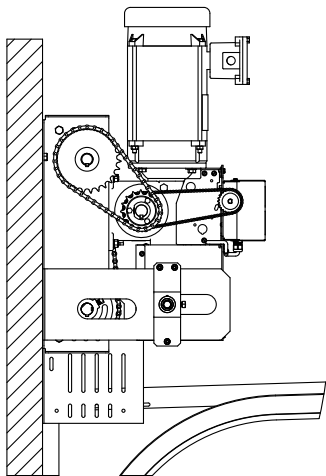
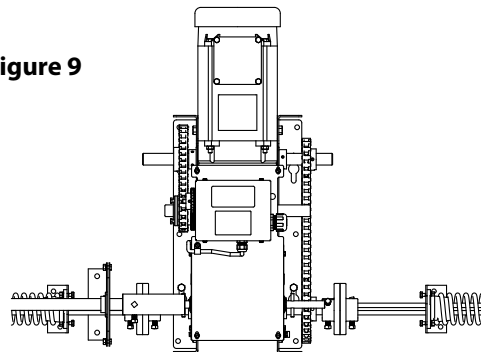


Figure 9



VERTICAL CENTER MOUNT

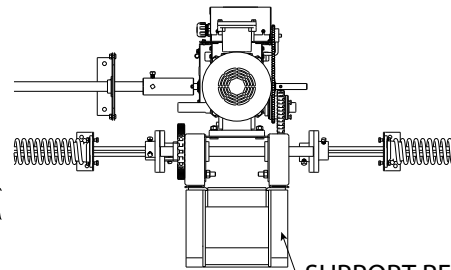
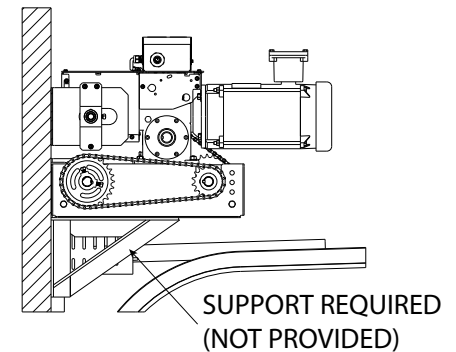


Figure 10

SUPPORT REQUIRED
(NOT PROVIDED)



SUPPORT REQUIRED
(NOT PROVIDED)

HORIZONTAL CENTER MOUNT

Section 4: Installation - Hoist

Unpacking and Configuring Release Cord: Fig. 11

- 1) The cord comes shipped connected to the Release Lever and looped around the end of the hoist shaft opposite the handwheel, with the bulk of the cord taped to the handwheel side of the brake enclosure (SIDE A).
- 2) Un-tape the bulk of the cord from the side panel of brake enclosure.
- 3) Straighten cord, ensuring there are no kinks or knots.
- 4) Determine which side you want the cord to be on.
- 5) For use on SIDE A, **un-loop cord from the SIDE B end of hoist shaft** and pull it out through SIDE A hole.
- 6) For use on SIDE B, pull cord out through SIDE B hole.

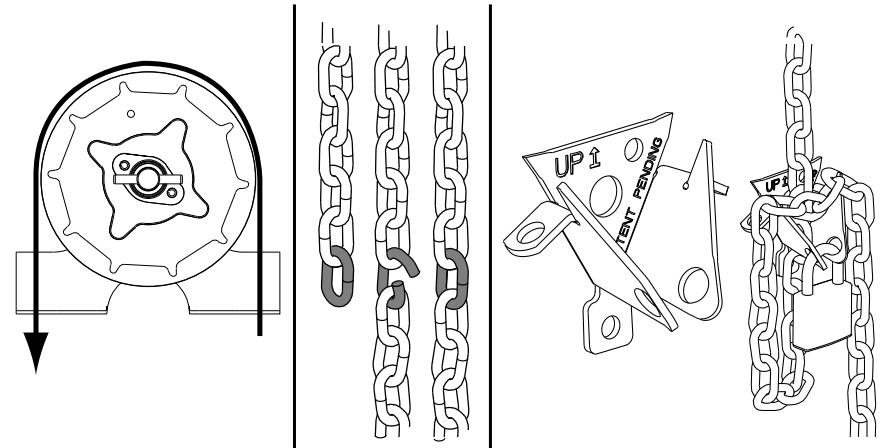
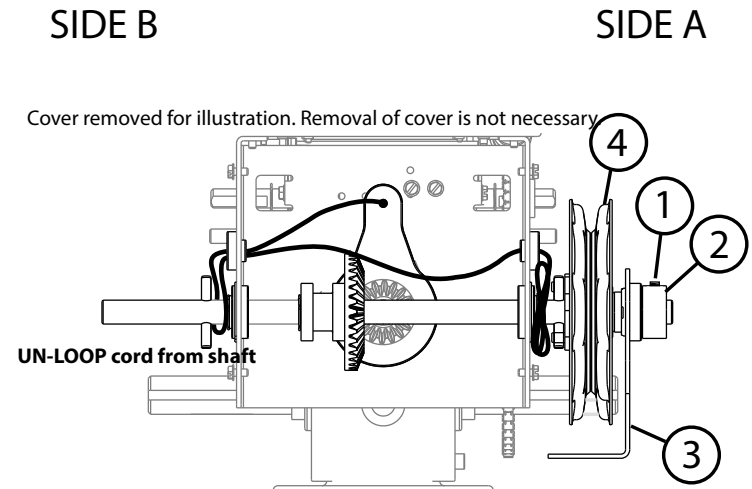
Shifting Manual Handwheel SIDE A to SIDE B: Fig. 11

- 1) Loosen the set screws (1) and remove set collar (2).
- 2) Slide the chain guard (3) and handwheel (4) off of hoist shaft.
- 3) Slide all onto opposite side in order shown and tighten set screws.

Handwheel, Chain and Keeper

- 1) Route the hand chain through the chain guide, around the pocket wheel and back through the chain guide. **Fig.12.**
- 2) Connect the hand chain ends together as shown in **Fig 13.** by twisting open the last link on one end of the chain, and slipping the last link on the opposite end onto the open link.
- 3) Twist open link closed again.
- 4) Mount chain keeper to wall in line with chain approximately 4 feet from floor.
- 5) Loop chain around keeper as shown. **Fig. 14.** Optional Padlock not provided.

NOTE: To insure smooth operation, make sure there is no twist in the hand chain before connecting the link ends together.



Section 4: Installation - Hoist

Adjusting the Clutch (Optional) P/N 111817.0002 1/2 & 1HP Only

NOTE: The clutch is intended to provide protection for the door, operator and associated equipment.
It is not intended for entrapment protection.

The RHX® Clutch does not require any disassembly to adjust.

- 1) All adjustments should be made in very small increments (e.g. turning adjustment bolts 1/4 turn per increment).
- 2) When making adjustments, be sure to turn all 3 adjustment bolts an equal amount. **Fig 15.**
 - To increase tension, turn adjustment bolts clockwise.
 - To decrease tension, turn adjustment bolts counter-clockwise.
- 3) Clutch needs to be adjusted to a tension just above what is required to open and close door without clutch slippage.

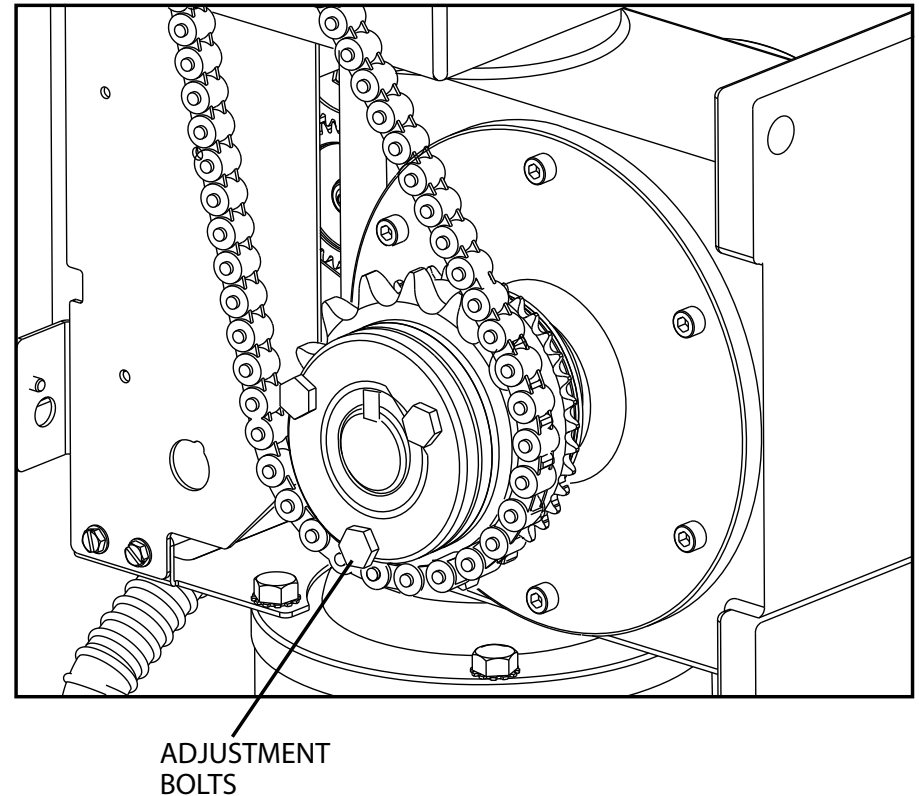
NOTE: Periodically check the system for proper clutch action. If clutch starts to slip after working properly for some time, check manual operation of door before adjusting clutch. Door may not be operating freely or counter-balance spring may need adjusting. Repairs and adjustments must be performed by a trained service representative using proper tools and instructions.

Installing Vent Plug

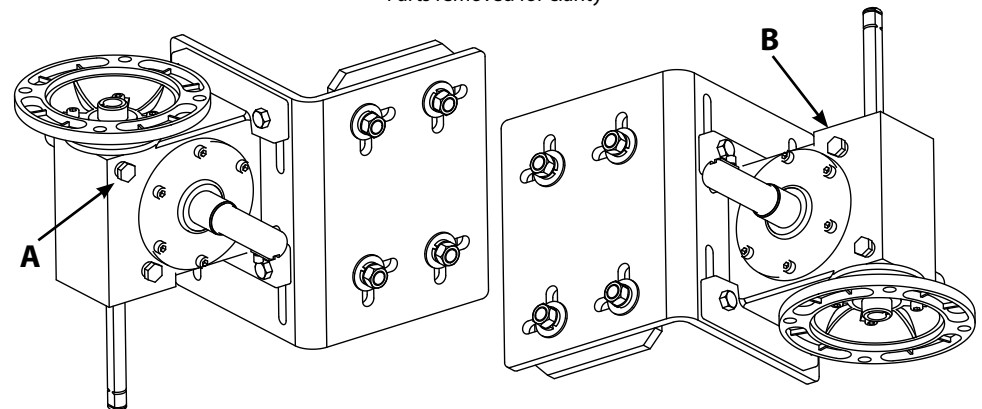
NOTE: The vent plug is to prevent over-pressurization of the gearbox and must be installed to prevent leakage at the seals.

The RHX® Includes the vent plug taped to the gear box.

- 1) Remove uppermost plug from gearbox dependent on how the unit is mounted.
- 2) Location A for motor up or TOH and bench mount positions.
- 3) Location B for motor down positions.
- 4) Install vent plug in its place.



Parts removed for clarity



Section 4: Installation - Trolley

Trolley Models

The Model RHX® Trolley Operator consists of the:

- Power Unit (A)
- Drawbar Track (B)
- Chain Guides (C)
- Header Bracket (D)
- Idler Pulley (E)
- Drive Chain (F)
- Drive Sprocket (G)
- Drawbar Arm (H)

The Drawbar track length, chain length and quantity of chain guides will vary by door heights. Fig. 1.

- 1) Attach Track to Power Unit using four (4) 7/16"-14 x 1" hex bolts, 7/16"-14 hex nuts and 7/16" lock washers (provided) Fig. 2.

NOTE: Drawbar tracks must be (29) inches longer than the door's height. Tracks have been sized properly and pre-punched for the chain guide assemblies from the factory.

Figure 2

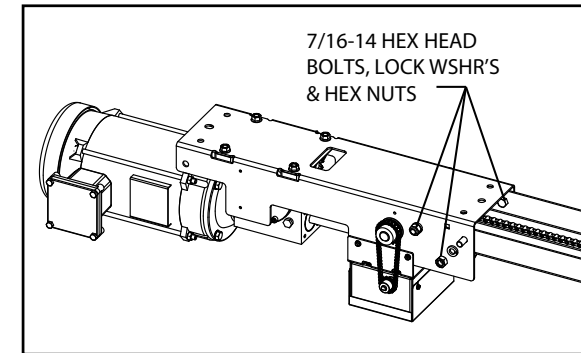
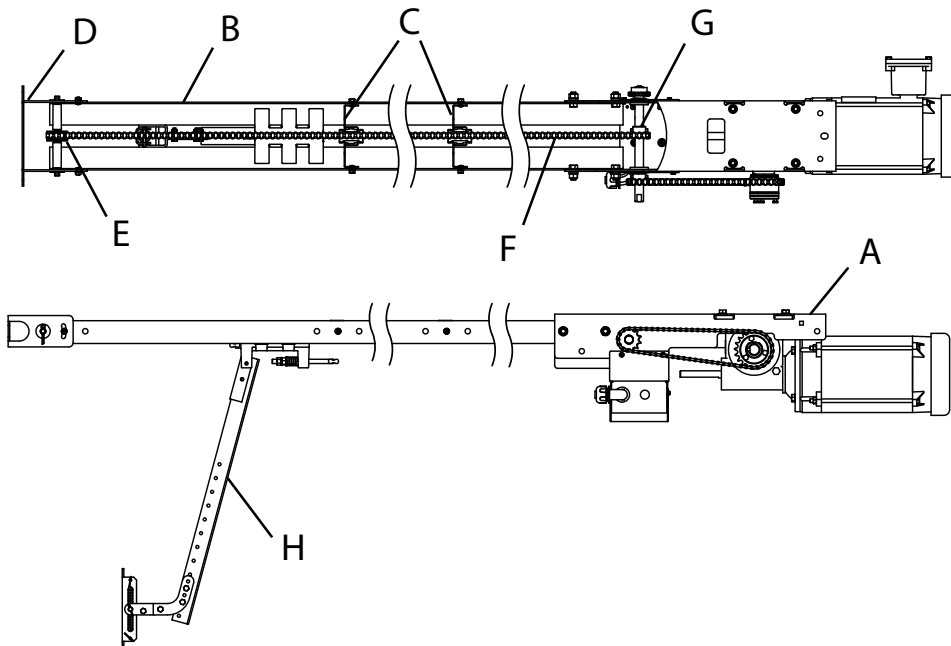


Figure 1



Trolley units are also available in Sidemount and Dual Trolley versions.

| HP | Kit | Part Number |
|--------|-----------------------|-------------|
| 1/2, 1 | Sidemount Trolley Kit | OPAKSMTHX.S |
| 1/2,1 | Dual Trolley Kit | OPAKDTHX.S |

Sidemount Trolley utilizes a HOIST operator in combination with a Sidemount Trolley Kit.

Section 4: Installation - Trolley

Drawbar Assembly

- 2) Attach the chain guide assemblies to the drawbar tracks using 1/4-20 track bolts and locknuts (provided). Fig. 3.

⚠ CAUTION

Verify that bolts are properly seated in track. Failure to seat bolts can cause carriage to bind in door track.

⚠ ATTENTION

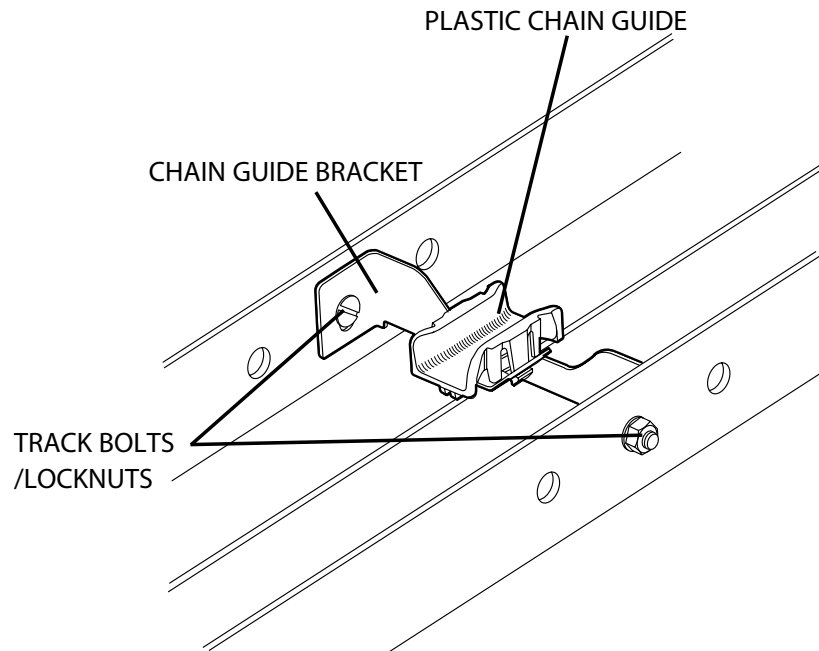
Vérifiez que les boulons sont bien en place dans la piste. Si les boulons sont mal logés, le chariot peut se coincer dans la piste de la porte.

NOTE: Space chain guides evenly between operator and header. Add a chain guide for every 4 feet of door height per chart.

| UNDER 12' | 12'TO 16' | 16'TO 20' | 20'TO 24' |
|-----------|-----------|-----------|-----------|
| 2 | 3 | 4 | 5 |

NOTE: Chain Guide mounting holes have been pre-drilled at standard locations along the track. If different locations are needed, hole size should be 9/32" dia. Be sure to de-burr the holes.

Figure 3



Section 4: Installation - Trolley

Drawbar Assembly

3) Insert the carriage into the tracks as shown in Fig. 4.

NOTE: The end of the carriage with the chain tension adjustment bolt should be toward the operator.

- 4) Place the header bracket in position around the drawbar track. Do not insert the track bolts and lock nuts at this time. The header bracket will be held in place (temporarily) by the idler pin which holds the pulley.
- 5) Install the idler pulley inside the track by inserting the $7/16"$ x $7"$ idler pin through one side of the track and feed it through an idler sleeve and the idler pulley followed by the second sleeve. Place flat washer ($7/16"$ x $1-1/4"$) over end of idler pin. Secure idler pin using cotter pin. Fig. 5.

NOTE: For building of the header bracket assembly on a Dual Trolley or Sidemount Trolley unit see the separate Drawbar instruction sheet for Sidemount and Dual Trolley models.

Figure 4

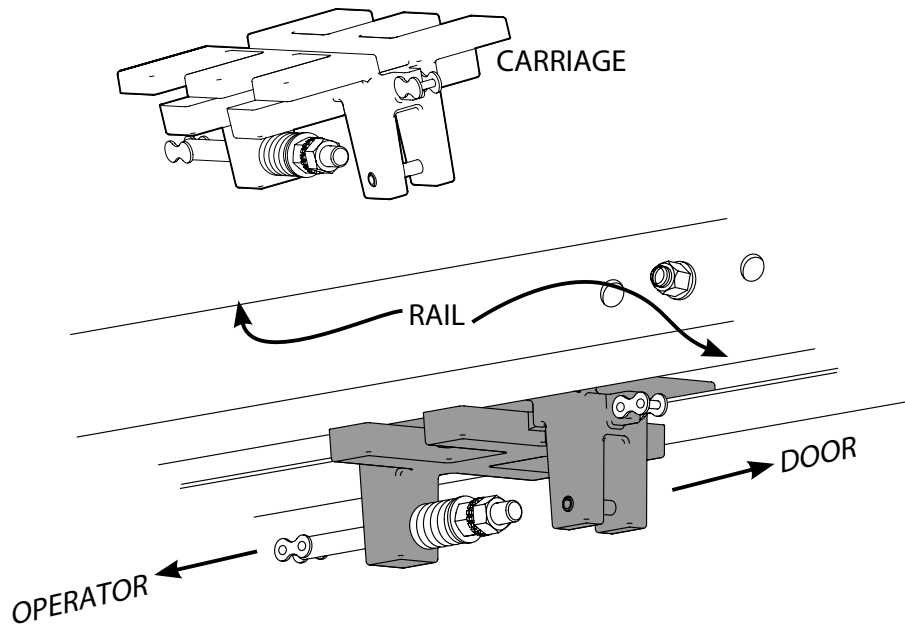
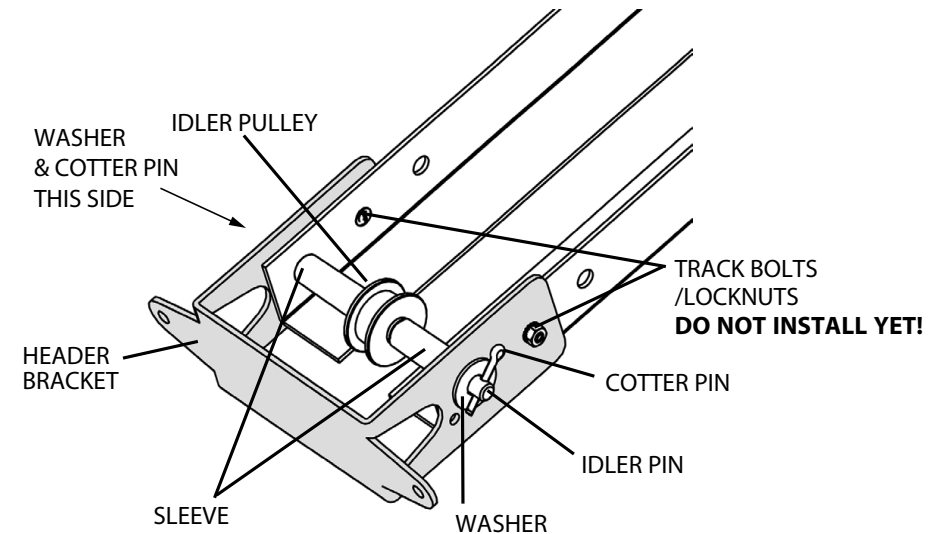


Figure 5



Section 4: Installation - Trolley

Drawbar Assembly

- 6) Uncoil the drawbar chain and install by routing the chain over the chain guides (A) and around the drive sprocket (B) on the output shaft as shown in Fig. 6.
- 7) Attach to Chain Tension Adjusting Bolt (C) using a master link (provided).
- 8) Pass the other end of the chain between the header bracket and the idler pulley (D). Make certain the chain is not twisted.
- 9) Attach the chain to the carriage (E) using a master link.
- 10) Insert the Adjusting Bolt through the hole in the Carriage and place the tensioning spring, flat washer and adjusting nut onto the bolt. Detail A, Fig 6.
- 11) Tighten Chain so that it will not jump a sprockets or pulley. Add locknut.

