

MILOP Design and Consulting Pty Ltd

Mechanical and steel structure engineering, design & consulting. Concrete pumping equipment, tower cranes, inspection and certification. Professional engineers

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Flowcrete Group Pty Ltd
1/15-17 Beaumont Road
Mt. Kuring-Gai, NSW 2080

Attn: Tammy



RE: Concrete Boom Pump – Putzmeister model BSF28-4
Six Yearly Major Inspection - Certification
Report no 1799/21, 02/11/2021

The concrete boom pump Putzmeister BSF 28m was undergone a Major Six Yearly inspection and refurbishment. In the report are given activities and details undertaken on this job.

The part of the job was done by the company Concrete Pump Engineering (CPE) and the job was completed by Flowcrete Group.

The concrete boom pump's specifications:

Concrete boom pump owner **KABOOM Concrete Pumping Pty Ltd**

Boom and pump manufacturer:	Putzmeister
Model and size mast/pump	BSF2804-14H
Pump serial number	210104310
Boom number	170206769
Year of manufacture:	2007
Boom operating hours	3250 hr
Max hydraulic pressure	350 bar
Concrete output rod/piston side	140 /88 m ³ /h
Concrete pressure rod/piston side	70/112 bar
Pipeline diameter	DN 125/5.5
End hose length	4 m
Truck Mercedes Benz, rego plates	27PUT5

In accordance with Australian Standard 2550.15-1994, Part 15 Concrete Placing Equipment, WorkSafe of QLD, Code of Practice- Concrete Pumping Equipment, the Six Yearly Major Inspection and the overhaul were included following tasks:

- Initial visual inspection was carried out before disassembling the boom, outriggers, and other structural components
- Preliminary load test of the boom,
- Disassemble of all structural components and assessment for their suitability for further use; the main components of the boom, outriggers and structural part of the chassis, pedestal and turret were

Flowcrete Group Pty Ltd; Karboom Concrete, Putz BSF28-4, Six Yearly Certification, Report no 1799/21, 02/11/2021

disassembled and visually inspected, checking deformation of structural members, their excessive wear, boom pin wear and surface damage, corrosion, loose or missing fasteners on the dismantled components

- Visual inspections of all disassembled hydraulic parts, subassemblies, and fittings
- Boom's and outriggers' hydraulic cylinders are tested for structural integrity, seals wear, creeping and oil leaking
- Non- distractive crack and surface testing for welds on components; abrasive blasting was applied to structural members; the magnetic particle inspection method has been applied. The testing was carried out by the accredited testing company
- Checking wear and tolerances of the components in the moving assemblies, pins' and bushes' tolerance, surface conditions and cracks
- Detected cracks were repaired using the proper procedures for welding structural sections recommended by the manufacturer
- Repair of the outrigger's static box on the left side was done in accordance with the manufacturer recommendation
- Bush bearings on the boom arms are renewed, big bush bearings on the king post are renewed, bearing bushes on the main turret pins are renewed
- The pins with cracks are replaced
- Warning and operating labels to be affixed
- After completion of the inspection and overhaul tasks, the plant was subjected to the testing load, following AS 1418.15 – Concrete placing equipment, the creep test for hydraulic cylinders under the test load was performed as well.

The final report contains the following parts and documents related to the Major Inspection:

- Inspections details of structural parts
- Crack test reports
- Testing of the structural integrity of the boom, outriggers, hydraulic cylinder creep test
- Photo documents during the Major Six Yearly Inspection.

Based on the supply documents recorded during the Major inspection, the inspection of overhaul documentation performed load testing of the machine and hydraulic cylinders' creep tests, I certify that the concrete boom pump has fulfilled all requirements regarding AS 2550.15 for continued operation after Major Six Yearly Inspection and there are no reasons why the above concrete boom pump should not be placed into operation.

02nd November 2021

Certified by:

Michael Podinic, BScME, MIEAust*



Inspection Details - Six Yearly Major Inspection

Component	OK	Remark
1. The visual inspection and load test performed before the boom dismantling	OK	
2. The boom was dismantled from the chassis; All boom components; boom arms, hydraulic lines, concrete delivery pipes, linkages, hydraulic cylinders, pins and bushes have been disassembled and visually inspected	OK	
3. The boom arms; first, second, third and fourth arm <ul style="list-style-type: none"> - abrasive blasted, - crack tested welded sections, - checked for buckling, corrosion, dents, distortion, cracks are repaired and re-tested. 	OK	
4. The boom hydraulic cylinders are dismantled. <ul style="list-style-type: none"> - Hydraulic cylinders were reselad and tested - checked fittings and pipes, holding pressure and function of the counterbalance valves, - cylinders rod polished, 4th cylinder rod re-chrommed - replaced all bearing bushes, - crack tested welds on barrels and rods. 	OK	
5. The turret and slew bearing; <ul style="list-style-type: none"> - the turret is abrasively blasted, - crack test all welds, cracks repaired. - replaced all hi-tensile bolts on the slew bearing on the inner and outer ring. Procedure for bolts tightening has been applied. 	OK	
6. Pedestal area and chassis; <ul style="list-style-type: none"> - welds areas abrasive blasted, - static boxes for front and rear stabilizers are sandblasted and crack tested - left-hand side front outriggers static box was damaged. Manufacturer Putzmeister worked out a procedure for repair. The box was repaired following this procedure 	OK	
7. Stabilisers push out and push down legs; <ul style="list-style-type: none"> - front stabilizers –slide out and push down, - rear stabilizers – slide out and push down, - crack tested welds on the front and the rear outriggers (stabilizers) boxes, checked for buckling, twisting, dints, corrosion, distortion, - hydraulic push down cylinders removed from legs, - hydraulic cylinders crack tested, - cracks repaired 	OK	

<p>8. Pedestal area and chassis:</p> <ul style="list-style-type: none"> - all welds areas abrasive blasted, - static boxes for front stabilizers are sandblasted and crack tested. - rear static boxes for stabilizers legs are abrasive blasted and crack tested. - all cracks repaired 	<p>OK</p>	
<p>9. The boom linkages disassembled;</p> <ul style="list-style-type: none"> - abrasive blast and crack test applied for all welds on linkages - cracks repaired. 	<p>OK</p>	
<p>10. Pins on the boom connections, stabilizers and hydraulic rams are crack tested.</p> <ul style="list-style-type: none"> - damaged pins were replaced - all DU bushes were replaced. 	<p>OK</p>	
<p>11. Load test of the boom after the machine is re-assembled Following Australian Standard 1418.15, the load test of the plant is performed.</p>	<p>OK</p>	
<p>12. A creep test of hydraulic cylinders, under the test load, is performed. The test passed, the report is attached.</p>	<p>OK</p>	
<p>13. Emergency stops. All devices are working properly.</p>	<p>OK</p>	
<p>14. Safety stickers and warnings to be affixed in accordance with requirements to AS2550.15</p>	<p>OK</p>	
<p>15. Oil Leaks No oil leaks were detected.</p>	<p>OK</p>	

CRACK TESTING OF THE BOOM AND OUTRIGGERS COMPONENTS

Just Inspections Services Pty Ltd.

Phone: 0401 635 122
Unit 13, Lot 9, 62 Crockford St.
Northgate, Qld.

NDT INSPECTION REPORT

REPORT NO: 190506

NATA's accreditation requirements

DATE: 15th November 2019

Accredited for compliance with ISO/IEC 17025 - Testing

ACCREDITATION No. 15517



PAGE NO: 1 of 10

CLIENT: Concrete Pumping Sales & Equipment

CONTACT: Gary Howell

SUBJECT: The Magnetic Particle Examination of M28 Putzmeister Concrete Boom.
The examination was carried out at 47 Sodium Street, Narangba Qld.

IDENTIFICATION: Serial No. 170206769

ORDER NO: 31596

EXAMINATION DATE: 4th & 15th November 2019

TECHNICIAN: D. Pospisil & M. Smith

TECHNICAL DATA

Test Specification: AS 1171-1998

Technique: Magnetic flow - sustained magnetization

Test Method: MT-01

Surface Condition/Coatings

& Preparation: Sandblasted

Material Specification: Carbon Steel – Not further specified

Acceptance Standard: To detect possible cracking

Demagnetised: No

Test Restrictions: Nil

Just Inspections Services



RESULTS OF EXAMINATION

IDENTIFICATION

1st Stage Boom – 437579 E

MPI all accessible welds to main boom

Crack was repaired and retested

INTERPRETATION

1 crack evident

Nil cracking evident

Just Inspections Services



RESULTS OF EXAMINATION

IDENTIFICATION

2nd Stage Boom – 437596 D

MPI all accessible welds to main boom

All cracks were repaired and retested

INTERPRETATION

5 cracks evident

Nil cracking evident

Just Inspections Services



Photo 1



Photo 2



Photo 3



Photo 4

Just Inspections Services



RESULTS OF EXAMINATION

IDENTIFICATION

3rd Stage Boom – 437599 C

MPI all accessible welds to main boom

All cracks were repaired and retested

INTERPRETATION

2 cracks evident

Nil cracking evident

Just Inspections Services



RESULTS OF EXAMINATION

IDENTIFICATION

4th Stage Boom – 463482

MPI all accessible welds to main boom

All cracks were repaired and retested

INTERPRETATION

4 cracks evident

Nil cracking evident

Just Inspections Services



Photo 5



Photo 6



Photo 7



Photo 8

Just Inspections Services



RESULTS OF EXAMINATION

IDENTIFICATION

INTERPRETATION

Outrigger Arms Qty. 2

MPI all accessible welds

3 cracks evident

Outrigger Legs Qty. 2 (Photo 14)

