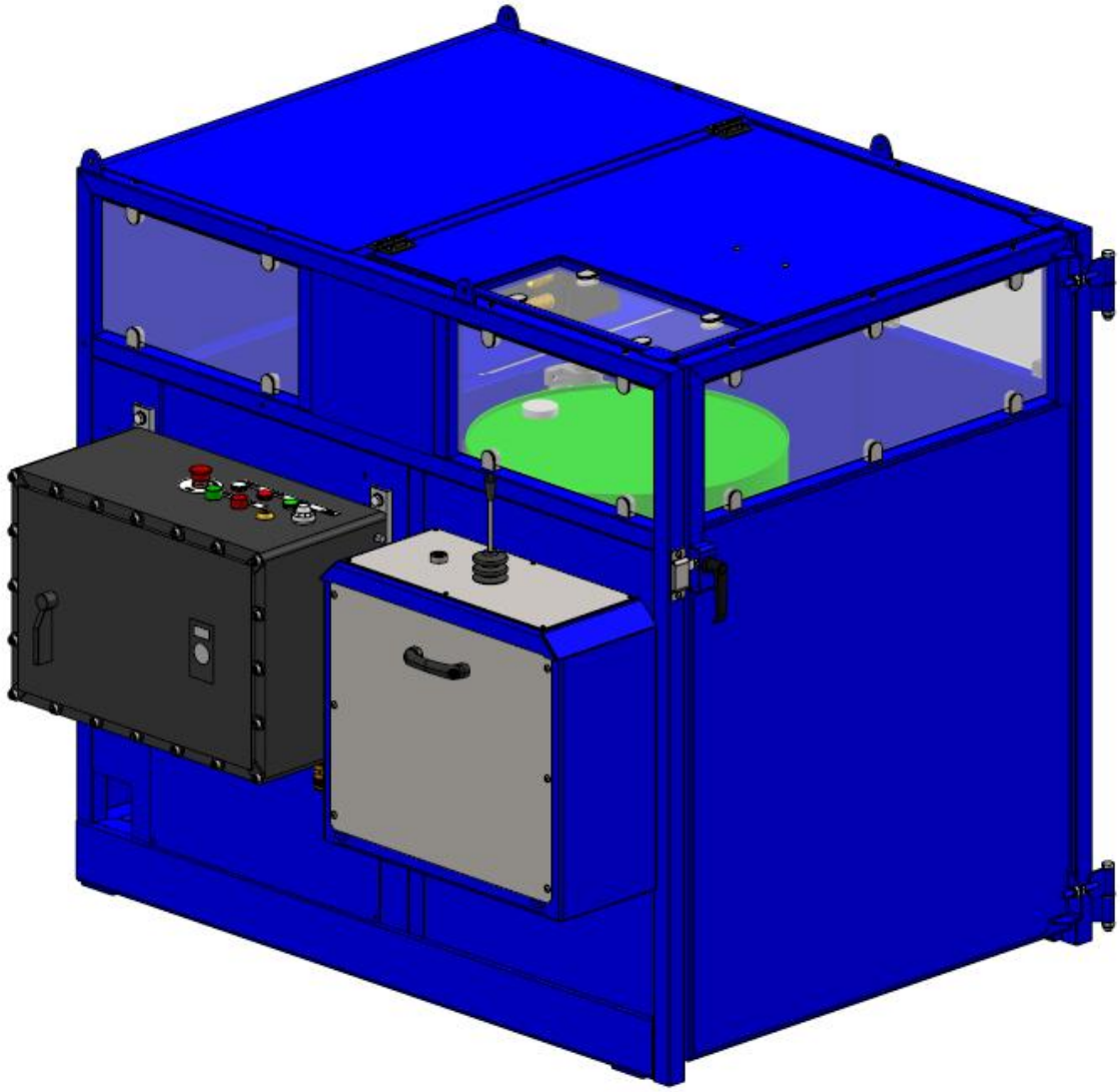
Bespoke Handling Equipment

Operating Instructions



DME02-230V-25RPM-Ex

ATEX Rated Electric Horizontal Drum Mixer

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Section I – Correct Use and Application

Only operation manuals written in English are the original instructions, versions provided in any other language then become a translation of the original instructions.

General

The unit described in the present operating instructions must be used, operated and serviced in accordance with the present instructions. Any other type of use is beyond the scope of application and can result in damage or injury to personnel, the unit or property. The unit described in the present operating instructions complies with all relevant directives and standards.

Foreseeable Misuse of the Unit

Personnel must take care when operating the unit. The following actions must be adhered to:

- The maximum safe working load (SWL) must not be exceeded.
- Do not stand or ride on the unit.
- Loads must be undamaged.
- Do not stand underneath a raised load or within the confines of the unit during operation.
- The load must be lifted and/or mixed by the attachment provided.
- Do not alter the unit specification from original supply.
- Do not disable, remove or adjust safety mechanisms or switches.
- Observe all instruction decals applied to the unit.
- Do not leave the unit in direct sunlight.
- The manufacturer shall not be held liable in case of faults or accidents due to negligence, incapacity, installation by unqualified personnel or improper use.

