Hollister-Whitney

A VANTAGE Company

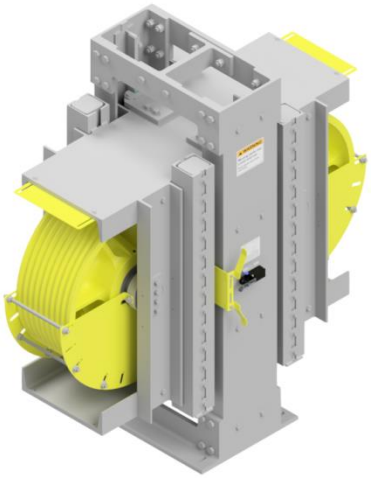
Bulletin #1172
Installation & User Guide
-Models 346 & 347 Compensating Rope Tension Sheave Assemblies
-Models 346TD & 347TD Compensating Rope Tie-Down Sheave Assemblies

13-Feb-19

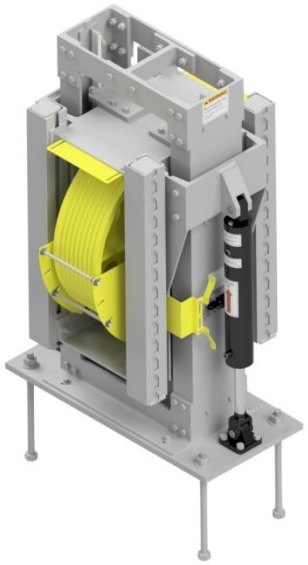
#1 Hollister-Whitney Parkway, Quincy, IL 62305 / Phone: 217.222.0466 / **www.hollisterwhitney.com**

Installation & User Guide #1172

MODEL 346
TENSION
SHEAVE, SINGLE

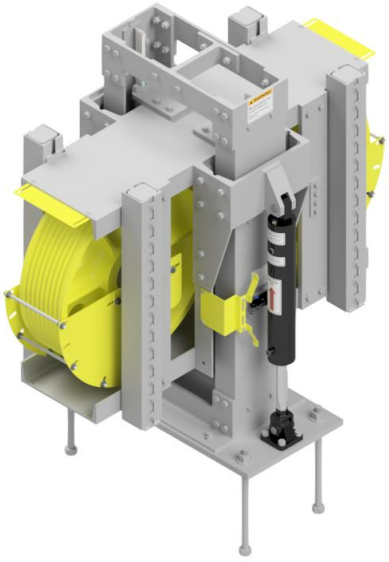


MODEL 347
TENSION
SHEAVE, TWIN



MODEL 346TD
TIE-DOWN
SHEAVE, SINGLE

MODEL 347TD
TIE-DOWN
SHEAVE, TWIN



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WARNING

This installation and user guide is intended for qualified and authorized elevator personnel ONLY. For your safety and the safety of others, do not attempt ANY procedure that you are not qualified and authorized to perform. Recommended procedures must be done in accordance with the applicable rules of the latest edition of the National Electrical Code; the latest edition of ASME A17.1; and all governing local codes. Every attempt has been made to ensure that this guide is accurate and up-to-date. Hollister-Whitney Elevator Co. LLC assumes no liability for consequences resulting from any error or omission. Please notify Hollister-Whitney Elevator Co. LLC regarding any difficulties with this guide

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List of Figures

Section

1

1 User Guide

1.1 Specifications

All 346 and 347 Compensating Rope Tension Sheave Assemblies are designed for use in both non-seismic and seismic applications up to 700 feet per minute. Models 346TD and 347TD Compensating Rope Tie-Down Sheaves are also designed for use in non-seismic and seismic applications, and for speeds greater than 700 feet per minute.

The moveable portion of the assembly consists of cast iron sheave(s) with sealed ball bearings and sufficient grooves to accommodate the required compensating ropes. The sheave(s) are mounted within a moveable carriage fitted with polyethylene guide shoe inserts. The inserts track on the fixed vertical rails for stability and to achieve a vertical working travel of up to 12 inches.

Single or twin sheave assemblies are provided to accommodate varying car sizes and rope drop distances. The appropriate assembly is positioned so the intermediate loop of the compensating ropes is aligned within the grooves of the sheave(s).

1.1.1 Model 346 Single Sheave

Table 1 - 346 Single Sheave Specifications

Part Number	Sheave Dia.	Max Sheave Width	Maximum Rope Quantity	Shipping Weight (Approx.)	Hanging Weight (Approx.)	Nominal Distance Between Ropes
346-009B	20”	6.50”	7 x 1/2” or 6 x 5/8”	1100 lbs.	700 lbs.	20”
346-093B	25”	8.50”	9 x 1/2” or 8 x 5/8”	1200 lbs.	800 lbs.	25”
346-091B	30”	8.50”	9 x 1/2” or 8 x 5/8”	1300 lbs.	900 lbs.	30”
Approximate weights, does not include optional weight racks. A full set of loaded weight racks will add approximately 650 lbs.						

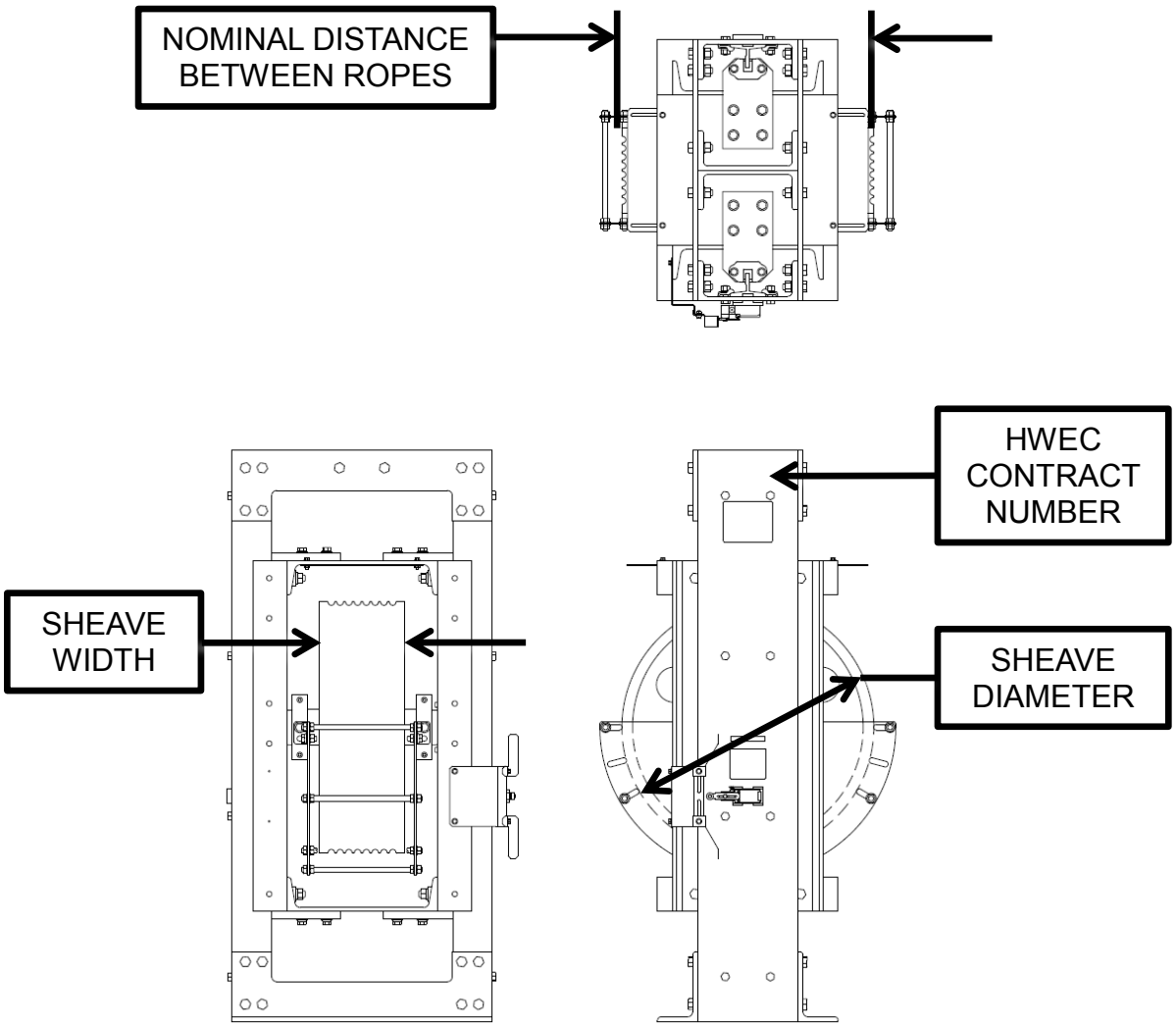


Figure 1 – 346 Single Sheave

1.1.2 Model 346TD Single Sheave

Table 2 - 346TD Single Sheave Specifications

Part Number	Sheave Dia.	Max Sheave Width	Maximum Rope Quantity	Shipping Weight (Approx.)	Hanging Weight (Approx.)	Nominal Distance Between Ropes
346TD-009B	20”	6.5”	8 x 1/2” or 6 x 5/8”	1600 lbs.	900 lbs.	20”
346TD-093B	25”	8.5”	9 x 1/2” or 8 x 5/8”	1700 lbs.	1000 lbs.	25”
346TD-091B	30”	8.5”	9 x 1/2” or 8 x 5/8”	1800 lbs.	1100 lbs.	30”
Approximate weights, does not include optional weight racks. A full set of loaded weight racks will add approximately 650 lbs.						

