



## Specification

# Transport Frames and Workboxes Specification

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## Engineering

**23/06/2022**

**100-ST-EG-0006 Rev 1**

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<b>Transport Frames and Workboxes Specification</b>			
<b>Document &amp; Revision Number</b>	100-ST-EG-0006	Rev 1	<b>23/06/2022</b>
<b>Status</b>	IFU - Issued for Use		
<b>Summary of Changes</b>	Updates include: Legislation and standards in Section 4, Design and repair requirements in Section 7 and 8, Included a new transport frame matrix in Appendix 1, Change of document structure		
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<b>Checked or Squad Review# (if applicable)</b>	IR-00183521		
<b>Approved</b>	John Whitehall-Holla		
<b>Access to this document:</b>	Choose an item.	<b>Next Review Date (if applicable)</b>	Click here to enter a date.

<b>Revision History (to be completed for each version retained by Document Control)</b>					
<b>Author</b>	<b>Checker</b>	<b>Approver</b>	<b>Rev No.</b>	<b>Status</b>	<b>Issued Date</b>
<b>Asset Management</b>	<b>Brendan Nichol</b>	<b>Tony Warrener</b>	0	IFU	1/07/2018
<b>Jeremy Guo</b>	<b>Chirag Patel</b>	<b>John Whitehall-Holla</b>	1	IFU	23/06/2022

## TABLE OF CONTENTS

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<b>1.</b>	<b>PURPOSE</b> .....	<b>7</b>
1.1	General .....	7
1.2	Work Included .....	7
<b>2.</b>	<b>DEFINITIONS</b> .....	<b>8</b>
<b>3.</b>	<b>LEGISLATIVE CONTEXT</b> .....	<b>9</b>
<b>4.</b>	<b>REFERENCE DOCUMENTS</b> .....	<b>10</b>
4.1	Standards and Codes .....	10
4.2	Applicable Fortescue Specifications .....	11
<b>5.</b>	<b>FUNCTIONAL REQUIREMENTS</b> .....	<b>11</b>
<b>6.</b>	<b>SELECTION CRITERIA</b> .....	<b>12</b>
<b>7.</b>	<b>DESIGN</b> .....	<b>13</b>
7.1	Design Criteria .....	13
7.2	Design Process .....	14
7.3	Materials .....	15
7.4	Transport Frame Types and Requirements.....	15
7.4.1	Pallet Type Transport Frames .....	16
7.4.2	Transport Boxes / Baskets .....	16
7.4.3	Transport Frames.....	17
7.4.5	Stackable Transport Frames .....	17
<b>8.</b>	<b>MANUFACTURE</b> .....	<b>18</b>
8.1	Fabrication and Assembly.....	18
8.2	Surface Protection .....	18
8.3	Painting Requirements .....	19
8.4	Nameplate.....	19
8.5	Certification .....	19
<b>9.</b>	<b>INSPECTION</b> .....	<b>20</b>
9.1	Defect Identification.....	20
9.2	Transport Frame Inspections .....	20
<b>10.</b>	<b>REPAIR AND MODIFICATIONS</b> .....	<b>21</b>
10.1	Initial Assessment and Evaluation .....	21

10.2	Transport Frame Repair Requirements .....	21
10.3	Repair / Modification Process .....	23
<b>11.</b>	<b>PREPARATION FOR SHIPMENT .....</b>	<b>23</b>
<b>12.</b>	<b>SUPPLIER DOCUMENTATION REQUIREMENTS .....</b>	<b>23</b>
12.1	Verification Report .....	24
12.2	Drawing Requirements .....	25
12.3	Final Acceptance.....	25
12.4	Manufacturer’s Data Report (MDR) .....	26
12.5	Supplier Documentation Requirements Defined in Specification .....	26
12.6	Supplier Documentation Schedule .....	27
<b>APPENDIX 1:</b>	<b>TRANSPORT FRAME REQUIREMENT MATRIX.....</b>	<b>38</b>

## List of Tables

---

Table 1: Terms and Definitions.....	8
Table 2: Legislations .....	9
Table 3: Standards and Codes .....	10
Table 4: Fortescue Standards and Specifications.....	11
Table 5: Design Process .....	14
Table 6: Supplier Documentation Requirement Schedule.....	27

## **LIST OF APPENDICES**

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Appendix 1: Transport Frame Requirement Matrix

## **1. PURPOSE**

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This specification defines the technical requirements of transport frames used across Fortescue's operations. The document provides detailed steps to be taken to design and repair transport frames and workboxes.

### **1.1 General**

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The supplier shall provide the specified equipment or materials in accordance with the intent and the provisions of this specification and all other documents, codes, standards and requirements referred to or included in this specification.

Obligations not expressly mentioned in the specification, but which are necessary for the satisfactory provision of complete and operational equipment or materials, ready to install and commission, shall be deemed to be included in the contract at no additional cost to the Principal.

All the Supplier's works shall conform to the site data and project requirements, Equipment Data Sheet(s), Supplier Data Requirements (SDR), equipment specifications, standard specifications and current applicable standards adopted by Standards Australia, unless specifically instructed otherwise further in this specification.

All materials shall be new and of the best quality available for the purpose. Equipment shall be selected to ensure standardisation across the Principal's various operations.

### **1.2 Work Included**

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The supplier's scope shall include, but not necessarily be limited to, the following summarised activities:

1. Supplier participation in regular meetings with the Principal for:
  - i Kick off
  - ii Review of design and fabrications issues
  - iii Review of analysis criteria and results
  - iv Review of fabrication and quality control procedures
  - v Review progress at each major manufacturing shop.
2. HAZID, HAZOP and Risk Reviews, as required to meet the requirements of Part 6 of the Mines Safety and Inspection Regulations and supply of all related documentation in accordance with item Z13 in section 12.6 of this specification.

3. Detailed design calculations as specified in sections 7 and 12 of this specification.

test

4. Shop assembly and shop testing in accordance with section 8 of this specification.

5. Preparation for transport in accordance with section 11 of this specification

6. Delivery as nominated.

7. Supplier documentation in accordance with section 12 of the specification.

## 2. DEFINITIONS

**Table 1: Terms and Definitions**

<b>Term</b>	<b>Definition</b>
Fortescue	Fortescue Metals Group Limited all subsidiaries and employees.
Principal	Representative of the Fortescue Metals Group Limited
Supplier	Vendor manufacturing the frame, may or may not be the OEM
QA/ QC	Quality assurance/ Quality control processes and associated documents
Verification report	A summary report by a Verification engineer, for a constructed frame containing the following information: Description, Drawing, WLL, Identification Number, Designed / Drawn By, Engineering Verification By, Location of Examination, Result of Examination and Verification / Qualification
Qualified Engineer	A Chartered Professional Engineer (CPEng) in the correct field
Third Party	Any individual or a company who does not have a direct connection with a legal transaction but who might be affected by.
Working Load Limit (WLL)	The maximum load that can an item lift in a particular configuration or application
Competent	Having the necessary ability, knowledge, or skill to do something successfully
Certification	The authoritative act of documenting compliance with requirements
Shall	Indicates that statement is mandatory
Should	Indicates a recommendation
Transport Frame	Purpose built frame to support specific equipment during transportation
OEM	Original equipment manufacturer
MDR	Manufacturing data report
AS	Australian Standard
Equip	Equipment
Mods	Modifications
Lifting Devices	Devices that can be fitted directly or indirectly to the hook or any other coupling device on a crane, hoist or winch, as defined in AS 2549

