

Models 105, 110, 106, 116, 310, 311, 314 and 316

EXTENSION

RESIDENTIAL
STANDARD LIFT

INSTALLATION INSTRUCTIONS AND OWNER'S
MANUAL

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PLEASE DO NOT RETURN THIS PRODUCT TO THE STORE

If you need assistance, please call 1-866-569-3799 (press Option 1) and follow the prompts to contact a customer service representative. They will be happy to handle any questions that you may have.

IMPORTANT NOTICES!

To avoid possible injury, read and fully understand the enclosed instructions carefully before installing and operating the garage door. Pay close attention to all warnings and notes. After installation is complete, fasten this manual near garage door for easy reference.

This Installation document is available at no charge from:

- Your local Wayne Dalton Sales Center, or
- Online at www.Wayne-Dalton.com, or
- By mailing to: Wayne Dalton, a division of Overhead Door Corporation, P.O. Box 67, Mt. Hope, OH., 44660

Important Safety Instructions

DEFINITION OF KEY WORDS USED IN THIS MANUAL:

WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN SEVERE OR FATAL INJURY.

CAUTION

PROPERTY DAMAGE OR INJURY CAN RESULT FROM FAILURE TO FOLLOW INSTRUCTIONS.

IMPORTANT: REQUIRED STEP FOR SAFE AND PROPER DOOR OPERATION.

NOTE: Information assuring proper installation of the door.

READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING INSTALLATION. IF IN QUESTION ABOUT ANY OF THE PROCEDURES, DO NOT PERFORM THE WORK. INSTEAD, HAVE A TRAINED DOOR SYSTEMS TECHNICIAN DO THE INSTALLATION OR REPAIRS.

1. READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS.
2. Wear protective gloves during installation to avoid possible cuts from sharp metal edges.
3. It is always recommended to wear eye protection when using tools, otherwise eye injury could result.
4. Avoid installing your new door on windy days. Door could fall during the installation causing severe or fatal injury.
5. Doors 12'-0" wide and over should be installed by two persons, to avoid possible injury.
6. Operate door only when it is properly adjusted and free from obstructions.
7. If a door becomes hard to operate, inoperative or is damaged, immediately have necessary adjustments and/ or repairs made by a trained door system technician using proper tools and instructions.
8. DO NOT stand or walk under a moving door, or permit anybody to stand or walk under an electrically operated door.
9. DO NOT place fingers or hands into open section joints when closing a door. Use lift handles/ gripping points when operating door manually.
10. DO NOT permit children to operate garage door or door controls. Severe or fatal injury could result should the child become entrapped between the door and the floor.
11. Due to constant extreme spring tension, do not attempt any adjustment, repair or alteration to any part of the door, especially to springs, spring brackets, bottom corner brackets, fasteners, counterbalance lift cables or supports. To avoid possible severe or fatal injury, have any such work performed by a trained door systems technician using proper tools and instructions.
12. On electrically operated doors, pull down ropes must be removed and locks must be removed or made inoperative in the open (unlocked) position.
13. Top section of door may need to be reinforced when attaching an electric opener. Check door and/ or opener manufacturer's instructions.
14. Visually inspect door and hardware monthly for worn and or broken parts. Check to ensure door operates freely.
15. Test electric opener's safety features monthly, following opener manufacturer's instructions.
16. NEVER hang tools, bicycles, hoses, clothing or anything else from horizontal tracks. Track systems are not intended or designed to support extra weight.
17. This door may not meet the building code wind load requirements in your area. For your safety, you will need to check with your local building official for wind load code requirements and building permit information.
18. For windloaded doors, the wind performance is achieved via the entire door system and component substitution is not authorized without express permission by Wayne Dalton.

NOTE: It is recommended that 5/16" lag screws are pilot drilled using a 3/16" drill bit, prior to fastening.

CAUTION

IF ANY PART OF THE DOOR IS TO BE INSTALLED ONTO PRESERVATIVE-TREATED WOOD, PTFE-COATED OR STAINLESS STEEL FASTENERS MUST BE OBTAINED AND USED. REPLACEMENT FASTENERS MUST BE OF AT LEAST EQUAL STRENGTH AND SIZE AS ORIGINAL FASTENERS. IF THE ORIGINAL FASTENER WAS RED-HEAD, THE REPLACEMENT FASTENER MUST BE RED-HEAD ALSO. CONTACT WAYNE DALTON FOR FASTENER STRENGTH VALUES IF NEEDED.

WARNING

IMPACT GUNS ARE NOT RECOMMENDED. WHEN INSTALLING 5/16" LAG SCREWS USING AN ELECTRIC DRILL/ DRIVER, THE DRILL/ DRIVERS CLUTCH MUST BE SET TO DELIVER NO MORE THAN 200 IN-LBS OF TORQUE. FASTENER FAILURE COULD OCCUR AT HIGHER SETTINGS.

IMPORTANT: RIGHT AND LEFT HAND IS DETERMINED INSIDE THE BUILDING LOOKING OUT.

Potential Hazard	Effect	Prevention
 <p>Moving door</p>	<p>WARNING</p> <p>Could result in Death or Serious Injury</p>	<p>Keep people clear of opening while Door is moving.</p> <p>Do NOT allow children to play with the Door Opener.</p> <p>Do NOT operate a Door that jams or one that has a broken spring.</p>
 <p>High tension spring</p>	<p>WARNING</p> <p>Could result in Death or Serious Injury</p>	<p>Do NOT try to remove, install, repair or adjust springs or anything to which door spring parts are fastened, such as, wood blocks, steel brackets, cables or other like items.</p> <p>Installations, repairs and adjustments must be done by a trained door system technician using proper tools and instructions.</p>

Removing an Existing Door and Preparing the Opening

IMPORTANT: COUNTERBALANCE SPRING TENSION MUST ALWAYS BE RELEASED BEFORE ANY ATTEMPT IS MADE TO START REMOVING AN EXISTING DOOR.

WARNING

A POWERFUL SPRING RELEASING ITS ENERGY SUDDENLY CAN CAUSE SEVERE OR FATAL INJURY. TO AVOID INJURY, HAVE A TRAINED DOOR SYSTEMS TECHNICIAN, USING PROPER TOOLS AND INSTRUCTIONS, RELEASE THE SPRING TENSION.

To avoid possible injury and to insure proper installation, it's highly recommended that you read and fully understand the complete instructions on removing an Existing Door & Preparing the Opening. These are available for download at www.Wayne-Dalton.com or at your local Wayne Dalton Sales Center.

IMPORTANT: IF YOU JUST REMOVED YOUR EXISTING DOOR OR YOU ARE INSTALLING A NEW DOOR, COMPLETE ALL STEPS IN PREPARING THE OPENING.

To ensure secure mounting of track brackets, side and spring anchor brackets, or steel angles to new or retro-fit construction, it is recommended to follow the procedures outlined in DASMA technical data sheets #156, #161 and #164 at www.dasma.com.

The inside perimeter of your garage door opening should be framed with wood jamb and header material. The jambs and header must be securely fastened to sound framing members. It is recommended that 2" x 6" lumber be used. The jambs must be plumb and the header level. The jambs should extend a minimum of 12" (305 mm) above the top of the opening for Torsion counterbalance systems. For low headroom applications, the jambs should extend to the ceiling height. Minimum side clearance required, from the opening to the wall, is 3-1/2" (89 mm), for 2" track. Minimum side clearance required, from the opening to the wall, is 4-1/2" (114 mm), for 3" track.

IMPORTANT: CLOSELY INSPECT JAMBS, HEADER AND MOUNTING SURFACE. ANY WOOD FOUND NOT TO BE SOUND, MUST BE REPLACED.

For Torsion counterbalance systems, a suitable mounting surface (2" x 6") must be firmly attached to the wall, above the header at the center of the opening.

NOTE: Drill a 3/16" pilot hole in the mounting surface to avoid splitting the lumber. Do not attach the mounting surface with nails.

WEATHERSTRIPS (MAY NOT BE INCLUDED):

Depending on the size of your door, you may have to cut or trim the weatherstrips (if necessary) to properly fit into the header and jambs.

NOTE: If nailing product at 40°F or below, pre-drilling is required.

NOTE: Do not permanently attach weatherstrips to the header and jambs at this time.

For the header, align the weatherstrip 1/8" to 1/4" inside the header edge, and temporarily secure it to the header with equally spaced nails. Starting at either side of the jamb, fit the weatherstrip up tight against the temporarily attached weatherstrip in the header and 1/8" to 1/4" inside the jamb edge. Temporarily secure the weatherstrip with equally spaced nails. Repeat for other side. This will keep the bottom section from falling out of the opening during installation. Equally space nails approximately 12" to 18" apart.

HEADROOM REQUIREMENT: Headroom is defined as the space needed above the top of the door for tracks, springs, etc. to allow the door to open properly. If the door is to be motor operated, 2-1/2" (64 mm) of additional headroom is required.

NOTE: 6" low headroom conversion kit is available for 12" radius only. Contact your local Wayne Dalton dealer.

BACKROOM REQUIREMENT: Backroom is defined as the distance needed from the opening back into the garage to allow the door to open fully.

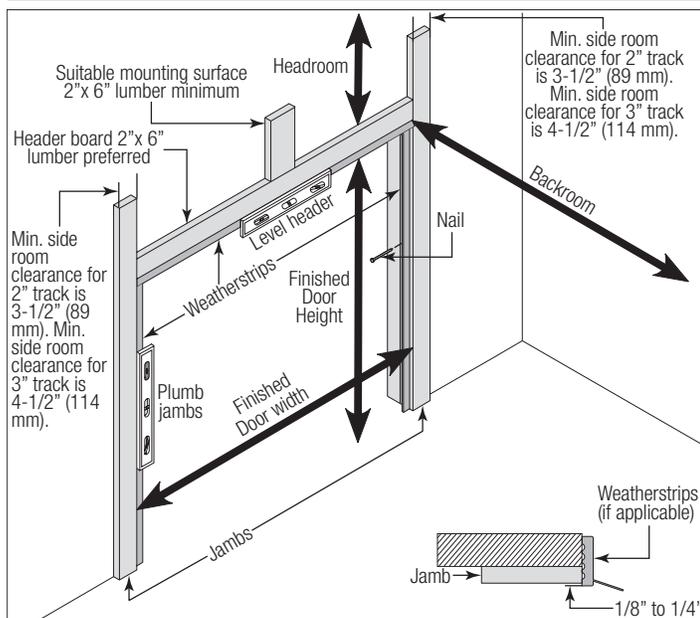
***NOTE:** For door heights from 10'1" to 14'0", refer to your operator manufacture installation instructions for appropriate depth into room.

BACKROOM REQUIREMENTS

Door Height	Track	Manual Lift	Motor Operated
6'0" to 7'0"	12" Or 15" Radius	98" (2489 mm)	125" (3175 mm)
7'1" to 8'0"	12" Or 15" Radius	110" (2794 mm)	137" (3480 mm)

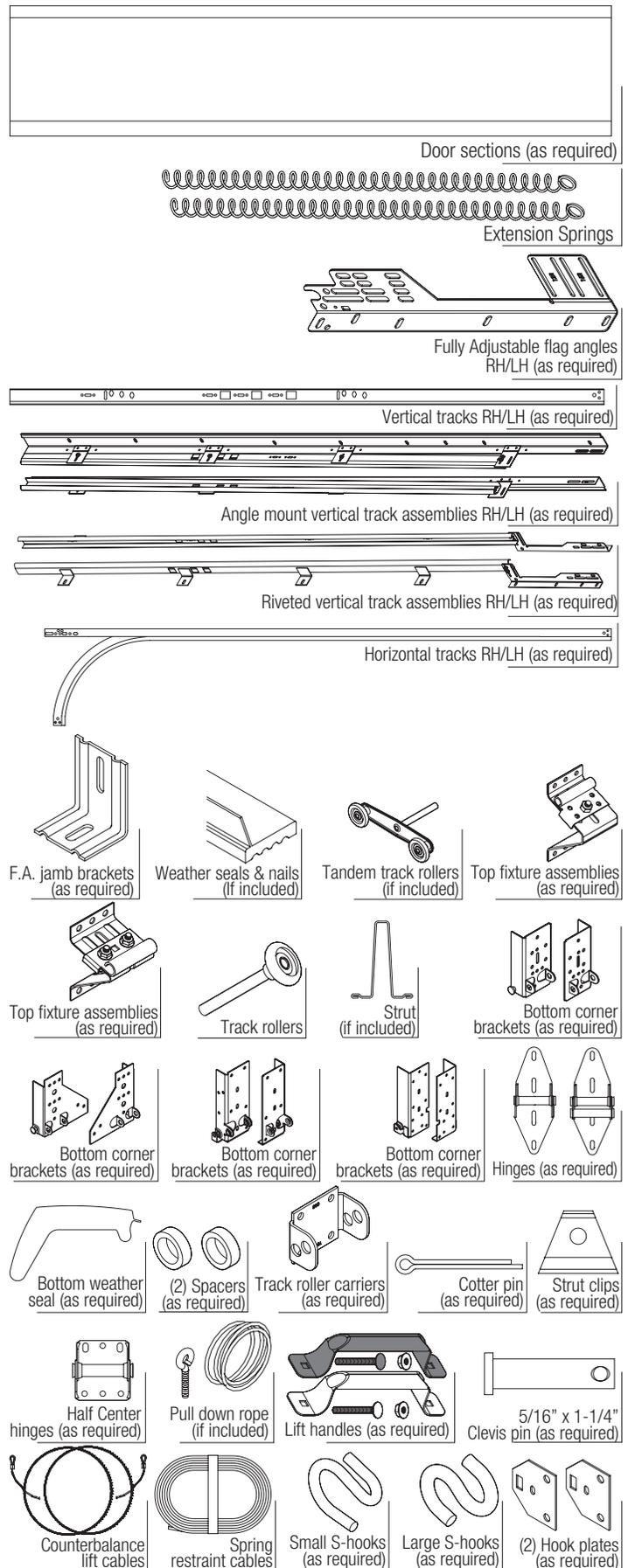
HEADROOM REQUIREMENTS

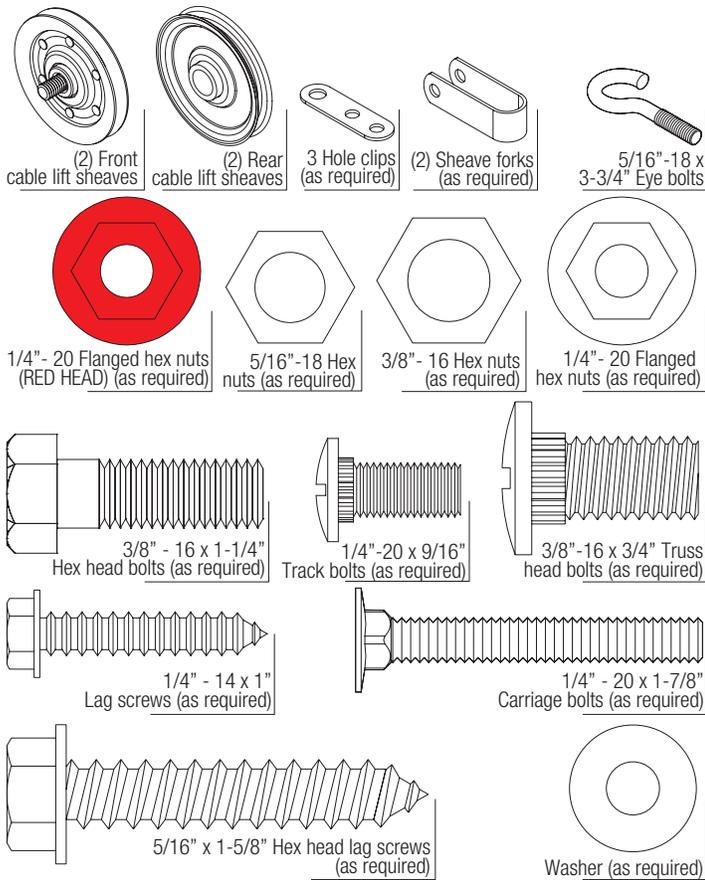
Track Type	Space Needed
12" Radius	12-1/2" (318 mm)
15" Radius	14-1/2" (368 mm)



Package Contents

NOTE: Depending on the door model, some parts listed will not be supplied if not required. Rear Back Hangs may not be included with your door.





