Installation, Operations & Maintenance Manual

Portable Davit, SWL 150 kg
Sr. No. AMT-PD0015-2601

AMETECS HEAVY INDUSTRIES

Plot 22 A, MW 5, Mussafah Industrial Area

Abu Dhabi, UAE

Tel: 00971-2-555 2426 | Fax: 00971-2-554 0040

Web: www.ametecs.com | E-mail: industries@ametecs.com

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1.0 Components of the Portable Davit

The Davit crane supplied for the project is portable and can be removed from the socket and stored when not needed.

The Davit crane has structural components as shown in the snapshot below:

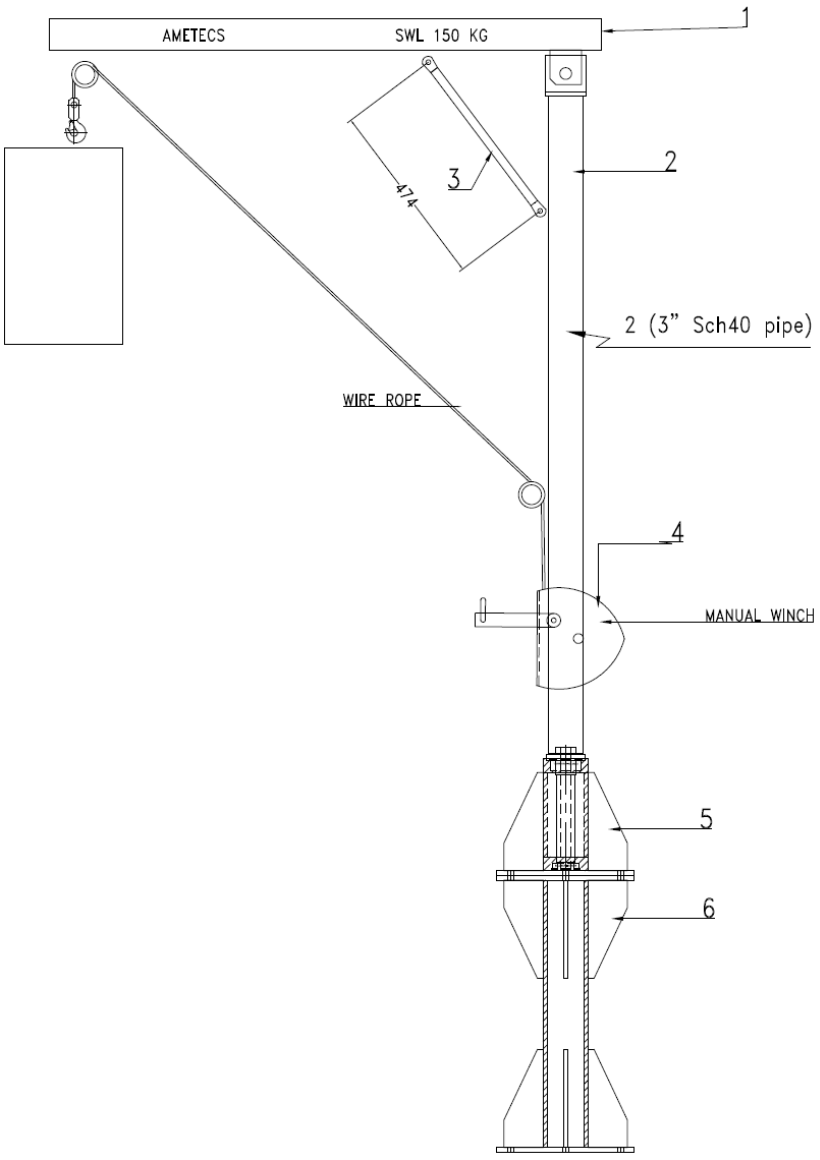


Fig: Snapshot of davit installed view

ITEM NO.	DESCRIPTION	QTY.	Material	Remarks
1	Davit arm	1	RHS, 80 x 80	Painted (325 mic.)
2	Davit column	1	Pipe, 3" SCH 40	Painted (325 mic.)
3	Bracing member	1	Pipe, 1" SCH XXS	Painted (325 mic.)
4	Manual winch	1	Galv. finish	HAACON
5	Surface mounted socket	1	Carbon steel	Painted (325 mic.)
6	Socket extension	1	Pipe, 4" SCH 40	Painted (325 mic.)

Socket

One surface-mounted socket is provided for the davit, which will be installed on a suitable steel beam using bolts supplied by AMETECS.

The top of the Bearing holder has a swivel lock plate with 4 nos. holes, used to lock the column swivel as needed.

