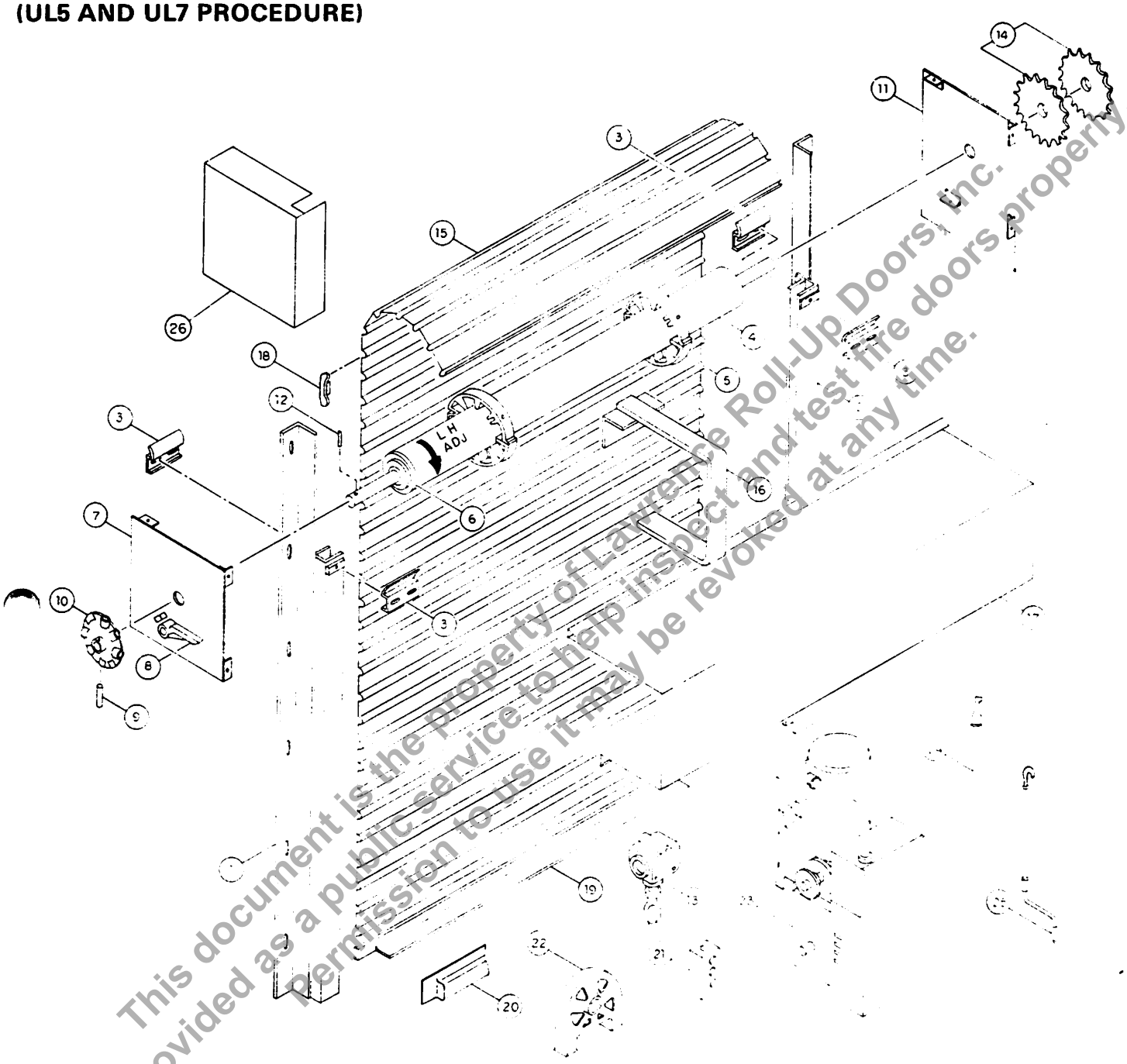
PARTS LIST — FIRE DOORS

PUSH-UP, CHAIN, HANDCRANK OR MOTOR OPERATED
LEFT HAND ADJUST SHOWN, FACING COIL SIDE
(UL5 AND UL7 PROCEDURE)

CORNELL IRON WORKS
ES10-209 4-1-88



1	L.H. GUIDE	14	SPROCKETS
2	R.H. GUIDE	15	DOOR CURTAIN
3	BELLMOUTHS	16	HOOD SUPPORT
4	BARREL (COUNTER BALANCE SHAFT)	17	SHEETMETAL HOOD
5	RINGS	18	ENDLOCK
6	ROLLER BEARING	19	BOTTOM BAR
7	ADJUSTOR BRACKET	20	SAFETY EDGE
8	DROPOUT ASSEMBLY	21	PUSH BUTTON STATION (MOTOR UNITS)
9	STOP PIN	22	CHAIN OPERATOR
10	ADJUSTING WHEEL	23	MOTOR OPERATOR (WHEN REQ'D.)
11	GOVERNOR BRACKET	24	POLE HOOK FOR PUSH UP OPERATION
12	ROLL PIN	25	REMOVABLE HAND CRANK
13	CRANK BOX	26	MECHANISM COVER

CORNELL IRON WORKS, INC.

INSTALLATION INSTRUCTIONS FOR FIRE DOORS — PUSH-UP, HAND CRANK, HAND CHAIN OR MOTOR OPERATION, FACE OF WALL MOUNTED

NOTE: Read all instructions carefully, checking shop drawings supplied for any special conditions. Open all crated materials and check with attached parts list prior to installation. All parts supplied should correspond with type of door being installed. If any special devices such as electric releases, smoke or heat detectors are supplied see their individual instructions.