Door Section Identification

When installing your door, you must use sections of the appropriate height in the right stacking location. Determine, what sections you need to use in what order depends on the design of your door.

Sections are stamped for identification, #1, #2, #3, #4 and #5. The stamp, located on each side of the sections identifies the stacking sequence. The sequence is always determined by #1 being the bottom section to #4 or #5 being the highest top section. If the stamp on the section is illegible, refer to the section side view illustration. The section side view illustration shows the section profile of all sections, and can also be used to identify each section.

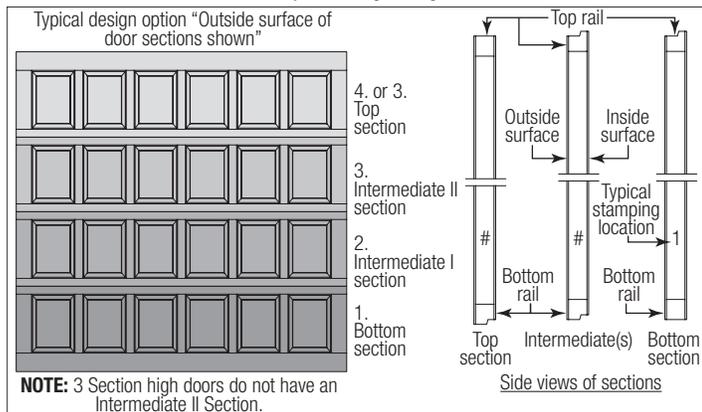
The **BOTTOM SECTION** can be identified by #1.

The **INTERMEDIATE I SECTION** can be identified by #2.

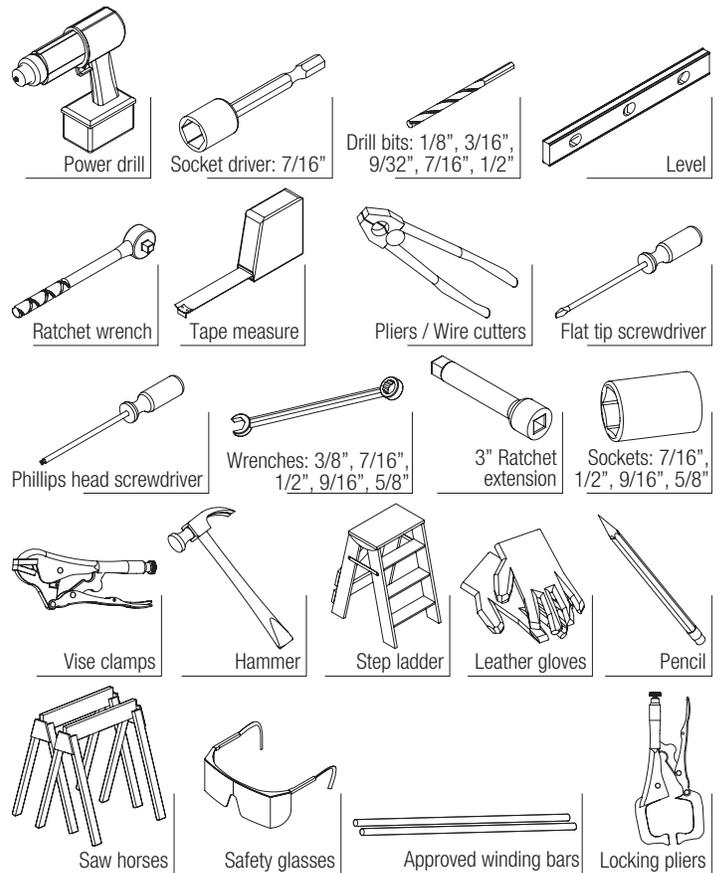
The **INTERMEDIATE II SECTION** can be identified by #3, for a 4 section high door only.

The **INTERMEDIATE III SECTION** can be identified by #4, for a 5 section high door only.

The **TOP SECTION** can be identified by a #, being the highest section.

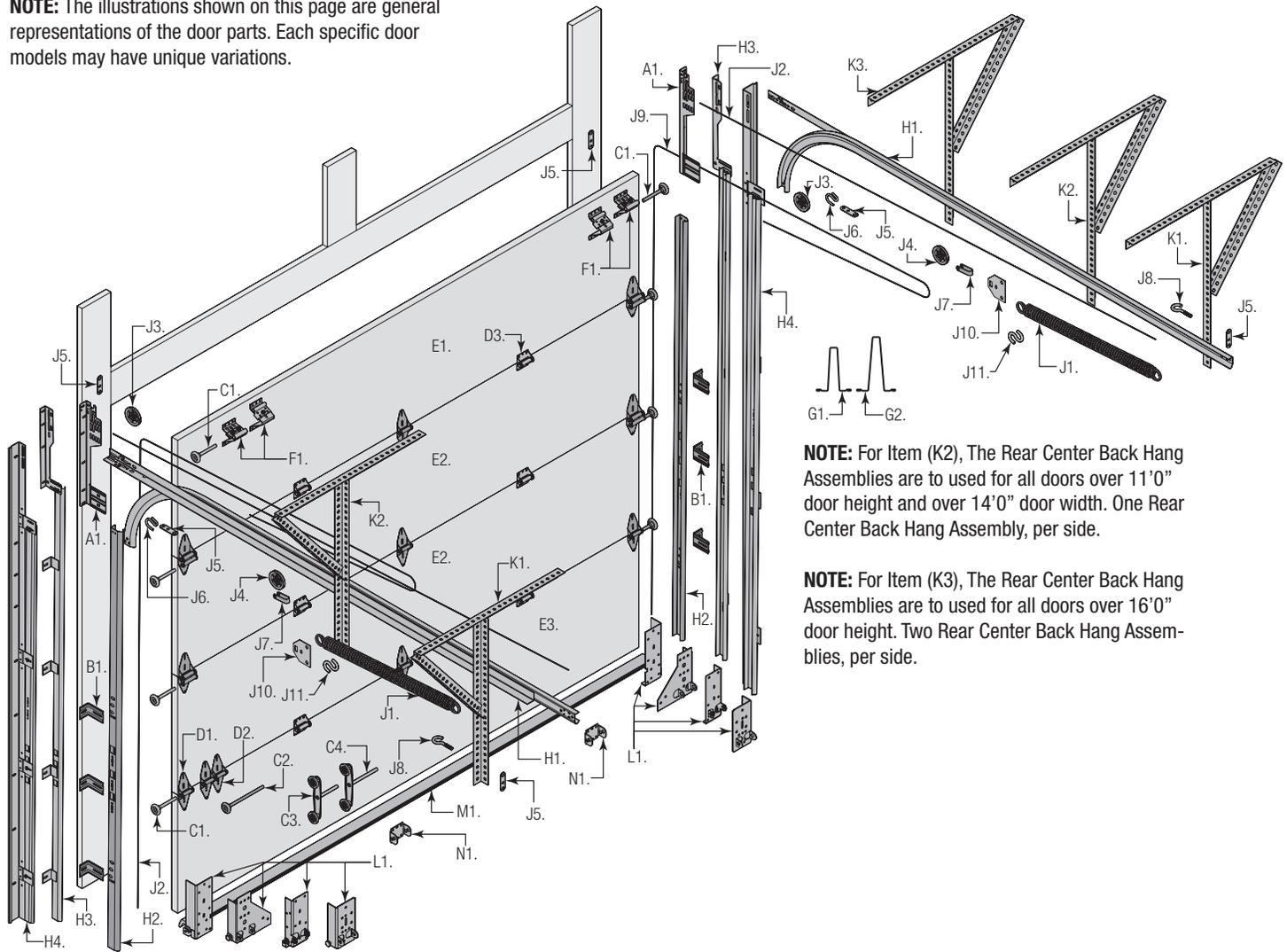


Tools Required



BREAKDOWN OF PARTS

NOTE: The illustrations shown on this page are general representations of the door parts. Each specific door models may have unique variations.



NOTE: For Item (K2), The Rear Center Back Hang Assemblies are to be used for all doors over 11'0" door height and over 14'0" door width. One Rear Center Back Hang Assembly, per side.

NOTE: For Item (K3), The Rear Center Back Hang Assemblies are to be used for all doors over 16'0" door height. Two Rear Center Back Hang Assemblies, per side.

A. FLAG ANGLES (AS REQUIRED):

A1. Fully Adjustable (F.A.) Flag Angles

B. JAMB BRACKETS (AS REQUIRED):

B1. Fully Adjustable (F.A.) Jamb Brackets

C. TRACK ROLLERS (AS REQUIRED):

- C1. Short Stem Track Rollers
- C2. Long Stem Track Rollers
- C3. Short Stem Tandem Track Rollers
- C4. Long Stem Tandem Track Rollers

D. GRADUATED END HINGES:

- D1. Single Graduated End Hinges (S.E.H.), Industry Standard
- D2. Double Graduated End Hinges (D.E.H.), Industry Standard
- D3. Half Center Hinges (As required)

E. STACKED SECTIONS:

- E1. Top Section
- E2. Intermediate(s) Section / E3. Bottom Section

F. TOP FIXTURES (AS REQUIRED):

F1. Top Fixture Assemblies

G. STRUT(S) (AS REQUIRED):

G1. Strut (2" U-shaped) / G2. Strut (3" U-shaped)

H. TRACKS (AS REQUIRED):

- H1. Left Hand and Right Hand Horizontal Track Assemblies
- H2. Left Hand and Right Hand Vertical Tracks
- H3. Left Hand and Right Hand Riveted Vertical Track Assemblies

H4. Left Hand and Right Hand Angle Mount Vertical Track Assemblies

J. EXTENSION SPRING ASSEMBLY (AS REQUIRED):

- J1. Extension Springs
- J2. Spring Restraint Cables
- J3. Front Cable Lift Sheaves
- J4. Rear Cable Lift Sheaves
- J5. 3 Hole Clips (As Required)
- J6. Small S-Hooks (As Required)
- J7. Sheave Forks (As Required)
- J8. 5/16" - 18 x 3-3/4" Eye Bolts (As Required)
- J9. Counterbalance Lift Cables
- J10. Hook Plates (As Required)
- J11. Large S-Hooks (As Required)

K. REAR BACK HANGS:

- K1. Left Hand And Right Hand Rear Back Hang Assemblies
- K2. Left and Right Hand Rear Center Back Hang Assemblies (As Required)
- K3. Left and Right Hand Rear Center Back Hang Assemblies (As Required)

L. BOTTOM CORNER BRACKETS (AS REQUIRED):

L1. Left Hand and Right Hand Bottom Corner Brackets

M. BOTTOM WEATHER SEAL (AS REQUIRED):

M1. Bottom Weather Seal (Door Width), (Nails Not Supplied)

N. TRACK ROLLER CARRIERS (AS REQUIRED):

N1. Track Roller Carriers

DOOR INSTALLATION INSTRUCTIONS

Before installing your door, be certain that you have read and followed all of the instructions covered in the pre-installation section of this manual. Failure to do so may result in an improperly installed door.

NOTE: Reference TDS 160 for general garage door terminology at www.dasma.com.

IMPORTANT: WOOD DOORS MUST BE COMPLETELY FINISHED (3 TOTAL COATS, INCLUDING PRIMER COAT) PRIOR TO INSTALLATION, TO ENSURE THAT THE INTERIOR AND EXTERIOR SURFACES, AS WELL AS ALL EDGES OF THE DOORS ARE PROPERLY PROTECTED AGAINST MOISTURE OR OTHER CONTAMINANTS. WOOD DOORS, IN A NON-FINISHED CONDITION, MUST BE TRANSPORTED AND STORED SO THE WOOD SURFACES ARE NOT EXPOSED TO MOISTURE OR OTHER CONTAMINANTS. IMPROPER TRANSPORTATION, STORAGE OR DELAYS IN FINISHING, THAT ALLOWS EXPOSURE OF THE WOOD DOOR SURFACES TO MOISTURE OR OTHER CONTAMINANTS WILL RESULT IN THE WARRANTY BEING VOIDED.

1 Attaching Flag Angles and Jamb Brackets To Vertical Tracks

NOTE: If you have Riveted Track or Angle Mount Track, skip this step.

Hand tighten the left hand flag angle to the left hand vertical track using (2) 1/4" - 20 x 9/16" track bolts and (2) 1/4" - 20 flange hex nuts.

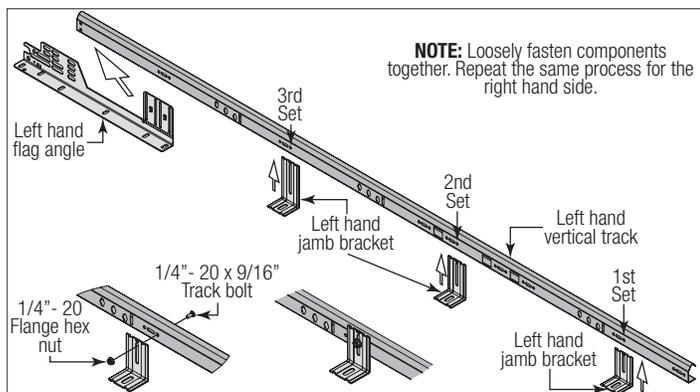
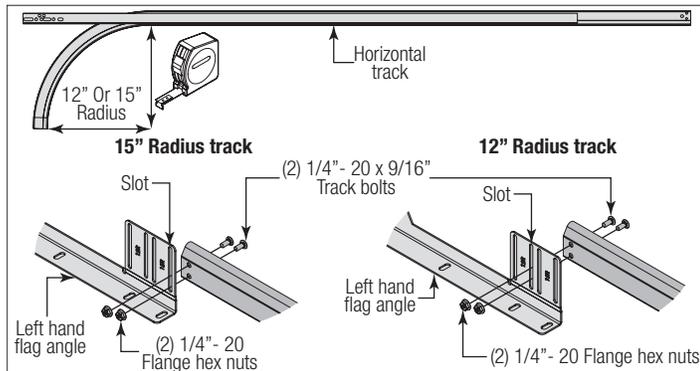
NOTE: The bottom jamb bracket is always the shortest bracket, while the center jamb bracket is the next tallest. If three jamb brackets per side are included with your door, you will have received a top jamb bracket, which is the tallest.

To attach the bottom jamb bracket, locate lower hole of the hole/ slot pattern of the 1st hole set on the vertical track. Align the slot in the jamb bracket with the lower hole of the hole/ slot pattern. Hand tighten jamb bracket using (1) 1/4" - 20 x 9/16" track bolt and (1) 1/4" - 20 flange hex nut.

Place the center jamb bracket over the lower hole of the hole/ slot pattern that is centered between the bottom jamb bracket and flag angle of the 2nd hole set. Hand tighten jamb bracket using (1) 1/4" - 20 x 9/16" track bolt and (1) 1/4" - 20 flange hex nut.