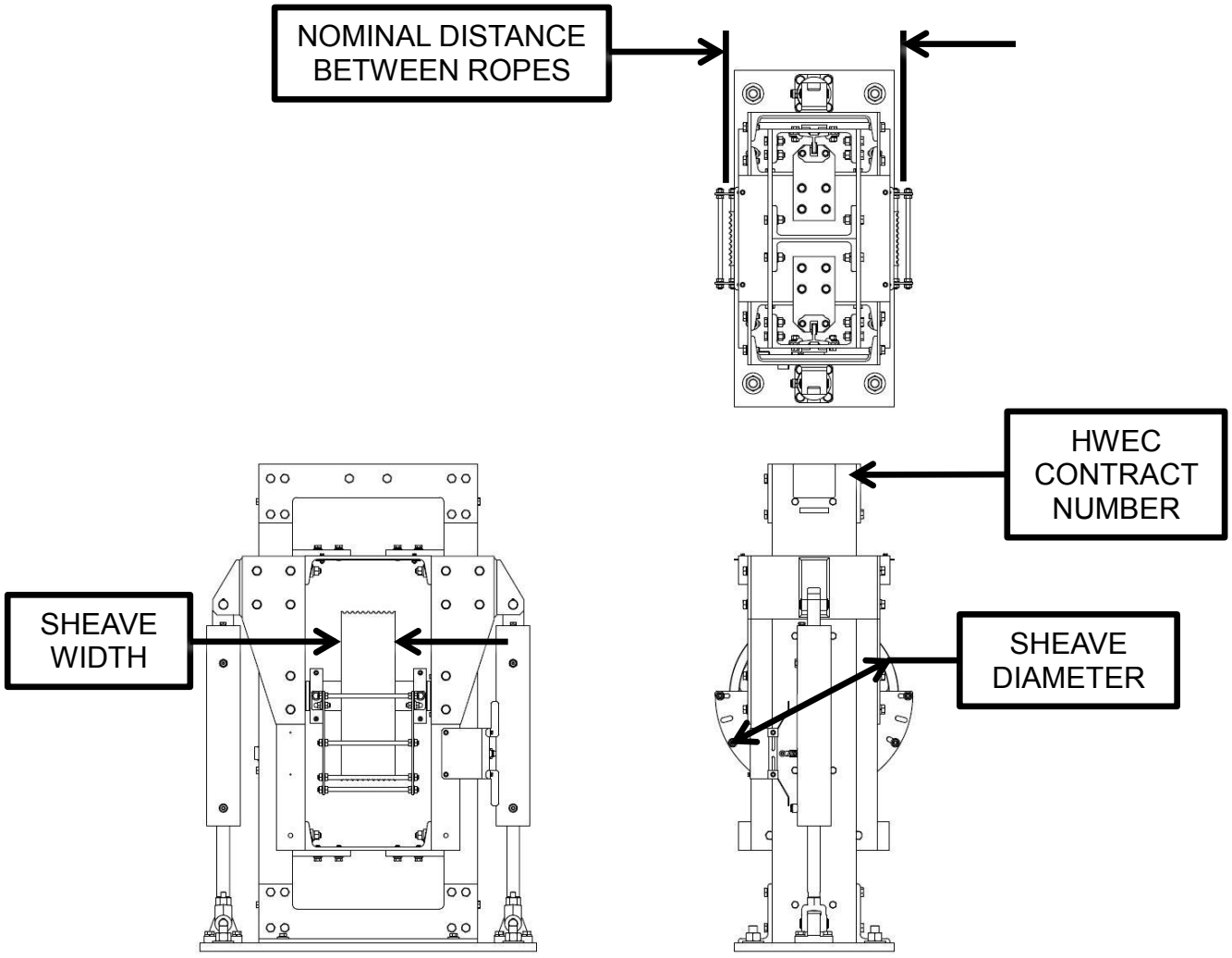


Figure 2 – 346TD Single sheave

1.1.3 Model 347 Twin Sheave

Table 3 - 347 Twin Sheave Specifications

Part Number	Sheave Dia.	Max Sheave Width	Standard Rope Quantity	Shipping Weight (Approx.)	Hanging Weight (Approx.)	Nominal Distance Between Ropes
347-009B	20”	6.50”	7 x 1/2” or 6 x 5/8”	1600 lbs.	1200 lbs.	41”
347-093B	25”	8.50”	9 x 1/2” or 8 x 5/8”	1900 lbs.	1500 lbs.	51”
347-091B	30”	8.50”	9 x 1/2” or 8 x 5/8”	2100 lbs.	1700 lbs.	61”
347-009B-SPL	20”	6.50”	7 x 1/2” or 6 x 5/8”	SPL	SPL	SPL
347-093B-SPL	25”	8.50”	9 x 1/2” or 8 x 5/8”	SPL	SPL	SPL
347-091B-SPL	30”	8.50”	9 x 1/2” or 8 x 5/8”	SPL	SPL	SPL
Approximate weights, does not include optional weight racks. A full set of loaded weight racks will add approximately 650 lbs. SPL versions can be customized for DBR and additional weight racks.						

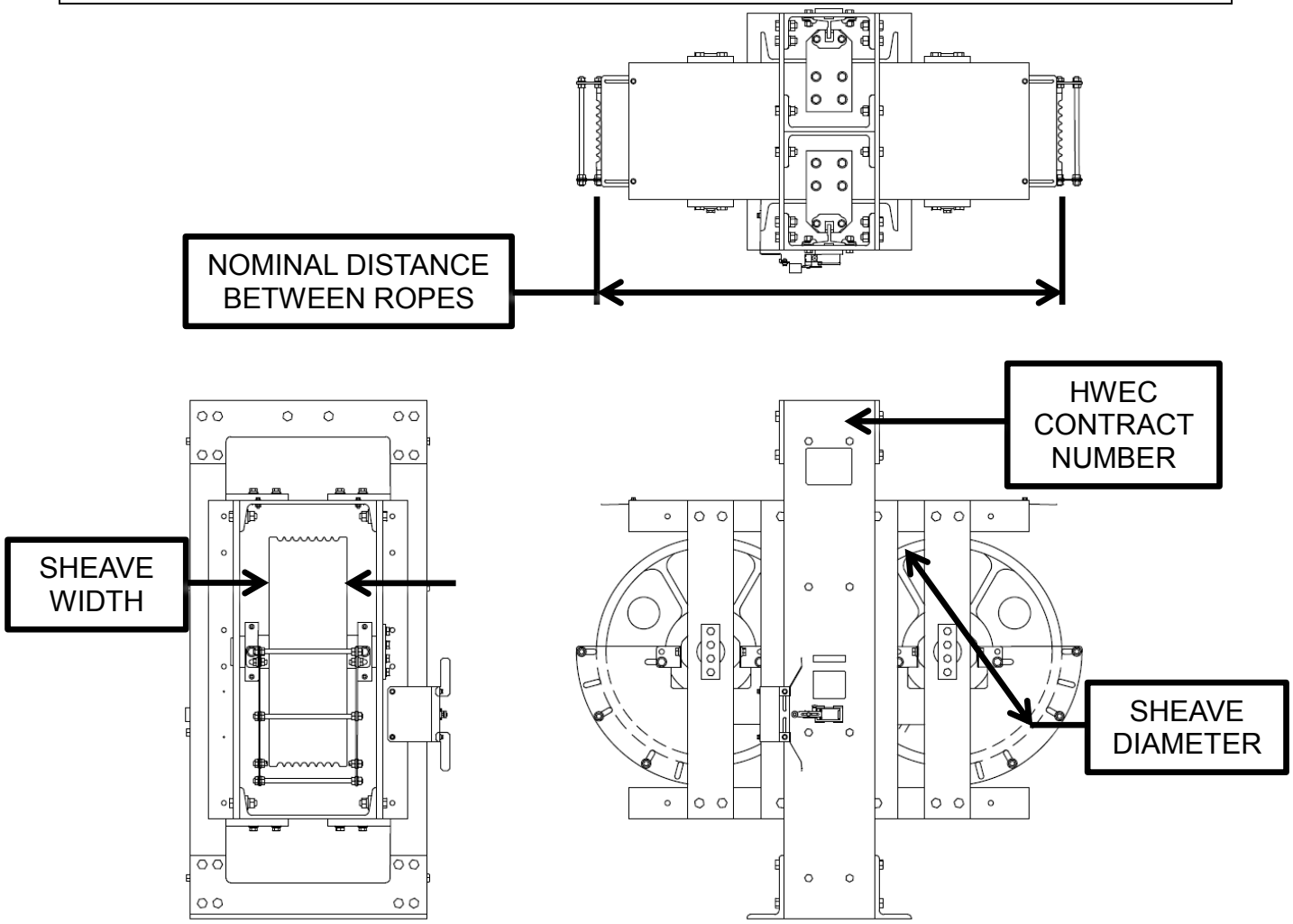


Figure 3 – 347 Twin Sheave

1.1.4 Model 347TD Twin Sheave

Table 4 - 347TD Twin Sheave Specifications

Part Number	Sheave Dia.	Max Sheave Width	Maximum Rope Quantity	Shipping Weight (Approx.)	Hanging Weight (Approx.)	Nominal Distance Between Ropes
347TD-009B	20”	6.50”	7 x 1/2” or 6 x 5/8”	2100 lbs.	1400 lbs.	41”
347TD-093B	25”	8.50”	9 x 1/2” or 8 x 5/8”	2400 lbs.	1700 lbs.	51”
347TD-091B	30”	8.50”	9 x 1/2” or 8 x 5/8”	2600 lbs.	1900 lbs.	61”
347TD-009B-SPL	20”	6.50”	7 x 1/2” or 6 x 5/8”	SPL	SPL	SPL
347TD-093B-SPL	25”	8.50”	9 x 1/2” or 8 x 5/8”	SPL	SPL	SPL
347TD-091B-SPL	30”	8.50”	9 x 1/2” or 8 x 5/8”	SPL	SPL	SPL
Approximate weights, does not include optional weight racks. A full set of loaded weight racks will add approximately 650 lbs. SPL versions can be customized for DBR and additional weight racks.						

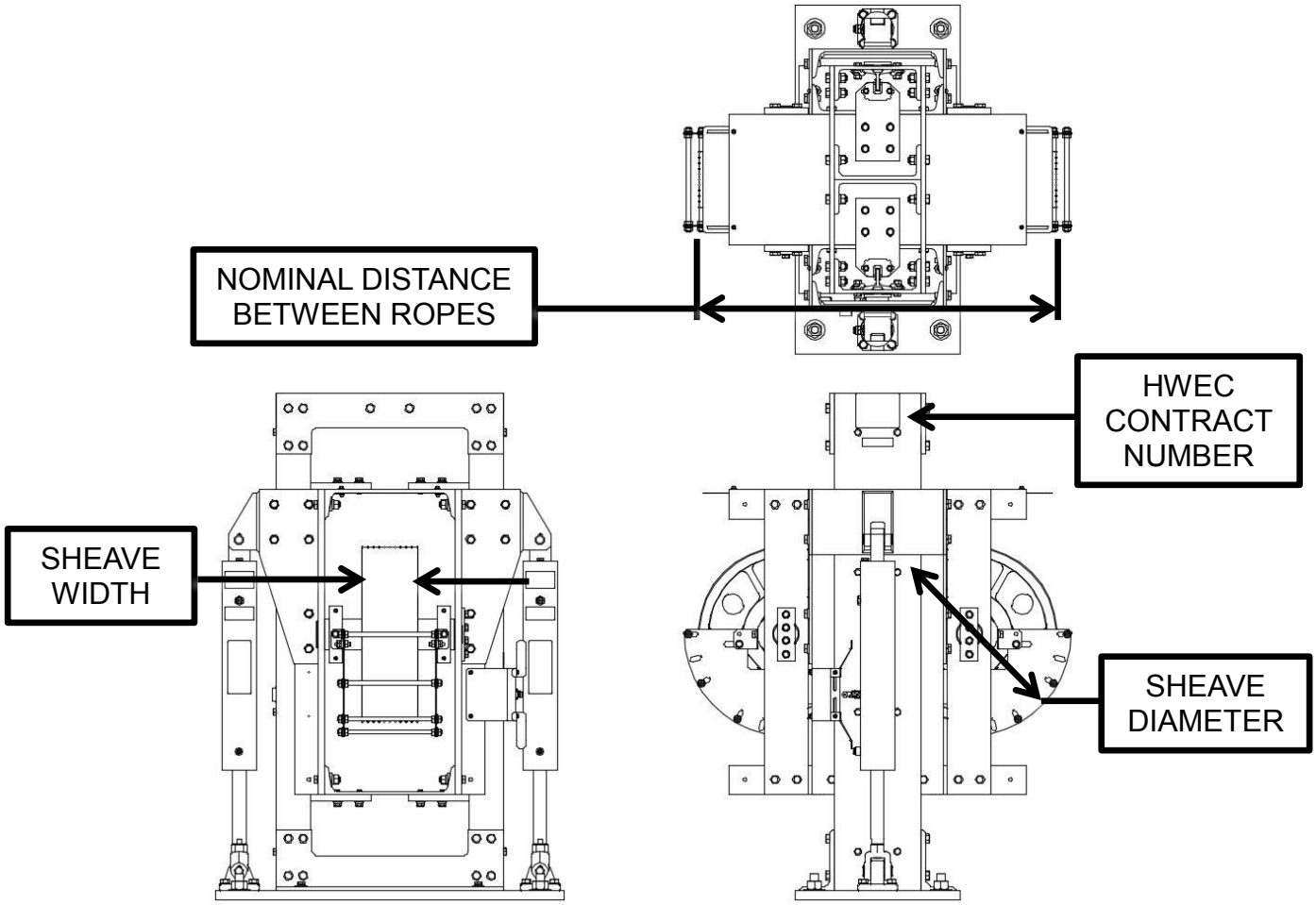


Figure 4 – 347TD Twin Sheave

NOTE -

THE STANDARD ROPE QUANTITY IS BASED ON THE STANDARD HWEC ROPE PITCH. REDUCED PITCH IS AVAILABLE TO ACCOMMODATE THE FOLLOWING ROPE QUANTITIES FOR THE RESPECTIVE SHEAVE WIDTHS:

- 6.50” WIDTH = 7 X 1/2” OR 6 X 5/8”
- 8.50” WIDTH = 9 X 1/2” OR 8 X 5/8”

THE “-SPL” VERSIONS OF THE TWIN SHEAVE ARE USED FOR INCREASED ROPE DROPS.