STEP 1 Check opening width and height dimensions with those shown on the shop drawing, they should correspond. With guides on floor, run 5/16" diameter self-tapping screws into bellmouth/stopper mounting pads at top of guide assembly (four places). This will aid in bellmouth/stopper installation later.

STEP 2 Locate best working point such as the lintel and check for level. Refer to shop drawings for any set back of guides from face of opening. **NOTE:** Set bottoms of guide members 3/4" or 1" above the floor as indicated on shop drawing for proper expansion clearance. Install the left hand guide (1) plumb and true. Install the right hand guide (2) equal distance top and bottom and level with left hand guide as shown on plan view. Mark off holes, drill and tap for steel jambs. For masonry jambs, through bolts are specified by Underwriters Laboratories. Where through bolts cannot be used due to job conditions, use expansion shields and minimum 8" long bolts. Always use the fiber washers supplied. These are placed under the steel washers. **NOTE:** "Do not weld" wall angles to steel jambs. This practice is not acceptable to Underwriters Laboratories or other labeling authorities.

STEP 3 Locate a good hoisting point above the center of the opening and set in place a chain block (if no other hoisting equipment is available). On larger doors it is advisable to use two chain blocks.

STEP 4 Place the counterbalance shaft (4) at the base of the guides. The adjusting end will either be marked "L.H. or R.H. adjust." Place barrel according to this mark. Left or right is always taken as you face the coil. Install rings (5) on the counterbalance shaft which will have holes drilled and tapped for ring attachment studs. (Take note of the direction of the coil to insure installing the rings in the proper direction). See attached detail ES10-209.7.

STEP 5 Hoist counterbalance shaft (4) two or three feet above floor, remove adjusting wheel (10) and install adjustor bracket (7) on adjust end of shaft with the dropout assembly (8) on the outside as shown on attached drawing. Replace adjusting wheel (10) on shaft and depending on type of shaft, either insert roll pin (12) or insert key and tighten set screws to secure the adjusting wheel on the shaft. Dropout assembly (8) to remain in lowered position.

STEP 6 Locate governor bracket (11) and remove attached sprocket(s) (14). **NOTE:** The arrangement of sprocket(s), washers, etc. "as shipped" must remain the same for later installation on the shaft. Place governor bracket (11), mechanism on the outside, on the opposite end of the shaft from adjustor bracket. Install drive sprocket(s) (14) with key on the end of the shaft against the bracket arranged in the same order as previously removed. See attached drawing ES10-209.4 or ES10-209.5.

STEP 7 Hoist complete assembly and position brackets on the outside leg of the wall angles, bolt in place using 1/2" diameter bolts at the top and 3/8" diameter bolts in the holes at the bottom.

NOTE: It is advisable to locate and drill hood support fastening holes prior to installing curtain. The support is centered between the brackets. If more than one support is required, layout should be checked relative to length of hood sections supplied.

STEP 8 Place two blocks about 4" high in the opening, re-roll the curtain (15), place on top of blocks with the bottom bar (19) on top. Hoist curtain, bottom bar first, and pass it over the rings (5) on the counterbalance shaft (4) in the same direction as coiling and feed slowly into guides down to the blocks on the floor.

STEP 9 With the bottom bar resting on the blocks, set the curtain edges equal distance from the end brackets at both sides. Next slide counterbalance shaft (4) away from adjustor bracket (7) as far as possible to insure proper alignment between the adjusting wheel (10) and the dropout assembly (8). Align sprocket(s) (14) on shaft with respective sprocket(s) on governor bracket (11). Install roller chains, from hardware pack, on sprocket(s). See detail ES10-209.4 or ES10-209.5. Tighten sprockets (14) on shaft with set screws. Attach curtain (15) to rings (5) as shown on ring installation sheet ES10-209.7. Install removable bellmouth/stoppers on guide assemblies with self-tapping screws supplied. Re-align sprocket(s) (14) if necessary and tighten set screws at this time.

STEP 10 (Refer to detail ES10-209.3.) To apply spring charge, remove cotter and stop pin (9) from adjusting wheel (10) and lower the dropout assembly (8). Using two 1/2" diameter steel rods, approximately 18" long, apply spring torque by inserting both rods into adjustor wheel one above the other. Rotate wheel in a direction of raising the curtain. Maintain applied torque with upper rod, while removing lower rod. Re-insert this rod above the other and continue applying torque one notch at a time using this hand over hand procedure until full spring charge has been applied.

The total number of turns to be applied (with the curtain in the closed position) will be written on the counterbalance shaft. The number of turns shown is approximate and more or less torque may be required to achieve ideal curtain balance. For larger units it may be necessary to apply tension and raise the curtain alternately until full spring charge is applied. Replace stop pin (9) into adjustor wheel as shown in detail on sheet ES10-209.3 using cotter pin to retain it and raise dropout assembly to engage with stop pin. Temporarily secure dropout assembly in position with C-clamp or vise grips until final spring tension adjustment is completed and fuselink chain has been stretched into position. Proceed to Step #11 for instructions concerning finer spring tension adjustment.

NOTE: Use extreme caution in above procedure.