If a top jamb bracket was included, hand tighten it to vertical track using the lower hole of the hole/ slot pattern in the 3rd hole set and (1) 1/4" - 20 x 9/16" track bolt and (1) 1/4" - 20 flange hex nut.

Repeat the same process for right hand side.



2 Attaching Bottom Weather Seal

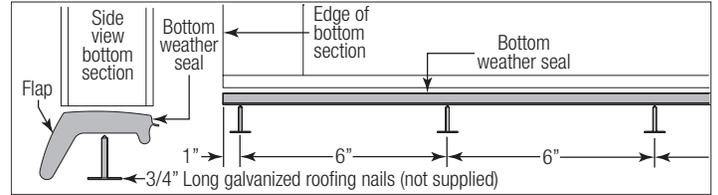
NOTE: Reference Package Contents or Breakdown Of Parts, to determine if a bottom weather seal was supplied. If a bottom weather seal was supplied, complete this step.

NOTE: Refer to door section identification, located in the pre-installation section of this

manual to determine what size section you need to use as your bottom (first) section. Measure your section to make sure it is the correct height as indicated on the chart.

Place the bottom section face down on a couple of sawhorses or flat clean/ smooth surface. Align the bottom weather seal with the flap pointing towards the outside surface of the bottom section. Starting at one end of the door, measure inward 1" and attach the bottom weather seal to the bottom of the bottom section with 3/4" long galvanized roofing nails (not supplied). Now stretch the bottom weather seal slightly and nail the rest of the bottom weather seal to the bottom of the bottom section every 6". Once the bottom weather seal is fastened cut off any extra material so that the bottom weather seal is even with both ends of the bottom section.

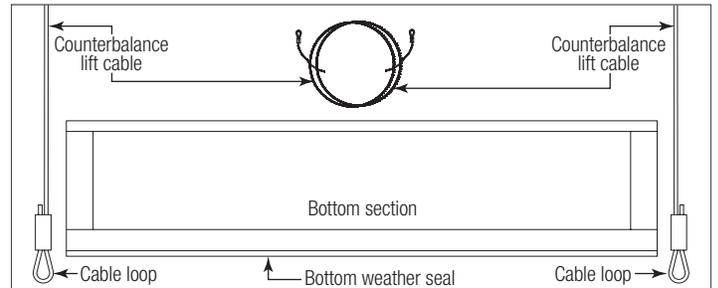
NOTE: Verify bottom weather seal is aligned with bottom section. If there is more than 1/2" excess weather seal on either side, trim weather seal even with bottom section.



3 Attaching Bottom Corner Brackets

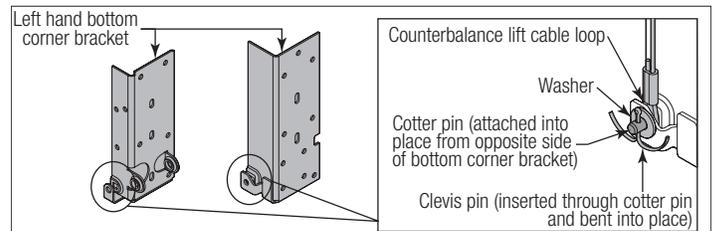
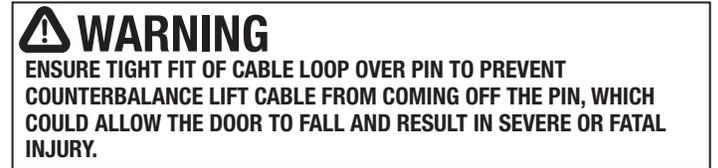
NOTE: Refer to door section identification, located in the pre-installation section of this manual or refer to Breakdown of Parts.

With the bottom section facing down from the previous step, uncoil the counterbalance lift cables.



NOTE: Refer to Package Contents / Breakdown of Parts, to determine which bottom corner brackets you have.

Depending on which bottom corner brackets you have, slip the loop at the ends of the counterbalance lift cable over the milford pin of the bottom corner bracket or secure the cable loop to the clevis pin and bottom corner bracket using a flat washer and a cotter pin. Repeat for other bottom corner bracket.

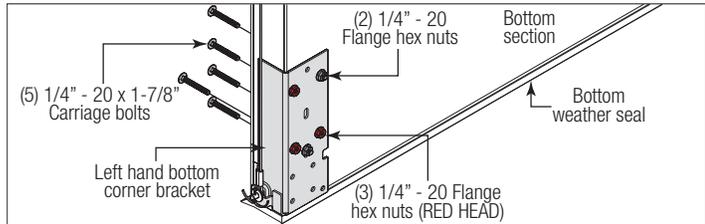
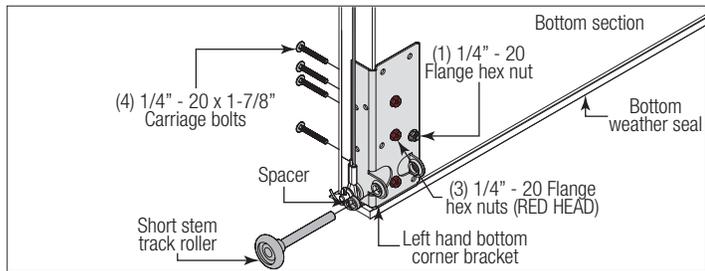
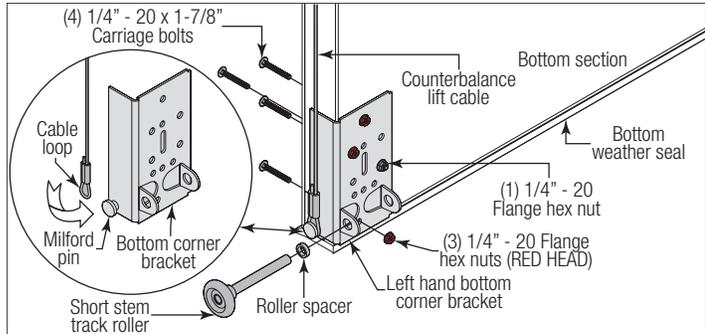
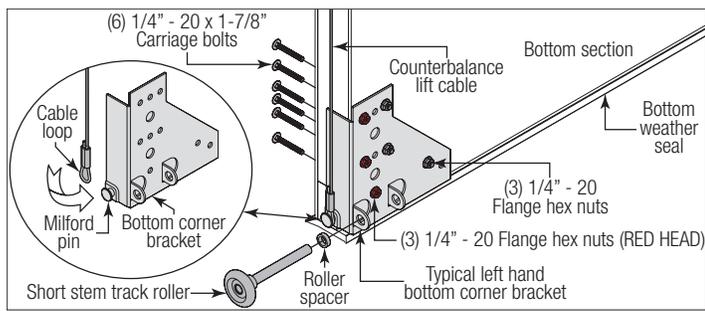


Locate the left hand bottom corner bracket. Align the bottom corner bracket horizontally with the bottom edge of the bottom section and align the bottom corner bracket vertically with the left bottom edge of the bottom section.

Mark and pre-drill 9/32" diameter holes through the bottom section. Attach the bottom corner bracket to the bottom section using 1/4" - 20 x 1-7/8" carriage bolts, (3) 1/4" - 20 RED HEAD flange hex nuts and 1/4" - 20 flange hex nut(s). Repeat the same process for the right hand side.

IMPORTANT: THE CARRIAGE BOLTS AND THE 1/4" - 20 RED HEAD FLANGE HEX NUTS MUST BE MUST BE INSTALLED ON THE BOTTOM CORNER BRACKETS, AS SHOWN.

If applicable, insert a short stem track roller and roller spacer into each of the bottom corner brackets.



4 Attaching Track Roller Carrier's

NOTE: If you don't have track roller carriers, then skip this step. Refer to Package Contents / Breakdown of Parts, to determine if a track roller carrier was supplied with your door.

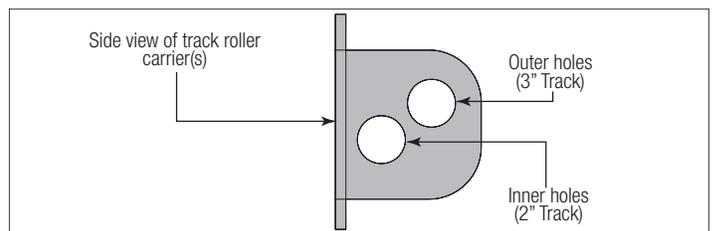
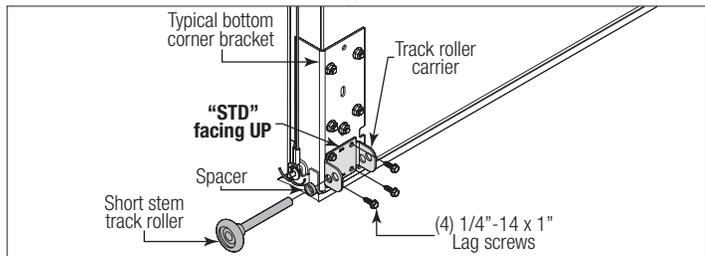
Starting on left hand side of the bottom section, position the track roller carrier with the stamp "STD" facing UP to the bottom corner bracket and aligning the four holes of the track roller carrier with the four holes in the bottom corner bracket. Secure the track roller carrier to the bottom corner bracket with (4) 1/4" - 14 x 1" lag screws.

NOTE: Prior to fastening the track roller carrier to the bottom section, pilot drill using a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Repeat the same process for other track roller carrier. Insert a short stem track roller and spacer into the inner holes of the track roller carriers.

NOTE: The track roller carrier's inner holes are used on doors with 2" track applications; the outer holes are used on doors with 3" track applications.



5 Attaching Hinges and Strut To Bottom Section

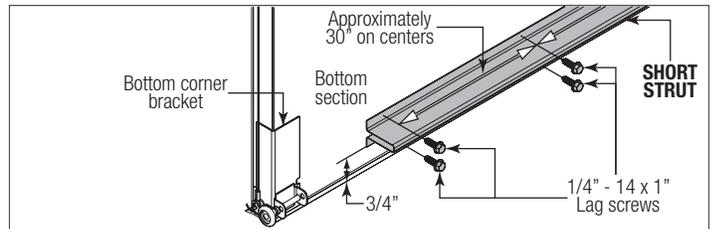
NOTE: Refer to the Bottom Section Short Strut Strutting Schedule below, to determine the appropriate strutting for your Bottom section.

Bottom Section Short Strut Strutting Schedule For Door Heights Less Than Or Equal to 8'0"				
Door Models	Door Width			Location On Bottom Section
	Up To and Including 12'2"	From 12'3" To 16'0"	From 16'1" To 18'0"	
105 / 106	N/A	(1) Short	N/A	Bottom Of Section
110 / 116		(1) Short		
310 / 311 / 314 / 316		(1) Short		

Lay a **SHORT STRUT** onto the bottom rail of the bottom section. Position the bottom of the strut 3/4" up from the bottom edge of the bottom section. Center the short strut from side to side on the section surface. Drill pilot holes, 1" deep into the bottom section using a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Attach the strut using (1) 1/4" - 14 x 1" lag screw at each pre-drilled hole.



NOTE: Refer to the Bottom Section Graduated End Hinge Schedule below, to determine the appropriate hinges for your bottom section.

Bottom Section Graduated End Hinge Schedule			
Door Height	Section Type	Track	Graduated End Hinge Number
3 Through 5 Section High Doors	Bottom	2"	#1
		3"	#3

NOTE: Refer to the Bottom Section Long Strut Strutting Schedule below, to determine the appropriate strutting for your Bottom section.

Bottom Section Long Strut Strutting Schedule				
Door Models	Door Width			Location On Bottom Section
	Up To and Including 12'2"	From 12'3" To 16'0"	From 16'1" To 18'0"	
105 / 106	N/A	(1) Long	N/A	Top Of Section
110 / 116		(1) Long	(1) Long	
310 / 311 / 314 / 316		(1) Long	(1) Long	

NOTE: Center hinge(s) use #1 graduated end hinges at each pre-drilled or vertical stile location. The pre-drilled locations are located at the top rails on the inside of the section surface.

NOTE: Some struts also may or may not have holes in them. If they don't, then prior to installing the strut and hinge to the section surface, you may have to drill a 3/16" hole for the appropriate fastener on one or both sides of the strut legs.

Using the appropriate graduated end hinges for the ends and depending on the width of your door, enough center hinge(s) for each pre-drilled hole location(s). Starting at the upper left hand corner of the bottom section. Position the lower hinge leaf of the appropriate graduated end hinge onto the upper corner of the bottom section. Align the slots of the lower hinge leaf with the pre-drilled holes in the bottom section. If applicable, lay a long strut over the lower hinge leaf and over the top rail of the bottom section. Center the long strut from side to side.

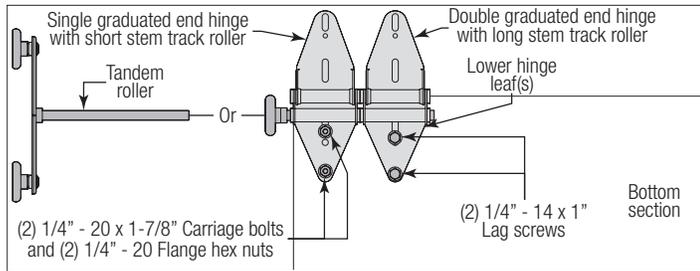
FOR GRADUATED END HINGES WITHOUT A LONG STRUT: Attach the upper slot of the graduated end hinge to the bottom section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1)

1/4" - 20 flange hex nut. Secure the lower hole of the graduated end hinge to the bottom section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other side.

IF YOU HAVE DOUBLE GRADUATED END HINGES WITHOUT A LONG STRUT: Position the second graduated end hinge next to the first (single) graduated end hinge. Using the second graduated end hinge as a template, drill pilot holes, 1" deep into the bottom section using a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Secure the graduated end hinge to the bottom section using (2) 1/4" - 14 x 1" lag screws. Repeat for other side.

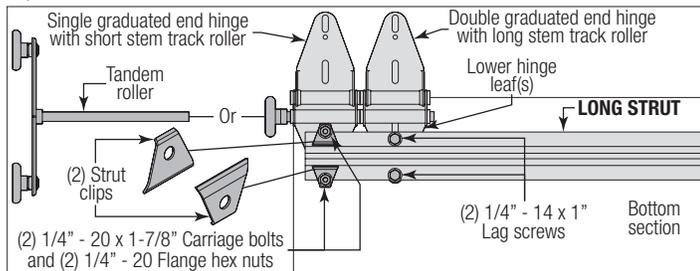


FOR GRADUATED END HINGES WITH A LONG STRUT: Attach the upper leg of the strut, (1) strut clip to the upper slot of the graduated end hinge to the bottom section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Secure the lower leg of the strut, (1) strut clip to the lower hole of the graduated end hinge to the bottom section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other side.

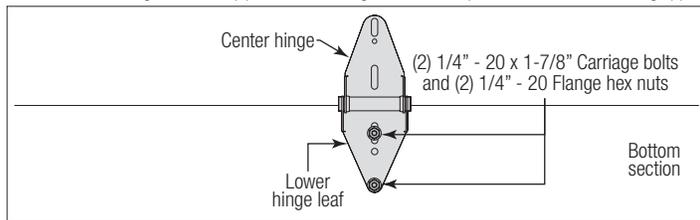
IF YOU HAVE DOUBLE GRADUATED END HINGES WITH A LONG STRUT: Position the second graduated end hinge next to the first (single) graduated end hinge. Using the second graduated end hinge as a template, drill pilot holes, 1" deep into the bottom section using a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

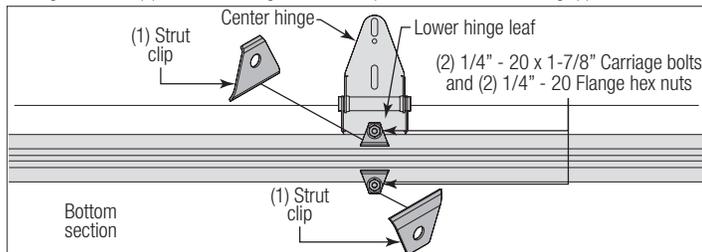
Secure the graduated end hinge to the bottom section using (2) 1/4" - 14 x 1" lag screws. Repeat for other side.



