



PRO-3 SERIES DAVIT SYSTEM

OPERATOR'S MANUAL



Man-Rated for:

Work Positioning | Confined Space Entry / Retrieval | Rescue | Fall Protection
Also Rated for Material Handling Applications

EMPOWERED BY INNOVATION

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1: INTRODUCTION TO DAVIT ARM APPLICATIONS

Congratulations on your purchase of a Best Safety Systems PRO-3 Series Davit System as part of your Safety-at-Heights equipment. Please see Figure 1 below for names and locations of system components.

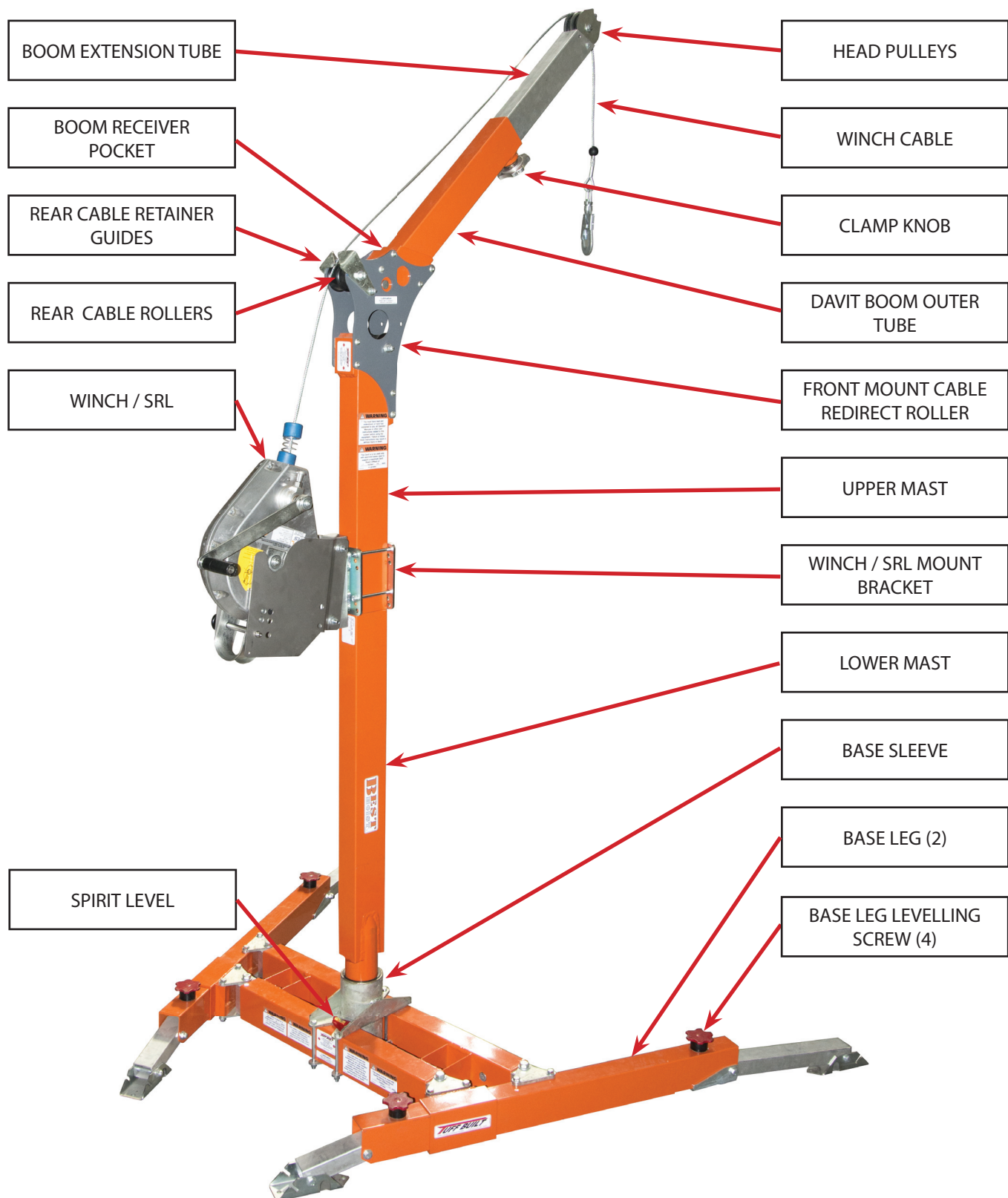


Figure 1, PRO-3 Davit System Parts and Location

PRO-3 SERIES DAVIT SYSTEM OPERATOR'S MANUAL

The PRO-3 Davit Arm is constructed of high quality aluminium tubing for lightness, and features the BTS-Klick pin-less connections for easy of set-up and tear-down.

The PRO-3 Davit Arm may be equipped with a variety of PRO-Series bases, winches, self-retracting lifelines, and other accessories to meet your needs.

This product has been specifically designed and carefully manufactured to provide reliable operation in many different safety-at-heights applications. These include, but are not limited to, various combinations of:

1.1 FALL PROTECTION

The PRO-3 Davit Arm is designed to be used with a variety of mounting base options to provide an engineered supporting structure for Personal Fall Arrest Systems (PFAS). Additionally, with the addition of a winch, the Davit Arm may be used as a rescue device to assist with the rescue of a worker who has fallen and is being suspended by his/her PFAS.