1.2 Features

1.2.1 Debris Guards

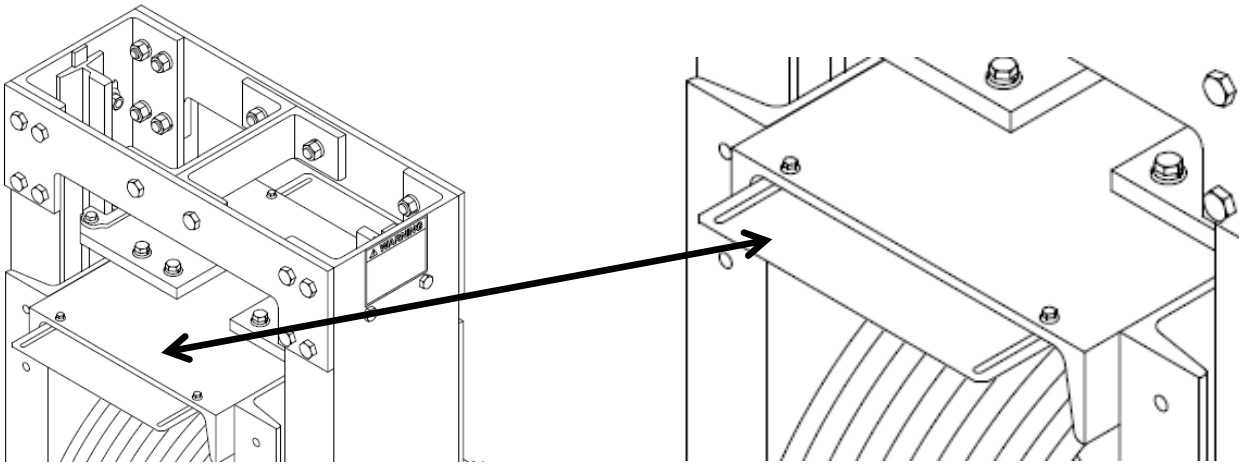


Figure 5 – Debris Guards

Debris guards are adjustable and mounted at the top of the traveling portion of the assembly. The guards aid in preventing material from dropping between the ropes and sheaves that could result in damage and/or displace the ropes from the sheaves.

1.2.2 Rope Retainers

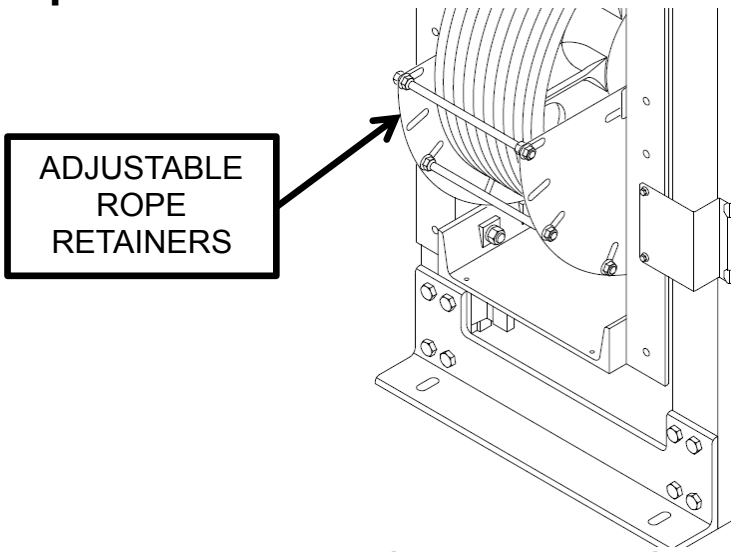


Figure 6 – Rope Retainers

Adjustable rope retainers maintain the compensating ropes within the sheave grooves. The retainers are not meant to prevent injury but instead are designed to keep the ropes from jumping out of the grooves under certain conditions.

1.2.3 Optional Weight Racks

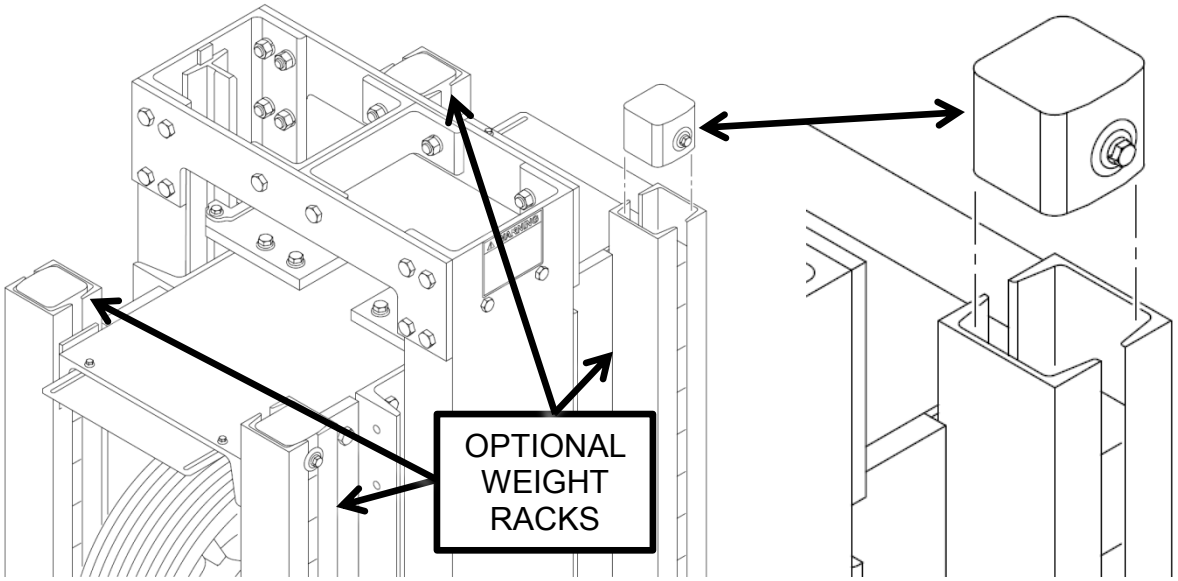


Figure 7 – Secure Weights

Additional weights are occasionally used to provide extra tension on the compensation ropes to keep them tracking smoothly.

Optional weight racks can be affixed to the traveling portion of the assembly for maintaining proper compensating rope tension. Single sheave models require an adaptor mounting angle to mount the weight racks.

Four of the individual weights will have a tapped hole for a 3/8” locking bolt. These four tapped weights are used at the top of each weight stack-up to secure the entire weight in that rack.

A full set of weights are approximately 650 lbs. Weight can be used as required. It is recommended the same number (amount) of weight be used in all four racks to balance the assembly and prevent binding of the guide rails sheave(s) or in the case of the tie-down version, the dampers.

1.2.4 Limit Switch

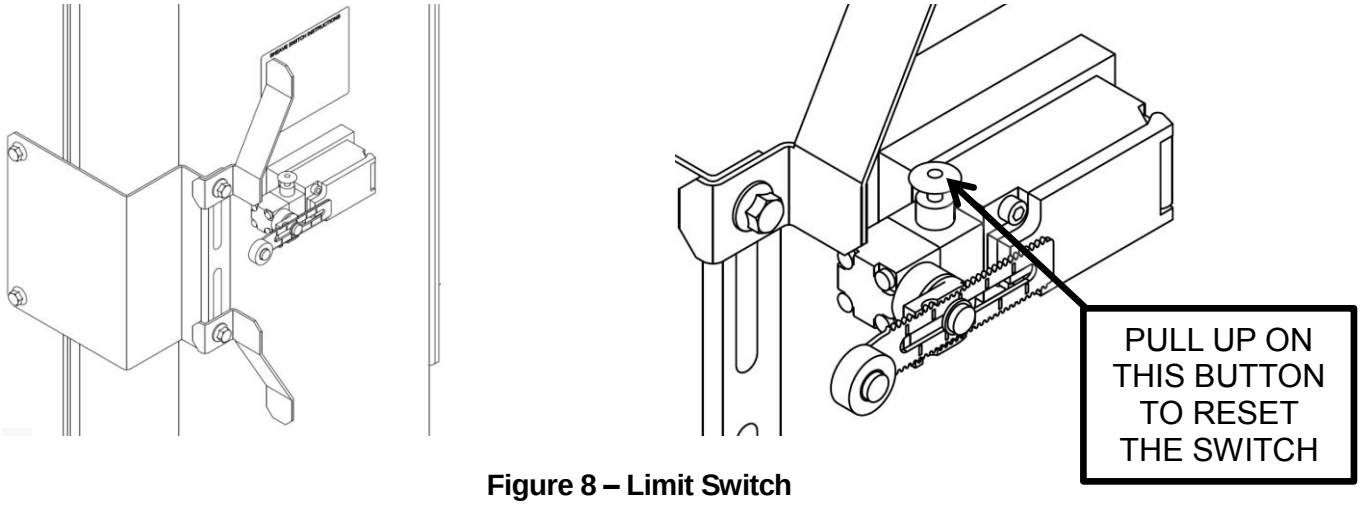


Figure 8 – Limit Switch

Prior to reaching the top or bottom limits of the units travel, adjustable cams will activate a compensating rope sheave switch. When activated, a set of dry contacts will open to send a signal to the elevator's control system to initiate the appropriate elevator shut-down.

The switch has a manual reset button that must be pulled out in order to return the assembly to service.

1.2.5 Tie-Down Assembly

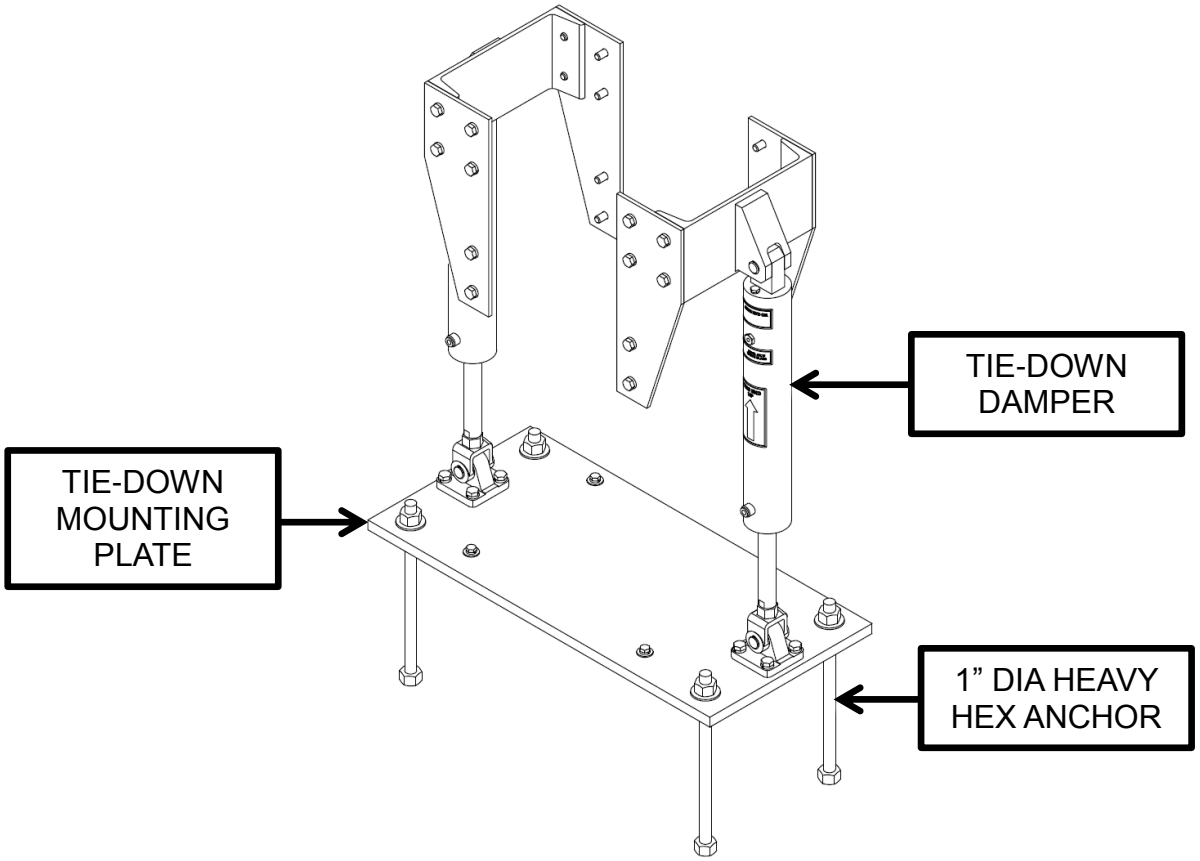


Figure 9 – Tie-Down Assembly

Tie-down models include the assembly shown above. It includes two dampers and an anchor plate. Maximum uplift of the anchor plate is 30,000 lbs.

Four cast in place anchors, HWEC part number #346TD-156-3, are included. The 1” dia. heavy hex anchor (ASTM F1554 grade 36 minimum), must be embedded 12” minimum.