Davit structure

The davit is supplied as a modular welded structure, comprising 1 column segment, 1 arm segment, 1 socket extension, and 1 no. surface mounting socket

Lifting gear

The manual winch is supplied with a suitable rope and hook for a lifting height of 10.5 m.

2.0 Safety Manual for Davit Operations

Any person operating the davit should understand that this is an activity that requires responsibility. There are rules and regulations to be obeyed to ensure the safe and efficient use of the crane.

The procedures described in this document may be used as a tool in the overall training and authorization of a prospective Portable crane operator.

Any person operating the crane should realize that all cranes are different and may have specific operating, safety, inspection, and maintenance requirements. This manual must be read and understood thoroughly before operating the crane.



THE WEIGHT OF THE HEAVIEST DAVIT COMPONENT IS APPROX. 25 KG; ENSURE PERSONS MOVING THE DAVIT ARE TRAINED AND SUPERVISED EFFICIENTLY, TO PREVENT ANY ACCIDENT.



AS DAVIT HOOK CLEARANCE IS APPROX. 2508 MM WHEN INSTALLED IN THE SOCKET, A SUITABLE PLATFORM MIGHT BE NEEDED WHEN INSTALLING THE ARM.



DO NOT USE THE DAVIT FOR MANLIFTING.



DO NOT USE THE DAVIT WITHOUT LOCKING PINS AND R-PINS.

2.1 Operator qualifications

The minimum qualifications for a person to operate the davit are as follows:

- Ability to understand signs, labels, and instructions
- Proper eyesight (natural or corrected)
- Have coordination between hands, eyes, and feet
- Understand fully the operation sequence to be followed

2.2 Personal protective equipment

An operator and any other person involved in a lift must use the PPE required in the area. If the top of the load is lifted to a height greater than 5 feet, then the load is considered an overhead hazard, and head protection must be worn.

2.3 Shift/Operator Inspection Checks

At the beginning of each shift during which the crane is used, a visual inspection must be made following the table below. A visual inspection is limited to that which can be made from a safe observation point. Any defects must be reported to the supervisor.

Inspection Item	Description of Inspection Checkpoints
Tagged Crane	Check that the crane is not tagged with an out-of-order sign.
Column pin	Check that the pins of column members are not damaged due to inappropriate storage methods
Hook	Check for damage, cracks, nicks, gouges, deformations of the throat opening, and wear on the hook or load-bearing point. Also, ensure the hook latch is in proper condition.
Locking pin sets	Ensure all locking pin sets are complete with lock pin, washer, and cotter pin.
Load rope	Check for wear in the load rope or any nodes on the rope.
Unusual Sounds	Check for any unusual sounds from the crane mechanism while operating the crane.
Housekeeping and Lighting	Check the area for accumulation of material, trip or slip hazards, and poor lighting.

The operator should only respond to signals from another person directing the lift. Except for an emergency STOP signal, this must be obeyed when given by any person nearby.

An operator must not carry a load over another person. The davit must NEVER be used to make a side pull.

When attaching or moving a load, the operator or rigger must ensure all the following:

- The Load rope is free of kinks or twists and not wrapped around the load.
- The load is attached to the load block hook using a sling or other approved device.
- The sling and load will clear all obstacles or obstructions.
- The load is balanced and secured before lifting the load more than a few inches.
- Multiple lines are not twisted around each other.
- The hook is brought over the load in a manner to prevent swinging.
- There is no sudden acceleration or deceleration of the moving load.

2.4 Inspection

The inspection procedure for the davit is divided into two general categories:

- Routine inspections need to be performed before every lift.
- Periodic inspections, which are done monthly.
- Load test of the davit is to be performed annually by a competent third-party agency.

Please refer to the separate manuals for the winch to carry out the various maintenance tasks on these components.

3.0 Installation of the davit

3.1 Installation of Davit Sockets

Ensure the center location of the Davit socket is confirmed at the site, and the base plate location is marked accordingly on the beams.

SS 316L bolts are provided for the installation of the surface-mounted socket. Ensure hole marking is done as per the base plate hole spacing on the socket extension.
Follow the manufacturer's instructions for installation.

Lift the socket and align the base plate holes, tightening the bolts.

3.2 Installation of davit structure

At least 2 people will be needed when installing the davit segments in the socket. Due to the overall height of the davit, a scaffolding/platform might need to be erected to reach the top of the davit arm when attaching/removing a sling.

NOTE: THE MAXIMUM WEIGHT OF THE DAVIT COMPONENT IS 25 KG.

1) Place the pin of the column in the socket and ensure the pin is seated in both bearings. If in doubt, follow the figure below.