Check to ensure the following:

- The chain is properly engaging the output sprocket.
- The chain is not twisted.

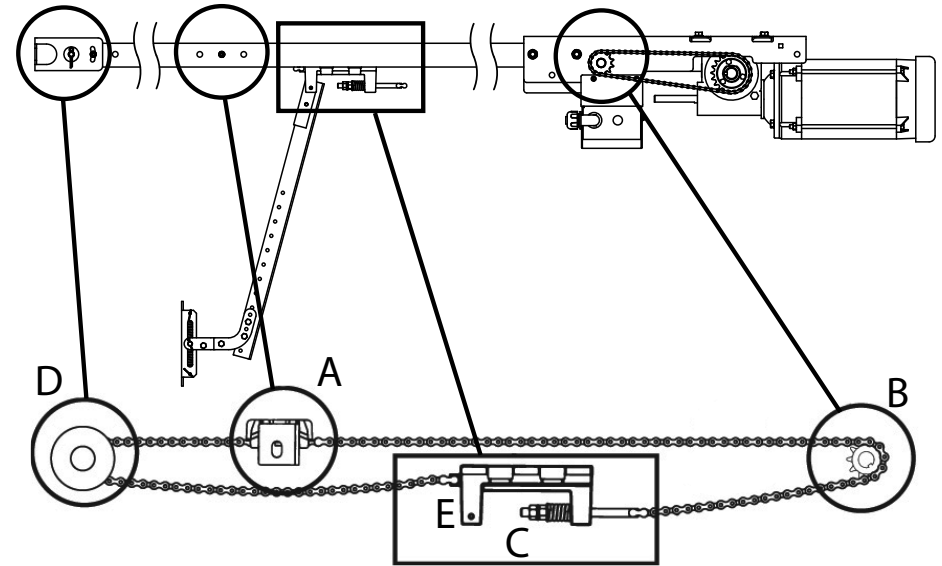
⚠ WARNING

DO NOT apply line voltage until instructed to do so.

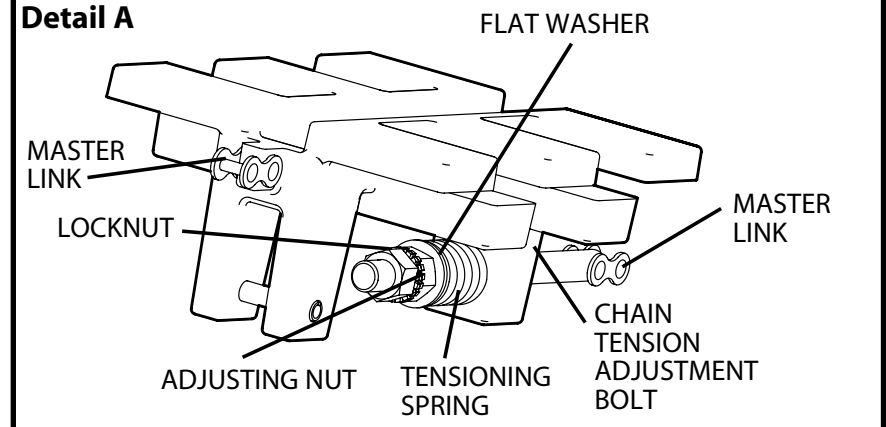
⚠ AVERTISSEMENT

NE PAS mettre sous tension tant que l'instruction n'est pas donnée de le faire.

Figure 6



Detail A



Section 4: Installation - Trolley

Drawbar Installation

⚠ WARNING

Repairs and adjustments, including particularly to cables and spring assemblies under high tension, must be made by a trained service representative using proper tools and instructions.

⚠ AVERTISSEMENT

Les réparations et les réglages, plus particulièrement ces qui sont destinés aux câbles et ensembles de ressort sous tension élevée doivent être effectués par un technicien d'entretien de qualifié qui se sert d'outils appropriés et qui respecte les instructions.

⚠ CAUTION

Check the working condition of the door before installing the operator. The Door must be free from sticking and binding. If the door is equipped with a latching device, secure the locking bar in the open (unlocked) position. If the door lock is to remain functional, an interlock switch **MUST** be installed which will prevent operation of the door whenever the door lock is engaged. Refer to the Wiring Instructions, page 5.7, of this manual for proper connection of the interlock switch.

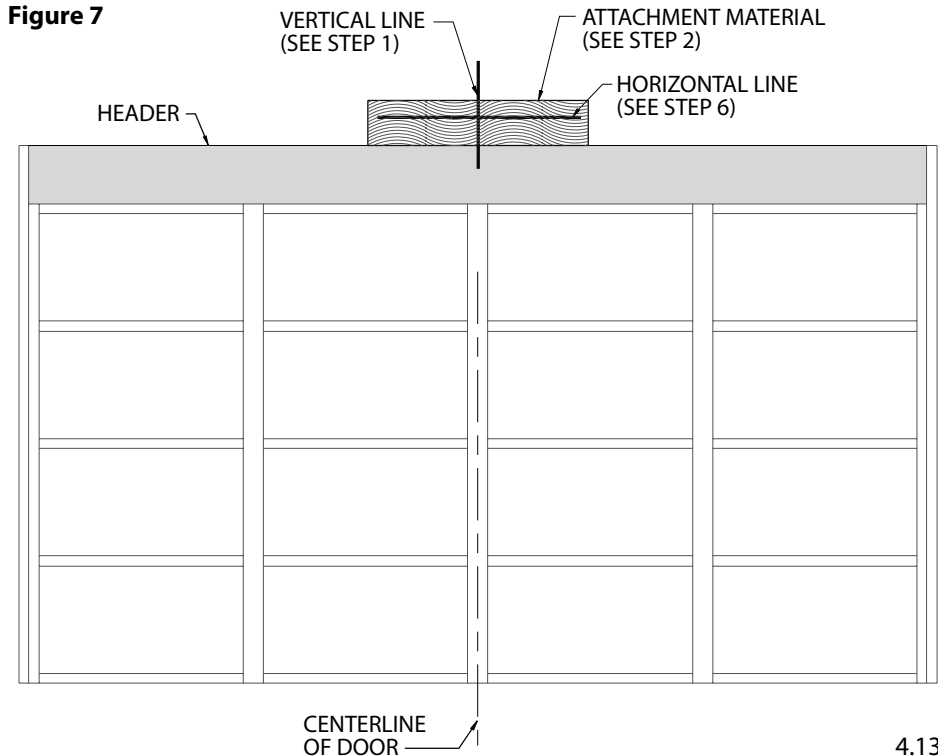
⚠ ATTENTION

Vérifiez l'état de fonctionnement de la porte avant d'installer l'opérateur. La porte doit pouvoir bouger librement sans gripper. Si la porte est équipée d'un dispositif de verrouillage, fixez la barre de verrouillage en position ouverte (déverrouillée). Si le verrouillage de la porte doit rester fonctionnel, un interrupteur de sécurité **DOIT** être installé pour empêcher le fonctionnement de la porte chaque fois que le verrouillage de la porte est engagé. Reportez-vous aux instructions de câblage, page 5.7, de ce manuel pour établir une connexion correcte de l'interrupteur de sécurité.

- 1) Measure the width of the door to determine the center. Make a vertical line above the door, as shown in Fig. 7. (If the vertical line is not in line with a door stile, a means of attaching the door bracket to the door must be provided. This can be accomplished by spanning the center of the door's top section (between the top and bottom rail) with a suitable material such as wood or steel).
- 2) Prepare for attaching drawbar to header. If woodwork, or other suitable material is not already in place, securely affix a 2" x 6" block of wood or metal plate as shown in Fig. 7.
- 3) Center the block/plate on the header.
- 4) Mark the door's vertical center line on this block/plate.

NOTE: On torsion spring doors with an uneven number of panels, the operator may be attached to the stile nearest to the center.

Figure 7



Section 4: Installation - Trolley

Drawbar Installation

- 5) Use a level, as shown in Fig. 8 to find the highest point of travel for the door.
 - 6) Mark a horizontal line across the vertical line you made on the header at 5" above the highest point of door travel.
 - 7) Raise the door end (idler pulley) of the drawbar while resting the operator on the floor or other desired material.
 - 8) Position the header bracket on the centerline with its bottom edge on the horizontal mark. Fig. 9.
- Fasten header bracket to header using fasteners appropriate for the header material.

Figure 8

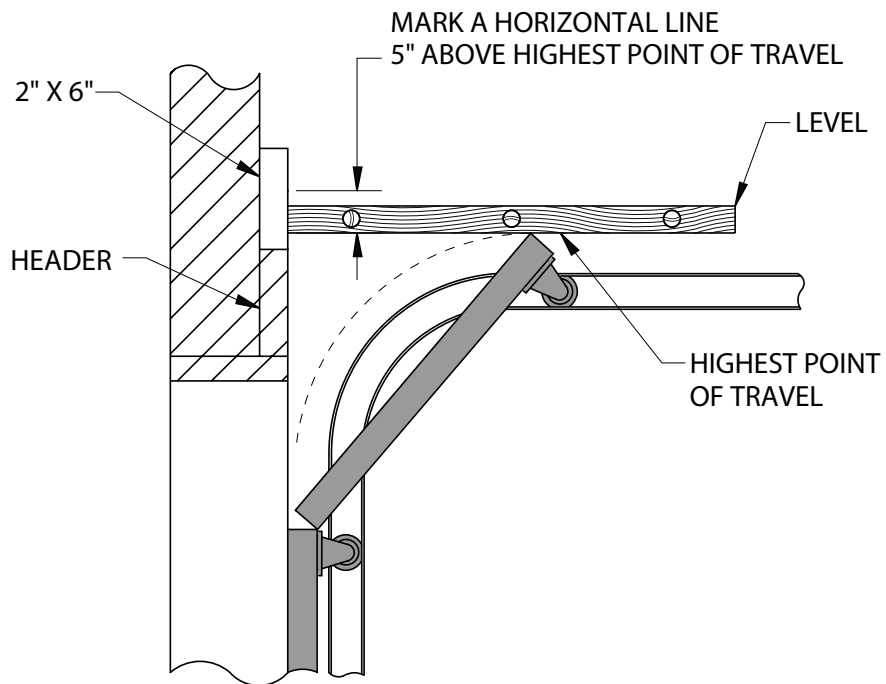
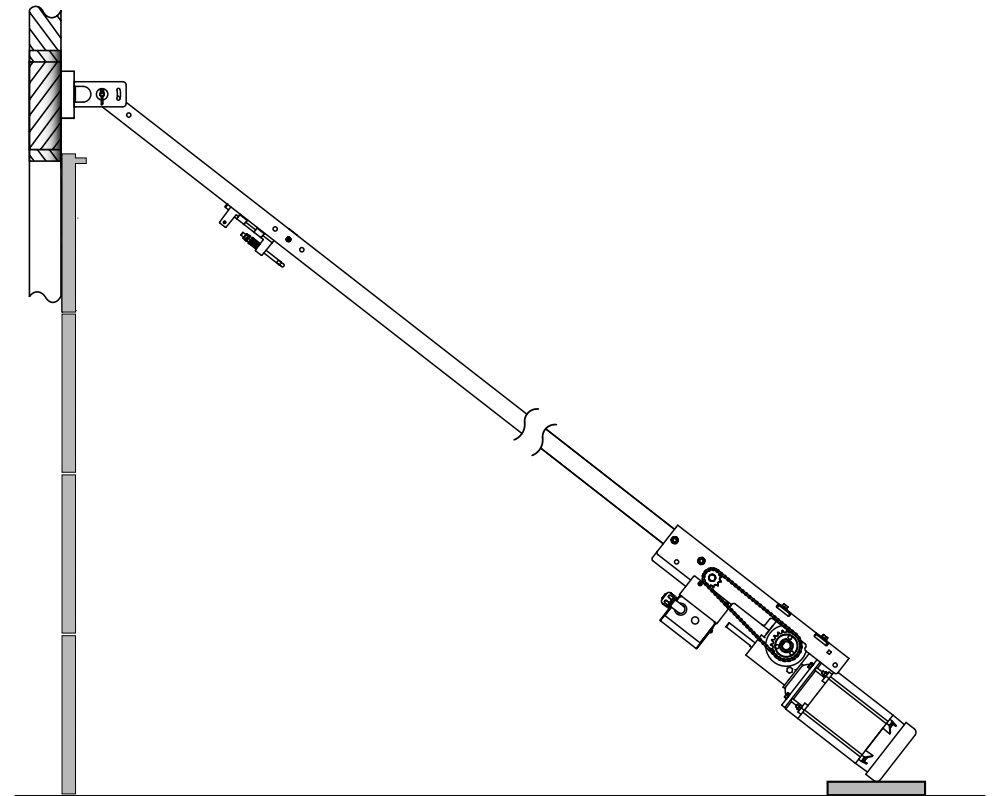


Figure 9



Section 4: Installation - Trolley

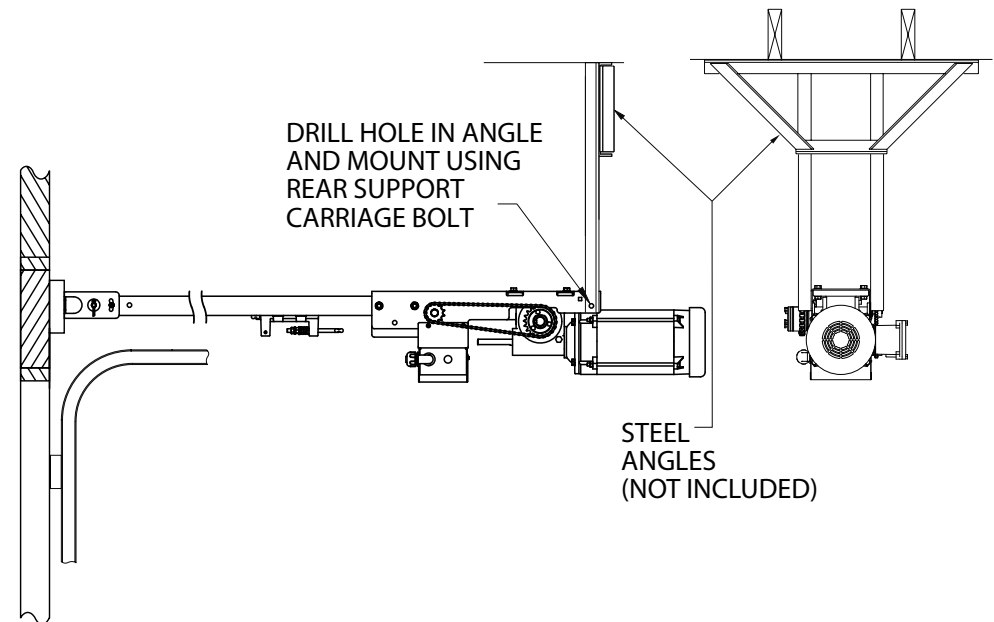
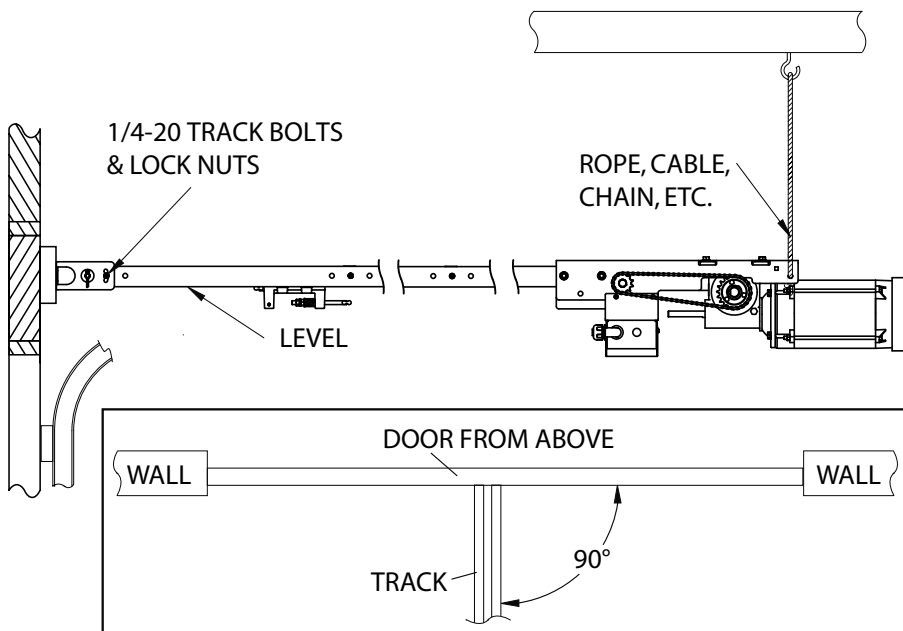
Attach the Door

- 1) Raise the operator and position it so that the drawbar tracks are level and perpendicular to the face of the door (or the stile where the door bracket will be attached). Fig. 10.
- 2) Lock the drawbar tracks into the header bracket using the two (2) track bolts (1/4"-20 x 9/16") and two (2) locknuts.
- 3) Secure the operator in position by installing steel angles (not provided) between the ceiling superstructure and the operator power unit. Fig. 11.

NOTE: Track bolts MUST be installed from inside the track.

Figure 11

Figure 10



Section 4: Installation - Trolley

Connection the Door

- 1) Pull down on the drawbar arm locking sleeve and attach to carriage.
- 2) Position the spring box on the door as shown in Fig. 12, with mounting holes on the door centerline. (Even with or above top door roller).

NOTE: Make sure to use reinforcement bracket when attaching spring box to door. Do not attach door bracket directly to door section.

- 3) For wood doors fasten the spring box to the door using two 1/4" -20 X 2-1/4" carriage bolts and nuts. For metal doors use two 1/4"- 20 self tapping sheet metal screws, or as recommended by the door manufacturer.
- 4) Use two (2) 1/4"-20 X 1" bolts and nuts to attach the door arms together.

NOTE: If the door strut interferes with the mounting of the spring box, position it below the strut. DO NOT, in any way, cut or modify the strut.

Make sure that Spring Box does not bottom out when door closes.

Fig. 13.