<b>Term</b>	<b>Definition</b>
Competent person	A person who has acquired through training, qualifications or experience, or a combination of these, the knowledge and skills to enable that person to perform the tasks required by this Specification.
HAZOP	Hazard and Operability Study
HAZID	Hazard Identification

### **3. LEGISLATIVE CONTEXT**

In managing Fortescue’s risks and duty of care, which in Australia is defined in the Work Health and Safety Act 2020, the guideline must be applied with any relevant regulations, code and standards. In the case whereby this guideline and the relevant codes differs, then the more stringent shall apply. The legislation included but not limited to are listed in Table 2: Legislations.

<b>Act / Regulation</b>
Work Health and Safety Act 2022
Transport Act - Road Traffic (Vehicles)Regulations 2014 and applicable “Load Restraint Guide” Second Edition 2004
The Heavy Vehicle National Law (HVNL) and applicable Load Restraint Guide 2018 (Other States NT)

## 4. REFERENCE DOCUMENTS

All work shall comply with the latest revision of Fortescue Metals Group Specifications, Australian Standards and Codes of Practice. Where a conflict exists, this specification shall take precedence unless otherwise instructed by the Principal. The Supplier may submit an alternative, equivalent, and recognised standards and codes that clearly demonstrate the equivalence of any alternative standard or code for prior approval by the Principal.

The latest revision of the following documents at the date of Issue of tender documents shall form part of this specification and shall apply wholly or partially as the case may be and as necessary for the completion of the works.

Unless otherwise specified, all document listed in Table 4 will be issued to the supplier upon request. It is the responsibility of the supplier to have access to standards & code include but not limited to what covered in Table 3

### 4.1 Standards and Codes

The following standards and codes shall apply. Access to the following standards and codes is the responsibility of the vendor and not that of Fortescue. Australian standards are listed as follow. Equivalent international standards may be considered with prior written permission from Fortescue.

**Table 3: Standards and Codes**

Document Number	Title of Document
AS 1100	Technical Drawing
AS 1163	Structural Steel Hollow Sections
AS 1318	SAA Industrial Safety Colour Code
AS 1418.1	Crane Hoist and Winches, Part 1: General Requirement
AS 1554	Structural Steel Welding - Welding of steel structures
AS 1594	Hot-rolled Steel Flat Products
AS 1657	Fixed platform, walkways, stairways and ladders – Design, construction and installation
AS 2809	Road Tank Vehicles for Dangerous Goods Set
AS 2700	Colour Standards for General Purpose
AS 3678	Structural Steel – Hot Rolled Plates, Floor Plates and Slabs
AS 3679.1	Structural Steel – Hot Rolled Bars and Sections
AS 3990	Mechanical Equipment - Steelwork
AS 4068	Flat pallets for material handling
AS4100	Steel Structure

Document Number	Title of Document
AS 4991	Lifting Devices
NTC Load Restraint Guide	NTC Load Restraint Guide 2018 Edition
AS 1170.2	Wind Loading
AS 2549	Cranes, hoists and winches
AS 5131	Structural steelwork - Fabrication and erection

## 4.2 Applicable Fortescue Specifications

In addition to document(s) listed in Table 3, the following project documents shall apply:

**Table 4: Fortescue Standards and Specifications**

Site Data Sheet	Title of the Document
100-SP-ST-0001	Standard Engineering Specification for Structural Steelwork Fabrication
100-SP-ST-0003	Standard Engineering Specification for Protective Coating System – Hot Dip Galvanising
100-SP-ST-0004	Standard Engineering Specification for Protective coating Systems - Painting
100-SP-DC-0002	Vendor Data Requirements Specification
100-PR-EG-0001	Procedure - Drafting Presentation (Engineering)
100-ST-CP-0005	Packing, Marking and Documentation Specification
100-SP-ME-0096	Standard Engineering Specification - Welding Specification for Lifting Lugs
100-FA-SA-0650	Work Box Pre Operational check

## 5. FUNCTIONAL REQUIREMENTS

Transport frames must be considered for transportation where equipment is too large, heavy or not suitably shaped for palletising. Some of the key benefits of the transport frame are:

- Minimise risk of fatality or Injury
- Minimise risk of damage to component
- Ease of handling
- Improve business efficiency and compliance

Work boxes design has also been included in this specification.

All packing requirements for transportation shall comply with Fortescue Packing, Marking and Documentation Specification listed in Table 4.

## **6. SELECTION CRITERIA**

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A guideline to when a transport frames could be required is as follows;

- When the equipment weight and dimensions exceed the general purpose flat pallet capacity of 2 Tonnes and dimensions 1165mm x1165mm as per AS 4068.
- If the complexity of the equipment's shape makes it difficult to transport due to stability issues requiring multiple dunnage to aid in restraining the load. These equipment types will be deemed as a "Complex Shape"
- Where the "Complex Shape" of the equipment makes it difficult to load and unload requiring specialised lifting jigs or techniques

The above conditions could dictate that one of the following should be considered;

- Pallet Type Transport Frame
- Medium Duty Transport Frame
- A Large Equipment Transport Frame
- Transport Boxes and Baskets,

Notes:

- If still unsure about selection criteria contact a site or asset management mechanical engineer for advice
- See Transport Frame Type section for details regarding the specific frame type specifications
- Examples of transport frames can be found in Appendix.
- Load dimensions outside packing requirements of 11.8m in length, 2.3m width, 2.3m height and weight of 20 metric tonne or more shall be considered an Oversize Load and shall comply with Fortescue Packing, Marking and Documentation Specification listed in Table 4.

## **7. DESIGN**

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The design of the Transport frame shall comply with the followings:

### **7.1 Design Criteria**

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- Transport frames shall be designed to accommodate all dead, live, restraint and inertial loading applied to them or otherwise required to be considered by various transport codes relevant to the transport route and the type of transport used
- transport frames shall be sufficiently rigid so these design loads do not cause deflections that could damage the frame cargo
- Transport frames shall be designed to be easily handled by either forklifts and or crane operations as appropriate to the frame and the equipment being handled
- Crane liftable transport frame and or spreader beams must be designed, tested, and supplied in accordance with AS4991
- Manufacture and structural integrity of all transport frames must conform to AS 3990 and AS5131 (mechanical steelwork) including non-destructive testing of lifting lugs
- For lifting lug types and installation refer to 100-SP-ME-0096
- Transport Frames shall be approved for Safe Road Transport by a qualified, registered engineer experienced in logistics engineering and designing lifting devices who shall provide a Verification of Transport Support Device Report.
- Transport Frames shall be designed to be compliant with National Transport Council's "Load Restraint Guide"- section F.1 Performance Standards.
- The transport frames shall be such that it will not hold liquid on the transport frame that might add an additional load on the transport frame or may cause centre of gravity to shift from its original location except where catchment of liquid is mandatory or dictated by government act or regulation. Storage and handling of the flammable and/or combustible liquids must comply with the AS 1940.
- Transport frame carrying any equipment / Component, which has antifriction bearing mounted on a shaft shall have provision to fit anti brinelling mechanism where applicable.
- Frames may have adjustable mounting holes to secure equipment of different sizes.