FOR CENTER HINGES WITHOUT A LONG STRUT: Attach the upper slot of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Secure the lower hole of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other center hinge(s).



FOR CENTER HINGES WITH A LONG STRUT: Attach the upper leg of the strut, (1) strut clip to the upper slot of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Secure the lower leg of the strut, (1) strut clip to the lower hole of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other center hinge(s).



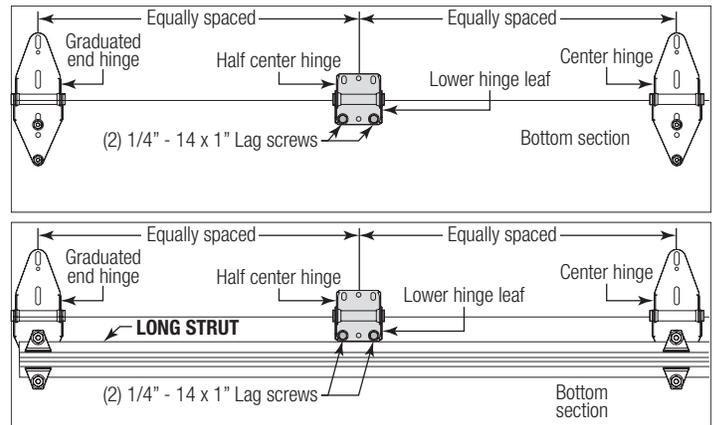
NOTE: If you don't have half center hinges, then skip this part of the step. Refer to Package Contents / Breakdown Of Parts, to determine if you have half center hinges.

Using a tape measure, position the half center hinges equally spaced in between the center

hinges and the graduated end hinges. Position the holes of the lower hinge leaf at the top rail of the bottom section. Using the half center hinge as a template, drill pilot holes, 1" deep into the bottom section with a 1/8" drill bit (if needed).

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Attach the lower hinge leaf of the center hinge to the bottom section using (2) 1/4" - 14 x 1" lag screws. Repeat for other half center hinge(s).



If you have single graduated end hinges, insert a short stem track roller / short stem tandem track roller (if included) into the hinge tube on each side.

If you have double graduated end hinges, insert a long stem track roller / short stem tandem track roller (if included) into the hinge tubes on each side.

IMPORTANT: WHEN PLACING TRACK ROLLERS / TANDEM TRACK ROLLER (IF INCLUDED) INTO GRADUATED END HINGES NUMBER 2 AND HIGHER, THE TRACK ROLLER / TANDEM TRACK ROLLER (IF INCLUDED) GOES INTO TUBE FURTHEST AWAY FROM SECTION.

6

Attaching Hinges and Strut To Intermediate Section(s)

NOTE: Refer to door section identification, located in the pre-installation section of this manual to determine what size section you need to use as your intermediate I (second), intermediate II (third) and if applicable Intermediate III (fourth). Measure your section to make sure it is the correct height as indicated on the chart.

NOTE: Refer to the Graduated End Hinge Schedule below, to determine the appropriate hinges for your Intermediate section(s).

3 Section High Graduated End Hinge Schedule			
Door Height	Track	Section Type	Graduated End Hinge Number
3 Section High Door	2"	Intermediate I	#2
	3"	Intermediate I	#4

4 Section High Graduated End Hinge Schedule			
Door Height	Track	Section Type	Graduated End Hinge Number
4 Section High Door	2"	Intermediate II	#3
		Intermediate I	#2
	3"	Intermediate II	#5
		Intermediate I	#4

5 Section High Graduated End Hinge Schedule			
Door Height	Track	Section Type	Graduated End Hinge Number
5 Section High Door	2"	Intermediate III	#4
		Intermediate II	#3
		Intermediate I	#2
	3"	Intermediate III	#6
		Intermediate II	#5
		Intermediate I	#4

NOTE: Refer to the Strutting Schedules below, to determine the appropriate strutting for your Intermediate(s) section. Measure the height of the long strut(s) to determine if you have 2" or 3".

Intermediate Section Strutting Schedule For Door Heights Less Than Or Equal to 8'0"				
Door Models	Door Width		Location On Intermediate Section	
	Up To and Including 12'2"	From 12'3" To 16'0"		From 16'1" To 18'0"
105 / 106	N/A	(1) Long Strut per Intermediate II Section	N/A	Top Of Section
110 / 116		(1) Long Strut per Intermediate II Section		
310 / 311 / 314 / 316				

NOTE: Center hinge(s) use #1 graduated end hinges at each pre-drilled or vertical stile location. The pre-drilled locations are located at the top rails on the inside of the section surface.

NOTE: Some struts also may or may not have holes in them. If they don't, then prior to installing the strut and hinge to the section surface, you may have to drill a 3/16" hole for the appropriate fastener on one or both sides of the strut legs.

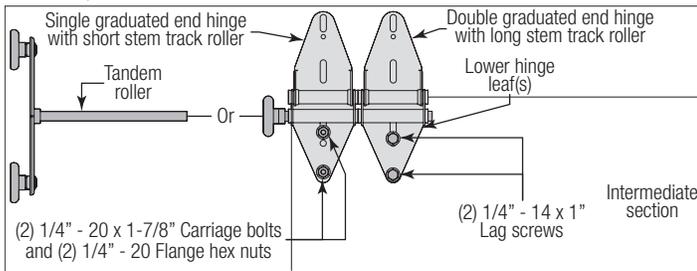
Using the appropriate graduated end hinges for the ends and depending on the width of your door, enough center hinge(s) for each pre-drilled hole location(s). Starting at the upper left hand corner of the Intermediate section. Position the lower hinge leaf of the appropriate graduated end hinge onto the upper corner of the Intermediate section. Align the slots of the lower hinge leaf with the pre-drilled holes in the Intermediate section. If applicable, lay a long strut over the lower hinge leaf and over the top rail of the bottom section. Center the long strut from side to side.

FOR GRADUATED END HINGES WITHOUT A LONG STRUT: Attach the upper slot of the graduated end hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Secure the lower hole of the graduated end hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other side.

IF YOU HAVE DOUBLE GRADUATED END HINGES WITHOUT A LONG STRUT: Position the second graduated end hinge next to the first (single) graduated end hinge. Using the second graduated end hinge as a template, drill pilot holes, 1" deep into the Intermediate section using a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Secure the graduated end hinge to the Intermediate section using (2) 1/4" - 14 x 1" lag screws. Repeat for other side.

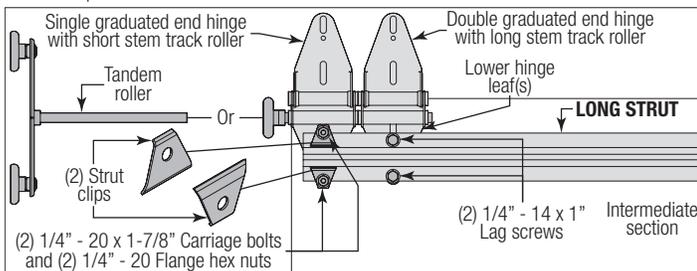


FOR GRADUATED END HINGES WITH A LONG STRUT: Attach the upper leg of the strut, (1) strut clip to the upper slot of the graduated end hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Secure the lower leg of the strut, (1) strut clip to the lower hole of the graduated end hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other side.

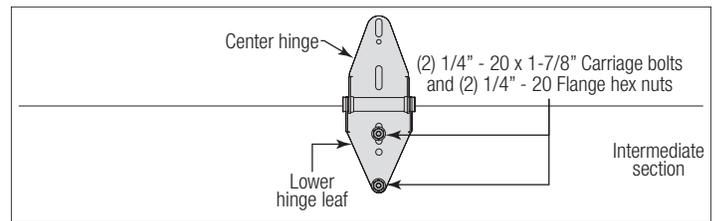
IF YOU HAVE DOUBLE GRADUATED END HINGES WITH A LONG STRUT: Position the second graduated end hinge next to the first (single) graduated end hinge. Using the second graduated end hinge as a template, drill pilot holes, 1" deep into the Intermediate section using a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

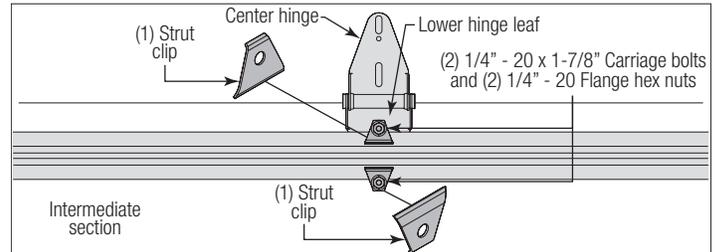
Secure the graduated end hinge to the Intermediate section using (2) 1/4" - 14 x 1" lag screws. Repeat for other side.



FOR CENTER HINGES WITHOUT A LONG STRUT: Attach the upper slot of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Secure the lower hole of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other center hinge(s).



FOR CENTER HINGES WITH A LONG STRUT: Attach the upper leg of the strut, (1) strut clip to the upper slot of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Secure the lower leg of the strut, (1) strut clip to the lower hole of the center hinge to the Intermediate section using (1) 1/4" - 20 x 1-7/8" carriage bolt and (1) 1/4" - 20 flange hex nut. Repeat for other center hinge(s).

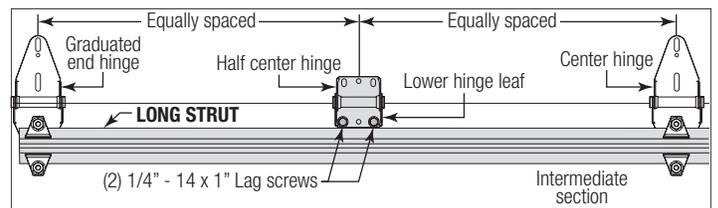
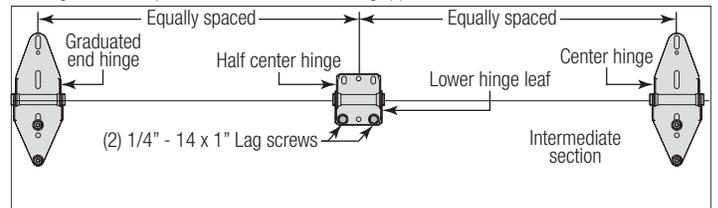


NOTE: If you don't have half center hinges, then skip this part of the step. Refer to Package Contents / Breakdown Of Parts, to determine if you have half center hinges.

Using a tape measure, position the half center hinges equally spaced in between the center hinges and the graduated end hinges. Position the holes of the lower hinge leaf at the top rail of the bottom section. Using the half center hinge as a template, drill pilot holes, 1" deep into the Intermediate section with a 1/8" drill bit (if needed).

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Attach the lower hinge leaf of the center hinge to the Intermediate section using (2) 1/4" - 14 x 1" lag screws. Repeat for other half center hinge(s).



If you have single graduated end hinges, insert a short stem track roller / short stem tandem track roller (if included) into the hinge tube on each side.

If you have double graduated end hinges, insert a long stem track roller / short stem tandem track roller (if included) into the hinge tubes on each side.

IMPORTANT: WHEN PLACING TRACK ROLLERS / TANDEM TRACK ROLLER (IF INCLUDED) INTO GRADUATED END HINGES NUMBER 2 AND HIGHER, THE TRACK ROLLER / TANDEM TRACK ROLLER (IF INCLUDED) GOES INTO TUBE FURTHEST AWAY FROM SECTION.

If applicable, repeat the same process for the other Intermediate sections, except for the top section.

7 Attaching Top Fixtures And Strut To Top Section

NOTE: Refer to door section identification, located in the pre-installation section of this manual to determine what size section you need to use as your top section. Measure your section to make sure it is the correct height as indicated on the chart.

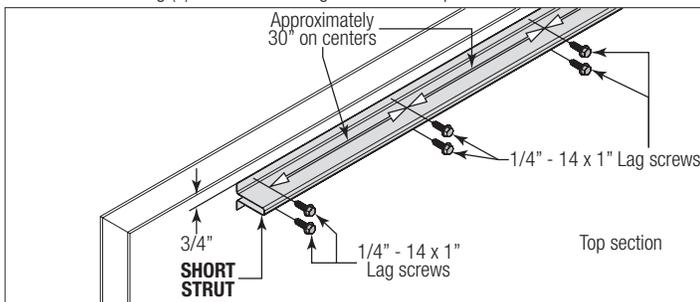
NOTE: Refer to the Top Section Short Strut Strutting Schedule below, to determine the appropriate strutting for your Top section.

Top Section Short Strut Strutting Schedule For Door Heights Less Than Or Equal to 8'0"			
Door Models	Door Width		Location On Top Section
	Up To and Including 12'2"	From 12'3" To 16'0"	
105 / 106	N/A	(1) Short	N/A
110 / 116		(1) Short	
310 / 311 / 314 / 316			

Place the top section face down on a couple of sawhorses or flat clean/ smooth surface. Lay a **SHORT STRUT** onto the top rail of the top section. Position the top section 3/4" downward from the top edge of the top section. Center the short strut from side to side on the section surface. Drill pilot holes, 1" deep into the top section using a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Attach the strut using (1) 1/4" - 14 x 1" lag screw at each pre-drilled hole.



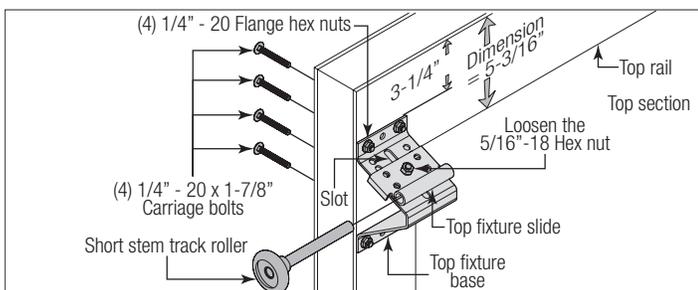
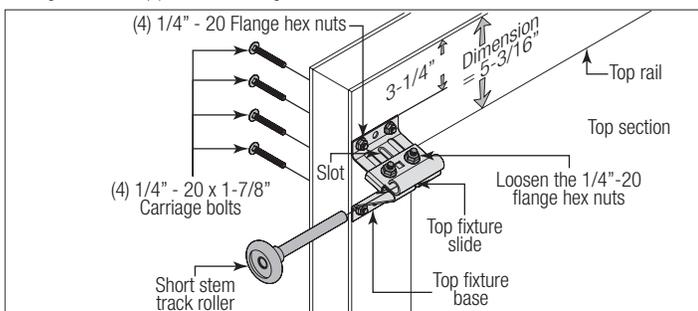
NOTE: Refer to Package Contents / Breakdown of Parts, to determine which Top Fixtures Assemblies you have.

First, measure the width the top rail (5-3/16" or 3-1/8") of the top section, to determine, the proper location and the correct orientation of the top fixtures.

