

NORTHWEST DOOR, INC.

Garage Door Installation Instructions

STANDARD LIFT 12" & 15" Radius Torsion Spring Hardware

Residential Steel
Door Models:

501-502-511-512

401-402-411-412

T108-T118-T128-T138

T208-T218-T228

WARNING: Installing, adjusting, and servicing of a garage door can be **DANGEROUS**.
Read instructions thoroughly before you begin. If you are unsure, **SEEK PROFESSIONAL HELP**



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VS1.1 1-03-SL

TOOLS REQUIRED

Hammer, level, measuring tape, drill & bits, 1/2" x 24" round cold rolled steel winding bars, socket set, screw drivers, wrenches, hacksaw, vise-grips, utility knife, pliers, ladder, and saw horses.

ADDITIONAL MATERIAL

10"x1-1/2"x1-1/2" prepunched angle, wood or vinyl door stop, 16 -penny nails, 7-penny galvanized finish or shake nails, 5/16"x3/4" hex head bolts & 5/16" flange nuts, and 5/16"x1-1/2" lag screws. (Prepunched angle and door stop may be included if ordered as an option)

Step 1

OPENING PREPARATION

Measure the opening. It must be the same size as the door. Vertical jambs must be plumb and header must be level for a square opening. Note vertical jamb extension above opening. Minimum side clearance for standard lift hardware is 3 1/2". 2x6 bucks are recommended for a mounting surface, 2x4 bucks are acceptable.

HEADROOM REQUIRED:

Torsion Spring

| | |
|------------------|-----|
| 15" Radius Track | 15" |
| 12" Radius Track | 12" |

Note: If door is to be motor operated, an approximate 2 1/2" additional headroom will be required. See clearance requirements provided with your garage door opener for exact measurements.

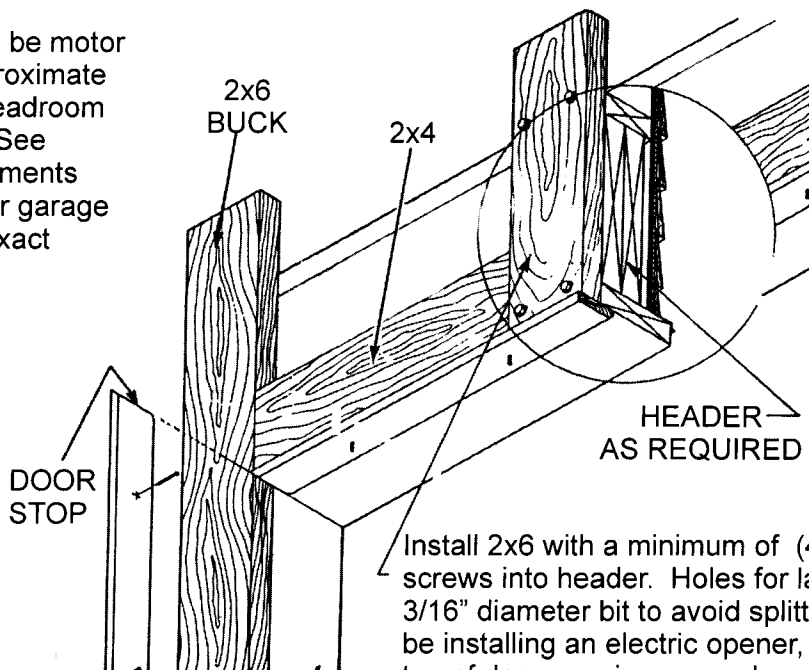


Figure "B"

Install 2x6 with a minimum of (4) 5/16x4" washer head lag screws into header. Holes for lags must be predrilled with a 3/16" diameter bit to avoid splitting the wood. If you will also be installing an electric opener, the 2x6 should extend from top of door opening upward a minimum of 2 1/2" beyond required clearance for garage door.

IMPORTANT! RECOMMENDED HEADER CONSTRUCTION

Header construction is very important! In addition to normal header construction, a vertical 2x6 MUST be integrated onto the header construction as seen in *Figure "A"*. This is for anchoring the center bearing bracket and therefore must be adequately anchored into the header.

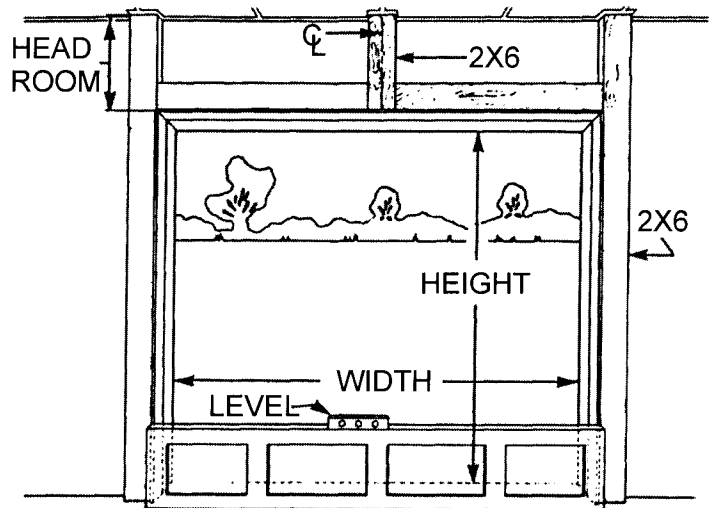
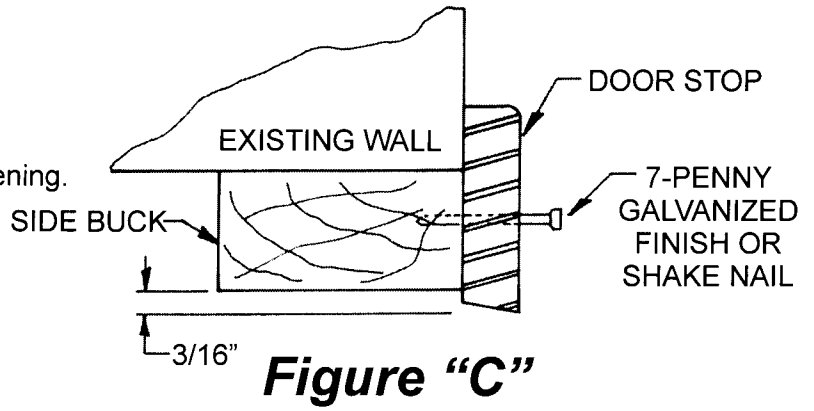


Figure "A"

Step 2

INSTALLING DOOR STOP

Using 7-penny galvanized finish or shake nails, TEMPORARILY tack door stop around edge of opening. See Figure "B". Drive nails only part way in. Door stop should extend into garage about 3/16". See Figure "C"



Step 3

BOTTOM SECTION ASSEMBLY

If you have sections of different heights, choose the larger of the sections for the bottom section. Lay the bottom section face down on sawhorses or other flat smooth surface. Be sure to protect the face of the door from damage.

Locate the bottom brackets, break them apart and remove the connecting tabs. See Figure "D" Then position the bottom brackets flush to the bottom inside of door section. See Figure "E". See Figure "J" & "I", Page 3 to determine the interior side of door.

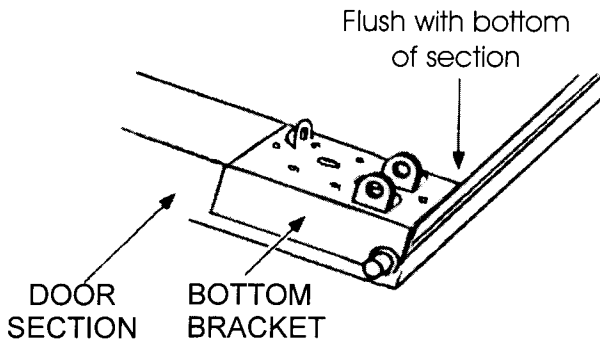
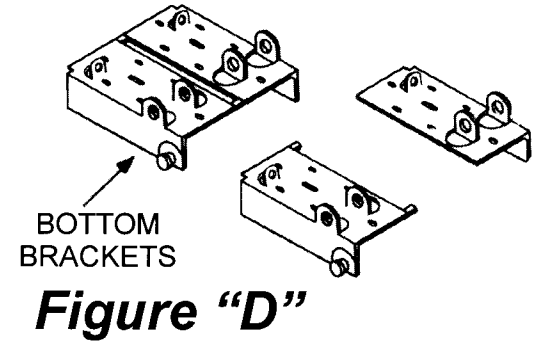
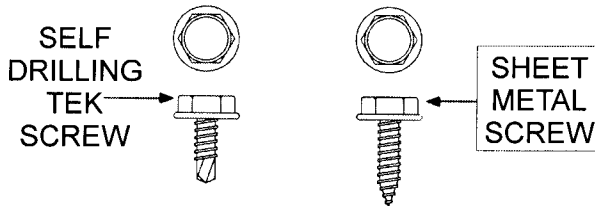


Figure "E"

Using the RED HEADED sheet metal screws, attach the bottom brackets to the door section through the holes illustrated in Figure "F". Three (3) red headed sheet metal screws in each bottom bracket.



