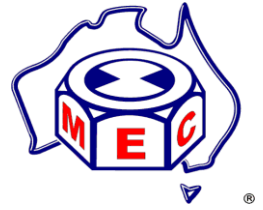


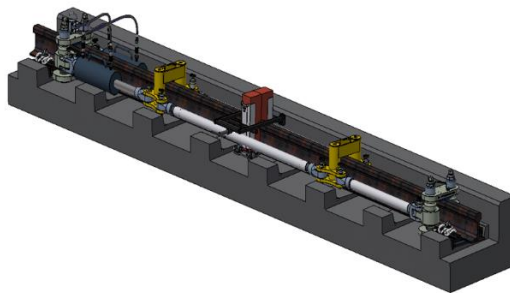
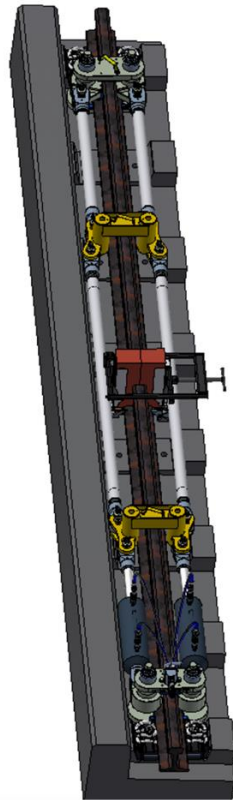
Melville Equipment Corp Pty Ltd

"Proud Australian Manufacturers"



FP-195 PLINTH TRACK

70 T TENSOR



Melville Equipment Corp Pty Ltd

Address:

10 Rogilla Close
MARYLAND NSW 2287
AUSTRALIA

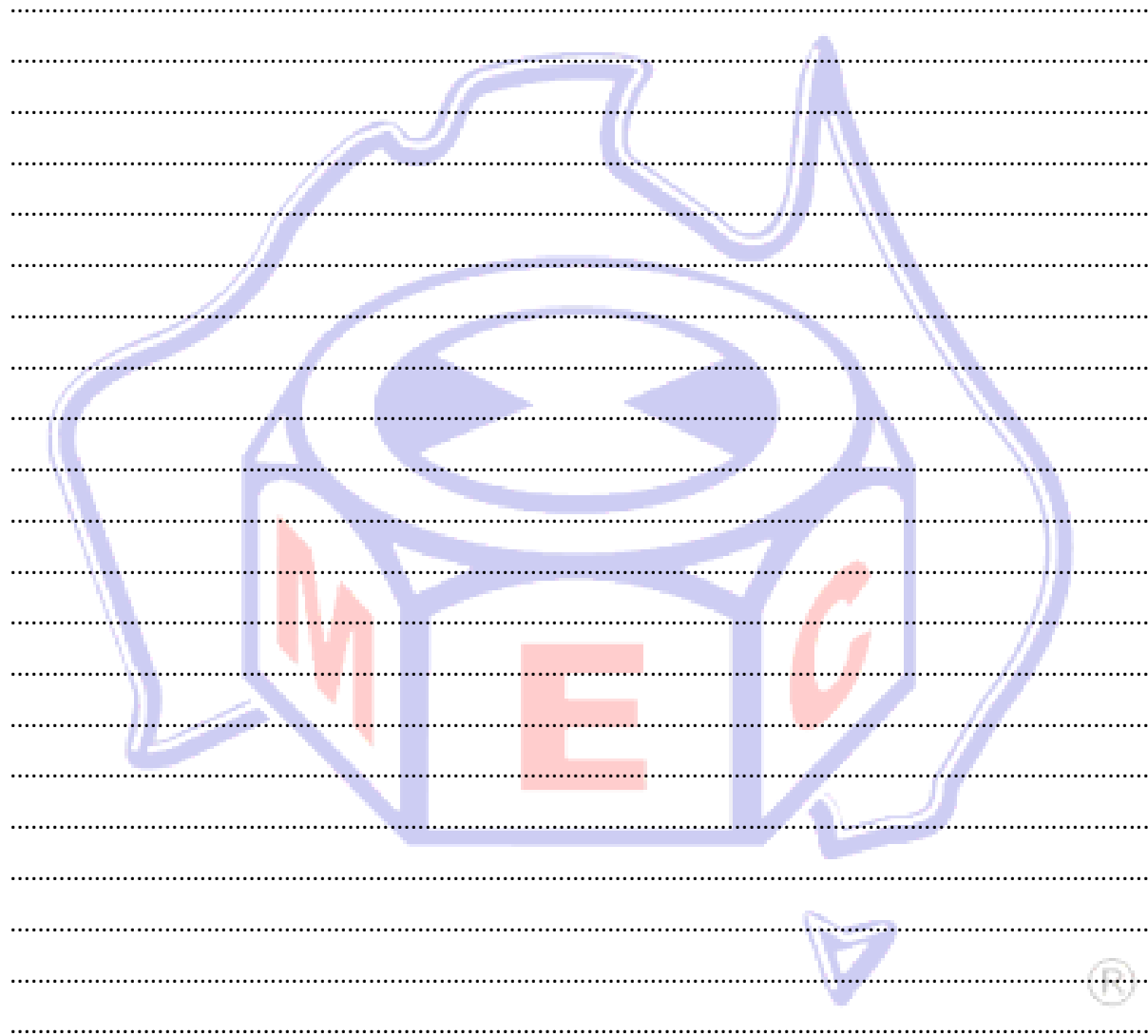
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MEC Part Number: MANUAL-195-AA

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1. Preface

Every attempt has been made to present accurate and current information within this manual. However, as product development on the Tensor and components used within is continuous, the information contained herein may be subject to change without notice, and without incurring obligation.

The information provided within this manual is the sole property of Melville Equipment Corporation Pty Ltd (MEC) and as such, reproduction or replication of any material contained within is not allowed without the written consent of MEC.

Information provided within this manual assumes:

- The person(s) operating the machinery have read and understand this manual and other manuals provided for specific components
- The person(s) operating are properly trained and equipped to safely and professionally operate this machinery
- The person(s) operating utilise the correct attachments and/or tools, and are trained and equipped to use them safely and professionally

INSPECTING AND SERVICING THE FP-195 TENSOR

This manual contains safety, operation and periodic inspection/servicing instructions. MEC specifies that inspecting/servicing the equipment, other than “before use” inspections, must be performed by MEC or a certified and authorised dealer. Please read the following warning.



SERIOUS INJURY OR DEATH COULD RESULT FROM THE IMPROPER REPAIR OR SERVICE OF THIS EQUIPMENT.

REPAIRS AND / OR SERVICE OF THIS EQUIPMENT MUST ONLY BE PERFORMED BY MELVILLE EQUIPMENT CORP. PTY LTD. OR CERTIFIED AND AUTHORISED DEALER.

THE USER SHALL NOT MODIFY THE DESIGN OR CONFIGURATION OF EQUIPMENT WITHOUT CONSULTING MEC



2. Safety Information

This operation and training manual is intended to complement existing site procedures.

The following site documentation must be reviewed by the trainee before commencing training:

- Safe Work Procedures (SWP)
- Isolation Procedures

If the training package information conflicts with existing site documentation, then the authorised site and/or end user is to consult with MEC in regards to any possible amendments or modifications required.

The following practices and procedures must be adhered to:

- Always complete Pre-Operation Checks prior to use and report any defects if found
- Only connect equipment with compatible MEC equipment
- Only operate the equipment for its intended purpose
- Never operate with guards missing or damaged
- The minimum PPE requirements outlined in this manual shall be adhered to in conjunction with site specific requirements. If there is a conflict, consult MEC.
- Ensure Isolation Procedures are followed prior to carrying out any maintenance
- If any faults or damage to this machine are found during pre-operation checks or operation, tag the machine “Out-of-Service” and follow site procedures

Following the above mentioned and the information contained within this manual will ensure safe, efficient operation of the equipment.



3. Safety Symbols

The safety symbols and signal words, as shown below, are used to emphasise all operator, maintenance and repair actions which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to the equipment.

3.1. Safety Symbols & Signal Words

	This safety alert and signal word indicates a hazardous situation which, if not avoided, <u>will</u> result in <u>death or serious injury</u> .
	This safety alert and signal word indicates a potentially hazardous situation which, if not avoided, <u>could</u> result in <u>death or serious injury</u> .
	This safety alert and signal word indicates a potentially hazardous situation which, if not avoided, <u>may</u> result in <u>minor or moderate injury</u> .
	This signal word indicates a potentially hazardous situation which, if not avoided, <u>may</u> result in <u>property damage</u> .
	This signal word indicates a situation which, if not avoided, <u>will</u> result in <u>damage to the equipment</u> .
	This signal word indicates a situation which, if not avoided, <u>may</u> result in <u>damage to the equipment</u> .



3.2. Hazard Warning Signs

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all instructions to avoid possible injury or death.
	This is the fire risk symbol. It is used to alert you to the potential of a fire starting if ignition sources are present.
	This is the explosive risk symbols. It is used to alert you to the potential of an explosion /explosive substances present.
	This is the toxic hazard symbol. It is used to alert you to the presence of toxic substances.
	This is the corrosive risk symbol. It is used to alert you to the presence of corrosive substances.
	This is the electric shock risk symbols. It is used to alert you to the presence of an electrical supply.
	This is the battery symbol. It is used to alert you to the potential hazard of electrical supply, battery acid and leaking batteries.

	This is the hot surface symbol. It is used to alert you that the surfaces may be hot.
	This is the dangerous gases symbol. It is used to alert you to the presence of dangerous gases.
	This is the fluid under pressure symbol. It is used to alert you that there are fluids under pressure in this machinery.
	This is the sharp edges symbol. It is used to alert you to the presence of sharp edges or cutting hazard.
	This is the keep hands clear symbol. It is used to warn you to keep hands clear as there are pinch points present.
	This is the rotating parts symbols. It is used to warn you of rotating parts on the machinery. Keep clear of rotating parts.

3.3. Personal Protection Symbols

	This is the eye protection symbol. It is used when eye protection must be worn.
	This is the hearing protection symbol. It is used when hearing protection must be worn.
	This is the head protection symbol. It is used when head protection must be worn.
	This is the hand protection symbol. It is used when hand protection must be worn.
	This is the foot protection symbol. It is used when feet protection must be worn.
	This is the protective body clothing symbol. It is used when protective clothing must be worn.



	This is the face protection symbol. It is used when face protection must be worn.
	This is the long hair protection symbol. It is used when long hair is required to be contained or restrained.

3.4. Prohibition Symbols

	This is the naked flame symbol. It is used when there is not to be a fire, naked flame, ignition sources and smoking nearby.
---	---

4. Safety Precautions

To ensure safe operation, please read and understand the following statements and their meanings. Also refer to supporting manuals from the engine manufacturer on specific operation and maintenance of the engine. This manual contains safety precautions which are outlined below.



Ensure all personnel operating this equipment are properly trained to ensure safe operation



Wear personal protective equipment around this machinery.

Minimum requirements: safety glasses, hearing protection (when powerpack in use), protective clothing and safety shoes at all times.



Hot parts can cause severe burns.

Do not touch power pack whilst in operation.



Carbon monoxide can cause severe nausea, fainting or death.

Avoid inhaling exhaust fumes and never operate the engine in a closed or refined area.



Fuel can cause fires and severe burns.

Do not fill the fuel tank while the engine is hot or running.





- Hoses must have a minimum working pressure rating of 10,000psi (700 Bar).
- Hoses must have a band stating their maximum working pressure (MWP) and test certificate I.D.

Do not use hoses that aren't compliant with both of these requirements.



High Pressure fluids can puncture skin and cause severe injury or death.

Do not work on hydraulic system without proper training and safety equipment. Ensure all hose connections are tight.