Figure 12

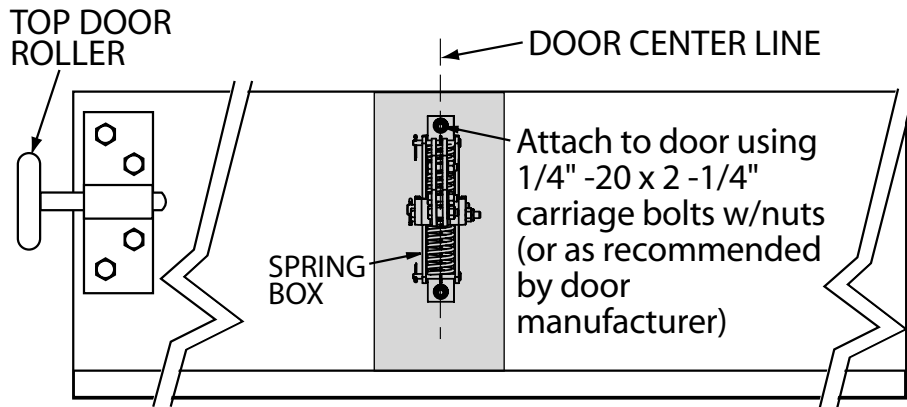
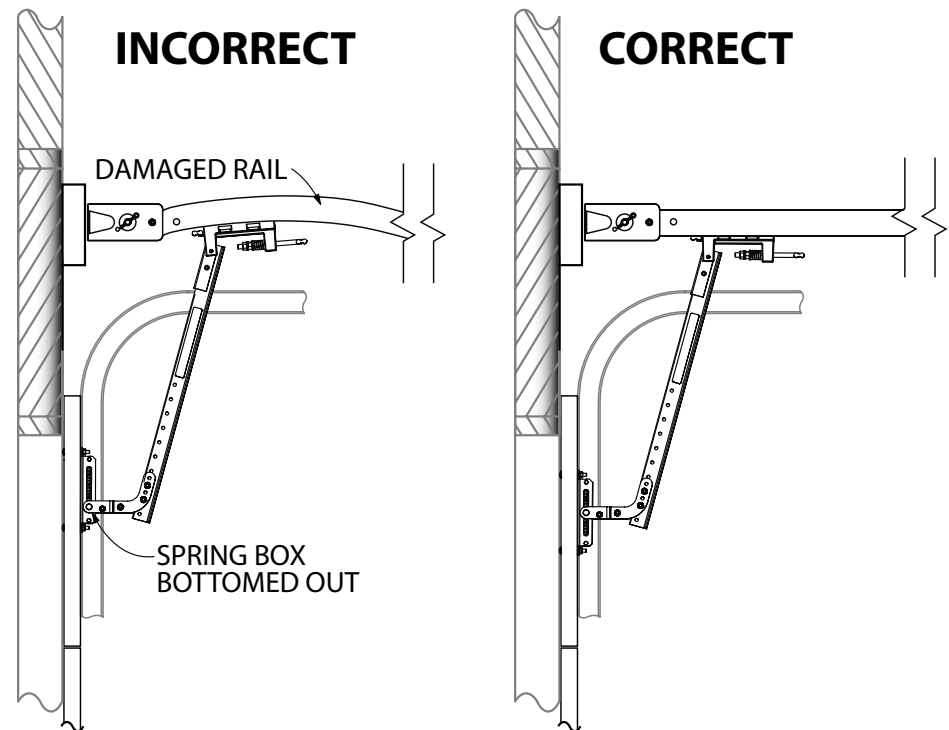


Figure 13



Section 4: Installation - Trolley

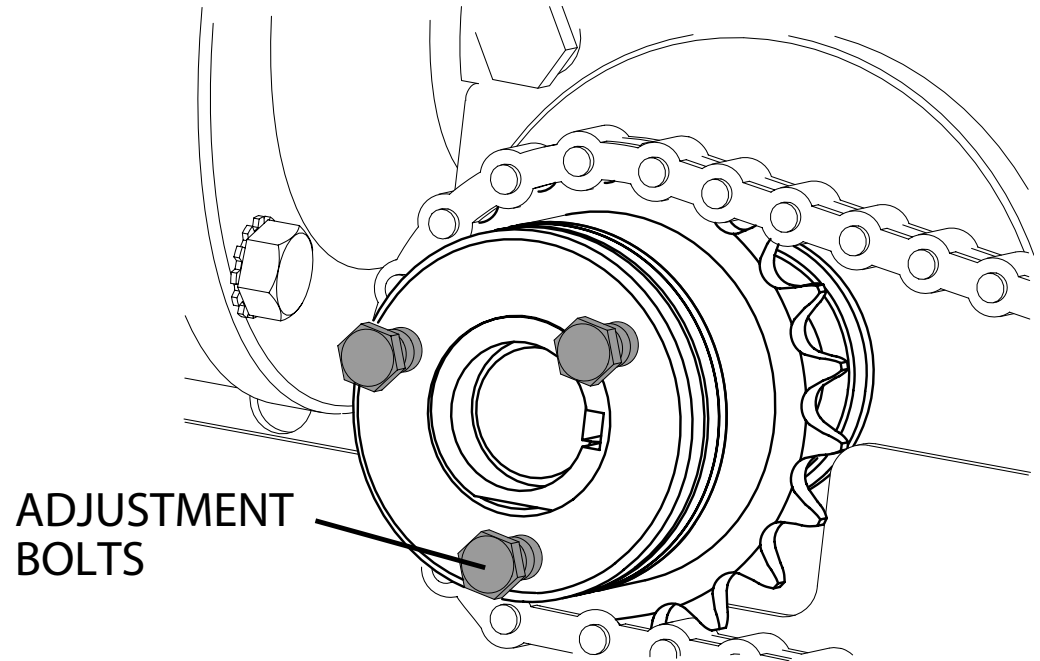
Adjusting the Clutch P/N 111583.0001

NOTE: The clutch is intended to provide protection for the door, operator and associated equipment. It is not intended for entrapment protection.

The RHX® Clutch does not require any disassembly to adjust.

- 1) All adjustments should be made in very small increments (e.g. turning adjustment bolts 1/4 turn per increment).
- 2) When making adjustments, be sure to turn all 3 adjustment bolts an equal amount.
 - To increase tension, turn adjustment bolts clockwise.
 - To decrease tension, turn adjustment bolts counter-clockwise.
- 3) Clutch needs to be adjusted to a tension just above what is required to open and close door without clutch slippage.

NOTE: Periodically check the system for proper clutch action. If clutch starts to slip after working properly for some time, check manual operation of door before adjusting clutch. Door may not be operating freely or counter-balance spring may need adjusting. Repairs and adjustments must be performed by a trained service representative using proper tools and instructions.

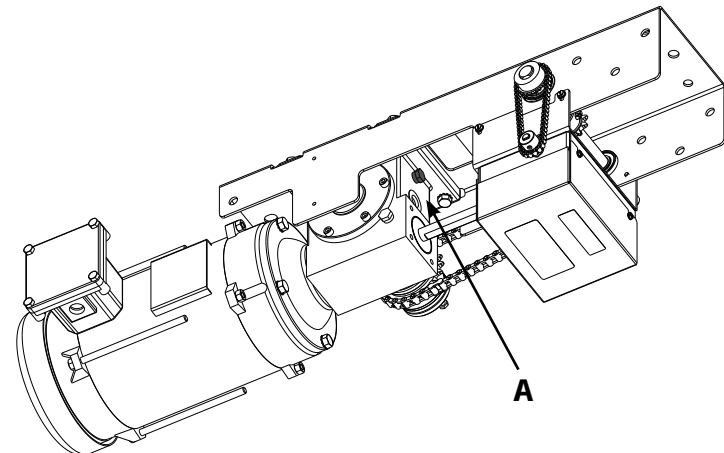


Installing Vent Plug

NOTE: The vent plug is to prevent over-pressurization of the gearbox and must be installed to prevent leakage at the seals.

The RHX® Includes the vent plug taped to the gear box.

- 1) Remove uppermost plug from gearbox.
- 2) Location A for Trolley mount positions.
- 3) Install vent plug in its place.

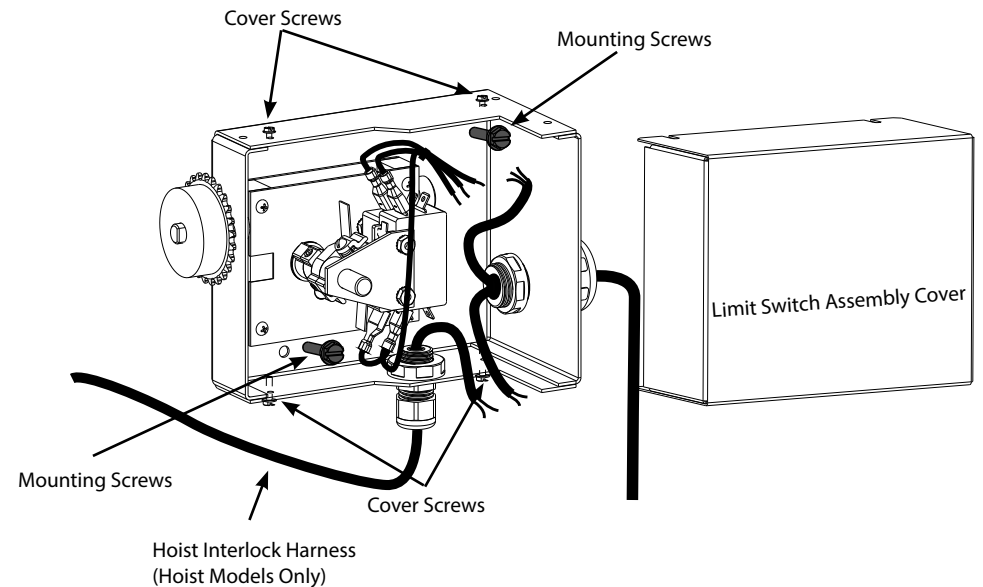


Section 4: Installation

Limit Switch Box Reversal (Hoist Models Only)

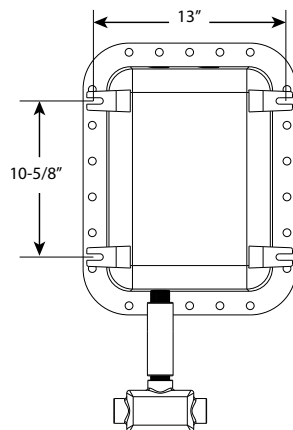
Some installations may require the reversal of the Limit Switch Assembly box to facilitate installation.

- 1) Remove limit switch chain and sprockets as an assembly.
- 2) Loosen, but do not remove, cover screws (4) to remove limit switch cover.
- 3) Remove limit switch assembly mounting screws (2).
- 4) Rotate assembly 180 degrees and reassemble in reverse order.
- 5) Adjust/reroute hoist interlock cable if needed. (Hoist models only).
- 6) Install sprockets and chain in reverse order.
- 7) Align sprockets and tighten set screws.
- 8) Reinstall cover.

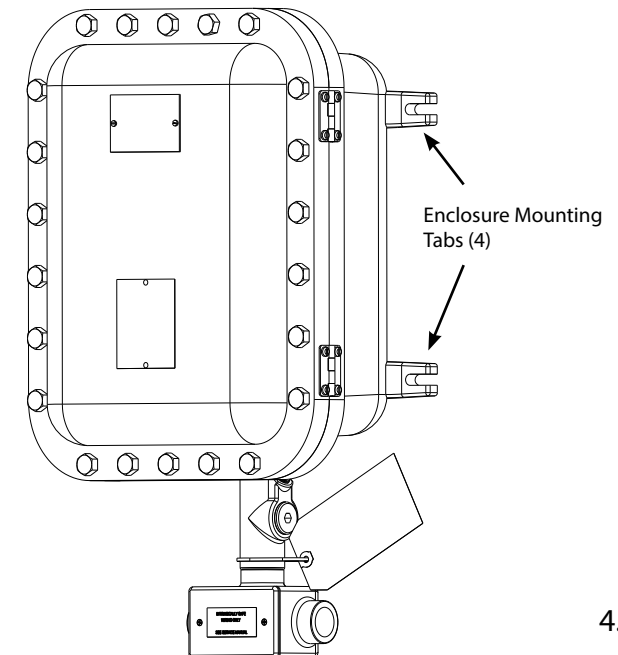


Enclosure Mounting

- 1) Affix enclosure to wall with appropriate mounting hardware.
- 2) Route conduit per NFPA and local authority standards.

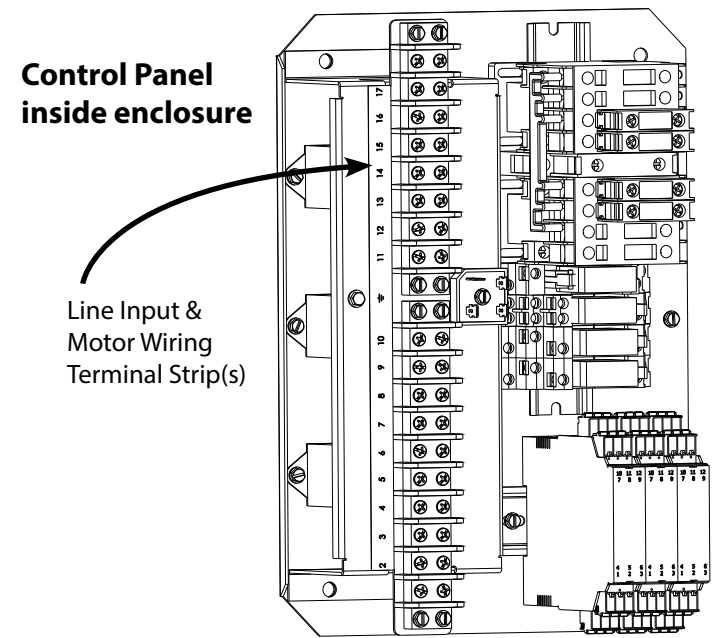
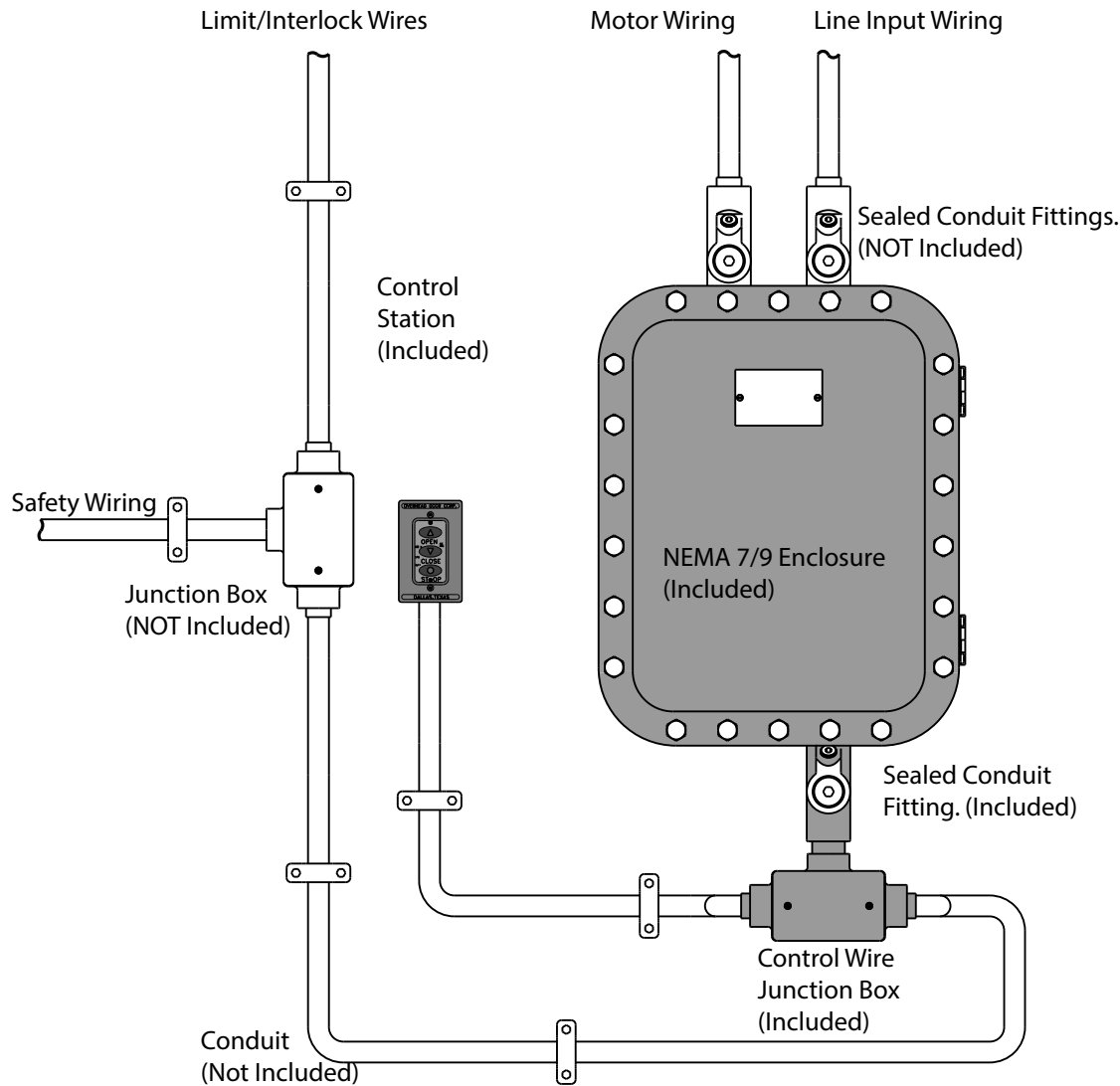


See typical installation diagram at the beginning of this book as an example.



Section 5: Line Input & Motor Wiring

TYPICAL INSTALLATION



See Typical Installation diagram at the front of this manual.

Section 5: Wiring

Line Voltage and Motor Wiring

⚠ WARNING

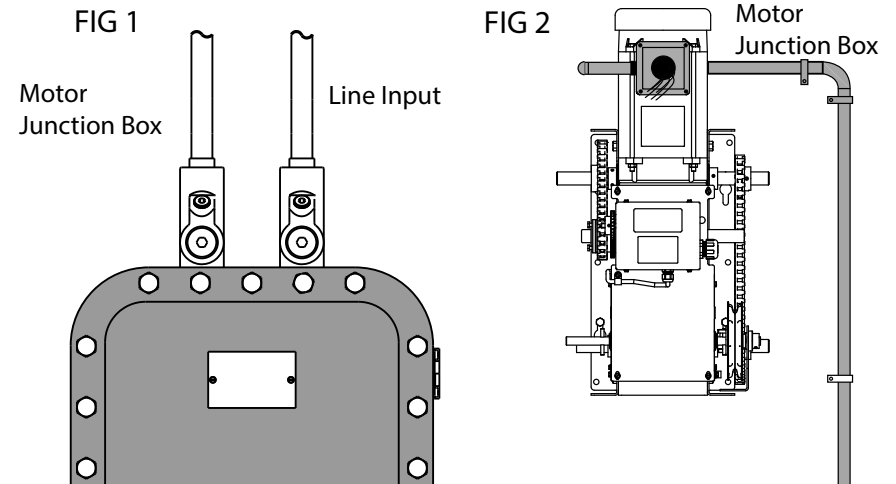
- DO NOT apply power to operator until instructed to do so.
- It is strongly recommended, and may be required by law in some areas, that line voltage wiring be performed by a qualified electrician.
- Be sure that electrical power has been disconnected from the input power wires being connected to the operator prior to handling these wires. An appropriate lock-out/tag-out procedure is recommended.
- Line voltage wiring must meet all local building codes.
- Make sure operator voltage, phase and frequency nameplate ratings are identical to the job site line voltage ratings.
- Input power wiring must be properly sized for the operators amperage rating located on the nameplate.
- To reduce the risk of electric shock, make sure the chassis of this unit is properly grounded.

⚠ AVERTISSEMENT

- NE PAS mettre sous tension tant que l'instruction n'est pas donnée de le faire.
- Il est fortement recommandé voire même exigé par la loi dans certaines régions, de contacter un électricien qualifié pour l'acheminement du fil électrique.
- Assurez-vous que l'alimentation électrique a été déconnectée des câbles d'alimentation d'entrée connectés à l'opérateur avant de manipuler ces câbles. Une procédure de verrouillage/étiquetage appropriée est recommandée.
- Le câblage au secteur doit satisfaire à tous les codes de construction locaux.
- Assurez-vous que les valeurs nominales de la plaque signalétique pour tension, phase et fréquence de l'opérateur correspondent à celles des tensions de l'alimentation sur site.
- La capacité d'entrée doit correspondre à la valeur nominale de l'ampérage des opérateurs indiquée sur la plaque signalétique.
- Pour réduire le risque de choc électrique, assurez-vous que le châssis de l'unité est correctement mis à la terre.

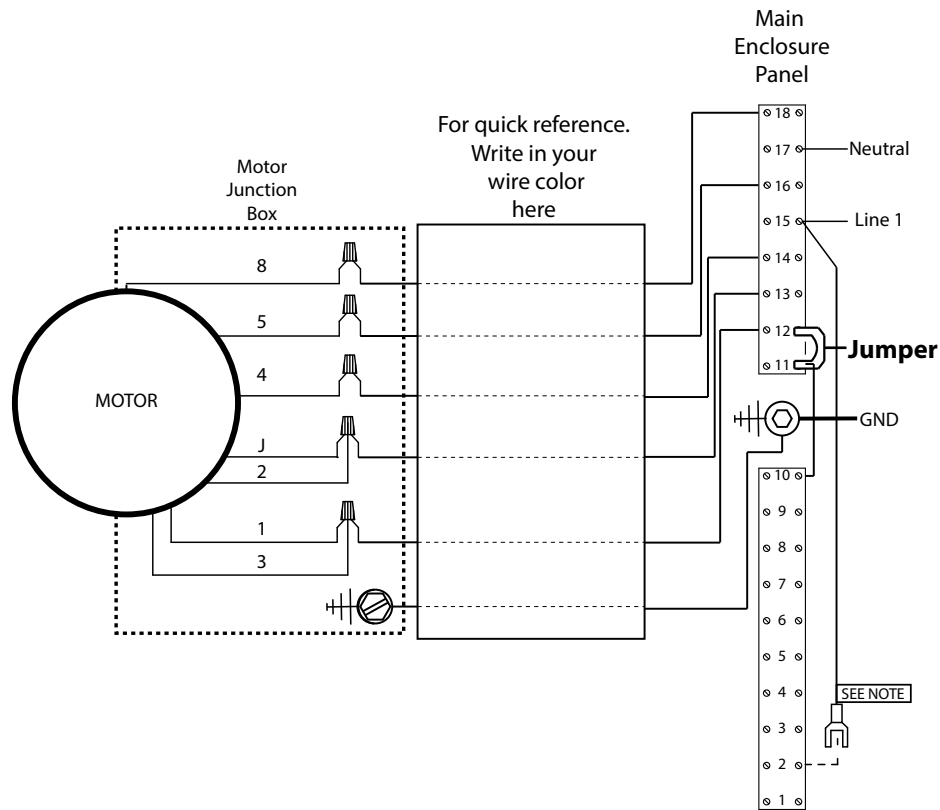
Use the appropriate wiring diagram on the following 2 pages.