Next, slide the full length of astragal into aluminum retainer until both ends of astragal are flush with each end of the retainer. Trim the astragal to length if necessary, however the astragal must not be stretched once in the retainer. Then crimp as shown in Figure "G".

Red headed sheet metal screws are used in these holes

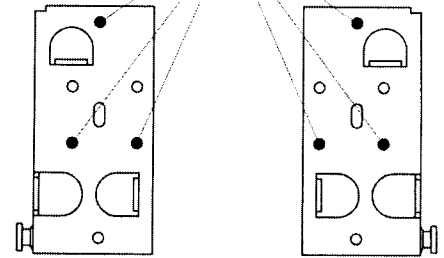


Figure "F"

After sliding the astragal into the retainer, crimp these edges 1/2" from ends

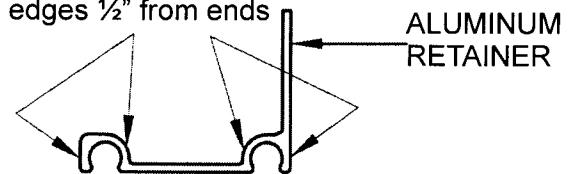
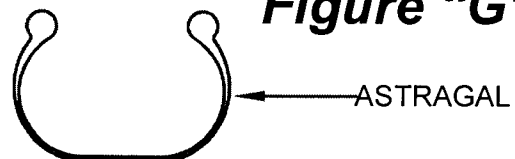


Figure "G"

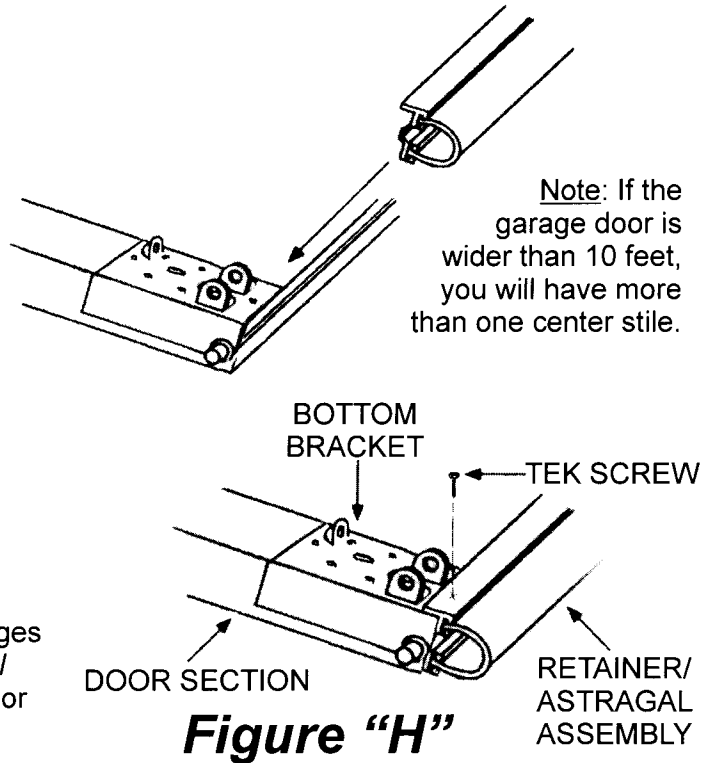


Step 3 (Continued)

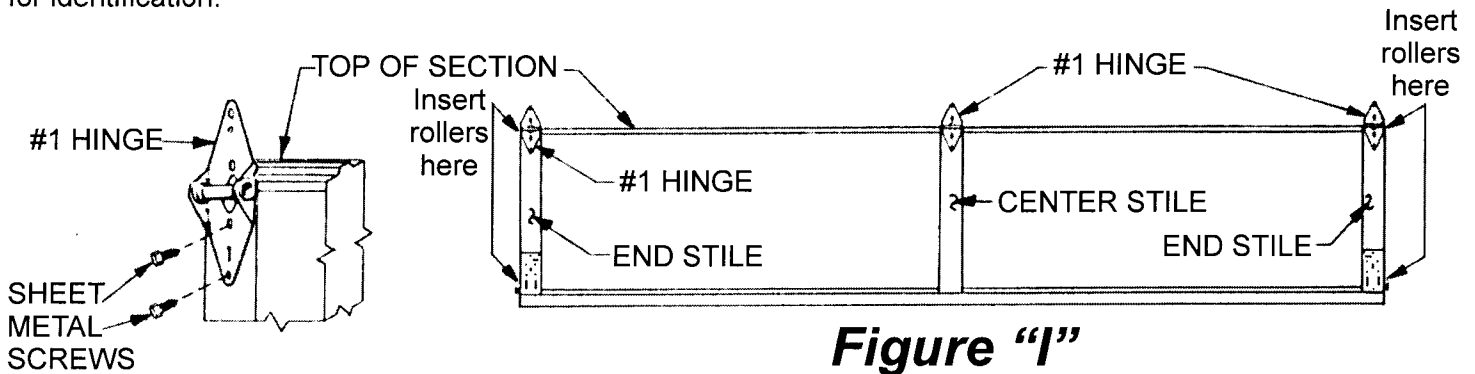
BOTTOM SECTION ASSEMBLY

Place the retainer and astragal assembly on back side and bottom of the bottom section. The retainer/astragal assembly should be flush with each end of bottom section. Secure the retainer/astragal assembly with self-drilling TEK screws at each stile location, center stiles first. When securing to the end stiles, the TEK screw should extend through the retainer then through the pre-drilled hole at the bottom the bottom bracket. When completed the astragal/retainer assembly should be flush with each end of the section and the bottom brackets should be flush with the bottom of the section. See *Figure "H"*

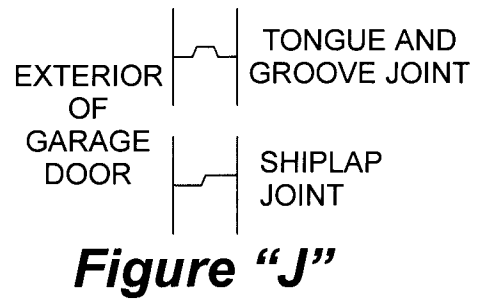
Next, securely fasten the #1 hinges to the bottom section with sheet metal screw as shown in *Figure "I"*. The #1 hinges have a (1) stamped on the lower half of the hinge. *Figure I* illustrates a Door with a Tongue and Groove Joint. The door you are installing may have a Shiplap Joint, see *Figure "J"* for identification.



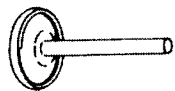
Note: If the garage door is wider than 10 feet, you will have more than one center stile.