Clamping parts can cause severe injury.

Avoid unnecessary contact with the tensor whilst it is in operation.



Loose hair, clothing and jewellery can cause severe injury.

Ensure hair is restrained; loose clothing not to be worn and jewellery must be removed before operating the machinery.



	
 	
Ignition sources can cause fires and severe burns. There is <u>not</u> to be a fire, naked flame, ignition sources or smoking around any MEC machinery.	

	
 	
Toxic and/or Hazardous substances utilised in this machinery. Hydraulic oil and petrol are toxic and/or hazardous substances used within this machinery. Do not inhale, swallow or touch toxic/hazardous substances.	

	
	
Injury can occur through incorrect operation of the equipment. Only operate the equipment for its intended use. Failure to do so may result in injury. Do not ride on or tow the equipment.	

	
	
Electrification can occur if used on live third rail and/or fourth rail. Do not use equipment on live third rail and/or fourth rail electrification.	



Noise Hazard.

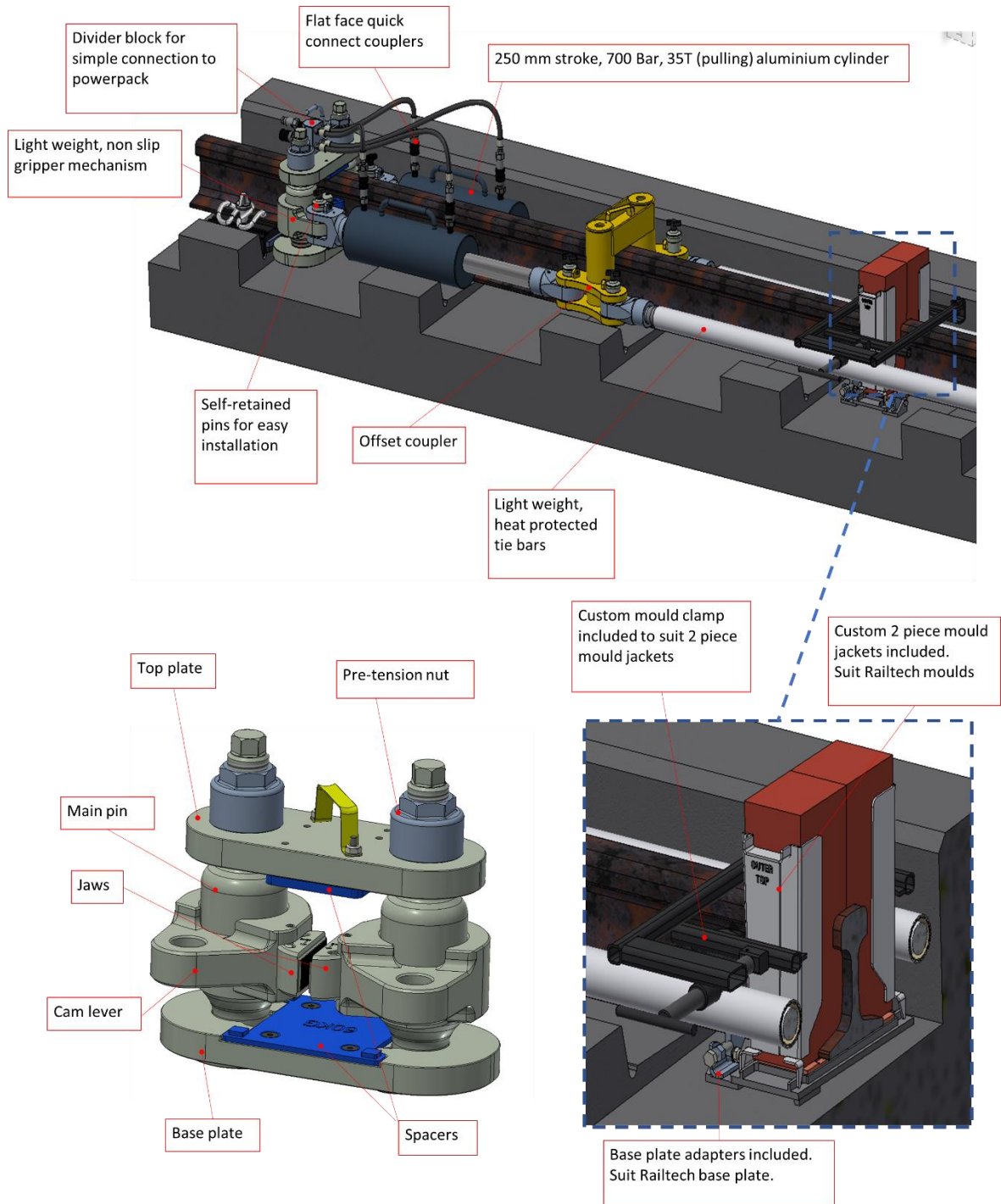
Ensure adequate hearing protection is worn whilst using power pack provided with this machinery.



5. Introduction

Melville Equipment Corp Pty Ltd (MEC) has developed the FP-195-AA 70T tensor to tense rail on plinth track where a curb is in close proximity to the rail. This curb prevents standard tensing and shearing equipment being used.

The innovative FP-195-AA tensor not only solves this special problem, but is light weight, easy to set up and remove, and always grips the rail first time, unlike conventional tensors which can be temperamental in engaging the rail.

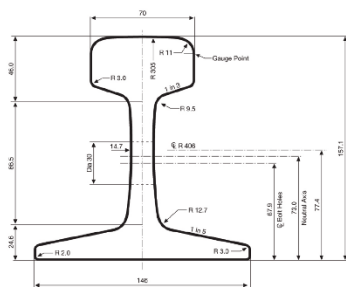


6. Specifications

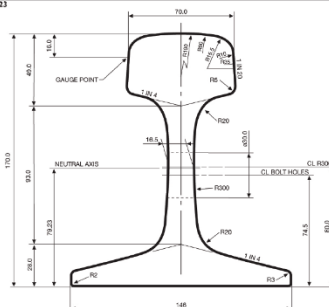
6.1. FP-195-AA

Stroke	250mm
Max tensing force	70T
Max pushing force	0T
Max Operating pressure	700 Bar (10,000 PSI)
Cylinder in-built full bore (extend) relief setting	250 Bar (3,600 PSI)
Hydraulic Oil ¹	ISO68
Threaded connections	1 3/4" x 12 TPI UNF
Connecting pins	Diameter 40mm
Total weight	350 kg
Assembled length (standard arrangement)	4500 mm
Compatible weld shears	Melville Equipment Corp's FP-168 weld shear
Compatible weld moulds	Railtech's PLK JW standard gap & WG68 wide gap
Design life	4000 fully stressed load cycles
Power pack valving:	Advance / Hold / Retract
Power pack reliefs	Single 700 Bar relief required. (Cylinders have in-built full bore relief)
No. of whip hoses from Power pack	2
Flat face quick connect fitting size	3/8 body
Power pack reservoir size:	Minimum 1 litre of useable oil for every 2 cylinders used
Compatible rail sizes	53 kg/m 60kg/m 68kg/m

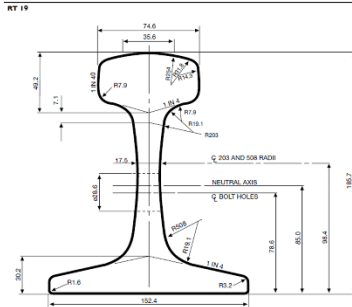
53 KG RAIL
RT 25



60 KG RAIL
RT 33



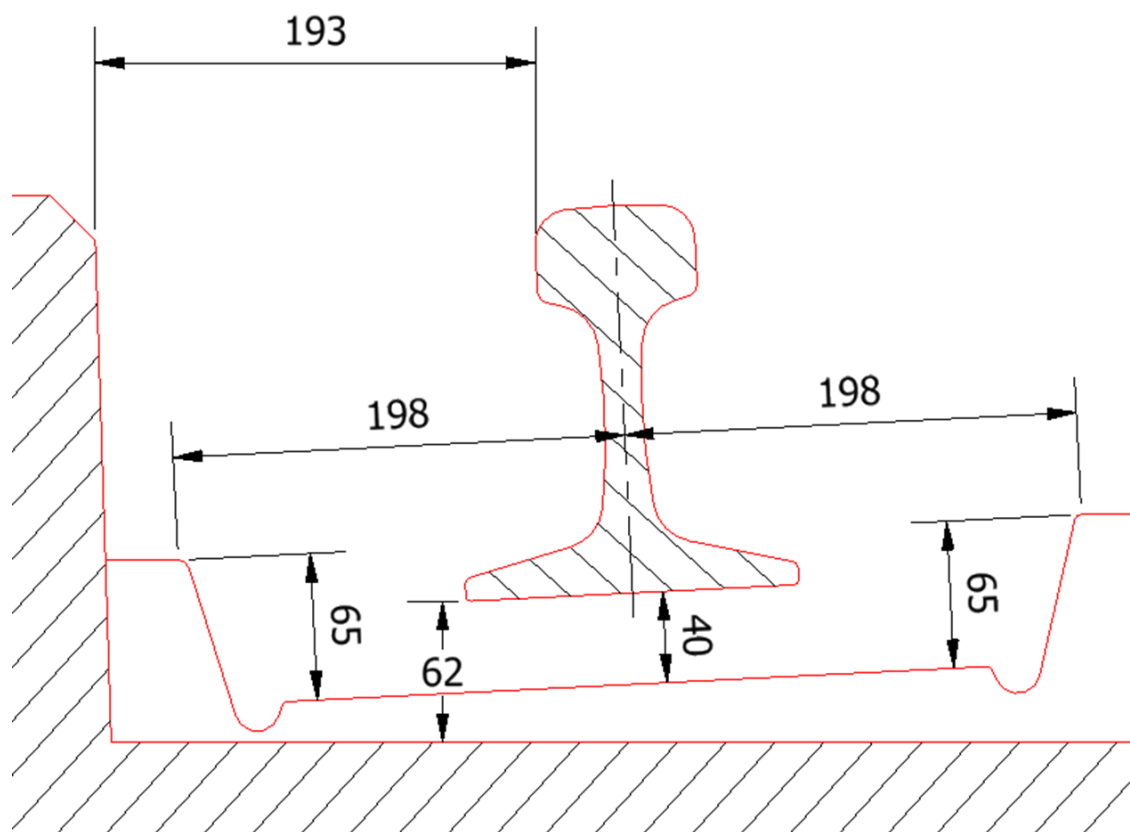
68 KG RAIL
RT 19



¹ The type of hydraulic oil depends on ambient air temperatures. ISO68 is a good, general purpose oil for ambient conditions between 10-30°C. If the ambient temperature is between 0-10°C use the next lighter oil grade. If the ambient temperature is between 30-50°C, use the next heavier oil grade



6.1.1. Minimum Plinth Dimensions



7. Operation



Before use of the equipment, be aware of the operating environment and conditions for which the equipment is to be used. Ensure all users are trained to operate the machinery before operation.

7.1. Operating Conditions

The following outlines the conditions under which the equipment is intended to be operated:

- Used to tense train rail up to 70 T tension.
- Used only when set up correctly for the rail sizes 53, 60 and 68 kg, as per section 7.3 below.
- Powered by an appropriate load holding 700 Bar power pack such as MEC's FP-180-AR power pack.
- Used in conjunction with an Aluminothermic Welding Processes, in particular Railtech's 3 piece moulds (both the PLK JW standard gap and WG68 wide gap variations).
- Used within a track possession



7.2. Pre-Operation Checks

Hoses

1. Ensure all hoses are free from damage (including frayed fibres, tears and burn marks). If damage is found, replace before use.