1.2 WORK POSITIONING

The RDS may be equipped with a Winch or a Self-Retracting Lifeline (SRL) to be used for the suspension of a worker at an elevated position for the performance of a task. The worker must wear a harness and if he is suspended in a work seat a secondary personal fall arrest system must be used.

1.3 RESCUE

The PRO-3 Davit Arm, base, and winch may be used employed as part of a system meeting the requirements of ANSI/ASSE Z359.4 & EN795 for the rescue of a fallen worker. Application of rescue in line with AS/NZS 1891 & Confined entry AS/NZS 2865.

1.4 CONFINED SPACE ENTRY / RETRIEVAL & RESCUE

The PRO-3 Davit Arm, base, and winch, may be used as part of a system to facilitate access to and egress from a confined space as well as non-entry rescue in the event of an emergency. When used with an approved BTS mounting base and winch, the PRO-3 Davit System meets the requirements of OSHA 1910.146, ANSI/ASSE Z117.1, EN795 & AS/NZS 2865 for use as a confined space entry/retrieval and rescue device.

1.5 FALL PROTECTION WHILE CLIMBING

In situations where it is not practical to install and use a temporary or permanently installed personal fall arrest system, the PRO-3 Davit Arm may be combined with a suitable BTS mounting base and winch to guard against falling while climbing a ladder or other structure. The winch line can be used as an extendable anchorage connector that moves up and down with the climber. An energy absorbing lanyard installed between the winch line and the dorsal D-ring on the climber's full body harness absorbs fall energy and reduces the arresting forces in the event of a fall in line with current codes of practice. The winch must be operated so as to continuously eliminate any slack in the winch line as the climber moves up and down (length as requested). The winch operator must be specifically instructed in such use of this equipment. All such installations must be designed, installed, and used under the supervision of a competent person as defined in AS/NZS1891.4.

1.6 MATERIAL HANDLING

The PRO-3 Davit Arm, when combined with a suitable BTS mounting base and winch, may be used for the raising and lowering of tools, equipment, and other material not exceeding the rated Working Load Limit of the lowest rated system component.

NOTE: Some jurisdictions may not allow the use of the same equipment to move personnel and material. Please note the user is to follow all site specific conditions, codes of practice & Australian standards.

2. APPLICATION RESTRICTIONS

There are restrictions and limitations that must be carefully considered in the selection, installation, and operation of this type of equipment. Serious injury or death may result from failure to consider these factors.

2.1 WORKING LOAD LIMIT

The PRO-3 Davit Arm is designed and rated to a working load limit of 1 person weighing a maximum of 136kg (including all clothing, tools, and equipment) when used with an approved winch or Self retracting Lifeline (SRL).

2.2 SITE CHARACTERISTICS, PHYSICAL and ENVIRONMENTAL FACTORS

Individual work sites have associated with them any of a number of hazards related to the site itself and the activities being carried out at that site. These may include, but are not limited to:

- Poisonous or explosive atmospheric conditions,
- Poisonous or corrosive chemical hazards,
- Hot surfaces
- Electrical hazards e.g. overhead power lines
- Sharp edges
- Engulfment hazards
- Moving machinery

All of these factors must be taken into consideration when selecting equipment for a given application.

3. GENERAL SYSTEM REQUIREMENTS

The PRO-3 Davit Arm is designed for use with a variety of accessories to perform many functions. There are basic requirements common to all such systems that include, but are not limited to, the following.

3.1 ANCHORAGE STRENGTH

The PRO-3 Davit Arm is designed to be set up or installed, and used on a supporting surface (anchorage) capable of providing sufficient anchorage strength to support all applied loads with an acceptable margin of safety. The standards governing different situations specify various minimum requirements depending on the application, the work being performed, and other factors. However, at no time shall the anchorage provide any less than the greater of:

- 2:1 safety factor on the maximum arrest force (MAF) rating of any fall arrest system being used,
- 4:1 safety factor on personnel working loads applied to the system, as defined in the specific codes of practice & standards.
- 4:1 safety factor on material handling loads applied to the system, as defined in the specific codes of practice & standards.

All installations **MUST BE** used under the supervision of a Competent Person.

3.2 COMPATIBILITY OF CONNECTORS

Connectors used to connect components in the system must be compatible with each other to ensure sufficient strength and eliminate the risk of accidental disengagement or rollout during use. Connectors supplied with products designed, manufactured, and/or approved by BTS will meet all the compatibility requirements for connectors. Any connectors not supplied by BTS, **MUST BE** approved by a Competent Person, and installed, inspected, and used according to the respective manufacturer's instructions.

3.3 FULL BODY HARNESS

Use only a full body harness designed, tested, and approved for fall arrest (Refer to AS/NZS1891.4) when connecting a person to this winch.

WARNING: Body belts or straps do not provide adequate support to the body and may cause serious injury or death in the event of a fall.

3.4 FALL PROTECTION

Activities involving working at heights require the use of equipment to protect the worker in the event of a fall. Suitable fall protection must be provided as required by applicable local regulations when using the PRO-3 Davit System and related equipment.