STEP 11 Check curtain for ease of operation. Final spring tension adjustment, if necessary, should be increased or decreased with the curtain in the fully open position. Insert one (two if necessary) 1/2" diameter steel rods into adjustor wheel (10). (Refer to Step 10.) Holding the rod(s) firmly, disconnect the dropout assembly and lower until it clears stop pin (9) on the adjustor wheel. Remove cotter pin and stop pin (9) from adjustor wheel and begin to increase or decrease tension. To increase tension turn the wheel in the direction of raising the curtain, one notch at a time; to decrease tension wheel will rotate under its own power in the direction of lowering the curtain. Do this in 1/8 turn increments re-inserting stop pin, cotter pin and engaging dropout assembly into operating position (See detail on sheet ES10-209.3) immediately after each turn of wheel and re-checking curtain for proper balance.

NOTE: Use extreme caution in above procedure.

STEP 12 ALL FIRE DOORS MUST BE TESTED FOR AUTOMATIC CLOSING. Before testing, check to see that all mechanism parts are properly aligned and all set screws tightened. Once the proper spring adjustment has been set, the amount of spring torque to be released for automatic closing must be determined. (Reference detail ES10-209.3) With the curtain in the full open position, place a "C" clamp in each guide 6" below the stopper to prevent the curtain from crashing down during dropout torque adjustment.

Using 1/2" adjustor bars (reference Step 10) to maintain spring torque, disengage the dropout assembly (8). Gradually let off spring torque while watching for the curtain to begin to fall from the stoppers. When the curtain begins to close, note the hole position in the adjustor wheel (10) that is closest to the bar stop on the bracket plate. Locate the additional stop pin (9), provided, in this hole. Rewind adjustor wheel (10) back to the original "Balanced" position and re-engage dropout assembly (8). Remove "C" clamp from guides and drop test the curtain by releasing the dropout assembly (8).This will allow spring torque to decrease and the curtain will close to the floor. If curtain begins to close slowly, relocate additional stop pin (9) to let off more spring torque one notch at a time. If the curtain closes too fast, refer to details on sheet ES10-209.6 for adjustment of the centrifugal governor mechanism.

STEP 13 Re-check curtain for ease of operation. If satisfactory, align mechanism cover (26) on adjustor bracket (7). Place hood (17) to overlap the mechanism cover and install with sheel metal screws supplied. For hoods with more than one section, a hood support (16) is supplied.

STEP 14 Set up a permanent fuselink arrangement as shown on shop drawings. If a fuselink is required on opposite side of the wall, drill a hole large enough to place a 1" I.D. pipe sleeve through wall. Overhead space permitting, chain arrangement should be 2 to 3 feet above the hood. Install an eyebolt in wall above brackets at either side of the door. Run fuselink chain from dropout assembly on one bracket through eyebolt and up to pipe through wall supplying one fuselink between pipe and eyebolt. Feed chain through pipe and install eyebolt on opposite side of wall. Run chain through eyebolt, fasten a fuselink on chain and feed chain back through pipe in wall and over to eyebolt above remaining bracket again supplying a fuselink between pipe and eyebolt. Run chain through eyebolt and down to dropout assembly. Pull slack out of chain and fasten end of chain to dropout assembly. Disconnect temporary fuselink hook-ups from dropout assemblies at this time. Reference ES10-209.8 and ES10-40.