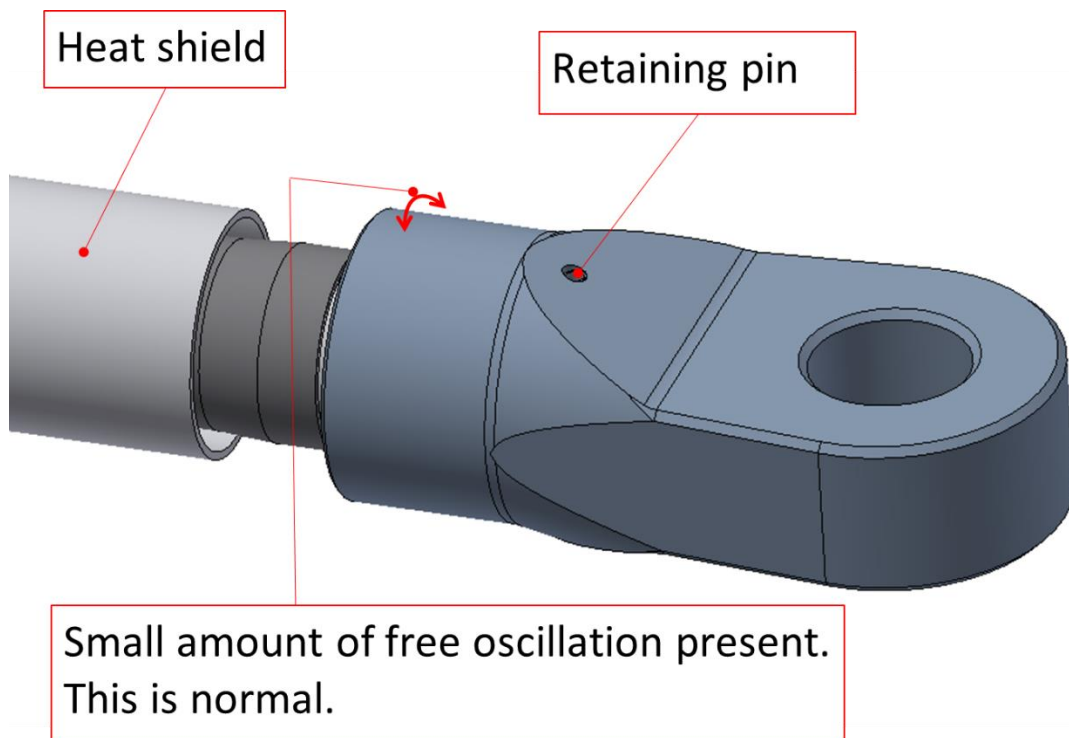
Tie Bars

2. Inspect the condition of the heat shield – ensure is intact without holes or tears.



Using the tensor without *INTACT* heat shields on the tie bars may lead to tie bar failure.

3. Inspect tie bar ends (clevis) and ensure they are free from burrs and deformation. Ensure each retaining pin is present.

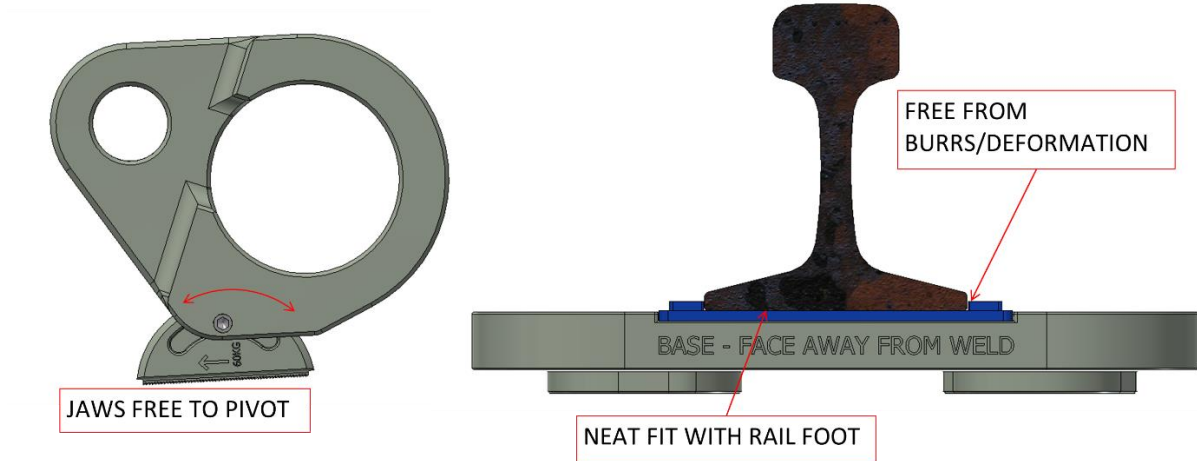


Jaws and Spacers

4. Ensure the correct jaws and spacers are fitted as per section 7.3.
5. Ensure the rail seat on the base plate is free from damage and fits neatly on the rail foot



6. Ensure the jaws pivot freely in their housing and the serrations are in good condition and clear from scale. Use a wire brush if necessary to remove trapped scale.



Cylinders

7. Ensure quick connect fittings are clean and dry. Replace if damaged or leaking.
8. Ensure the cylinder and clevis' are free from damage and deformation.

Pins, nuts and couplers

9. Ensure all pins and holes are free from damage and deformation.
10. Ensure the pre-tension nuts spin smoothly (by hand) onto main pins.

Retaining straps

1. Ensure all retaining straps are free from damage.

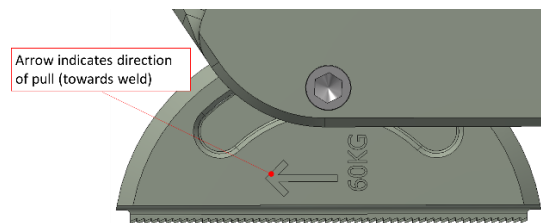
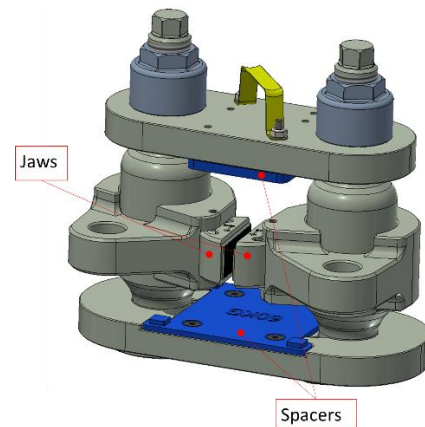
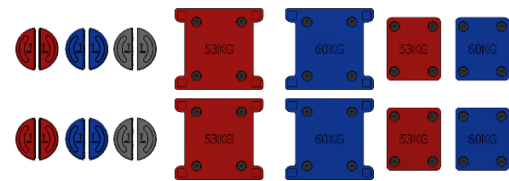


7.3. Tensor set-up

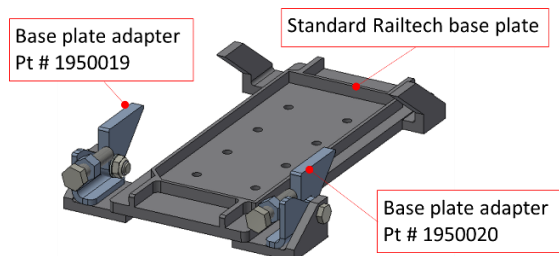
1. The FP-195-AA tensor uses interchangeable jaws and spacers to accommodate different rail sizes. They are clearly marked with their corresponding rail size. The different jaws account for varying web thickness, the different spacers account for varying rail height.

Note: There are no spacers required for 68kg rail. Refer to Section 10.2 for part numbers.

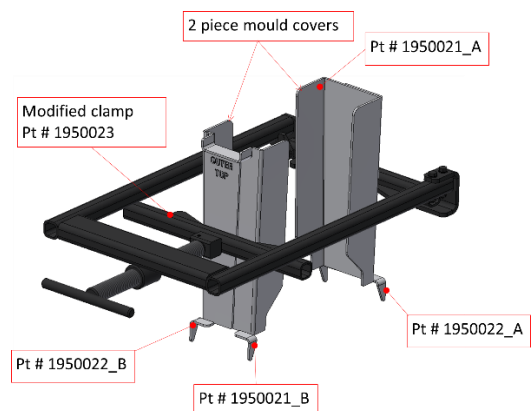
2. **Ensure the correct jaws and spacers are fitted for the rail in question.** The jaws are directional and must be fitted with the arrow pointing in the direction of pull (i.e. towards the weld).



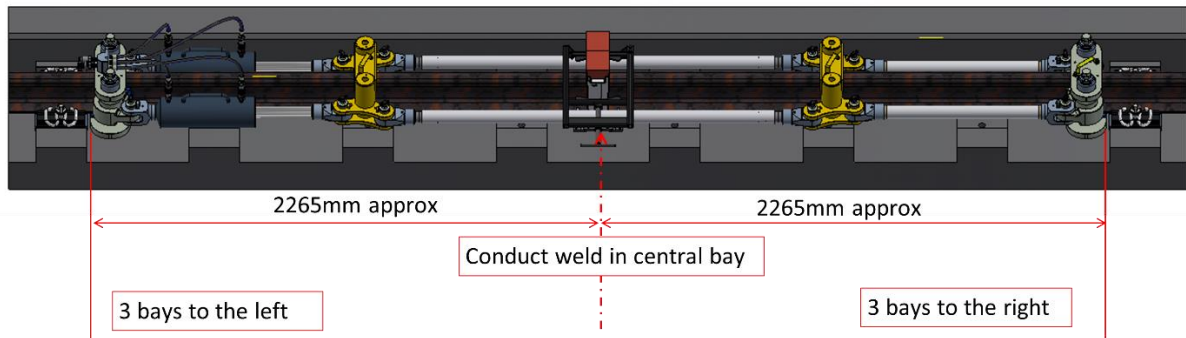
3. Fit the adapters provided to a Railtech base plate.



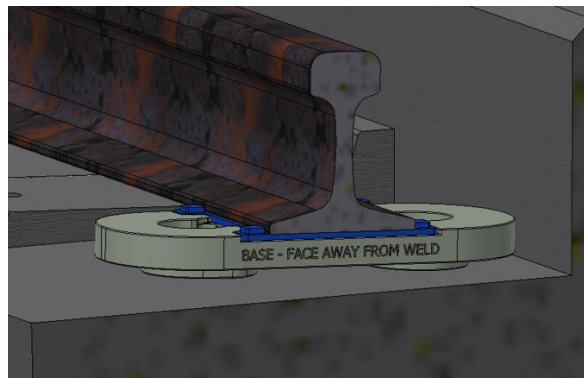
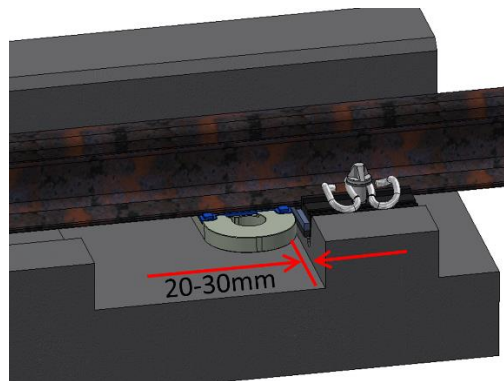
4. Ensure the clamp and mould covers provided with MEC's FP-195-AA tensor replace the standard Railtech counterparts.