- 1) Remove LINE VOLTAGE & MOTOR LEAD INPUT PLUGS at enclosure and install proper fittings and conduit. (FIG 1)
- 2) Route proper LINE VOLTAGE wires into motor junction box. (FIG 2)
- 3) Locate LINE INPUT terminals on Enclosure Terminal Strip. Using correct connectors, attach wires to LINE INPUTS, and GROUND terminal. (Reference wire diagrams on 5.3 to 5.4.)
- 4) Route Motor Leads and connect per Wiring Diagram for proper motor configuration. (Reference wire diagrams on 5.3 to 5.4.)

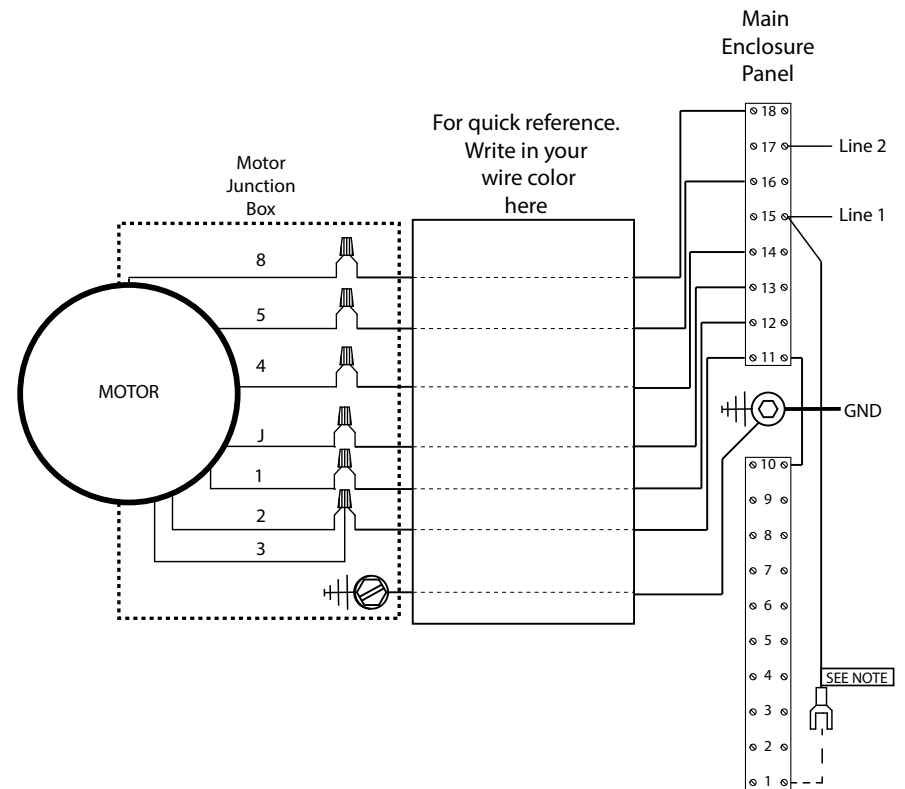


Section 5: Line & Motor Wiring 1 Phase

115 VAC Single Phase Motor Wiring



208-230 VAC Single Phase Motor Wiring



NOTE
FACTORY PROVIDED JUMPERS MUST BE CONNECTED

115V Single Phase Systems:

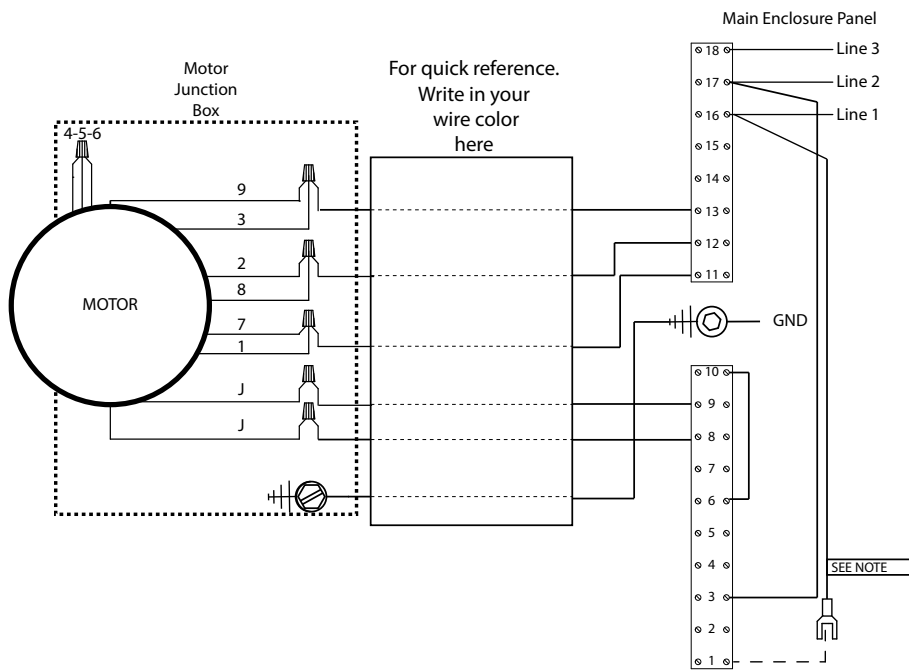
- Spade Lands On Terminal #2
- 2 Position Jumper Lands On Terminals #11 And #12

208-230V Single Phase Systems:

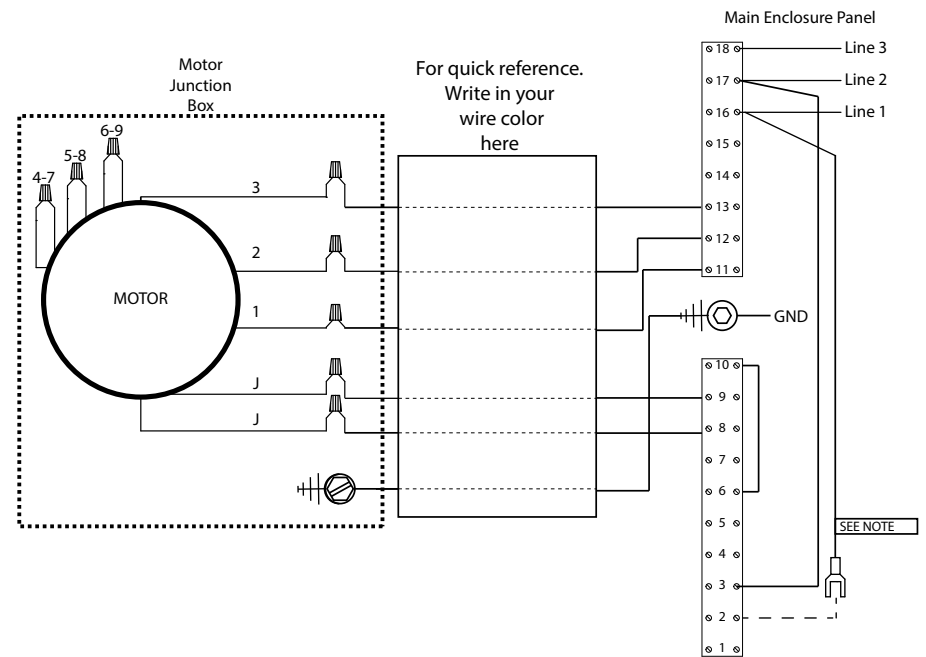
- Spade Lands On Terminal #1
- 2 Position Jumper Is Unused.

Section 5: Line & Motor Wiring 3 Phase

208-230 VAC Three Phase Motor Wiring



460 VAC Three Phase Motor Wiring



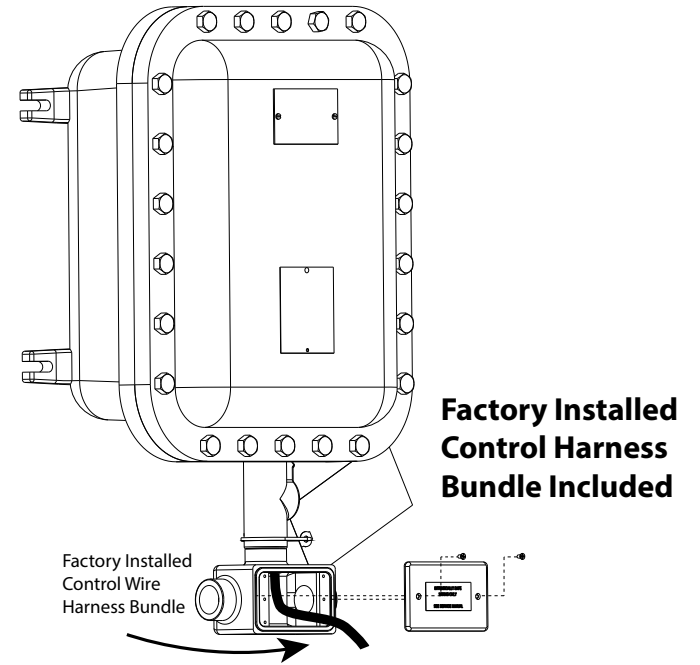
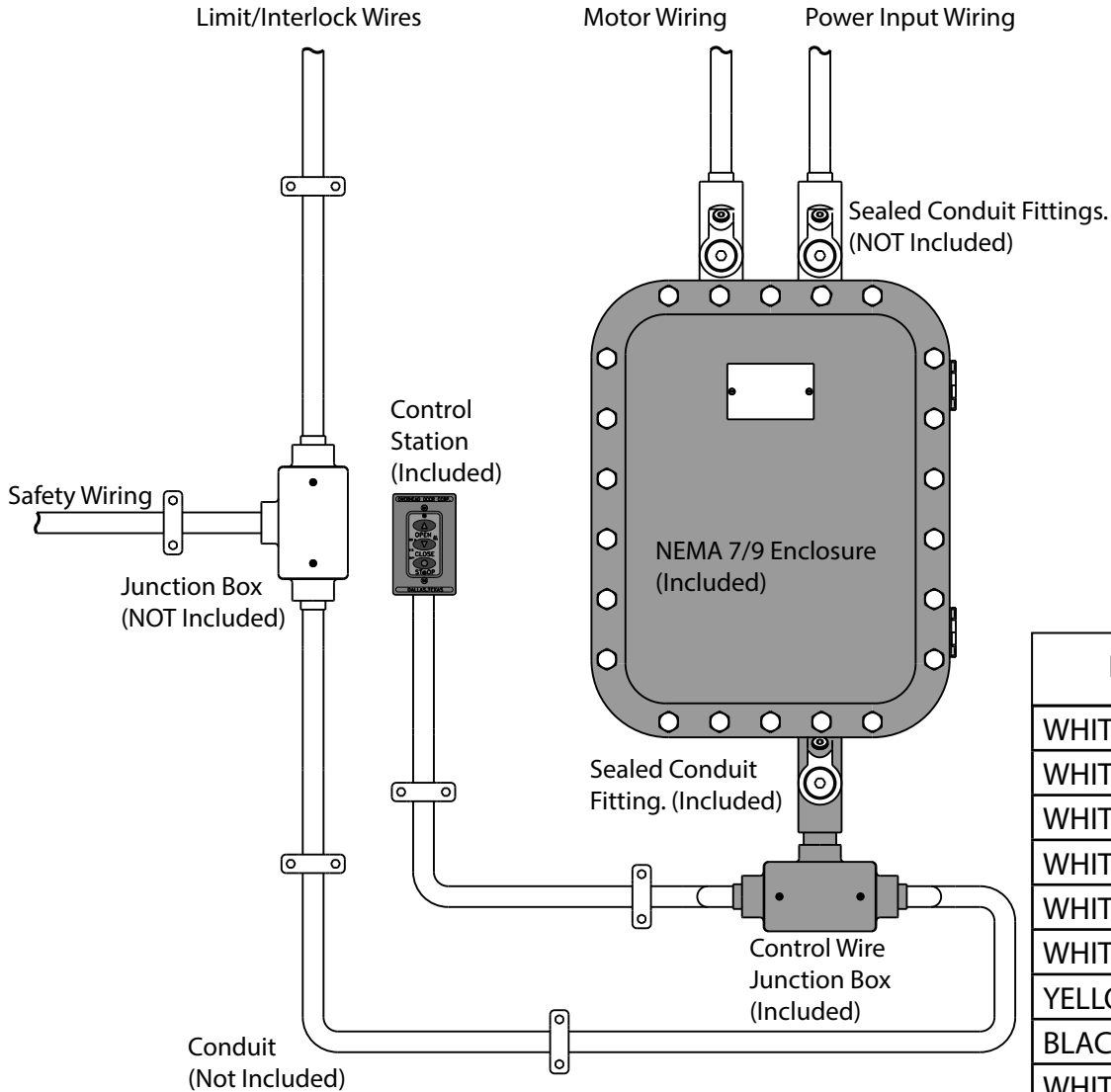
NOTE
FACTORY PROVIDED JUMPER MUST BE CONNECTED

208-230V Three Phase Systems:
 - Spade Lands On Terminal #1

460V Three Phase Systems:
 - Spade Lands On Terminal #2

Section 5: Control Wiring

TYPICAL INSTALLATION



| INTRINSICALLY SAFE WIRING TABLE | | WRITE IN YOUR WIRE COLORS |
|---------------------------------|------------------------|---------------------------|
| WHITE/ORANGE | N/C OPEN LIMIT SWITCH | |
| WHITE/GREEN | N/C CLOSE LIMIT SWITCH | |
| WHITE/BLACK | LIMIT SWITCH COMMON | |
| WHITE/YELLOW | N/O OPEN BUTTON | |
| WHITE/BLUE | N/O CLOSE BUTTON | |
| WHITE/RED | N/C STOP BUTTON | |
| YELLOW | N/O ONE-BUTTON | |
| BLACK | PUSHBUTTON COMMON | |
| WHITE/BROWN | MONITORED SENSING EDGE | |
| BROWN | MONITORED SENSING EDGE | |
| WHITE/VIOLET | N/C INTERLOCK | |
| VIOLET | N/C INTERLOCK | |

See Typical Installation diagram at the front of this manual.

Section 5: Intrinsically Safe Wiring

Wall Controls

⚠️ WARNING:

- Wall Control(s) must be located so that the door is within sight of the user and is far enough from the door or positioned such that the user is prevented from coming in contact with the door while operating controls.
- Attach the Warning placard adjacent to the Wall Control. Fig. 3.

⚠️ AVERTISSEMENT:

- La ou les commandes murales doivent être situées de telle sorte que l'utilisateur puisse pas entrer en contact avec la porte lorsqu'il se sert des commandes.
- Fixez le poster d'avertissement à côté de la commande murale. Fig. 3.

⚠️ WARNING:

Before momentary contact control can be used on the close button, a monitored external reversing device, such as a sensing edge, must be used. See page 5.8 for installation of entrapment devices.

⚠️ AVERTISSEMENT:

Avant d'utiliser la commande à contact momentané sur le bouton FERMETURE, un dispositif d'inversion externe surveillée tel commutateur de détection de bord doit être utilisé. Voir l'installation des dispositifs de protection contre le coincement en page 5.8.

⚠️ CAUTION:

Failure to follow all applicable codes for wiring this unit will result in a violation of Factory Mutual Systems approval rating for this unit and void the Overhead Door warranty.

⚠️ ATTENTION:

Toute infraction aux codes applicables concernant le câblage de l'unité aura une incidence sur la cote d'approbation de Factory Mutual Systems pour cette unité ainsi qu'à la garantie offerte par Overhead Door.

⚠️ WARNING:

Single button input will reverse the door to the up limit. A timer will resume downward travel if set. Single button input will NOT stop the door. Use of an emergency stop button is strongly recommended for single button input applications.

⚠️ AVERTISSEMENT:

Une entrée à bouton unique inversera la porte vers la limite supérieure. Une minuterie reprendra le parcours vers le bas, si réglé. Une entrée à bouton unique N'ARRÊTERA PAS la porte. L'utilisation d'un bouton d'arrêt d'urgence est fortement recommandée pour les applications d'entrée à bouton unique.

NOTE: Operator will support 3-button or 1-button station input, **but not both**. See "Setting Button Station Input Mode" - Section 6.6

- 1) If 1-button input is used, cap WHT/YEL and WHT/BLU leads on main harness. Fig. 4.
- 2) If 3-button station is used, cap YEL lead on main harness. Fig. 5.

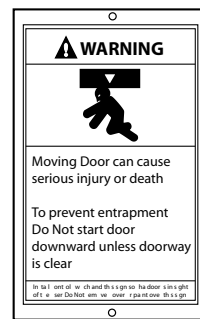
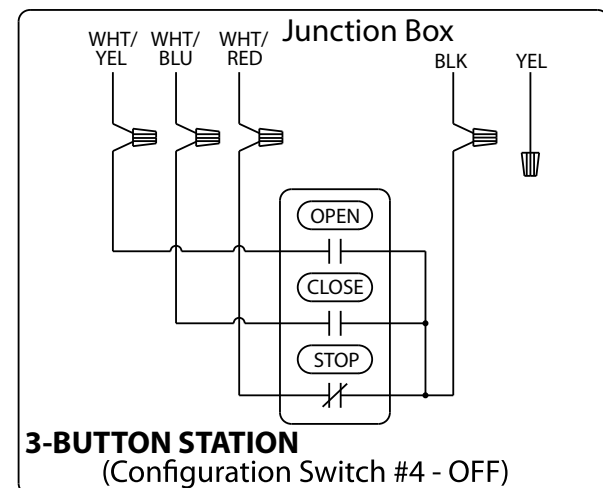
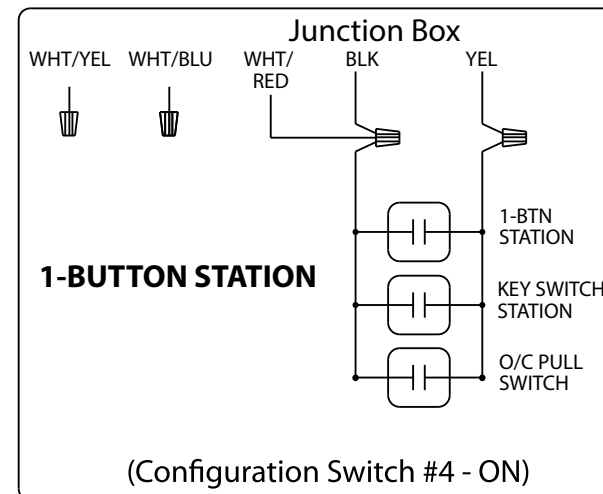


Figure 3

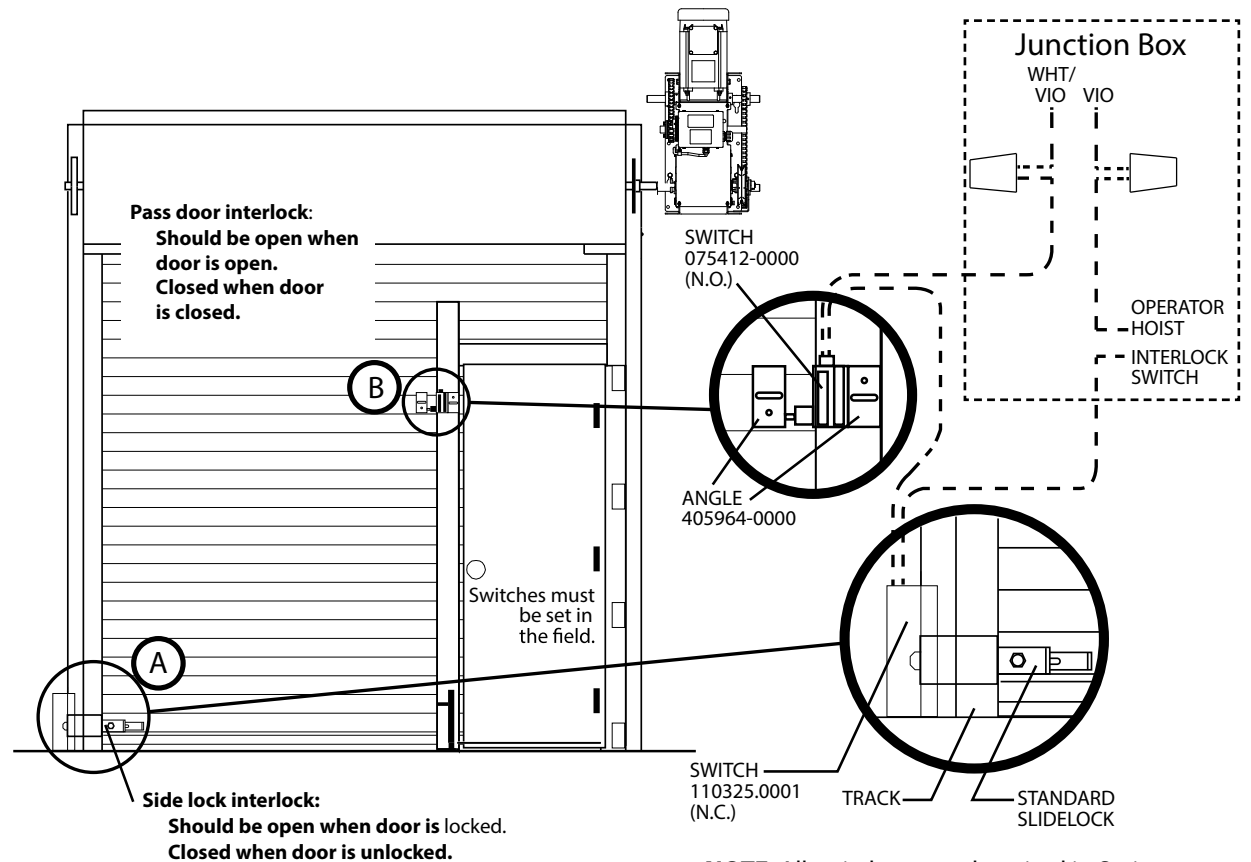


Section 5: Intrinsically Safe Wiring

Interlock Switches

- 1) Optional external interlock switches are required with some Sectional & Rolling Steel Doors to prevent the door from operating under certain conditions including the following:
 - If the door is equipped with a functioning door lock, an interlock switch must be installed to prevent electric operation when the lock is engaged.
 - If the door is equipped with a pedestrian pass-through door, an interlock switch (B) must be installed at the pass-through door in order to prevent electrical operation when the pass-through door is open.
- 2) The Switches must be set in the field.
- 3) An OPEN circuit must be provided to prevent electrical operation.