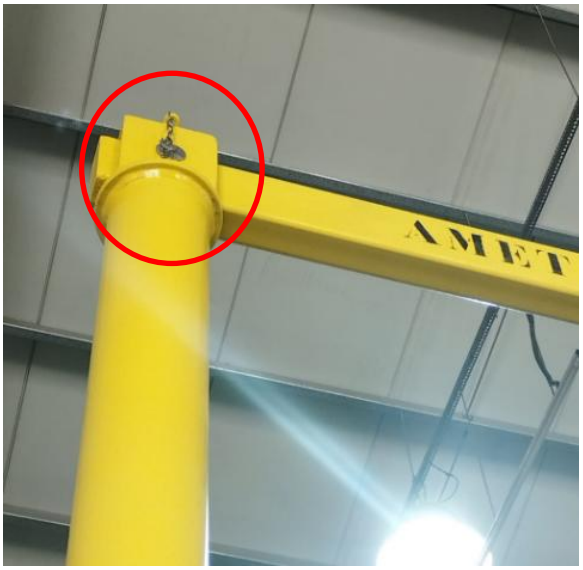
Fig: Gap between the bottom of the column and the top of the socket (image shown may differ from the actual product).

2) Lock column swivel by inserting swivel lock pin into suitable hole on socket top plate.

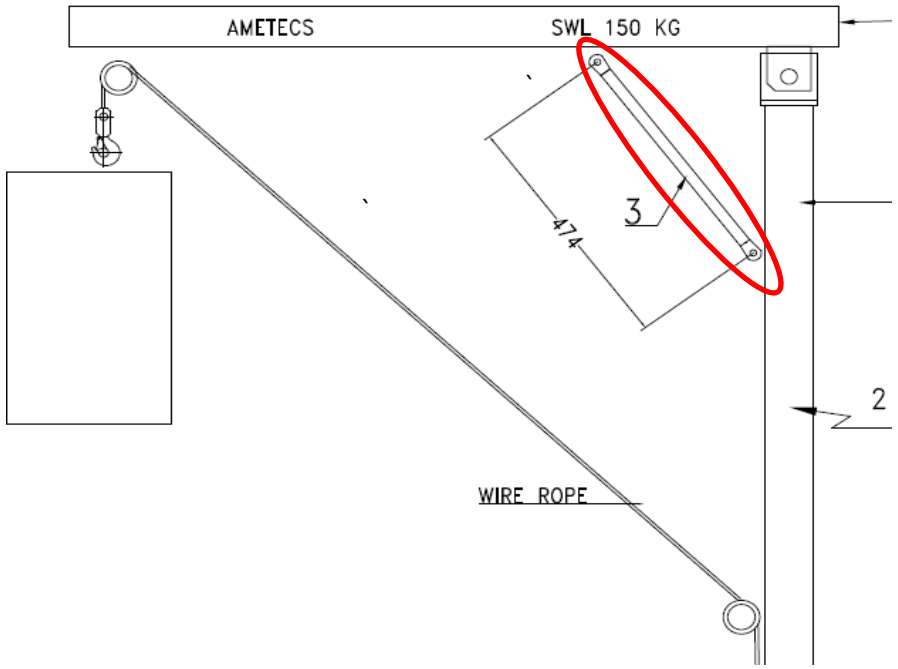


Fig: Swivel lock pin in place to prevent davit rotation(image shown may differ from the actual product).

3) Install the arm to top of column and secure using load pin



4) Install bracing between the arm and the column.



5) Install the winch onto the mounting point on the column.

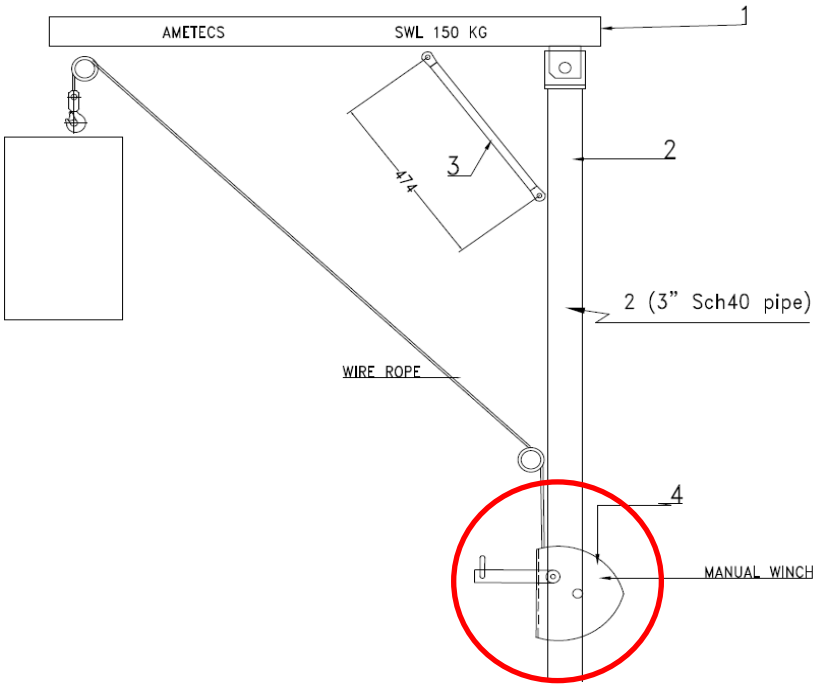


Fig: Winch installed to arm(image shown may differ from the actual product).