MPI 100% of foot plate welds

Nil cracking evident

All cracks were repaired and retested

Nil cracking evident

Just Inspections Services



Photo 9



Photo 10



Photo 12

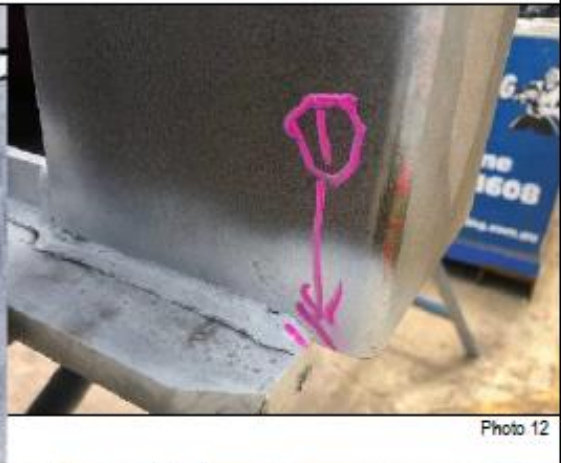


Photo 13



Photo 14

Just Inspections Services



RESULTS OF EXAMINATION

IDENTIFICATION

Boom Knuckles Qty. 6

MPI all accessible welds

INTERPRETATION

Nil cracking evident


L. Justo
NDT Technician



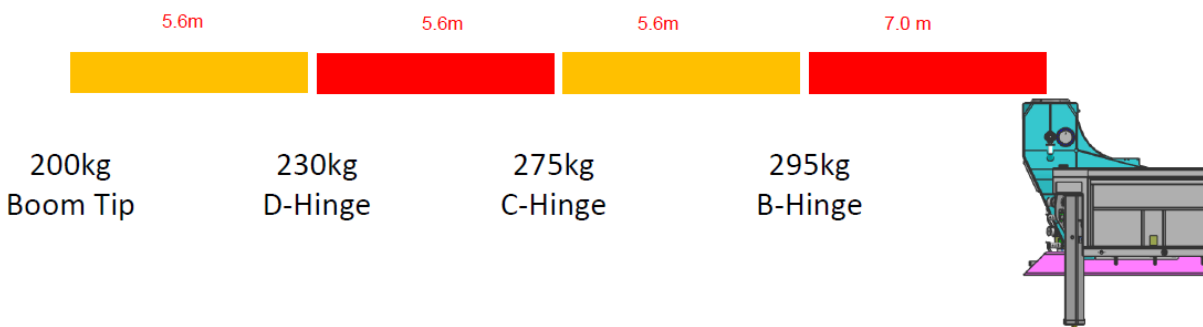
Disclaimer: Where a percentage of a product is inspected by Just Inspections Services Pty Ltd or its sub-contractors, Just Inspections Services Pty Ltd or its sub-contractors cannot and will not guarantee the serviceability or compliance of the remaining areas or items not inspected.

TEST LOAD

Testing after the Major inspection was performed following AS1418.15 – Concrete pumping equipment

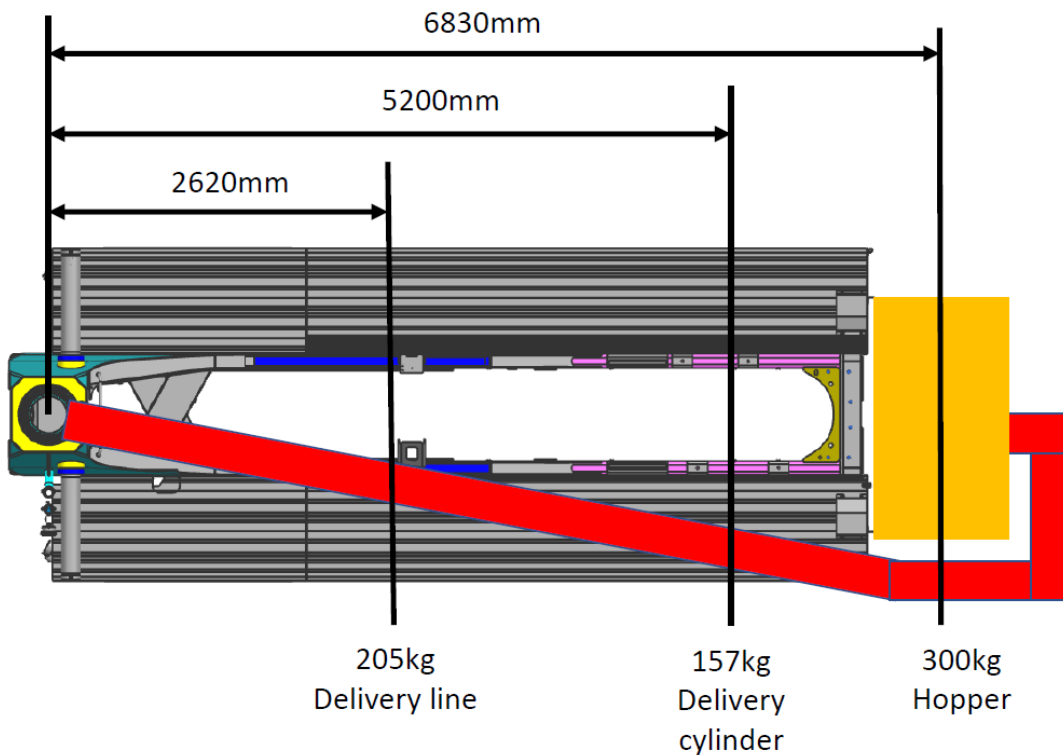
Stability test weight – 210104310

Concrete boom pump Putzmeister BSF 28-4 - Testing load



Concrete boom pump Putzmeister BSF 28-4 - Testing load

Stability test weight – 210104310



PUTZMIESTER - BSF 28-4-14H S/N 170206769												
BETWEEN FRONT & REAR OUTRIGGER				ABOVE FRONT LEFT OUTRIGGER				OUTFRONT				
STAGE	START TIME	END TIME	MEASUREMENT	STAGE	START TIME	END TIME	MEASUREMENT	STAGE	START TIME	END TIME	MEASUREMENT	
1ST				1ST				1ST				
	5:30	5:45	5mm		5:30	5:45	0mm		1:40	2:00	0mm	
	5:45	6:00	0mm		5:45	6:00	0mm		2:00	2:15	0mm	
	6:00	6:15	0mm		6:00	6:15	0mm		2:15	2:30	0mm	
2ND				2ND				2ND				
	5:30	5:45	0mm		5:30	5:45	0mm		1:40	2:00	0mm	
	5:45	6:00	0mm		5:45	6:00	0mm		2:00	2:15	0mm	
	6:00	6:15	0mm		6:00	6:15	0mm		2:15	2:30	0mm	
3RD				3RD				3RD				
	5:30	5:45	0mm		5:30	5:45	0mm		1:40	2:00	0mm	
	5:45	6:00	0mm		5:45	6:00	0mm		2:00	2:15	0mm	
	6:00	6:15	0mm		6:00	6:15	0mm		2:15	2:30	0mm	
4TH				4TH				4TH				
	5:30	5:45	0mm		5:30	5:45	0mm		1:40	2:00	0mm	
	5:45	6:00	0mm		5:45	6:00	0mm		2:00	2:15	0mm	
	6:00	6:15	0mm		6:00	6:15	0mm		2:15	2:30	0mm	
OUTRIGGER				NOTES								
DESC	START TIME	END TIME	MEASUREMENT	* No deflection in front left outrigger static box * Smooth movement in boom * Some distortion in static box from welding * Outrigger grinded to fit in box. Ground top and bottom plate as per photos								
FRONT LEFT												
	5:30	7:15	0mm									
FRONT RIGHT												
	5:30	7:15	0mm									
REAR LEFT												
	5:30	7:15	0mm									
REAR RIGHT												
	5:30	7:15	0mm									

RESEALING AND TESTING BOOM HYDRAULIC CYLINDER

Concrete Pumping Sales & Equipment (Aust) Pty Ltd

Tax Invoice

38 Radley Street
Virginia QLD 4014

07 3216 5777
www.pumpingconcrete.com.au
ABN: 97 412 391 019

Invoice No.: 00040651
Date: 22/01/2020
Customer PO:
Terms: C.O.D.

Bill To:
Kaboom Concrete Pumping
6 Derwent Street
Sippy Downs QLD 4556

Ship To:
Kaboom Concrete Pumping
6 Derwent Street
Sippy Downs QLD 4556

QTY	PART #	PRODUCT DESCRIPTION	UNIT PRICE (ex-GST)	DISC %	TOTAL PRICE (ex-GST)
1	00-00002	Reseal and test 1st stage cylinder and load holding valves (New seal kit, polished rod & oil)			
1	00-00002	Reseal and test 2nd stage cylinder and load holding valves (New seal kit, polished rod & oil)			
1	00-00002	Reseal and test 3rd stage cylinder and load holding valves (New seal kit, polished rod & oil)			
1	00-00002	Reseal and test 4th stage cylinder and load holding valves (rechrome rod, seal kit & oil)			

Delivery via: Service job onsite
Comment: Thank You

Subtotal:
GST:
Total (inc-GST):
Paid to Date:

Balance Due:

REPAIR LEFT HAND SIDE FRONT OUTRIGGER STATIC BOX ON

- PROCEDURE FOR REPAIR THE STATIC BOX



Report Number - CPE/RI19/210104310

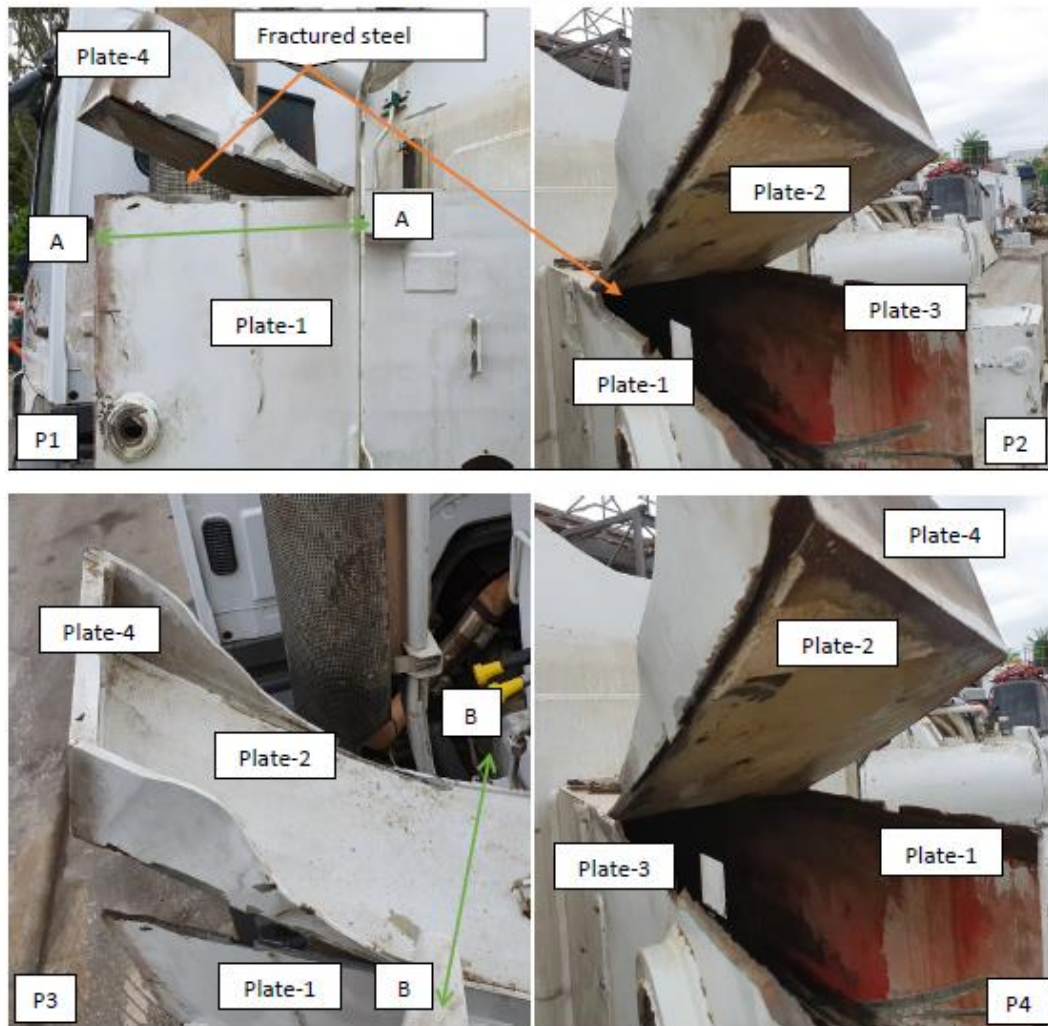
Repair instruction for passenger side leg box damage due to the accident on 03rd June 2019.

Concrete pump truck / boom detail,

- a. BSF28-4-14H, S/N- 210104310
- b. Boom Number - 170206769
- c. Boom operating hours – 3250.40 hours
- d. Manufactured year – 2007

The following repair instructions are to be used as a guide for the person responsible for carrying out the weld repair job. The repair instructions should be signed off after completing the weld repair along with non-destructive testing (NDT testing).

- 1. Overview of the fractured area and initial NDT testing.





Step-1.

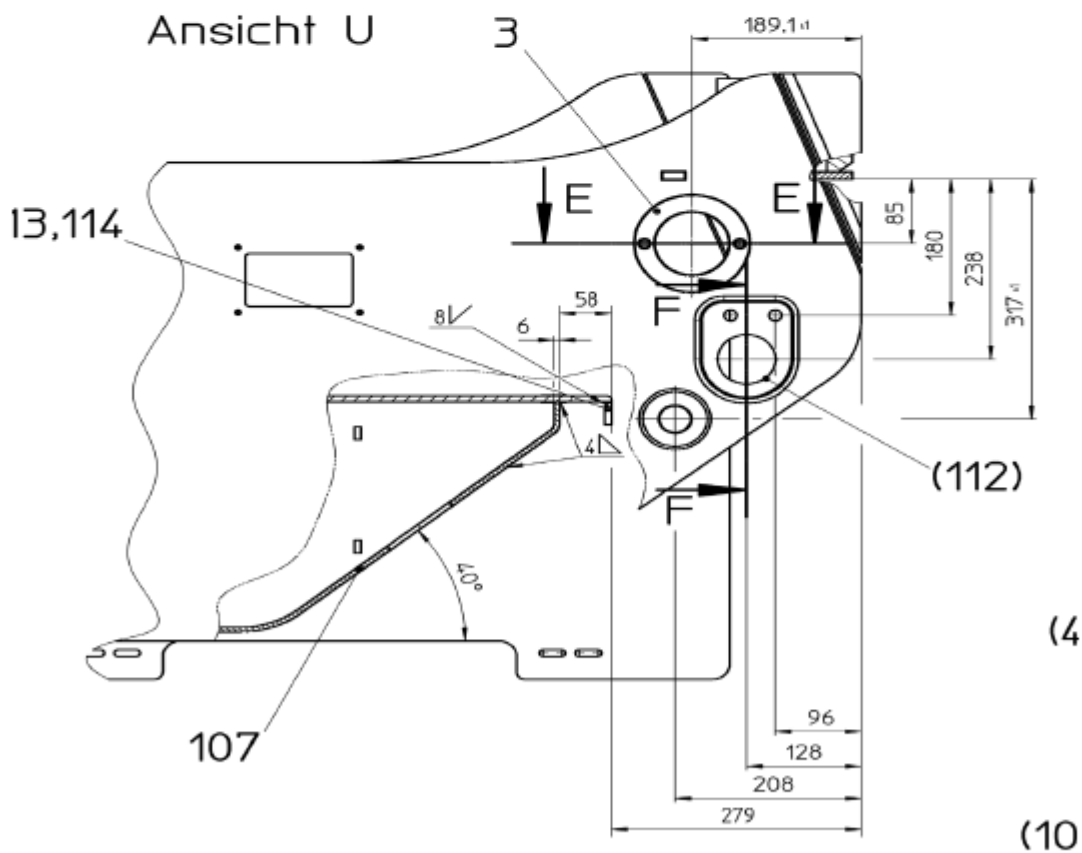
Remove the paint from the fractured surface on plate 1 & 3 then carryout ultrasonic testing (UT) to find any lamination cracks below the fracture line, approximately 50mm downwards then horizontally to the end of the fracture line. Advise doing a magnetic partical test (MPT) to establish the crack propagation horizontally along the fractured surface/line. See photo 1 (P1) line A-A.

Carry out a hardness profile test (bottom part of plate 1 & 3, outside surface, below the crack line) vertically along the fracture line (100mm interval two locations) to determine the non-heat effected zone from the previous fillet weld, this was on plate 2 against the side wall (plate 1 & 3).

By performing the above initial testing 1 & 2, determine the horizontal cut line. This is to be butt welded with a new S690QL steel plate (replacing the deformed steel plate) above the fracture line on plates 1 & 3, as shown in photo P1.

Use only a cutting disk to cut the plates 1 & 3 on the horizontal plane. Never use the gas/OXY cutting process this will destroy the material mechanical property of the existing side plates.

Details for the new plate 1 & 3 measurements for profile cutting are as below, however final measurement should be based on the cut line defined as above.



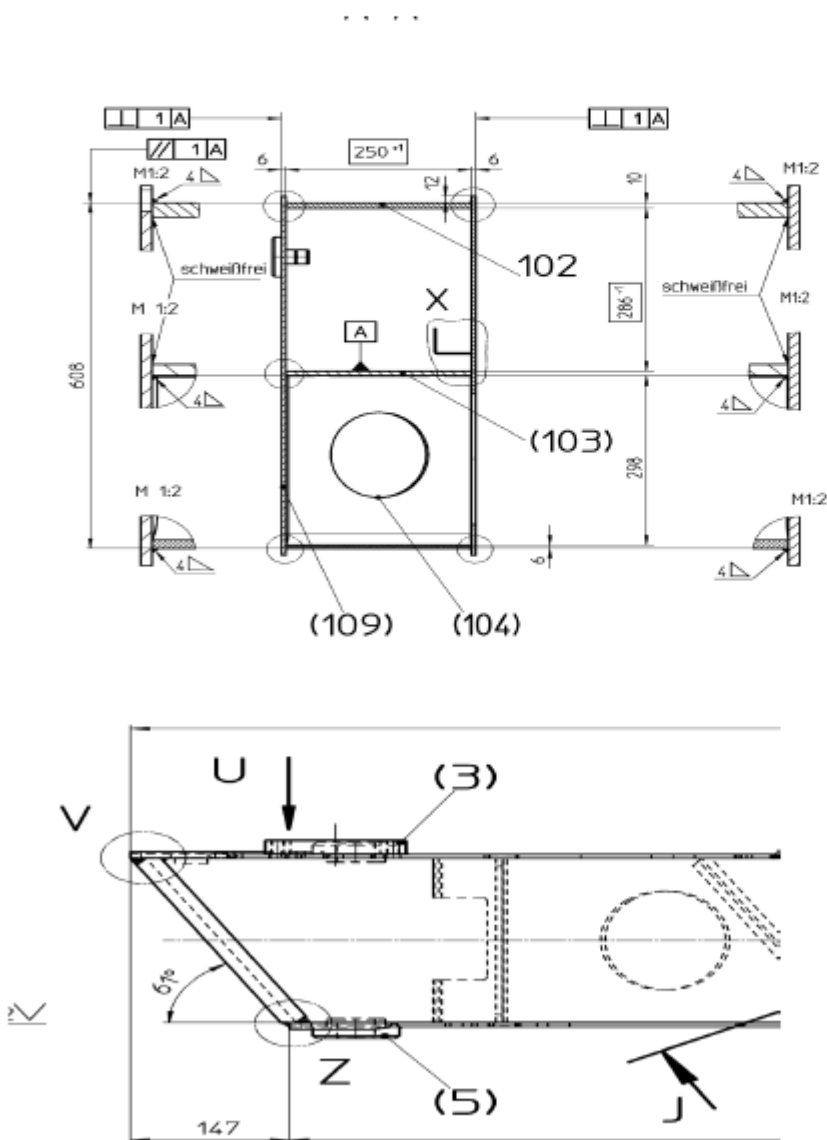


Step -2

Remove the paint on the bent surface of plate 2 then carryout ultrasonic testing (UT) to find any lamination cracks as a result of the bending. Mark the line B-B (as shown in the photo P3) on the passenger side leg box. Carryout MPT tests on the bent surface and check if any surface cracks are present.