NOTE: N/C Interlock switches MUST be connected in series for proper operation.



NOTE: All switches must be wired in Series.

Section 5: Intrinsically Safe Wiring

Sensing Edge Switch Installation

Figure 6 shows an example of a typical sensing edge installation. Right hand side is shown but Left hand is a mirror image of this.

- 1) Install junction box 12" above the center of the door opening on same side as sensing switch.(A)
- 2) Secure one end of cord to junction box (A) using a cable clamp.
- 3) Secure other end of cord (straight or coiled) to sensing edge switch enclosure using a cable clamp. (B)
- 4) Connect wires of cord to sensing edge switch using wire nuts or other suitable wire connectors.
- 5) Run 2 wire cable from the junction box (A) to the enclosure junction box (C).
- 6) Join wires from switch using wire nuts or other suitable wire connectors.
- 7) Manually Operate the door to make certain cord is free to travel and does not become snared during door opening or closing.

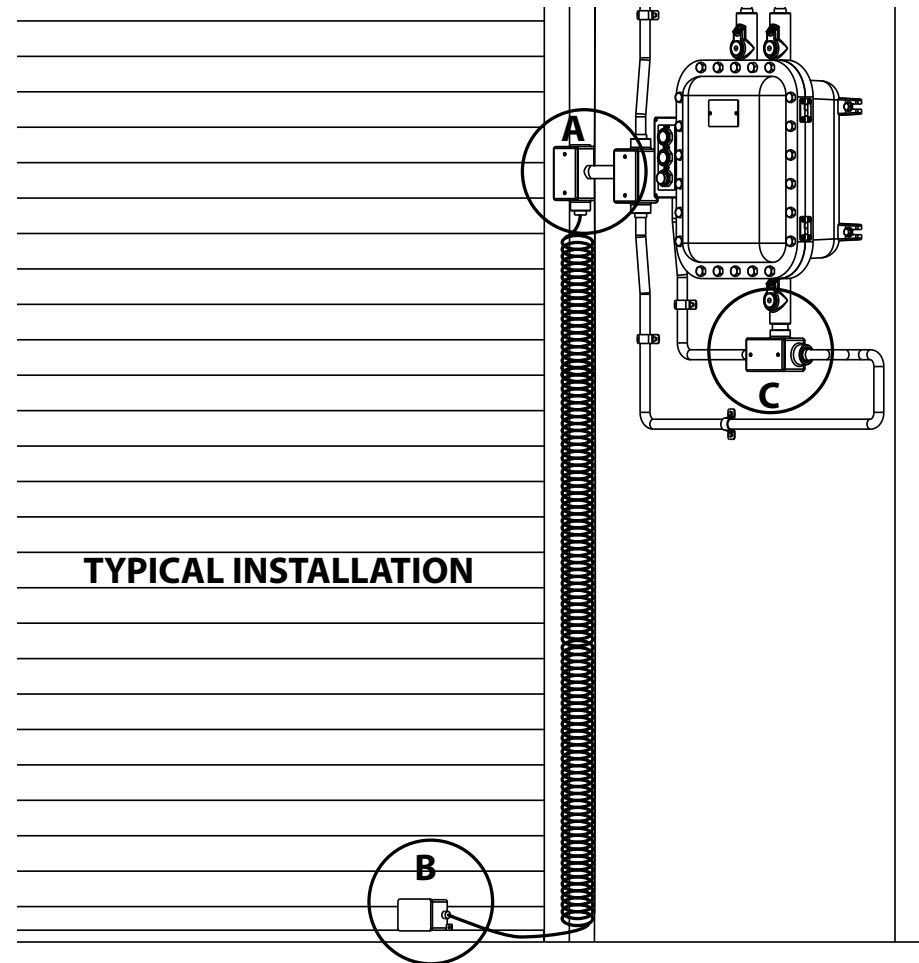
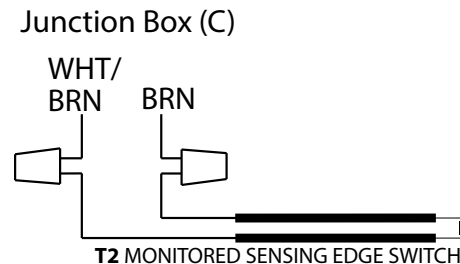


FIG. 6

⚠ WARNING: Actuating the operator using constant contact on the CLOSE button will override non-functioning external reversing devices, including sensing edges.

⚠ AVERTISSEMENT: L'activation de l'opérateur avec un contact constant sur le bouton FERMER annulera les dispositifs de renversement externes non fonctionnels, y compris les systèmes de détection des bords.

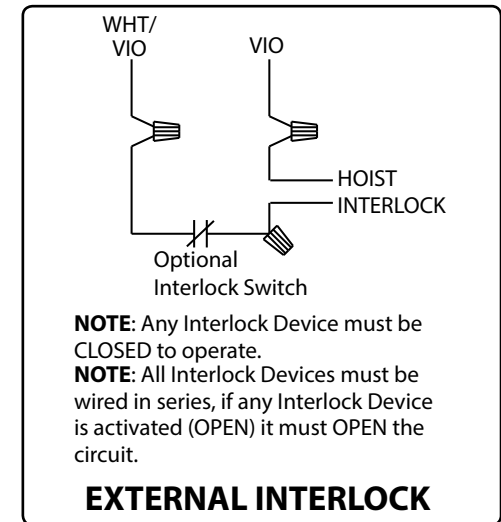
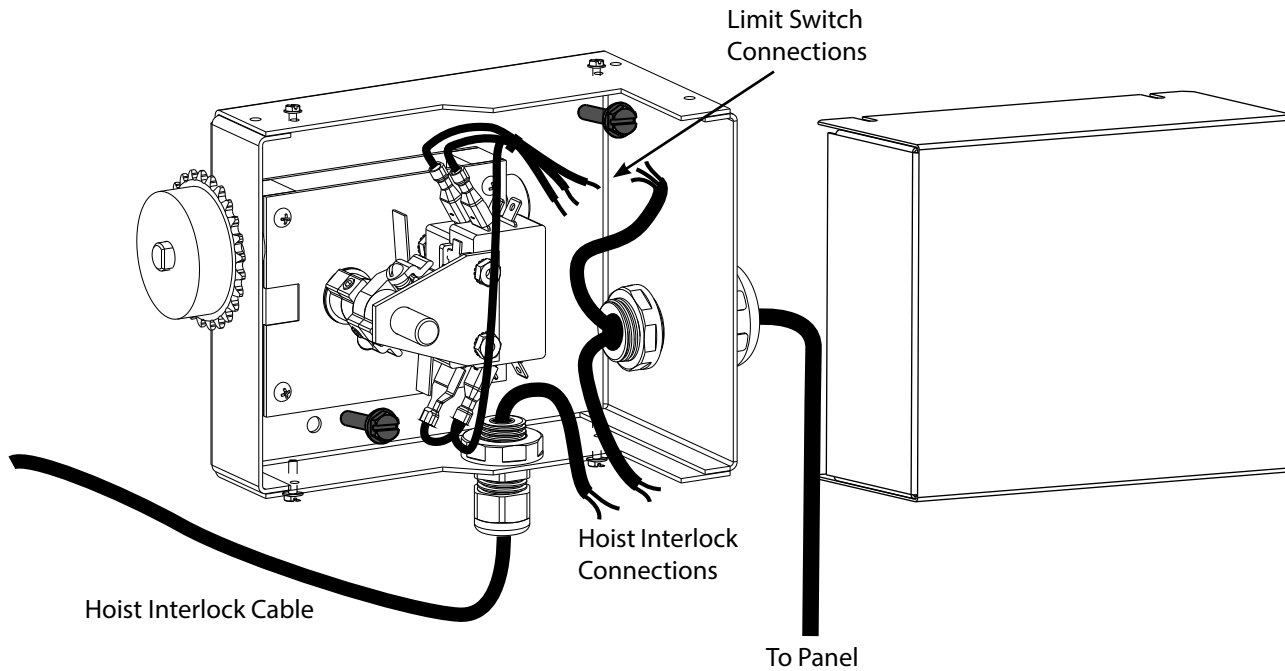
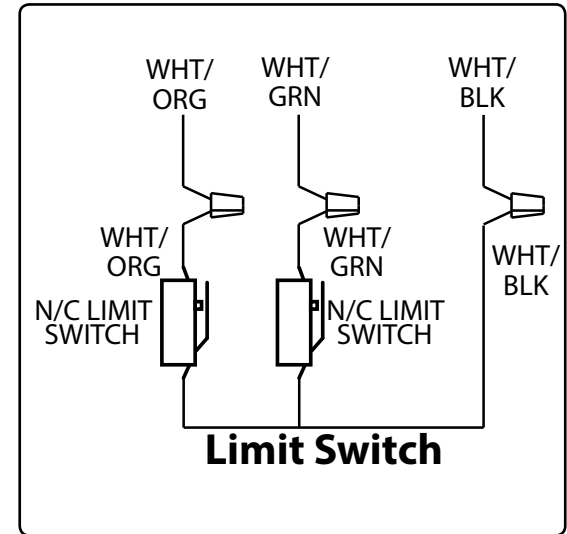
NOTE: Only a 2-wire Monitored T2 Type Sensing Edge can be connected. DO NOT use a non-monitored sensing edge switch, or DC (T3) monitored sensing edge.



Section 5: Intrinsically Safe Wiring

Limit Switch/Hoist Interlock Wiring

- 1) Route conduit and wires to limit switch box at operator. Remove existing water tight connector and add suitable conduit connectors if needed.
- 2) Run 3 suitable wires from junction box to limit switch box. Add two extra wires for hoist interlock connections on HOIST model units.
- 3) Connect the 3 limit switch wires with suitable wire nuts.
- 4) Connect the 2 hoist interlock wires with suitable wire nuts. (Hoist Models Only). Not polarity sensitive.



Section 6: Operator Configuration

⚠ DANGER: After power is supplied to the operator, Do not make contact with components inside the control panel except for the Keypad Keys and programming switches. **Fig. 1**

⚠ DANGER: Après avoir mis l'opérateur sous tension, Ne pas entrer en contact avec des composants à l'intérieur du panneau de commande, sauf pour les touches du pavé numérique. **Fig. 1.**

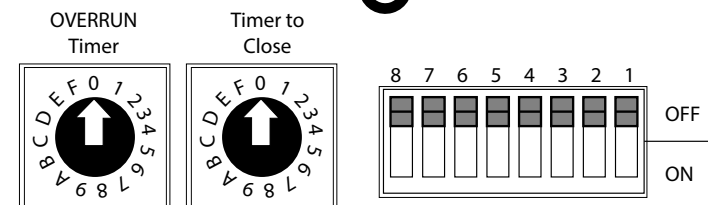
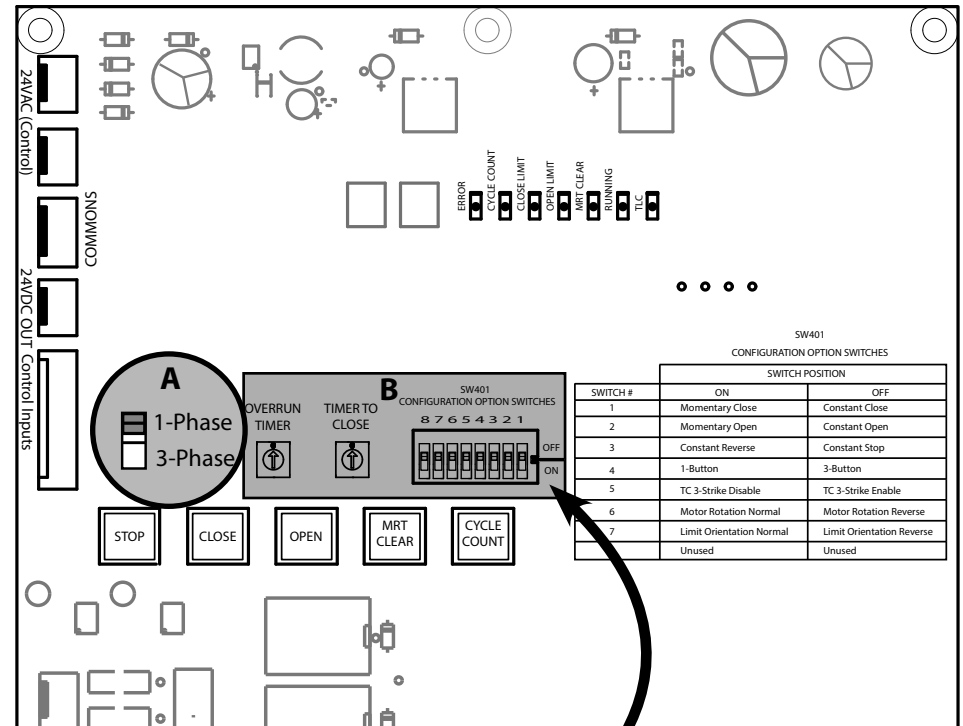
⚠ WARNING: Do not calibrate operator or operate door unless doorway is in sight and free of obstructions. Door will move during setup. Keep people clear of opening while door is moving.

⚠ AVERTISSEMENT: Calibrer l'opérateur et utiliser la porte uniquement si la porte est en vue et libre de tout obstacle. La porte se déplacera pendant la programmation. Ne laisser personne se tenir dans l'ouverture de la porte pendant qu'elle est en mouvement.

The following instructions assume that the operator is in the default configuration. To return the operator to its default configuration:

- 1). Verify phase switch is in correct position dependent on applied power. (A)-(1 or 3 Phase)
- 2). Slide all eight CONFIGURATION OPTION switches to their OFF positions. (B).
- 3). Reset dial switches to "0".
- 4). Apply power to operator.

FIG 1



SWITCH DETAIL

Section 6: Operator Configuration

Setting Close Direction:

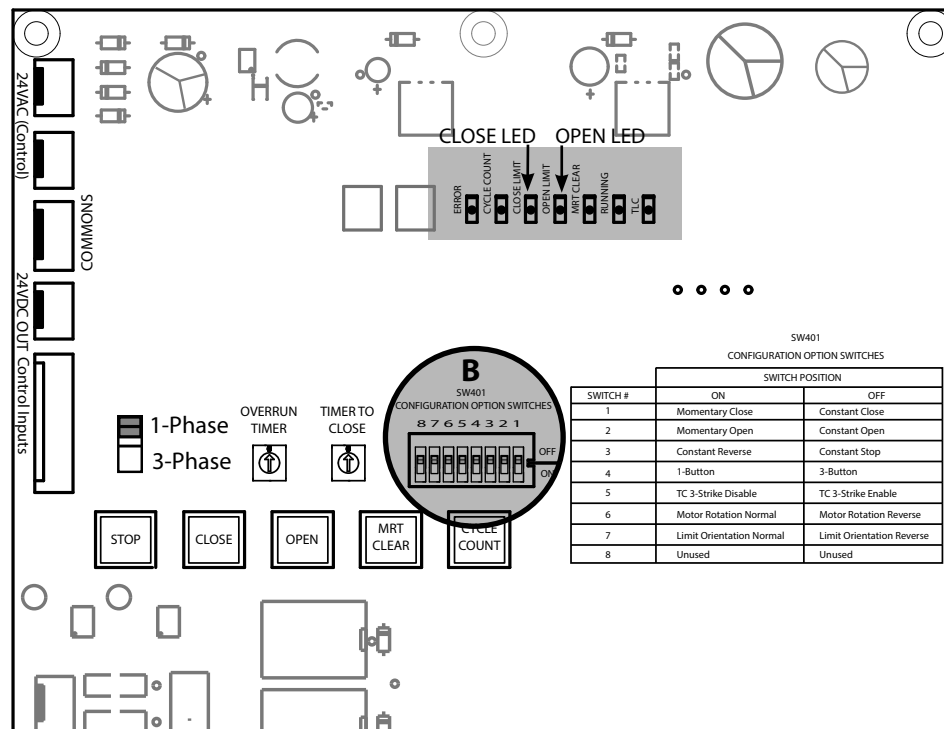
The direction of motor rotation depends on mounting position and/or how the main input power phases are wired. This setting is used to ensure the door is closing and opening according to the input commands. **The following instructions are based on the door having been set near mid-travel at installation.**

- 1) Briefly press and release the CLOSE key. Check to see if the door moved in the downward direction.
- 2) If the door moved down, no adjustment is necessary. If the door moved up, slide CONFIGURATION OPTION switch (B) #6 to its ON position to reverse the direction of motor rotation, and repeat Step 2 to verify that the door now moves down when the CLOSE key is activated.

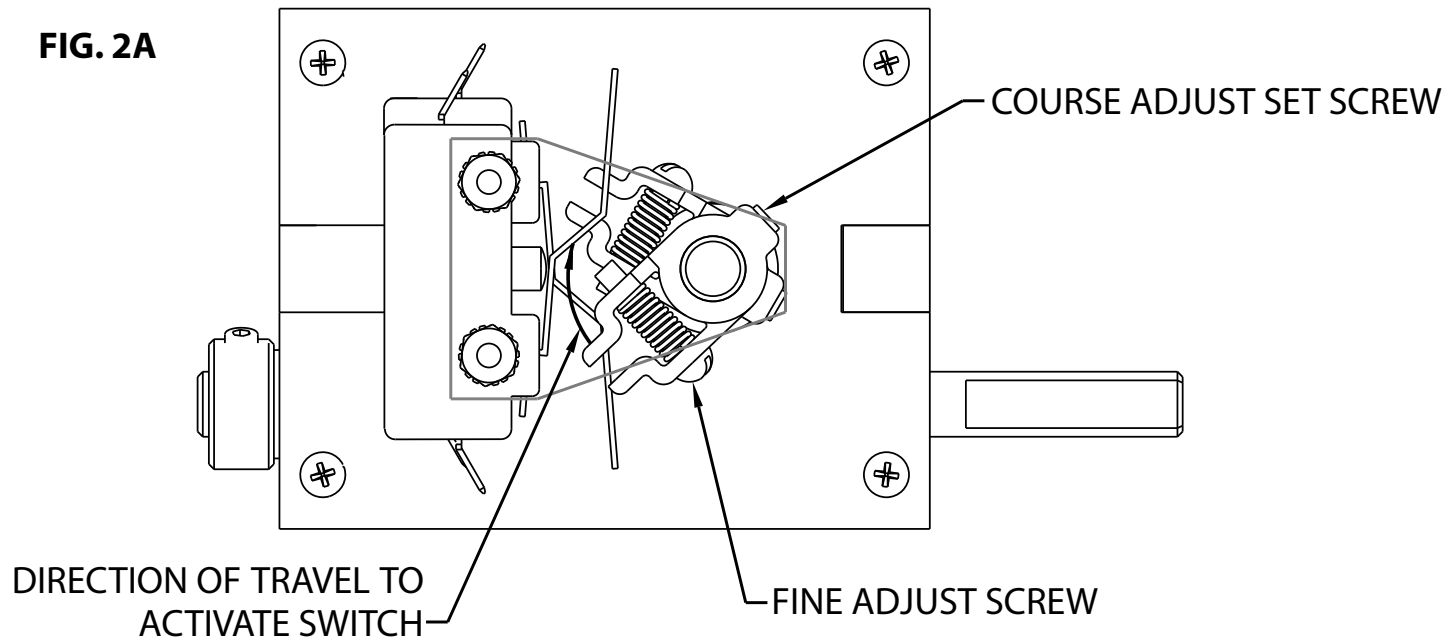
Setting Limit Orientation:

After the Close Direction has been appropriately configured, each of the limit switches must be assigned to its proper Open or Close Limit function. **The following instructions are based on the door having been set near mid-travel at installation.**

- 1) Verify limit cams are positioned as shown in FIG. 2A. Ref. page 6.3 (MID TRAVEL).
- 2) Press and HOLD the OPEN key to run the door up.
- 3) Allow the door to open until either on-board OPEN LED or CLOSE LED turns on. IF THE CLOSE LED TURNS ON, IMMEDIATELY RELEASE THE OPEN KEY as the limit orientation is not correct, and proceed to Step 4. If the motor stops on its own (OPEN LED TURNS ON), the limit orientation is correct and no adjustment is necessary. Proceed to setting limits.
- 4) To change the orientation of the limit switches, slide the CONFIGURATION OPTION switch (B) #7 to the ON position. Briefly press and release the CLOSE key and allow the motor to run just long enough to move the cam off the limit switch. Repeat Steps 2 and 3 to verify that the motor stops on its own when the Open Limit switch is made (OPEN LED TURNS ON).