3.5 CONFINED SPACE SAFETY

When the PRO-3 Davit Arm is used as part of a system involving work in a confined space, always follow an approved confined space safety plan meeting all site specific regulations & general codes of practice.

3.6.1 SWING ANGLE

Care must be taken at all times to minimize the potential for swing fall when working at heights. At no time should the angle of a winch or SRL line exceeds 30° with respect to the vertical (see Figure 2).

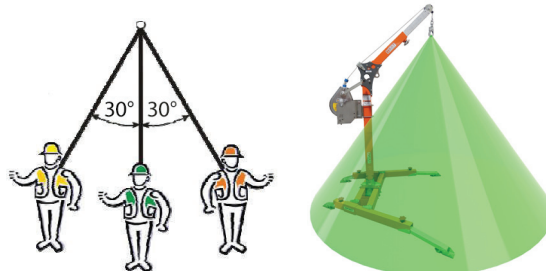


Figure 2, Maximum Swing Angle

4. PRO-3 DAVIT SYSTEM SETUP & OPERATION

The PRO-3 Davit Arm is designed for use in conjunction with various accessories to meet different requirements. These may include winches, davits, self-retracting lifelines (SRL's), energy absorbers, and full-body harnesses. All installations must be approved by a Competent Person.

4.1 SET-UP / INSTALLATION OF MOUNTING BASES

The PRO-3 Davit Arm is designed for use in many types of bases depending on the given application, including:

- Service vehicle tow hitch mounted bases
- Barrel mount bases
- Counterweighted bases
- Various styles of clamp-on and permanent mount bases

Mounting bases must be set up or installed and used on an anchorage meeting the strength requirements as specified in Section 3.1. Bases other than the BTS PRO-3 Series Portable Base shown in Figure 3 must be set up or installed following the Manufacturer's setup or installation instructions provided with each base.

4.2 PRO-3 Series Portable Base

If you are using a BTS PRO-3 Series Portable Base with your PRO-3 Davit Arm, assemble the base as shown in Figure 3.

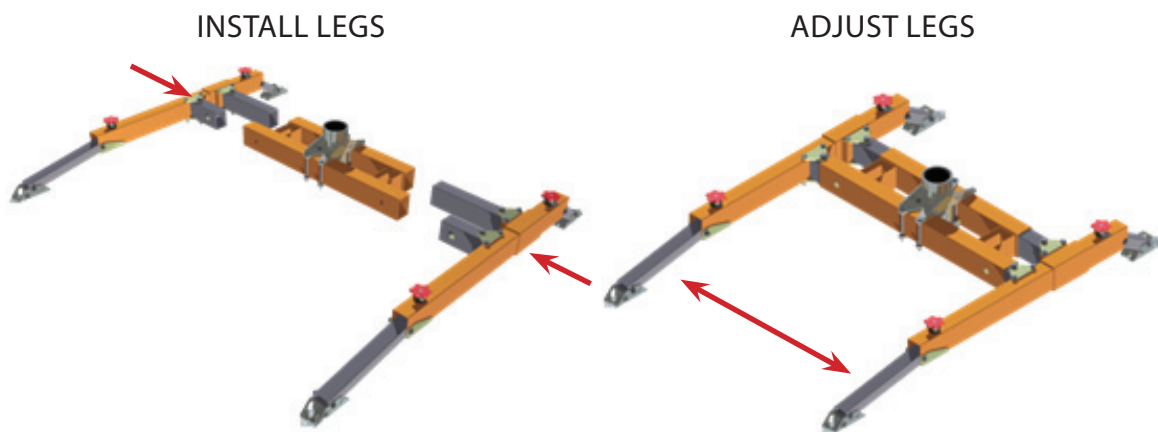


Figure 3, Assembling & Adjusting PRO-3 Portable Base (Typical)

NOTE: For openings larger than 1905mm in diameter, use the Model 30115 PRO-3 Heavy Duty Portable Base (see Figure 4).

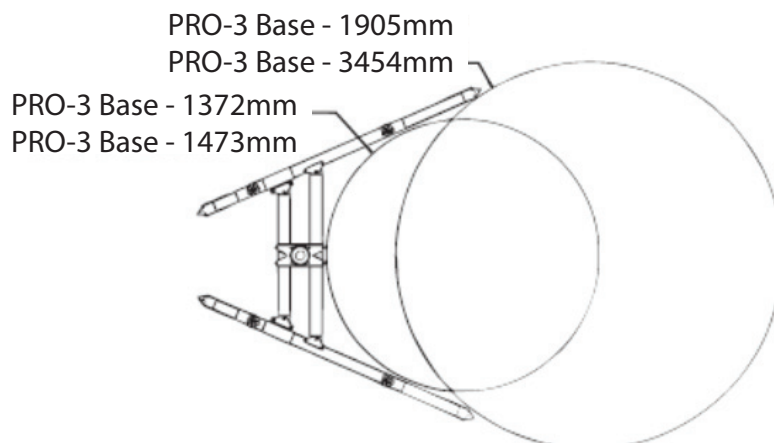


Figure 4, Range of Opening Sizes for PRO-3 and PRO-3 Heavy Duty Portable Bases

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By angling the base legs, position the base around the opening being entered so as to achieve the best access to the opening for the entrant, and the best working position for the attendant.

