

Plant No. 2308

Portable Low Fresh water Flush chamber + service.

MANUAL NO.: 682



FORMIT SERVICES

Ultra 2005 Mobile Toilet Lifting Frame Certification

29 May 2009

Rev No. 0



Consulting Engineers Corrosion & Asset Control Shade Design
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FORMIT SERVICES
Ultra 2005 Mobile Toilet Lifting Frame Certification



Revision No.	Issue Date	Revision Details
0	29 March 2009	Issued to Client

Authors: David Todorovski

Signed:

Reviewed by: Tony Dockrill

Signed:

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TABLE OF CONTENTS

1. PREAMBLE	1
2. CERTIFYING FIRMS BACKGROUND	1
3. ENGINEER	1
4. SUPERVISING ENGINEER	1
5. GENERAL.....	1
6. DESIGN BASIS	1
7. DEFINED CRITERIA.....	2
8. DESIGN LOADINGS	2
9. STATEMENTS	2
10. DISCLAIMER	2
APPENDIX A IZZAT CONSULTING ENGINEERS DRAWINGS	3
APPENDIX B BVCI – TOILET LIFTING FRAME DRAWINGS.....	5

1. PREAMBLE

In accordance with your request we submit the following certification of the Ultra 2005 Mobile Toilet Lifting Frame.

2. CERTIFYING FIRMS BACKGROUND

Izzat Consulting Engineers formerly Dockrill Consulting Engineers (J.R. & M.R. Dockrill Pty. Ltd. est.1975) is a locally owned and operated company. The firm has had significant experience in the construction and building industries, specialising in the fields of Structural and Civil Engineering and Project Management. We have a wide client base extending from individual developers, private and public corporations, government and related authorities. Dockrill Consulting Engineers attain much of our commissions through our reputation and proven track record to provide innovative and economical solutions whilst maintaining committed time frames.

3. ENGINEER

David Todorovski

Bachelor of Engineering (Civil) – Honours Class 1
Bachelor of Engineering (Environmental) – Honours Class 1
University of Newcastle
Student Member of the Institution of Engineers Australia (No. 2988753)

4. SUPERVISING ENGINEER

Tony Dockrill

Bachelor of Engineering, Civil Engineering – Honours.
University of Newcastle.
Chartered Professional Engineer (NPER-3, Structural and Civil).
Member of the Institution of Engineers Australia (Reg No. 21011).

5. GENERAL

A steel lifting frame assembly is used to lift the Ultra 2005 toilet by Formit Services. This document should be read in conjunction with drawings provided by BVCI and Izzat Consulting Engineers.

Table 1: Engineering Drawings

Drawing Number	Revision	Title	Appendix
E4133-0_SK01	0	Lifting Frame Arrangement	A
1002015	B	Formit – Toilet – Top Frame	B
1002019	B	Formit – Toilet – Base	B
1001029	A	Toilet – Lift – Rod	B

6. DESIGN BASIS

Our office was engaged to provide a design certification for Ultra 2005 toilet lifting frame.

All design loads are as determined by SAA Loading Codes.

All design work was carried out in accordance with;

- AS1170.0 – Structural design actions – General principles
- AS1170.1 – Structural design actions – Permanent, imposed and other actions
- AS4100 – Steel structures
- Design Loadings provided by Formit Services Pty Ltd.

7. DEFINED CRITERIA

The various permissible methods of lifting are shown on Izzat sketch E4133-0_SK01 which is contained in Appendix A

Rational engineering judgement has been used to decide which components require checking with design certification calculations.

We have been informed that items 4 on the base frame act as ties only and the toilet weight is supported by items 1.

8. DESIGN LOADINGS

The design loading for the lifting frame of the Ultra 2005 Mobile is as follows:

- Dry Weight of toilet – 140kg
- Fresh Water Tank when full – 110 litres
- Waste Water Tank when full – 400 litres
- Maximum mass lifted – 540 kg

The above loads were applied to the lifting frame in accordance with AS1170.0 – Structural design actions – General principles and AS1170.1 – Structural design actions – Permanent, imposed and other actions. The steel lifting frame was checked against AS4100 – Steel Structures.