Section 6: Operator Configuration



Setting Limits:

After the Limit Orientation has been appropriately configured, each of the limit switches must be set for proper door operation. The following instructions are based on the door having been set near mid-travel at installation.

- 1) Press and HOLD the OPEN key to run the door until up limit is activated.
- 2) Identify up limit, cam will be on the ramp activating the up limit at this time. Loosen course adjust set screw and rotate limit cam away from activation ramp of switch blade.
- 3) Run door to desired open position.
- 4) Rotate cam until limit is activated. You will hear and feel the limit switch "click". Tighten course adjust set screw. Back off of limit slightly by use of the fine adjust screw.
- 5) Verify proper function by running unit down a few feet, then press and hold OPEN key until door stops. Fine tune if necessary.
- 6) Repeat for down limit running in opposite direction.

Note that the following section offers direction for use of Limit Overrun.

Section 6: Operator Configuration

Setting Limit Overrun

⚠ WARNING: The Limit Overrun will override external reversing devices. Therefore, any externally connected devices will be disabled during that portion of the door travel controlled by the Limit Overrun function.
The Down Limit Overrun function should be used to close the door no more than the final 2".

⚠ AVERTISSEMENT: La fonction de dépassement de limite annulera les dispositifs de renversement externes, y compris les cellules photoélectriques et des systèmes de détection ou d'inversion aux bords. En conséquence, tous les dispositifs externes connectés seront désactivés pendant la partie de la course de la porte qui est contrôlée par la fonction de dépassement de limite.
La fonction de dépassement de limite inférieure doit être utilisée pour fermer la porte uniquement aux derniers 5 cm.

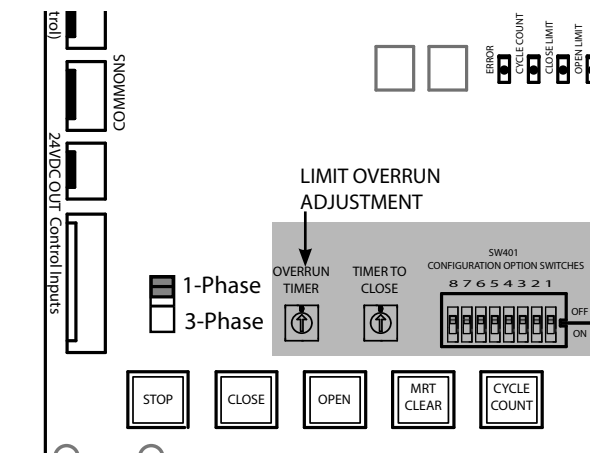
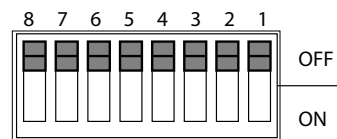
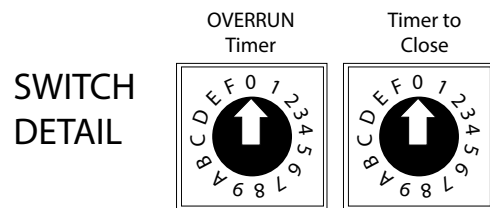
⚠ CAUTION: If proper seal cannot be obtained at a setting of 15, Reset the Limit Overrun back to 0 and reset the Down Limit position as described on 6.3. Then adjust the Limit Overrun as instructed.

⚠ ATTENTION: Si une adhésion appropriée ne peut être obtenue à un réglage de 15, réinitialiser le dépassement de limite à 0 puis la position de déplacement de la limite inférieure selon les instructions de la page 6.3. Régler ensuite le dépassement de limite tel qu'indiqué ci-dessus.

The Limit Overrun setting is a matter of trial and error. The goal is to adjust the Limit Overrun until an appropriate seal is obtained between the bottom of the door edge and the floor. The door should close gently with light tension on door cables, or minimal stacking on the rolling steel slats.

The Limit Overrun can be adjusted in 16 discrete increments from level (0) to level (15), using rotary switch. Level (0) disables the Limit Overrun so the door stops immediately when the Close Limit switch is made. Each additional increment adds 60ms to the total Limit Overrun time. To adjust the Limit Overrun setting:

- 1) Adjust rotary LIMIT OVERRUN switch to the desired value.
- 2) Position the door a few feet above the floor by using the OPEN, CLOSE and STOP Keys.
- 3) Press and hold the CLOSE Key until the operator stops.
- 4) Repeat Steps 1-3 until the appropriate seal is obtained between the door and the floor.



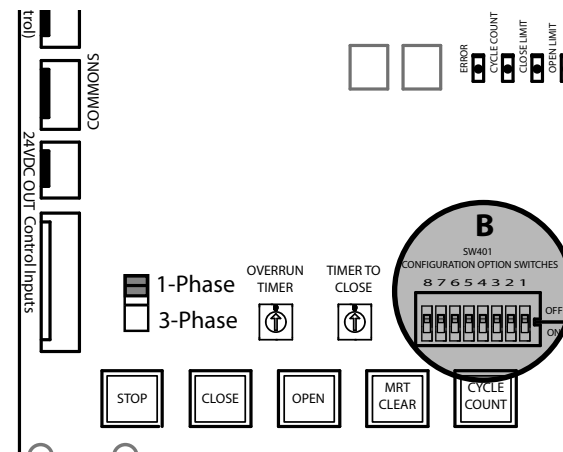
Section 6: Operator Configuration

Setting Open and Close Modes (Momentary vs. Constant Contact)

⚠ WARNING: Before momentary contact control can be used on the CLOSE button, a monitored external reversing device sensing edge switch must be used.

See pages 5.8 for installation of entrapment protection devices.

⚠ AVERTISSEMENT: Avant d'utiliser la commande à contact momentané sur le bouton FERMETURE, un dispositif d'inversion externe surveillée tel commutateur de détection de bord doit être utilisé. Voir l'installation des dispositifs de protection contre le coincement en pages 5.8.



OPEN:

1) Adjust CONFIGURATION OPTION switch (B) #2 to select the Open mode:

- Switch #2 (ON) selects momentary contact mode, this means, if you press and release the OPEN key, the door will continue to move until it reaches its travel limit.
- Switch #2 (OFF) selects constant-stop mode, this means, if you release the OPEN key prior to the door reaching its travel limit, the door will stop.

CLOSE:

2) Adjust CONFIGURATION OPTION switches (B) #1 and #3 to select the Close mode:

- Switch #1 (ON) selects momentary contact mode, this means, if you press and release the CLOSE key, the door will continue to move until it reaches its travel limit. Note that Switch #3 is ignored while Switch #1 is (ON).
- Switch #1 (OFF) and Switch #3 (OFF) selects constant contact-stop mode, this means, if you release the CLOSE key prior to the door reaching its travel limit, the door will stop.
- Switch #1 (OFF) and Switch #3 (ON) selects constant contact-reverse mode, this means, if you release the CLOSE key prior to the door reaching its travel limit, the door will reverse direction.

Section 6: Operator Configuration

Selecting a 1- Button or 3- Button Control Station

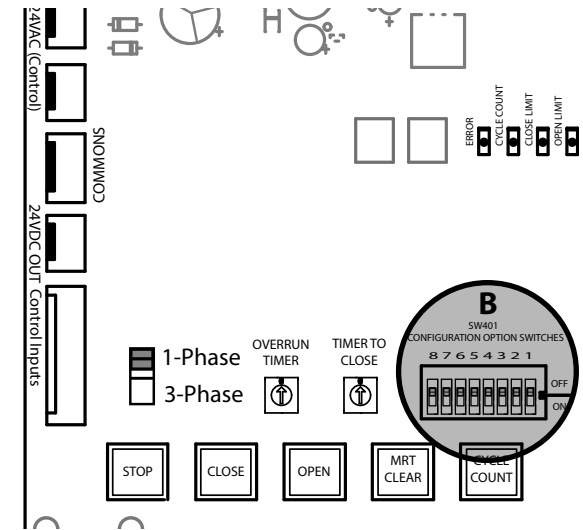
The operator can support one or more 3-button (individual Open/Close/Stop) stations or 1-button stations. However, it cannot support combinations of the two at the same time. The type of control station(s) used with the operator must be selected using a Configuration Option Switch.

Note:

If the operator is configured for a 3-button station and a 1-button station is connected, the door will only move in the up direction.

If the operator is configured for a 1-button station and a 3-button station is connected, the CLOSE button will be ignored and the OPEN button will act as the 1-button.

- 1) Slide CONFIGURATION OPTION Switch (B) #4 to the ON position to select a 1-button control. Slide the switch to the OFF position to select a 3-button control.



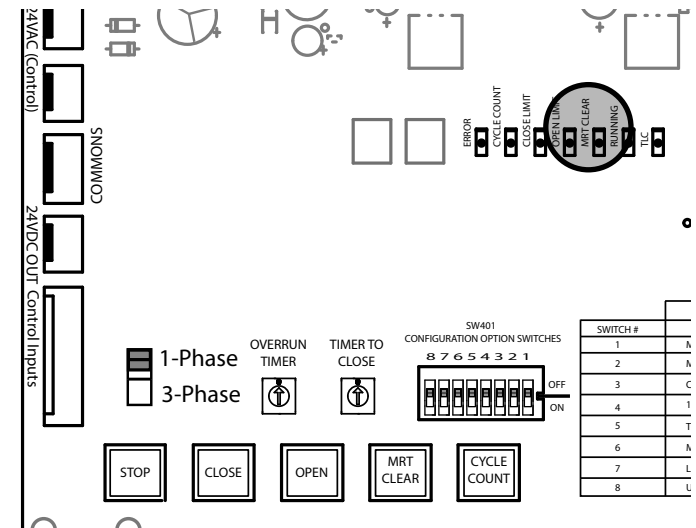
Setting Max Run Timer (MRT)

The Max Run Timer (MRT) will automatically set itself once the operator is run a full cycle. The MRT LED will go out.

RE-Setting Max Run Timer (MRT)

Press and hold the MRT clear key briefly until MRT LED flashes, release MRT key. MRT LED should be on solid.

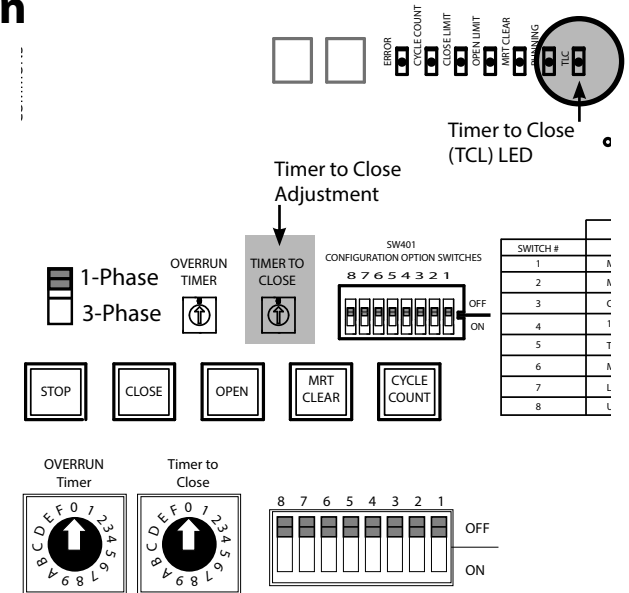
Cycle door 2 full cycles : full open to full close to full open or full close to full open to full close, without stopping mid travel, to reset MRT.



Section 6: Operator Configuration

Setting Timer to Close Function

| Rotary Switch Position | Time Delay (seconds) | Rotary Switch Position | Time Delay (seconds) |
|------------------------|----------------------|------------------------|----------------------|
| 0 | Disabled | 8 | 50 |
| 1 | 2 | 9 | 60 |
| 2 | 5 | A | 90 |
| 3 | 10 | B | 120 |
| 4 | 15 | C | 150 |
| 5 | 20 | D | 180 |
| 6 | 30 | E | 210 |
| 7 | 40 | F | 240 |



The Timer-to-Close feature provides the ability to automatically close the door, after a fixed time delay, after the door has been moved to its OPEN limit. This time delay is user adjustable by the on-board Timer-to-Close rotary switch as follows:

To configure the Timer-to-Close feature:

- 1) Set the rotary switch to the desired time delay setting in the chart shown above.
- When set to 0, the timer-to-close feature is disabled and the Timer-to-Close LED is turned off.
 - When a non-zero time delay is selected, the Timer-to-Close LED turns on solid.
 - If the operator is configured for constant-contact closing, the Timer-to-Close feature is disabled and the LED is turned off, regardless of the rotary switch setting.
 - Any action that moves door toward upper limit activates Timer-to-Close cycle and the Timer-to-Close LED will start flashing. Selected countdown time will start when unit reaches up limit.
 - If the door is stopped during its upward travel, the Timer-to-Close cycle is aborted and the LED will turn on solid.

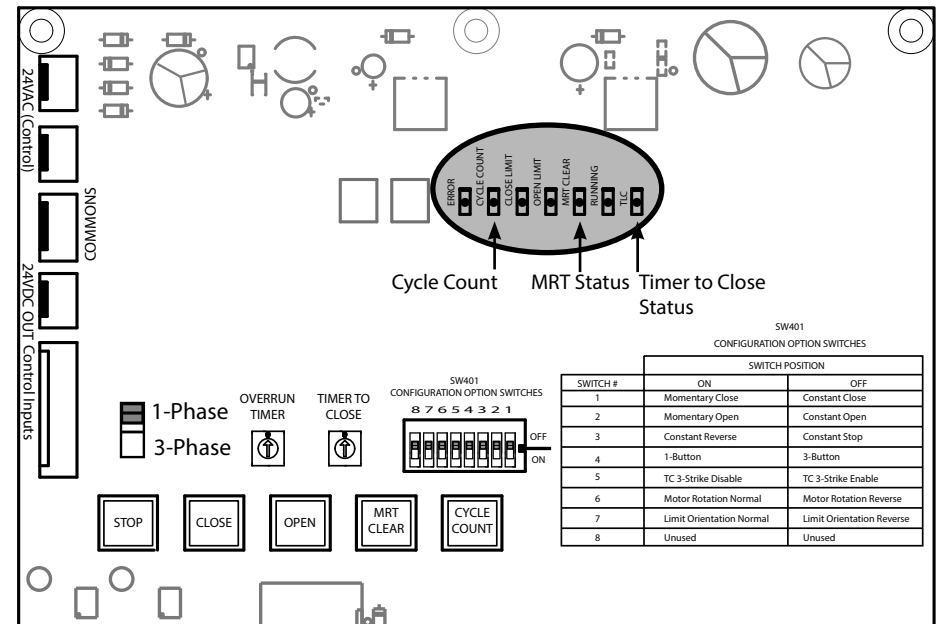
- If safety is activated during time out cycle, timer will hold until safety is cleared.
- If the safety edge becomes active at any point during the downward travel, the operator will reverse direction and run the door to its OPEN limit. This will re-start the Timer-to-Close cycle.
- The Timer-to-Close feature will make three attempts to move the door to its CLOSE limit. If it is unable to do so, the Timer-to-Close cycle is terminated and the LED is turned on solid. To re-initiate timer, door must be cycled closed first.
- 3- strikes on/off feature. Move switch 5 to ON to disable 3 strikes feature.
- The Timer-to-Close cycle may be user-terminated at any time by pressing the CLOSE or STOP buttons. The operator will respond to the input, and the Timer-to-Close LED will turn on solid to indicate the cycle has ended.
- If OPEN button is pressed, door will open and reset Timer-to-Close.

Section 7: Operator Status and Indicators

Displaying the Cycle Count

The operator maintains a count of completed open/close cycles and can display this count via an LED, in increments of 1,000 cycles.

1. To display the cycle count, press and hold the on-board Cycle Count Key (CYC/CNT) for at least three seconds.
2. The Cycle Count LED will blink rapidly, at which point the (CYC/CNT) Key may be released. The LED blinks will be followed by a one second pause, and then the LED will blink once per second for each 1,000 cycles the operator has completed. Once the total cycle count has been displayed, the LED will blink rapidly and the cycle count will displayed again. This will continue indefinitely until user-terminated.
3. To stop the cycle count display, press and hold the CYC/CNT Key for at least three seconds. The Cycle Count LED will go on solid for 1 second and then go out to indicate the cycle count display has been terminated. The CYC/CNT Key may be released at this point.



MRT Clear status indicator

If the MRT CLEAR LED is illuminated, set MRT as outlined in on page 6.6

Timer to Close Running Status Indicator

LED will remain on solid if timer is set.
LED will flash when count down is active.

Section 7: Operator Status

Operator Status Display

The on-board Running and Error LEDs provide a visual indication of the general status of the operator controls. The Running LED serves as a heartbeat, and blinks once per second at all times as long as power is supplied to the operator. If the Running LED should ever stop blinking, it indicates an unrecoverable fault and an authorized service technician should be contacted.

A single red LED is used to display error codes. To display an error code, the LED will quickly blink 5 times, followed by a one second pause. After this pause, the LED will blink once per second to count out an error code. After the error code has been displayed, the LED will blink quickly again. This process will repeat until the error condition has been remedied. The error codes and their causes are listed in the table below.

When power is first applied to the operator, the controls will check the status of the OPEN, CLOSE and STOP button inputs to prevent unintended or unknown operation at power-up. The controls expect the OPEN and CLOSE input circuits to be open, and the STOP input circuit (including any interlock) to be closed. If this is not so, the Error LED will display Error Code 4 and operation will be inhibited until the offending circuit is corrected, at which point the Error LED will turn off and normal operation will be allowed.

If the controls detect that the motor has overheated while operating, the motor will be turned off and the Error LED will display Error Code 1 to indicate the thermal condition. Allow time for the motor to cool and attempt to operate the motor again. If the thermal condition is still present, the motor will not run and the Error LED will continue blinking. If the motor starts running, the Error LED is turned off and normal operation resumes. If the safety edge has been activated, causing the door to reverse, the Error LED will display Error Code 2 as soon as the reversal is started. The LED will continue blinking until the next

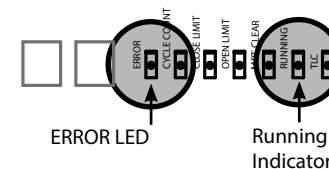
attempt to move the door in the down direction, at which point the LED is turned off.

Should the Max Run Timer ever expire, the motor will be stopped and the Error LED will display Error Code 3. To clear this error, the Max Run Timer must be cleared and reset. To clear the Max Run Timer, press and hold the MRT CLEAR button on the control board for at least 3 seconds. The MRT Clear LED will blink five times and then turn off. The MRT CLEAR button may then be released. Once the button is released, the MRT Clear LED will turn on solid to indicate the max run timer has been reset. The timer value is set automatically when the motor completes its first uninterrupted operations from open limit to close limit (moving down) and from close limit to open limit (moving up).

These are the only serviceable conditions that the Error LED will indicate. If the Error LED is displaying a code not listed above, or is turned on solid, cycle power to the controls. This will reset the control logic and attempt to restore normal operation. If the condition persists after cycling power, an authorized service technician should be contacted.