FOR TOP SECTIONS WITH A 5-3/16" TOP RAIL: Measure down from the top of the top section 3-1/4" and make a small mark. Align the top of the top fixture assembly with the mark previously made and even with the edge of the section.

NOTE: The slotted half of the top fixture assembly should be facing upwards.

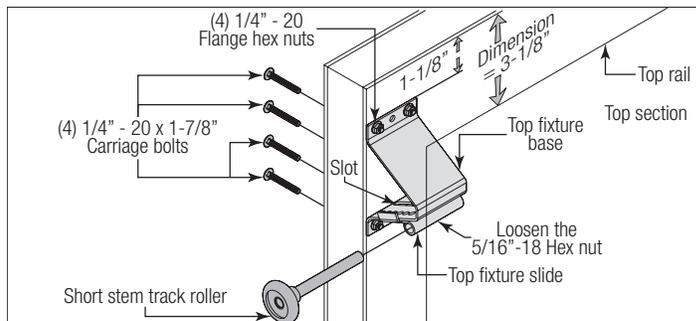
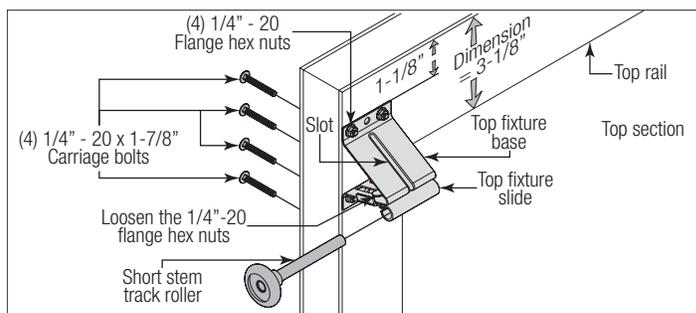
Using the top fixture base as a template, mark and pre-drill (4) 9/32" diameter holes through the top section. Attach the top fixture base to the top section using (4) 1/4" - 20 x 1-7/8" carriage bolts and (4) 1/4" - 20 flange hex nuts.



FOR TOP SECTIONS WITH A 3-1/8" TOP RAIL: Measure down from the top of the top section 1-1/8" and make a small mark. Align the top of the top fixture assembly with the mark previously made and even with the edge of the section.

NOTE: The slotted half of the top fixture assembly should be facing downwards.

Using the top fixture base as a template, mark and pre-drill (4) 9/32" diameter holes through the top section. Attach the top fixture base to the top section using (4) 1/4" - 20 x 1-7/8" carriage bolts and (4) 1/4" - 20 flange hex nuts.

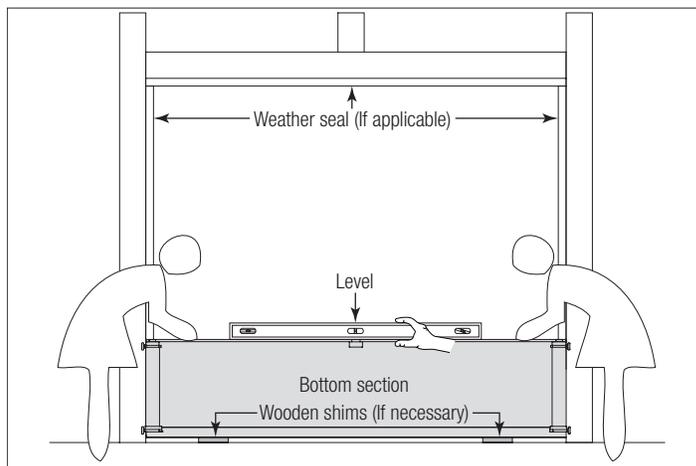


NOTE: Ensure the top fixture slide is able to slide along the top fixture base. If needed, loosen the 1/4" - 20 flange hex nuts.

Repeat the same process for the right hand side. The top fixtures will be tightened and adjusted later, in step, Adjusting Top Fixtures. Insert a short stem track roller into each of the top fixture slides.

8 Positioning Bottom Section

Center the bottom section in the door opening. Level the section using wooden shims (if necessary) under the bottom section. When the bottom section is leveled, temporarily hold it in place by driving a nail into the jamb and bending it over the edge of the bottom section on both sides.



9 Attaching Vertical Tracks To Jamb

NOTE: Depending on your door, you may have Fully Adjustable Flag Angles, Riveted Vertical Track Assemblies or you may have Angle Mount Vertical Track Assemblies. Refer to Package Contents / Breakdown of Parts, to determine which Flag Angles / Vertical Track Assemblies you have.

IMPORTANT: IF YOUR DOOR IS TO BE INSTALLED PRIOR TO A FINISHING CONSTRUCTION OF THE BUILDING'S FLOOR, THE VERTICAL TRACKS AND THE DOOR BOTTOM SECTION ASSEMBLY SHOULD BE INSTALLED SUCH THAT WHEN THE FLOOR IS CONSTRUCTED, NO DOOR OR TRACK PARTS ARE TRAPPED IN THE FLOOR CONSTRUCTION.

IMPORTANT: THE TOPS OF THE VERTICAL TRACKS MUST BE LEVEL FROM SIDE TO SIDE. IF THE BOTTOM SECTION WAS SHIMMED TO LEVEL IT, THE VERTICAL TRACK ON THE SHIMMED SIDE MUST BE RAISED THE HEIGHT OF THE SHIM.

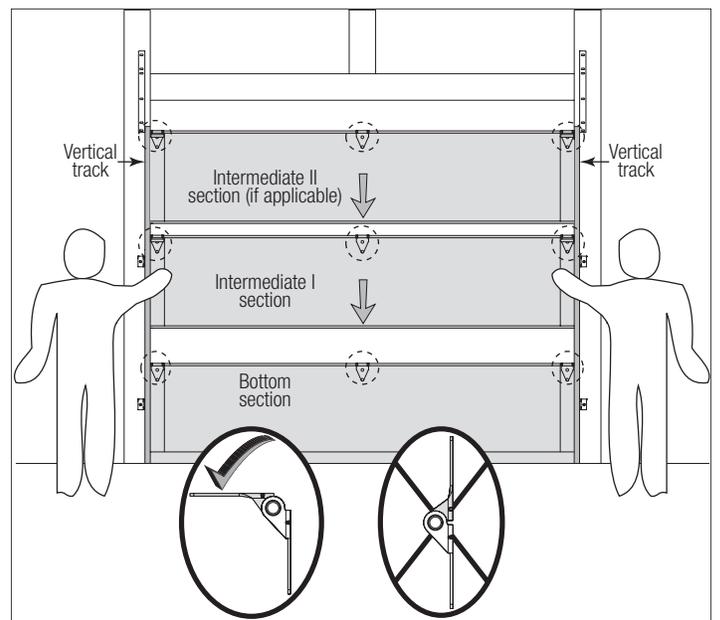
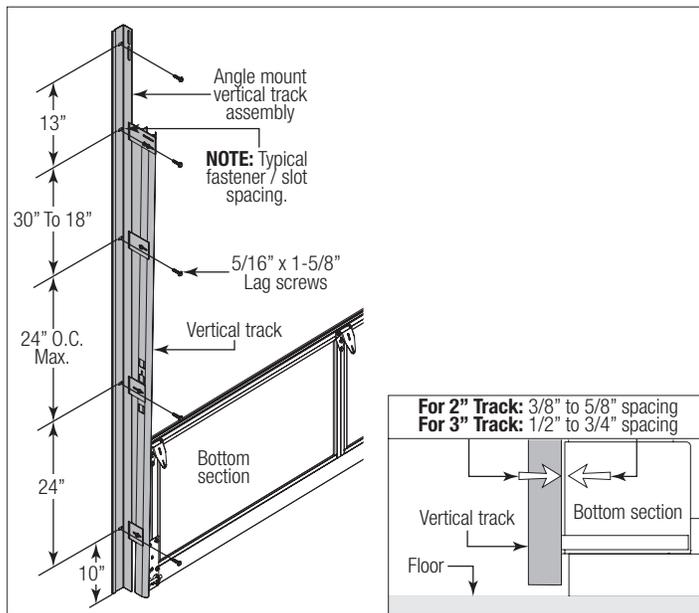
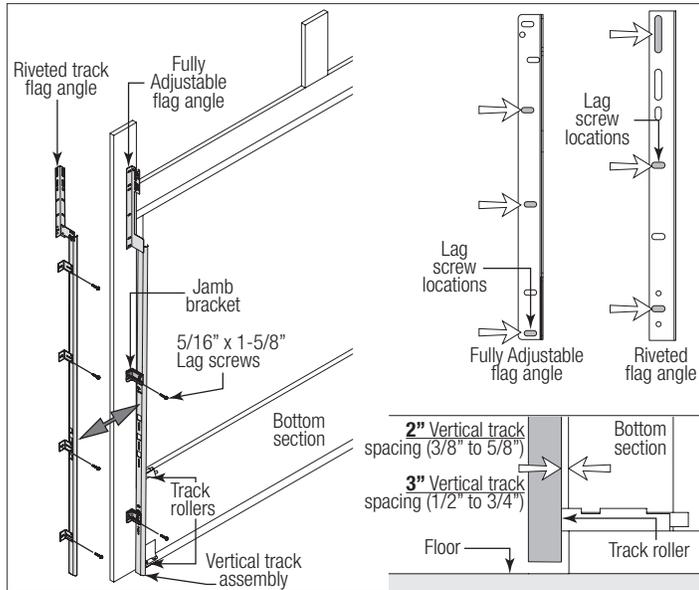
NOTE: Make sure the counterbalance lift cable is located between the track rollers and the door jamb.

Starting on the left hand side, remove the nail holding the bottom section to jamb. Position

the left hand vertical track assembly / angle mount assembly over the track rollers of the bottom section. Make sure the counterbalance lift cable is located between the track rollers and the door jamb. Drill 3/16" pilot holes into the door jamb for the lag screws. Loosely fasten vertical track assembly / angle mount assembly to the jamb using 5/16" x 1-5/8" lag screws.

FOR 2" TRACK: Tighten fasteners, securing the bottom jamb bracket in the vertical track assemblies / bottom slot in the angle mount to jamb, maintain 3/8" to 5/8" spacing, between the bottom section and vertical track.

FOR 3" TRACK: Tighten fasteners, securing the bottom jamb bracket in the vertical track assemblies / bottom slot in the angle mount to jamb, maintain 1/2" to 3/4" spacing, between the bottom section and vertical track.

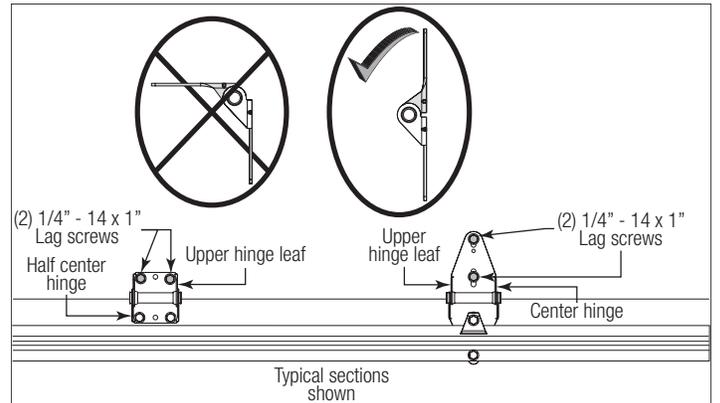


FOR CENTER HINGE(S): Starting with a center hinge, flip the upper hinge leaf up. If needed use it as a template, mark and pre-drill (2) 9/32" diameter holes through the section. Attach the upper hinge leaf to the section using (2) 1/4" - 20 x 1-7/8" carriage bolts and (2) 1/4" - 20 flange hex nuts. Repeat same process for the other Center Hinges.

FOR HALF CENTER HINGE(S): Flip a upper hinge leaf up and use it as a template. Mark and pre-drill (2) 1/8" pilot holes, 1" deep into the section with a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Attach the center hinge upper leaf to the section using (2) 1/4" - 14 x 1" lag screws. Repeat same process for other half center hinge(s).



FOR GRADUATED END HINGES: Starting with the outer graduated end hinges, flip the upper hinge leaf up. If needed use it as a template, mark and pre-drill (2) 9/32" diameter holes through the section. Attach the upper hinge leaf to the section using (2) 1/4" - 20 x 1-7/8" carriage bolts and (2) 1/4" - 20 flange hex nuts. Repeat same process for the other side.

IF YOU HAVE DOUBLE GRADUATED END HINGES: Flip the inner upper hinge leaf up and use it as a template. Mark and pre-drill (2) 1/8" pilot holes, 1" deep into the section with a 1/8" drill bit.

IMPORTANT: BE EXTREMELY CAREFUL NOT TO DRILL THRU THE SECTION. ONLY DRILL 1" DEEP.

Attach the inner upper hinge leaf to the section using (2) 1/4" - 14 x 1" lag screws. Repeat same process for the other side.

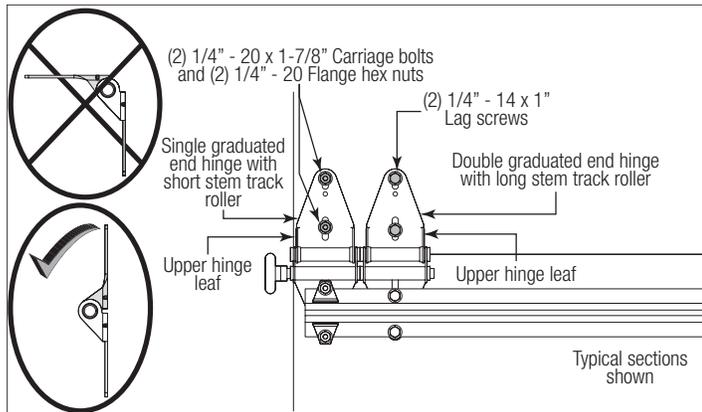
Repeat same process for other sections, except top section.

10 Stacking Sections

NOTE: Refer to door section identification, located in the pre-installation section of this manual to determine what size section you need to use as your intermediate I (second), intermediate II (third), intermediate III (fourth), Intermediate IV (fifth) and if applicable Intermediate V (sixth). Measure your section to make sure it is the correct height as indicated on the chart.

NOTE: Make sure graduated end and center hinges are flipped down, when stacking another section on top.

With assistance, lift second section and guide the track rollers into the vertical tracks. Keeping the sections vertically aligned, lower section until it is seated against bottom section.



11 Stacking Top Section

Place the top section in the opening. Temporarily secure the top section by driving a nail into the header near the center of the door and bending it over the top section. Now, flip up the graduated end hinge and center hinge leaves, hold tight against section, and fasten center hinges first and end hinges last (refer to step, Stacking Sections). Vertical track alignment is critical. For 2" track, position flag angle / wall angle between 1-11/16" (43 mm) to 1-3/4" (44 mm) from the edge of the door; tighten the bottom lag screw. For 3" track, position flag angle / wall angle between 2-3/16" (56 mm) to 2-1/4" (57 mm) from the edge of the door; tighten the bottom lag screw.

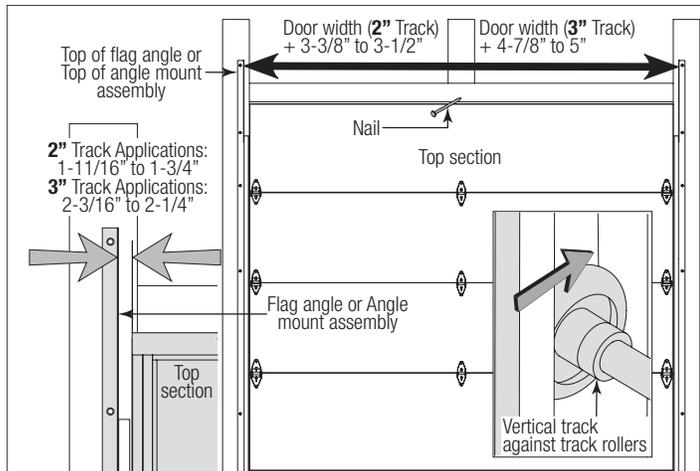
Flag angles / wall angles must be parallel to the door sections. Repeat same process for other side.