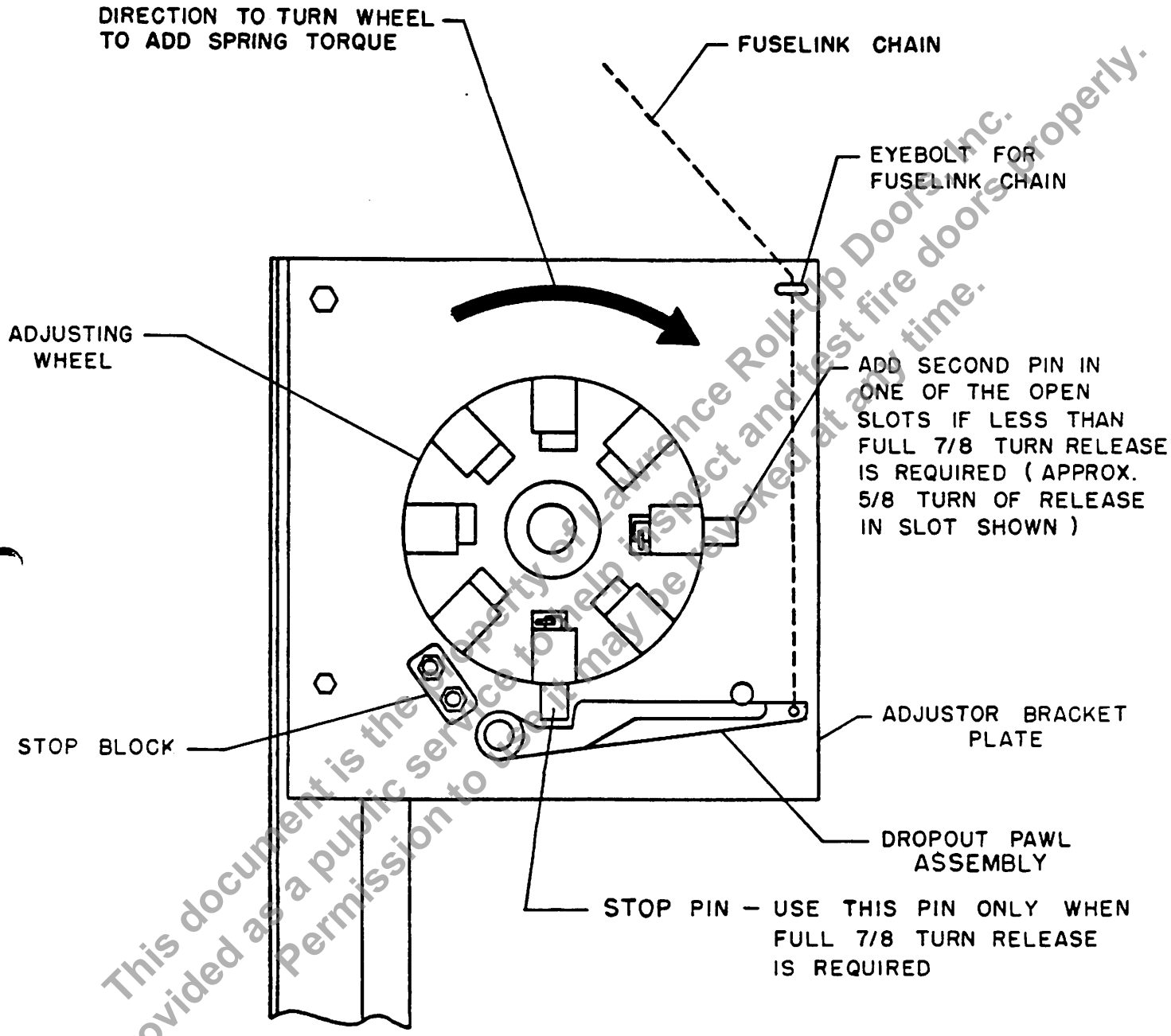
INSTALLING MOTOR OPERATORS

On doors with wall mounted motors an angle or flat is supplied mounted to the guide with pre-drilled and tapped holes matching the motor base plate. Using these holes, lay out the two outboard holes for the motor base plate. Drill and insert expansion shields. Hoist and bolt motor in place. Fit and align roller chain around sprockets, adjust for correct tension and tighten bolts securely. It is important to use the lock washers provided. Operator must be mounted securely to prevent movement during operation. Additional bracing may be required to meet field conditions.

NOTE: On some jobs special motor mounting may be required. Refer to shop drawings provided and mount motor accordingly.

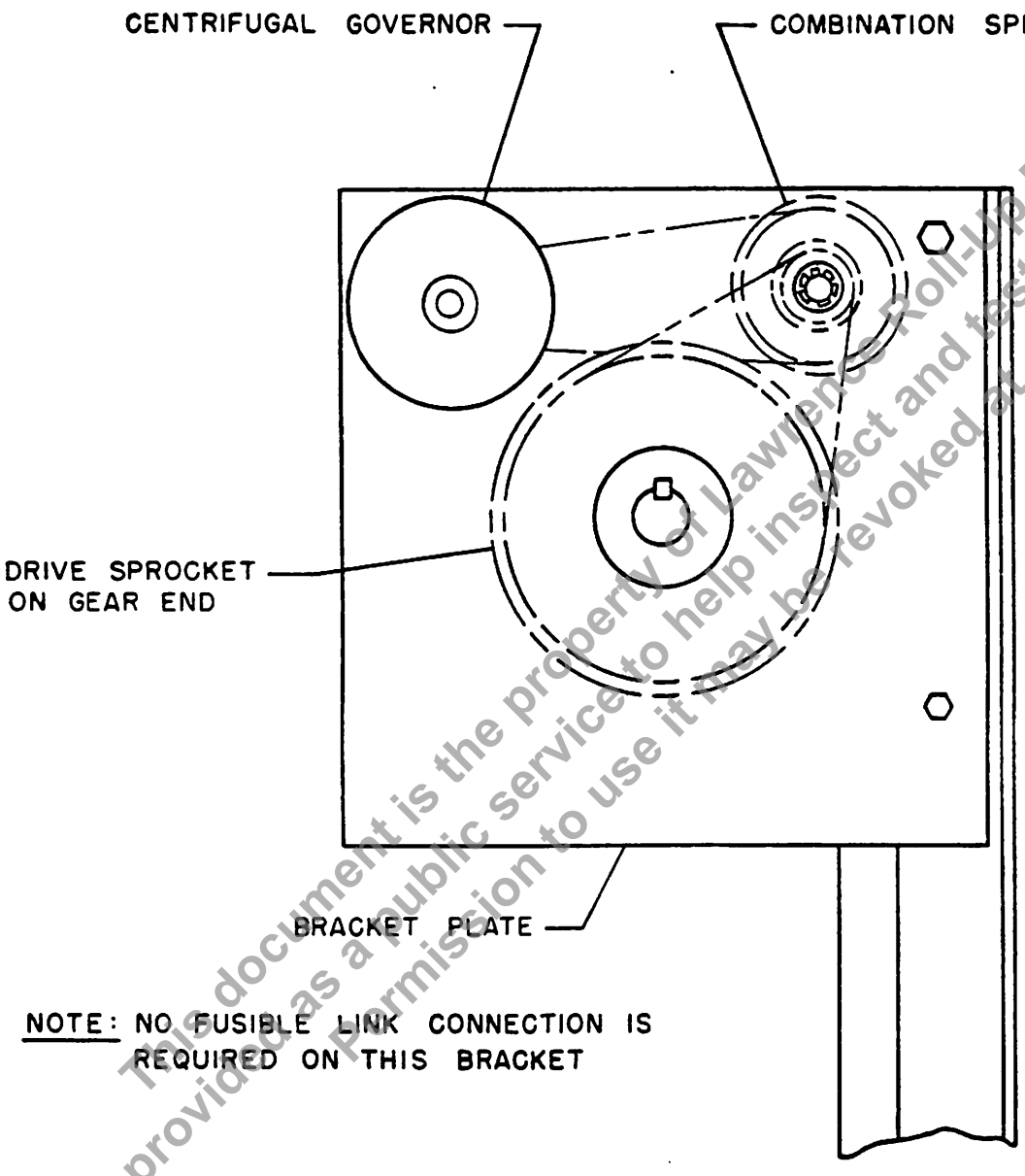
Refer to motor manufacturer's instructions for additional information.