9. STATEMENTS

We certify that the Ultra 2005 Mobile Toilet Lifting Frame as detailed in the drawings noted in Table 1 (previous page) is structurally satisfactory for the loads noted in Section 8 above for the following lifting regimes:

- Using four lifting rods and a spreader beam simultaneously
- Using four lifting rods and no spreader beam
- Using two opposite lifting rods and no spreader beam only when mobile toilet is empty

Care must be taken when lifting the Ultra 2005 Mobile Toilet ensuring it is stable and is not subjected to any excessive dynamic loading. The toilet is to be lifted by a suitably rated crane or hoist.

10. DISCLAIMER

The design certification is provided on the basis that materials used meet Australian Standards. Construction practices are in accordance with industry standards and the structures exposure is not excessive with respect to vibration, corrosion or other external factors unknown and not notified to the certifying engineer. No modifications shall be made, which would significantly increase the mass, alter the stability or affect the design strength of the Ultra 2005 Mobile Toilet Lifting Frame.

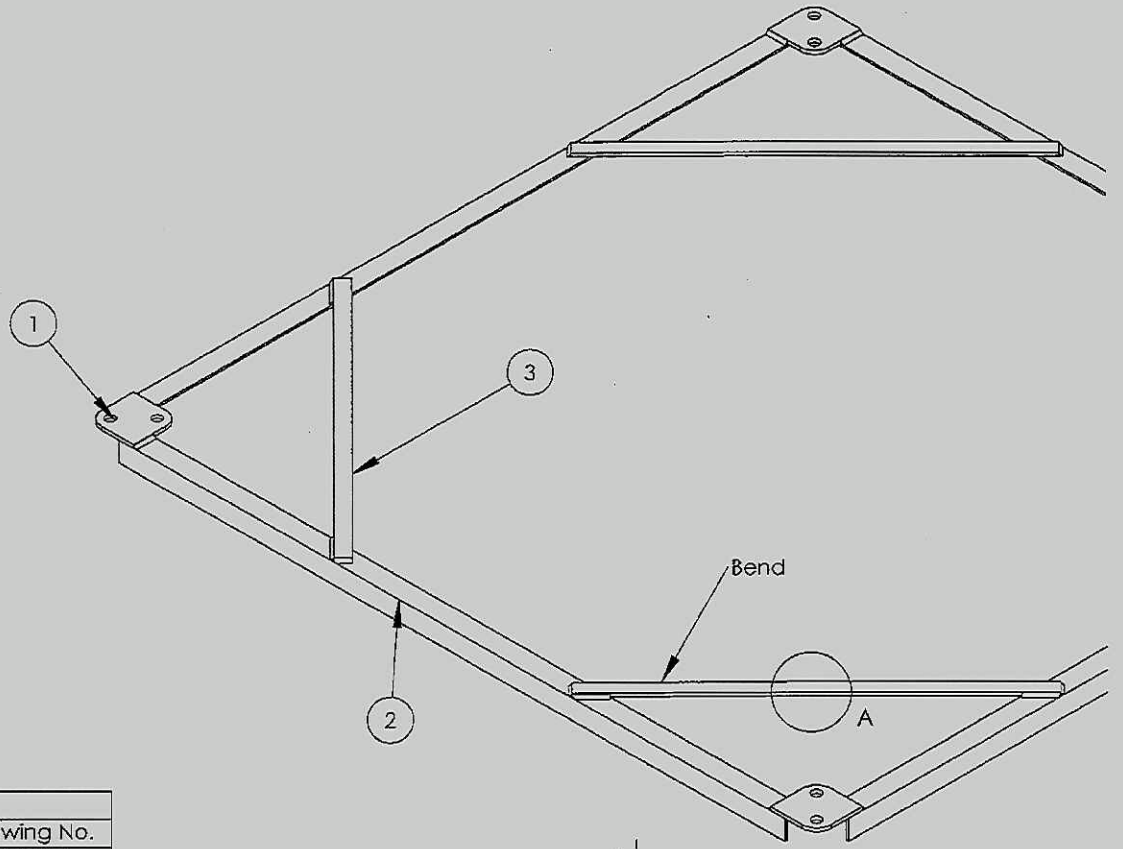
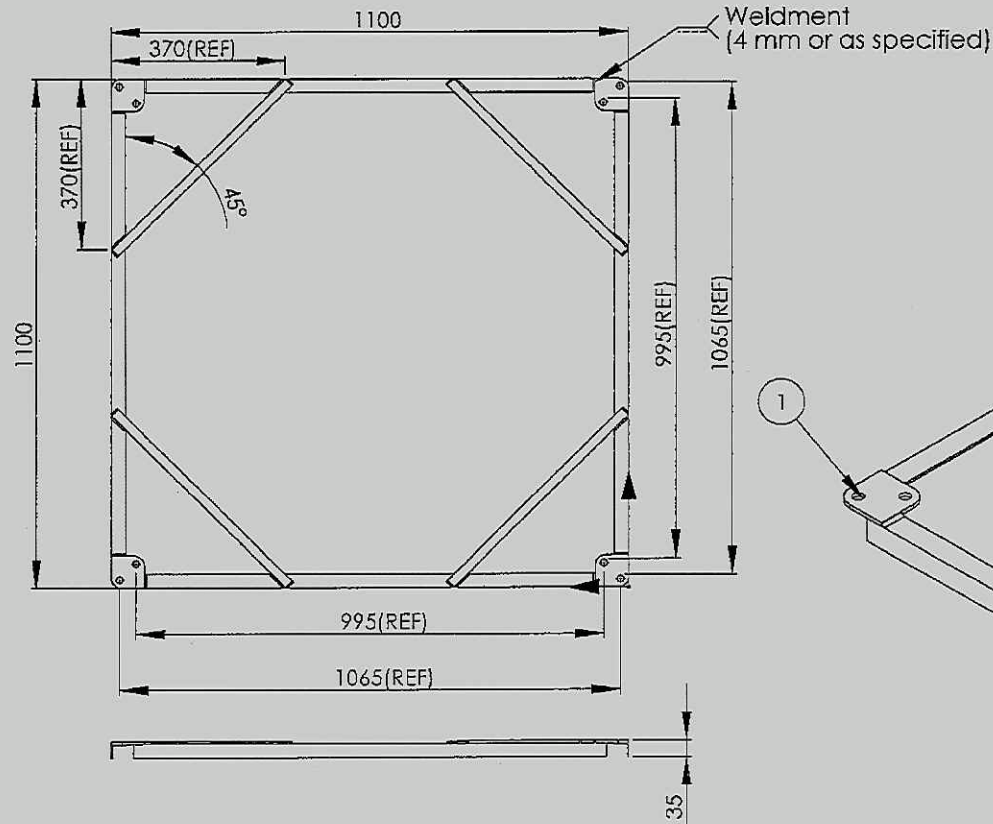
We trust the above information satisfies your requirements.