IMPORTANT: THE DIMENSION BETWEEN THE FLAG ANGLES MUST BE:

FOR 2" TRACK APPLICATIONS: door width plus 3-3/8" (86mm) to 3-1/2" (89 mm) for smooth, safe door operation.

FOR 3" TRACK APPLICATIONS: door width plus 4-7/8" (124mm) to 5" (127 mm) for smooth, safe door operation.

Complete the vertical track installation by securing the jamb bracket(s) or slots in the wall angle and tightening the other lag screws. Push the vertical track against the track rollers so that the track rollers are touching the deepest part of the curved side of the track; tighten all the track bolts and nuts. Repeat for other side.



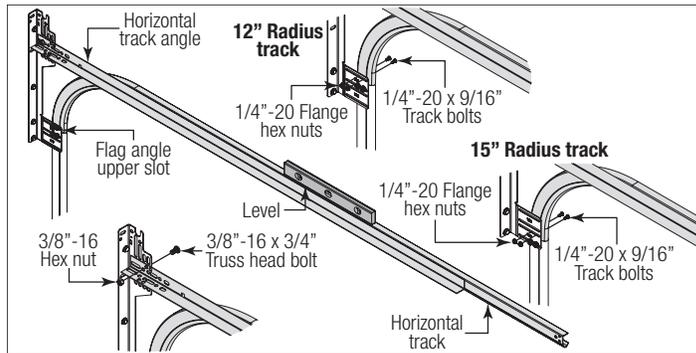
12 Attaching Horizontal Tracks

NOTE: Depending on your door, you may have Fully Adjustable Flag Angles, Riveted Vertical Track Assemblies or you may have Angle Mount Vertical Track Assemblies. Refer to Package Contents / Breakdown of Parts, to determine which Flag Angles / Vertical Track Assemblies you have.

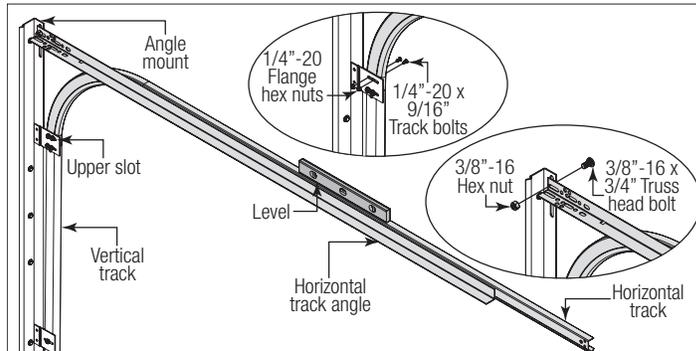
WARNING

DO NOT RAISE DOOR UNTIL HORIZONTAL TRACKS ARE SECURED AT REAR, AS OUTLINED IN STEP, REAR BACK HANGS, OR DOOR COULD FALL FROM OVERHEAD POSITION CAUSING SEVERE OR FATAL INJURY.

FOR FLAG ANGLES: To install horizontal track, place the curved end over the top track roller of the top section. Align the bottom of the horizontal track with the top of the vertical track. Tighten the horizontal track to the flag angle with (2) 1/4" - 20 x 9/16" track bolts and (2) 1/4" - 20 flange hex nuts.

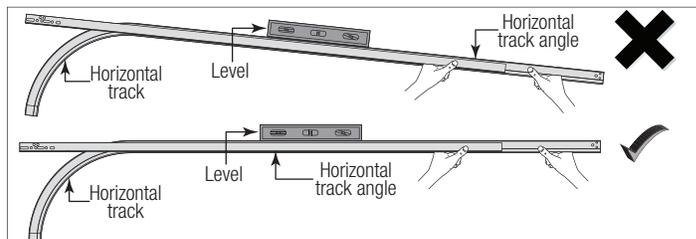


IF YOU HAVE ANGLE MOUNT: To install horizontal track, place the curved end over the top track roller of the top section. Align the bottom of the horizontal track with the top of the vertical track. Tighten the horizontal track to the angle mount with (2) 1/4" - 20 x 9/16" track bolts and (2) 1/4" - 20 flange hex nuts.



Next level the horizontal track assembly and bolt the horizontal track angle to the first encountered slot in the flag angle / angle mount using (1) 3/8" - 16 x 3/4" truss head bolt and (1) 3/8" - 16 hex nut. Repeat for other side. Remove nail that was temporarily holding the top section in position.

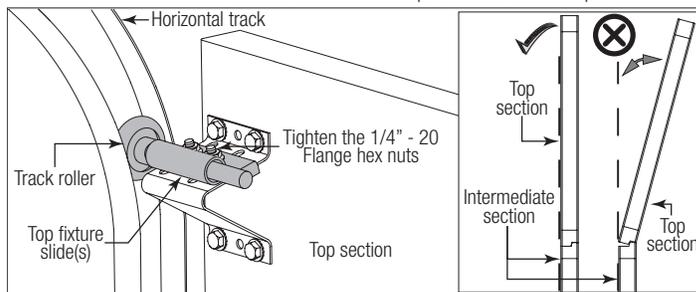
IMPORTANT: FAILURE TO REMOVE NAIL BEFORE ATTEMPTING TO RAISE DOOR COULD CAUSE PERMANENT DAMAGE TO TOP SECTION.



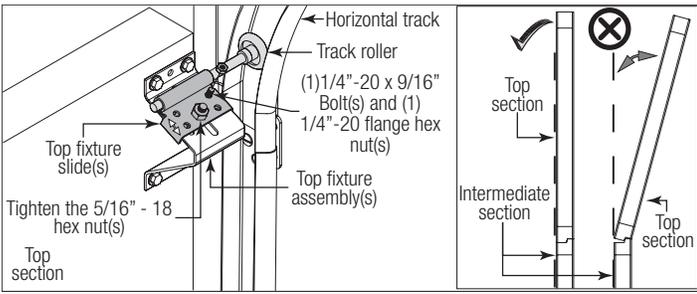
13 Adjusting Top Fixtures

NOTE: Refer to Package Contents / Breakdown of Parts, to determine which Top Fixtures Assemblies you have.

With horizontal tracks installed, you can now adjust the top fixtures. Vertically align the top section of the door with the lower sections. Once aligned, position the top fixture slide, out against the horizontal track. Maintaining the slide's position, tighten the 1/4" - 20 flange hex nuts or the 5/16" - 18 hex nut to secure each of the top fixture slide to the top fixture base.



If needed, lock each of the top fixture slides into place using (1) 1/4" - 20 x 9/16" track bolt and (1) 1/4" - 20 flange hex nut through any two aligning holes.



COUNTERBALANCE INSTALLATION INSTRUCTIONS

14 Attaching Rear Back Hangs

Raise the door until the top section and half of the next section are in the horizontal track radius. Do not raise door any further since rear of horizontal tracks are not yet supported.

WARNING
RAISING DOOR INTO THE LOOSE HORIZONTAL TRACKS CAN RESULT IN DOOR FALLING AND CAUSE SEVERE OR FATAL INJURY.

Clamp a pair of locking pliers onto the vertical tracks just above the second track roller on one side, and just below the second track roller on the other side. This will prevent the door from raising or lowering while installing the rear back hangs.

Using the chart below, select the appropriate perforated angle (may not be supplied). Fabricate and install rear back hangs, as shown.

NOTE: If an opener is installed, position horizontal tracks one hole above level when securing them to the rear back hangs.

Perforated Angle Gauge Weight Limitations For Extension Springs:	
Perforated Angle Gauge	Door Balance Weight
1-1/4" x 1-1/4" x 15 Gauge	220 lbs. to 440 lbs.
1-1/4" x 1-1/4" x 16 Gauge	175 lbs. to 350 lbs.

WARNING
MAKE SURE BACK HANGS ARE BRACED SUFFICIENTLY TO RESIST ANY MOTION DURING SPRING APPLICATION AND DOOR TRAVEL. IF BACK HANGS PIVOT OR DEFLECT, ADD REINFORCEMENT UNTIL THEY REMAIN FIRM AND STATIONARY. ANY BACK HANG THAT HAS BENT MUST BE REPLACED.

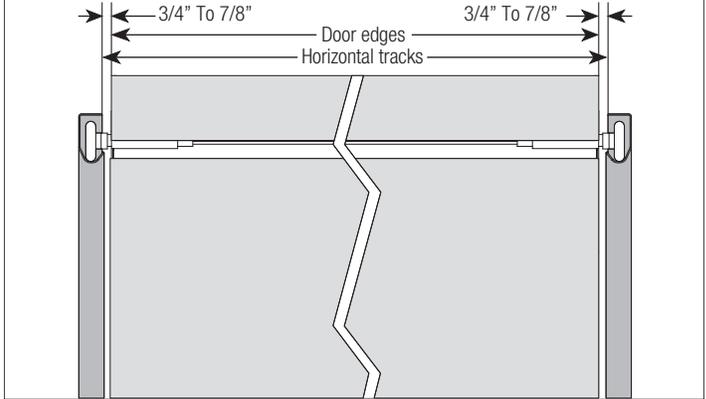
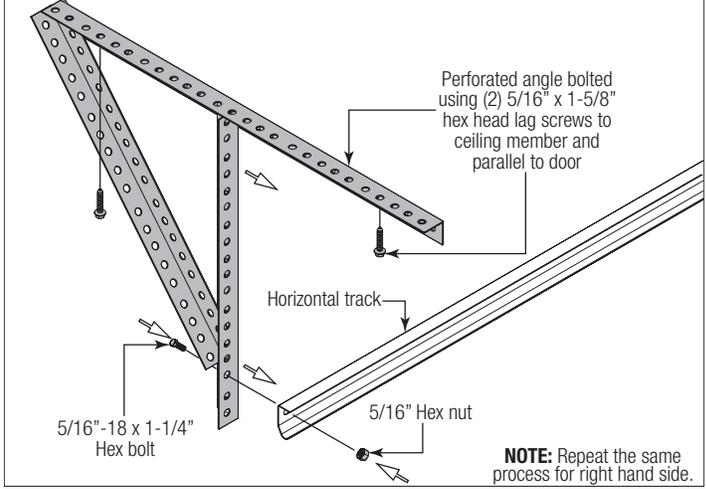
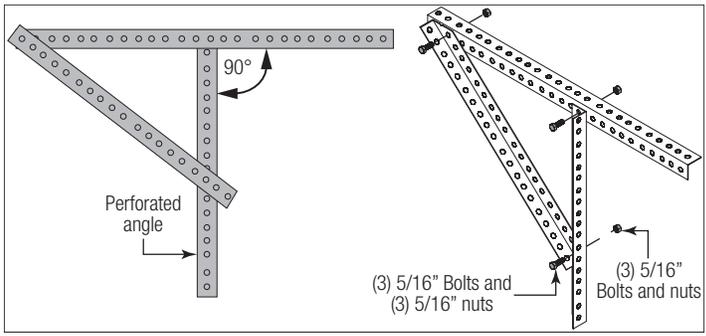
WARNING
KEEP HORIZONTAL TRACKS PARALLEL AND WITHIN 3/4" TO 7/8" FROM DOOR EDGE, OTHERWISE DOOR COULD FALL, RESULTING IN SEVERE OR FATAL INJURY.

IMPORTANT: DO NOT SUPPORT THE WEIGHT OF THE DOOR ON ANY PART OF THE REAR BACK HANGS THAT CANTILEVERS 4" OR MORE BEYOND A SOUND FRAMING MEMBER.

NOTE: If rear back hangs are to be installed over drywall, use (2) 5/16" x 2" hex head lag screws and make sure lag screws engage into solid structural lumber.

WARNING
FAILURE TO ASSEMBLE AND ATTACH REAR BACK HANGS PROPERLY ACCORDING TO THE ABOVE INSTRUCTIONS MAY RESULT IN DOOR FALLING WHEN RAISED, CAUSING SEVERE OR FATAL INJURY.

NOTE: Perforated angle must be attached to sound framing members and **nails should not be used.**

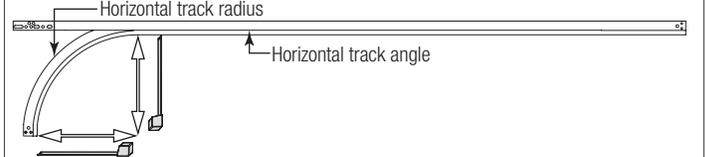


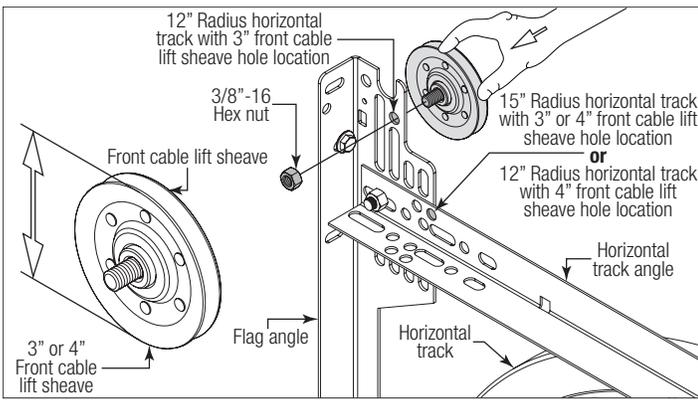
15 Attaching Front Cable Lift Sheaves

IF YOU HAVE 3" FRONT CABLE LIFT SHEAVE AND A 12" RADIUS HORIZONTAL TRACK: Starting on the left hand side and using (1) 3/8" - 16 hex nut, secure the front cable lift sheave to the 13/32" hole near the top of the flag angle, as shown.

IF YOU HAVE 3" OR 4" FRONT CABLE LIFT SHEAVE AND A 15" RADIUS HORIZONTAL TRACK: Starting on the left hand side and using (1) 3/8" - 16 hex nut, secure the front cable lift sheave to the first 13/32" hole in the horizontal angle, as shown.

Repeat the same process for the right hand side.





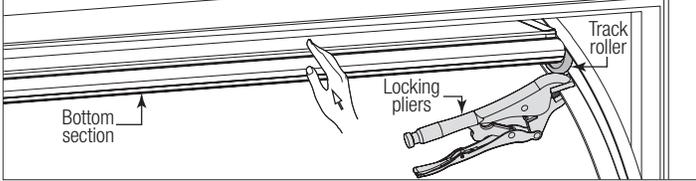
16 Attaching Extension Springs

Remove the locking pliers from the vertical tracks.

WARNING

WITH ASSISTANCE, RAISE THE DOOR SLOWLY INTO THE OPEN POSITION MAKING SURE THE DOOR TRAVELS SMOOTHLY THROUGH THE TRACKS. CLAMP LOCKING PLIERS TO THE BACK LEG OF BOTH HORIZONTAL TRACKS, BELOW THE BOTTOM TRACK ROLLERS TO KEEP THE DOOR FROM LOWERING.

NOTE: This illustration shows the outside of the door in the open position.