See previous page for ERROR CODE LED location

| Error Code (Number of LED blinks) | Error Condition |
|-----------------------------------|----------------------------|
| 1 | Motor Overheated |
| 2 | Safety Edge Reversal |
| 3 | Max Run Timer Expired |
| 4 | Invalid Inputs at Power-Up |



Section 8: Service and Maintenance

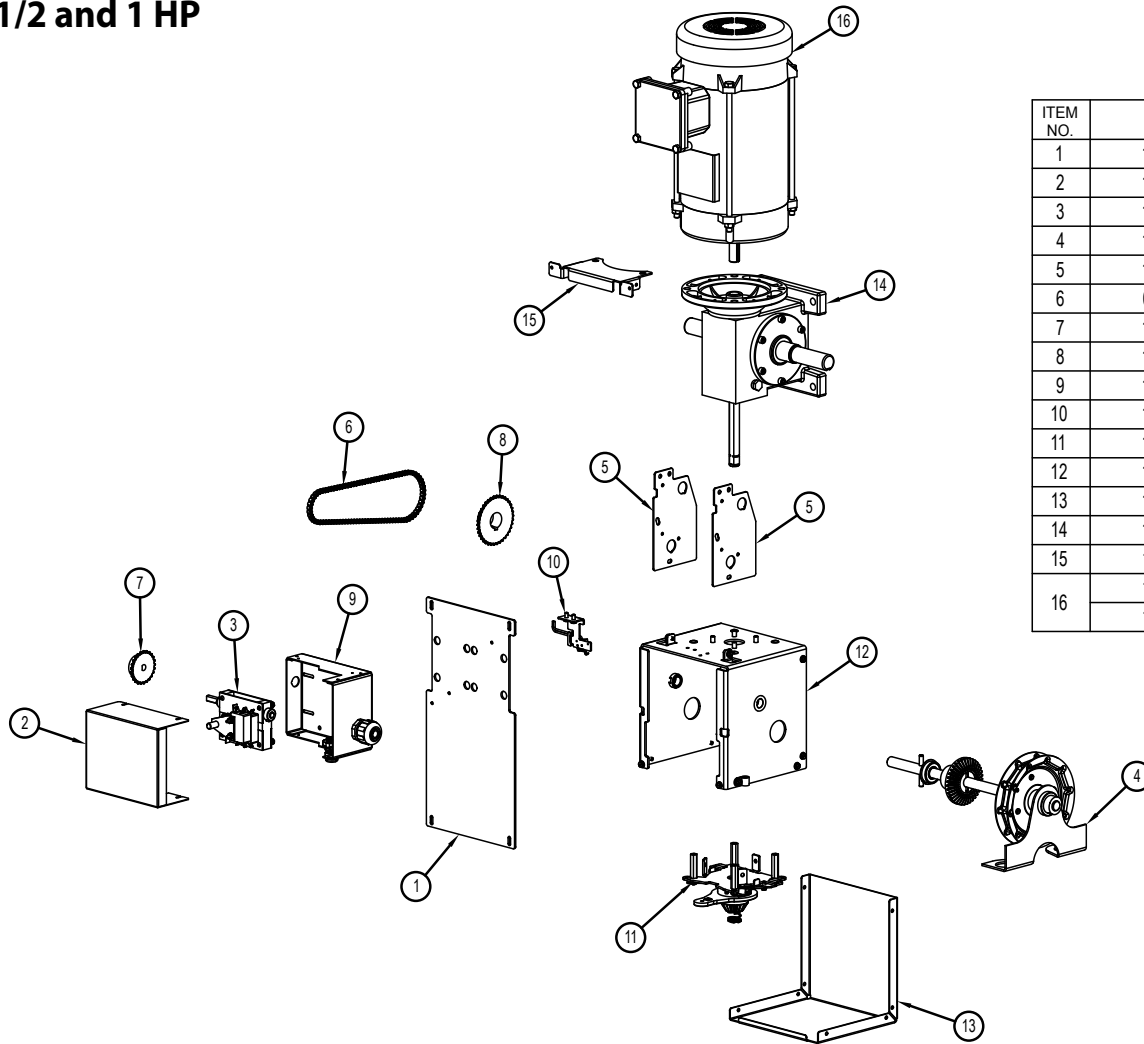
Maintenance Schedule

The following table provides a schedule of recommended Service and Maintenance items to be completed by a trained service representative.

| SERVICE ITEM | SERVICE INTERVAL (FREQUENCY) | | | |
|-------------------------------------|------------------------------|-----------------------------|-------------------------------|-------------------------------|
| | MONTHLY | EVERY 6 MO. OR 5,000 CYCLES | EVERY 12 MO. OR 10,000 CYCLES | EVERY 36 MO. OR 30,000 CYCLES |
| MANUAL OPERATION OF DOOR | | ● | | |
| EDGE OPERATION | ● | | | |
| CLUTCH ADJUSTMENT | | | ● | |
| CHECK FOR LOOSE OR MISSING HARDWARE | | | ● | |
| CHECK LIMIT POSITION | | | | ● |
| GEAR TRAIN WEAR | | | | ● |

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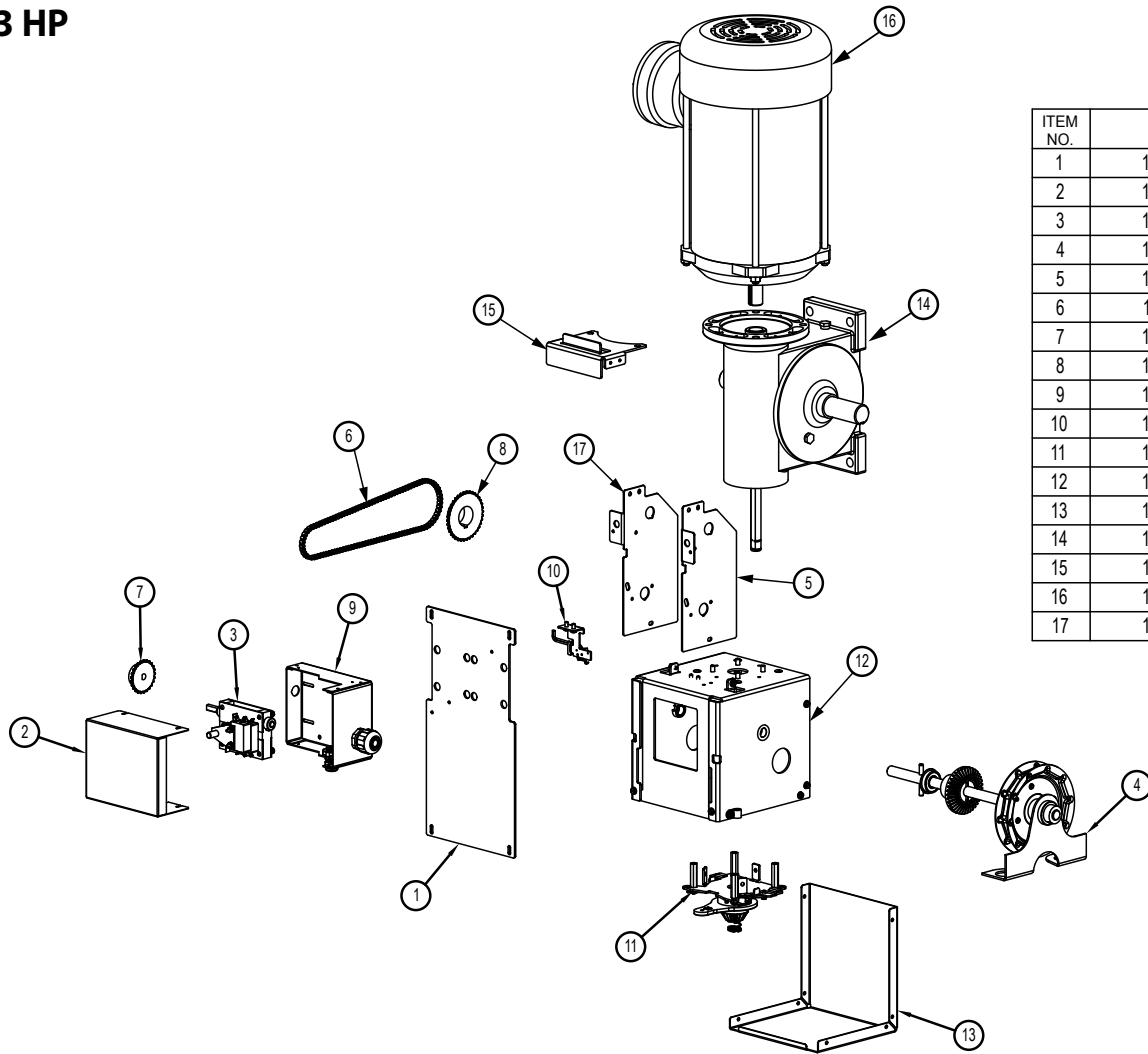
Hoist Operator Parts Breakdown 1/2 and 1 HP



| ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-------------|-----------------------------|------|
| 1 | 112153-0001 | PLATE, TOP, OPER, EXPF | 1 |
| 2 | 112428-0001 | COVER, LIMIT BOX, EXPF | 1 |
| 3 | 107891-0004 | LIMIT ASSY | 1 |
| 4 | 111859-0001 | SHAFT ASSY, HOIST, RHXH | 1 |
| 5 | 111625-0001 | COVER, LIMIT, RHXH | 2 |
| 6 | 086565-1031 | CHAIN, RLR, #25 X 92P, LOOP | 1 |
| 7 | 107803-0001 | SPRKT, 25T, 1/4P, 1.38 HUB | 1 |
| 8 | 111537-0001 | SPROCKET, #25, 1/4P, 38T | 1 |
| 9 | 112427-0001 | LIMIT BOX | 1 |
| 10 | 112337-0001 | INTERLOCK SWITCH ASSY | 1 |
| 11 | 112498-0001 | RELEASE ASSY | 1 |
| 12 | 111527-0001 | ENCLOSURE | 1 |
| 13 | 111528-0001 | FRONT COVER | 1 |
| 14 | 111503-0002 | GEAR REDUCER, 40:1 | 1 |
| 15 | 111525-0001 | ENCLOSURE BRACKET | 1 |
| 16 | 105924-0001 | MOTOR, 1/2HP, 1PH | 1 |
| | 105924-0006 | MOTOR, 1HP, 3PH | |

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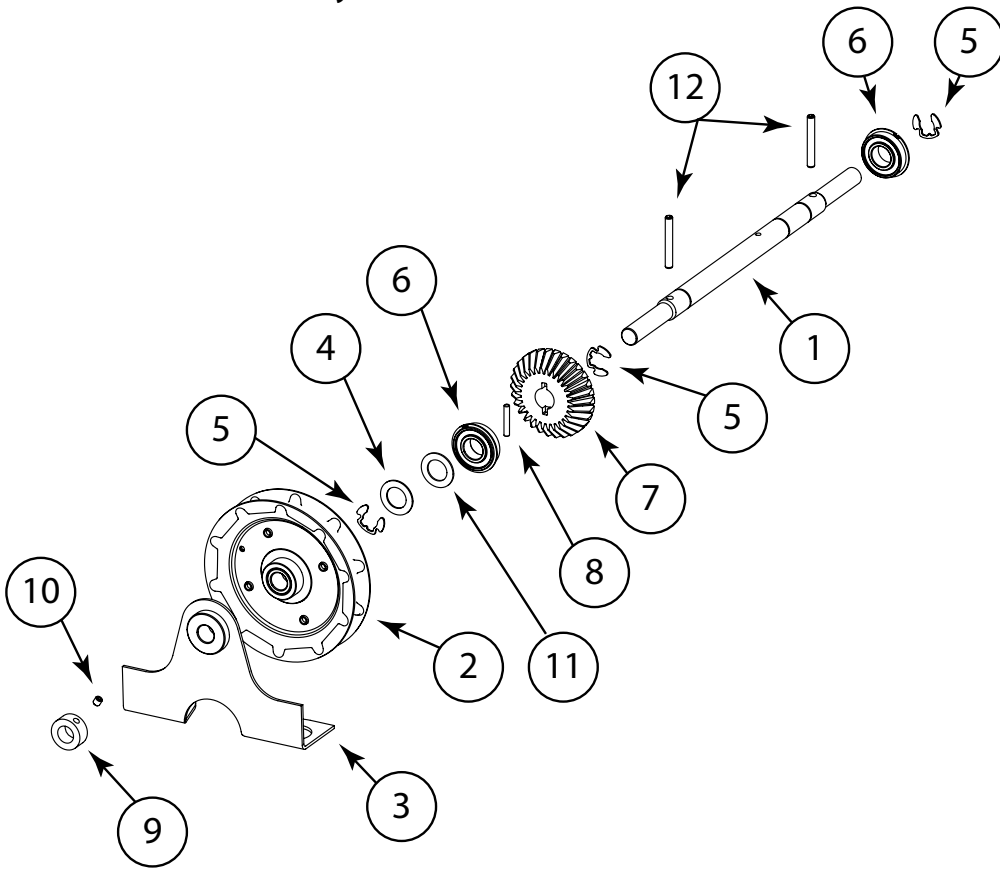
Hoist Operator Parts Breakdown 3 HP



| ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-------------|------------------------------|------|
| 1 | 112153-0001 | PLATE, TOP, OPER, EXPF | 1 |
| 2 | 112428-0001 | COVER, LIMIT BOX, EXPF | 1 |
| 3 | 107891-0004 | LIMIT ASSY | 1 |
| 4 | 111860-0001 | SHAFT ASSY, HOIST, RHXH | 1 |
| 5 | 111624-0001 | COVER, LIMIT, RHXH, LH | 1 |
| 6 | 112676.0109 | CHAIN, RLR, #25 X 109P, LOOP | 1 |
| 7 | 107803-0001 | SPRKT, 25T, 1/4P, 1.38 HUB | 1 |
| 8 | 111537-0002 | SPROCKET, #25, 1/4P, 38T | 1 |
| 9 | 112427-0001 | LIMIT BOX | 1 |
| 10 | 112337-0001 | INTERLOCK SWITCH ASSY | 1 |
| 11 | 112498-0002 | RELEASE ASSY | 1 |
| 12 | 111546-0001 | ENCLOSURE | 1 |
| 13 | 111528-0001 | FRONT COVER | 1 |
| 14 | 111544-0001 | GEAR REDUCER, 40:1, 3HP | 1 |
| 15 | 112543-0001 | ENCLOSURE BRACKET | 1 |
| 16 | 112493-0001 | MOTOR, 3HP, 3PH | 1 |
| 17 | 111624-0002 | COVER, LIMIT, RHXH, RH | 1 |

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Hoist Shaft Assembly

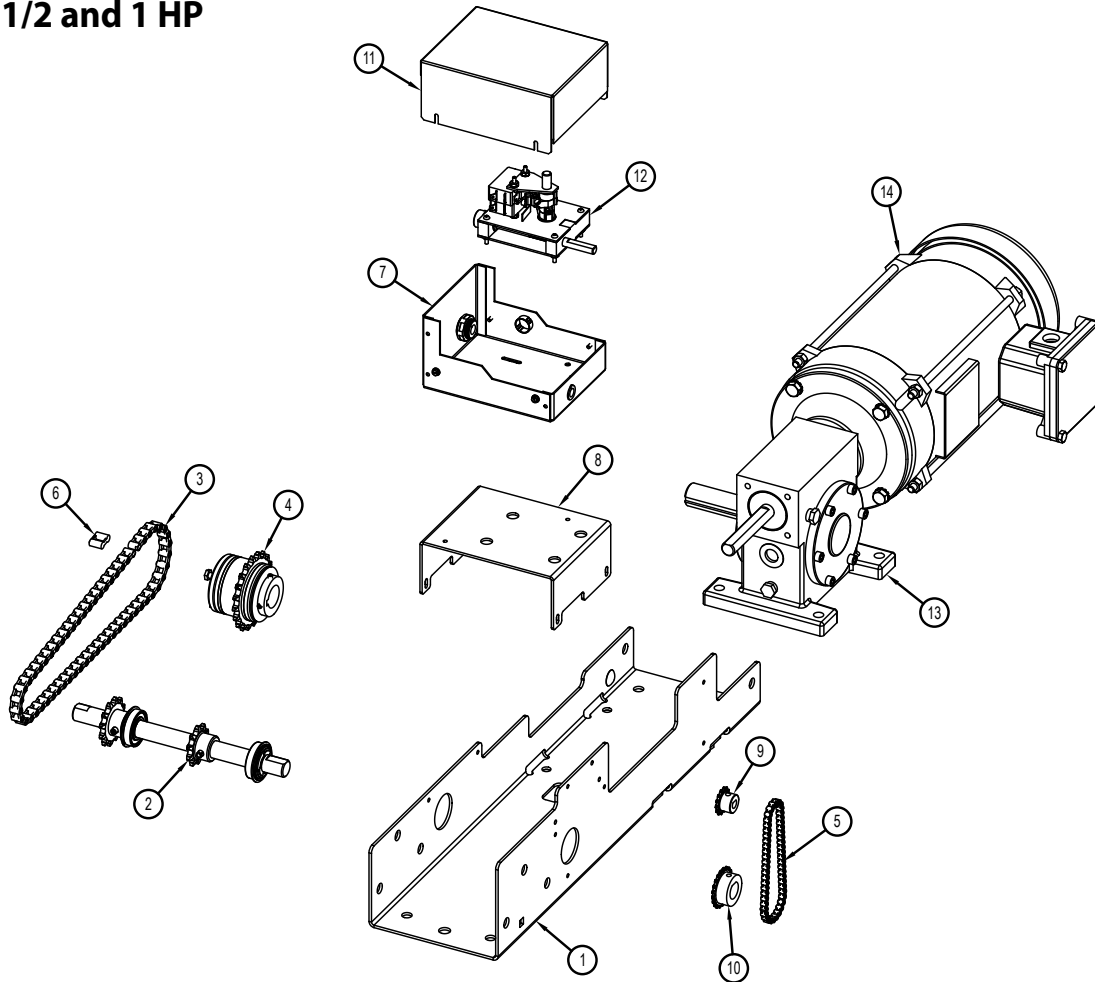


| Item | Part Number..... | Description | QTY. |
|----------|--------------------|--|----------|
| A | 111859.0001 | Shaft Assembly, Hoist, RHXH 1/2-1HP | 1 |
| 1 | 111529.0001 | SHAFT,HOIST,RHXH | 1 |
| 2 | 110872.0001 | HANDWHEEL,STANDARD CHAIN | 1 |
| 3 | 110411.0001 | CHAIN GUARD ASSY | 1 |
| 4 | 110819.0001 | WASHER,PLAIN .651 I.D. | 1 |
| 5 | 111382.0003 | RING,RTNG,HIGH GRIP, .50 DIA. | 3 |
| 6 | 110813.0001 | BEARING, .625 I.D. | 2 |
| 7 | 111531.0002 | GEAR,BEVEL,36T,RHX | 1 |
| 8 | 110881.0001 | PIN,DOWEL, .188 X 1.13 | 1 |
| 9 | 604297.3062 | SET CLR,5/8ID X1-1/8OD, | 1 |
| 10 | 080300.1604 | SCR,SET,SCH,KNRLD,1/4-20 | 2 |
| 11 | 086649.0029 | WASHER,THRUST .64 | 1 |
| 12 | 110313.0010 | PIN,SPRING, .250 DIA X 2.0 | 2 |

| Item | Part Number..... | Description | QTY. |
|----------|--------------------|---|----------|
| A | 111860.0001 | Shaft Assembly, Hoist, RHXH, 3HP | 1 |
| 1 | 111554.0001 | SHAFT,HOIST,RHXH,3HP | 1 |
| 2 | 110872.0001 | HANDWHEEL,STANDARD CHAIN | 1 |
| 3 | 110411.0001 | CHAIN GUARD ASSY | 1 |
| 4 | 110819.0003 | WASHER,PLAIN, .770 ID | 1 |
| 5 | 111382.0001 | RING, RTNG, HIGH GRIP | 3 |
| 6 | 110695.0001 | BEARING, .75 ID | 2 |
| 7 | 111552.0001 | GEAR,BEVEL,30T,HOIST | 1 |
| 8 | 110881.0001 | PIN,DOWEL, .188 X 1.13 | 1 |
| 9 | 604297.3062 | SET CLR,5/8ID X1-1/8OD, | 1 |
| 10 | 080300.1604 | SCR,SET,SCH,KNRLD,1/4-20 | 2 |
| 11 | 086649.0030 | WASHER, | 1 |
| 12 | 110313.0010 | PIN,SPRING, .250 DIA X 2.0 | 2 |

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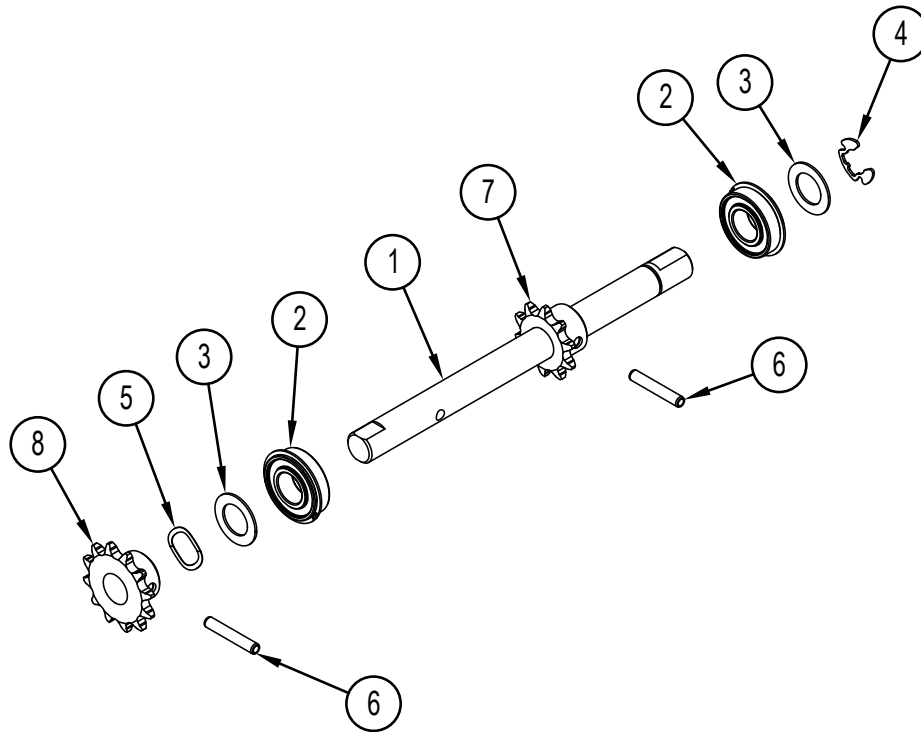
Trolley Operator Parts Breakdown 1/2 and 1 HP