Level the Base Assembly using the 4 Base Leg Levelling Screws, adjusting the base such that the legs angle slightly upwards as they go from back to front. Ensure that davit mast is vertical, and base is stable. A spirit level is fitted at the rear of the base to aid in setup.

4.3 DAVIT INSTALLATION & ADJUSTMENT

Install the davit into the sleeve on the base as shown in Figure 5, and check that the davit rotates freely in the sleeve.

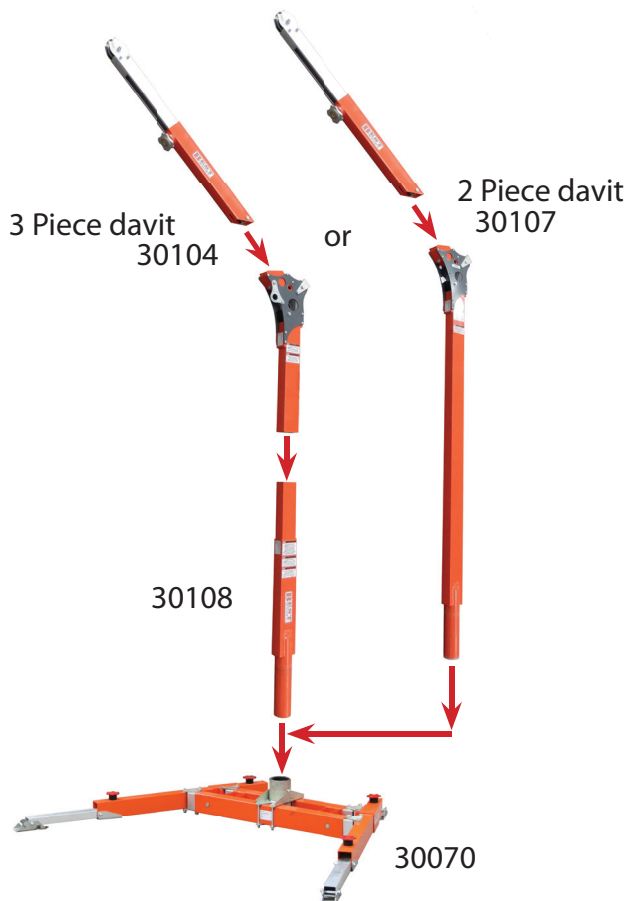


Figure 5, Installation of PRO-3 Davit Arm to PRO-3 Series Mounting Base

Adjust the offset of the davit as required by loosening the Clamp Knob, sliding the Boom Extension Tube to the required position, and tightening the Clamp Knob to lock the Extension Tube in place. Tighten the Clamp Knob until you hear and feel the internal ratchet click at least twice to ensure proper engagement of the Overload Indicator.

Note: Under all normal working loads, the Boom Extension Tube is locked in place when the Clamp Knob is tightened. If system misuse applies excessive load to the system, the Extension Tube slides back inside the Receiver Tube to effectively shorten the arm and reduce loading to protect other parts of the system. Movement of the Extension Tube under loading indicates that excessive force is being applied to the system, and the activity causing the movement MUST BE stopped immediately.

4.4 WINCH, SRL, & ACCESSORY INSTALLATION

Please refer to the Operator's Manual provided with all BTS accessories at the time of purchase for detailed information on the installation of Winches or SRL's onto the Davit System.

For accessories not supplied by BTS, the Competent Person responsible for the design, installation, and use of the system must provide detailed information regarding the installation of the winch or SRL onto

the system.

Install any additional accessories required for the job at hand according to the appropriate Operator's Manual or other user instructions as applicable.

4.5 SYSTEM OPERATION

Once all accessories have been properly installed onto the system, accessory operation is as outlined in the applicable Operator's Manual, Manuals for winches, SRL's, or other accessories provided by BTS are provided with the equipment at time of purchase. Replacement manuals are available from BTS or your local dealer on request. No person shall use this winch without receiving proper training as outlined in Section 5. Any user must fully read and understand this manual and any other instruction manual(s) related to the system being used, or have the instructions explained to them, before using this equipment.

4.6 INSPECTION

The PRO-3 Davit Arm must be inspected before each use as outlined in Section 6.1.

Any problems must be reported immediately to your supervisor, and the equipment labelled to prevent further use until it has been repaired.

NOTE: Any time a winch is returned to a factory authorized service centre for repair, please provide photocopies of all previous Inspection Log sheets for that winch to assist with diagnosis and processing of any warranty claims.

Please obtain a Returned Goods Authorization number from the service centre before sending your winch for service.

5. TRAINING

Any worker using this PRO-3 Davit Arm must receive appropriate training from their employer on all equipment involved prior to operating. Users must fully read and understand this manual and any other instruction manual(s) related to the system being used, or have the instructions explained to them, before using this equipment.

6. INSPECTION

6.1 INSPECTION BEFORE USE

The PRO-3 Davit Arm must be inspected before each use as described in Sections 6.1.2 to 6.1.3. Report any problems or concerns to your supervisor, and do not use the equipment until they have approved doing so.