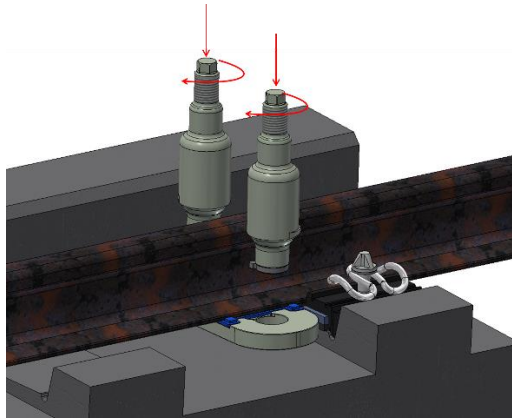
7.4. Operating Procedure



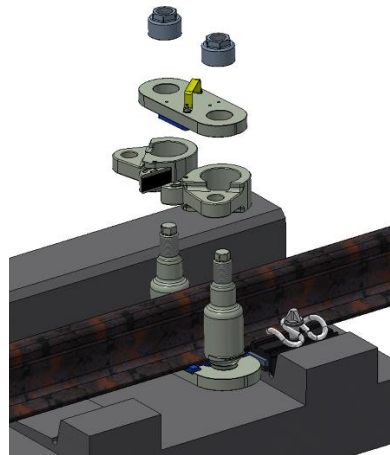
1. Ensure Pre-operational checks and tensor set-up have been conducted as per sections 7.2 and 7.3 respectively.
2. Remove fasteners and inserts from the 6 effected rail seats
3. At the non-cylinder end, place the base plate under the rail 20-30 mm from the concrete rail seat.
4. Use rail wedges or equivalent to raise the base plate onto the rail foot. Ensure the foot fits neatly between the snugs and is oriented with text facing away from weld



5. Drop main pins into base plate and twist clockwise to lock

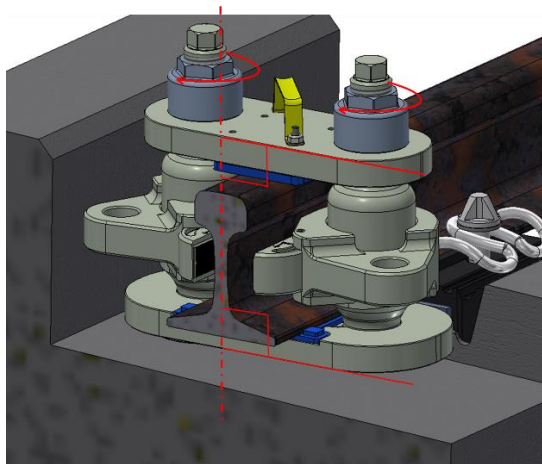


6. Assemble cam levers, top plate and pre-tension nuts as shown. Firmly tighten the pretension nuts with an 18" adjustable wrench or equivalent. Sequence the tightening to ensure the gripper assembly stays square during this process.

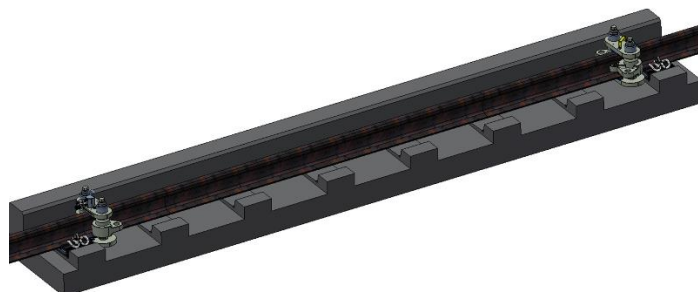


WARNING

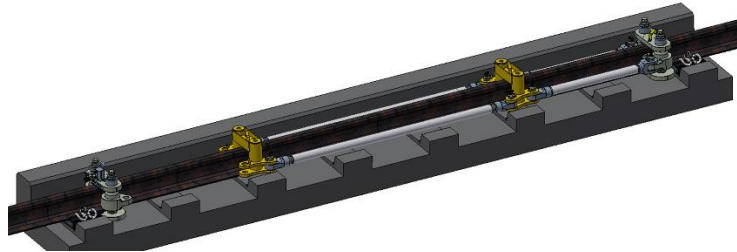
Failure to snug tighten the pre-tension nuts can result in damage (overload) to the main pins.



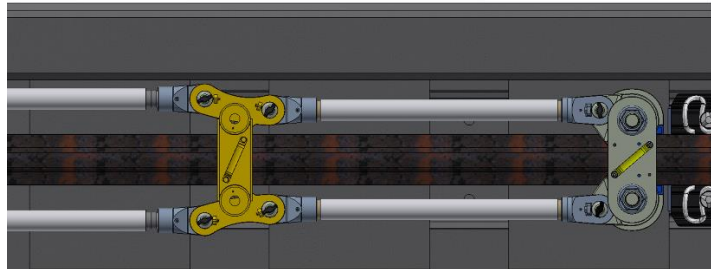
7. Repeat steps 3 to 6 for the cylinder end



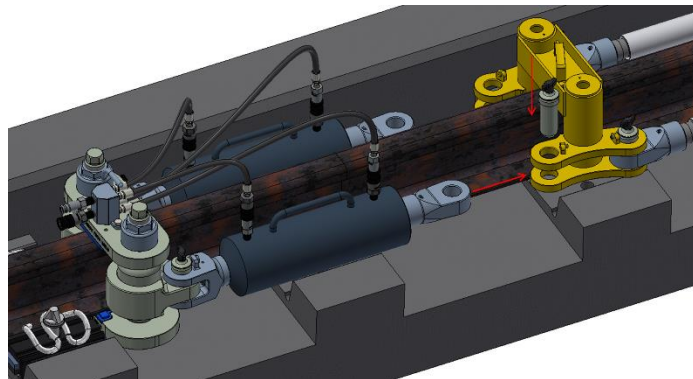
8. Starting at the non-cylinder end, assemble the short tie bars, an offset coupler, the long tie bars and the second offset coupler.



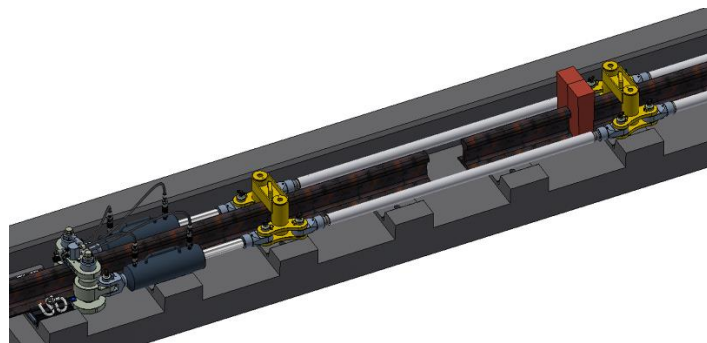
9. Note the orientation of the offset couplers. They are symmetric about the weld



10. Connect the cylinders to the gripper assembly. Stroke the cylinders to insert the final pins. It may be easiest to do this one cylinder at a time.



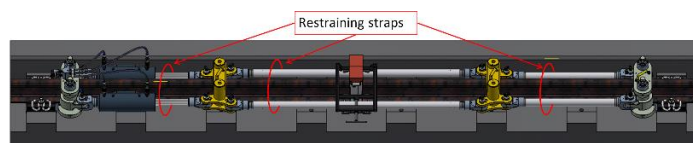
11. Before tensing, place the mould halves around the rail. Move away from the weld joint so as not to impede during rail alignment.



12. Fit the restraining straps as shown.

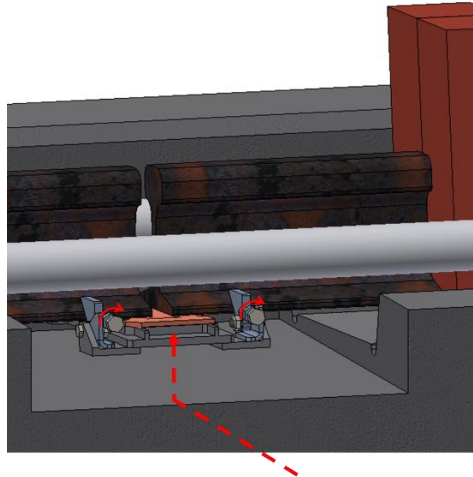


Failure to do so may result in serious injury in the unlikely event of component failure.

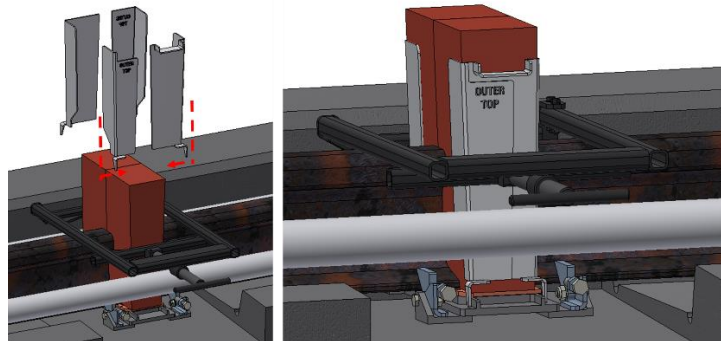


13. Tense and align rail as per network owners requirements

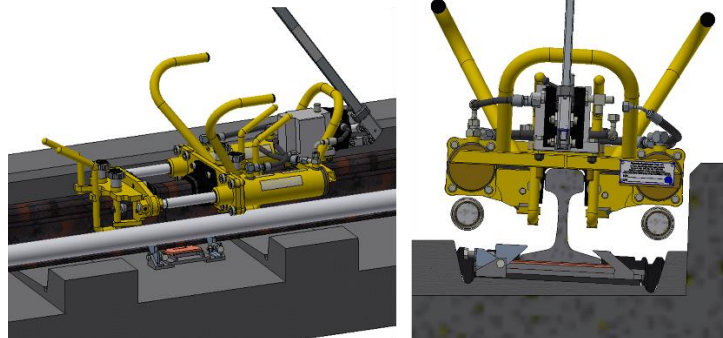
14. Fit base plate using clay cement as per Railtech's instructions



15. Position mould halves, mould covers and clamp and following Railtech's procedure complete weld,



16. As per the network owners procedures, at the appropriate time, remove the mould clamp and covers and prepare the weld for shearing
17. Place Melvelles FP-168 shear onto the weld and shear as per operating instructions.



18. Hot grinding can also be achieved, within the limits of the plinth geometry. The curb will likely limit how far around the rail head a profile grinder can reach. Melvelles testing on a plinth matching the limiting dimensions given in section 6.1.1 is shown below



19. The tensor can now be removed by following steps 10 to 3 in reverse order.

8. Storage & Transport

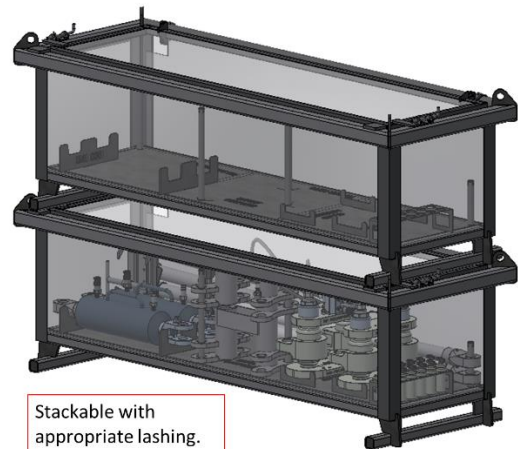
8.1. Stowage Crate (Pt #1950026)

MEC has designed a stowage crate for convenient stowage and transport of the FP-195-AA tensor.