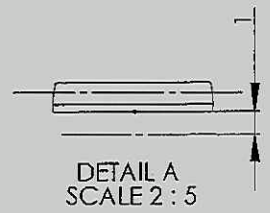
APPENDIX A IZZAT CONSULTING ENGINEERS DRAWINGS



APPENDIX B BVCI – TOILET LIFTING FRAME DRAWINGS



Weldment Cut List			
ITEM NO.	QTY.	DESCRIPTION	Drawing No.
1	4	Angle, Frame, 30X30X3	1002016
2	4	Pad, Corner, Square	1002017
3	4	Support, Torsion	1002018



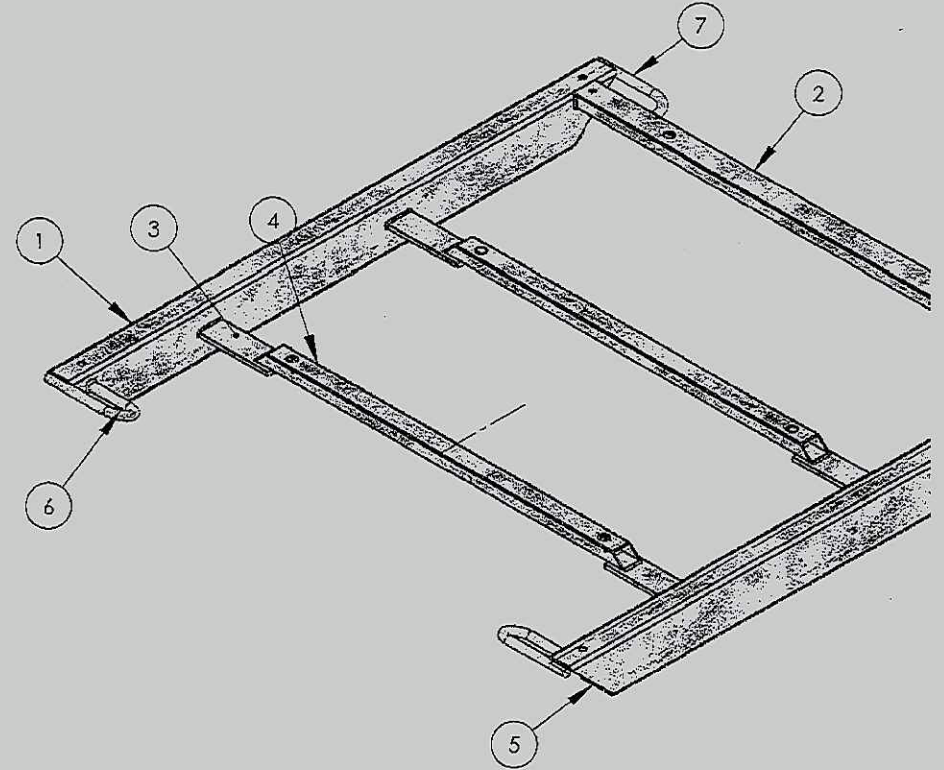
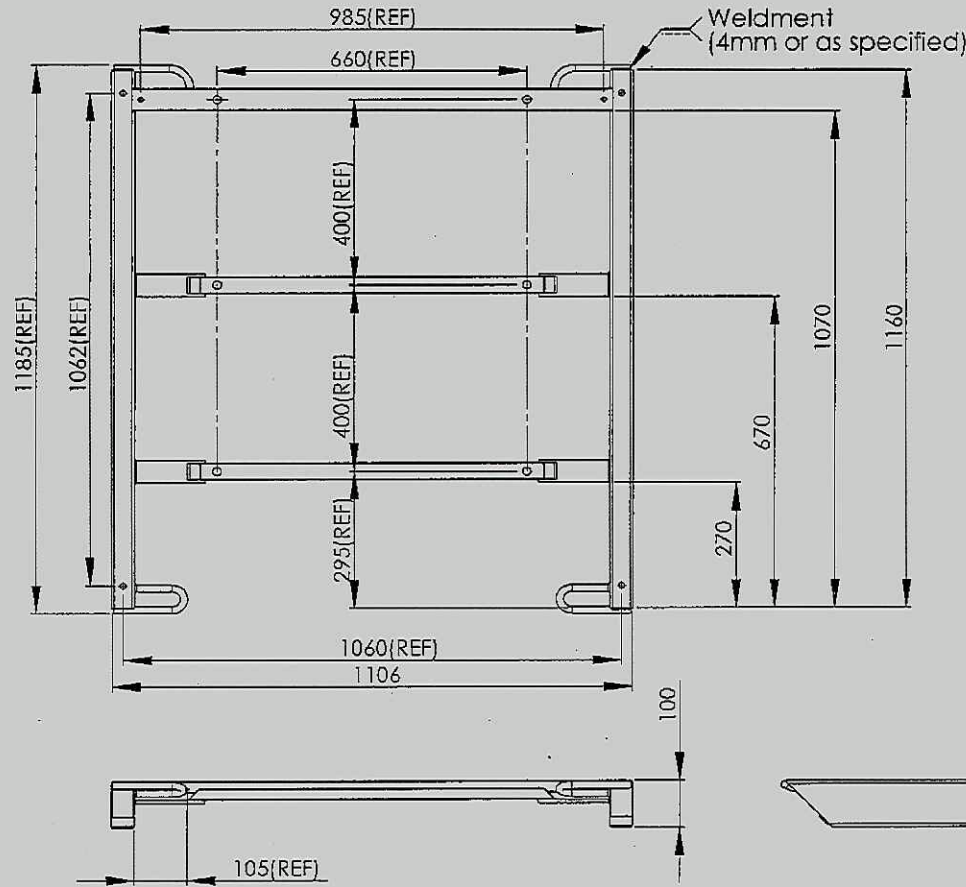
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 Remove - All sharp edges and burrs Surface finish - Hot Dipped Galvanized
 Number off - 1, per Assembly