Attach the looped end of the cables over the buttons located at the lower outside corners of the bottom brackets. Once the cables are attached, roll them into a 6" to 9" diameter coil for easy handling. Next, insert the 1"x1" foam blocks into the bottom bracket safety caps, align the safety caps on the bottom brackets, insert rollers, then push the push nut onto the roller stem as shown in *Figure "K"*. Insert rollers into the two #1 hinges located on the end stiles. See *Figure "I"*



CABLE ASSEMBLY



ROLLER



BOTTOM BRACKET SAFETY CAP

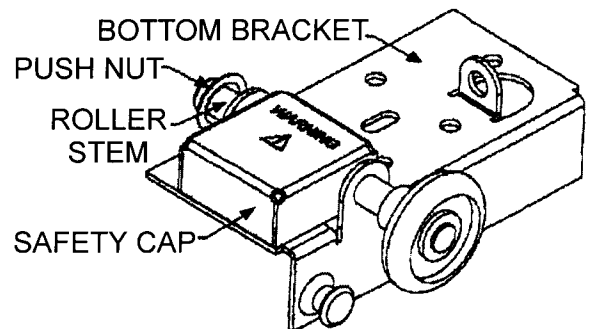


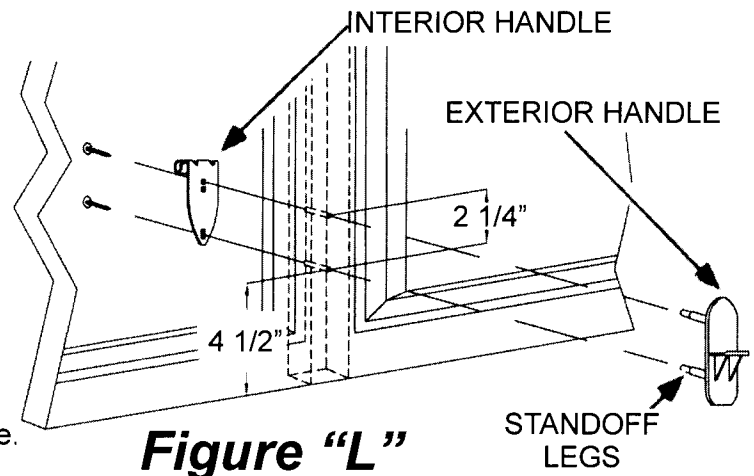
Figure "K"

NOTE: THE SAFETY CAP IS A REQUIRED SAFETY DEVICE. IT IS DESIGNED TO AVOID ACCIDENTAL INJURY FROM THE BOTTOM BRACKET BEING REMOVED ONCE THE DOOR IS INSTALLED AND OPERATIONAL.

Step 3 (Continued)

BOTTOM SECTION ASSEMBLY

The lift handle consists of two parts, the plastic exterior handle and the interior steel handle. These handles **MUST** be installed on the bottom section, and the **POSITIONING OF THESE HANDLES ARE CRITICAL**. If it is a raised panel type door, the handle should be centered on the flat portion between the raised panels on the exterior of the door, (at the same location where a center stile or backer plate occurs) which can be identified by locating the pilot holes for the hinge. These holes indicate the center of the stile or backer plate.

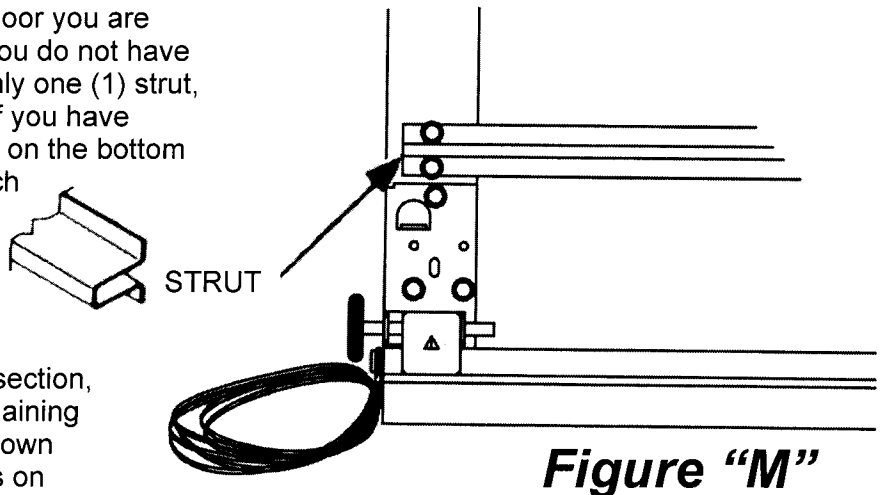


To install these handles, measure up from the bottom of the section $4 \frac{1}{2}$ " to locate the first or lower hole and $6 \frac{3}{4}$ " up for the second or upper hole. Using a long shank $\frac{3}{16}$ " drill bit, drill pilot holes completely through the section from the exterior face side. After drilling the pilot holes, use a $\frac{7}{16}$ " bit to ream out the hole from the face side. Do not drill the $\frac{7}{16}$ " hole through the back side of the center stile or the backer plate. See Figure "L".

After you have reamed these holes, insert the exterior handle into the holes. If the door is $1 \frac{1}{2}$ " thick you must first cut off the standoff legs at the pre-measured cut off location. Next align the metal handle on the interior of the door. Secure the handles with the #10 x $\frac{3}{4}$ " washer head screw provided. After completing the handle installation, affix the "Do not remove" warning label to the inside of the door, next to the lifting handle.

Next check your packing list to see if the door you are installing requires reinforcement struts. If you do not have struts, continue to next step. If you have only one (1) strut, it will be installed later on the top section. If you have multiple struts, you must install one of them on the bottom section using self-drilling TEK screws. Attach the strut, centered horizontally just above the bottom brackets. Secure at top and bottom of the strut on each center stile and end stiles. See Figure "M".

If you have been supplied with three (3) or more struts, one strut is secured to the top section, one strut on the bottom section and the remaining struts should be distributed evenly up and down the door. When you later install these struts on the intermediate sections, attach them in the center of the appropriate section(s).



Step 4

INTERMEDIATE and TOP SECTION ASSEMBLY

Depending on your door height, the number of intermediate sections you have will vary. As previously noted the larger of the sections is used for the bottom. If you have an additional large section, it will be used as the top section. If you have more large sections, they will be distributed as evenly as possible up and down the door.

After choosing the order of the intermediate sections, take intermediate section #2 and lay face down on a flat smooth surface. At the top of the section install the required hinges with sheet metal screws. The end stiles require #2 hinges and the center stile or stiles #1 hinges. See Figure "N" (Page 5)

If the door will be electrically operated and is not supplied with a keyed manual locking assembly, you **MUST** also install lift handles on intermediate section #2. Follow the previous instructions for installing the lift handles. If you will be installing a keyed lock assembly, the lift handles are not required on intermediate section #2. Go to **Step 4a**, Page 12, install the lock assembly and return to Step 4 for completion.



Step 4 (Continued)

INTERMEDIATE and TOP SECTION ASSEMBLY

Next choose intermediate section #3 and install #3 hinges on the top of the end stiles and #1 hinges on the top of the center stiles.

If you have additional intermediate sections, follow the same process. The center stiles always require #1 hinges and the top of the end stiles require hinges with the matching number as the section's position when the door is stacked. If you have struts that need to be installed on the intermediate sections, install as required before going on to the top section.

IF THE DOOR IS TO BE ELECTRICALLY OPERATED, THE TOP SECTION MUST HAVE A STRUT FOR ADDITIONAL SUPPORT!

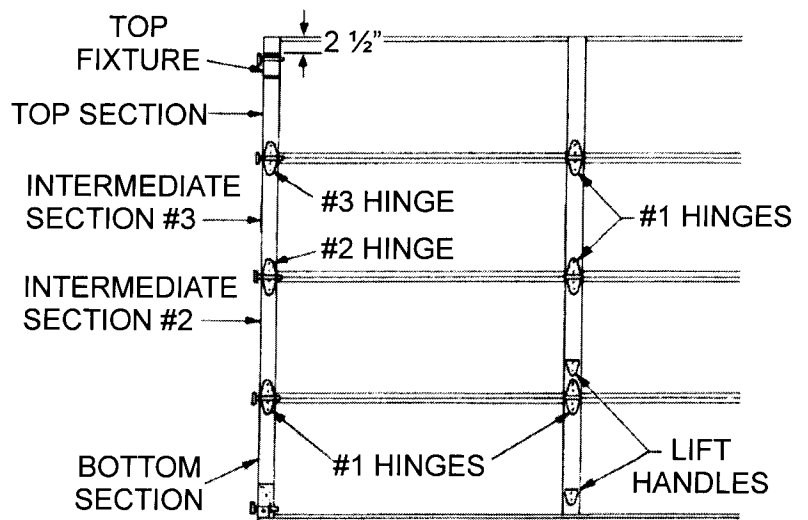


Figure "N"

If you have low headroom hardware (double track) go to Step 4b, Page 31, to complete top section assembly, then return to Step 5.