AUTOMATIC SPRING RELEASE MECHANISM FOR ADJUSTOR BRACKET



OUTSIDE LEFT HAND ADJUST SHOWN

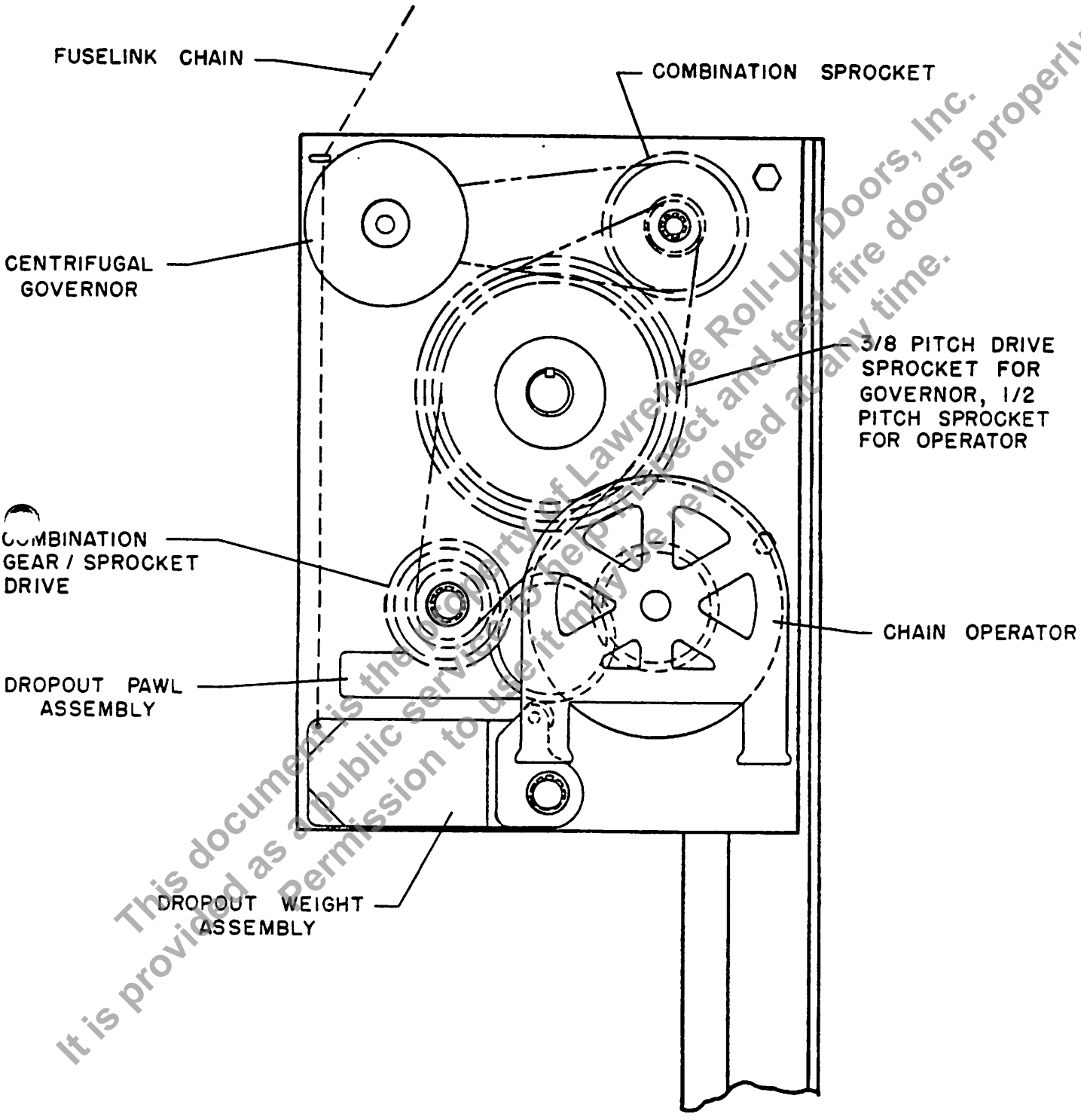
GOVERNOR MECHANISM FOR PUSH-UP OPERATED FIRE DOORS



NOTE: NO FUSIBLE LINK CONNECTION IS REQUIRED ON THIS BRACKET

OUTSIDE RIGHT HAND BRACKET SHOWN

GOVERNOR / AUTOMATIC RELEASE MECHANISM FOR CHAIN OPERATED FIRE DOORS (MOTOR OPERATED DOORS SIMILAR)