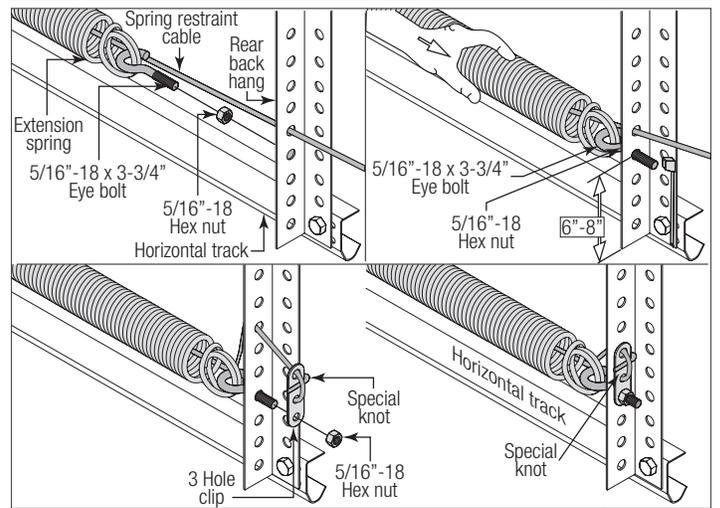
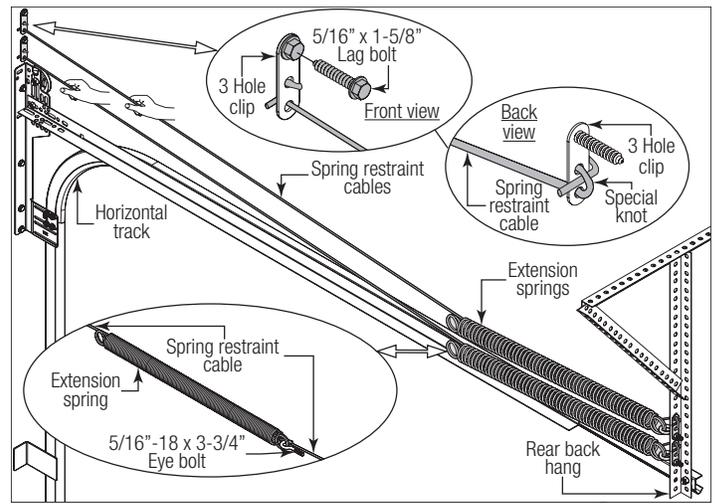
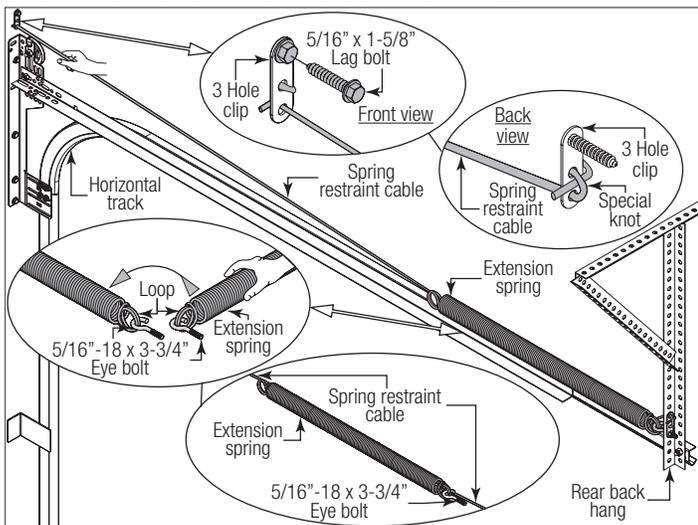
WARNING

FAILURE TO INSTALL SPRING RESTRAINT CABLES CAN RESULT IN SEVERE OR FATAL INJURY IN CASE OF SPRING BREAKAGE.

Position (1) 5/16" - 18 x 3-3/4" eye bolt and (1) 5/16" - 18 hex nut into the rear back hang, 6" to 8" above the horizontal track, as shown. Feed the spring safety cable through the rear back hang and tie the special knot around the "room side" of the 3 hole clip, as shown. Secure the eye bolt and 3 hole clip to the rear back hang using (1) 5/16" - 18 hex nut. Hook one end of the extension spring onto the eye bolt. Feed the spring safety cable through the rear extension spring loop and center of the extension spring then front spring loop, pull the spring safety cable taut and tie the special knot around the "jamb side" of the 3 hole clip. Attach the "jamb side" 3 hole clip to the jamb near the flag angle using (1) 5/16" x 1-5/8" lag bolt. Repeat the same process for the other side.

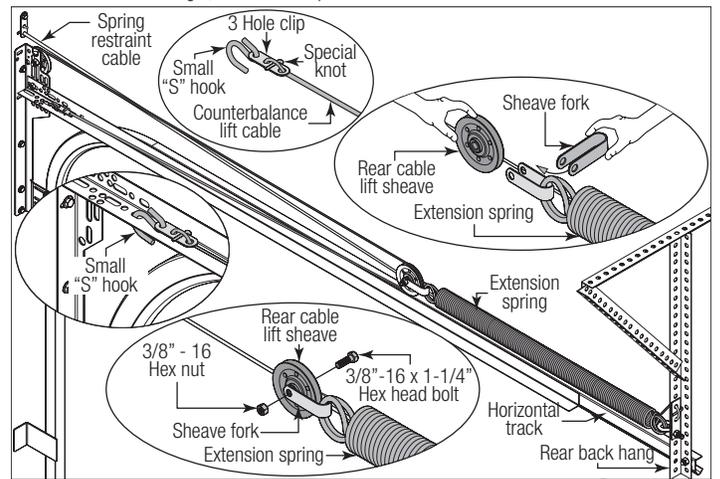
NOTE: Some larger doors feature 2 pairs of extension springs. A spring restraint cable must be installed through each spring.

IMPORTANT: SPRING RESTRAINT CABLES MUST BE TAUT AND EQUALIZED.



17 Attaching Spring Sheaves

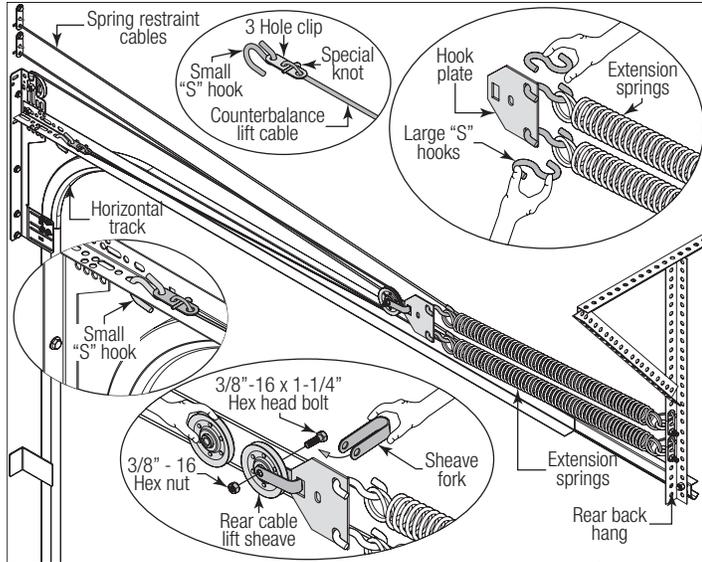
IF YOU HAVE ONE PAIR OF EXTENSION SPRINGS: Hook the sheave fork from the front loop of the extension spring and attach the sheave fork to the rear cable lift sheave using (1) 3/8" - 16 x 1-1/4" hex head bolt and (1) 3/8" - 16 hex nut. Thread the counterbalance lift cable over the front cable lift sheave and around the rear cable lift sheave and tie the special knot around the "horizontal angle" using a 3 hole clip, as shown. Insert one end of the small "S" hook into the "horizontal angle" with the 3 hole clip and the other end into the second slot of the horizontal angle, as shown. Repeat for the other side.



NOTE: Some larger doors feature 2 pairs of extension springs. A spring restraint cable must be installed through each spring.

IF YOU HAVE TWO PAIR OF EXTENSION SPRINGS: Insert two large "S" hooks and the sheave fork into the hook plate. Attach the sheave fork to the rear cable lift sheave using (1) 3/8" - 16 x 1-1/4" hex head bolt and (1) 3/8" - 16 hex nut. Thread the counterbalance lift cable over the front cable lift sheave and around the rear cable lift sheave and tie the special

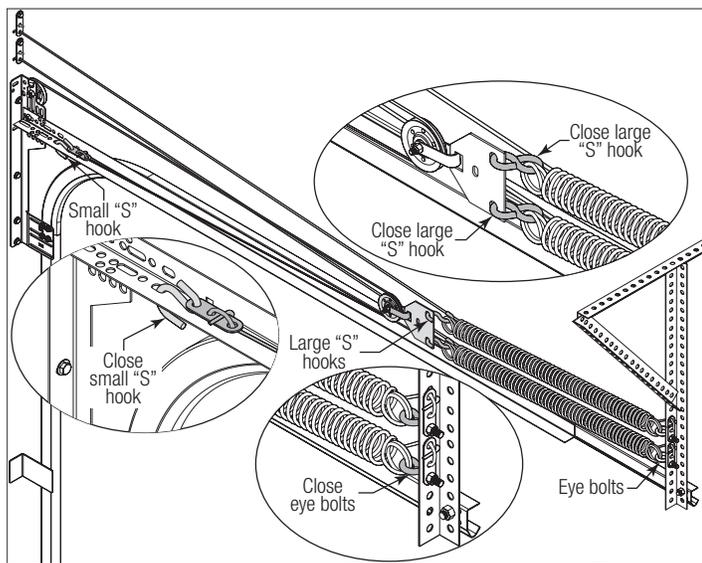
knot around the "horizontal angle" using a 3 hole clip, as shown. Insert one end of the small "S" hook into the "horizontal angle" with the 3 hole clip and the other end into the second slot of the horizontal angle, as shown. Insert one end of the small "S" hook into the "horizontal angle" with the 3 hole clip and the other end into the second slot of the horizontal angle, as shown. Repeat for the other side.



IMPORTANT: CLOSE "S" HOOKS AND EYE BOLTS WITH LOCKING PLIERS, TO PREVENT SPRINGS FROM COMING LOOSE.

WARNING

FAILURE TO CLOSE "S" HOOKS AND EYE BOLTS CAN RESULT IN SEVERE OR FATAL INJURY IF SPRINGS COME LOOSE.



18 Counterbalance Lift Cable Adjustments

Adjust counterbalance lift cables to create about 1" to 2" (25 mm to 50 mm) of initial extension spring stretch, with the door in the fully opened position. Measure relaxed extension spring length for your door height and verify with the chart below. Spring length must be the same for both extension springs to allow even door balance. Carefully remove the locking pliers from the horizontal track and lower the door into the closed position. Once the door is closed, measure the extension spring length in tension for both sides. Using the chart, verify the spring length in tension is correct with your door height.

NOTE: It may be necessary to adjust spring length for proper door balance.

Door Height	Spring Length Relaxed (Door Open)	Spring Length Extended (Door Closed)
6' 0"	25" (635 mm)	61" (1549 mm)
6' 3"	25" (635 mm)	62-1/2" (1588 mm)
6' 6"	25" (635 mm)	64" (1626 mm)

Door Height	Spring Length Relaxed (Door Open)	Spring Length Extended (Door Closed)
7' 0"	25" (635 mm)	67" (1702 mm)
7' 6"	27" (686 mm)	72" (1829 mm)
7' 9"	27" (686 mm)	73-1/2" (1867 mm)
8' 0"	27" (686 mm)	75" (1905 mm)

19 Balancing Door

Lift door and check its balance. If door rises off floor more than 2 ft. under spring tension alone, reduce spring tension by adjusting extension spring length, moving the "S" hook backward (towards the rear back hangs) to a different hole in the horizontal track. If the door is hard to rise or drifts down on its own, adjust extension spring length by moving the "S" hook forward (towards the header) to a different hole in the horizontal track. A poorly balanced door can cause garage door operator problems.

IMPORTANT: WHENEVER ADJUSTING EXTENSION SPRING LENGTH FOR DOOR BALANCE, ALWAYS OPEN THE DOOR TO THE FULLY OPEN POSITION AND RETURN THE LOCKING PLIERS, AS SHOWN IN F3 TO THE HORIZONTAL TRACKS BELOW THE BOTTOM TRACK ROLLERS.

If the door still does not operate easily, raise the door into the open position, return the locking pliers, and recheck the following items:

- 1.) Is the door level?
- 2.) Are the flag angles level and plumb?
- 3.) Does the distance between the flag angles equal door width plus 3-3/8" to 3-1/2"?
- 4.) Do the counterbalance lift cables have equal tension? Adjust by re-tying the special knot, if necessary.
- 5.) Make sure door is not rubbing on jambs.

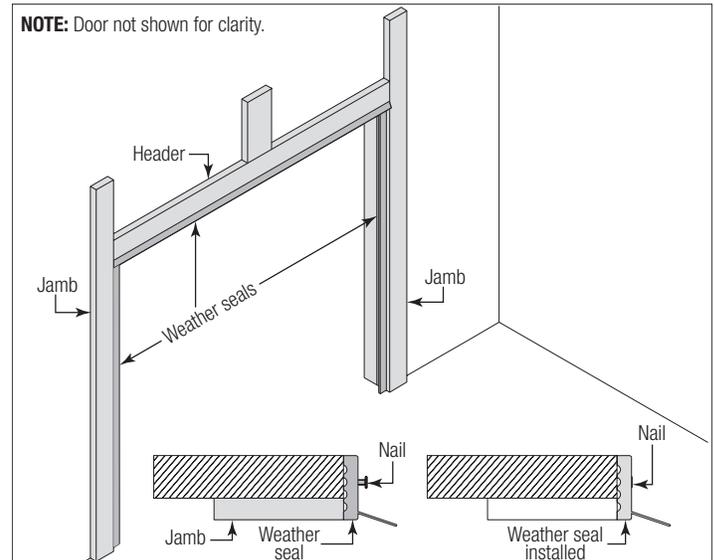
IMPORTANT: IF DOOR STILL DOES NOT BALANCE PROPERLY, THEN CONTACT A TRAINED DOOR SYSTEM TECHNICIAN.

20 Attaching Weather Seal

Permanently attach the weatherstrips on both door jambs and header. The weatherstrips were temporarily attached in Preparing the Opening, in the pre-installation section of this manual.

NOTE: When permanently attaching the weatherstrips to the jambs, avoid pushing the weatherstrips too tightly against the face of door.

NOTE: Door not shown for clarity.



21 Label Placement

IMPORTANT: USING THE ILLUSTRATION, ATTACH THE APPROPRIATE LABELS TO THE APPROPRIATE LOCATION ON THE SECTION, AS SHOWN.

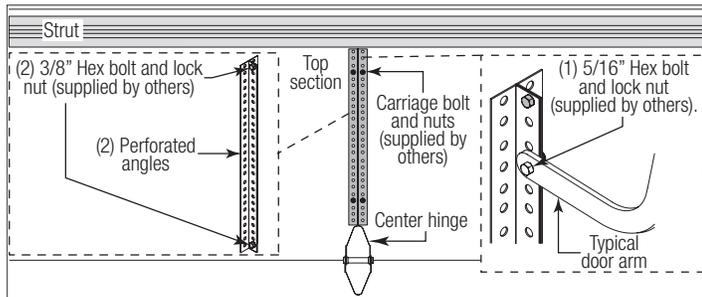
NOTE: The Spring Warning tag(s) are factory attached (one per spring).

NOTE: Because of different configurations, some labels may require minor relocations.