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-------------|-----------------------------------|-----|
| 1 | 111515-0001 | FRAME, RHXT | 1 |
| 2 | 112508-0001 | SHAFT ASSY, OUTPUT, EXPF, TROLLEY | 1 |
| 3 | 111584-3059 | CHAIN, #41 X 59P, NO LOOP | 1 |
| 4 | 111583-0001 | CLUTCH ASSY, RHXT | 1 |
| 5 | 086565-1022 | CHAIN, RLR, #25 X 56P, LOOP | 1 |
| 6 | 080884-0003 | LINK, CONN #41 CH | 1 |
| 7 | 112427-0001 | LIMIT BOX | 1 |
| 8 | 112429-0001 | BRACKET, LIMIT BOX | 1 |
| 9 | 107803-0001 | SPROCKET - 25 TOOTH, #25 | 1 |
| 10 | 112669-0001 | SPROCKET, 20T, #25, 1/4 P | 1 |
| 11 | 112428-0001 | COVER, LIMIT BOX, EXPF | 1 |
| 12 | 107891-0004 | LIMIT ASSY | 1 |
| 13 | 111503-0001 | GEAR REDUCER, 20:1 | 1 |
| 14 | 105924-0001 | MOTOR, 1/2HP, 1PH | 1 |
| | 105924-0006 | MOTOR, 1HP, 3PH | |

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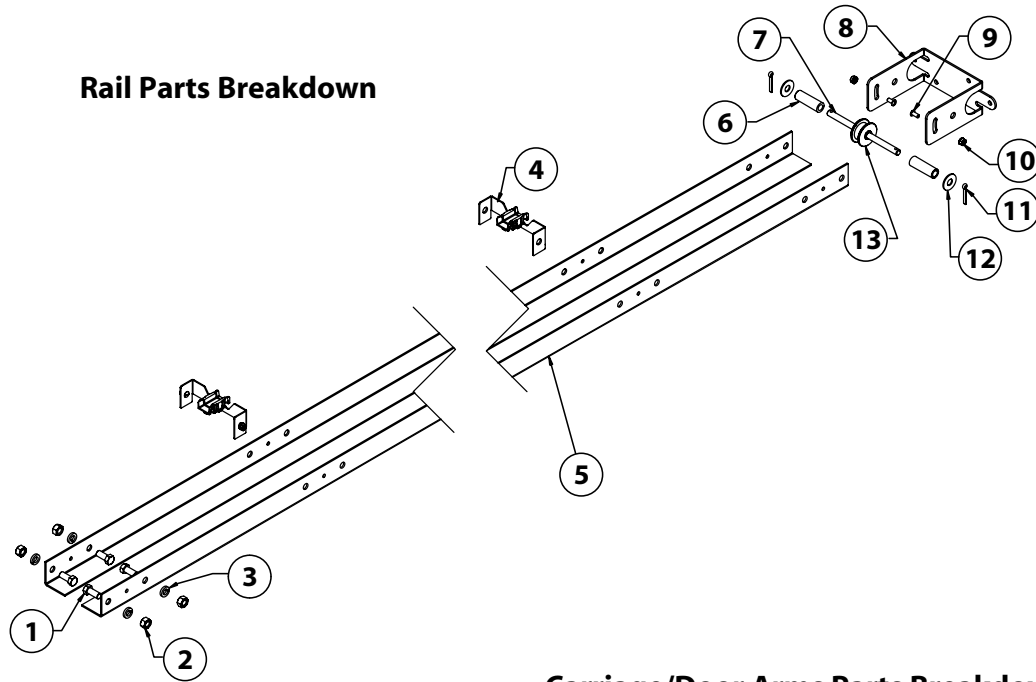
Trolley Output Shaft Parts Breakdown



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-------------|--------------------------------|-----|
| 1 | 112432-0001 | SHAFT, .75 DIA, OUTPUT, EXPF | 1 |
| 2 | 110695-0001 | BEARING, .750 ID | 2 |
| 3 | 110819-0003 | WASHER, .770 ID | 2 |
| 4 | 111382-0001 | RING, RTNG, HIGH GRIP STRENGTH | 1 |
| 5 | 110818-0004 | WASHER, WAVE SPRING, .780 ID | 1 |
| 6 | 110313-0004 | PIN, SPRING, .250 DIA, X 1.50L | 2 |
| 7 | 110739-0001 | SPRKT, 10T, #41 CH, 1/2P | 1 |
| 8 | 111611-0001 | SPROCKET, #41, 1/2P, 12T | 1 |

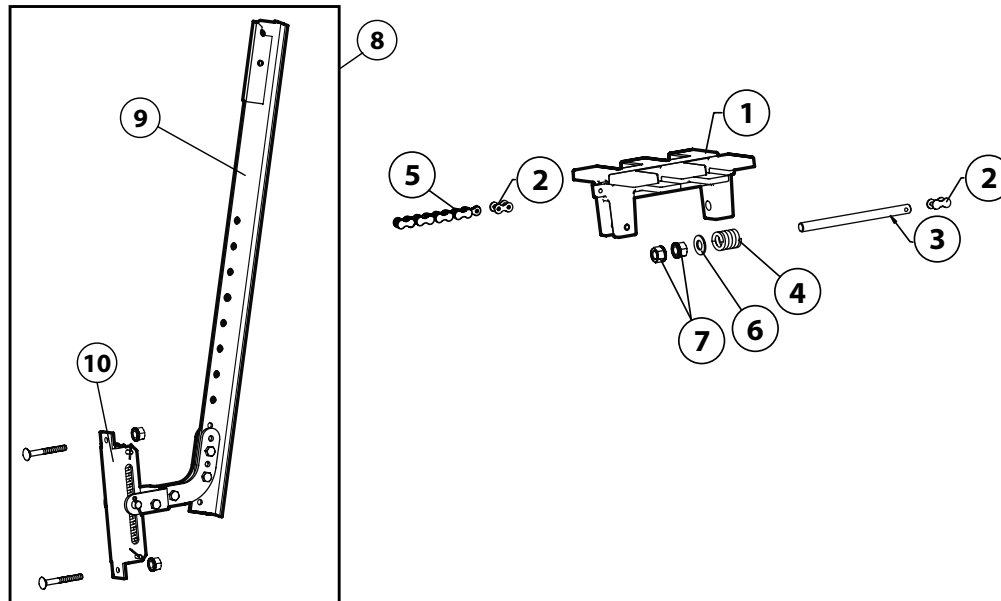
Section 9: Appendix A

Rail Parts Breakdown



| Item | Part Number | Description | Qty |
|---------------------------|-----------------|-----------------------------|-----|
| RAIL ASSY, TROLLEY | | | |
| 1 | 080105.0708 | BOLT, HH, PLD, 7/16-14 X 1 | 4 |
| 2 | 080352.0714 | NUT, HEX, PLD, 7/16-14 | 4 |
| 3 | 080322.0446 | WSHR, LK, 7/16 X 25/32 OD | 4 |
| 4 | 111390.0001 | CHAIN GUIDE | 2 |
| 5 | 110732.1125 | TRACK, 8' DOOR | 2 |
| | 110732.1149 | TRACK, 10' DOOR | |
| | 110732.1173 | TRACK, 12' DOOR | |
| | 110732.1197 | TRACK, 14' DOOR | |
| | 110732.1221 | TRACK, 16' DOOR | |
| | 110732.1245 | TRACK, 18' DOOR | |
| | 110732.1269 | TRACK, 20' DOOR | |
| 110732.1317 | TRACK, 24' DOOR | | |
| 6 | 110744.0001 | SPACER | 2 |
| 7 | 110768.0001 | PIN, IDLER | 1 |
| 8 | 111078.0001 | SPREADER BRACKET | 1 |
| 9 | 080019.0001 | BOLT, TRK, 1/4-20 X 9/16 | 2 |
| 10 | 086480.1620 | NUT, HEX, W/LK WSHR, 1/4-20 | 2 |
| 11 | 080401.0616 | PIN, COTTER | 2 |
| 12 | 080302.3240 | WASHER, PLAIN, STEEL | 2 |
| 13 | 111178.0001 | IDLER, PULLEY, W/BUSHING | 1 |

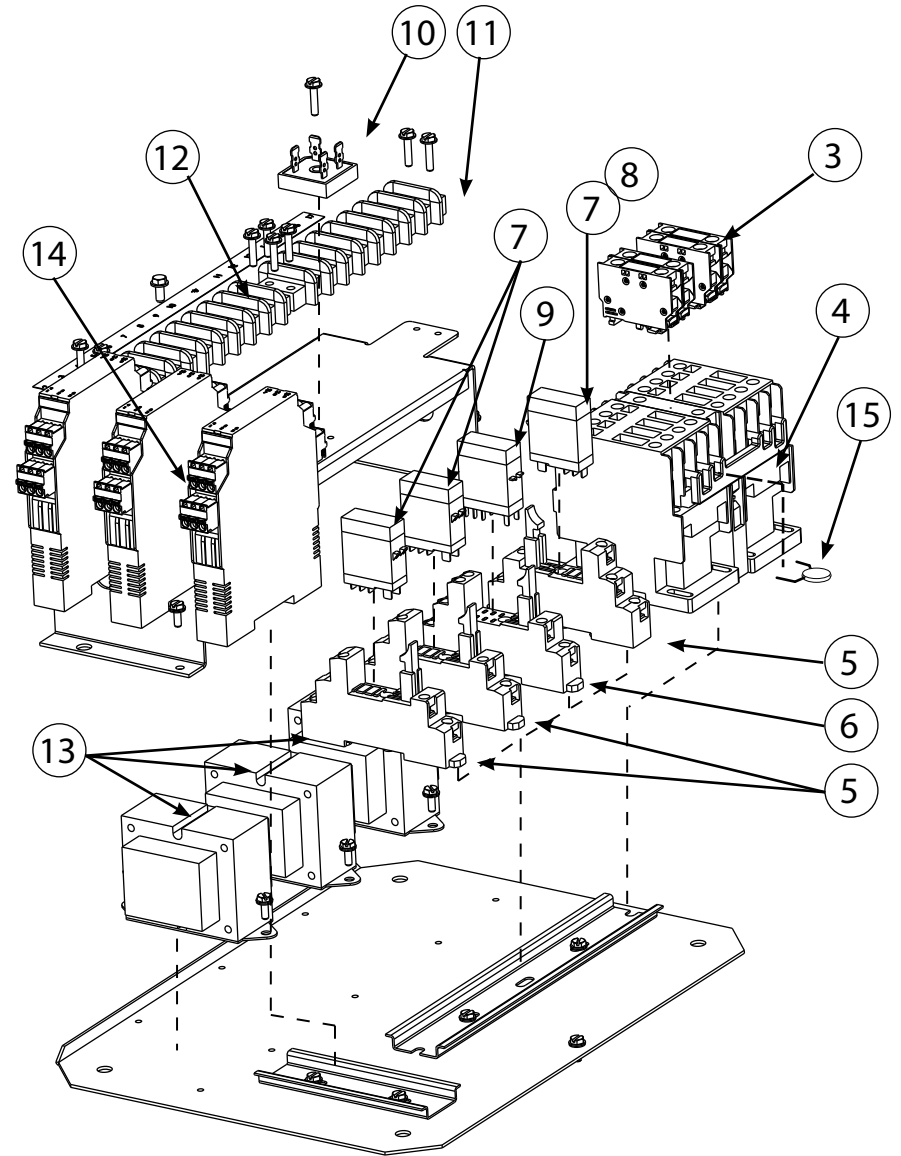
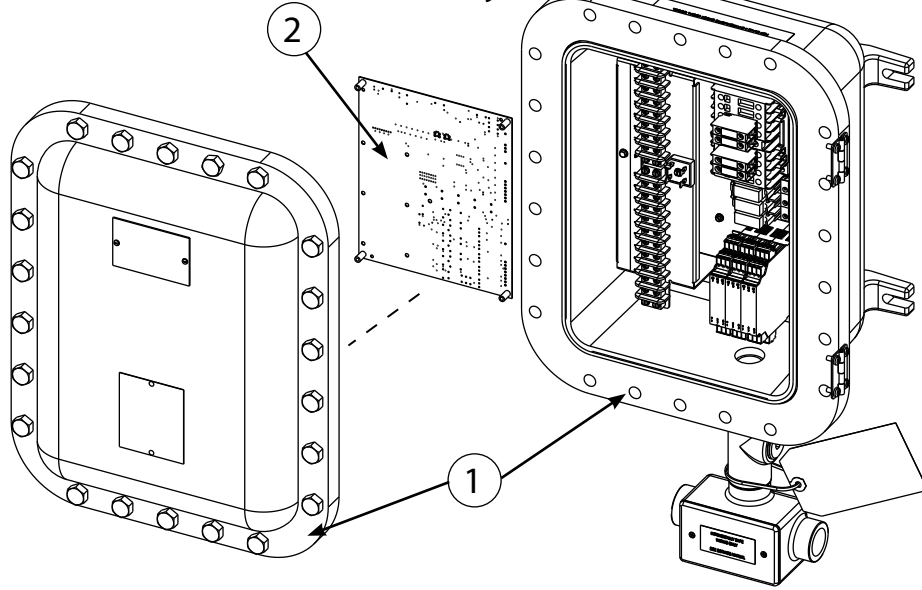
Carriage/Door Arms Parts Breakdown



| Item | Part Number | Description | Qty |
|---------------------------|-------------|--------------------------------|-----|
| RAIL ASSY, TROLLEY | | | |
| 1 | 110616.0001 | CARRIAGE, TROLLEY | 1 |
| 2 | 080884.0003 | CONNECTING LINK, #41 CHAIN | 2 |
| 3 | 110784.0001 | ROD, THREADED, 3/8-16 | 1 |
| 4 | 075064.0000 | SPRING, CRG, .796 OD X 1-1/4 | 1 |
| 5 | 111342.0495 | CHAIN, RLR, #41 X 495P | 1 |
| | 111342.0591 | CHAIN, RLR, #41 X 591P | |
| | 111342.0687 | CHAIN, RLR, #41 X 687P | |
| | 111342.0783 | CHAIN, RLR, #41 X 783P | |
| | 111342.0879 | CHAIN, RLR, #41 X 879P | |
| | 111342.0975 | CHAIN, RLR, #41 X 975P | |
| | 111342.1071 | CHAIN, RLR, #41 X 1071P | |
| | 111342.1263 | CHAIN, RLR, #41 X 1263P | |
| 6 | 080302.2626 | WASHER, FLAT, PLD, 3/8 X 13/16 | 1 |
| 7 | 086480.2416 | NUT, HEX, W/LK WSHR, 3/8-16 | 2 |
| 8 | OPAKDBT.S | DRAWBAR KIT | 1 |
| 9 | 108200.0001 | ARM, 24" | 1 |
| 10 | 111224.0001 | BOX ASSEMBLY, SPRING CUSHION | 1 |

Section 9: Appendix A

NEMA 7/9 Enclosure Assembly



| Item Number | Part Number | Description | QTY. 1 Phase | QTY. 3 Phase |
|-------------|-------------|---------------------------|-----------------|-----------------|
| 1 | 112175.0001 | ENCLOSURE ASSY, NEMA 7/9 | 1 | 1 |
| 2 | 38563R | PCB, ASSY. NEMA 7/9 | 1 | 1 |
| 3 | 112502.0001 | CONTACT, FRONT MOUNT | 4 | 4 |
| 4 | 112255.0001 | CONTACTOR, REVERSING, 24V | 1 | 1 |
| 5 | 112505.0002 | SOCKET, DPST | 3 | 3 |
| 6 | 112505.0001 | SOCKET, DPDT | 1 | 1 |
| 7 | 112506.0001 | RELAY, G2R-1-S-AC24 | 2 | 3 |
| 8 | 112506.0003 | RELAY, G2R-1-S-AC120 | 1 | - |
| 9 | 112506.0002 | RELAY, G2R-2-S-AC24 | 1 | 1 |
| 10 | 112500.0001 | RECTIFIER, BRIDGE | 1 | 1 |
| 11 | 107910.0008 | TERMINAL STRIP, 8 LUG | 1 | 1 |
| 12 | 107910.0010 | TERMINAL STRIP, 10 LUG | 1 | 1 |
| 13 | 112568.0001 | TRANSFORMER, 1 PHASE | 3 | - |
| | 112568.0002 | TRANSFORMER, 3 PHASE | - | 3 |
| 14 | 112504.0001 | ISR | 3 | 3 |
| 15 | 39421A | MOV | 1 | 1 |

Section 9: Mounting Kits

SECTIONAL SIDE/CENTER – Match RHX Hoist with Sectional Mounting Kit Below

MOUNTING KITS / BRACKETS SECTIONAL DOORS

| TOP LEVEL KIT P/N | HP | DESCRIPTION |
|-------------------|--------|------------------------------------|
| OPMKDC26HX.S | 1/2, 1 | Mounting Kit, DC, 26 RPM, RHX |
| OPMKDC14HX.S | 1/2, 1 | Mounting Kit, DC, 14 RPM, RHX |
| OPMKDC14HX3HPS | 3 | Mounting Kit, DC, 14 RPM, RHX, 3HP |
| OPAKSMTHX.S | 1/2, 1 | SIDE MOUNT TROLLEY, RHX |
| OPMKCMHXX.S | 1/2, 1 | CENTERMOUNT (HORIZONTAL) |
| OPMKCMVHX.S | 1/2, 1 | CENTERMOUNT (VERTICAL) |
| OPMKCMHXX3HPS | 3 | CENTERMOUNT (HORIZONTAL) |
| OPMKCMVHX3HPS | 3 | CENTERMOUNT (VERTICAL) |
| OPMKWMHX.S | 1/2, 1 | Mounting Kit, Wall Mount, RHX |
| OPMKWMHX3HPS | 3 | Mounting Kit, Wall Mount, RHX |

ROLLING STEEL - Match RHX Hoist with Rolling Steel Mounting Kit Below

MOUNTING KITS / BRACKETS ROLLING STEEL DOORS

| TOP LEVEL KIT P/N | HP | DESCRIPTION |
|-------------------|--------|--------------------------------|
| OPMKWMHX.S | 1/2, 1 | Mounting Kit, Wall Mount, RHX |
| OPMKRSHX.S | 1/2, 1 | Mounting Kit, RS, RHX, FOH/TOH |
| OPMKRSHX3HPS | 3 | Mounting Kit, RS, RHX, FOH/TOH |
| 111767.0001 | 1/2, 1 | FOH/TOH, 3" SIDEROOM BRACKET |
| OPMKRSBMHX.S | 1/2, 1 | BENCH MOUNT |
| OPMKRSBMHX3HPS | 3 | BENCH MOUNT |

Rolling Steel Sprocket by Door Shaft Dia.

| Shaft Dia. | # Teeth | Sprocket P/N | KIT P/N |
|------------|---------|--------------|---------------|
| 1 | 36 | 086446.3616 | 111381.0001 S |
| 1.25 | 36 | 086446.3620 | 111381.0002 S |
| 1.375 | 48 | 086446.4822 | 111381.0003 S |
| 1.75 | 60 | 086446.6028 | 111381.0004 S |

The Genuine. The Original.



RHX®

Commercial Operator Limited Warranty

Overhead Door Corporation ("Seller") warrants to the original purchaser of the model RHX® Trolley or RHX® Hoist commercial door operator ("Product"), subject to all of the terms and conditions hereof, that the Product and all components thereof will be free from defects in materials and workmanship under normal use for the following period(s), measured from the date of installation:

- Two (2) years

Seller's obligation under this warranty is specifically limited to repairing or replacing, at its option, any part which is determined by Seller to be defective during the applicable warranty period. Any labor charges are excluded and will be the responsibility of the purchaser.

This warranty is made to the original purchaser of the Product only, and is not transferable or assignable. This warranty does not apply to any unauthorized alteration or repair of the Product, or to any Product or component which has been damaged or deteriorated due to misuse, neglect, accident, operation outside published ratings, failure to provide necessary maintenance, normal wear and tear, or acts of God or any other cause beyond the reasonable control of Seller.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SELLER BE RESPONSIBLE FOR, OR LIABLE TO ANYONE FOR, SPECIAL, INDIRECT, COLLATERAL, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES, even if Seller has been advised of the possibility of such damages. Such excluded damages include, but are not limited to, loss of goodwill, loss of profits, loss of use, cost of any substitute product, interruption of business, or other similar indirect financial loss.

Claims under this warranty must be made promptly after discovery, within the applicable warranty period, and in writing to the Seller or to the authorized distributor or installer whose name and address appear below. The purchaser must allow Seller a reasonable opportunity to inspect any Product claimed to be defective prior to removal or any alteration of its condition. Proof of the purchase and/or installation date, and identification as the original purchaser, may be required.

ORIGINAL PURCHASER: _____

INSTALLATION ADDRESS: _____

SELLER: _____

SELLER'S ADDRESS: _____

FACTORY ORDER #: _____

DATE OF INSTALLATION: _____

SIGNATURE OF SELLER: _____