ISSUE	DATE	ISSUE DESCRIPTION	BY	CHECKED
A	31/10/08	Released for Discussion	AK	CA
B	08/12/08	Updated Geometry for Manufacturing	AK	CA

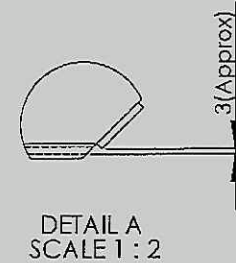
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Manufacturers & Suppliers of:
 - Precast Concrete Products,
 - Access Covers & Grates,
 - Rotationally Moulded Plastic,
 - Bricks & Paving,
 - Waste Water Treatment Products.

Formit - Toilet - Top Frame	
Part of	
Part No.	1002015
Description:	Frame, Light, Square Profile Details
Scale: 1:10	Drawing No: 1002015 B



Weldment Cut List			
ITEM NO.	QTY.	DESCRIPTION	Drawing No.
1	2	Frame, Large, Rectangular, 100X50X2	1002020
2	1	Beam, Torsion, Rectangular, 50X25X2.5	1002021
3	4	Support, Torsion, Machined	1002023
4	2	Beam, Torsion, Rectangular, 38X25X2	1002022
5	4	Pad, Frame, Small	1002026
6	2	Sweep, Long	1002024
7	2	Sweep, Short	1002025



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 Number off - 1. per Assembly

ISSUE	DATE	ISSUE DESCRIPTION	BY	CHECKED
A	31/10/08	Released for Discussion	AK	CA
B	09/12/08	Geometry Updated for Manufacturing	AK	CA

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Manufacturers & Suppliers of:
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Formit - Toilet - Base	
Part of	
Part No.	1002019
Description:	Frame, Large, Rectangular Profile Details
Scale: 1:10	Drawing No: 1002019 B