6.1.1 Cleaning and Lubrication

If required, clean and lubricate the PRO-3 Davit Arm and all its parts as outlined in Section 7. Do not use solvents or other chemicals to clean the base.

6.1.2 Physical Damage

- Check all tubular sections, ensure they are straight and free of dents, distortion, cracks, corrosion or other damage.
- Inspect the base, ensuring it is not damaged and is free of dents, distortion, cracks, corrosion or other damage.
- Inspect the feet, ensuring they are not damaged and are free of dents, distortion, cracks, corrosion or other damage.
- Inspect the pulley to ensure it is clean and rotates freely.
- Ensure the davit arm and legs open properly and lock into place with the BTS Klick.
- Inspect all bolts and nuts. Make certain they are securely attached and tight. Check if any bolts, nuts or other fasteners are missing or have been substituted or altered.
- Ensure all labels are present and fully legible. See section 6.2.
- Inspect the winch for cracks, dents, bending, rust, wear, corrosion, or other damage. Refer to winch manual.
- Inspect other system components (Karabiners, SRL, etc.) per associated manufacturer's instructions.
- Record results of inspection in Inspection & Maintenance Log found at the end of this manual. If inspection or operation reveals a defective condition, remove the Rescue Davit System from service immediately and contact an authorized service center for repair.

Note: Not all labels shown may be present on your equipment, as some are related to standards and certifications that may not apply to your jurisdiction.

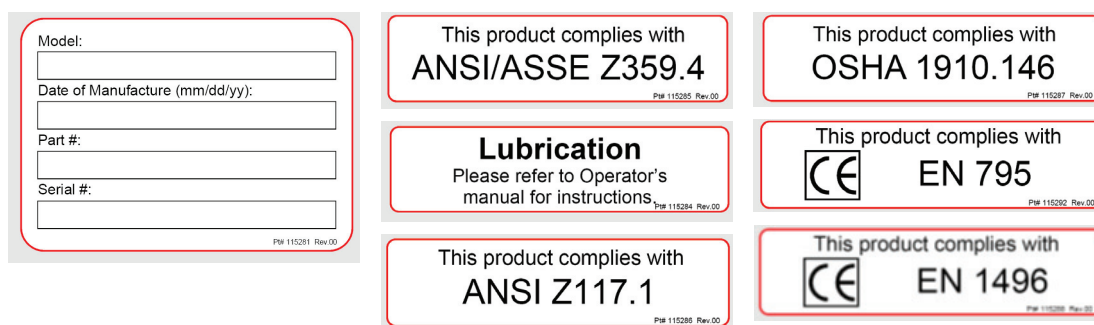
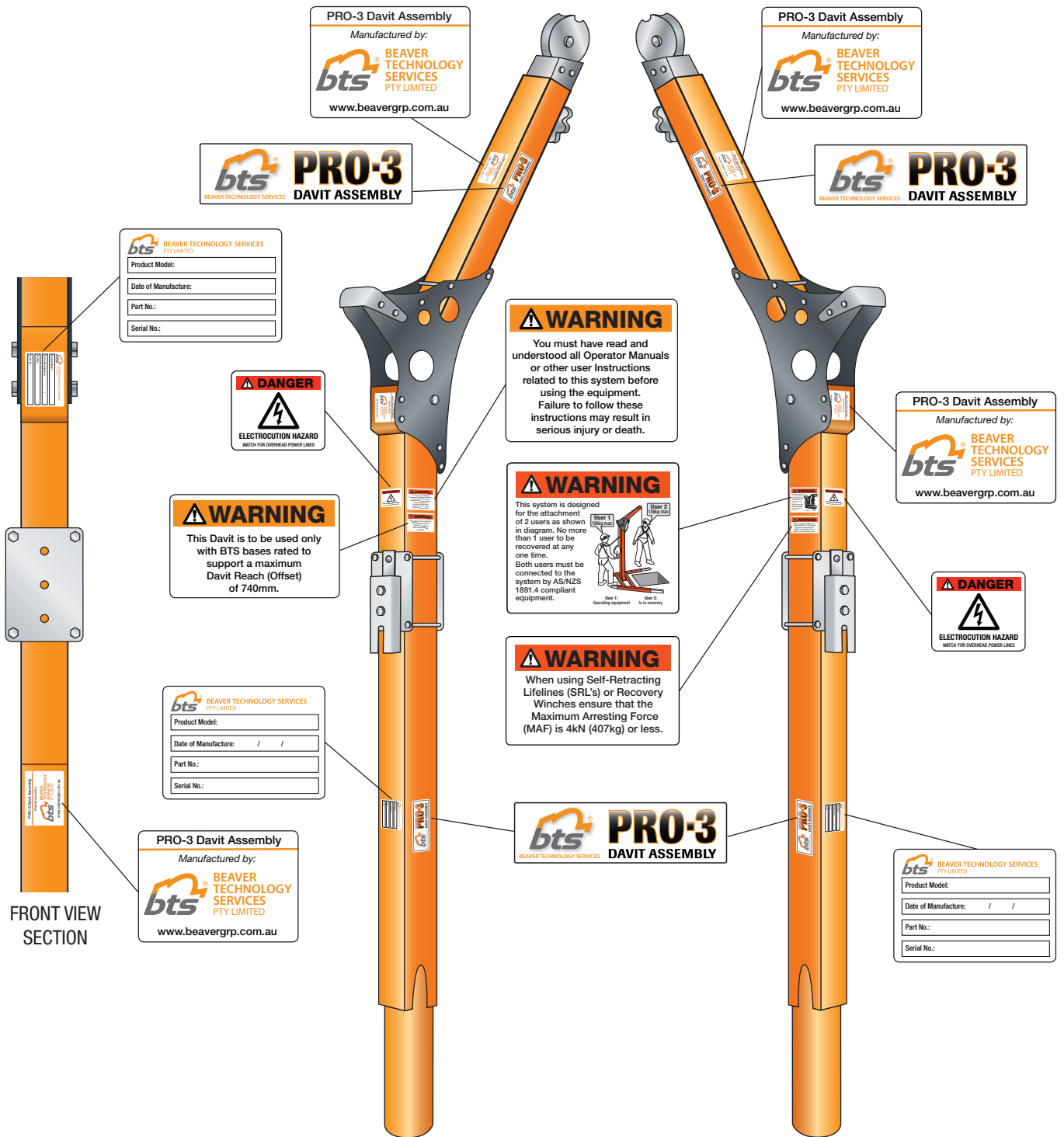
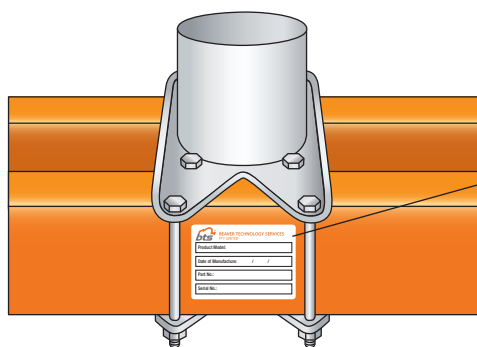