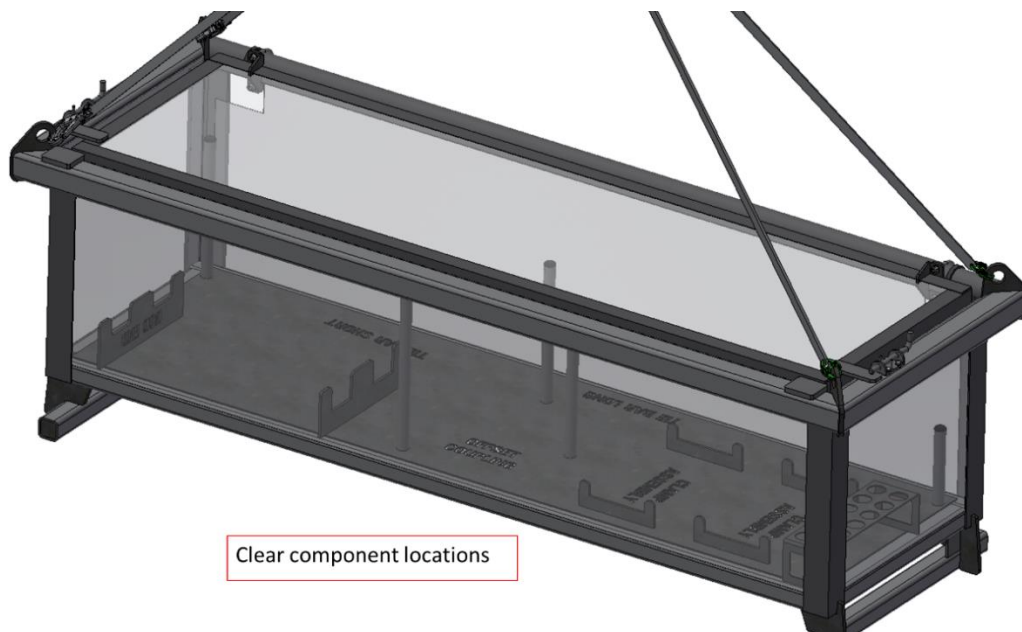
- Fully enclosed
- Clear locations for each component
- Lifting chains included
- Stackable
- Forklift compatible.
- Sits neatly on equipment trolleys



Complete with Lifting chain and lid.

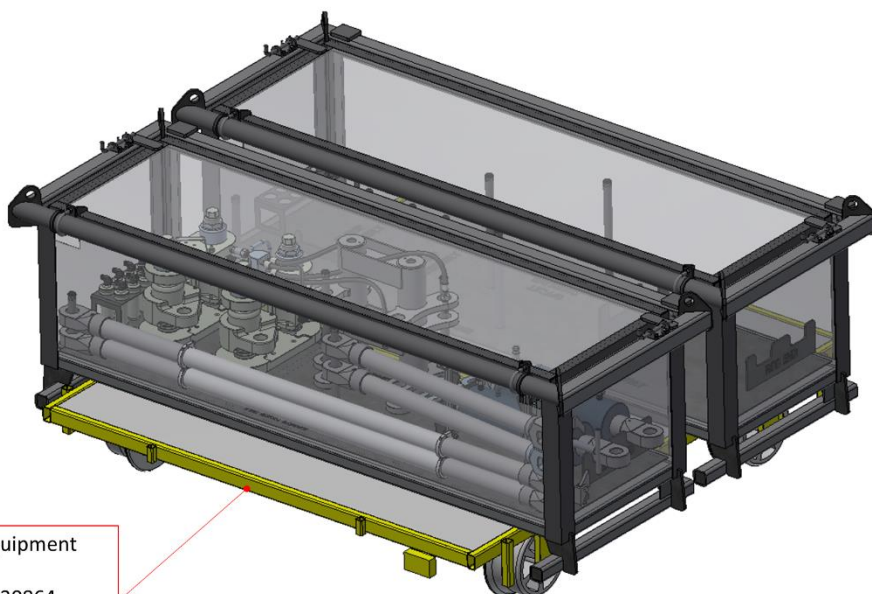


Stackable with appropriate lashing.



Clear component locations





Suitable equipment
trolleys:
Type A - 1120864
Type B - 1120865
Link - 1120815



9. Maintenance and Care

NOTICE

In addition to the Safety Precautions found in this manual and the supporting tool and engine manuals, observe the following for equipment protection and care

- Make sure all couplers/connectors are wiped clean before connection
- Always store hoses coupled together in a 'loop' to stop hydraulic lock due to the hoses and hydraulic oil heating (if possible)
- Always store the tensor in a clean dry space, safe from damage or pilferage
- Always use genuine MEC spare parts. Non genuine parts will void the warranty and expose operators to the uncontrolled hazard of component failure. MEC cannot provide quality assurance for non-genuine parts, hence there is a chance they will fail, causing serious injury or death.

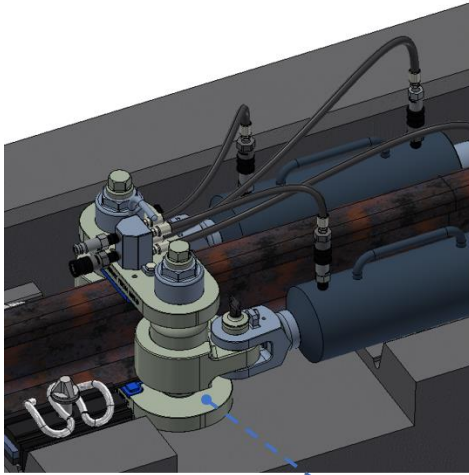
9.1. Identification

Each tensor set has a unique serial number engraved as shown below.

In addition, there are 44 components of each tensor uniquely identified alphanumerically from "A" through to "AR"

This enables item tracking and accurate inspection records.

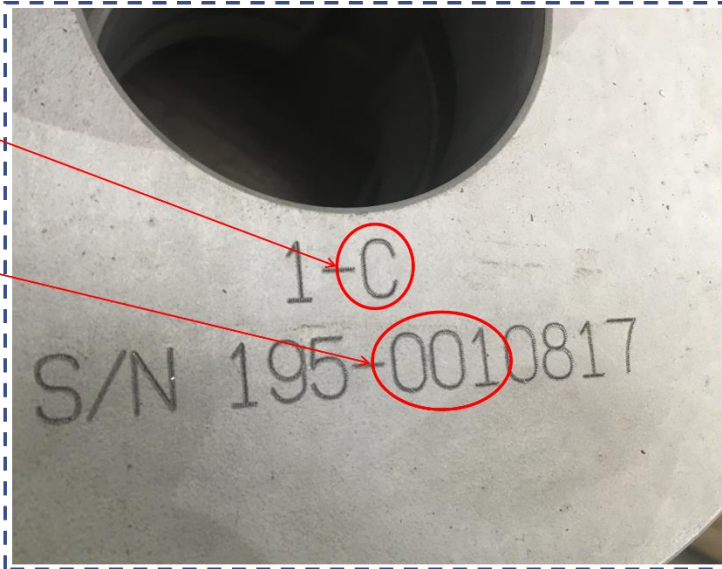




Component ID.

Component ID.

Tensor Serial #



9.2. Maintenance Period



The FP-195-AA 70T tensor contains components manufacture from high strength aluminium alloys. These components have finite fatigue lives. They need to be replaced as per the terms described in the table below. Failure to do so may result in component failure causing serious injury or death.

Refer to section 7.2 for “Each use” details.

REGULAR SERVICE PERIOD Perform at every indicated month or usage, whichever comes first.		Each use	Every 12 months or 1000 welds	Every 4000 welds
ITEM				
Hoses	Visual Check	X		
Tie bars	Visual Check	X		
	Dimensional check		X	
	NDT		X	
	Replace high strength alloy components			X
Cylinders	Visual Check	X		
	NDT		X	
	Replace high strength alloy components			X
Main pins	Visual Check	X		
	NDT		X	
Top and bottom plates	Visual Check	X		
	Dimensional check		X	
	NDT		X	
Cam Levers	Visual Check	X		
	Dimensional check		X	
	NDT		X	
Jaws	Visual Check	X		
	NDT		X	
Pins	Visual Check	X		
	Dimensional check		X	
	NDT		X	





Besides “Each Use” inspections, all maintenance and inspections must be carried out by Melvelle Equipment or an authorized representative.

9.3. Maintenance Spares

Below is a list of spares that may be required for general maintenance during the life of the equipment.

MEC Part Number	Description
1950001	CYLINDER, PULL, 35T, 10000 PSI, 250mm STK, AL BDY
1950008	Clevis Pin
1950011	CYLINDER CLEVIS
1950012	53KG RAIL GRIPPING JAW PAIR
1950013	60KG RAIL GRIPPING JAW PAIR
1950014	68KG RAIL GRIPPING JAW PAIR
1950015	53KG RAIL FOOT INSERT
1950016	60KG RAIL FOOT INSERT
1950029	MALE CLEVIS 1-3/4" THREAD
1950031	LONG TIE BAR ASSEMBLY 1-3/4" THREAD
1950032	TIE BAR SHORT 1-3/4" THREAD
1160237-FEMALE	FEMALE SNAP CONNECTOR FLUSH FACED 3/8" NPT HTMA 10000PSI
1160237-MALE	MALE SNAP CONNECTOR FLUSH FACED 3/8" NPT HTMA 10000PSI
1950021_A	MOULD COVER INNER
1950021_B	MOULD COVER INNER - SLAG PAN SIDE
1950022_A	MOULD COVER OUTER
1950022_B	MOULD COVER OUTER - SLAG PAN SIDE
H04J2-00570-060	CYLINDER HOSE - SHORT
H04J2-00860-060	CYLINDER HOSE - LONG
H04J2-04600-060	WHIP HOSE



9.4. Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTION
Difficult to assembly	Incorrect spacers & Jaws	Ensure correct spacers and jaws are fitted as per section 7.3
	Offset couplers installed in incorrect orientation	Ensure Offset couplers are assembled as per instructions given in section 7.4
	Plinth dimensions outside specification	Check plinth specification against limiting dimensions provided in section 6.1.1
	Hoses weren't stored connected. Hydraulic expansion has built up pressure behind quick snaps.	Allow hoses to cool.
Tensor slips	Jaws fitted in incorrect orientation	Ensure jaws are fitted as per section 7.3
	Offset couplers installed in incorrect orientation	Ensure Offset couplers are assembled as per instructions given in section 7.4
	Pre-clamp nuts not tightened	Ensure pre-tension nuts are assembled and tightened as per instructions given in section 7.4
	Scale built up in jaw serrations	Clean with wire brush
	Jaws broken	Replace
No tension being created	Quick snaps not fully connected	Press together firmly until the "snap" home.
	Contamination/dirt preventing Quick snap from connecting correctly	Clean thoroughly.
Base plate fouls on Plinth rail seat.	Incorrectly set out.	Ensure base plates are assembled as per instructions given in section 7.4
Oil leaking from small hole at blind end of cylinder body.	Pressure on full bore side exceeds 250 Bar.	This is not a fault. The cylinders are design to vent to atmosphere to protect against over pressurizing the full bore side.
Weld shear fouls on tie bars	Incorrect weld shear used	Use only Melville FP-168 weld shear.
	Incorrect spacers fitted	Ensure correct spacers are fitted as per section 7.3



10. Further Documents

Please refer to the further documents within for drawing, risk assessment and other related information.