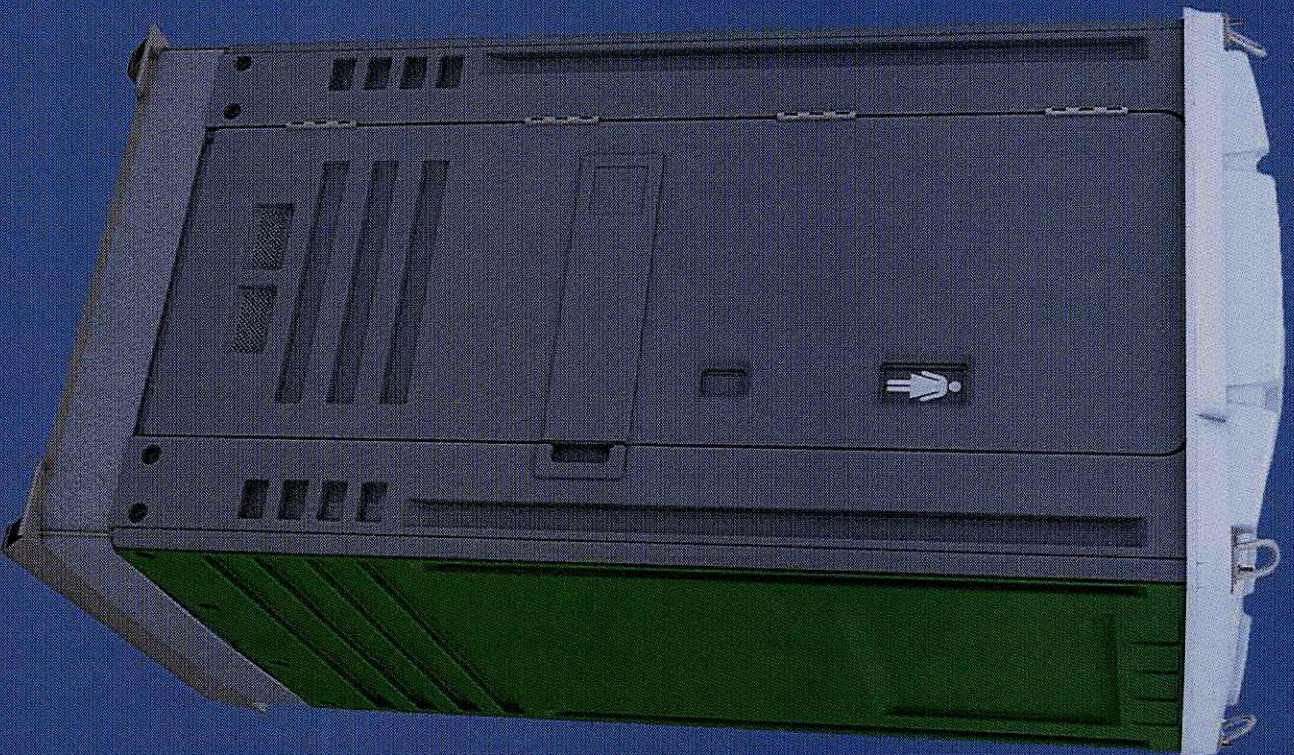
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MERLIN ULTRA

HIGH CLASS DURABILITY



MERLIN ULTRA PORTABLE TOILET - GREEN

Want the longest lasting portable toilet for events and construction? You want the Merlin Ultra.

The Ultra is built tough, from the ground up. It has a tried-and-tested, durable construction, featuring galvanised steel skid and twin sheeted walls. And even its lifting lugs are tougher. Made from galvanised steel, they actually form part of the frame (they're connected to internal steel rods linked to the skid base), and they're engineer certified to meet Work Cover requirements.

It's also pleasant to use and easy to maintain, with an easy-clean, ergonomic interior, and a built-in fresh water unit for hand-washing and flushing, not to mention large waste and water tank storage units.

Of course, we haven't forgotten looks. The Ultra was designed with an attractive modern aesthetic, so it's at home at any event or construction site — even Ladies Day at the races!