Minimum concrete requirements;

- Strength = 2,500 PSI minimum
- Footing Depth = 18” minimum
- Edge distance = 12” minimum

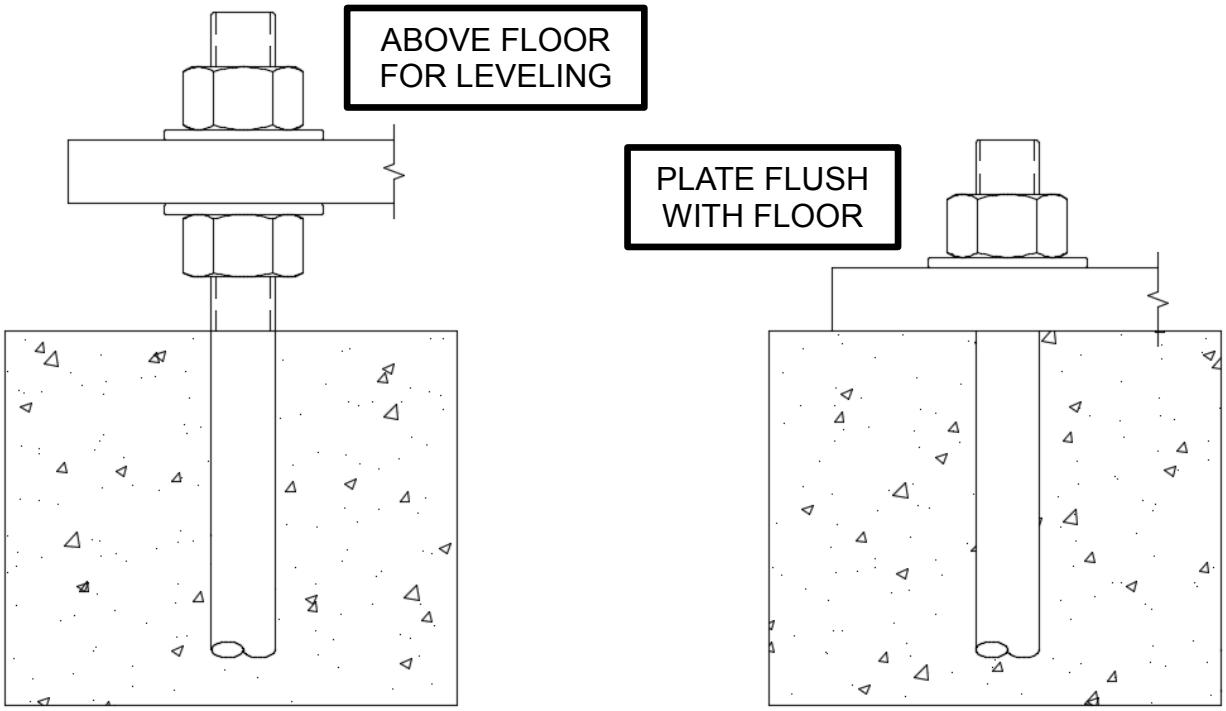


Figure 10 – Tie-Down Plate Mounting Styles

Anchor plate can be mounted slightly above the concrete surface for the ability to level the plate. Or it can be mounted flush with the floor.

1.3 Unit Labels

Labels are placed on the assembly noting instructions, and areas where caution should be used.

1.3.1 Warning - Moving Parts Can Crush and Cut Label

Two “Moving Parts Can Crush and Cut” warning labels are located on both sides and toward the top of the rope tension assembly.

Figure 11 – Warning Label

✱ IMPORTANT –

Keep personnel clear during operation to reduce the risk of injury.

1.3.2 Sheave Switch Instructions Label

A “Sheave Switch Instructions” label is located above the sheave switch.

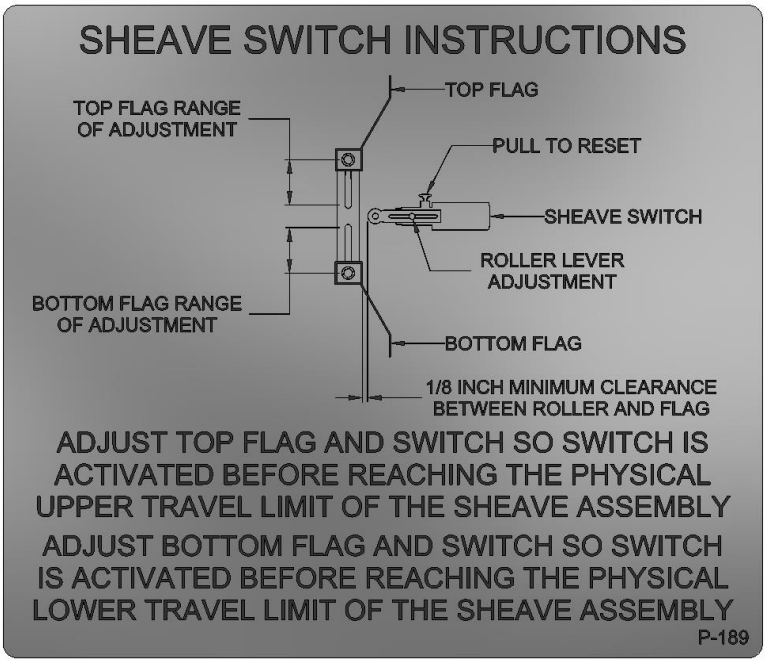


Figure 12 – Sheave Switch Instructions Label

Adjust top flag and switch so the switch is activated before reaching the physical upper travel limit of the sheave assembly.

In the same manner, adjust the bottom flag and switch so the switch is activated before reaching the physical lower travel limit of the sheave assembly.

The following labels are placed on the dampers of the tie-down models.

1.3.3 Use AW32 Hydraulic Oil Label

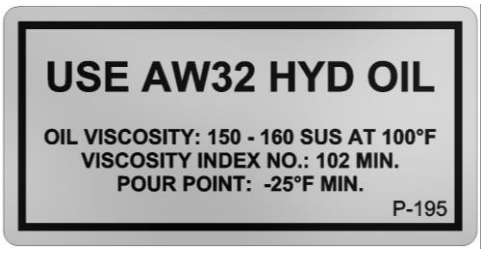


Figure 13 – Use AW32 Hydraulic Oil Label

1.3.4 Oil Fill Level Label

Figure 14 – Oil Fill Level Label

1.3.5 This End Up Label

Figure 15 – This End Up Label

Section

2

2 Installation

2.1 Safety

- Wear proper PPE (Personal Protective Equipment).
- Inspect tools and equipment to ensure they are in good condition and proper working order.
- Read and understand all instructions prior to proceeding.
- Follow standard elevator industry and governing safety requirements.

2.2 Verification

Verify all components are present and that the compensating rope sheave assembly can be installed. It may be necessary to fully verify the assembly by checking the following:

- Determine if the assembly is correct by comparing physical dimensions to the layouts and/or assembly drawings provided for the specific job (i.e., sheave diameter, speed requirement, groove quantity & size, assembly height).
- See sample rope sheave assembly drawings on the last pages of this document.
- Confirm the HWEC contract number marked on the top of the support legs of the assembly matches the contract number of your order.

2.3 Planning

- Determine the compensating rope drop locations (matching the existing drops or refer to applicable job layouts) by using plum lines or laser means.
- Confirm that the assembly will have adequate clearance when positioned in line with the required compensating rope drops.
- Prior to the installation of the assembly, plan and prepare for the electrical and/or conduit routing for the electrical sheave switch.
- Ensure that electrical routing will not interfere with the operation, maintenance, or removal of the assembly. **NOTE- Conduit and fittings are not provided.**

NOTE -

- THE ROPE COMPENSATING SHEAVE ASSEMBLIES CAN BE POSITIONED IN EITHER DIRECTION.
- THE SHEAVE SWITCH AND FLAGS CAN BE LOCATED ON EITHER SIDE AND IN EITHER DIRECTION AS NEEDED

2.4 Placement of Assembly

- Center the assembly in the pit between the compensating rope drop locations. Maximum of 3" pull-off, or pull-in, each side, from sheave to hitch is allowed.
- Verify the assembly will not interfere with elevator equipment (car, cwt, buffers, etc.) or obstructions.

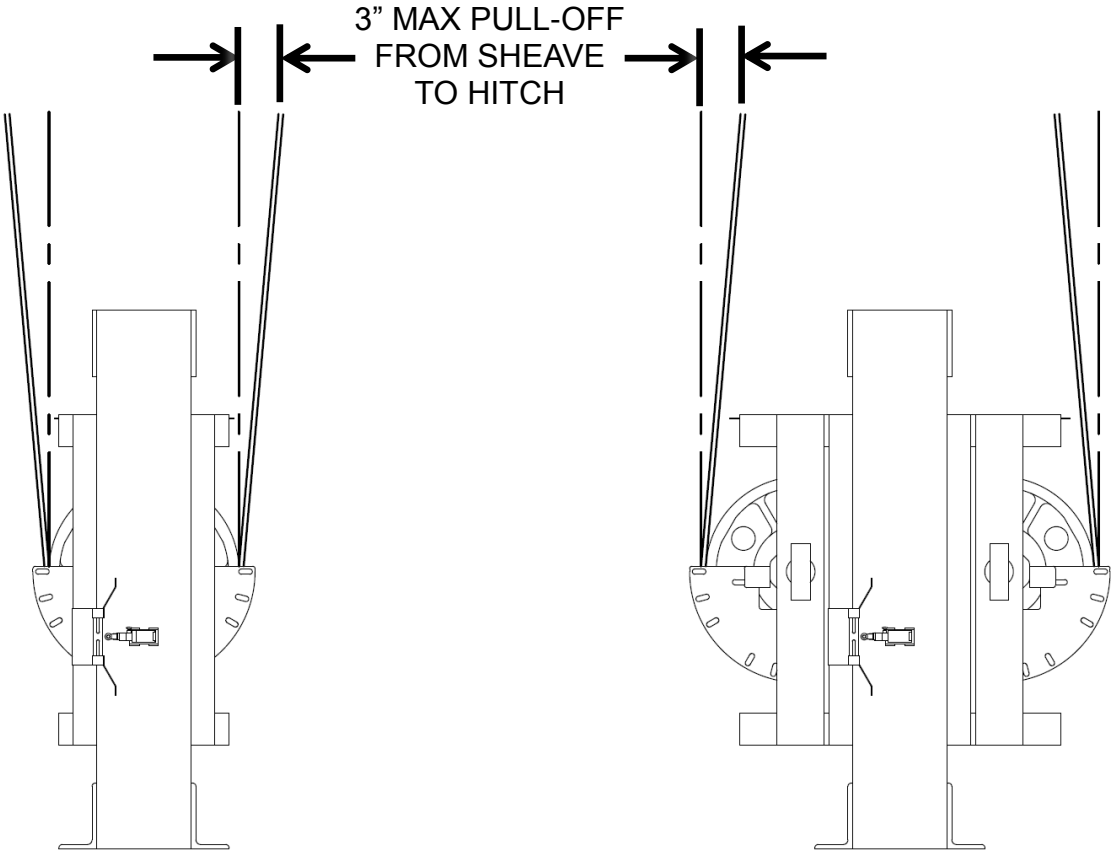


Figure 16 – Pull Off / In

2.5 Mark Mounting Location

- Use the assembly base as a “template” to mark the mounting locations. A field template (not included) can also be made from cardboard, Masonite, or etc. for locating the mounting holes and hardware locations.
- Mark all mounting locations as necessary.
- Remove the assembly or template and verify that the marked mounting locations correspond with the assembly base and drawings.
- Prepare appropriate mounting hardware sufficient for the reactions shown on the drawings and as appropriate for the mounting support structure.