If you DO NOT HAVE a low headroom hardware set and the top section requires a strut, the strut should be installed first. Center the strut horizontally on the top section with the upper edge of the flange being flush with the top edge of the section. With the self drilling TEK screws, fasten both flanges of the strut at each stile location. If the door is an open back type (no metal back skin), additionally attach the strut on the top flange only, centered between each of the stiles. Next secure the adjustable top fixtures 2 1/2" down from top of section with four TEK screws. See Figure "N" & "O"

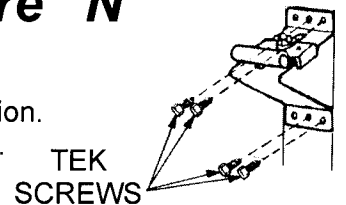


Figure "O"

Step 5

STACKING THE DOOR

Place the bottom section in the opening so it is centered and level. If it not level, place a shim under one end to level it. The **BOTTOM SECTION MUST BE LEVEL**. See Figure "P".

Drive 16 penny nails part of the way into the jamb along both ends of the section as shown in Figure "P". Bend nails over the ends of the section to hold the section in place. See Figure "Q".

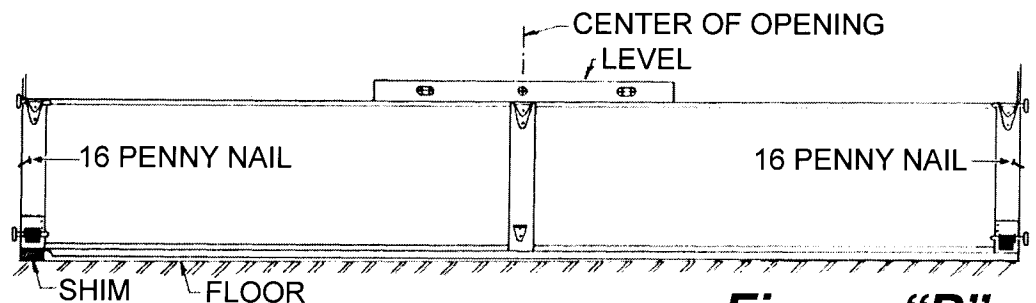


Figure "P"

Next stack intermediate section #2 on top of the bottom section. Hold it in position with 16 penny nails just like the bottom section, then secure the upper half of the hinges with sheet metal screws. Continue stacking the remaining sections in the correct order as shown in Figure "N". Each time each section is stacked, be sure to secure it with 16 penny nails and attach the upper half of the hinges.

Once you have completed stacking the door, **MAKE SURE THE TOP SECTION IS LEVEL**. If not, disassemble the door and repeat the stacking procedure until all sections are level.

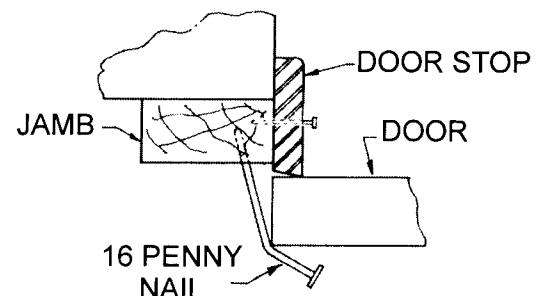


Figure "Q"



Step 5 (Continued)

STACKING THE DOOR

Once you have all sections stacked in the opening, make sure all rollers are inserted correctly into the hinges and top fixtures. The graduated hinges (#2, #3, etc.) should have the rollers inserted into the sleeves that are the furthest from the door. See *Figure "R"*

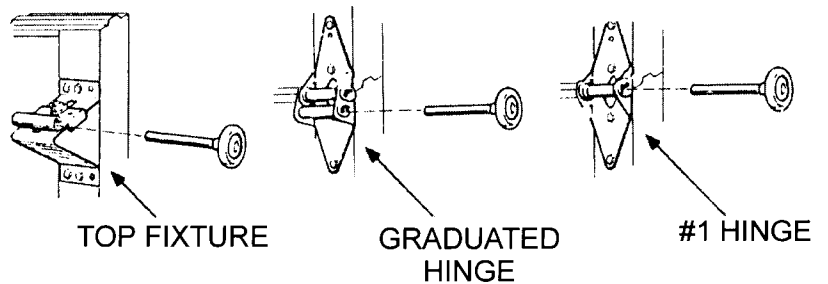


Figure "R"

Step 6

TRACK ASSEMBLY

The vertical track comes in stock lengths, either for a 7' high door or a 8' high door. If your door is any other height you will need to cut off the vertical tracks with a hacksaw. Example: If your door is 6'-6" or 7'-6" you will need to cut off standard vertical track by 6". Be sure to cut vertical tracks off the same ends.

Then using 1/4"x1/2" round head carriage bolts and 1/4" hex flange nuts, attach the flag brackets and jamb brackets to each vertical track as shown in *Figure "S"*. Do not tighten nuts more than finger tight at this time. The head of the bolt goes to the inside of the track. The flat side of the track goes toward the wall.

After both vertical tracks are assembled, hook each track over the rollers and swing into position as shown in *Figure "T"*.

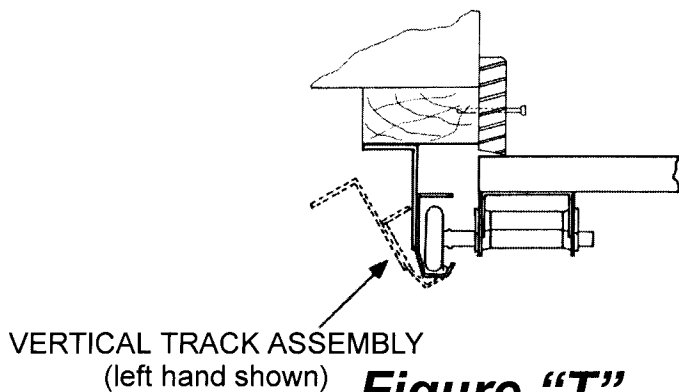


Figure "T"

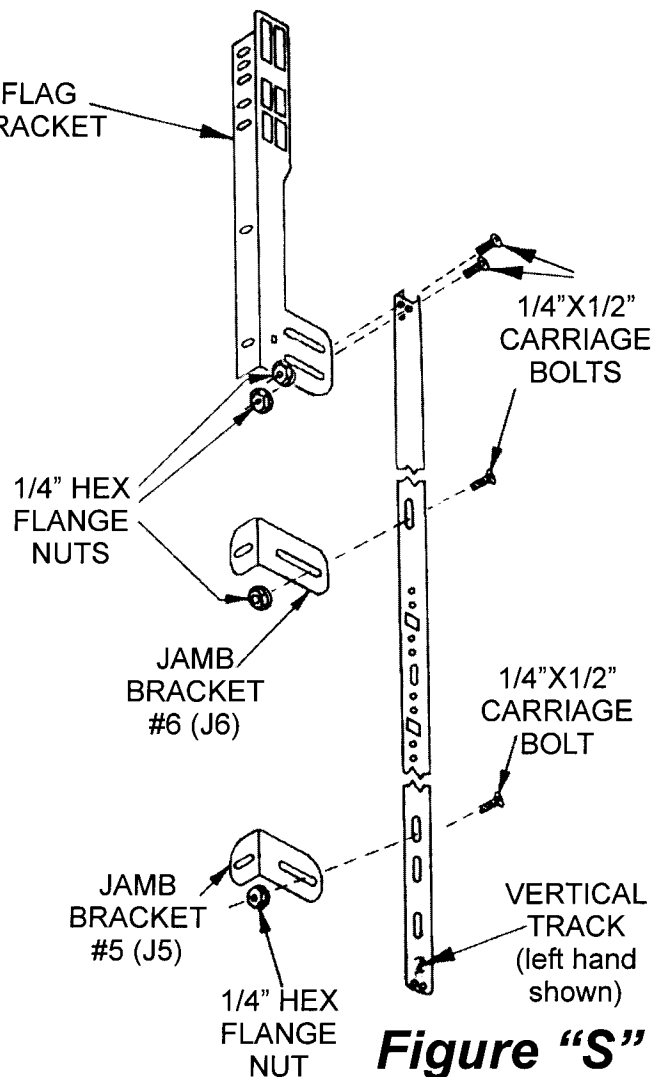


Figure "S"

If you previously had to shim one side of the door to level it, you will also need to shim under the vertical track on the same side of the door with the same thickness shim. The top of the vertical tracks must be level with each other.