## 7.2 Design Process

Design process for transport frames is as follows:

**Table 5: Design Process**

TASK / STEPS	NEW EQUIP	REPAIR	MODS
1. Identified Need and Define Equipment Requirements <ul style="list-style-type: none"> <li>(i) Equipment requirements are defined. All parties involved in the design, fabrication and use of the frames should be consulted.</li> <li>(ii) Correlate technical information required to design frame</li> </ul>	Yes	Yes	Yes
2. FMG Site Engineer to create Conceptual Design of Frame <ul style="list-style-type: none"> <li>(i) Originator of process may request an External Engineering company to develop the conceptual design.</li> </ul>	Yes		
3. Detailed Design of Frame <ul style="list-style-type: none"> <li>(i) Identify a Qualified Engineering Company to design the equipment or repair modification proposal.</li> </ul>	Yes	Yes	Yes
4. Third Party Validation <ul style="list-style-type: none"> <li>(i) Engineering design to be validated by a Qualified, Registered Third Party Engineer experienced in logistics engineering and designing lifting devices.</li> </ul>	Yes		Yes
5. Detailed Design Approval <ul style="list-style-type: none"> <li>(i) Verification Report and Design details sent to Principal for approval. All parties involved in the design, fabrication and use of the frames shall be consulted.</li> <li>(ii) Written approval required from Principal prior to any fabrication, repairs or modifications by Vendor.</li> </ul>	Yes	Yes	Yes
6. Submit Design and Drawings to Fortescue Representative <ul style="list-style-type: none"> <li>(i) Representative receives design standards, engineering calculations, engineering drawings and verification report. All documentation shall be signed off by site prior to accepting completed transport frame thus completing order.</li> </ul>	Yes	Yes	Yes
7. Documentation Control <ul style="list-style-type: none"> <li>(i) All received design standards, engineering calculations, engineering drawings and verification report, shall be uploaded into Fortescue's Document Control System.</li> </ul>	Yes	Yes	Yes

Note: Compulsory Tasks for either New Equipment or Repairs/Modifications are marked with a Yes

### **7.3 Materials**

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Materials shall comply with AS1163 or with written approval from Fortescue to use any comparable international steel grade.

### **7.4 Transport Frame Types and Requirements**

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Fortescue has a number of purpose built transportation frames/cradles for carrying specific equipment within its operations. Frames/cradles designed to carry/support a specific piece(s) of equipment shall only be used for that equipment. Examples of frame types can be found in Appendix 1.

Transport frame guidelines include but not limited to:

- 1) Forklift capacity across Fortescue is about 16 tonnes. Gross weight including the frame and the object must be considered.

Should the gross weight exceed 16 tonnes frames must be designed to be lifted with a crane with corrected rated lifting points.

- 2) Components that require special consideration are listed in the notes of Appendix 1

Notes shall only be used as guidance, if unsure contact both Original Equipment Manufacturer and Fortescue for preferred transport methods

- 3) All frames must have lash points to enable components to be restrained for transport
- 4) If components with complex geometry must be specially considered, this include but not limited to providing Fortescue the special transport frames drawings for review, providing instructions for transport and obtain written approval from Fortescue on the transport method
- 5) Components with shaft and bearings must be transported with frames equipped with anti-brinelling mechanisms. The anti-brinelling mechanism should have a mechanical safety system to prevent failures during emergency braking.
- 6) Appendix 1 shall only be used as guidance to provide illustration on common components carried/stored in transport frames

#### 7.4.1 Pallet Type Transport Frames

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Functions and construction method of transport frames include but not limited to:

- A flat steel frame construction generally consists of structural steel channel and/or angle and/or tube.
- Base plate may be flat or checker plate, 6mm thick, mild steel, which is welded to the steel frame. Principal shall specify plate type on concept drawing, in the contract or purchase order.
- Designed with forklift pockets where practical
- Multiple restrain/tie down points along the outer steel frame to accommodate the different equipment types
- If designed for lifting, all lifting lugs shall be hard stamped with rated capacity in Tonne and painted red.

#### 7.4.2 Transport Boxes / Baskets

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Transport boxes design guide as follows:

- Frames must comply with AS4991
- Frames shall be steel structure construction consisting of structural steel, tube, angle or channel
- Base plate may be flat, or checker plate welded to the steel frame. Principal shall specify plate type on concept drawing, in the contract or purchase order.
- Transport boxes may have flat plate walls welded to steel frame.
- For baskets, a 4mm wire 50x50 mesh should be used and welded to steel frame. Principal shall be consulted where alternative mesh is proposed.
- Designed with forklift pockets where practical with correct pocket sizes specified by Fortescue
- Restrain/tie down points can be incorporated on the outer steel frame and painted blue
- Where designed for lifting, all lifting lugs shall be hard stamped with rated capacity in Tonne and painted red.

### 7.4.3 Transport Frames

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These frames design incorporates the following:

- Special consideration for complex shape regarding support and loading/unloading requirements
- Frames designed with the suitable WLL with component gross weight
- Specially designed mounting locations to bolt/secure equipment to frame for stable transportation must use Nyloc nuts
- Steel structure shall comply with material specifications of either AS3990 or AS4100 as appropriate
- Fabrication to comply with AS5131 Construction category 2
- Design shall comply with either AS4100 or AS3990. Shall incorporate restraint/tie down points in design complying with to National Transport commission publication 'Load Restraint Guide'

### 7.4.5 Stackable Transport Frames

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Stackable Transport frames design shall consider the following:

- Designed to comply with AS 3990
- When designing stackable frames firstly identify the maximum number of frames to be in a stack shall be stamped on the frame so frame's capacity and stability can be checked.
- When calculating capacity of frame the total stack of frames with components, static weight must be factored in.
- Frame design shall undergo stability calculation checks for maximum weight and height of stack as per section 3 of AS 3990.
- Frame's mating components for stacking shall have self location parts which engage tightly countering the possibly of sliding or vibrating apart.
- Frame restrains/tie down points shall be designed to take into consideration both single frame and different combinations of stackable frames. Design shall comply with to National Transport commission publication 'Load Restraint Guide'
- Frames shall be clearly marked as Stackable and the maximum number of frames that can be stacked shall also be marked on the frames; e.g. 'Stackable Frames – Maximum of (Number) Frames in a Stack'

## **8. MANUFACTURE**

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### **8.1 Fabrication and Assembly**

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Transport frames shall be fabricated as per the drawing approved by qualified, registered engineer experience in designing lifting devices and verified by third party.