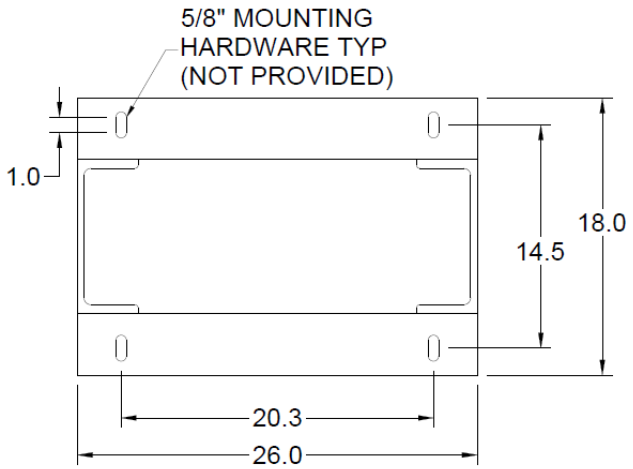


Figure 17 – Mounting Dimensions for Non Tie-Down Models

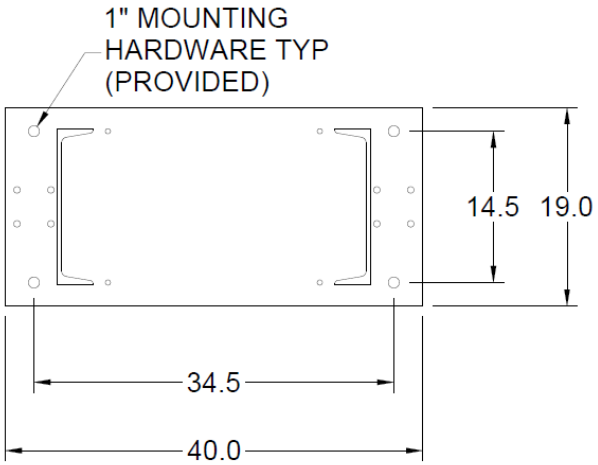


Figure 18 - Mounting Dimensions for Tie-Down “TD” Models

2.6 Mount Assembly

- Reposition and plumb the assembly. Securely attach the assembly to the support structure using the appropriate mounting hardware.
- Install and secure compensating ropes in accordance with elevator industry standards.
- Ensure the assembly guide shoes are properly adjusted and moving freely on the fixed guides.
- Install and adjust the rope retainers. Recommended clearance between the rope retainer rods and the outer edge of the sheave(s) is less than ½ of the compensating rope diameter.
- Install and adjust the debris guards to provide maximum protection without interfering with the compensating ropes.
- Re-adjust the compensating ropes after initial rope stretch and ensure equalized tension.

2.7 Electrical Runs

- Install the necessary electrical wiring and conduit for connecting the sheave switch to the elevator control system.
- Adjust the top and bottom flags to actuate the compensating sheave switch before the sheave assembly reaches its upper or lower limit of travel. An additional switch and flag (not included) can be mounted if a next or nearest floor slowdown circuit is required.

2.8 Verify Operation

- Verify the assembly is plumb and located in accordance with the job specific drawings.
- Verify the electrical routing does not interfere with the operation of the assembly.
- Verify the assembly does not interfere with other elevator equipment (car, counterweight, buffers, etc.) or obstructions.
- Verify all mounting hardware is securely tightened.
- Test the sheave switch to ensure proper elevator shut-down when actuated.
- Run the elevator at reduced speed to confirm acceptable operation.
- On tie-down versions verify the dampers are not in a bind and function properly.

Chapter 3

3 Service

3.1 General Lubrication

- Standard assemblies are provided with sealed bearings; therefore no grease fittings are present.
- When required, sheave bearings that would require grease may be provided. They can be identified by the presence of grease Zerk fittings near the shaft.
    - Sheave bearings are packed with lubricant for shipping at the Hollister-Whitney plant.
    - The sheave cavity is left unfilled.
    - Fill the sheave cavity upon installation and/or after bearing replacement.
    - Add grease slowly spinning the sheave occasionally to help distribute grease evenly.
    - Lubricate yearly with approximately 1oz. of lubricant for EACH of the grease fittings. Add grease slowly spinning the sheave occasionally to help distribute grease evenly.
    - Harsh operation environments with, salt air and /or high dust content may severely shorten maintenance periods.
    - Use ExxonMobil Polyrex EP2 grease.
    - Refer to HWEC bulletin #1137 for additional information on lubrication of sheave shaft bearings.

3.2 Tie-Down Damper Lubrication

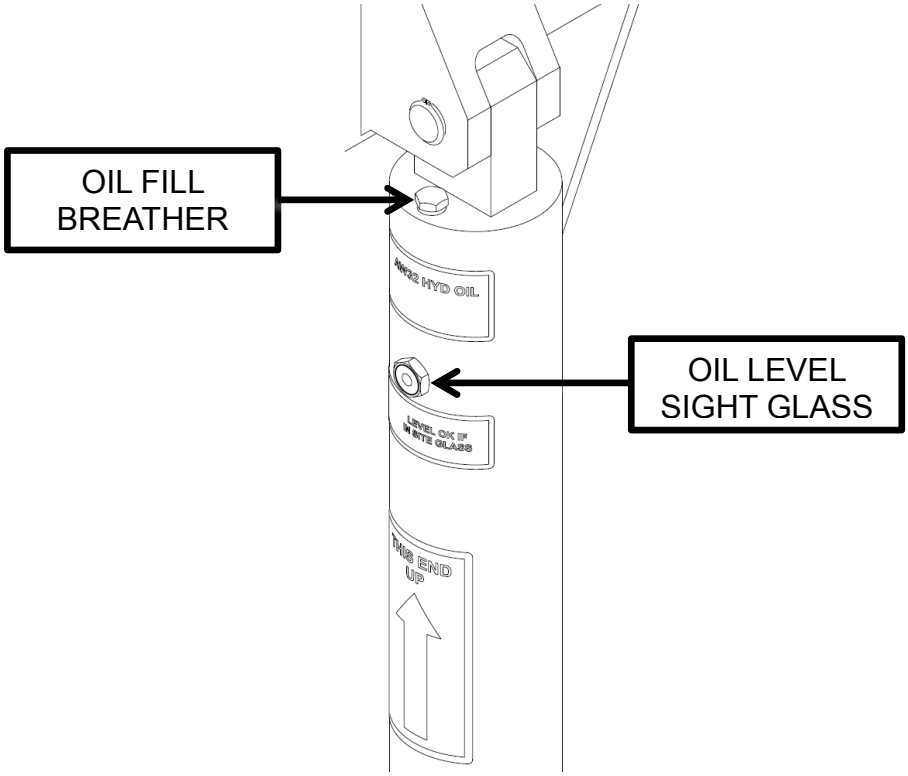


Figure 19 – Damper Lubrication Components

Tie-Down dampers are shipped filled with hydraulic oil. If the oil can be seen in the sight glass no action is required. If no oil appears in the sight glass remove the oil fill breather on top of the damper and fill with AW32 hydraulic oil until oil is visible in the sight glass.

Do not fill to the top of the fill port. The damper will still function if it is filled to the top of the cylinder. However, any excess oil will be pushed out of the oil fill breather when the damper is actuated.

3.3 Maintenance

Periodically perform inspections and tests in accordance with the latest edition of ASME A17.1 and all governing local codes to ensure sound condition and proper operation.

For maximum rope and sheave life, maintain equal tension across all compensating ropes.

Inspect and adjust rope length as needed to maintain proper operation.

On models with dampers check oil level in sight glass.

Recommend:

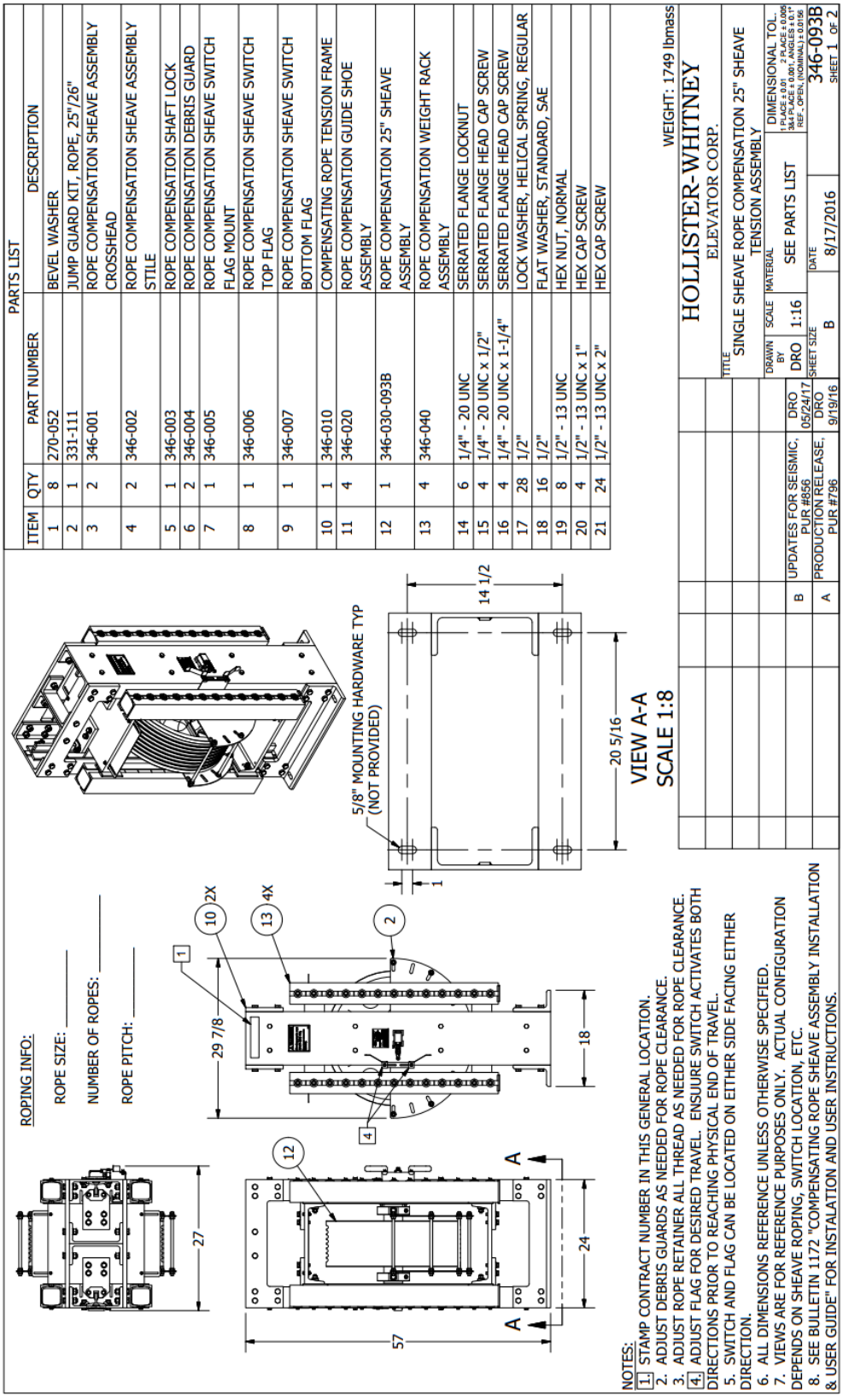
- Monthly for the first six (6) months after installation and turn-over.
- Every two (2) months for the second six (6) months.
- After 12 months from installation and turn-over perform routine inspections as necessary.