Approved Application Conditions

- Operation in dry industrial and commercial environments.
- Permissible temperature range 5°C to 40°C.
- Lighting of at least 300 Lux.
- Altitudes not exceeding 2000m.
- Operation only on secure, level surfaces with sufficient capacity.
- Operation in accordance with guidance stated within the operating instructions.
- The unit must be maintained in accordance with the maintenance schedule stated within the operating instructions.
- Appropriate personal protective equipment, PPE, must be worn at all times.

Proprietor Responsibilities

For the purposes of the present operating instructions the "proprietor" is defined as any natural or legal person who either uses the unit themselves, or on whose behalf it is used. In special cases (e.g. leasing or renting) the proprietor is considered the person who, in accordance with existing contractual agreements between the owner and user of the unit, is charged with operational duties. The proprietor must ensure that the unit is used only for the purpose for which it is intended and that there is no danger to life or limb of the user and third parties. Furthermore, accident prevention regulations, safety regulations and operating, maintenance and repair guidelines must be followed. The proprietor must ensure that all users have read and understood these operating instructions. The proprietor must perform an onsite risk assessment before the unit is put in to service.

IMPORTANT
Failure to comply with the operating instructions shall invalidate the warranty. The same applies if improper work is carried out on the unit by the proprietor or third parties without the permission of the manufacturer.

Adding Attachments and/or Accessories

The mounting or installation of additional equipment which affects or enhances the performance of the unit requires written permission of the manufacturer. Local authority approval may also need to be obtained. Local authority approval does not however constitute the manufacturer's approval. An onsite risk assessment must then be carried out.

WARNING - ANY UNAUTHORISED MODIFICATIONS OR ADDITIONS TO THE UNIT SHALL INVALIDATE THE WARRANTY AND STS SHALL NOT BE LIABLE.

Safety Regulations for the Operation of the Unit

Operator authorisation
The unit may only be used by suitably trained personnel, who have demonstrated to the proprietor, or their representative that they can operate the unit safely and in accordance with the operating instructions.

Operator's rights, obligations and responsibilities
The operator must be informed of their duties and responsibilities and be instructed in the operation of the unit and shall be familiar with the operating instructions. Operators must be provided the appropriate PPE as mentioned in the 'Approved Application Conditions' section of this manual.

Unauthorised use of unit
The operator is responsible for the unit during the time it is in use. The operator must prevent unauthorised persons from operating the unit.

Damage and faults
The proprietor must be immediately informed of any damage or faults to the unit or attachment. Units which are unsafe for operation must be quarantined until faults have been rectified and the unit deemed safe for operation.

Servicing and repairs
All unit parts and consumables are available from STS. The unit must be fitted with original STS parts and consumables unless otherwise stated. Any deviation from non-original parts and consumables may result in injury to personnel or damage to the unit and will invalidate the warranty. The operator must never disable, remove or adjust safety mechanisms or switches. The unit should only be serviced and repaired by a competent individual as selected by the company the equipment is intended for use with.

Safety devices and warning decals
Safety devices, warning decals and warning instructions in the operating instructions and on the unit must be strictly observed.

Hazardous area of the unit
The hazardous area is defined as the area in which a person is at risk due to the unit itself or movement of the unit and/or load. This also includes areas which can be reached by falling loads. The operator must:

- Instruct unauthorised personnel to leave the hazardous area.
- Give a warning signal with plenty of time for personnel to leave.
- Stop all operations if unauthorised personnel are within or enter the hazardous area.

Type of loads
The operator must make sure that the load is in a satisfactory condition. Loads must always be positioned safely and carefully. Use suitable precautions to prevent parts of the load and/or their contents from falling or spilling.

Cleaning
Cleaning of the unit depends on the environment that the unit is used in. It is recommended that the unit be cleaned daily if the unit comes into contact with aggressive substances such as chemicals, fertilizers, salt, etc. It is recommended to use detergent and a damp cloth to clean the body of the unit. Do not use flammable liquids to clean the unit. Do not clean the unit with pressurised water. If the unit is rated for Ex environments, the unit must be kept clean and dust free.

Personal protective equipment (PPE)
PPE must be worn at all times. A minimum of safety shoes must be worn while operating the unit. Safety shoes, safety glasses, protective gloves, hearing protection and protective overalls are to be worn when carrying out servicing, repairs and maintenance. When operating overhead loads, a hard hat must be worn. End user health and safety procedures and best practices should be followed in addition to the above recommendations.

Consumables and Parts

Environmental hazards
Parts and oils must be disposed of in accordance with the relevant environmental protection regulations.

Hydraulic hoses
Brittle hydraulic hose lines cause accidents. Hairline cracks in the hydraulic lines can cause injury and infection. The hydraulic hoses should only be serviced or replaced by a competent individual as selected by the company the equipment is intended for use with. It is the responsibility of the proprietor to maintain the hydraulic hoses.

NOTE: For more consumable information refer to 'Section IV – Unit Maintenance, Troubleshooting and Consumables'.