OUTSIDE RIGHT HAND OPERATOR BRACKET SHOWN

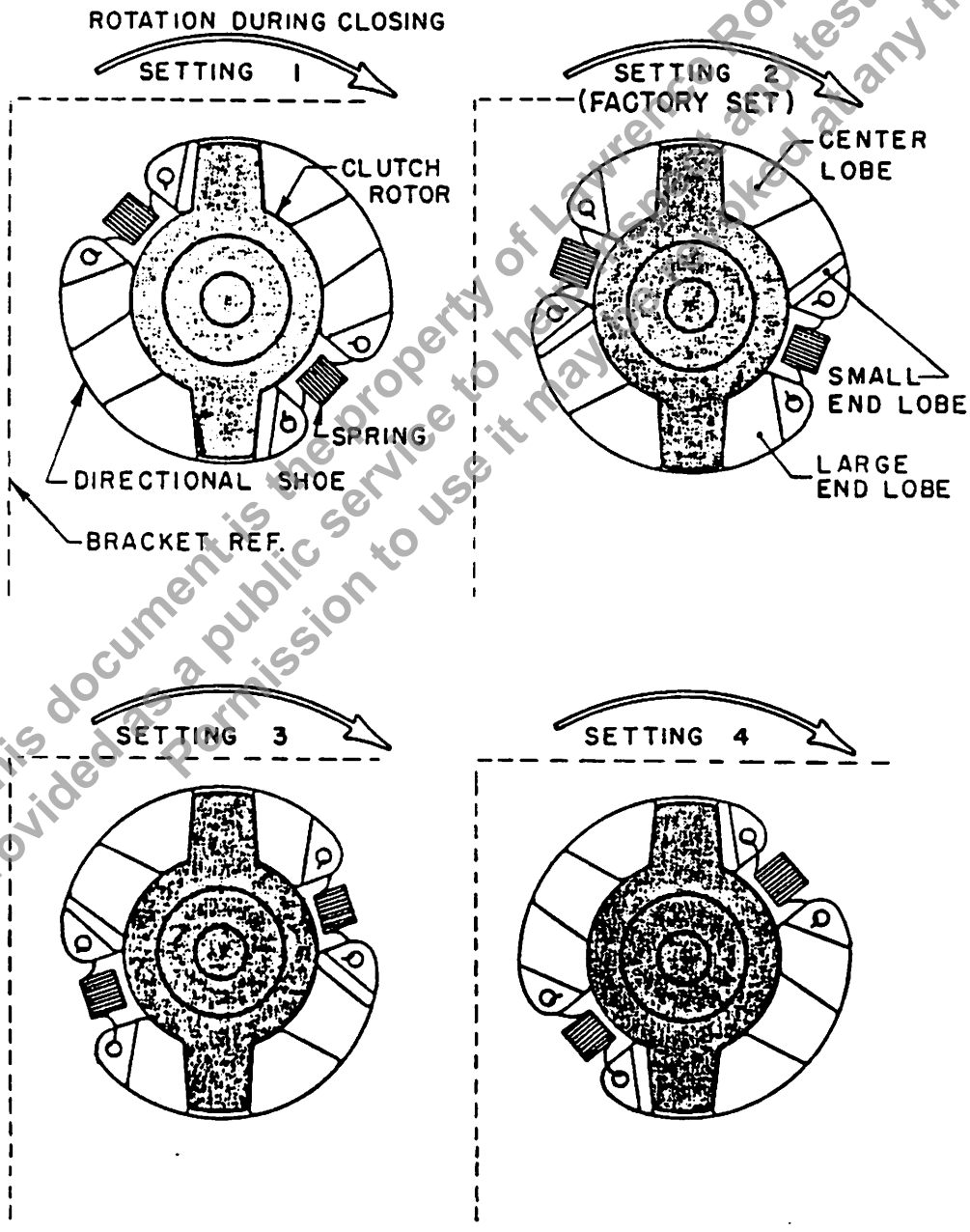
GOVERNOR MECHANISM ADJUSTMENT INSTRUCTIONS

The Centrifugal Governor Mechanism has four basic settings (See Below) in which to adjust and control the closing rate of the door curtain. The closing rate is the time it takes for the curtain to close completely. The slowest closing rate is most desirable.

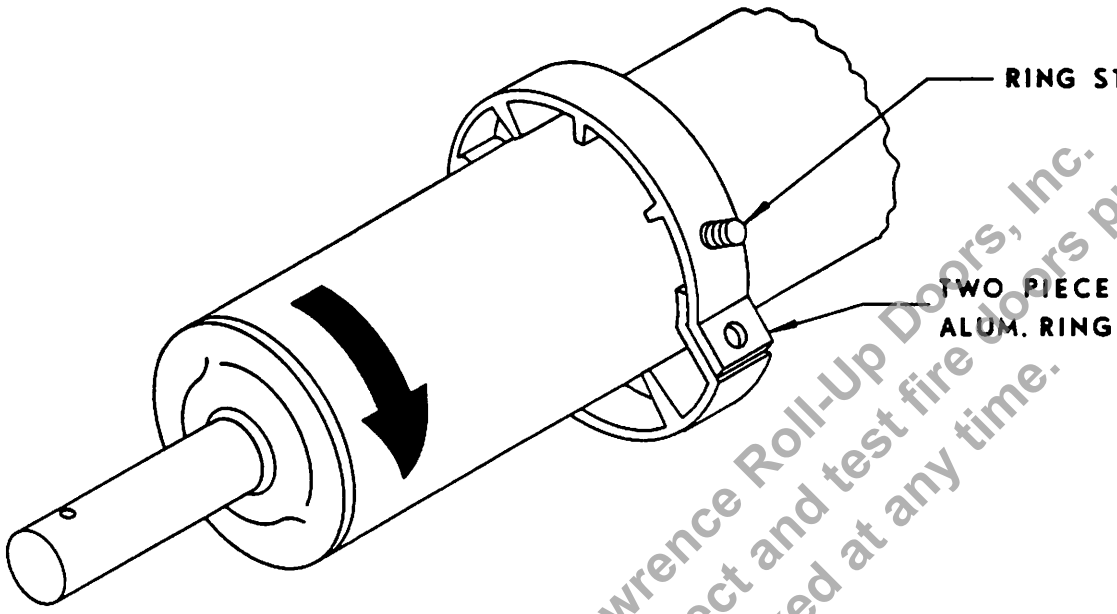
The Governor is adjusted by arranging the "Directional" shoes in different combinations. Each shoe has three lobes: small end lobe; center lobe; large end lobe. Verify that the factory setting agrees with Setting 2 below. The closing rate (time) decreases as you progress through Settings 1, 2, 3 and 4 on a R.H. Bracket Assembly as shown below. (Setting #1 is the slowest closing rate and Setting #4 is the fastest closing rate.)