NOTE -

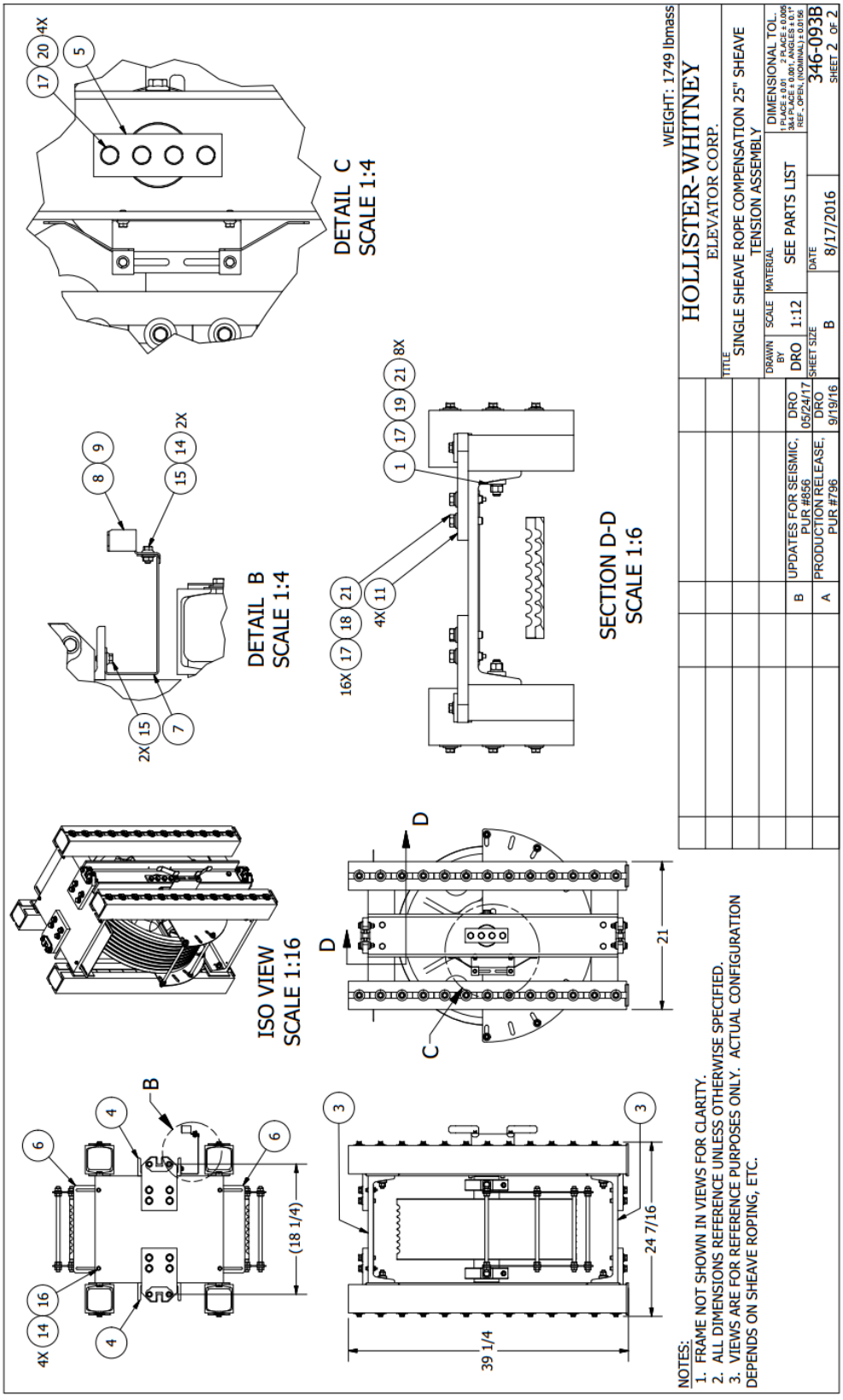
THE USE OF TRACTION STEEL ROPE, PRE-FORMED AND PRE-STRETCHED IS HIGHLY RECOMMENDED.

ROPE COMPOSITION AND CONSTRUCTION CAN DIFFER DEPENDING ON ROPE MANUFACTURERS. THEREFORE, ACTUAL INSPECTION AND ADJUSTMENT REQUIREMENTS MAY VARY.

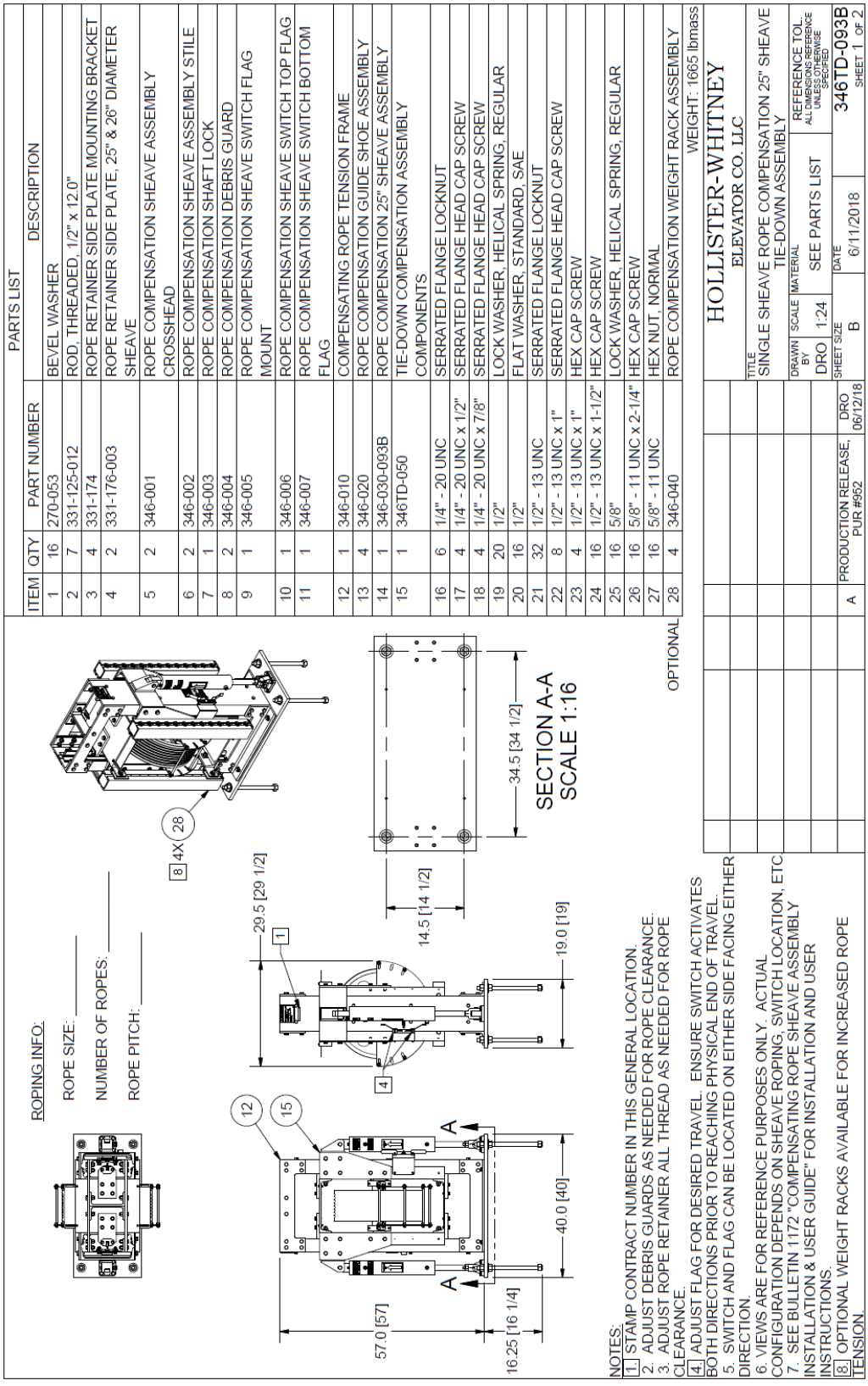
List of Drawings



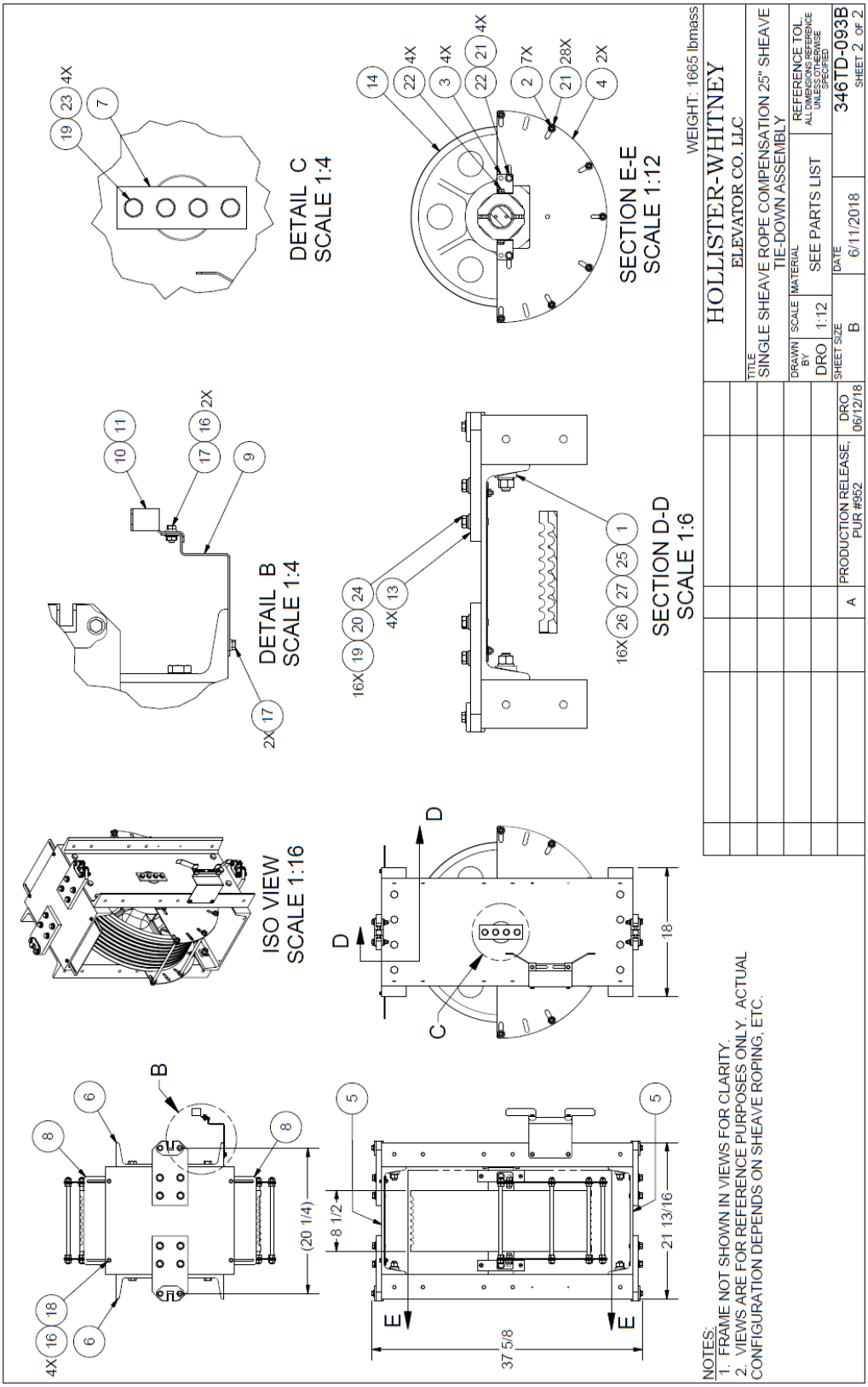
Drawing 1 Model #346 Single Ø25" Sheave Sheet-1



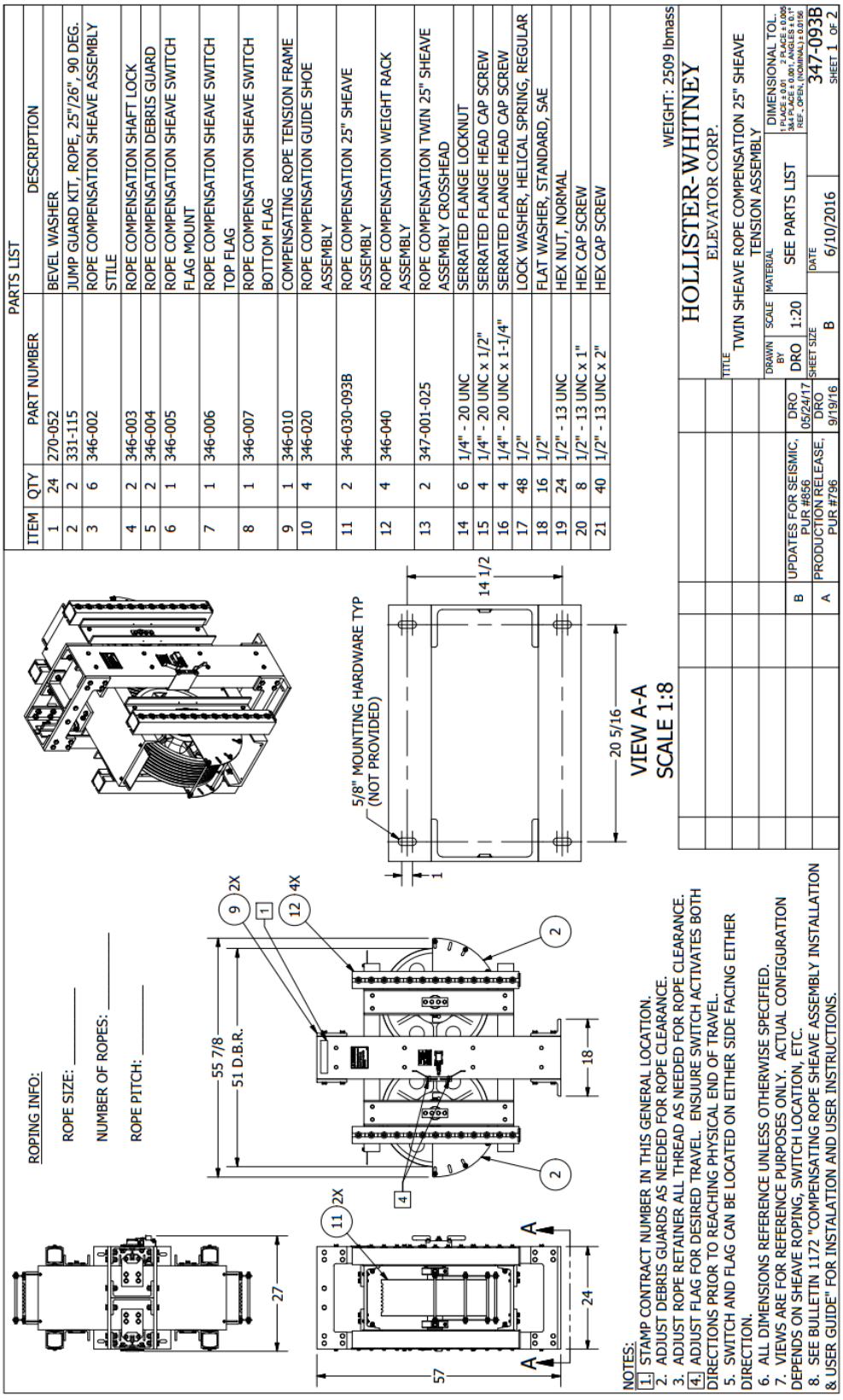
Drawing 2 Model #346 Single Ø25" Sheave Sheet-2