Frames shall be fully welded construction and all welding shall comply to AS 1554 Structural Steel Welding Or Equivalent international welding standards (e.g. ISO3834, ASTM and/or EN Standards)

Fabrication shall comply in accordance with AS5131 construction category 2.

### **8.2 Surface Protection**

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Components of transport frames shall be protected against corrosion. Refer to Fortescue Standard Engineering Specification, Protective Coating Systems for the protective coating.

### 8.3 Painting Requirements

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Frame colour coding must follow as per the criteria stated below in Table 6:

**Table 6 Paint Requirements**

Object	Paint
Transport Frame:	YELLOW - AS2700 "Y15"
Lifting Lugs:	RED – AS2700 "R13"
Lashing Lugs:	BLUE - AS2700 "B23"
Sign Lettering:	BLACK

Where frames are designed for lifting, the marking of frames shall comply with section 13 of AS 4991.

### 8.4 Nameplate

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The frame shall be fitted with a stainless steel nameplates which will be located in an accessible area when the frame is in use by means of stainless steel screws or rivets. The information on the name plate shall be engraved and paint filled in the English language using minimum letter height 5mm and depth of 1mm with the following;

- Manufacturer Name
- Frame Equipment Number
- Serial number
- Empty Weight / Tare Weight in metric tonnes
- Working Load Limit (WLL) in metric tonnes

Where equipment can be used in several configurations the WLL/rated capacities for each configuration shall be indicated

### 8.5 Certification

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Inspection and testing certification(s) shall be provided for the transport frame once the fabrication and testing have been completed. The test certificate shall record data-plate particulars and test results.

A certificate of Inspection and Testing shall be provided as part of the Verification Report detailed in Section 12.1.

## **9. INSPECTION**

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Prior to each use, all transport frames shall be visually inspected by personnel to ensure the frame is free of any significant damage or wear and markings are legible. If any defects are detected, the transport frame shall immediately be tagged 'Out of Service' and withdrawn from service.

### **9.1 Defect Identification**

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If any of the following defects are visible, the transportation frame shall be withdrawn from service and referred to a competent person:

- (a) Markings that have become detached or illegible. In such cases the lifting device may be returned to service after being assessed by a competent person that it —
  - Is in good condition; and
  - Has been remarked following verification of its identity and capacity.
  - Cuts, nicks, gouges, cracks, excessive corrosion, heat damage, bent or distorted components or any other defects.

NOTE: Shallow and rounded indentations in areas of low tensile stress may not affect the structural integrity, but deep nicks in high-tension areas and sharp transverse nicks could affect the structural integrity.

- Signs of overloading, such as any visible deformation of components.

Transport frames having any defects shall be tagged Out of Service, and withdrawn from service.

### **9.2 Transport Frame Inspections**

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Transport frames shall be inspected and undertaken in accordance with the following:

- The transport frame shall be cleaned where applicable prior to inspection.
- Any worn components shall be measured to determine the degree of wear, which shall not exceed that allowed. Wear may be tolerated until the thickness of any worn section has been reduced by 10% or other specified value of the nominal section in any plane
- All components shall be inspected for any signs of wear at their load-bearing or highly stressed points. Signs of wear include nicks, cracks, gouging, stretching or distortion.

NOTE: The application of a magnetic particle inspection method may assist in the identification of faults otherwise not visible using the unaided eye. This should be carried out after blasting.

## **10. REPAIR AND MODIFICATIONS**

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### **10.1 Initial Assessment and Evaluation**

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Prior to any repair work taking place, an Initial Assessment and Evaluation report shall be provided detailing defects, and quoting on required repairs.

The report should include the following:

- Photographs of the transport frame/workbox should be taken in an “as received” condition. For transport frames take note if unit is mounted securely and external condition including build-up with contaminants such ore build up to also be noted.
- Clean equipment and photographed.
- Record and provide nameplate information
- Any damage, corrosion and external condition evident after cleaning such as pitting, or unusual wear should be noted
- All critical dimensions to be checked against drawings and record any non-conformities:
  - Overall dimensions
  - Component mounting locations
  - If no drawings exist, provide quote for technical drawings and certification requirements – for details see Section 7 for the design criteria
  - Visual inspection of the lifting points for damage or cracks (where fitted)
  - A drawing showing all locations of repairs on the equipment (Repair Map)
- Any proposals for modification(s) and queries submitted to the Principal should be included within this report.

### **10.2 Transport Frame Repair Requirements**

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All transport frames shall be repaired to the standards and specifications set out in in Section 7.1 and all documentation supplied as set out in Section 11 of this specification. Frames designed to be lifted and requiring repairs shall comply with clause 15.2 of AS4991.

Any component or part of the transport frame shall be replaced in accordance with the mentioned Standard(s) or the manufacturer's specifications for that component or part.

Transport frame components shall be discarded if:

- Cracked
- Twisted
- Distorted
- Severely corroded or
- Have deposits that can't be removed

Minor damage such as nicks and gouges may be removed by careful grinding and filing. Following the repair, the surface should be blended smoothly into the adjacent material without abrupt change of section. The complete removal of the damage should not reduce the thickness of the section at a point by more than 10% of the nominal dimension in any plane.

Where it is anticipated the repair will remove material to a depth greater than 10% of the original material thickness, the proposed repair shall be referred to the Principal for assessment prior to the repair proceeding. The Principal may request a Registered Third Party Engineer to review the proposed repair.

Where structural repair or subsequent work to load-bearing components has taken place on a transport frame designated for lifting, either of the following shall be undertaken:

- a. Application of a proof load in accordance with AS4991 Section 12.
- b. A repair procedure in accordance with AS4991 Appendix C.

### **10.3 Repair / Modification Process**

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The repair / modification process can be found in Table 5: Design Process.

## **11. PREPARATION FOR SHIPMENT**

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Where transport frame arrived supporting specific equipment, the repaired/modified frame shall be used to transport the specific equipment back to site. The frame shall only be used if all of the final acceptance requirements have been met. Fortescue's packing and marking specification applies.

Transport frames and workboxes not included in the above statement shall be suitably packed to prevent damage during transport, handling and extended storage on site open to atmospheric conditions.

For further requirements refer to the Packing, Marking and Documentation Specification, see Table 4.

## **12. SUPPLIER DOCUMENTATION REQUIREMENTS**

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The supplier should provide a copy of the drawing for approval prior to fabrication of frame.

All documentation shall comply with 100-SP-DC-0002 Vendor Data Requirement Specifications

The drawings should be issued in Micro station format to Fortescue document control as per 100-SP-DC-0002 Vendor Data Requirement Specifications.

Technical drawings shall comply with Fortescue Draft presentation 100-PR-EG-0001

All frames designed and supplied as lifting devices shall be supplied with information complying with AS 4991 Section 14.