Figure 6a, PRO-3 Davit Arm Labels (Pre September 2013)

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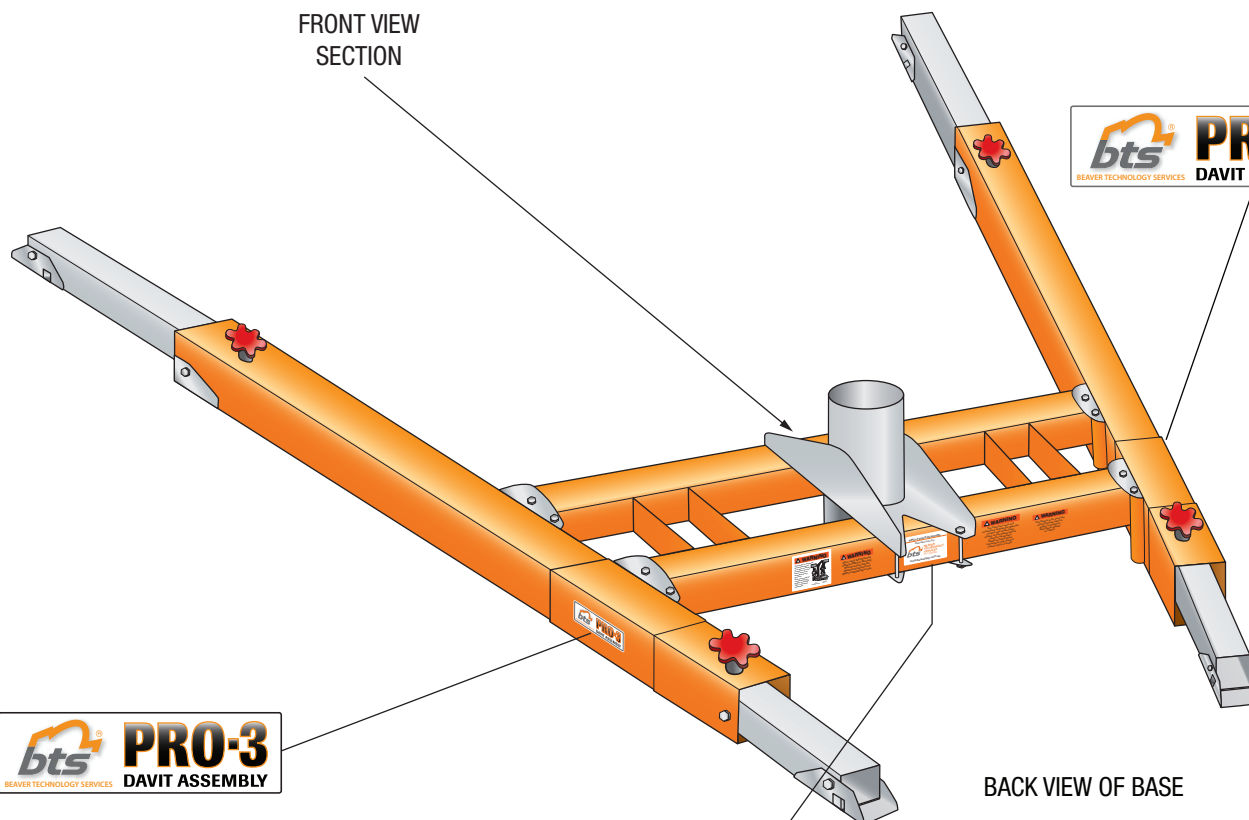