Lifting the Unit

Lifting the unit safely
In order to raise the unit safely, including off a pallet, proceed as follows:

- The unit must be on a level surface to prevent it from moving accidently.
- The lifting gear must only be secured to the points designated for this purpose.
- Always use lifting gear with sufficient capacity.
- The unit should only be handled by qualified personnel who are trained in using lifting slings and tools.
- Do not walk into or stand under a raised unit.
- If necessary, secure the unit with guide ropes to aid when lifting the unit.

Jacking the unit safely
In order to jack up the unit safely, proceed as follows:

- The unit must be on a level surface to prevent it from moving accidently.
- Always use a jack with sufficient capacity.
- The unit should only be handled by qualified personnel who are trained in using lifting slings and tools.
- When jacking up the unit, take appropriate measures to prevent it from moving, slipping or tipping over (e.g. wedges, wooden blocks, strops)

WARNING - IMPROPER LIFTING CAN RESULT IN SERIOUS ACCIDENTS

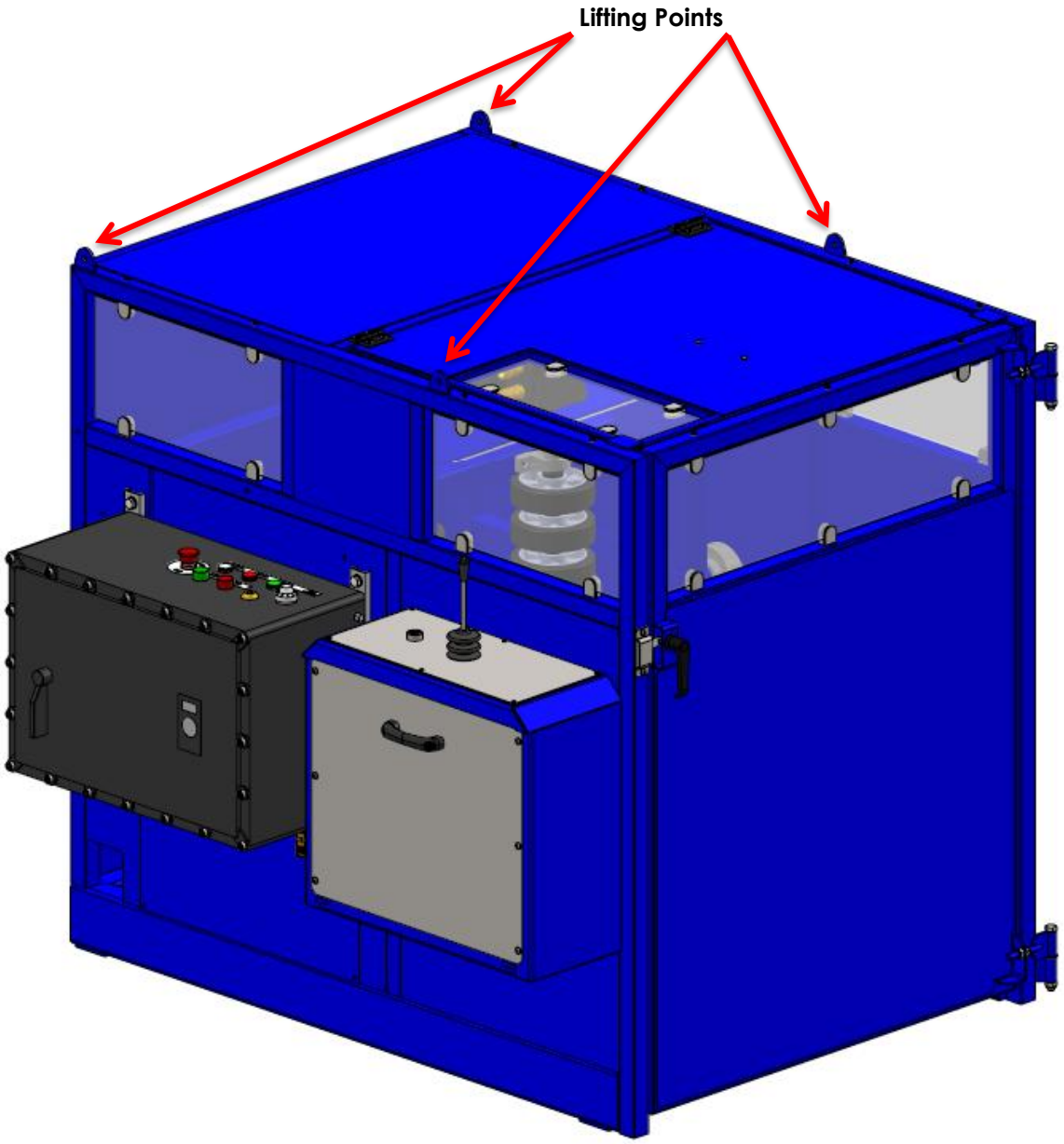
Securing the unit for transport
In order to transport the unit safely, proceed as follows:

- The unit must be securely fastened when transported on a lorry/trailer.
- The lorry/trailer must have fastening rings.
- Use wedges to prevent the unit from moving.
- Use only tension belts or tie-down straps with sufficient strength.