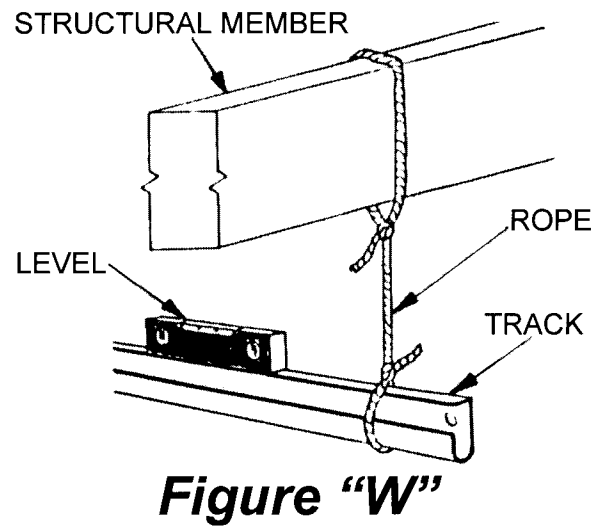
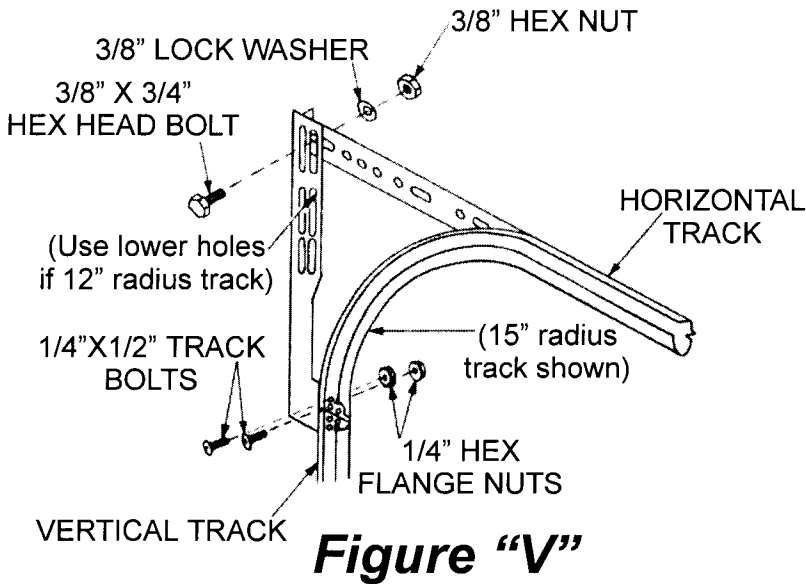
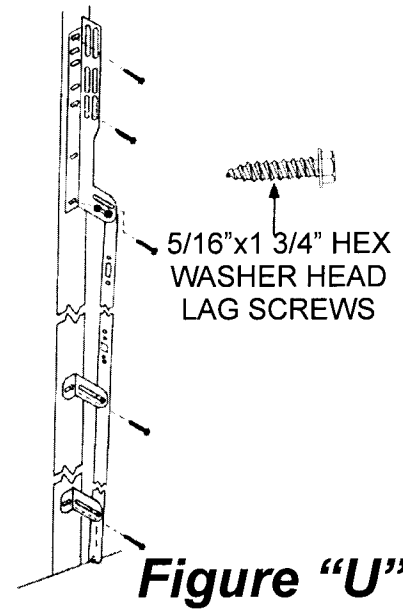
Step 6 (Continued)

TRACK ASSEMBLY

Leaving 1/2" clearance between the track and the edge of the door, fasten the vertical track to the jambs with 5/16" x 1 3/4" lag screws. See Figure "U". Drill 3/16" pilot holes 1 3/4" deep, before inserting the lag screws. The vertical tracks and the flag brackets must be plumb and parallel with the edges of the door, allowing the 1/2" space.

Lift the horizontal track assemblies into position. Suspend the rear of the track with a rope temporarily. Position the curved portion of the tracks over the top roller as shown in Figure "V". Attach the horizontal track to the flag bracket using two 1/4" x 1/2" track bolts and 1/4" hex flange nuts per side, thumb tighten only. Heads of the bolts must be on the inside of the track.

Using one 3/8" x 3/4" hex head bolt, a 3/8" lock washer and a 3/8" hex nut per side, attach the horizontal track angle to upper holes in the flag brackets. If you have 15" radius track use the upper most holes, if 12" radius use the next set of holes down, thumb tighten only.

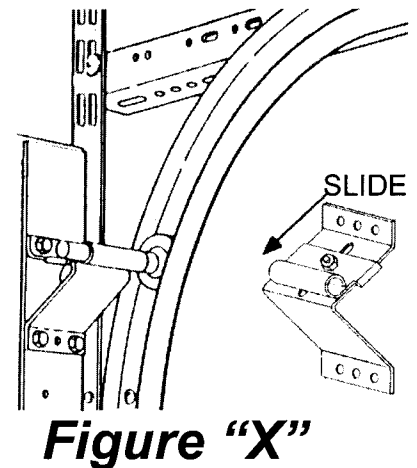


Level the horizontal track and temporarily tie the rear of tracks to the ceiling with rope as shown in Figure "W". The horizontal track should be perpendicular to the door and in line with the vertical track.

Starting at the bottom of the vertical track and working your way up, push the vertical tracks forward into the rollers. Once the track is forward against the rollers, tighten all bolts on the vertical tracks.

Next tighten all bolts on horizontal tracks, making sure the curved portion of the horizontal tracks line up with the tops of the vertical tracks and the horizontal track is level.

Adjust the top fixtures by loosening the nut on top of the sliding mechanism located on the top fixture and sliding the roller snugly against the track. See Figure "X". Once snug tighten the nut.



Step 7

TORSION SPRING ASSEMBLY

Measure the length of the 1 inch diameter torsion tube included. It must be at least 10 inches longer than the door's width.

Next slide the bushing, torsion springs and the cable drums onto the torsion tube as shown in *Figure "Y"*. The cable drums and torsion springs must be in the correct location and are color coded for easy identification. The cable drums are also stamped on the interior rim "LH" or "RH" for identification. The wind of the springs can also be identified by *Figure "Z"*. In some cases you may have only one spring rather than two. If so, identify which wind torsion spring it is and locate it on the torsion tube according to *Figure "Y"*.

Insert the black nylon bushing into the spring anchor end of either spring. The exposed portion of the bushing has a collar that fits inside the slot in the spring anchor bracket. See *Figure "AA"*. Then attach the spring or springs to the spring anchor bracket and the spring warning tag with the RED HEADED 3/8" x 1 1/2" hex head bolts and the RED 3/8" hex nuts, thumb tighten only. Once assembled the spring anchor bracket should be at mid point or centered on the torsion tube.