BACK & RIGHT SIDE VIEW
 LEFT SIDE & BACK VIEW
 Figure 6b, PRO-3 Davit Arm Labels (Post September 2013)



FRONT VIEW SECTION

BEAVER TECHNOLOGY SERVICES PTY LIMITED	
Product Model:	
Date of Manufacture:	/ /
Part No.:	
Serial No.:	



BACK VIEW OF BASE

WARNING

This system is designed for the attachment of 2 users as shown in diagram. No more than 1 user to be recovered at any one time. Both users must be connected to the system by AS/NZS 1891.4 compliant equipment.

Step 1: Operating equipment
Step 2: In recovery

WARNING

When using Self-Retracting Lifelines (SRL's) or Recovery Winches ensure that the Maximum Arresting Force (MAF) is 4kN (407kg) or less.

PRO-3 Davit Assembly

Manufactured by:

BEAVER TECHNOLOGY SERVICES PTY LIMITED

www.beavergrp.com.au

WARNING

You must have read and understood all Operator Manuals or other user Instructions related to this system before using the equipment. Failure to follow these instructions may result in serious injury or death.

WARNING

This Davit is to be used only with BTS bases rated to support a maximum Davit Reach (Offset) of 740mm.

Figure 6c, PRO-3 Portable Davit Arm Base Labels (Post September 2013)

While minor cosmetic damage will not affect the structural integrity of the PRO-3 Davit System, seriously damaged equipment MUST BE removed from service and returned to an authorized service centre for repair prior to further use.

Additionally, inspect any accessories being used with the Davit System as instructed in the Operators Manual provided by the respective manufacturer at the time of purchase.

6.1.3 Davit Overload Indicator Operation

The PRO-3 Davit Arm is equipped with a unique overload protection feature that guards against damage to system components and provides a visual indicator of the structure having been subjected to greater than allowed loading.



Figure 7, Overload Visual Indicator Marks

Note: Do not test Overload Indicator over an opening or where there is a chance of falling

To inspect the Overload Indicator for proper engagement:

- Fully extend and lock the Boom Extension Tube as described in Section 4.3,
- Install a winch or SRL on the structure as per the applicable instructions, and,
- Pull with your full body weight on the lifeline and make sure there is no movement of the Extension Tube. If using an SRL, apply a sharp, steady pull on the lifeline to engage the SRL brakes, and then pull on the lifeline to test the Overload Indicator.

Note: When conducting this test with an SRL, the test should be applied to the lifeline above the snap hook to eliminate any damage over time to any integral overload indicator in the hook itself.

6.2 ANNUAL INSPECTION

At least annually, and more frequently if subjected to harsh conditions or excessive use, the PRO-3 Davit System **MUST BE** given a detailed inspection by a competent person as described below, and the results recorded in an Inspection Log. A sample Inspection Log is provided at the rear of this manual. Please make photocopies of this sample to record all inspection results.

Following the instructions for Daily Inspection contained in Section 6.1.2 to 6.1.3, inspect the equipment for physical damage and record the results in the Inspection Log.

Check all bolts for correct tension. Sleeve mount bolts: 14Nm. Leg bracket bolts: 14Nm.

IMPORTANT: Be sure to review any previous inspection records to be aware of existing concerns and to allow for re-inspection of any potential problem areas. Cumulative findings may lead to the need for repair or replacement when looked at together.

NOTE: Any time equipment is returned to a factory authorized Service Centre for repair; please provide photocopies of all previous Inspection Log sheets for that product to assist with diagnosis and processing of any warranty claims or service issues.

Please obtain a Returned Goods Authorization number from the service centre before sending your equipment for service.

7. MAINTENANCE, CLEANING, LUBRICATION & STORAGE

The PRO-3 Davit System has been designed to provide many years of trouble free service, and requires little in the way of routine maintenance.

Any loose fasteners must be tightened, and the equipment returned to a factory authorized service centre for structural repair if necessary.

Basic cleaning should be performed at least annually (as outlined in Section 7.1) as part of the annual inspection or more frequently as required when used in harsh conditions (refer to section 6.2).

7.1 Cleaning the PRO-3 Davit Arm

Use a solution of warm water and a mild detergent to clean the PRO-3 Davit System and its labels. Do not use solvents or other cleaners to clean the equipment, as this may result in damage to the powder coat finish.

7.2 Lubrication

7.2.1 BTS Klick Lubrication

After cleaning and inspection as instructed in Sections 6.2 & 7.1, lubricate BTS Klick connectors with graphite solution or a similar moisture displacing penetrant as required, and wipe away any excess with a clean cloth. Do not apply oil, grease, or other lubricants that may attract and trap contaminants.

7.2.2 Sliding Assemblies Lubrication

After cleaning and inspection as instructed in Sections 6.2 & 7.1, wipe all sliding surfaces with a clean rag dampened with a moisture displacing penetrant.