If there are no lamination cracks found on the bent surface, mark 50mm from the B-B line towards the pedestal side and use this line as a proposed cutting line. This will be butt welded with a new S690QL steel plate, replacing the bent steel plate.

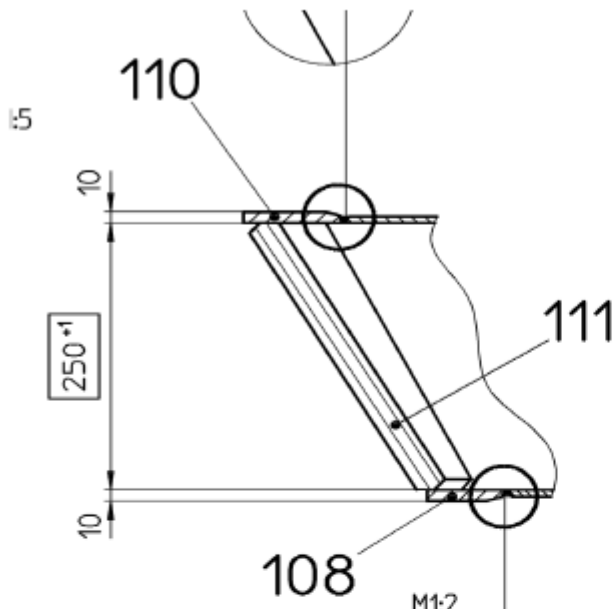
Details for a new plate -2 measurement for profile cutting are as shown in the drawing below, however final measurement should be based on the cut line defined above.





Step -3

Recover plate -4 (111) by cutting the existing welds and making the weld profile per the below details.



Carryout NDT test (UT+MPT) to find if any lamination cracks are present. If not, the same plate can be used as a replacement plate or profile cut a new plate with S690QL grade steel and a thickness of 25mm.

2. Preparation for steel plates and welding .

Refer to the attached sample drawing in Annexure -2 and complete using the actual measurements from steps 1,2 & 3 above. Information in the attached CAD drawing is a guideline for replacement plate sizes and its cutting profile.

Complete the weld repair work based on the attached Welding Procedure Sheet (WPS) and contact the undersigned for any further information relating to the welding if required. The given WPS requires all the butt welds to be NDT tested (100% MPT test and RT - Radiographic testing), and all the fillet welds to be covered 100% by MPT testing.

3. Engineer's recommendations considering the complete pump is subject to a major inspection due to the accident.

- 3.1 All the weld crack areas specified under section 1, recommend to carryout magnetic partical test. *AS1551.1SP-2014 Table 6.2.2*
- 3.2 All the critical areas in the boom, eg-hinge points/stiffener plates/forcing rod/joint connections, ram connections & pedestal need to be MPT based on *AS1551.1SP-2014 Table 6.2.2*.
- 3.3 Recommend carrying out Eddy current test on weld seams where it is not practical to remove the paint for MPT. ED test shall be based on *ISO 17643-2005 Non-destructive testing of welds – (Eddy current testing of welds by complex-plane analysis)*.
- 3.4 All the pin/rod connections at boom joints A, B, C & D, and the pedestal need to be checked for internal cracks based on Ultrasonic test - *BS EN 10228-3:1998 Non-destructive testing of steel forgings. Ultrasonic testing of ferritic or martensitic steel forgings*.
- 3.5 Any findings based on above test results shall be informed to undersign, in order to obtain work instructions based on the manufacturer's recommendations.



4. Details relating to welder qualification for S690QL steel welding.

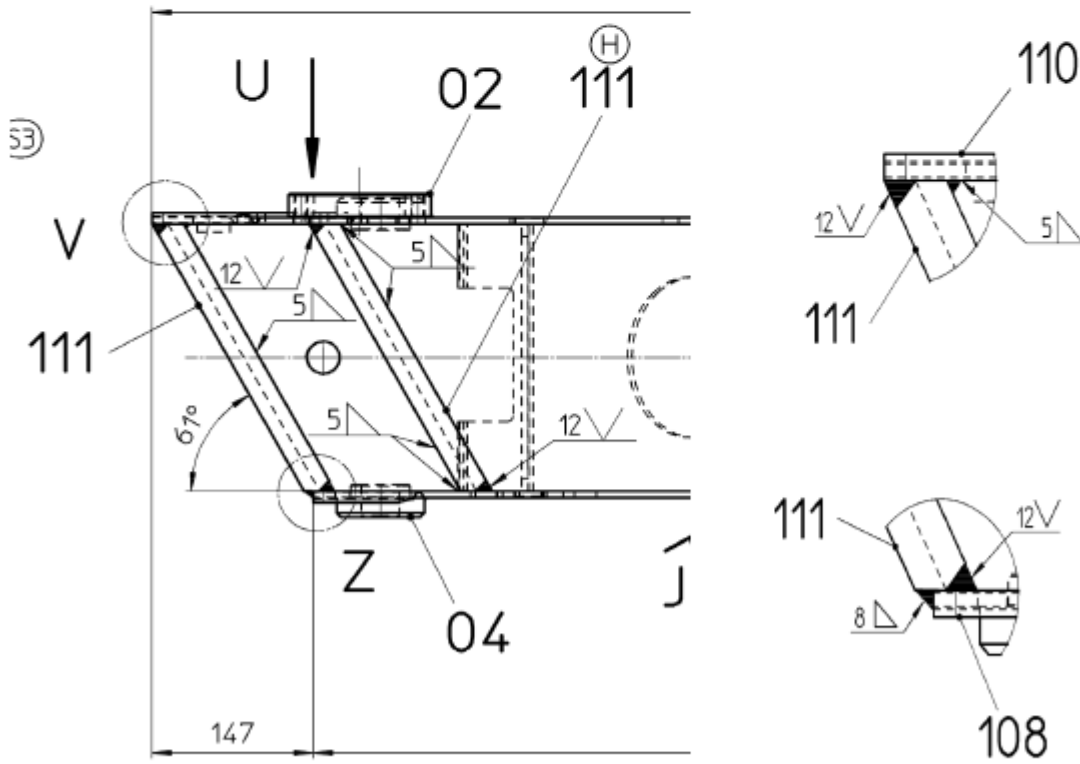
- 4.1 The welder shall be qualified based on ISO 9606-1 for S690QL high strength fine grain steel plate (quenched and tempered steel plates with a yield strength of 690-700Mpa) welding, which will cover fillet & butt weld.
- 4.2 To qualify the welder to the welding procedure qualification (WPS) based on the actual job scope, two sample welds will be needed to become requalified based on ISO15614.1 level -2 as per the attached WPS for butt weld & fillet weld. This will be the approval for butt weld & fillet weld for complete job.

5. Modification on passenger side leg box .

In order to strengthen the failure area, two types of stiffener plates have been proposed to strengthen the passenger side leg box. This modification can be done after completing the weld repair (replace all the plate -1 ,2,3 & 4) as specified in sections 1 & 2 below.

Stiffener plate -1 .

The stiffener plate-1, which can be S350 grade steel 25mm thick plate, is proposed as shown in the below drawing. The plate POS111 will be welded on top of plate -2 parallel to plate -4. All the welds are fillet welds, and filler material can be under the classification of AWS A5.20 , E71T-1M, E71T-12MJ H8 (or AWS 5.1 E7018 low hydrogen electrodes for MMAW).





Stiffener plate -2

The stiffener plate -2, can be S350 mild steel plate (10mm thickness) as shown in the attached drawing, will be welded on plate 1 vertically across the butt weld (do not weld on top of the butt weld, avoid 25mm both sides from the centre of the butt weld) in intervals of 100mm distance apart. Three stiffener plates on plate -1. The same modification will be applicable on plate -3.

Your contact person in this subject is:

Gayan Vadysinghe

Mechanical Engineer –BSc, MIE Aust

CPE Machinery Pty Ltd

10-12 Kimpton Way (PO Box 442) Altona VIC 3018 Australia

Mob: +61 (0) 407 126 252 Tel: +61 (0) 3 9931 4200 Fax: +61 (0) 3 9931 4211

Email: gayan@cpemachinery.com.au

www.cpemachinery.com.au



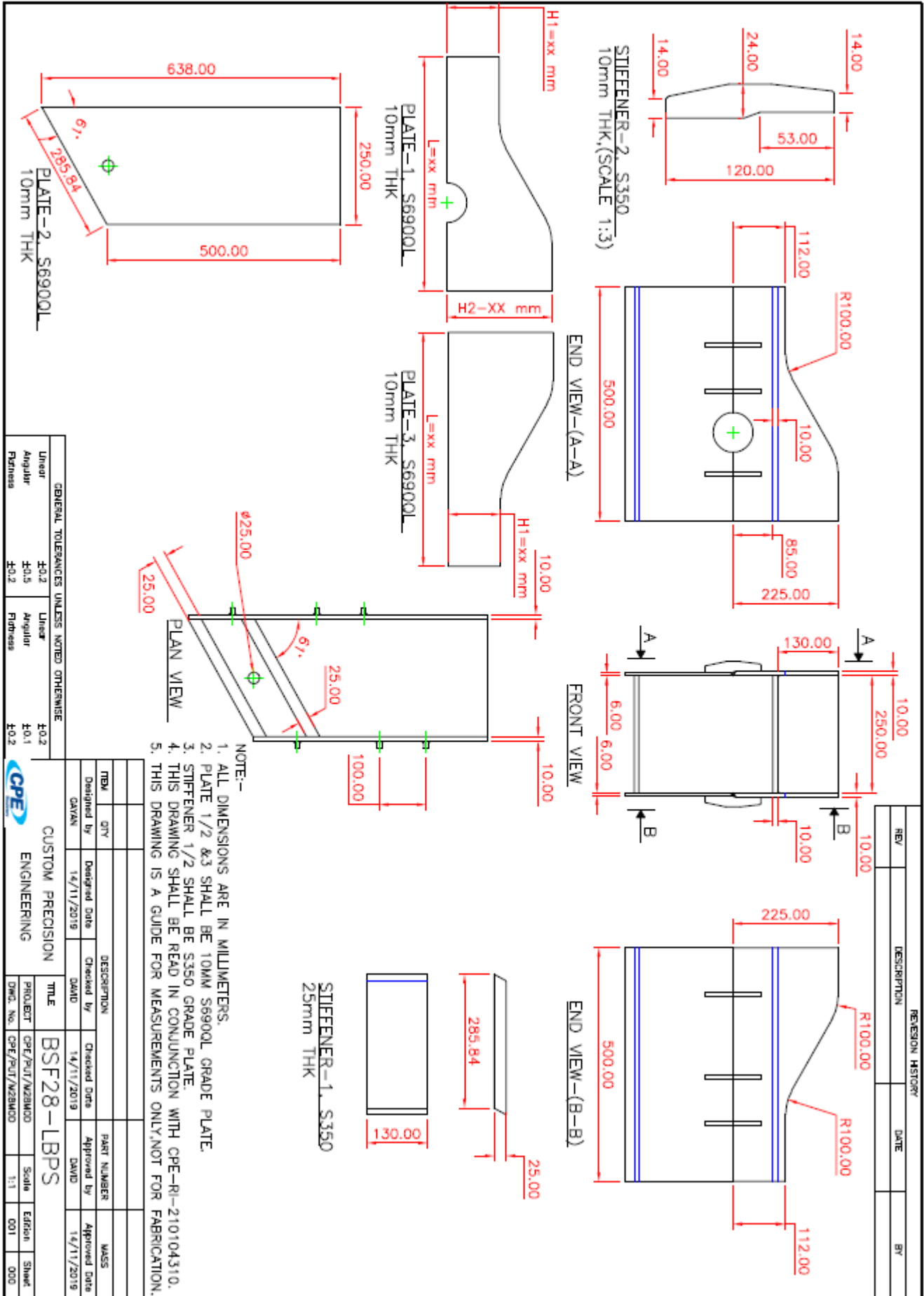
Annexure-01 (page-1) WPS for Butt weld

		WELDING PROCEDURE SHEET			WP No	S690- BW-6/8mm			
					DATE	15/11/2019			
COMPANY NAME		CPE Machinery Pty Ltd			Ref. Standards	ISO9606 / ISO15614			
ADDRESS		10-12 Kimpton Way, Altona Vic 3018			Ref WPS:	CPE/MAG/6/8mm-butt weld			
WELDING PROCESS		MAG WELDING			3				
SHIELDING GAS TYPE:		N/A							
POSITIONS:		2G -Butt weld			JOINT CONFIGURATION & PASS/LAYER SEQUENCE				
PROCESS MODE:	MANUAL	SEMI AUTO							
JOINT TYPE:	BUTT	TEE							
PENETRATION:	COMPLETE	FILLET							
ELECTRODE EXTENSION:	N/A								
NOZZLE DIAMETER:	N/A								
FLUX CLASSIFICATION:	N/A								
TUNGSTEN ELECTRODE:	N/A								
CLEANING PROCEDURES	WIRE BRUSH CLEAN								
IDENTIFICATION OF BASE MATERIAL									
PART	SPECIFICATION & GRADE								THICKNESS
1	S690			8mm	part-1				
2	S690			6mm	part-2				
IDENTIFICATION OF FILLER MATERIAL									
PROCESS	TRADE NAME		CLASSIFICATION/SIZE	GROUP	FILLER TREATMENT				
MAG	ESAB OK AristoRod69		SFA/AWS A5.28 E1105-G	ITEM	LOT				
EN ISO 16834-A G 69 4 M Mn3Ni1CrMo									
WELDING PARAMETERS									
Wire Dia	Layer	weld size / (mm)	wire feed speed/ (m/mim)	Voltage / (V)	current/ (A)	current polarity	welding speed/ (cm/min)	Gas flow (80%Ar +20%co2)	Heat input / (kJ/cm)
1 mm	1	4	10-12	26	230	DCE +	70	12L/min	5.13
	2	3	10-12	26	230	DCE +	70	12L/min	5.13
HEAT TREATMENT									
PREHEAT MIN:	80C~100C			INTERPASSING MAX:	200 C				
				INTERPASSING MIN	100C				
NOTES:	POST WELD PEENING BY NEEDLE GUN								
A ceramic backing bar can be used as a backing strip during the butt welding, but final surface preparation needs to be done by grinding.									



Annexure-01 (page -2) WPS for Fillet weld

		WELDING PROCEDURE SHEET				WP No	5690- FW-8/10mm				
						DATE	15/11/2019				
COMPANY NAME		CPE Machinery Pty Ltd				Ref. Standards	ISO9606/ISO15614				
ADDRESS		10-12 Kimpton Way, Altona Vic 3018				Ref WPS:	CPE/MAG/4mm- fillet weld				
WELDING PROCESS		MAG WELDING				3					
SHIELDING GAS TYPE:		N/A									
POSITIONS:		2F FILLET				JOINT CONFIGURATION & PASS/LAYER SEQUENCE					
PROCESS MODE:		MANUAL		SEMI AUTO							
JOINT TYPE:		BUTT		TEE							
PENETRATION:		COMPLETE		FILLET							
ELECTRODE EXTENSION:		N/A									
NOZZLE DIAMETER:		N/A									
FLUX CLASSIFICATION:		N/A									
TUNGSTEN ELECTRODE:		N/A									
CLEANING PROCEDURES		WIRE BRUSH CLEAN									
IDENTIFICATION OF BASE MATERIAL											
PART	SPECIFICATION & GRADE				THICKNESS	SPECIAL REQUIREMENTS					
1	S690				8mm	part-1					
2	S690				10mm	part-2					
IDENTIFICATION OF FILLER MATERIAL											
PROCESS	TRADE NAME				CLASSIFICATION/SIZE	GROUP	FILLER TREATMENT				
MAG	ESAB OK AristoRod69				SFA/AWS A5.28E1105-G	ITEM	LOT				
	EN ISO 16834-A G 69 4 M Mn3Ni1CrMo										
WELDING PARAMETERS											
Wire Dia	Layer	weld size / (mm)	wire feed speed/ (m/mim)	Voltage / (V)	current/(A)	current polarity	welding speed/(cm/min)	Gas flow (80%Ar +20%co2)	Heat input /(kj/cm)		
1 mm	1	4	11	26	230	DCE +	70	12L/min	5.13		
HEAT TREATMENT											
PREHEAT MIN	80C~100C				INTERPASSING MAX:		200 C				
					INTERPASSING MIN		100C				
NOTES:	POST WELD PEENING BY NEEDLE GUN										



Just Inspections Services Pty Ltd.

Phone: 0401 635 122
 Unit 13, Lot 9
 62 Crockford St Northgate

NDT INSPECTION REPORT

REPORT NO: 190601-02

DATE: 30th November 2019

PAGE NO: 1 of 2

NATA's accreditation requirements.
 Accredited for compliance with ISO/IEC 17025 - Testing
 ACCREDITATION No. 15517



CLIENT: Concrete Pumping Sales & Equipment (Aust). Pty Ltd

CONTACT: Gary Howell

SUBJECT: The Magnetic Particle and Ultrasonic Examination of front left side outrigger box for Putmeister BSF28-4-14H. The examination was carried out at the client's premises Radley St. Virginia

IDENTIFICATION: S/N: 170206769

ORDER NO: 31640G

EXAMINATION DATE: 25th November 2019

TECHNICIAN: L. Justo

TECHNICAL DATA

	Magnetic Particle	Ultrasonic	
Test Specification:	AS 1171-1998	Test Specification:	AS 1065-1988
Technique:	Magnetic flow - sustained magnetization	Flaw Detector:	Panametrics EPOCH LT
Test Method:	MT-01	Test Method:	UT.005
Surface Condition/Coatings & Preparation:	Sandblasted	Serial No:	050073512
Material Specification:	Carbon Steel – Not further specified	Probe:	
Acceptance Standard:	To detect possible cracking	Evaluation Sensitivity:	Level 2
Demagnetised:	No	Scanning Sensitivity:	6mm FBH @ 40% FSH at MBP + 6dB
Test Restrictions:	Nil	Area Tested:	
Note: Inspection does not include weld geometry assessment		Surface Preparation:	Complies with Clause 3.2
		Couplant:	Polycell

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RESULTS OF EXAMINATION

IDENTIFICATION

INTERPRETATION

Front Left Outrigger Box

Ultrasonic and Magnetic Particle examination from the crack face down 50mm

Magnetic particle
Ultrasonic

Nil cracking evident
No recordable defects evident


L. Justo
NDT Technician



Just Inspections Services Pty Ltd.