IT IS RECOMMENDED TO USE THE SWIVEL LOCK PIN ON COLUMN DURING INSTALLATION OF THE HOIST, SO THAT DAVIT COLUMN DOES NOT SWIVEL UNINTENTIONALLY.

4.0 Operating the portable davit.

The UP/DOWN operation is performed by rotating the manual winch in the appropriate direction.

Care should be taken when operating the davit manually to ensure that no component contacts any material on site (as the arm can be rotated 360 degrees).

A sample lifting cycle is given below:

- Ensure the arm is positioned correctly, depending on the reach and weight of the equipment to be lifted.



NEVER ATTEMPT TO EXCEED THE MAXIMUM DAVIT CAPACITY OF 150 KG.

- Position the arm of the portable davit in line with the object/opening in the ground. NO SIDEWAYS LIFT IS TO BE DONE WITH THE PORTABLE DAVIT.
- Lock the rotation by inserting a swivel lock pin into one of the 4 holes on top of the socket.
- Rotate the manual winch to move the load UP/DOWN
- Ensure that the load is properly positioned on the hook and safety latch of the
  The hook is closed properly.
- Raise the hook, with stops depending on the operation type being followed.
- Remove the swivel lock pin and place it in storage groove.



IF THE SWIVEL LOCK PIN IS KEPT LOOSE ON THE SOCKET, THERE IS A RISK OF THIS GETTING STUCK BETWEEN THE COLUMN AND THE TOP OF THE SOCKET, THEREBY CAUSING DAMAGE TO THE PIN.

- Swing the davit arm so that the object lifted is at the desired location.
- Lock the rotation by inserting a swivel lock pin into one of the 4 holes on top of the socket.
- Using the winch, lower the hook so that the object is carefully placed at the desired level.

5.0 Maintenance Tasks

For maintenance tasks of the winch, please refer to the relevant manuals for the hoist.

Bearings for the socket are sealed and hence do not require any regular cleaning.

The following maintenance tasks are to be performed on the welded davit.

Routine (before every lift)

- Ensure the locking pins are in good condition, with no cracks or any signs of damage.
- Ensure cotter pins are available for all locking pins.
- Check that no damage is present to any of the structural members.
- Ensure the pin of the bottom column section is free of dirt or debris, else it might not seat properly in the socket.
- Check the winch carefully for any sign of wear.

Periodic (every month)

- Ensure the locking pins are in good condition, with no cracks or any signs of damage.
- Ensure cotter pins are available for all locking pins.
- Check that no damage is present to any of the structural members.
- Ensure the pin of the bottom column section is free of dirt or debris, else it might not sit properly in the socket.
- Check the winch carefully for any sign of wear.
- If needed, lubricate the winch with the recommended lubricant.
- Check hook safety latches for proper operation.

Load test (annually)

- The Davit crane is to be inspected, and load tested annually or at the frequency desired by the client, in the presence of a competent third party.

Lubrication schedule:

Parts to be lubricated	Type of oil	Frequency
Bottom pin of column	NLGI No. 2	Once a month or after every removal of pin from socket
Mounting pins	NLGI No. 0	Once every 2 months
Socket bearings	NLGI No. 0	Once every month

6.0 Troubleshooting

For troubleshooting related to components of the davit, please refer to the table below:

Sl. No.	Problem	Troubleshooting hints
1	The rotation of the column/arm is not smooth	- The pin of the column is damaged, or there is debris on the pin. - Foreign particles on the bearing ID, which are to be cleaned. - Debris could have entered the socket; clean bearing inner sections, which are in contact with the socket pin.

7.0 Spare Parts List (5 years operation)

Part No.	Description	Quantity
AMT-PD0020-BRG1	Bearing Type-1 for socket, cap. 200 kg	1 no.
AMT-PD0020-BRG2	Bearing Type-2 for socket, cap. 200 kg	1 no.
AMT-PD0020-BRGC1	Circlip, bearing Type-1 for socket, cap. 200 kg	1 no.
AMT-PD0020-BRGC2	Circlip, bearing Type-2 for socket, cap. 200 kg	1 no.
AMT-PD-LR5-GL-15	Galvanized rope 5 mm Dia	15 m