7.3 Parts Considered Normal Wear and Tear for Warranty Purposes

Pulleys, Rollers, Labels, Adjuster Screws, Rubber Foot Pads (where applicable), and BTS Klick Connectors are considered subject to normal wear and tear during use and are not covered under warranty except in cases of material or manufacturing defects.

8. DAVIT SYSTEM GENERAL SPECIFICATIONS

8.1 MATERIALS OF CONSTRUCTION

The PRO-3 Davit Arm is principally constructed of powder coated 6061-T6 aluminium.

Steel hardware and connecting brackets are zinc plated and/or powder coated.

Plating conforms to ASTM B633-85, Type III, SC2.

8.2 COMPONENT WEIGHTS

- PRO-3 Upper Davit Boom Assembly: 4.0 kg
- PRO-3 Upper Davit Arm Post, 28R-54H: 6.1 kg
- PRO-3 Upper Davit Arm, 28R-66H: 6.8 kg
- PRO-3 1.0m Lower Davit Arm: 4.2 kg
- PRO-3 1.3m Lower Davit Arm: 5.5 kg
- PRO-3 2.2m 2-Piece Davit Arm, 28R-84H: 9.1 kg
- PRO-3 2.8m 2-Piece Davit Arm, 28R-108H: 10.5 kg
- BTS Klick style Winch / SRL bracket for the PRO-3 Davit Arm: 1.6 kg
- PRO-3 Series Portable Base 27.3 kg



PRO-3 DAVIT SYSTEM INSPECTION LOG

PRO-3 Davit System Model Number: _____

PRO-3 Davit System Serial Number: _____

Date of Manufacture (dd/mm/yy): _____

Purchase Date (dd/mm/yy): _____

INSPECTION ITEM	PASS	FAIL	DETAILS / LOCATION of DAMAGE	DISPOSITION (REPAIRED / SCRAPPED)	APPROVED FOR USE BY:
Check all tubular sections, ensure they are straight and free of dents, distortion, cracks, corrosion or other damage.					
Inspect the base, ensuring it is not damaged and is free of dents, distortion, cracks, corrosion or other damage.					
Inspect the feet, ensuring they are not damaged and are free of dents, distortion, cracks, corrosion or other damage.					
Inspect the pulley to ensure it is clean and rotates freely.					
Ensure the davit arm and legs open properly and lock into place with the BTS Klick.					
Inspect all bolts and nuts. Make certain they are securely attached and tight. Check if any bolts, nuts or other fasteners are missing or have been substituted or altered.					
Ensure all labels are present and fully legible. See section 6.1.2.					

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Inspect the winch for cracks, dents, bending, rust, wear, corrosion, or other damage. Refer to winch manual.					
Inspect other system components (Karabiners, SRL, etc.) per associated manufacturer's instructions.					

If inspection or operation reveals a defective condition, remove the Davit System from service immediately and contact an authorized service center for repair.

Date of Inspection: _____

Inspected By: _____

The information set out in this manual has been compiled from supplier reference data including third party sources. BTS believes that the information is accurate and reliable, though we do not make or give any warranty (other than implied by statute which may not be excluded) with respect to the information. By using this information, the user undertakes not to hold BTS liable or responsible in any way whatsoever in relation or consequential to such use.

WARRANTY INFORMATION

1 Year Limited Warranty – BTS/W - 0112

Beaver Technology Services Pty Limited (BTS) offers a one year limited warranty on this product.

This warranty is applicable from 1st January 2012 and supersedes all previous warranties

BTS, a part of the Beaver Group, warrants to the original retail consumer and purchaser that this product will be free from defects in materials and workmanship for one year from the date the product was purchased ('the warranty period').

BTS will rectify any defect in materials or workmanship appearing within the warranty period by repairing or replacing the product. BTS will offer a refund of the purchase price if the product cannot be readily and quickly repaired or replaced. BTS reserves the right to determine whether the product contains any defects in materials or workmanship covered by this warranty.

The benefits offered by this warranty are in addition to your rights and remedies that may apply at law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure. You are also entitled to have the goods repaired or replaced if the goods fail to meet the standard specified or quoted and the failure does not amount to a major failure.

How to make a warranty claim

To make a claim under this warranty, the product or part must be returned for examination, during the warranty period, to an authorised service centre nominated by BTS together with proof of purchase such as the dated sales receipt and an explanation of the problem to be rectified. An authorised service centre can be identified by contacting BTS at the address or telephone number set out below.

Any costs incurred in making a claim under this warranty or returning the product to an authorised service centre is to be borne by the person making the claim unless otherwise agreed by BTS. If BTS determines the product contains a defect in materials or workmanship that is covered by this warranty then BTS will bear the cost of returning the repaired product or replacement product to the person making the claim. If BTS determines the product does not contain a defect in materials or workmanship covered by this warranty then the cost of returning the product will be at the expense of the person making the claim.

Exclusions

This warranty does not apply to any defect caused by, or associated with misuse, abuse, lack of maintenance, negligence or accidents, repairs or alterations not authorised by BTS.

Contact: Beaver Technology Services Pty Limited
Part of the Beaver Group
19 Bearing Road, Seven Hills NSW 2147

Telephone: (02) 8811 3500

Website: www.btstech.com.au or www.beavergrp.com.au



CERTIFIED QUALITY

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