## **12.1 Verification Report**

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The below documents shall be provided to Fortescue as the Verification Report.

- Design standard – demonstrating relevant Australian Standards, NTC Load Guide Section F.1 and Fortescue Specifications
- Engineering calculations
- Engineering drawings
- Summary page per transport frame
  - Description
  - Drawing
  - WLL
  - Identification Number
  - Designed / Drawn by, Engineering Verified by, Location of Examination,
  - Result of Examination, Verification/Qualifications
  - Modification details if an existing frame to be modified.

## 12.2 Drawing Requirements

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The following details must be included in the drawings as minimum:

- WLL, Net and Gross weights
- Lifting Points
- Restraint/ Tie Down Points
- Restraint Specifications (e.g. Equipment required, Tension, torque)
- The Lifting and Restraint/Tie down Points and Restraint Specifications shall be clearly identified on the frame by means of decals, plates or such like.
- Forklift points

## 12.3 Final Acceptance

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For transport frames only requiring design verification the work will be deemed completed on written acceptance by the Principal of the Verification Report detailed in Section 12.1

Before packaging and delivery, a final inspection shall be conducted as follows:

- Inspection of critical dimensions.
- Inspection of overall workmanship.
- Inspection of surface treatment reports.
- Inspection of welding quality and records.
- Inspection of Supplier's MDR compiled to date.
- Any and all corrective action records.

Final inspection shall not be construed as relieving or mitigating the Supplier of their liability responsibilities under the Contract.

For new, repaired and/or modified transport frames the work will be deemed completed after final inspection has been completed and on written acceptance by the Principal of the Verification Report detailed in Section 12.1 prior to the delivery of the frame to Fortescue. A Manufacture Data Report shall be provided within a week after the frame has been completed as below.

## **12.4 Manufacturer's Data Report (MDR)**

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For modifications to or new transport frames, the supplier must provide a MDR document but not limited to the following:

- Third party testing certificate
- WPS
- WPQR
- Heat Treatment Chart
- Material Certificate
- Welding inspection certificate
- NDT test results
- All QA/QC documentation
- Certificate of Design Verification referencing Design Verification Report

## **12.5 Supplier Documentation Requirements Defined in Specification**

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Additional detailed requirements for SDRL codes nominated in Section 12.6 are detailed in this section below. For all standard SDRL code definitions, refer to the Vendor Data Requirements Specification 100-SP-DC-0002.

## 12.6 Supplier Documentation Schedule

Only documents with a Quantity and Format nominated are required.