Document #	Description	Pg. #
195-01 sheet 1 thru 3	General Arrangement	3535
195-01 sheet 4	Spacers and Jaws	38Error! Bookmark not defined.
195-60	Tie Bar Long	39
195-61	Tie Bar Short	40
195-89	Stowage Crate	41
180-07	Power Pack	42
-	Risk Assessment	43



10.1. GA Drawings

1 OF 4	1 FINAL ASSEMBLY
SHEET #	SHEET DESCRIPTION

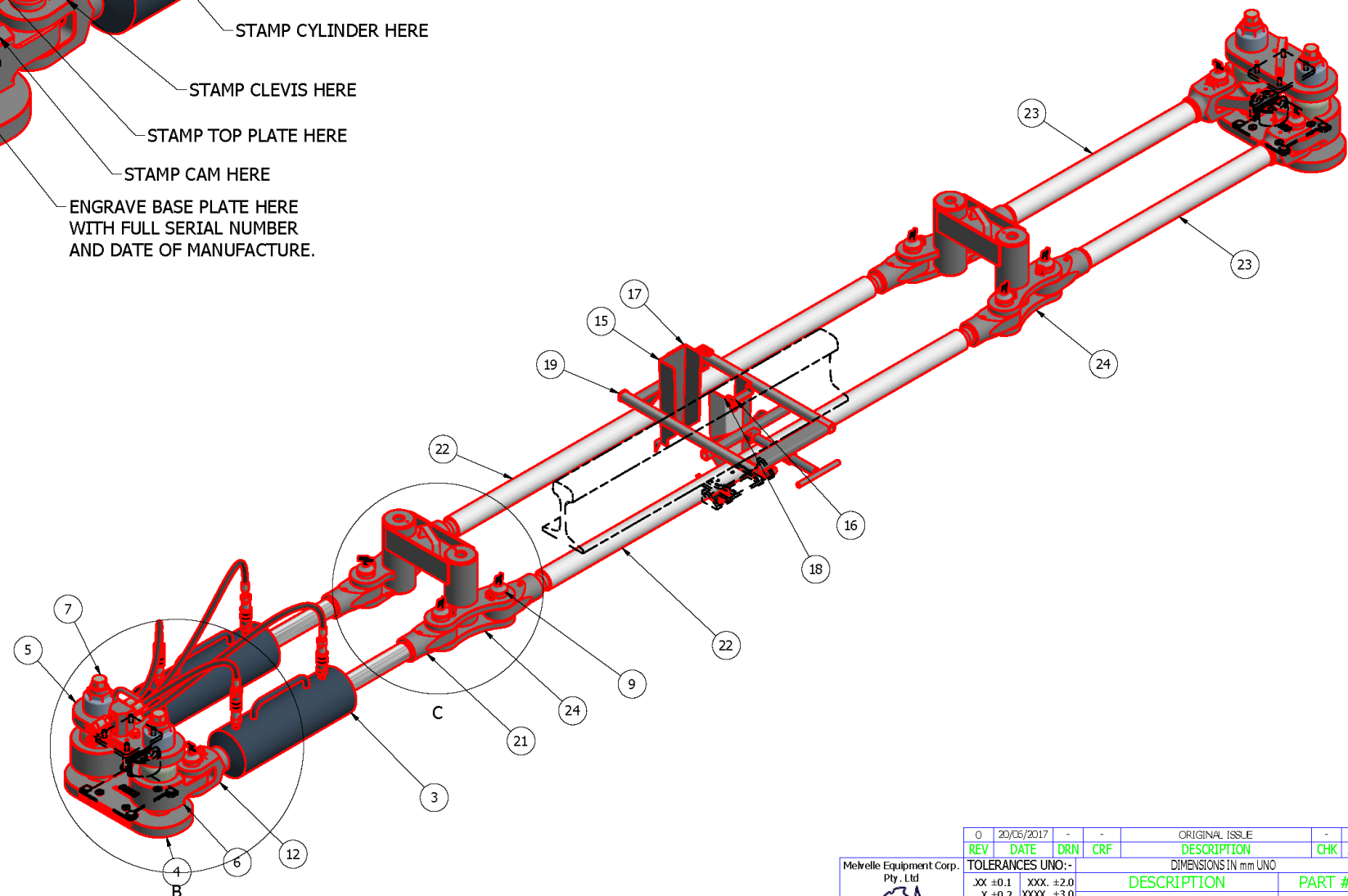
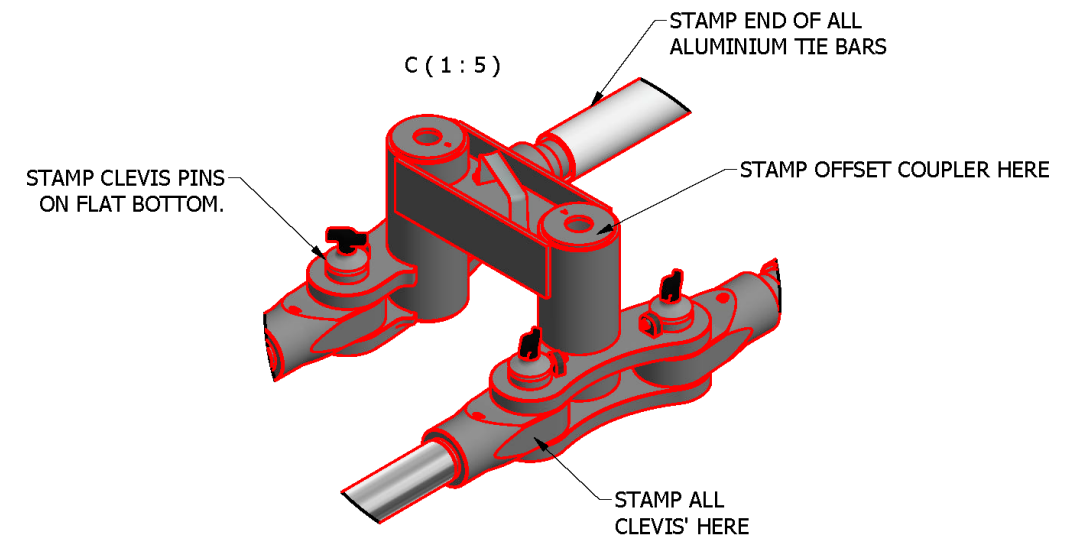
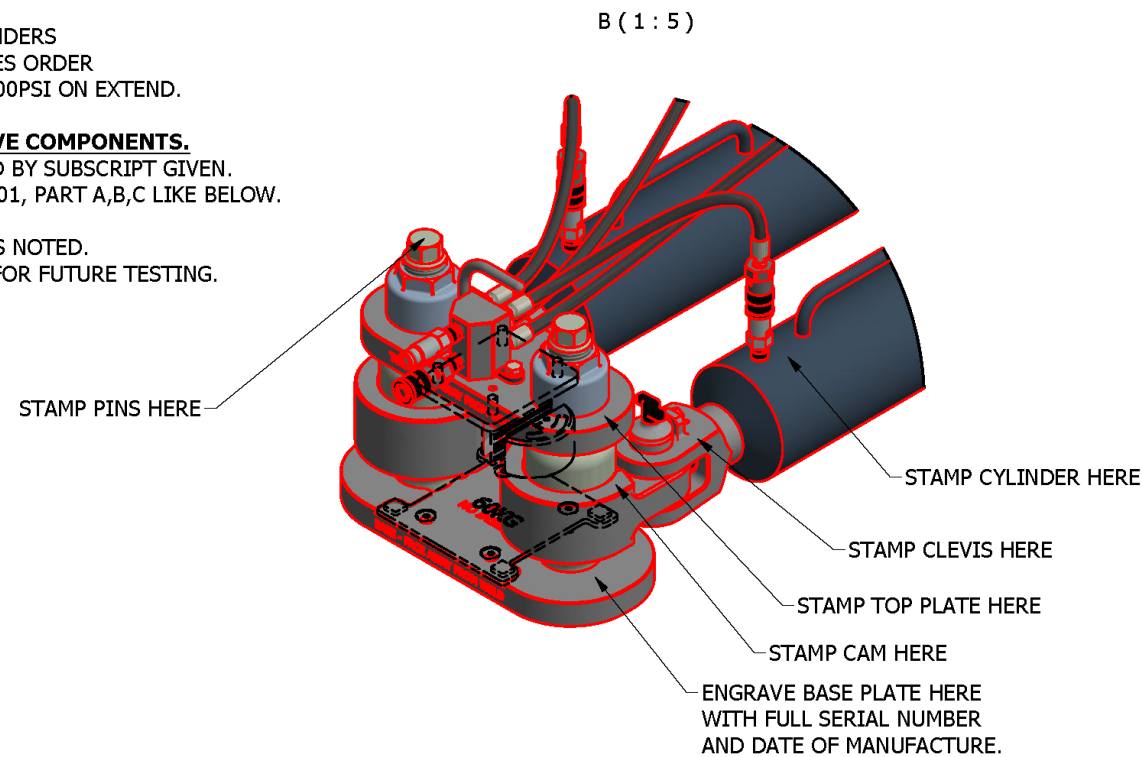
NOTES

REFER TO SALES ORDER FOR
JAWS/INSERTS TO BE FITTED.

****TESTING - STROKE CYLINDERS
WITH POWERPACK ON SALES ORDER
TO 10,000PSI RETRACT. 3500PSI ON EXTEND.**

HOW TO STAMP/ENGRAVE COMPONENTS.

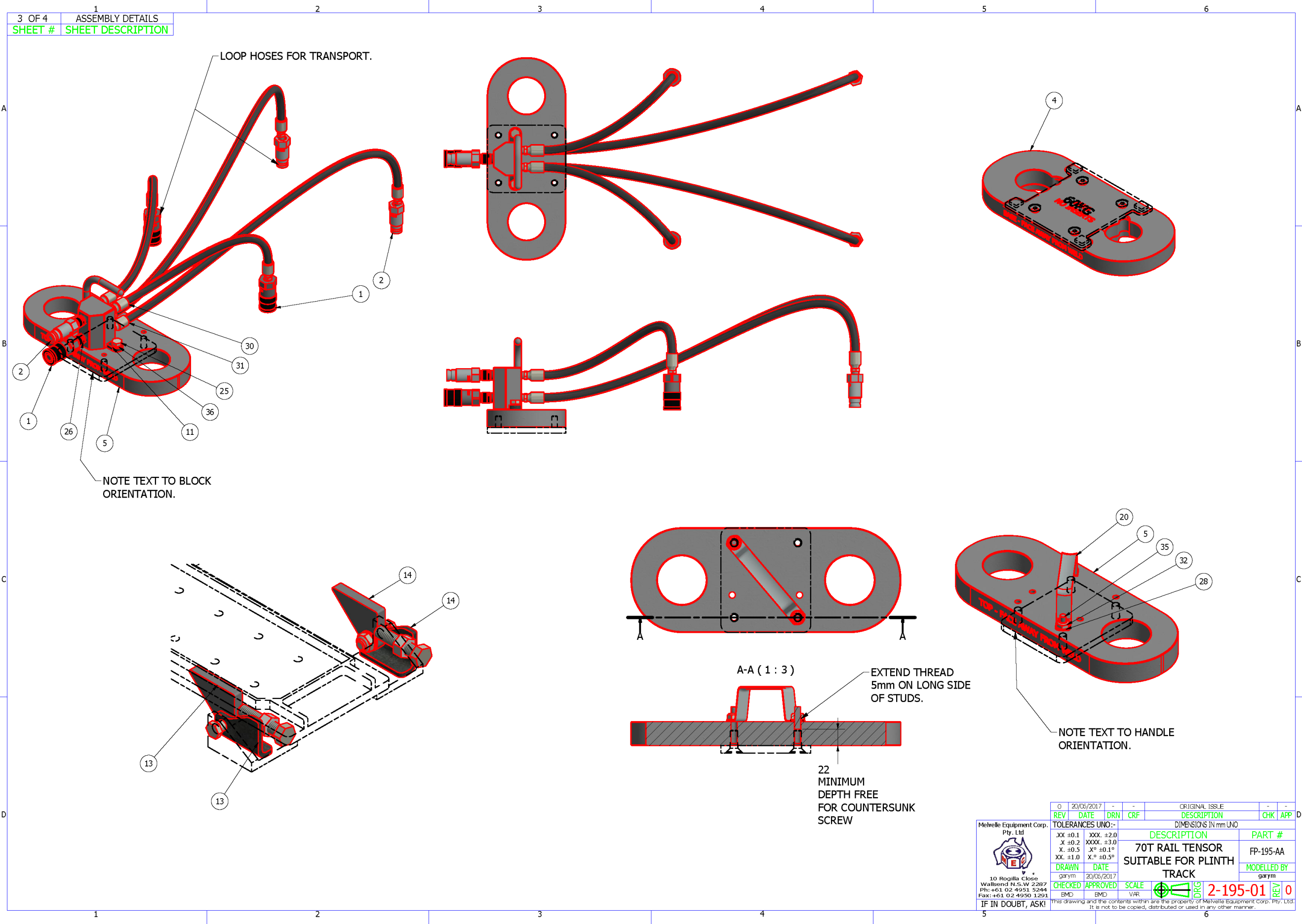
SERIAL NUMBER FOLLOWED BY SUBSCRIPT GIVEN.
FOR SERIAL NUMBER 195-001, PART A,B,C LIKE BELOW.
(1-A, 1-B, 1-C).
EXCEPT FOR BASE PLATE AS NOTED.
STAMPING/ENGRAVING IS FOR FUTURE TESTING.