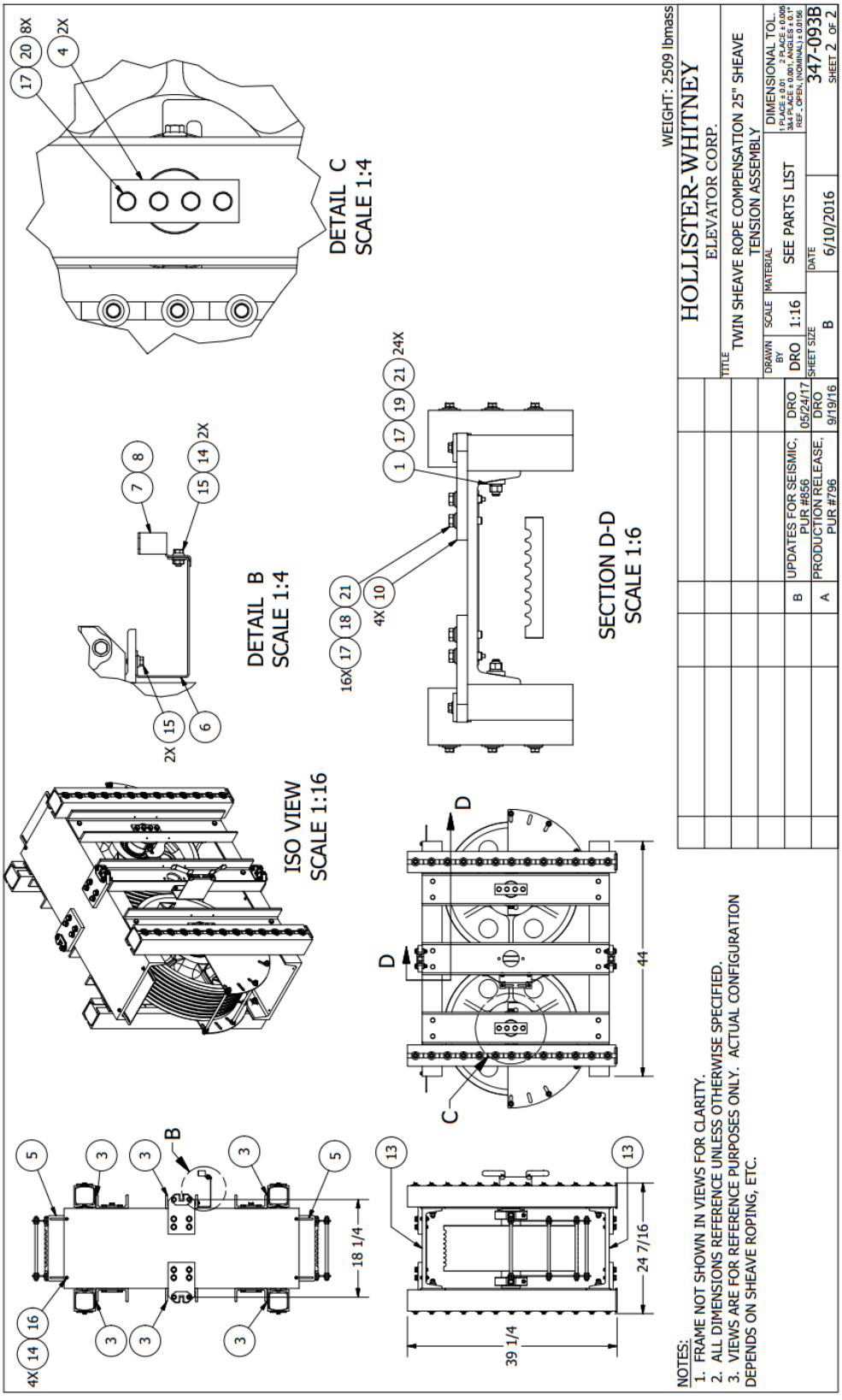
Drawing 3 Model #346TD Single Ø25" Sheave Sheet-1



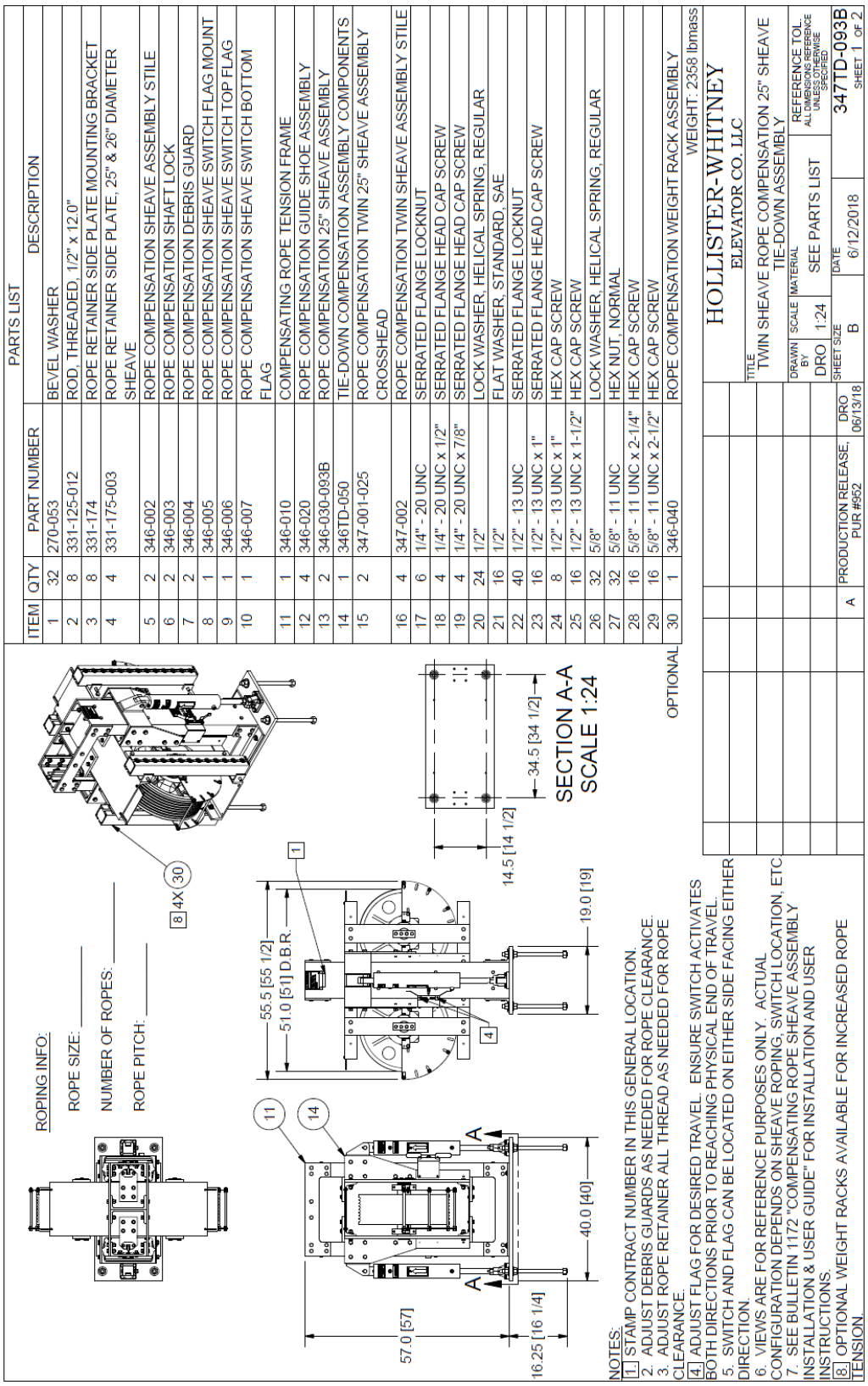
Drawing 4 Model #346TD Single Ø25" Sheave Sheet-2



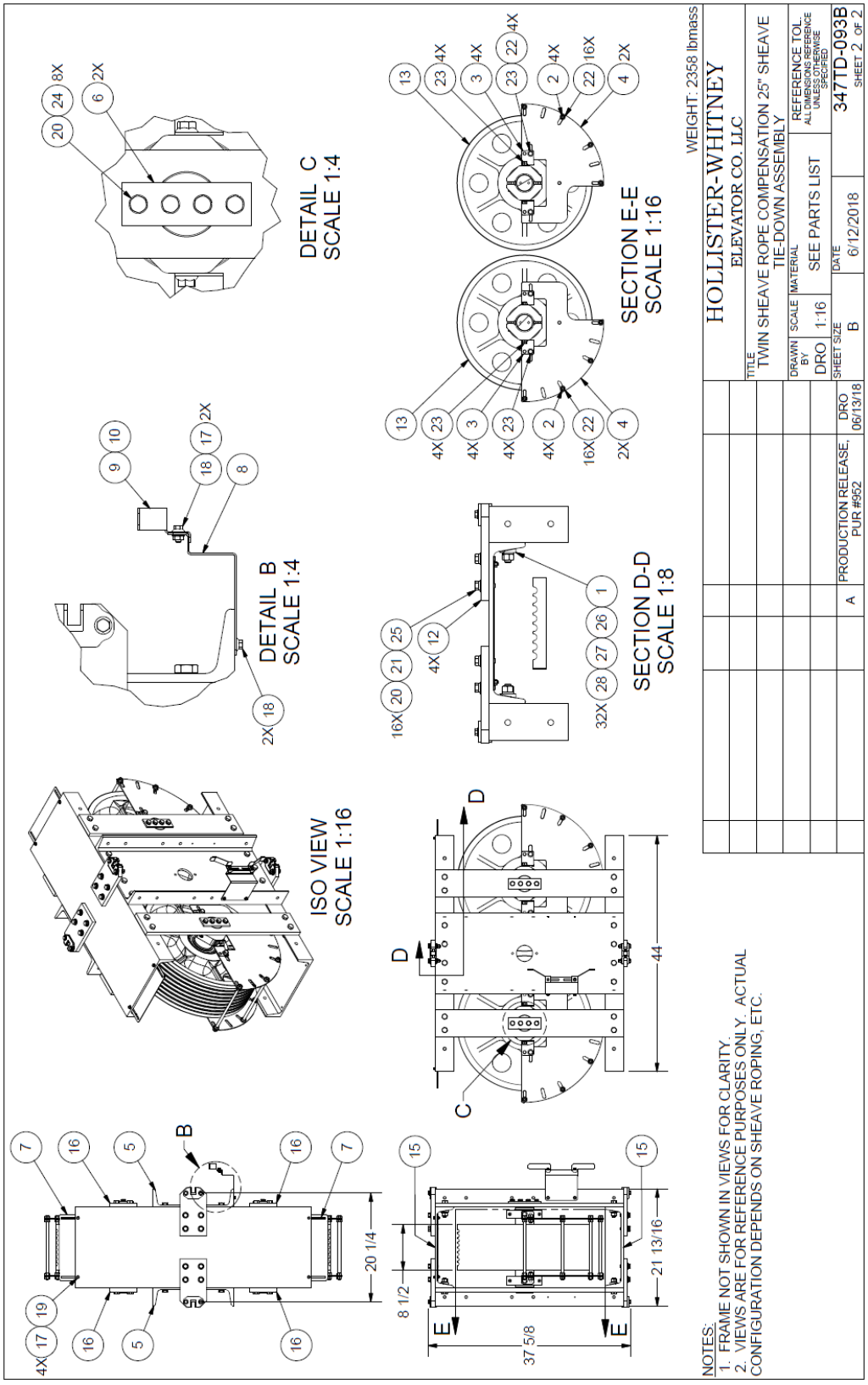
Drawing 5 Model #347 Twin Ø25" Sheave Sheet-1