**Table 1: Supplier Documentation Requirement Schedule**

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
<b>A</b>	<b>EPCM</b>			
A01	Project Execution Plan			
A02	Contractor Document Register	1E	1E	2
A03	Project Management Plans			
A04	Project Procedures			
A05	Procurement Plan/Procedures			
A06	Approved Supplier List			
A07	Approved Sub-Contracts List			
A08	Bid Requests			
A09	Tender Documents			
A10	Supplier/Sub-Contractor Bids			
A11	Bid Evaluations (Technical)			
A12	Recommendations to Award			
A13	Capital Expenditure Applications			
A14	Contract documents			
A15	Purchase Orders			
A16	PO and Contract Status Reports			
A17	Commitment Register			
A18	Cash Flow Forecasts			
A19	Invoicing Procedure			
A20	Invoices			
A21	Invoice Status Reports			
A22	Key Milestone Schedule			
A23	Payment linked Milestone Achievement			
A24	Detailed Procurement Schedules			
A25	Detailed Engineering Schedules			
A26	Detailed Construction Schedules			
A27	Detailed Contracting Schedules			
A28	Detailed Pre-com/Commissioning Schedule			
A29	Project Control Procedures			
A30	Reporting Procedures			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
A31	Trend Reports			
A32	Recovery Plans (Schedule)			
A33	Scheduling Studies			
A34	Work Breakdown Structure			
A35	Cost Report			
A36	Insurance Claim Status Reports			
A37	Safety Studies			
A38	Basis of Design			
A39	Discipline Design Criteria			
A40	Operation and Maintenance Philosophy			
A41	Scopes of Work			
A42	Contract Specifications			
A43	Technical Reports			
A44	Standard specifications			
A45	Risk Analysis			
A46	Performance Guarantee			
A47	Construction Execution Plan			
A48	Safety Training Plan			
A49	Constructability Study			
A50	Transportation and Lifting Studies			
A51	Mobile Equipment I Crane Use and Inspection Program			
A52	Audit Schedules			
A53	QA/QC Procedures			
A54	Site QC Procedures and Forms			
A55	Positive Material Identification (PMI) Procedures			
A56	Construction progress Reports			
A57	Construction Surveys			
A58	Punch List Reporting			
A59	Performance Testing and Acceptance Test Procedures			
A60	Commissioning and Acceptance Test Reports			
A61	Health Safety and Environmental Plan			
A61	Health Safety and Environmental Procedures			
A62	Material Test reports			
A63	Material Expediting and Delivery Reports			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
<b>C</b>	<b>Material / Supplier Commodity Certificates</b>			
C01	Material Test Certificates		1E	In MDR
C02	Pressure Test Certificates			
C03	Weight Certificates			
C04	Proof Load Test Certificates			
C05	Lifting Gear Certificates			
C06	Hazardous Area Dossier			
C07	Short Circuit Test Certificates			
C08	Certificate of Compliance		1E	In MDR
C09	Purchaser's Inspector's Release Certificate		1E	In MDR
C10	Design Verification Certifications			
<b>E</b>	<b>Electrical</b>			
E01	Electrical Equipment List			
E02	Power Consumption List			
E03	Electrical Single Line Diagram			
	Electrical Single Line Diagram – As built			
E04	Electrical Wiring Diagram			
E05	Electrical Schematics			
	E05 electrical schematics - As built			
E06	Electrical Layout Drawings			
E07	Cable Interconnection Diagrams			
E08	Earthing Layout / Details			
E09	Motor Assembly Drawings			
E10	Motor General Arrangement			
E11	Electric Motor Current / Speed Curves at 100% Rated Voltage			
E12	Electric Motor Speed / Torque Curves at 80% & 100% Rated Voltage			
E13	Electrical Data Sheets & Curves			
E14	Schedule Of Electrical Equipment In Hazardous Areas			
E15	Cable Schedules			
	Cable schedule – As built			
E16	Outline / General Arrangement Drawings			
E17	Electrical Calculations			
E18	Nameplate Details			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
E19	Interlock List			
E20	Power System Study Report			
E21	Protection Relay Settings			
E22	Cable Routing Layouts			
E23	Layouts of Electrical Installations   Substations			
E24	Electrical Standard Drawings			
E25	Lighting and Small power Layout			
E26	Light Illumination Levels			
E27	Electrical segregation and load management / shedding philosophy			
E28	Measurement of Resistance			
E29	Control room layout drawings			
<b>F</b>	<b>Supplier Fabrication Procedures</b>			
F01	Welding Procedure Specifications (WPS) including repair procedures		1E	4
F02	Welding Procedure Qualification Records (WPQR)		1E	In MDR
F03	Welding Map / Schedule		1E	In MDR
F04	Welder Qualification Register		1E	In MDR
F05	Welding Consumables Register		1E	In MDR
F06	Fabrication Procedures			
F07	Heat Treatment Procedures		1E	In MDR
F08	Paint & Surface Preparation Procedure		1E	In MDR
F09	Handling Procedure and Special Lifting Requirements		1E	In MDR
F10	Shipping, Packing, Preservation and Storage Procedures		1E	In MDR
<b>I</b>	<b>Instrumentation</b>			
I01	Instrument Index			
	I01 Instrument index - Certified submissions			
I02	Instrument Calibration Sheets			
I03	Instrument Data Sheets			
I04	Instrument Logic Diagrams			
I05	Cause and Effect Diagrams			
I06	I/O Schedule			
I07	Instrument Interconnection Diagrams			
I08	Instrument Cable Schedule			
I09	Pneumatic / Hydraulic / Process Hook Up Diagrams			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
I10	Instrument Loop Diagrams			
I11	Outline / General Arrangement Drawings			
I12	Instrument Layout Drawings			
I13	Control Panel Termination Diagrams			
	Termination diagrams - As built			
I14	Control Panel - Internal and External Layout			
I15	Control Panel Wiring Diagram			
I16	Junction Box Schedule			
I17	Junction Box Termination Details			
I18	Instrument Cable block Diagrams			
I19	Alarm & Trip Schedule (for issue to PCS Supplier)			
I20	Control Philosophy (for issue to PCS Supplier)			
I21	Calculations			
I22	PCS Programme with Description			
<b>K</b>	<b>Supplier Key Certificates</b>			
K01	Supplier's Certificate Of Compliance			
K02	Type Test / Approval Certificate			
K03	Shipping and Packing Certificates	1E	1E	In MDR
K04	Mechanical / Process Performance Guarantee	1E	1E	In MDR
K05	Third Party Validating Body Certificates	1E	1E	In MDR
K06	Third Party Fabrication Body Certificates			
<b>M</b>	<b>Mechanical / Process</b>			
M01	Equipment List			
	Equipment list – Certified submissions			
M02	Mechanical / Process Data Sheets And Curves			
M03	Outline / General Arrangements	1N	1E + 1N	Verification Report
	General arrangement plans and sections - Certified submissions		1E + 1N	Verification Report
M04	Cross Sectional Drawings		1E + 1N	Verification Report
M05	Shop Fabrication Drawings			
M06	Detail Drawings with Parts List			
M07	Bearing Drawings			
M08	Piping and Instrument Drawings (P&IDs)			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
	Piping and instrumentation diagram - Certified submission			
	Piping and instrumentation diagram - As built			
M09	Flow Diagrams			
M10	Seal Piping Plan Schematic			
M11	Piping Layouts			
M12	Lubrication Schedules			
M13	Maximum Allowable Loads on Equipment Nozzles			
M14	Utility Consumption List			
M15	Design Calculations – (thermal, pressure, structural, lifting, etc.)		1E	Verification Report
M16	Estimated Weight & Centre of Gravity Sketch			
M17	Weights and COG			
M18	Foundation Details & Loading Data – Preliminary submissions			
	Foundation details and loading data - Certified submissions			
M19	Noise Data Sheet			
M20	Nameplate Details		1E	Verification Report
M21	Tie-In List (With Locations)			
M22	Lifting Drawings			
M23	Rotor dynamic Analysis – Torsional and Lateral			
M24	Pulsation Study			
M25	Baseplate Finite Element Study Report			
M26	Material Schedule	1E	1E	In MDR
M27	Mill Liner Detail Designs			
M28	Pipe Spool Drawings			
M29	Piping Isometrics			
M30	Lubrication Diagrams			
M31	Process Description			
M32	Assessment of Condition Monitoring Requirements			
M33	Supplier's Surface Protection Details		1E	In MDR
M34	Equipment Installation Check Sheets			
M35	Document Package for Classified Plant Submission			
M36	Statutory Authority certificates			
M37	Process Standard Drawings			
M38	Mechanical Standard Drawings			
M39	Mechanical Standards Specifications			
M40	Tie-in Schedule			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
M41	Piping Support Drawings			
M42	Piping Standard Drawings			
M43	Rail Standard Drawings			
M44	Rail Detailed Drawings			
M45	Rail Plan and Profile Drawings			
M46	Special Tools Lists			
M47	Process Chemicals / Consumables Requirements			
M48	Lube Oil and Operating Fluid Schedule			
M49	Material Selection Diagrams and Guides			
M50	Line List			
M51	Piping Material Classes Specification			
M52	Site I Plot Plans			
M53	Plant layouts			
M54	Plant floor plans			
M55	Plant Elevations			
M56	PFDs & Mass Balance			
M57	Conveyor Arrangement Drawings			
M58	Conveyor Profile and Data Sheets			
M59	Reliability Availability Data, Calculations and Analyses			
M60	Expected Consumption of Raw Materials, Utilities, Chemicals, water etc.			
M61	Process Operating Description			
<b>P</b>	<b>Supplier Inspection / Test / Procedures / Specifications &amp; Qualifications</b>			
P01	NDT Procedures		1E	In MDR
P02	NDT Map / Schedule		1E	In MDR
P03	NDT Operator Qualifications		1E	In MDR
P04	Inspection and Test Record (ITR) Procedures		1E	In MDR
P05	Performance / Functional Test Procedures			
P06	Factory Acceptance Testing Procedures (FAT)			
P07	Commissioning Procedure			
P08	Pressure Test Procedure			
P09	Equipment Specifications			
P10	Manufacturing Procedures			
P11	Post Weld Heat Treatment Procedure			
P12	Supplier Work Procedures			
P13	Weld Test Procedures			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
<b>S</b>	<b>Structural/Civil/Architectural</b>			
S01	Layout, General Arrangement			
S02	Architectural			
S03	Civil Calculations			
S04	Drainage			
S05	Earthworks			
S06	Foundations			
S07	Roadwork, car parks			
S08	Buildings			
S09	Concrete Structures, Slabs			
S10	Services			
S11	Bunded areas, Ponds, Dams			
S12	Bolt Schedule			
S13	Structural Calculations			
S14	Services location Drawings			
<b>T</b>	<b>Supplier Test / Inspection Reports / Records</b>			
T01	Dimensional Control Reports		1E	In MDR
T02	Mechanical Testing Reports (Tensile, Hardness, Impact, etc.)		1E	Verification Report
T03	Mechanical Inspection and Test Records (ITRs)		1E	In MDR
T04	Instrument Inspection and Test Records (ITRs)			
T05	Electrical Inspection and Test Records (ITRs)			
T06	Civil / Structural Inspection and Test Records (ITRs)			
T07	Factory Acceptance Testing Report (FAT)			
T08	Dynamic and Static Balance Report			
T09	Electric Motor Test Report			
T10	Functional Test Reports			
T11	Performance Test Reports			
T12	Surface Preparation / Coating Reports		1E	In MDR
T13	Noise Report			
T14	Vibration Report			
T15	Calibration Certificates			
T16	PWHT Report			
T17	NDT Reports (including visual)		1E	In MDR
T18	Traceability Plans e.g. weld maps, etc.		1E	In MDR