WARNING - IMPROPER FASTENING OF THE UNIT DURING TRANSPORT CAN RESULT IN SERIOUS ACCIDENTS

IMPORTANT
After use, remove supplied lifting strop(s) and/or dee shackles and dispose.

Lifting Points



Section II – Unit Description

The DME02-230V-25RPM-Ex drum mixer is designed for use on flat and level floor.

The intended purpose of this unit is to accept, secure and rotate drums. The rotational speed can be adjusted by the operator to suit the application. The unit is designed to accept steel and plastic drums of between 200-220 litres. The drums must have a maximum diameter of between 560mm-600mm and can be up to 1040mm in height. The drum mixer will output a maximum rotational speed of 25 RPM.

An emergency stop button has been incorporated which will rapidly cut out all the electrical functions when pressed. The drum mixer will not start mixing unless the gate and lid are closed, if the gate is opened whilst the unit is operating then the mixer will stop to ensure the safety of the operator and other personnel. The hydraulic system will also be deactivated if the door is open.

The unit has been designed with smooth geometry including rounded edges. The rotating head of the unit is fully enclosed in guarding which is compliant with BS EN 13857:2019 to ensure safe handling of the mixer. Ergonomic controls ensure fatigue-free operation. For electric versions, a digital timer displays the remaining mixing time which can be set by the operator.

THE SAFE WORKING LOAD (SWL) OF THIS UNIT IS 300kg

Ex CERTIFICATION

This equipment has been certified by STS for use in Zone 1, 2, 21 and 22 areas for protection under constructional safety “c” and control of ignition source “b”.

Ⓔx II 2 G D
Ex db ia h IIB T4 Gb
Ex h tb IIIB T135°C Db
5°C ≤ Ta ≤ 40°C

IMPORTANT

Consideration must be taken by the end user to ensure safety and conformity within Ex zones between the unit and its surrounding environment including any interfaces which may occur.

STS recommend using conductive or antistatic drums with their mixer. Drum selection is the responsibility of the end user.

Note: Assembly contains individually certified components

Compatible Drum Types

Open Steel Drum | Closed Top Steel Drum | Plastic Mouser Drum

NOTE: STS recommend using conductive or antistatic drums with their mixer. Drum selection is the responsibility of the end user.

Section III – Unit Operation

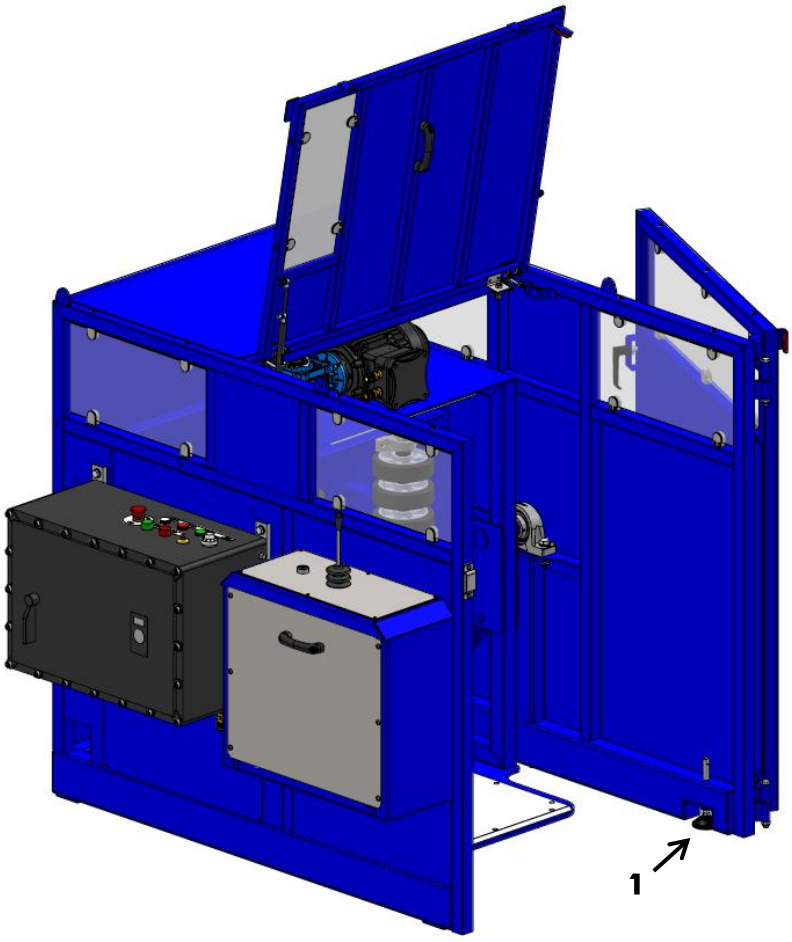
IMPORTANT
Before using this unit, operators must read and understand this instruction manual. Failure to observe the instructions in this manual will invalidate the warranty.