IMPORTANT NOTE: For L.H. Governor Bracket Assemblies, Setting #4 is the slowest closing rate and Setting #1 is the fastest closing rate, due to the opposite rotation.

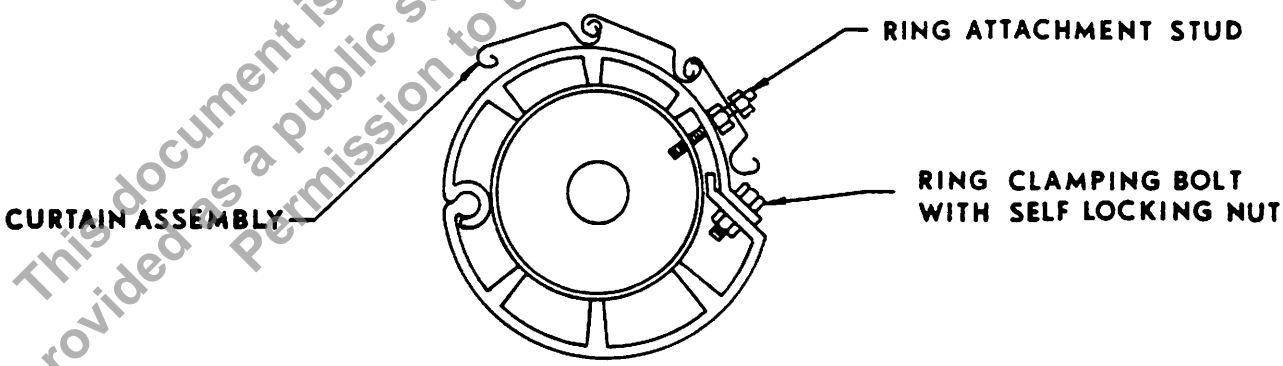
Governor Mechanism (Housing Removed) as seen on a R.H. Bracket Assembly



INSTALLATION OF TWO PIECE ALUMINUM RING



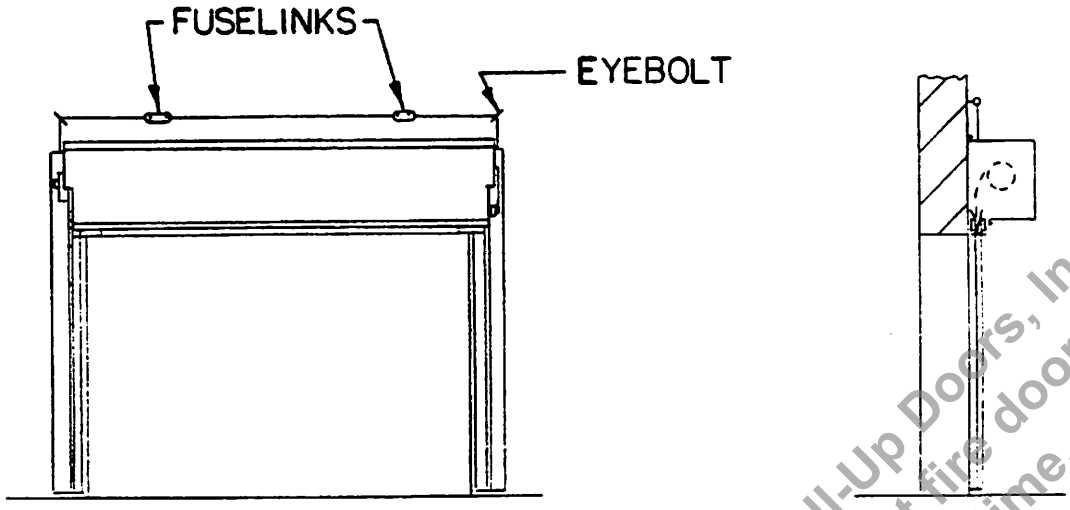
Locate the white arrow painted on the adjusting end of the barrel. This is in the direction to turn the adjusting wheel to supply spring torque. The rings must be positioned in relation to this arrow as shown in the sketch above.