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
T19	Pressure Test Report			
T20	Nameplate Rubbings			
T21	DTM survey model of placed fill			
T22	Extent of Shop Testing and Assembly			
T23	Repair Work Report		1E	In MDR
T24	Lifting Equipment Test Certificate and Register			
T25	Acceptance Certificates		1E	In MDR
<b>V</b>	<b>Supplier Management / Execution Documents</b>			
V01	Supplier Document Schedule (SDS)	1N	1E + 1N	In MDR
V02	Inspection And Test Plans (ITPs)		1N	In MDR
V03	Sub-Supplier ITPs		1E	In MDR
V04	Non Conformance Reports		1E	In MDR
V05	Engineering / Procurement / Fabrication Schedule	1E	1N	In MDR
V06	Sub-suppliers List		1E	In MDR
V07	Spare Parts and Interchangeability Record			
V08	2 Years Operating Spare Parts List			
V09	Commissioning Spare Parts List			
V10	Insurance Spare Parts List			
V11	List of Special Tools			
V12	Manufacturer's Data Report (MDR) Index		1E	1 week
V13	Manufacturer's Data Report (MDR)		1E	1 week post shipment
V14	Installation, Operation and Maintenance Manual (IOM)			
	Installation, Operation and Maintenance Manual (IOM) - Final Copies			
V15	Technical Queries (TQ)		1E	In MDR
V16	Supplier Quality Plan			
V17	Supplier QA System Certification	1E	1E	2
V18	Project (Specific) Quality Management Plan (PQMP)		1E	3
V19	Supplier Technical Query Procedure		1E	2
V20	Supplier Contract Variation Procedure		1E	2
V21	Supplier Communication/Correspondence Procedure			
V22	Supplier Contract Organisation Chart			
V23	Traffic Management Plan			
V24	Project Surveillance Plan	1E	1E	2
V25	Material Selection Diagrams and Guides		1E	8

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
V26	Deviation and Concession Report		1E	In MDR
<b>X</b>	<b>Planning and Scheduling</b>			
X01	Contract Activity Listing (Excel spreadsheet)		1E	2
X02	Approved Contract Activity Listing (Excel spreadsheet)		1E	3
X03	Detailed Network Programme (Primavera P3)	1E	1E + 1N	2
X04	Approved Detailed Network Programme (Primavera P3)		1E + 1N	3
X05	Contract Direct Man-hour 'S' Curve (Excel spreadsheet)		1E	Weekly
X06	Approved Contract Direct Man-hour 'S' Curve (Excel spreadsheet)			
X07	Contract Master Programme (Primavera P3)			
X08	Control Procedures (Microsoft Word)			
X09	3 Week Look-ahead Programme		1E + 1N	Weekly
X10	Contract Programme			
<b>Y</b>	<b>Reports</b>			
Y01	Design Progress		1E	Weekly Progress reports
Y02	Manufacturing Progress		1E	Weekly Progress reports
Y03	Procurement Progress			
Y04	Construction Progress			
Y05	Quality Assurance		1E	Monthly
Y06	Safety Statistics		1E	Monthly
Y07	Fuel Consumption On site			
Y08	Plant and Equipment Schedule			
Y09	Daily Labour Force Reports			
Y10	Grievances and Disputes			
Y11	Working Time Lost			
Y12	Names of all Contractors/Employees Engaged in respect of the Works			
Y13	Hours Worked			
Y14	Hourly Rate paid for each classification employed			
Y15	Number of employees by classification			
Y16	Contractor/Personnel turnover			
Y17	Monthly Project Status Report			
Y18	Weekly Project Status Report		1E	
Y19	Daily Project Status Report			

SDR Code	Description	With Tender	Post Award	
		Quantity and Format	Quantity and Format	No. of Weeks After Award
<b>Z</b>	<b>Other</b>			
Z01	Material Safety Data Sheets (MSDS)		1E	4 weeks prior to shipment
Z02	Atmospheric Emission Data			
Z03	Rec. Environmental Sampling and Analytical Procedures			
Z04	Waste / Production Estimates / Recycle Opportunities Information			
Z05	HSE Statistics		1E + 1N	Monthly
Z06	HSE Management Plan (HSMP)	1E	1E	2
Z07	Environmental Management Plan (EMP)			
Z08	Material Technical Data Sheets			
Z09	Installation Equipment Calibration Sheets / Reports		1E	In MDR
Z10	Test Equipment Calibration Sheets / Reports		1E	In MDR
Z11	Incoming Equipment Inspection Reports		1E	In MDR
Z12	Employee Management Plan / HR Management Plan			
Z13	Hazard and Risk Reports		1E	In MDR
Z14	Preliminary Work Method Statement			
Z15	Emergency Response Plan			
Z16	Cyclone Response Plan (if works Oct-May)			
Z17	Safe Works Procedures			
Z18	Table of HSE Records available			

Format code:

P = Paper copy  
 E = Electronic copy (PDF or equal)  
 N = Electronic file in native format  
 M = Mass Storage device

## APPENDIX 1: TRANSPORT FRAME REQUIREMENT MATRIX

\* Note: Pictures are for illustrative purposes only and do not give the supplier of transport frames a reason to deviate from the technical requirements set out in this standard

Object	Pictures
Cylinders	
Small Gearboxes	

Object	Pictures
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Medium-Large Gearboxes