36		2	10MM SPRING WASHERS	SWM10
35		2	ENGINEERS STUD M10 X 30 LONG	STUDEM10030
34		2	SEL LOK PIN M6 X 80 ZINC	RM0680
33		2	SEL LOK PIN M6 X 60 ZINC	RM0660
32		2	NUT M10 NYLOC - ZINC	NM10N
31		2	H04J2 + T2090-0406 + 00800 + T2090-0406, 10000PSI	H04J2-00860-060
30		2	H04J2 + T2090-0406 + 00510+ T2090-0406, 10000PSI	H04J2-00570-060
29		8	GRUB SCREW M12 x 20LG DOGPOINTx6mm	GRSM1220-DP06
28		2	FLAT WASHER - ENGINEERS - 3/8" X 3/4" ZINC	FW06
27		8	COUNTER SUNK CAP SCREWS M10x30	CSM1030
26		2	NIPPLE M/M 3/8" x 3/8" NPTF 10 000psi	CH00006
25		2	BOLT M10 x 30 HEX HEAD HT ZINC	BM1030Z
24	AQ,AR	2	OFFSET COUPLER	1950039
23	AO,AP	2	TIE BAR SHORT 1-3/4" THREAD	1950032
22	AM,AN	2	LONG TIE BAR ASSEMBLY 1-3/4" THREAD	1950031
21	AE,AF,AG,AH,AI,AJ,AK,AL	2	MALE CYLINDER CLEVIS	1950029
20		1	CARRY HANDLE FOR TOP PLATE	1950025
19		1	MOULD CLAMP ASSEMBLY	1950023
18		1	MOULD COVER OUTER FABRICATION - SLAG PAN SIDE	1950022_B
17		1	MOULD COVER OUTER FABRICATION	1950022_A
16		1	MOULD COVER INNER FABRICATION - SLAG PAN SIDE	1950021_B
15		1	MOULD COVER INNER	1950021_A
14		1	RAILTECH BASE PLATE ADAPTER OP HAND	1950020
13		1	RAILTECH BASE PLATE ADAPTER	1950019
12	AA,AB,AC,AD	2	CYLINDER CLEVIS	1950011
11		1	HOSE BLOCK AND HANDLE	1950010
10		4	MAIN PIN LOCKING TAB	1950009
9	O,P,Q,R,S,T,U,V,W,X,Y,Z,	12	CLEVIS PIN	1950008
8		4	END LOCK NUT FOR MAIN PIN	1950007
7	K,L,M,N	4	MAIN END PIN	1950006
6	G,H,I,J	4	CAM FABRICATION - NO JAWS	1950005
5	E,F	2	TOP PLATE	1950004
4	C,D	2	BASE PLATE FABRICATION	1950003
3	A,B	2	CYLINDER, PULL, 35T, 10000 PSI, 250mm STK, AL BDY	1950001
2		3	MALE SNAP CONNECTOR FLUSH FACED 3/8" NPT HTMA 10000PSI	1160237-MALE
1		3	FEMALE SNAP CONNECTOR FLUSH FACED 3/8" NPT HTMA 10000PSI	1160237-FEMALE
ITEM	STAMP LETTER	QTY	DESCRIPTION	PART NUMBER

		0	20/05/2017	-	-	ORIGINAL ISSUE	-	-		
		REV	DATE	UN-	CRF	DESCRIPTION	CHK	APP		
Melville Equipment Corp. Pty. Ltd		TOLERANCES DIM:-			DIMENSIONS IN mm UNO					
		XX +0.1	XXX +2.0	DESCRIPTION			PART #			
		X +0.2	XXXX +3.0	70T RAIL TENSOR			FP-195-AA			
		X +0.5	X° +0.1°	SUITABLE FOR PLINTH			MODELLED BY garm			
		XX +1.0	X° +0.5°	TRACK						
		DRAWN	DATE							
10 Rogilla Close Walsend N.S.W 2287 Ph: +61 2 4951 5244 Fax: +61 2 4950 1291		garm	20/05/2017	CHECKED	APPROVED	SCALE		2-195-01	REV	0
		BMD	BMD	1:10	DRG					

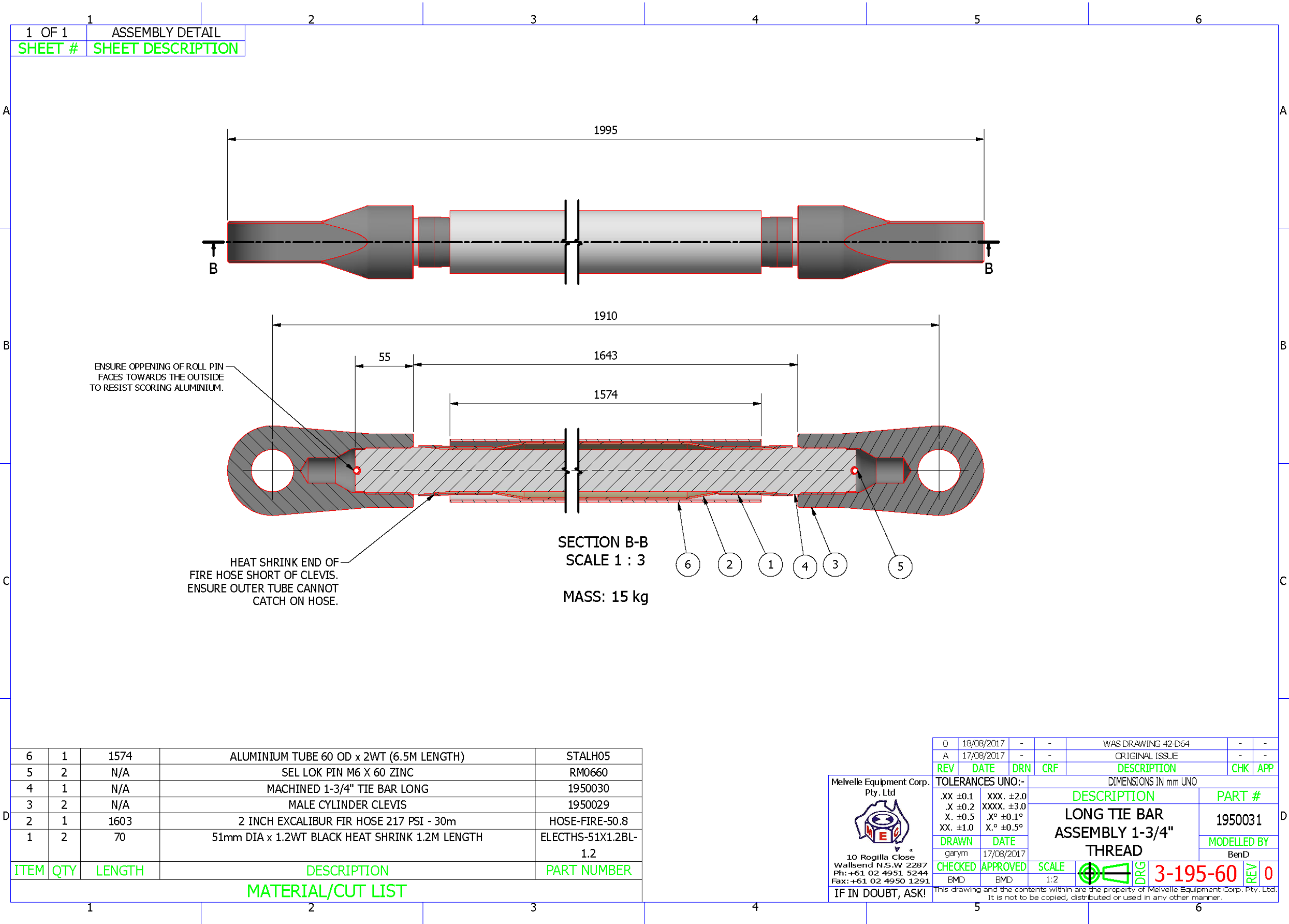
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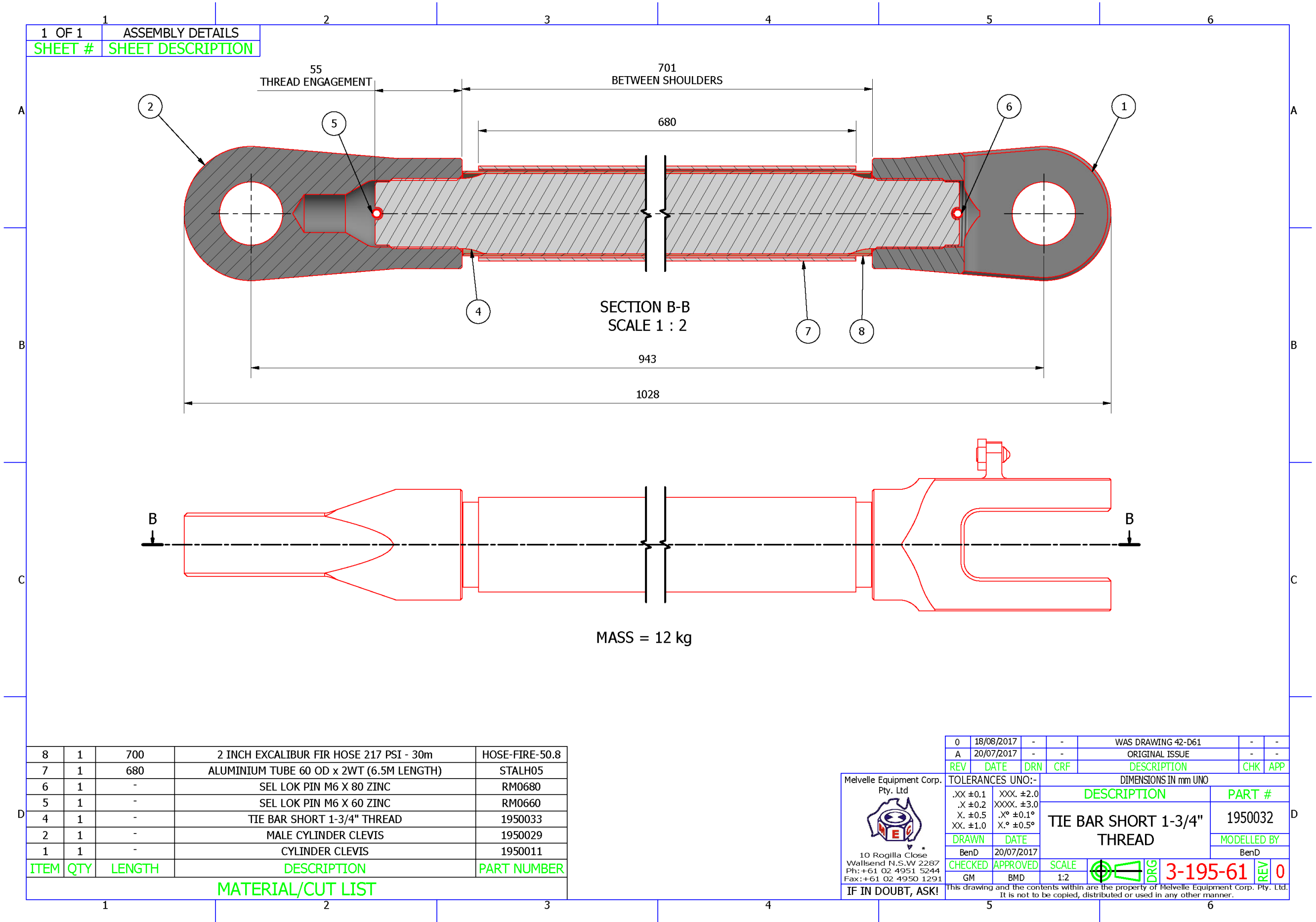
 Melville Equipment Corp. Pty. Ltd 10 Rogilla Close Walsend N.S.W 2287 Ph: +61 61 9251 5244 Fax: +61 61 4950 1201 IF IN DOUBT, ASK!	TOLERANCES UNO:- .XX +1.0 .XX, +2.0 .X .0 XXXX, +3.0 X .+0.5 .X ^o +0.1 ^o XX, +1.0 .X ^o +0.5 ^o		DIMENSIONS in mm UNO DESCRIPTION PART #	
	DRAWN DATE garym 20/05/2017		PARTS NEEDED FOR DIFFERENT RAIL SIZES	
	CHECKED APPROVED garym garym		MODELL BY garym	
	EMD EMD V/R		 2-195-01 REV	