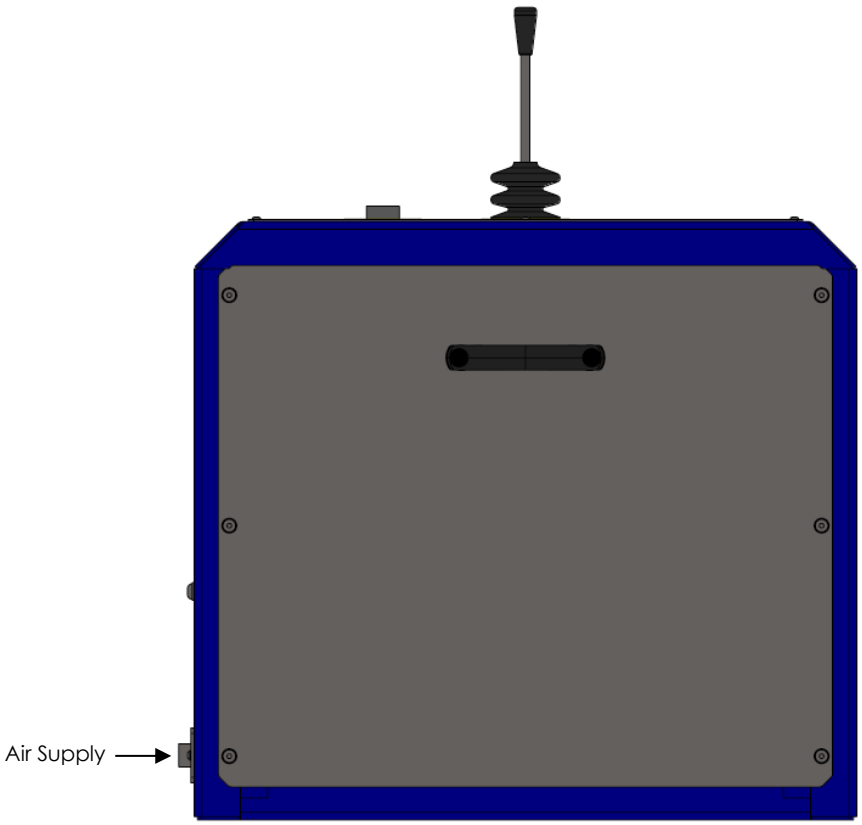
NOTE: Personal Protective Equipment (PPE) must be worn at all times, see 'Section I – Correct Use and Application' for more information.

Positioning and Installing the Mixer

- Position the mixing unit in a position close to a mains power supply and ensure that the gates can be opened fully for drum loading.
- Ensure lifting strops are removed after transport and before putting the unit into operation.
- The unit is fitted with one jacking screw foot **(1)**. Screw down the foot so that the mixer is stable across all four corners. The lock nut can then be tightened to lock the screw in place.
- The 3 stainless steel feet act as a grounding path to the floor. If the mixer is on a rubber mat for example and is isolated, a separate earthing clamp **must** be fitted to steel point of the frame.

This equipment must only be installed by competent individuals in accordance with BS EN 60079-14/17 ensuring that the power cable is terminated correctly.





- The unit also requires a dry and clean air supply; which should be connected to the unit via a flexible air hose of minimum 12.5mm bore fitted with a quick connect coupling. The unit will operate with a maximum pressure of 9 BAR, a recommended minimum of 6 BAR and a recommended minimum flow rate of 400 litres per minute.

- The unit is fitted with a 3/8" BSP female fitting, as shown above side of the unit. To allow fitting of the quick connect coupling, a 3/8" BSP male connector is required.

- The unit is now ready to use.

- The unit requires an airline to be connected to rotate a drum from vertical to horizontal, and vice versa.

ISOLATE AIR SUPPLY WHEN NOT IN USE

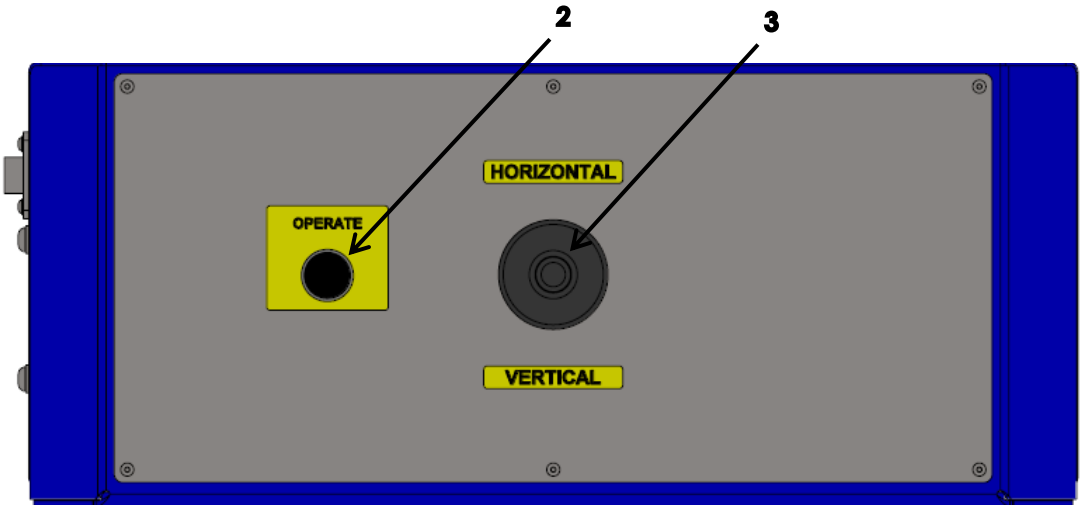
Pre-start Inspection

Before operating the drum mixer:

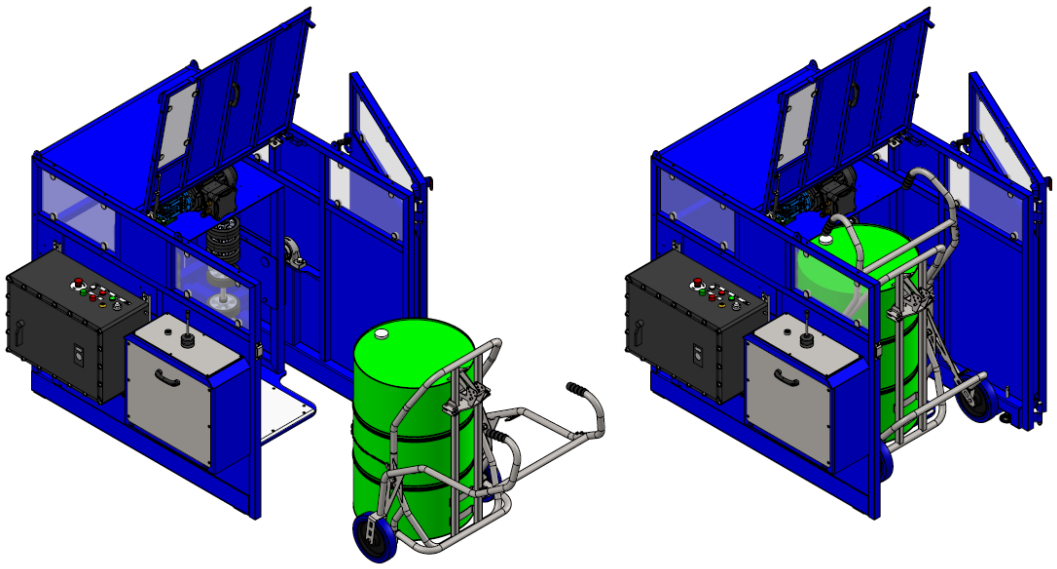
- Check the whole of the mixer for signs of damage.
- Check that the markings and labels are present, clean and legible.
- Check the mixing wheels and hydraulic tilt rams for wear and damage.
- Ensure the conductive mixing wheels are clean as these are used as an earth path.
- Visually inspect the control box and ensure it is closed with all bolts fitted.