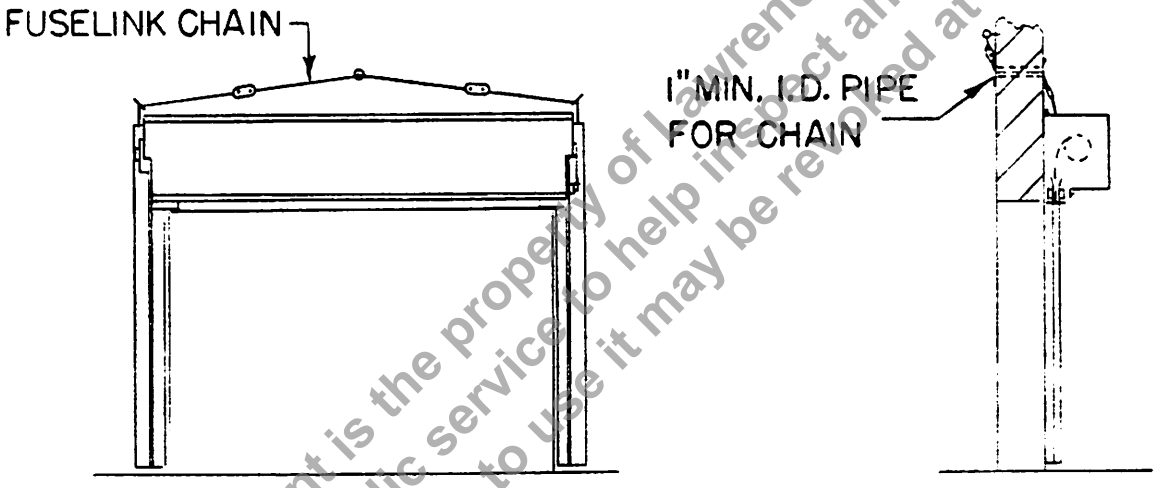
Locate the tapped holes in the barrel for the ring attachment studs. Place both pieces of the ring on the shaft and slide together to engage. Hold assembled pieces together with hex head bolt and self locking nut supplied. Locate hole in ring over tapped hole in barrel and insert short threaded end of ring attachment stud through ring and turn into barrel. Place one nut on stud and tighten to ring. Tighten down on hex head bolt until ring clamps securely around the perimeter of the barrel.

FUSELINK ARRANGEMENTS

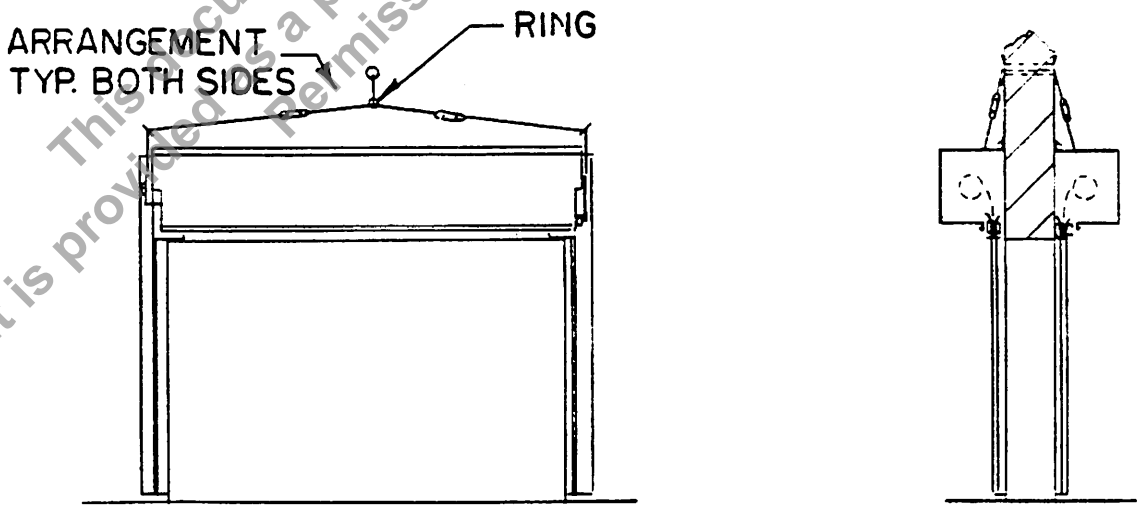
ES10-209.8



FUSELINKS ONE SIDE OF OPENING ONLY



FUSELINKS BOTH SIDES OF OPENING



DOORS AND FUSELINKS BOTH SIDES OF OPENING, DOORS CLOSE **SIMULTANEOUSLY** WHEN FUSELINKS ON EITHER SIDE OF OPENING BREAK.

CORNELL IRON WORKS, INC.
MAINTENANCE
Rolling Metal Doors and Grilles

A thorough inspection of the doors or grilles immediately after they have been installed will disclose if they are properly fitted, whether spring action is properly set, and how well controls on power-operated units do their job.

In most cases, subsequent inspections at one year intervals is sufficient. However, if doors operate in a dusty, gritty atmosphere or are cycled more than 5 times a day, an inspection schedule with shorter intervals may be required. The following annual inspection check is recommended for both manual and power operated doors or grilles.

Lubrication: Once a year the inside of the guide channels should be cleaned and lubricated with a thin coat of hard graphite grease. If guides are pile-lined then a small stiff brush should be used to clean and loosen the pile. (Do not grease pile lining).

Roller Chains: Roller chains on sprocket drives and limit switch drives on power operators should be cleaned and lubricated. Oil in gear housings of operators should be checked and maintained at proper level by adding a non-corrosive type lubricant such as Mobil Compound DD. Check limit switch setting and correct if required.

Stub Shafts: Stub shafts of exposed gears on mechanically operated doors and grilles and driving shaft bearings, should be lightly oiled. Exposed gears should be cleaned and lightly greased when necessary. Any bearings that have alimite fittings should be lubricated.

Counterbalance Spring: For manually operated doors or grilles, the effort exerted to open should be approximately the same as that exerted to close. On power-operated units, the emergency hand operator should be used to determine the effort required to open and close. (An ammeter can be used for test of power-operated units if available.)

Door Curtain: Check travel of door or grille curtain for proper side clearance. If guides are mounted plumb, this will immediately indicate if the roller shaft has shifted from its original level position. This is particularly important in new construction where building settling may distort the original door opening.

Check curtains for broken endlocks and windlocks or loose rivets or other fasteners. Check condition of weatherseals to insure that they are effective and repair or order replacements if required.

Bolts: Motor operator mounting bolts, bracket mounting bolts, and guide bolts should be checked and, if necessary, tightened.