Phone: 0401 635 122
Fax: 07 3818 6104

REPORT NO: 190601-01

DATE: 30th November 2019

PAGE NO: 1 of 3

CLIENT: Concrete Pumping Sales & Equipment (Aust). Pty Ltd

CONTACT: Gary Howell

SUBJECT: The Hardness Testing of client nominated areas on front left side outrigger box for Putmeister BSF28-4-14H. The examination was carried out at the client's premises Radley St. Virginia

IDENTIFICATION: S/N: 170206769

ORDER NO: 31640G

EXAMINATION DATE: 25th November 2019

TECHNICIAN: L. Justo

TECHNICAL DATA

Test Equipment: MITECH MH320 Leeb Hardness Tester S/N: H20113123109

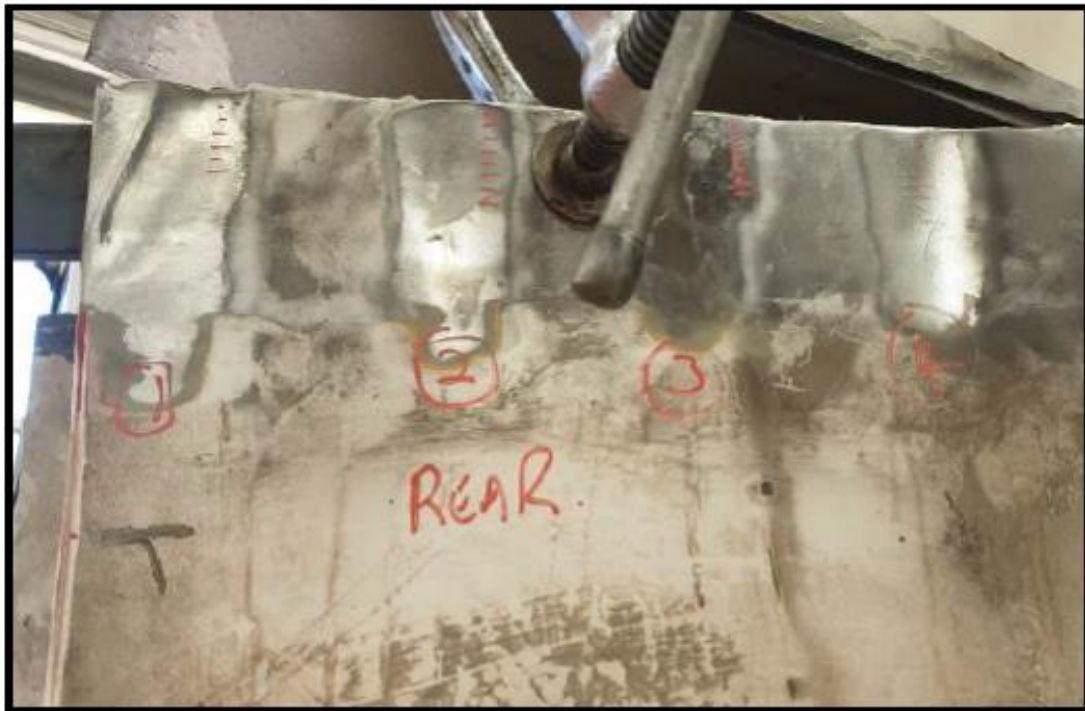
Technique: Average of three readings at each test location

Surface Condition/Coatings

& Preparation: Ground Smooth

Material Specification: Carbon Steel – Not further specified

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RESULTS OF EXAMINATION

Rear side

All hardness Readings in HL Scale

Distance from crack face	Position			
	1	2	3	4
5mm	389	347	400	323
10mm	441	435	474	434
15mm	466	491	478	471
20mm	472	519	480	478
25mm	499	528	480	483

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RESULTS OF EXAMINATION

Front side

All hardness Readings in HL Scale

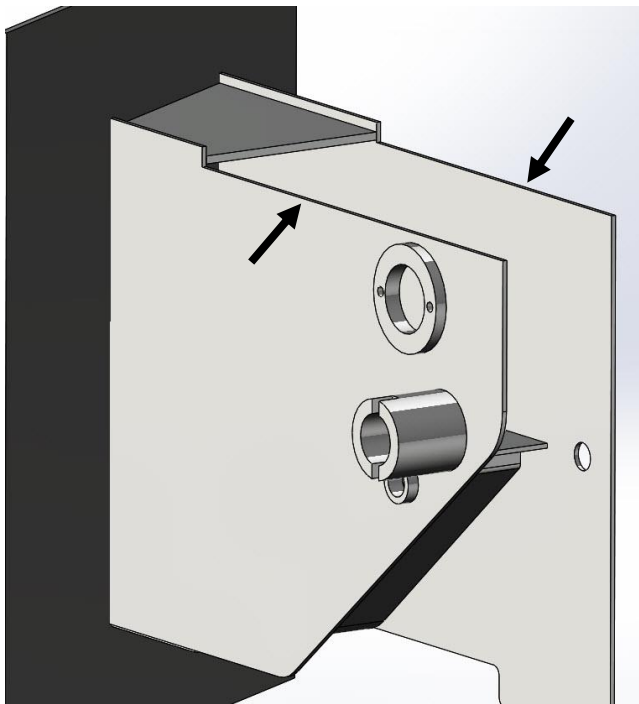
Distance from crack face	Position			
	1	2	3	4
5mm	505	537	492	386
10mm	515	546	513	484
15mm	518	515	514	512
20mm	522	517	496	487
25mm	524	505		499

Results may have been compromised when backing bar removed the bend in the plate

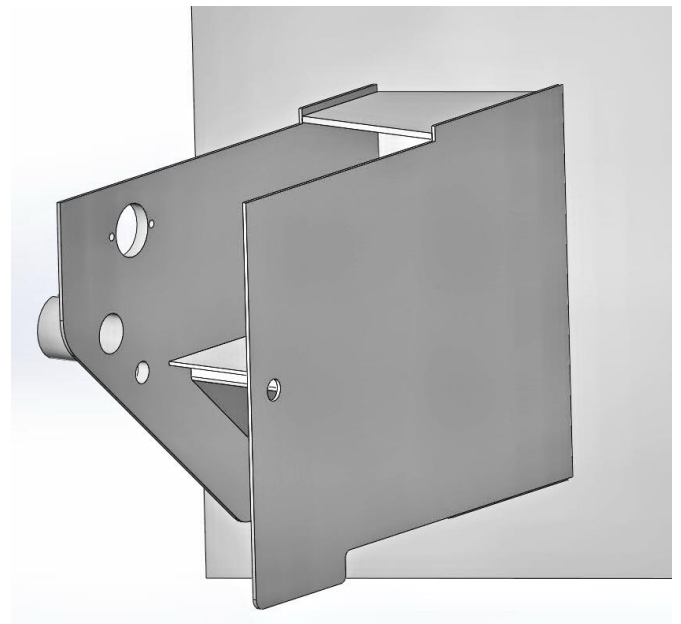
L Justo
NDT Technician
AINDT Level 2 Accredited. Registered No. 2557

RECOMMENDATIONS FOR REPAIR OF THE THIRD PARTY ENGINEER
- ALTERNATIVE OPTIONS

These are recommendations for repairing the front outriggers static box.

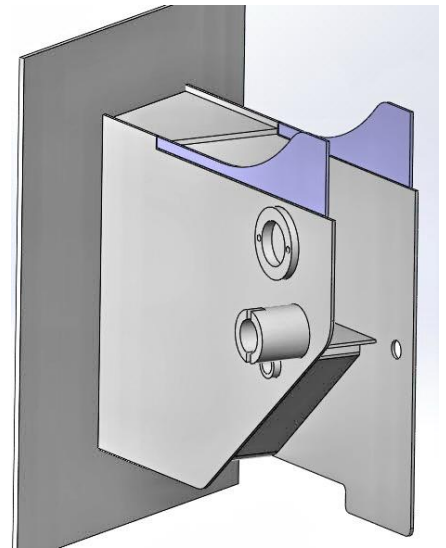


Cut top plate and side plate to undamaged zones.
Make top edge straight, grind chamfer 6*30 for
weld prep for later full penetration butt weld.

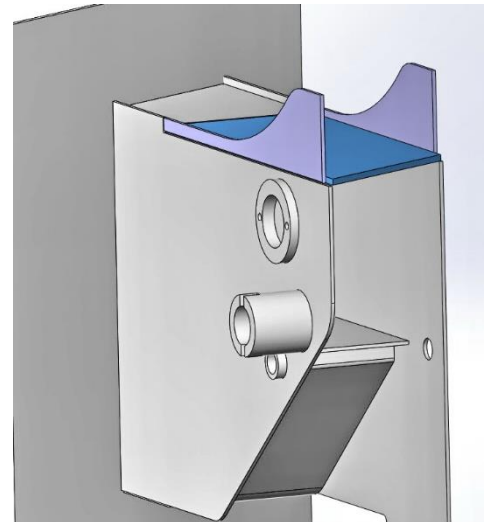


Cut new side plates, the same thickness as the original.
From the outside make weld prep for full penetration butt weld.
From inside make a weld back run as well.
Grind welds from inside and outside to be straight with parent plates. Note that new plates are shorter by 26 mm.

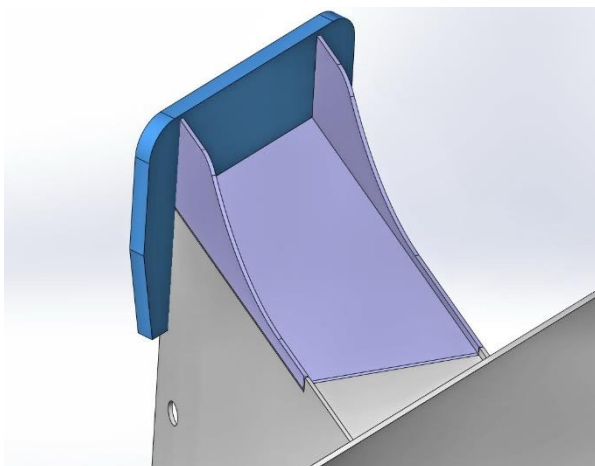
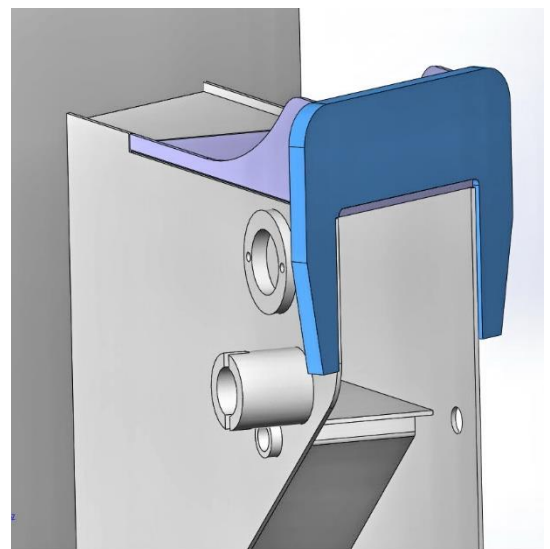
Welding wire Austmig NiCrMo.