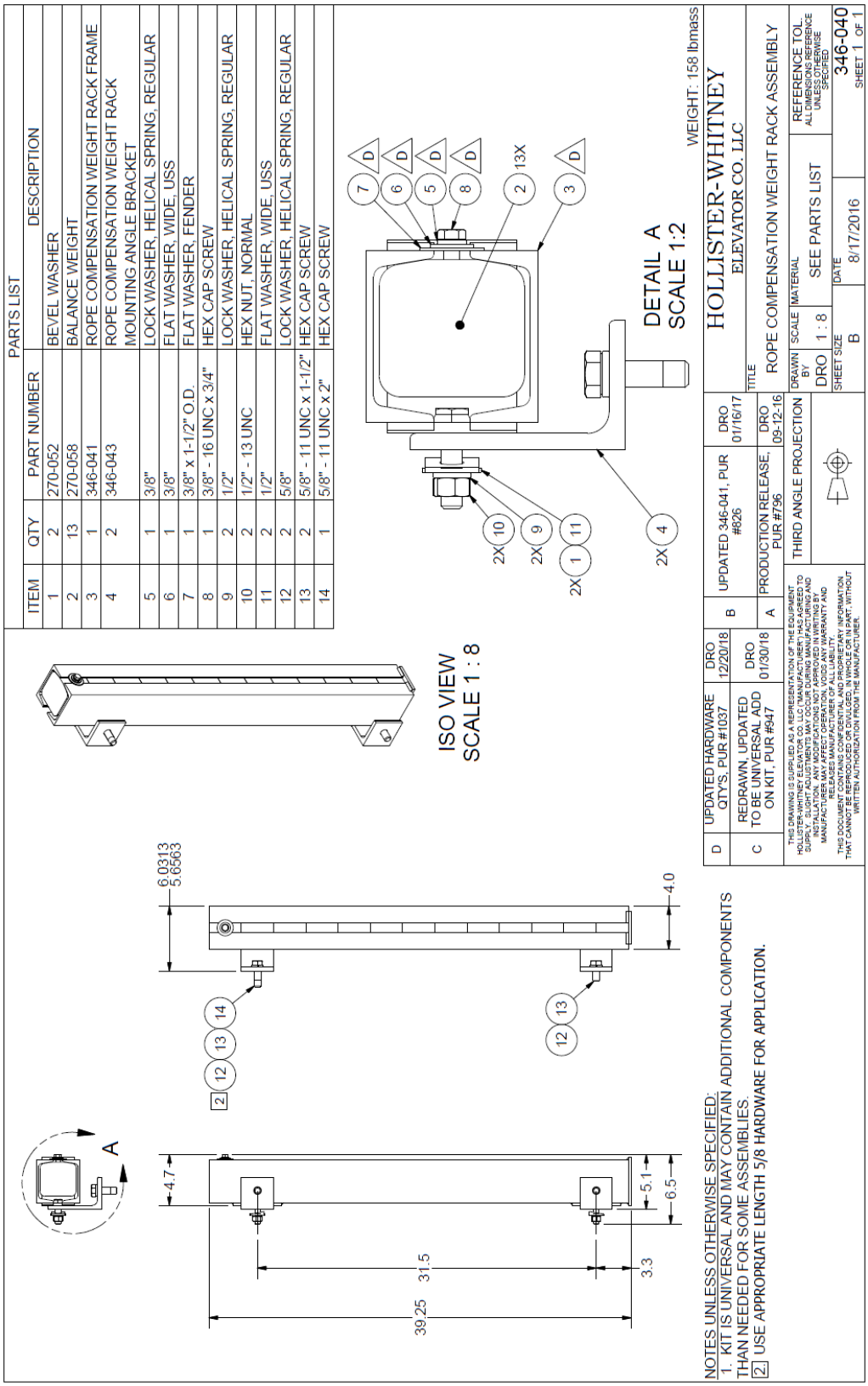
Drawing 6 Model #347 Twin Ø25" Sheave Sheet-2



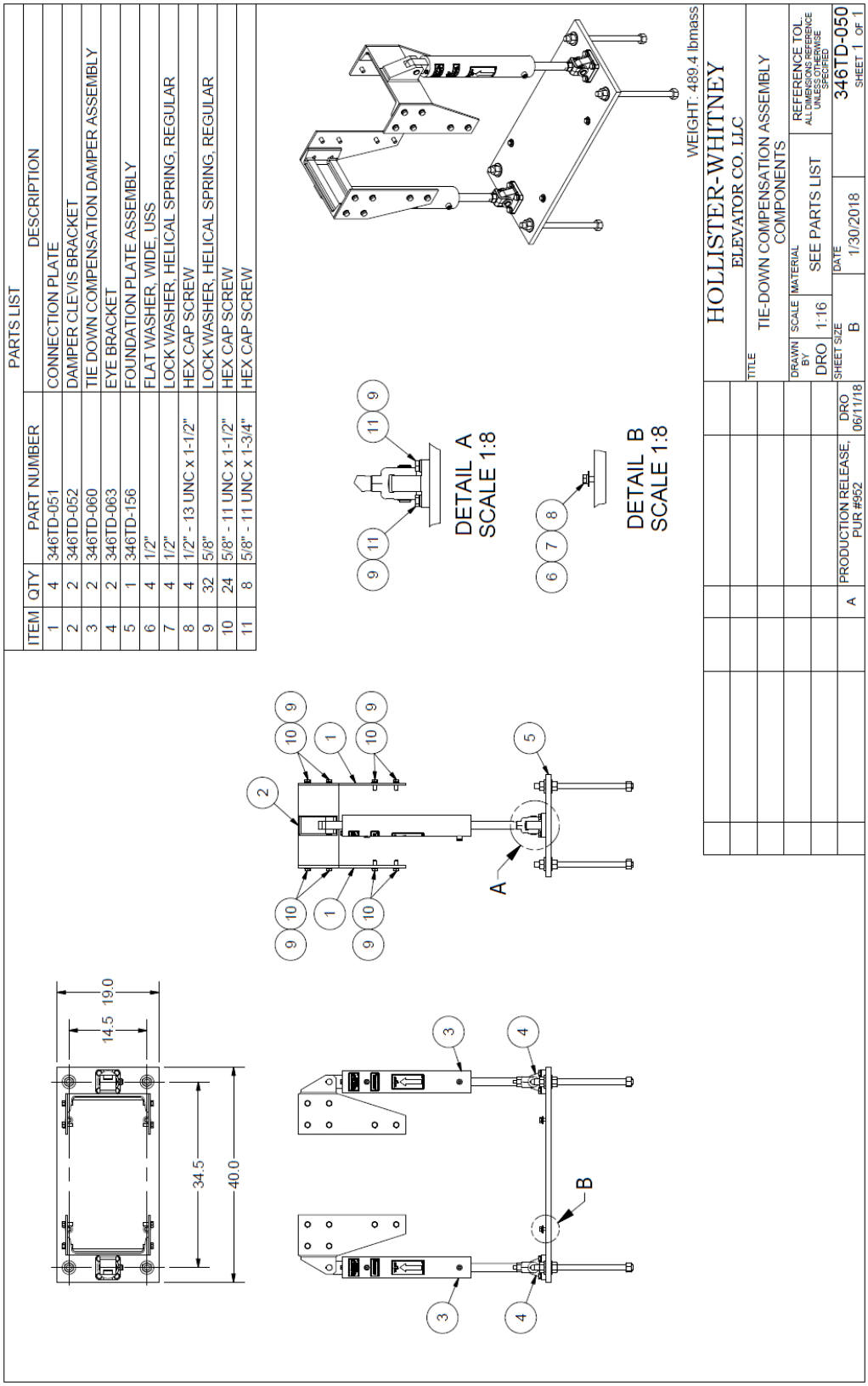
Drawing 7 Model #347TD Single Ø25" Sheave Sheet-1



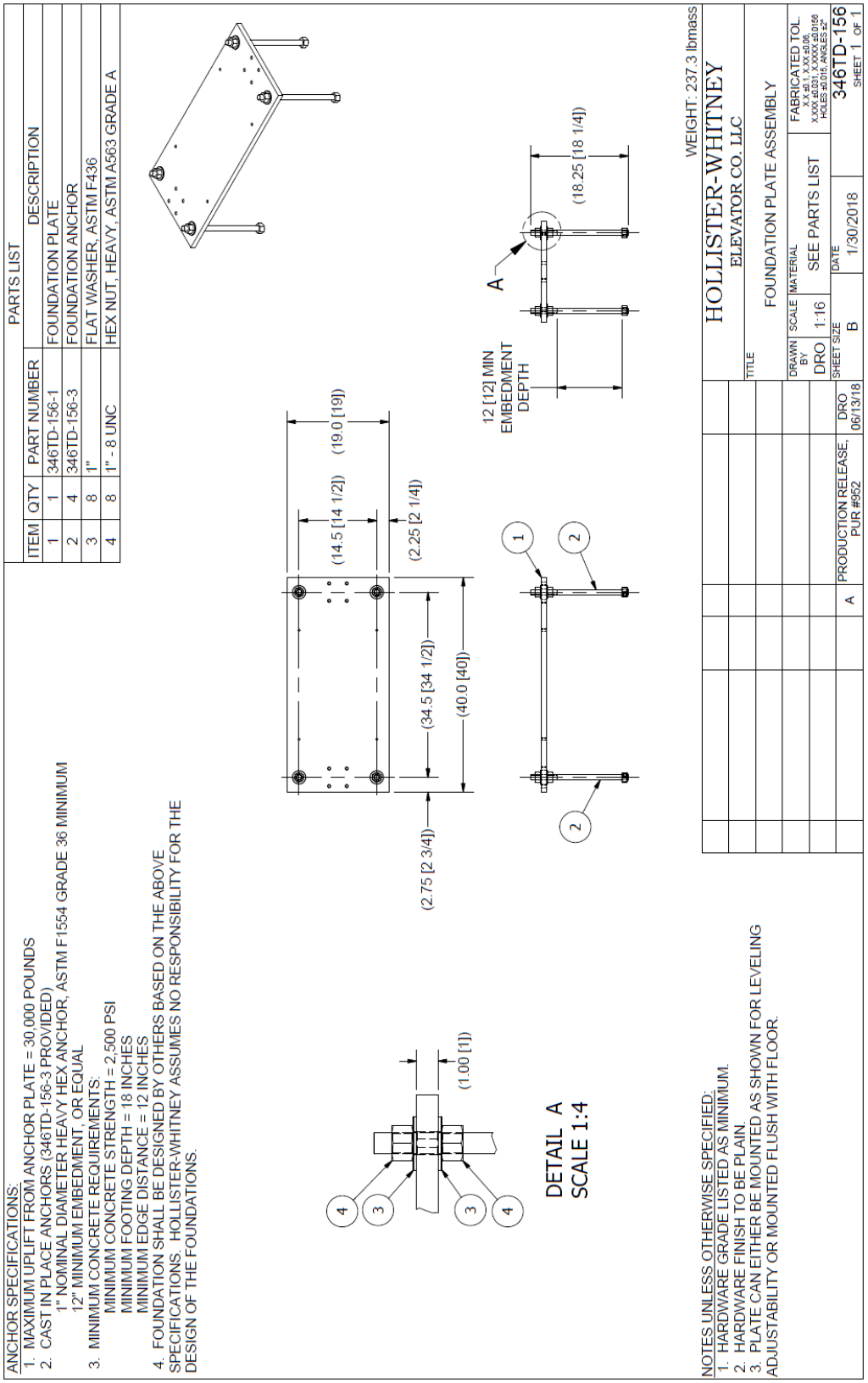
Drawing 8 Model #347TD Single Ø25" Sheave Sheet-2



Drawing 9 Weight Rack Assembly



Drawing 10 Tie-Down Compensation Assembly



Drawing 11 Foundation Plate Assembly