Loading the Mixer

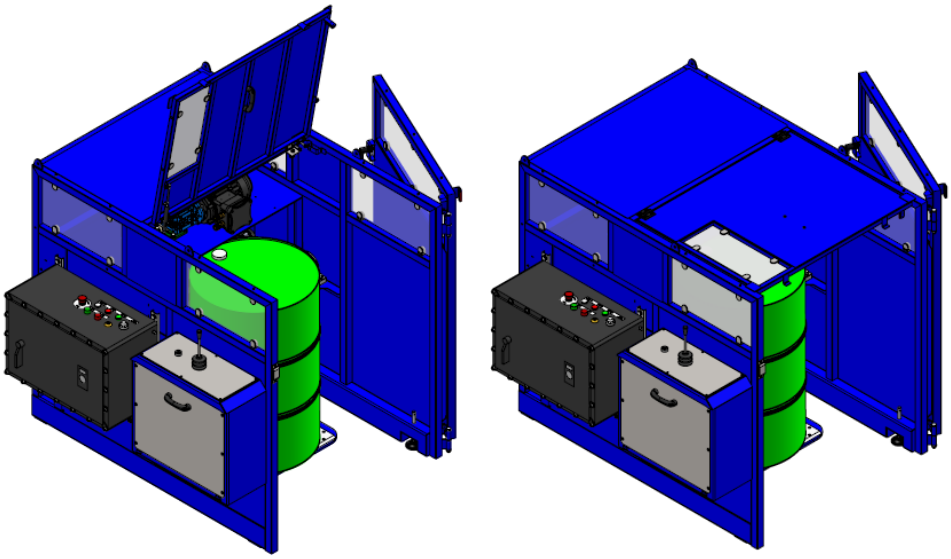
Pneumatic Hydraulic Controls



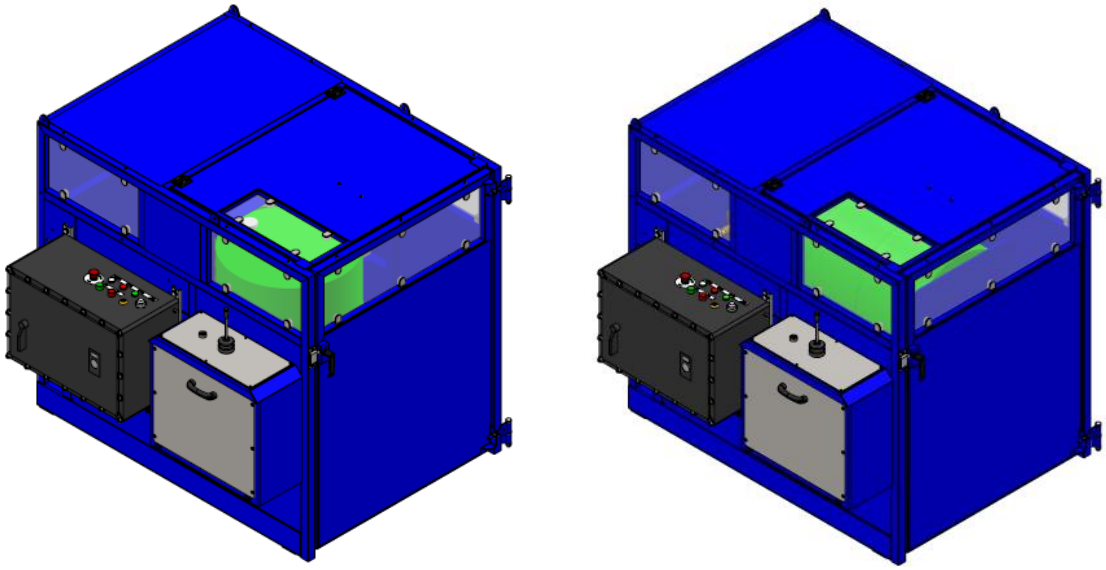
- The mixer can be loaded with either a DTC01 drum trolley (as shown below) or a DTP08 counterbalance drum lifter.
- Ensure the mixer head is in the vertical orientation by pushing and holding the operate button **(2)** whilst simultaneously pushing the lever **(3)** towards the vertical label. **Please note, the hydraulic system will be deactivated if the door is open.**
- Open the door and the lid to allow access to the mixer head, ensuring that the mixer head is in the vertical position.
- Lift the drum using the drum trolley, ensuring that the drum catch is as high as possible when connecting to the drum to achieve maximum lift height. Load the drum onto the nylon baseplate.



- Disconnect the drum trolley from the drum, close the lid, then closed the door.

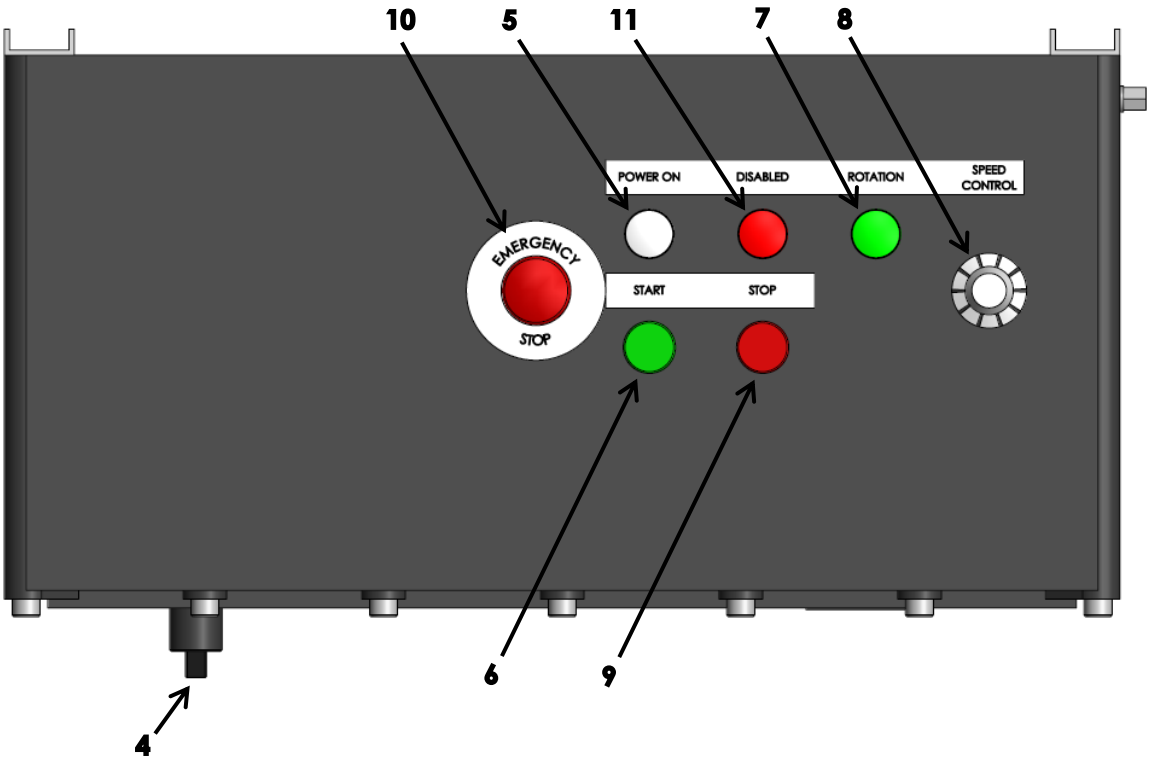


- Once the door is locked, the mixer is ready to be rotated to the horizontal position.