Locate the end bearing plates and break apart as shown in *Figure "AB"*

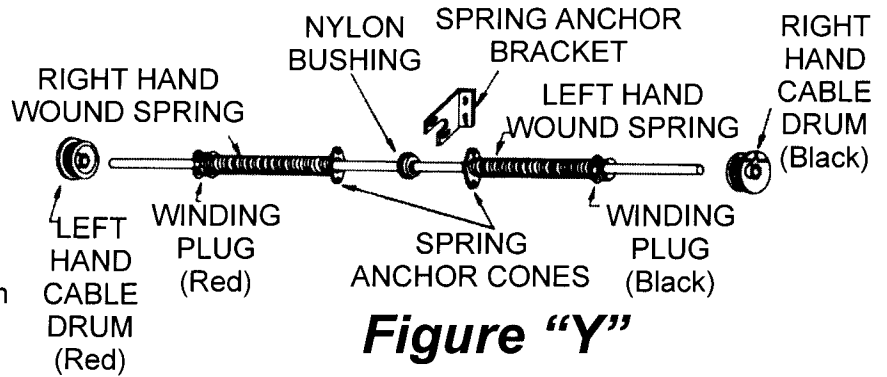


Figure "Y"

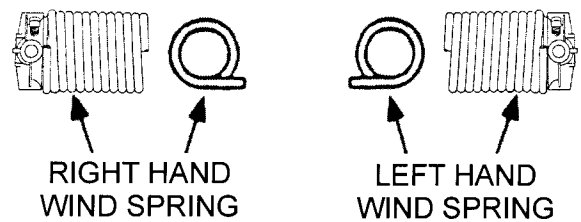


Figure "Z"

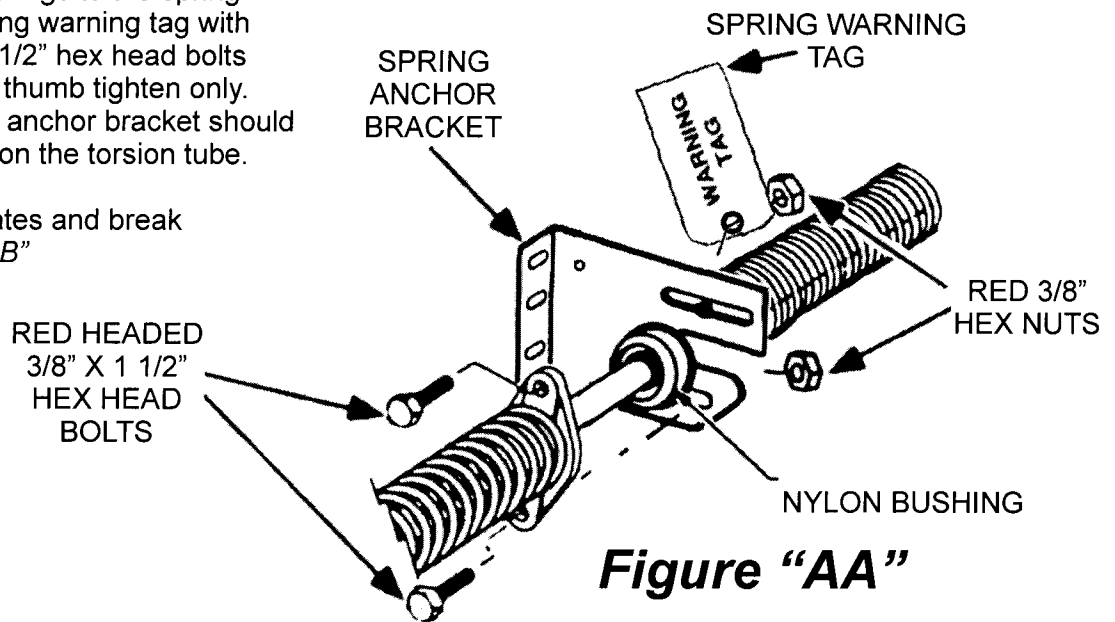


Figure "AA"

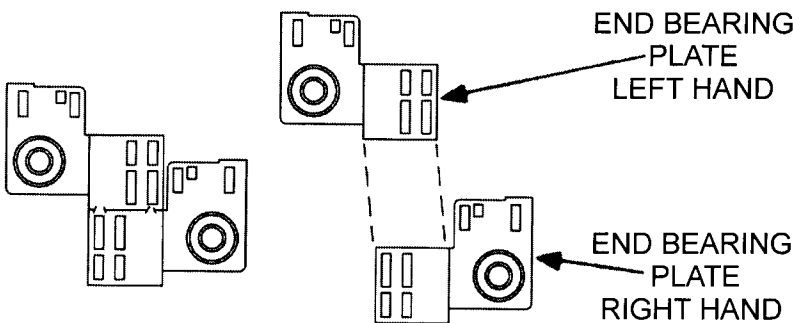


Figure "AB"



Step 7 (Continued)

TORSION SPRING ASSEMBLY

Attach the end bearing plates to each horizontal track angle using two 3/8" x 3/4" hex head bolts, 3/8" lock washers and 3/8" hex nuts, thumb tighten only. Then drill a 3/16" diameter pilot hole, 1 3/4" deep, and secure the top of the end bearing plate to the jamb with a 5/16" x 1 3/4" hex washer head lag screw. See Figure "AC"

After the lag screws are tight, finish tightening the 3/8" bolts and nuts attaching the end bearing plates to the horizontal track angles.

Next, lift the complete spring and torsion tube assembly into place. Slide the ends of the torsion tube into the end bearing plates. With the torsion tube level and straight you can now secure the spring anchor bracket to the header. Using the top and bottom slotted holes, drill 3/16" diameter pilot holes into the header. Then secure the spring anchor bracket with two 5/16"x1 3/4" hex washer head lags.

THE AREA WHERE THE SPRING ANCHOR BRACKET IS SECURED TO THE HEADER MUST BE SOLID WOOD AND CAPABLE OF SUPPORTING THE TORSIONAL FORCE APPLIED BY THE SPRINGS. See Figure "B", Page 1

Next, the safety cap must be installed on the spring anchor bracket. Hook the bottom of the safety cap under the lower edge of the spring anchor bracket. Then push the tab on the top of the safety cap into the slot that is on the side of the spring anchor bracket. You will need to use a hammer or a mallet to force the tab into the slot. See Figure "AD"

NOTE: THE SAFETY CAP IS A REQUIRED SAFETY DEVICE. IT IS DESIGNED TO AVOID ACCIDENTAL INJURY FROM THE SPRING ANCHOR BRACKET BEING REMOVED ONCE THE DOOR IS INSTALLED AND OPERATIONAL.

Now, adjust the spring and spring anchor bracket connection if necessary to assure that the torsion tube is straight, level and parallel with the top of the door. Then fully tighten the 3/8" hex head nuts.

Remove all 16 penny nails holding the door sections against the jamb.

Then slide the left cable drum against the end bearing plate and tighten set screws. Set screws should dimple the torsion tube when tightening. Tighten about three quarter turns after set screw first hit the torsion tube. From the left bottom bracket bring the cable up between the wall and roller shafts, behind the drum and into notch in the edge of the drum. Turn the drum until the cable is tight. Make sure that the cable button stop is seated against the drum and cable is in the outside groove. Turning the cable drum and sliding it up tight against the end bearing plate removes the cable slack. Clamp a vise-grip on top of torsion tube and against header to hold cable tight and unwinding from the drum. See Figure "AE", Page 10

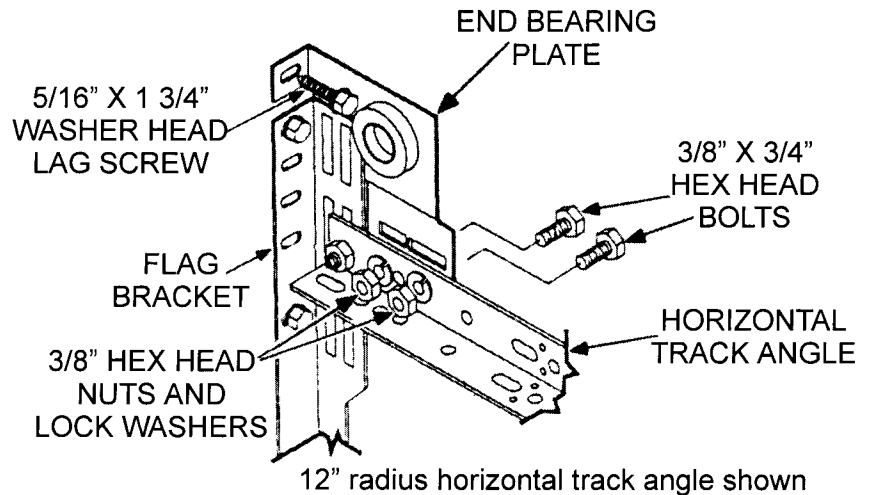


Figure "AC"

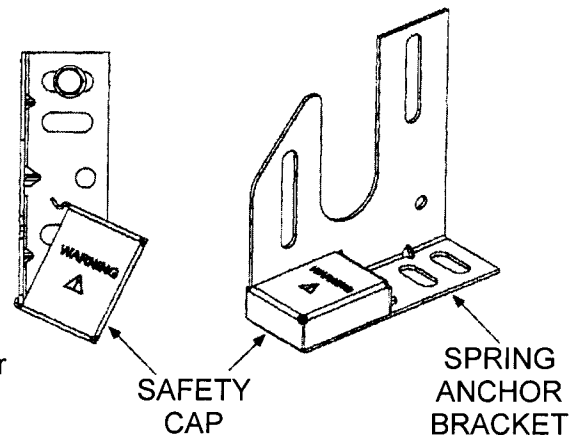


Figure "AD"

Step 7 (Continued)

TORSION SPRING ASSEMBLY

Run the cable from the right bottom fixture to the right cable drum just like you did on the left side. After inserting the cable into the notch in the drum, remove the slack from the cable by rotating the drum and sliding it up tight against the end bearing plate. The right cable should have the same amount of tension as the left cable. Once the tension is even, tighten the set screws on the right hand cable drum.