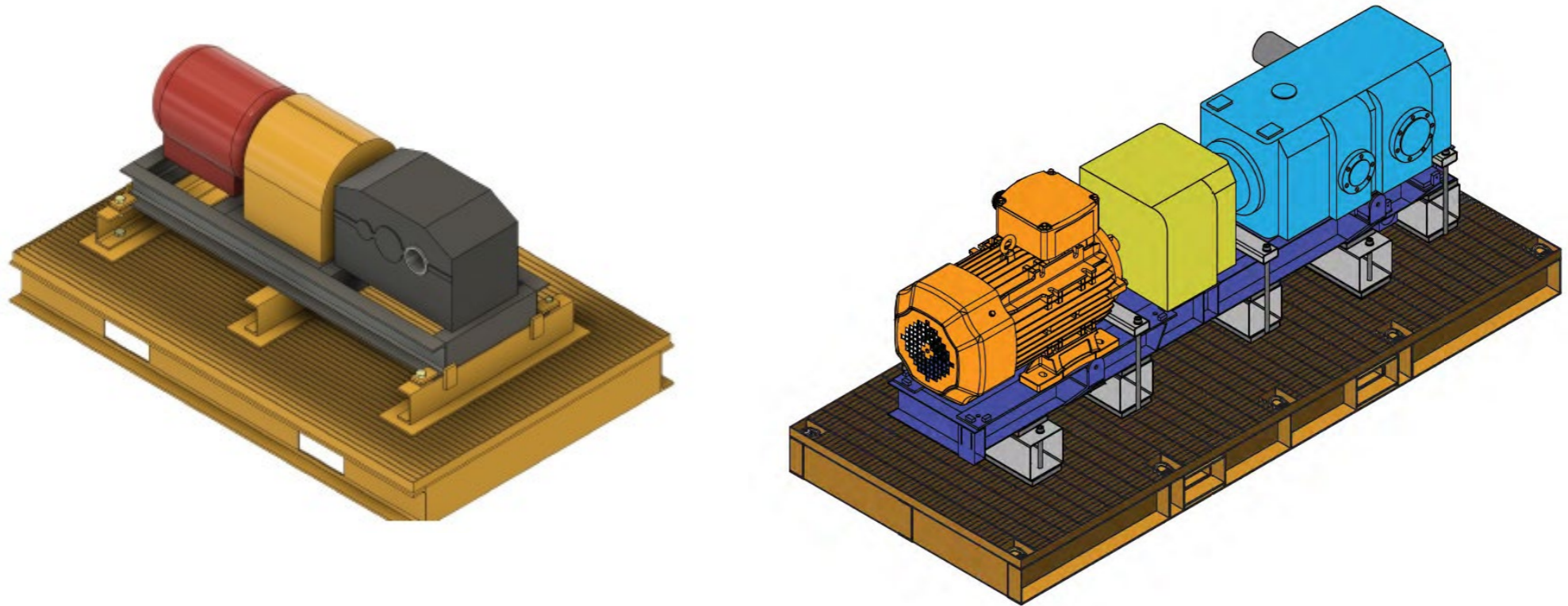


Exciters





Object	Pictures
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Drive assembly



Small Motors  
Base Mount  
& Flange  
Mount  
45kW -  
355kW



Object	Pictures
Motors 660kW & 350kw	
Motor 1000 kW – 2500 kW	

Object	Pictures
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Traction Motor



Pulley



Object	Pictures
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Primary Sizer Shaft



Pump Bare Shaft



Object	Pictures
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Countershaft



Plain Roller Trunnion



Object	Pictures
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Positioner guide roller

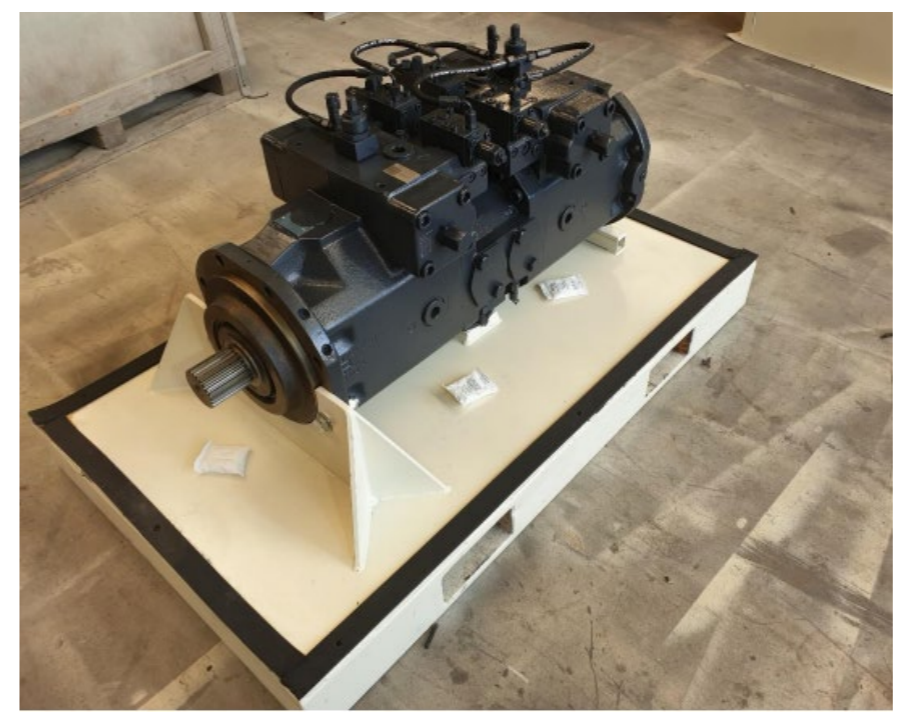


Cyclone



Object	Pictures
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Hydraulic pumps



Vacuum pump



Object	Pictures
Bucket Wheel Drive	
Bogie Wheel	

Object	Pictures	
Wheel Set		
Reclaimer Slew Drive / Vertical Pump		

Object	Pictures
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Planetary Gearbox



\*Gearbox must stay vertical during transport

TLO Chute



\*Existing drawing: 600SOP0003-09013-DR-ST-0005





Object	Pictures
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Chute



Radiator



Object	Pictures
Engine	 
Differential	 

Object	Pictures
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Oversized Chute



HPGR Roller

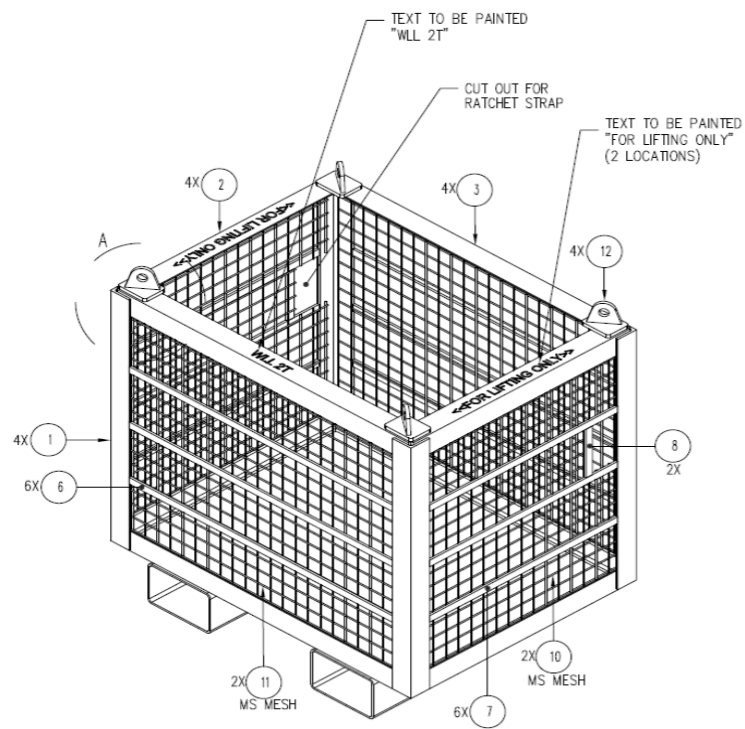


Object	Pictures
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Large Electrical Motor



Transport Basket



\*Existing drawing: 600MC0053-09000-DR-ME-5149