Door Arm Hookup

At the center of the top section, measure horizontally from the top of center hinge to the bottom of strut. Using that dimension, measure and cut (2) pieces of perforated angles. Assemble the (2) pieces together using (2) 3/8" bolts and nuts (supplied by others). Now, secure to the top section using carriage bolts and nuts (supplied by others), thru bolt both the perforated angles to the top section, as shown.

Align the door arm with hole with one of the holes in the perforated angles. Secure the door arm to the perforated angle using (1) 5/16" - 18 x 1" hex head bolt and (1) 5/16" - 18 lock nut (supplied by others), as shown.



Lift Handles

NOTE: Lift handles must be lined up vertically.

BOTTOM SECTION: Locate the exterior center stile or center most stile on the bottom section.

NOTE: For flush doors, find the center most stile by locating the center most hinge.

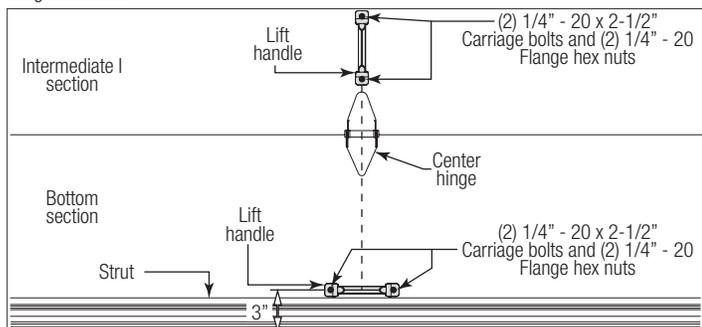
Using the bottom hole of the lift handle, measure up 3" from the bottom of bottom section. Mark the hole locations and drill (2) 9/32" dia. holes through the bottom section. On the outside of the door, insert (2) 1/4" - 20 x 2-1/2" carriage bolts (black head) into the outside lift handle and insert the assembly into the (2) pre-drilled holes in the bottom section. From the inside, slide the (2) holes in the inside lift handle over the stems of the carriage bolts. Secure the outside and inside lift handle to the bottom section with (2) 1/4" - 20 flange hex nuts.

INTERMEDIATE I SECTION: Locate the exterior center stile or center most stile on the Intermediate I section. Mark a vertical line on the section at that point.

NOTE: Some Garage Doors may require both lift handles to be installed on bottom section. If your bottom section height is 28" or 29", install both lift handles onto the bottom section. Install bottom lift handle per above instructions, then install the second lift handle a Minimum of 20" and a Maximum of 30" above the bottom lift handle.

Measure up 4" from the bottom of the Intermediate I section. Using this measurement as a guide, position the bottom hole of the lift handle bottom at the mark. Make a mark at the top hole of the lift handle. This should give you a Minimum of 20" and a Maximum of 30" between the lower lift handle and the middle of the top lift handle. If needed, reposition the lift handle to stay within the Minimum and Maximum dimensions, as stated above.

Using the lift handle as a template, mark the hole locations and drill (2) 9/32" dia. holes through the section. On the outside of the door, insert (2) 1/4" - 20 x 2-1/2" carriage bolts (black head) into the outside lift handle and insert the assembly into the (2) pre-drilled holes in the section. From the inside, slide the (2) holes in the inside lift handle over the stems of the carriage bolts. Secure the outside and inside lift handle to the section with (2) 1/4" - 20 flange hex nuts.

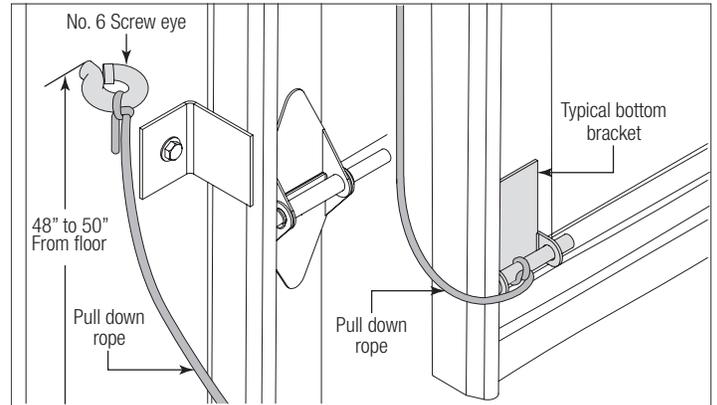


Pull Down Rope

WARNING

DO NOT INSTALL PULL DOWN ROPE ON DOORS WITH OPERATORS. CHILDREN MAY BECOME ENTANGLED IN THE ROPE CAUSING SEVERE OR FATAL INJURY.

Measure and mark the jamb approximately 48" to 50" (1220 to 1270 mm) from floor on the right or left side of jamb. Drill 1/8" pilot hole for no. 6 screw eye. Tie the pull down rope to the no. 6 screw eye and to the bottom corner bracket, as shown.



Cleaning Your Garage Door

IMPORTANT: DO NOT USE A PRESSURE WASHER ON YOUR GARAGE DOOR!

An annual inspection of all the surfaces of your garage door(s) will reveal the extent of weathering and the possible need for refinishing. When the finish becomes eroded or thin, clean and prime any areas showing deterioration. Then completely refinish the door, according to the directions, listed below, or the manufacturer's label directions. Proper finishing of the wood substrates to protect your door(s) from the effects of moisture and sunlight is vital in extending the service life and beautifying your garage door(s).

The interior and exterior surfaces, as well as all edges must be properly primed, painted and maintained, to protect and beautify your door. These finishing instructions are intended to achieve both objectives for your wood doors(s).

NOTE: Be sure to clean behind weatherstrips on both sides and top of door.

CAUTION

NEVER MIX CLEANSERS OR DETERGENTS WITH BLEACH.

GLASS CLEANING INSTRUCTIONS

Clean with a mild detergent solution (same as above) and a soft cloth. After cleaning, rinse thoroughly.

ACRYLIC CLEANING INSTRUCTIONS

Clean acrylic glazing with nonabrasive soap or detergent and plenty of water. Use your bare hands to feel and dislodge any caked on particles. A soft, grit-free cloth, sponge or chamois may be used to wipe the surface. Do not use hard or rough cloths that will scratch the acrylic glazing. Dry glazing with a clean damp chamois.

NOTE: Do not use any window cleaning fluids, scouring compounds, gritty cloths or solvent-based cleaners of any kind.

Painting Your Garage Door

Refer to Instruction Insert "**Field Painting Wood Door Sections**".

Maintaining The Finish On Your Garage Door

If the finish is beginning to fade, the door may require a field applied top clear coat. Depending on environment and usage, this may be necessary after 1 to 3 years of use. Refer to Instruction Insert "**Field Painting Wood Door Sections**".

Operation And Maintenance

OPERATING YOUR GARAGE DOOR: Before you begin, read all warning labels affixed to the door and the installation instructions and owner's manual. When correctly installed, your Wayne Dalton door will operate smoothly. Always operate your door with controlled movements. Do not slam your door or throw your door into the open position, this may cause damage to the door or its components. If your door has an electric opener, refer to the owner's manual to disconnect the opener before performing manual door operation below.

MANUAL DOOR OPERATION: For additional information on manual garage door operations go to www.dasma.com and reference TDS 165.

WARNING

DO NOT PLACE FINGERS OR HANDS INTO SECTION JOINTS WHEN OPENING AND/OR CLOSING A DOOR. ALWAYS USE LIFT HANDLES / SUITABLE GRIPPING POINTS WHEN OPERATING THE DOOR MANUALLY.

OPENING A DOOR: Make sure the lock(s) are in the unlocked position. Lift the door by using the lift handles / suitable gripping points only. Door should open with little resistance.

CLOSING A DOOR: From inside the garage, pull door downward using lift handles / gripping point only. If you are unable to reach the lift handles/ suitable gripping points only, use pull down rope affixed to the side of door. Door should close completely with little resistance.

USING AN ELECTRIC OPERATOR:

IMPORTANT: PULL DOWN ROPES MUST BE REMOVED AND LOCKS MUST BE REMOVED OR MADE INOPERATIVE IN THE UNLOCKED POSITION.

When connecting a drawbar (trolley type) garage door operator to this door, a drawbar operator bracket must be securely attached to the top section of the door, along with any struts provided with the door. Always use the drawbar operator bracket supplied with the door. To avoid possible damage to your door, Wayne Dalton recommends reinforcing the top section with a strut (may or may not be supplied). The installation of the drawbar operator must be according to manufacturer's instructions and force settings must be adjusted properly. Refer to the owner's manual supplied with your drawbar operator for complete details on installa-

tion, operation, maintenance and testing of the operator.

MAINTAINING YOUR GARAGE DOOR: Before you begin, read all warning labels affixed to the door and the installation instructions and owner's manual. Perform routine maintenance steps once a month, and have the door professionally inspected once a year. Review your Installation Instructions and Owner's Manual for the garage door. These instructions are available at no charge from Wayne Dalton, a division of Overhead Door Corporation, P.O. Box 67, Mt. Hope, OH., 44660, or at www.Wayne-Dalton.com. For additional information on garage door/operator maintenance go to www.dasma.com and reference TDS 151, 167 and 179.

Monthly Inspections:

1. Visual Inspection: Closely inspect jambs, header and mounting surface. Any material found not to be structurally sound must be replaced. It may be necessary to uninstall part or all of the door assembly in order to replace defective material. Refer to the supplemental instructions "Removing an Existing Door / Preparing the Opening" at www.Wayne-Dalton.com. Inspect the spring(s), counterbalance lift cables, track rollers, pulleys, rear back hangs and other door hardware for signs of worn or broken parts. Tighten any loose screws and/or bolts, except on bottom corner brackets or on the counterbalance assembly. Check exterior surface of the door sections for any minor cracks. Verify door has not shifted right or left in the opening. If you suspect problems, contact a trained door system technician.

WARNING

GARAGE DOOR SPRINGS, COUNTERBALANCE LIFT CABLES, BRACKETS, AND OTHER HARDWARE ATTACHED TO THE SPRINGS ARE UNDER EXTREME TENSION, AND IF HANDLED IMPROPERLY, CAN CAUSE SEVERE OR FATAL INJURY. ONLY A TRAINED DOOR SYSTEMS TECHNICIAN SHOULD ADJUST THEM, BY CAREFULLY FOLLOWING THE MANUFACTURER'S INSTRUCTIONS.

WARNING

NEVER REMOVE, ADJUST, OR LOOSEN THE BOLTS, SCREWS AND/OR LAG SCREWS ON THE COUNTERBALANCE (END BEARING BRACKETS, DRUMS OR SPRING SYSTEM) OR BOTTOM CORNER BRACKETS OF THE DOOR. THESE BRACKETS ARE CONNECTED TO THE SPRING(S) AND ARE UNDER EXTREME TENSION. TO AVOID POSSIBLE SEVERE OR FATAL INJURY, HAVE ANY SUCH WORK PERFORMED BY A TRAINED DOOR SYSTEMS TECHNICIAN USING PROPER TOOLS AND INSTRUCTIONS.

TORQUEMASTER® PLUS SPRINGS: Pawl knob(s) (located on the TorqueMaster® end brackets above the door) should be engaged to prevent the door from rapidly descending in case of spring failure or forceful manual operation.

EXTENSION SPRINGS: A restraining cable or other device should be installed on the extension spring (located above the horizontal tracks) to help contain the spring if it breaks.

2. Door Balance: Periodically test the balance of your door. If you have a garage door drawbar operator, use the release mechanism so you can operate the door by hand when doing this test. Start with the door in the fully closed position. Using handles or suitable gripping points, lift the door to check its balance. Adjust TorqueMaster® or Extension spring(s), if door lifts by itself (hard to pull down) or if door is difficult to lift (easy to pull down). DO NOT attempt to repair or adjust Torsion Springs yourself. To adjust TorqueMaster® or Extension spring(s), refer to your installation instructions and owner's manual. If in question about any of the procedures, do not perform the work. Instead, have it adjusted by a trained door systems technician.

3. Lubrication: The door should open and close smoothly. Ensure the door track rollers are rotating freely when opening and closing the door. If track rollers do not rotate freely, clean the door tracks, removing dirt and any foreign substances. Clean and lubricate (use a non-silicon based lubricant) graduated end hinges, center hinges, steel track rollers, bearings and torsion springs (torsion spring coil surfaces). DO NOT lubricate plastic idler bearings, nylon track rollers, door track. DO NOT oil a cylinder lock, if actuation is difficult use a graphite dust to lubricate.

CHECK FOR PRESENCE OF SAFETY LABELS:

Limited warranty

Models 105, 110, 106, 116, 310, 311, 314 and 316

Wayne Dalton, a division of Overhead Door Corporation ("Seller") warrants to the original purchaser of Models 105, 110, 106, 116, 310, 311, 314, and 316 ("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 for a period of One (1) year, measured from the date of installation:

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 gives you specific legal rights, and you may also have other rights which vary from state to state. This warranty is made to the original purchaser of the Product only, and is not transferable or assignable. This warranty applies only to Product installed in a residential or other non-commercial application. It does not cover any Product installed in commercial or industrial building applications. 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, puncture, drilling of holes (other than as directed by Seller), incorrect installation of hardware, fire, failure to provide necessary maintenance, normal wear and tear, exposure to salt or other corrosive environments, or acts of God or any other cause beyond the reasonable control of Seller. This warranty also specifically excludes all refinishing costs and any inconsistencies or occurrences related to the characteristics or attributes of natural wood, including but not limited to: (i) variations in the color or grain of Product sections, (ii) the emission or secretion of tannins from the Product sections which may stain or alter the color of a painted Product, and (iii) cracking, checking, lifting wood grain or cracking due to natural expansion and contraction of the Product sections.

SPECIAL PAINTING REQUIREMENTS: This warranty shall be void if the Product sections are not painted or sealed in accordance with DASMA TDS 162 (available at www.dasma.com) on all sides, including all edges with one (1) coat of exterior grade primer (or stain) and two (2) coats of high quality acrylic latex exterior grade finish paint (or sealer), applied in accordance with the paint or Sealer manufacturer's instructions and Seller's painting and maintenance instructions. Sections must be finished within five (5) days of receipt and prior to installation. Damage caused by exposure of the product to water, moisture, sun or other conditions prior to completion of painting (or Sealing) is excluded. This warranty shall also be void if the Product is painted a dark color, including but not limited to black, dark grey, dark green and dark brown*. IMPROPER TRANSPORTATION, STORAGE OR DELAYS IN FINISHING, THAT ALLOWS EXPOSURE OF THE WOOD DOOR SURFACES TO MOISTURE OR OTHER CONTAMINANTS WILL RESULT IN THE WARRANTY BEING VOIDED. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN TIME TO THE APPLICABLE WARRANTY PERIOD REFLECTED ABOVE. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

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 use, cost of any substitute product, or other similar indirect financial loss. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Claims under this warranty must be made promptly after discovery, within the applicable warranty period, and in writing to the Seller 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. There are no established informal dispute resolution procedures of the type described in the Magnuson-Moss Warranty Act.

* Dark colors shall mean colors as dark as or darker than any of the following Sherwin-Williams Exterior Colors: 7069 Iron Ore (dark grey), 6447 Evergreens (dark green) or 7510 Chateau Brown (dark brown).

• SELLER: _____

• SELLER'S ADDRESS: _____

Thank you for your purchase.

PLEASE DO NOT RETURN THIS PRODUCT TO THE STORE

If you need assistance, please call 1-866-569-3799 (press Option 1) and follow the prompts to contact a customer service representative. They will be happy to handle any questions that you may have.

After installation is complete, leave this Installation Instructions And Owner's Manual with the homeowner, or fasten it near garage door for easy reference.