Check to make sure both cable drums are snug against the end bearing plates and the cables have the same amount of tension. If not, the door will not operate evenly and remain level.

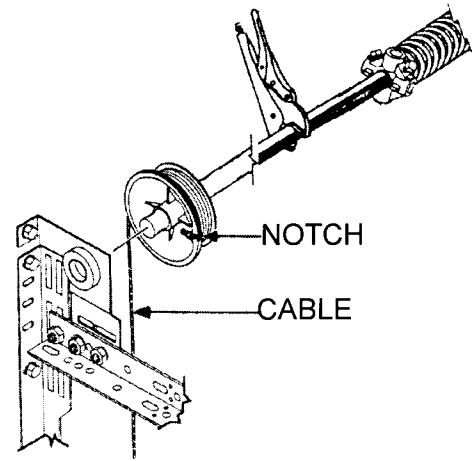


Figure "AE"

Step 8

WINDING SPRINGS

Make sure the door is secured and can not be raised while winding or adjusting the springs. If the door has a lock, put the lock in the locked position. If you have no lock, clamp another vise-grip on the vertical track just above one of the rollers so that the door can not move.

Mark a chalk line on the spring or springs as shown in Figure "AF". This will allow to count the number of turns you have on the springs when winding.

Wind the springs by using 1/2" diameter 24" long winding bars. Always use proper size winding bars. NEVER USE SCREWDRIVERS OR ANY TOOL TOO LARGE OR TOO SMALL TO FIT IN THE WINDING PLUGS CORRECTLY.

Always wind the spring in the direction that the spring is wound. In this application wind in the upward direction. The correct amount of turns for each spring is shown on the chart at lower right.

After each spring is wound the correct amount of turns, tighten the set screws. The set screws should be turned no more than 3/4 turn after it has made contact with the torsion tube.

Next, remove the vise-grip from the torsion tube. Unlock the door, or remove the vise-grip from the vertical track. Carefully raise the door three feet and clamp the vise-grip onto the vertical track above one roller to keep the door from further raising by itself.

WARNING:
SPRING TENSION IS DANGEROUS
To avoid *Serious Injury* please follow the exact spring winding procedures.
If in doubt, seek professional help!

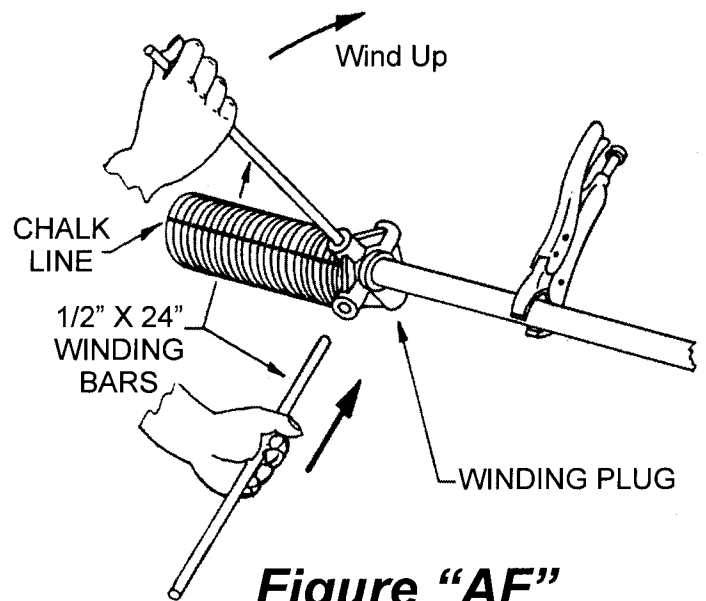


Figure "AF"

WINDING CHART

6'-0" high door = approximately 7 turns
6'-6" high door = approximately 7 1/2 turns
7'-0" high door = approximately 8 turns
7'-6" high door = approximately 8 1/2 turns
8'-0" high door = approximately 8 3/4 turns

Step 9

BACK HANG ASSEMBLY

Back hangs are required for support of the horizontal tracks. Generally the angle and fasteners required for the back hang and sway brace assembly are not included with the door. The distance between the horizontal track and the overhead structure will determine how much angle will be required.

If the ceiling trusses are exposed, usually the back hangs can be installed as in *Figure "AG"*. If the truss locations are not correct or you have concealed trusses, refer to *Figure "AH"*.

There should be 1/2" clearance between the door and the horizontal track. The sway braces should be within 18" of the back of the track and the horizontal track should be level. See *Figure "AG"*.

The angle should be attached to the structural members with 5/16"x1-1/2" lag screws. Use longer lag screws when going through sheet rock as required. Holes should be pilot drilled before inserting lag screws.

The angle that you attach to the horizontal track should drop straight down from the structural member and should be attached to the track with a 5/16"x3/4" carriage bolt and 5/16" flange nut. You must first drill a 5/16" diameter hole at the appropriate location in the horizontal track. An additional piece of angle must be attached to this vertical angle, diagonally, to resist any movement of the track. Attach the angle to the angle with 5/16"x 3/4" bolts and hex head nuts.

Then insert a 5/16"x 3/4" bolt with nut at the back of the track which acts as a stop for the door.

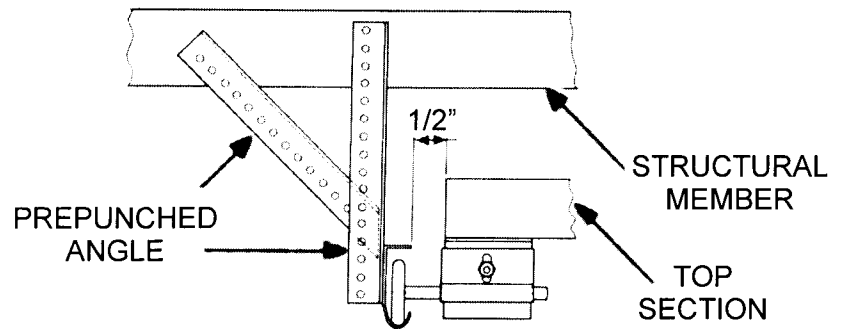


Figure "AG"

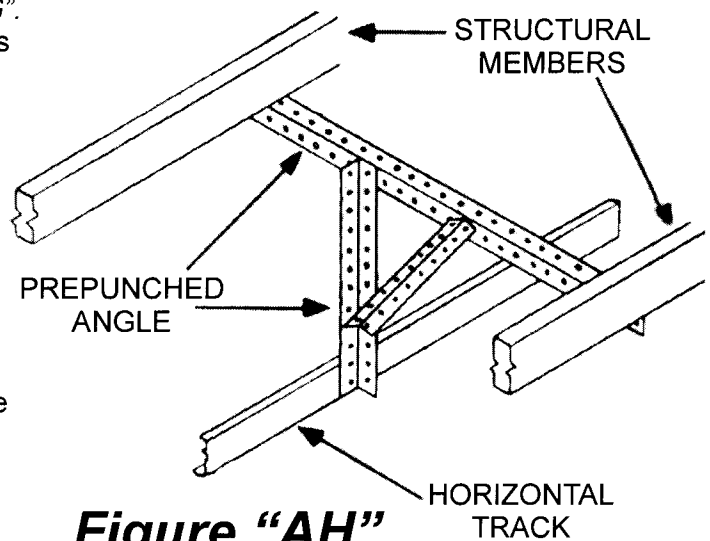


Figure "AH"

Step 10

FINAL ASSEMBLY & ADJUSTMENT

Remove vise-grip from track and raise the door. Check track alignment, the door should raise evenly and not bind. The door should not be able to be moved side to side more than 1/4", if so readjust the tracks as required. With the door closed, push vertical track and door toward the wood stop until door is snug against stop. Then tighten the nuts on the track bolts on the vertical track. From the outside, adjust wood stop to fit against the door and nail securely.