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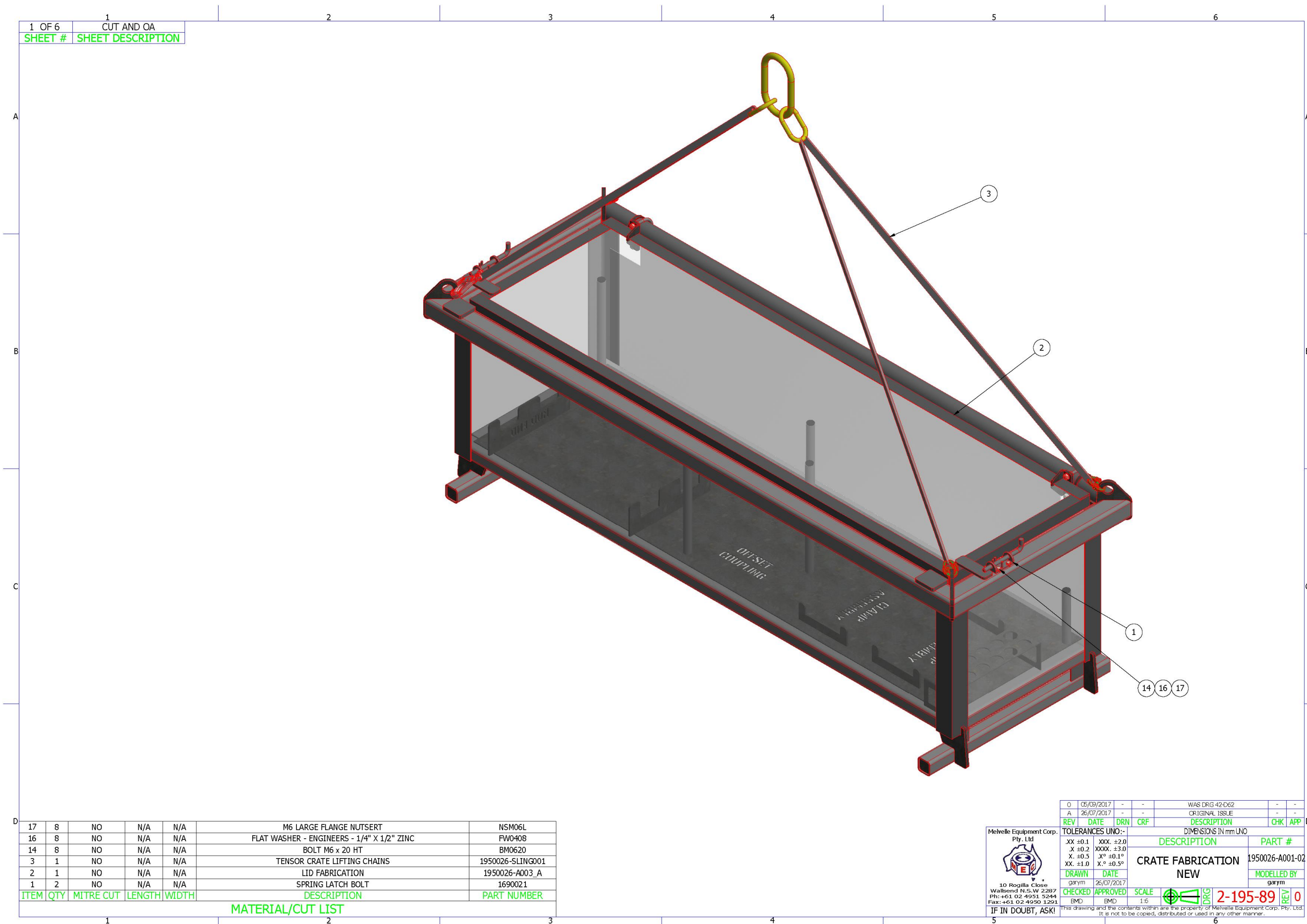
10.3. Tie Bar Long



10.4. Tie Bar Short



10.5. Stowage Crate



10.6. FP-180-AR Power Pack

1 OF 1

IMAGES

SHEET #	SHEET DESCRIPTION
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2 OFF, H04J2-04600-060 - H04J2 + T2090-0406 + 04540+ T2090-0406, 10000PSI WITH MALE-FEMALE SNAPS FITTED.

CHH0006 - 3/8" 10,000PSI MALE/MALE NIPPLE

MALE SNAP
1160237 SNAP CONNECTOR
FLUSH FACED 3/8 NPT HTMA SET - 10,000 PSI
(SET = MALE + FEMALE)

RETRACTING RELIEF.
SET TO 690 BAR (10,000PSI).

FEMALE SNAP
1160237 SNAP CONNECTOR
FLUSH FACED 3/8 NPT HTMA SET - 10,000 PSI
(SET = MALE + FEMALE)

Melville Equipment Corp.
Pty. Ltd

10 Rogilla Close
Wallsend N.S.W 2287
Ph: +61 02 4951 5244
Fax: +61 02 4950 1291

0

24/08/2017

-

-

ORIGINAL ISSUE

-

-

REV	DATE	DRN	CRF	DESCRIPTION	CHK	APP
DIMENSIONS IN mm UNO						
.XX ±0.1 .X ±0.2 .X ±0.5 .XX ±1.0					XXX. ±2.0 XXXX. ±3.0 .X° ±0.1° .X° ±0.5°	
DRAWN		DATE		PART #		
garym		24/08/2017		POWERPACK 10000 PSI, 5 GALLON RESEVOIR		
CHECKED		APPROVED		SCALE		MODELLED BY
BMD		BMD		NTS		garym
IF IN DOUBT, ASK!				3-180-07		REV 0

DRG

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10.7. Operational Risk Assessment

Machine: FP-195-AA - 70t RAIL TENSOR SUITABLE FOR PLINTH TRACK								Form No.: :	
ABN								Issue Date: 15/03/2017	
WORKPLACE GENERIC HIRARC FORM								Version: 2	
Company	MELVELLE EQUIPMENT CORP	Department / Workplace:	Melville Offices / MMS	Date of Assessment	06/02/2017	Commenced:	9am	Completed:	12md
Scope of Assessment: Identify the hazards, risks and controls associated with the operation of the FP-195-AA 70T tensor									
Names of Risk Assessment Team: Gary Morris, Ben Derooy, Andrew Melville				Names of additional personnel consulted during Risk Assessment:			Identified limitations of risk assessment: Only applies to risks identified as part of the operation of the machine.		
							Information Sources / References: AS4024.1-2006 Safety of Machinery, AS4024-2601-Two Handed Control Device		
RISK ASSESSMENT MATRIX									
Potential Consequences			Likelihood						
			Almost Certain	Likely	Possible	Unlikely	Rare		
Keyword	Description Safety Health & Hygiene	Description Environmental	<i>Expected to occur</i>	<i>Will occur occasionally</i>	<i>May Occur</i>	<i>Not expected to occur</i>	<i>Requires unusual chain of events</i>		
Minor	First Aid Injury	On-site release immediately contained with business unit resources	Medium 8	Medium 7	Low 3	Low 2	Low 1		
Significant	Medical Treated Injury or illness	On-site release or offsite release immediately contained with smelter resources	High 14	Medium 10	Medium 9	Low 5	Low 4		
Serious	Lost Time Injury or illness	Off-site release causing nuisance or community complaint. Breach of license condition	High 16	High 15	Medium 12	Medium 11	Low 6		
Severe	Fatality or Permanently disabling injury of illness	Off-site release with detrimental impact to environment or community. Repeated breach of license conditions	Extreme 24	Extreme 22	High 20	High 18	Medium 13		
Disastrous	Multiple Fatalities or work-related fatal diseases	Toxic release off-site with detrimental impact to environment or community	Extreme 25	Extreme 23	Extreme 21	High 19	High 17		
LEGEND			ACTION REQUIRED			NOTIFY			
LOW 1-6			Tolerable - Manage by Routine Procedures						
MEDIUM 7-13			Risk reduction required to "As low as Reasonably Practicable" ALARP			Design Team/Engineer			
HIGH 14-20			Immediate action required to reduce risk. Authorisation required before proceeding on task			CEO			
EXTREME 21-25			Intolerable. Cease activity until controls in place to reduce risk. Immediate & urgent Senior Management Team action required			CEO			
MANAGEMENT ACTIONS									
Comments		Refer to Action Plan							
Risk Assessment Referred to:		Design Team							
Risk Assessment Accepted by:		Andrew Melville							
Risk Assessment findings recorded in the Project Design Folder		Design Team							
Risk Assessment Findings communicated to:		Design Team, Melville Equipment Corp.							



		Raw Risk Rating (no controls)						Residual Risk Rating (after controls)			
Ref no	Description / hazard / risk	Consequence	Likelihood	Risk Level & Score	Controls	Consequence	Likelihood	Risk Level & Score	Is Risk Tolerable Y/N	Additional Controls Req	Action By / Name & date required
	Manual lifting of components during assembly	Significant	Possible	9	1) Use correct lifting techniques 2) Two man lift for cylinders which are the only component above 20kg 3) Use mechanical lifting device for Power Pack	Significant	Rare	4	Y		
	Uncontrolled release of energy from component failure	Serious	Possible	12	1) Ensure Restraint straps are fitted as per Section 8.4 of operation manual. 2) Ensure maintenance and inspection are carried out as per section 10 of the operation manual.	Serious	Rare	6	Y		
	Hydraulic injection injury	Serious	Possible	12	1) Ensure pre operational checks are carried out as per section 8.2 of operation manual. 2) Ensure only genuine Melvelle parts are used	Serious	Rare	6	Y		
	Fatigue of high strength aluminium alloy components - cylinders and tie rods	Serious	Possible	12	1) Ensure Restraint straps are fitted as per Section 8.4 of operation manual. 2) Ensure maintenance and inspection are carried out as per section 10 of the operation manual.	Serious	Rare	6	Y		