FEATURES & SPECIFICATIONS

FEATURES

- Heavy duty skid base designed to withstand the toughest treatment
- Large waste tank (390L) and water holding tank (110L)
- Aesthetically attractive & highly durable
- UV resistant twin sheet walls
- Hinged one piece polypropylene bowl with stainless steel water seal flap
- Hinged seat assembly for easy access to waste tank
- Meets Australian Work Cover regulations
- Heavy duty quality marine pump
- Non slip floor designed to self-drain

SPECIFICATIONS

WASTE TANK: CAPACITY 390 LITRES OR 800 USES

FRESH WATER TANK: 110 LITRES

SKID BASE: INCORPORATES DRAG HOOKS

LIFTING LUGS: STANDARD

REAR EVACUATION POINT: ON REQUEST

TRAILER MOUNTED: ON REQUEST

DIMENSIONS: HEIGHT 2295MM, WIDTH 1115MM, DEPTH 1175MM

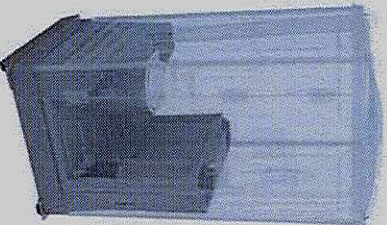
DOOR OPENING: 620MM

ALL MEASUREMENTS ARE APPROXIMATIONS ONLY AND ARE SUBJECT TO VARIATION.

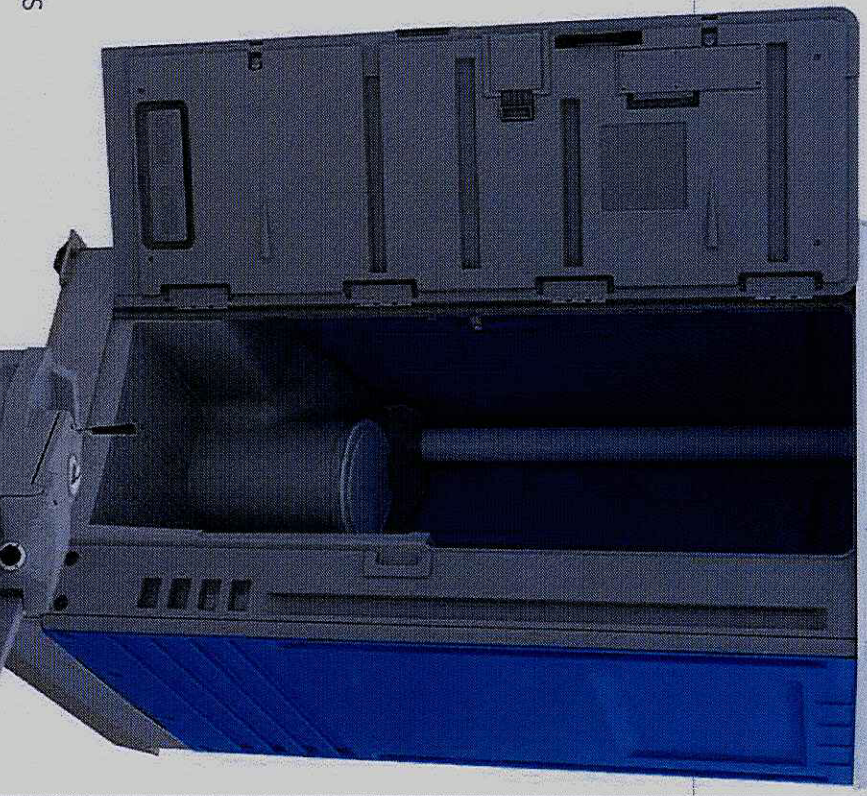
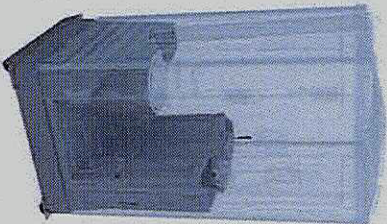
INTERNAL OPTIONS

The Merlin Ultra features a range of internal unit options to suit your needs

MERLIN **ULTRA** - FOOT OPERATED



MERLIN **ULTRA** - HAND OPERATED



MERLIN **ULTRA** -
HAND OPERATED



WALL
COLOURS



ROOF
COLOUR

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