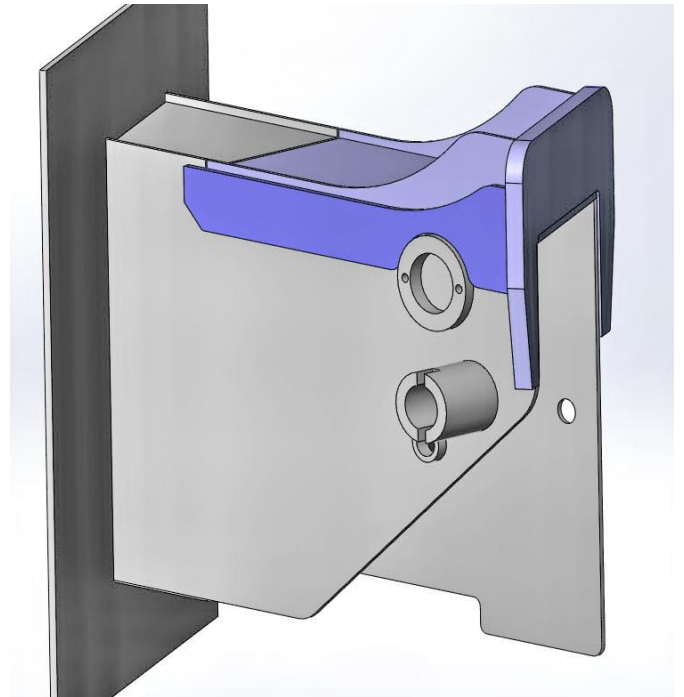
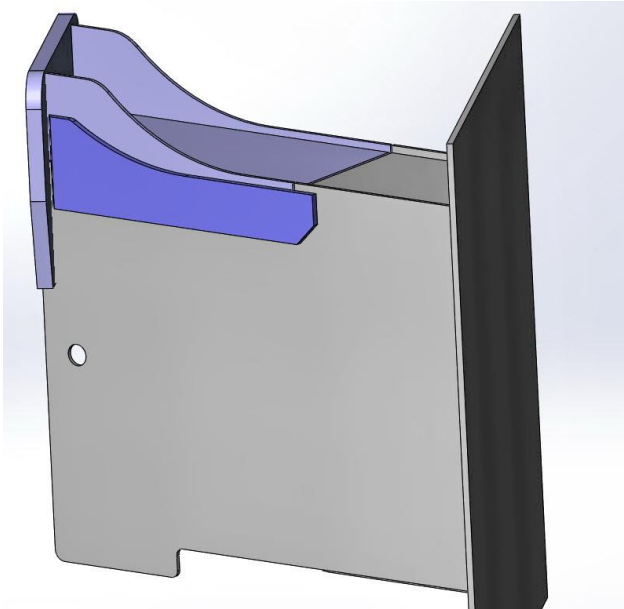
Add the new top plate, fillet welds, two runs from outside.
From across weld, use inside a removable backing plate for full penetration butt weld.



Front saddle plate, 25 mm thick, Bis 80, prepared per the attached drawing, Cut marked chafers to make the plate fit better.
Weld plate all around.



Add two reinforcement plates from both sides
Fillet weld all around.



RECOMMENDATION FOR REINFORCEMENT OF THE STATIC BOX**RE: Concrete Boom Pump Putz BSF 28m – Front Outriggers Static Box – Reinforcement**

Please find the following recommendations for reinforcement of the outrigger's static boxes for the front left and right sides of the machine.

The front left outrigger's static box was already repaired refer to the manufacturer's recommendations.

This repair neither improved nor strengthened this structural part of the machine.

So, an additional reinforcement plate would be useful and recommendable.

Also, the strengthening of the right side static box is advisable.

With these modifications, the upper support of the outrigger is reinforced.

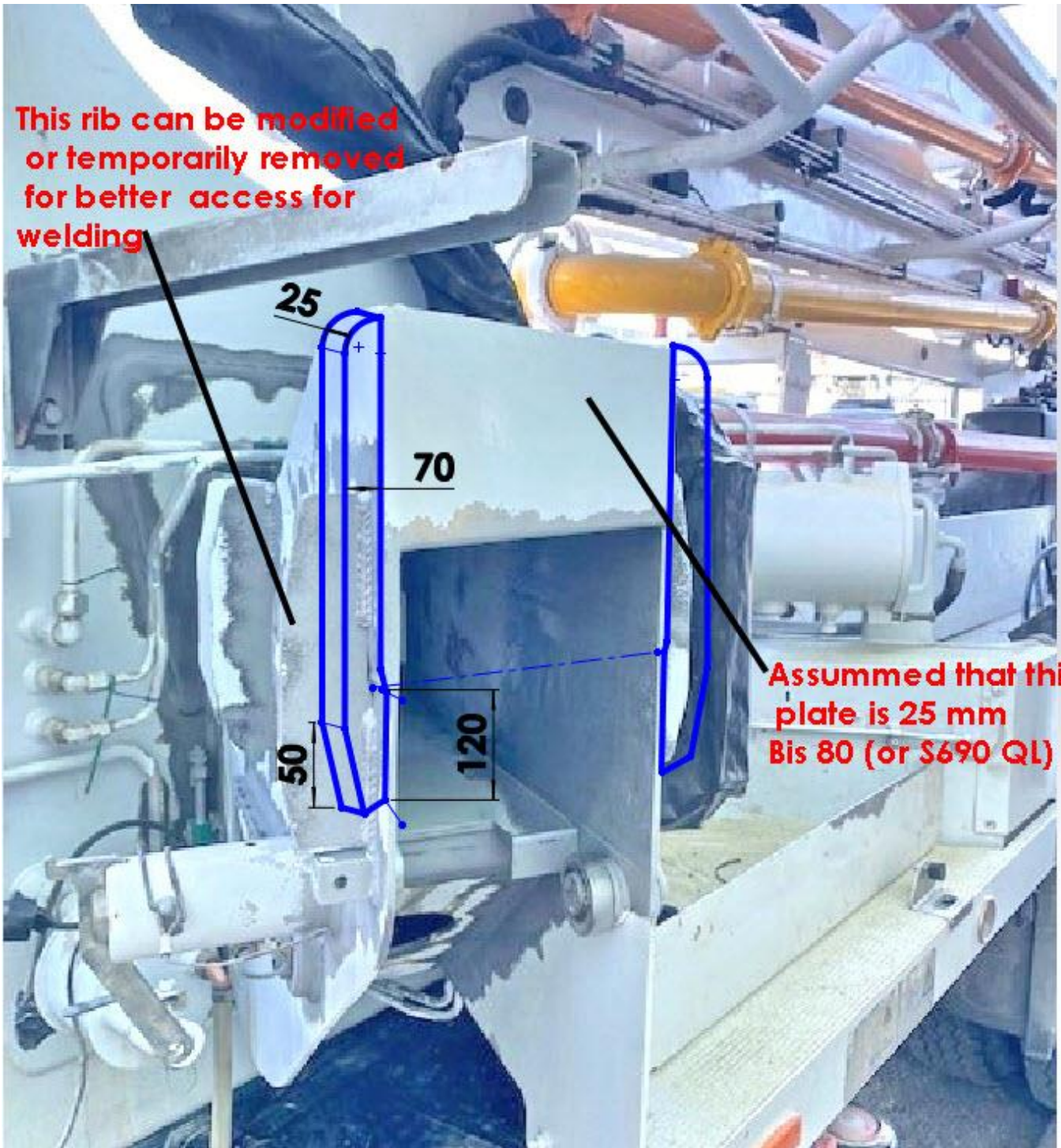
It is not clear how strong is the rear support on the lower plate of the static box.

Especially, it is important for short rigging, when the outrigger is partially opened, it could cause difficulties, depending on how the weld is reliable from the underside of the outriggers box.

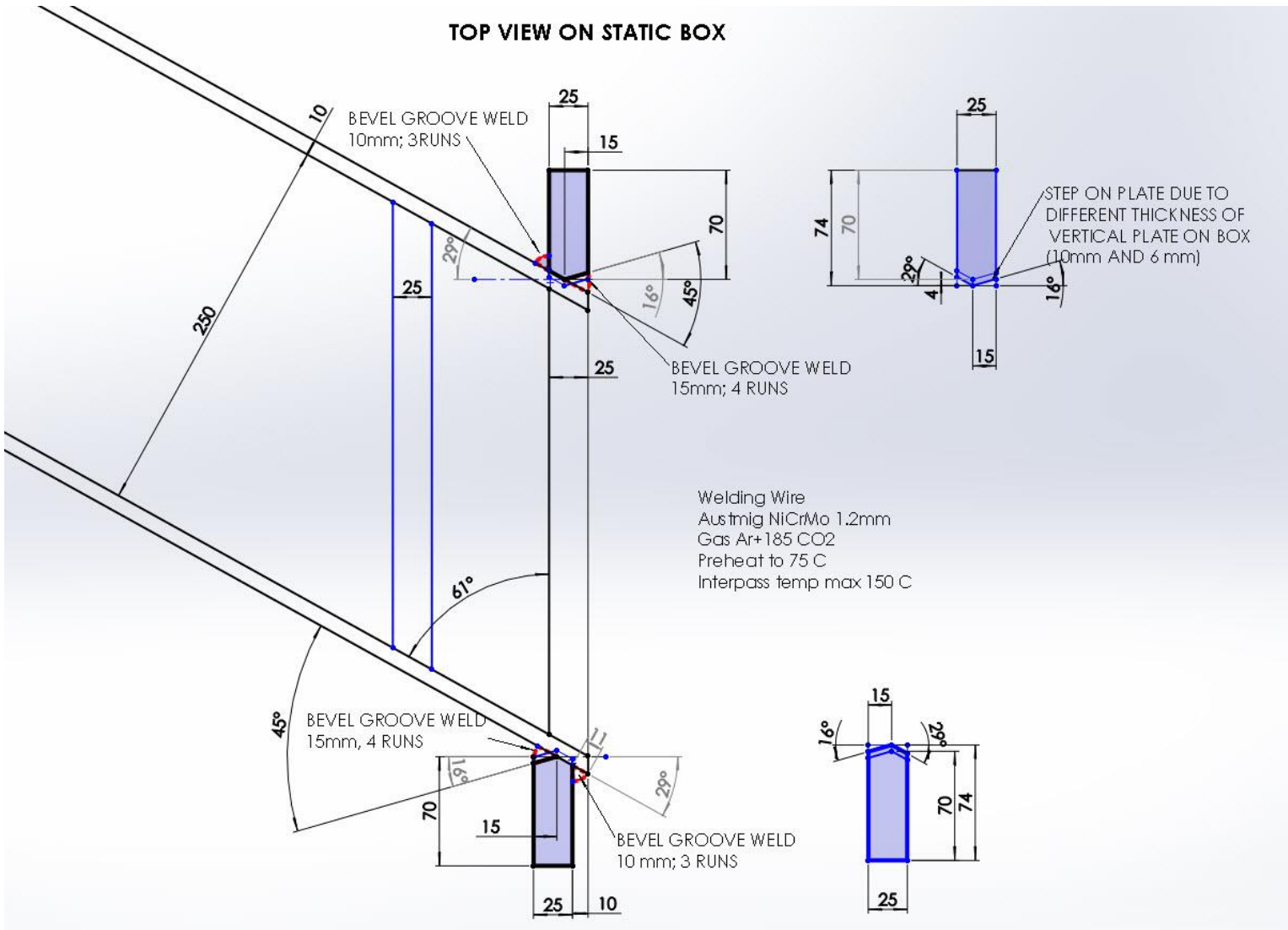
The reinforcements are shown graphically. Should you need more information or additional queries let me know.