Operate the door up and down, if the door is difficult to open and tends to close by itself, more spring tension is required. If the door opens by itself and is difficult to close, less spring tension is required. Always adjust torsion springs with the door closed and locked down and vise-grip on the torsion tube to prevent the shaft from turning.

USE EXTREME CAUTION WHEN ADJUSTING SPRINGS.

Screw the eye screw into the jamb halfway up the door along side the vertical track. Attach the pull rope to the eye screw and the other end to the top hole in the bottom fixture. See *Figure "AI"*.

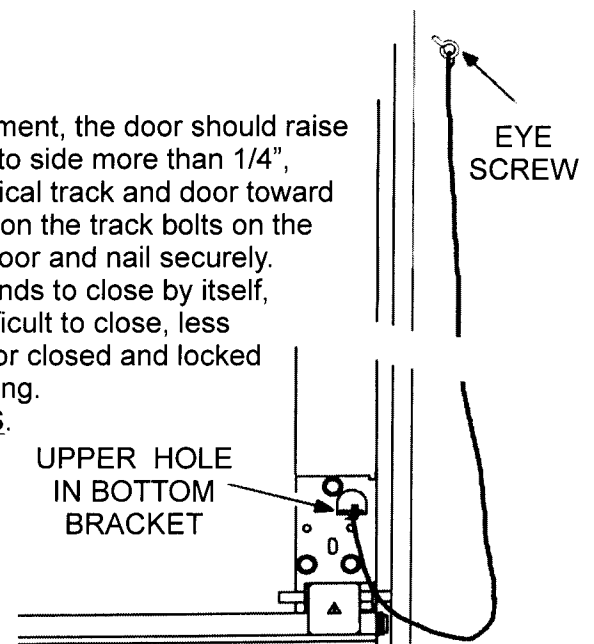
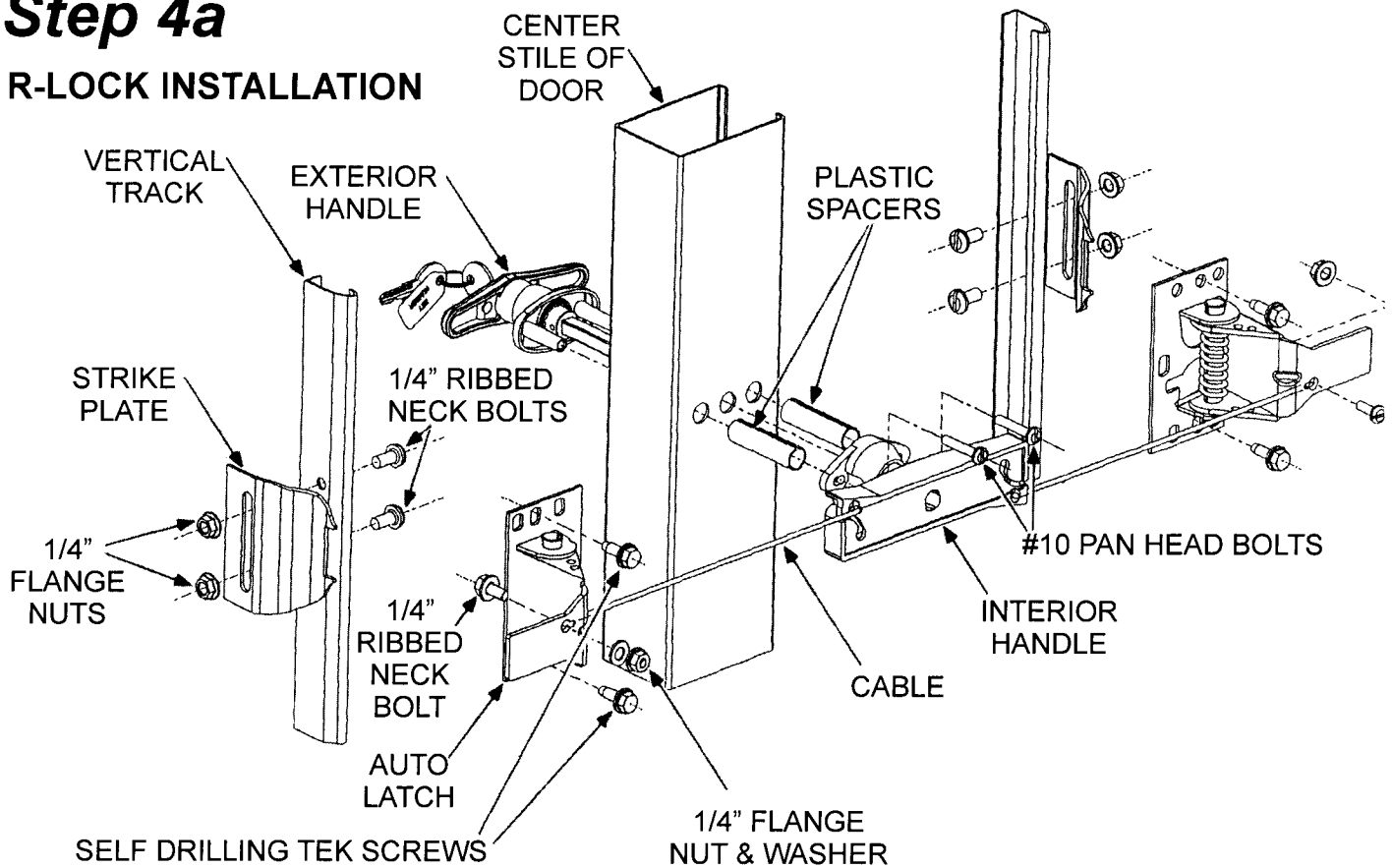


Figure "AI"

Step 4a

R-LOCK INSTALLATION



On all models except the Model 138, on the #2 intermediate section locate the center stile. (On the Model 138 use the #3 intermediate section) Halfway up, in the center of the center stile, drill three 7/16" diameter holes completely through the door section. Drill the holes starting from the face of the section. Use the template included in the lock assembly bag for locating and spacing the holes. Cut the plastic spacers to the correct length, and insert in the outermost holes. The correct length is the same as the thickness of the door section. Then from the front or exterior of the door section, insert the exterior handle into the holes in the section. Use the #10 pan head bolts to secure the interior handle to the exterior handle. Various lengths of the #10 bolts have been supplied with the lock assembly. Use the appropriate length #10 bolt depending on your door thickness. When you have tightened the bolts, the interior and exterior handles should fit firmly on the door.

The next part of the lock installation should not be completed until after *Step 7*, Page 10 and before *Step 8* WINDING THE SPRINGS. Return to *Step 4*, Page 4, INTERMEDIATE & TOP SECTION ASSEMBLY.

Install the strike plates on the vertical track using two 1/4" ribbed neck bolts and 1/4" flange nuts. The strike plates should be located about the same distance from the floor as the interior handle. The closer they are to being the same height to the floor, the easier the lock will be to operate. If the prepunched holes in the vertical track are not at the correct location, drill 5/16" diameter holes as necessary.

Locate the auto latches at the same height from the floor as the strike plates, and on the end stiles of the door. The outer edge of the auto latch bracket should be even with the edge of the door. Secure each auto latch with two 1/4" self drilling TEK screws. The latch portion of the auto latches should extend over to the strike plates and rest in the slot. Next attach the button end of the cables to the interior handle. The other ends of the cable should extend to the auto latches. Put the cable through the hole from the front side of the latch, pull the cable tight, then allow about 1/2" slack in the cables. Secure the cable with a 1/4" ribbed neck bolt, flange nut and washer as shown in the above illustration. Check the operation by rotating the lock handle as far as possible, the latch should fully open, if not remove some of the slack from the cables. Trim off the excess cable from the back of the auto latches when completed.

Thank you for purchasing a Northwest Door.

*Please help conserve our natural resources,
by recycling the door packaging if possible.*



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