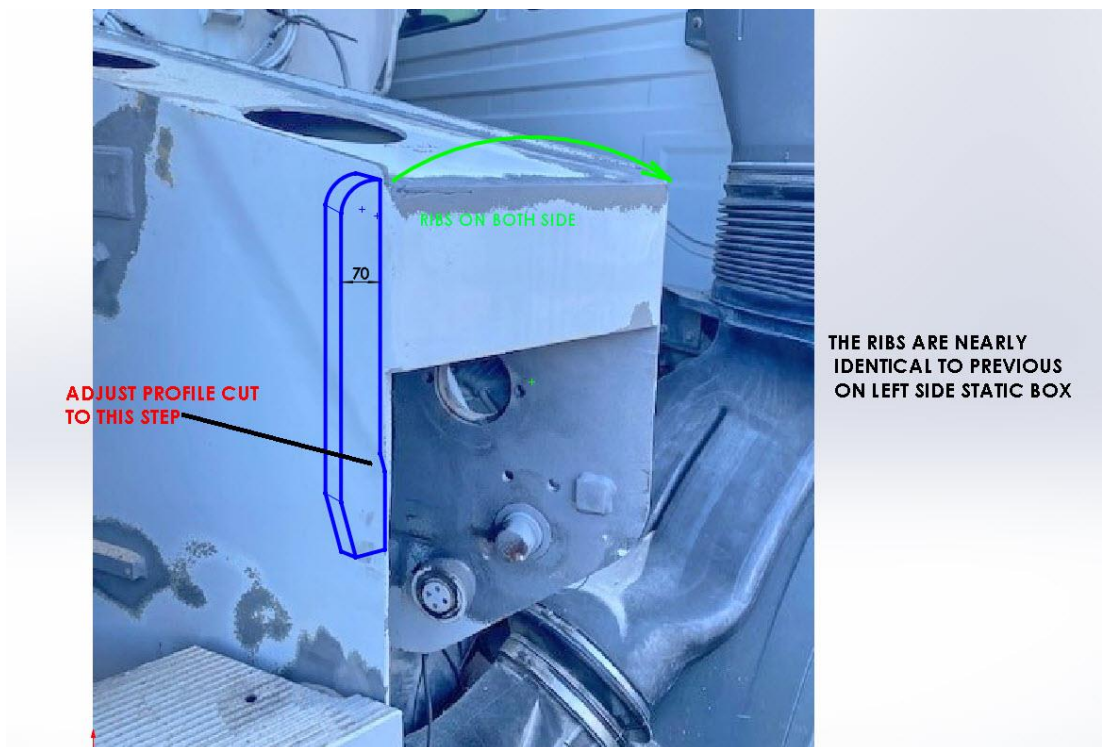
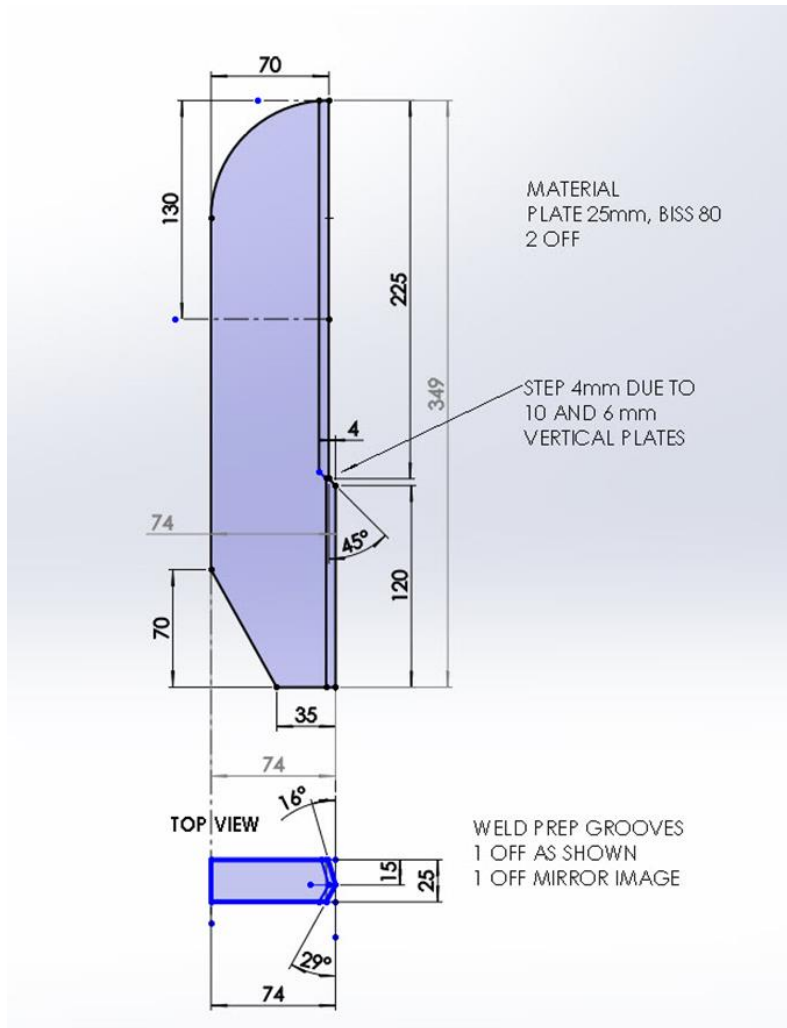
Regards

Michael Podinic



TOP VIEW ON STATIC BOX





NDT MAGNETIC PARTICLE EXAMINATION REPORT FOR REPAIRED STATIC BOX



ANNALIYAH Pty Ltd

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MAGNETIC PARTICLE EXAMINATION REPORT

Client: Flowcrete Pty Ltd
Address: 1/35 Sodium Street
Narangba QLD 4504

Correlation #: S-4281	Report #: S4281/1
Client Order #: Verbal	Job Identification: Serial # 170206769
Technician: C. Woodford	Examination Date: Friday 17/09/2021
Test Location: Narangba	Material: Carbon steel (grades unknown)
Surface Preparation: Abrasive	Surface condition: As formed, welded
Subject of report: One (1) only Putzmeister M28-4 concrete	placing truck Registration # 28PUT5
Nature of test: Crack Detection	Acceptance Criteria: AS/NZS 1554.1:2014 Table 6.2.2 SP
Test Restrictions: Nil	Product Standard: Not specified
Equipment: BCI Yoke	Serial #: 7087
Brand: SmartChem	Test Media: SmartCheck MPI black, white
Quantity: 2 can	Batch #: 20217, 1216101
U/V Light: Nichia NSU033B	NDT Procedure: QT-MP- 7, 8.
Light Meter: Labino Apollo 2.0	Serial #: 0032
Sensitivity: C.B.S. (brass 3 lines)	Serial #: DDAF3182EB8C
Method of examination: As per AS1171-1998	Magnetisation: Magnetic flow
Dead weight test: yes	Demagnetised: Yes < 0.3mT
Result:	

- a/ A magnetic particle examination was carried out on welds of repairs to front left and right hand stabilizer leg storage boxes as directed as follows: At time of inspection Nil cracking evident. Complied with code requirements



Accreditation No: 19756 – Testing
Accredited for compliance with ISO/IEC 17025
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Colin Woodford
.....
Colin Woodford Level 3
A.I.N.D.T. Registration # 1093

Issue Date: 24/09/2021



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Correlation #: S-4281

Job #: S-4281-1

Date: 17/09/2021



Figure 1



Figure 2



Figure 3

Colin Woodford Level 3
A.I.N.D.T. Registration # 1093

Issue Date: 24/09/2021

PHOTO DOCUMENTS FROM LOAD TESTING OF STRUCTURAL PARTS OF THE BOOM AND CREEP TESTING OF THE OUTRIGGERS



Fig 1. Load testing of the boom – Day 1



Fig 2. Load testing of the boom – Day 2



Fig 3. Weight of the load test is 25 % overload in accordance to AS1418.15



Fig 4. Testing over the repaired outriggers box



Fig 5. The first boom cylinder - Creep testing



Fig 6. The second boom cylinder - Creep testing



Fig 7. The third boom cylinder - Creep testing



Fig 8. The fourth boom cylinder - Creep testing



Fig 9. The right front outrigger - Creep testing



Fig 10. The The left front outrigger - Creep testing



Fig 11. The right rear outrigger - Creep testing



Fig 12. The left rear outrigger - Creep testing