Starting the Mixer

Electrical Controls



- With the drum loaded and the door and lid closed, turn the control box isolator switch on **(4)**. The 'Power On' white light **(5)** will be illuminated.
- Rotate the mixing head to the horizontal position by pushing and holding the operate button **(3)** and holding the lever **(4)** towards the horizontal direction. The disabled light **(11)** will go out.
- Press the green start button on the control panel **(6)** on the main panel to start the mixing cycle, the 'Rotation' light **(7)** will illuminate during operation.
- The Speed Control dial **(8)** controls the mixing speed. The dial rotates a full turn for each of the 10 speed increments.
- To stop the mixing process, press the red stop button **(9)**.
- If the door or lid is opened or the emergency stop button **(10)** is pressed, the disabled light **(11)** will illuminate. The emergency stop button will stop all powered movement when pressed, to reset, turn anti-clockwise.

WARNING
Only qualified personnel should open the control box enclosure and it must never be opened in an Ex rated area before power is isolated to the unit, power must be isolated before it reaches the control box and not just by turning the power switch **(4)** to off. Wait at least 30 minutes after isolating power before opening the control box.

Unloading the Mixer

- To unload the mixer, once mixing has finished, rotate the mixing head to the vertical position.
- Once the drum is in the vertical orientation, open the door and the lid to allow access to the mixer head, then remove the drum.

Section IV – Unit Maintenance, Troubleshooting and Consumables

Maintenance Checklist

The follow servicing checklist indicates the operations to be performed and the respective intervals to be observed. Maintenance intervals are defined as:

W = Every 50 service hours, at least weekly
A = Every 1000 service hours, at least annually
● = Standard maintenance interval

During the run-in period – after approx. 100 service hours – the owner must check the wheel nuts/bolts and re-tighten if necessary.

NOTE: Personal Protective Equipment (PPE) must be worn at all times, see 'Section I – Correct Use and Application' for more information.

NOTE: Maintenance must only be performed by a suitably competent individual as decided by the company the equipment is intended for use with. All electrical maintenance must only be performed by qualified personnel.

Chassis and Superstructure		**W**	**A**
1	Check doors and/or covers for damage	●	●
2	Check labels are legible and complete	●	●
3	Check chassis and fixings connections for damage		●
4	Check screw threads on mixer head for damage, re-grease if necessary		●
5	Check gearbox, shaft and head (load handler) for wear and damage		●
6	Check shaft nut for signs of movement	●	●

Hydraulic Operations		**W**	**A**
1	Test hydraulic system	●	●
2	Check hydraulic oil and top up, if necessary, to the line or middle of the sight glass (see 'Consumables' for oil type and instructions)	●	●
3	Check that hydraulic ports, hose and pipe lines are secure, check for leaks and damage	●	●
4	Check cylinders and piston rods for damage and leaks, make sure they are secure		●
5	Test "hydraulic" controls and make sure the labels are present, legible and complete		●
6	Replace hydraulic oil (see 'Consumables' for oil type and instructions)		●
7	Check hydraulic oil for condensed water, replace if necessary (see 'Consumables' for oil type and instructions)		●

Electrical System (DME01/02/04 and DME01/02/04-Ex Model Only)		W	A
1	Test warning and safety devices in accordance with operating instructions	●	●
2	Test unit controls are functioning and in particular that the stop/emergency stop is functioning quickly and effectively	●	●
3	Visually inspect all cables, glands and Electrical components for damage/degradation	●	●
4	The inspection and maintenance of category 2G, 2D equipment should be executed in compliance with EN 60079-17 standards. (WARNING: Ex Enclosure must have power isolated before it reaches the control box and not just by turning the power switch to off)		●

Ex Checks (if applicable, -Ex models only)		W	A
1	Check wheels for dirt and grime, clean if required	●	●
2	Clean unit, ensure dirt and dust free. Use damp or anti-static cloth	●	●
3	Check unit for any damaged painted surfaces. Touch up, if necessary, with an approved touch up paint	●	●
4	Check continuity between all bare metal (non-powder coated) conductive parts of the unit, all parts to have a resistance of less than 1 Megaohm to the earthing chains		●
5	Check control panel window cement for discolouration/degradation	●	●

OPERATORS SHOULD REPORT ANY DEFECTS ON THE UNIT TO THE APPROPRIATE PERSON, IF IN ANY DOUBT OR YOU NEED REPLACEMENT PARTS, PLEASE CONTACT THE STS TECHNICAL SUPPORT LINE.

Troubleshooting

When trying to locate a fault, proceed in the order shown in the table.

NOTE: Troubleshooting must only be performed by a suitably competent individual as decided by the company the equipment is intended for use with.

If, after carrying out the following remedial action, the unit cannot be restored to operation, contact the manufacturer's technical helpline. In order for customer services to react quickly and specifically to the fault, the following information is essential:

- Unit serial number
- Unit product name
- Description of error
- Current location / Company

Unit does not turn on

Possible Cause	Action
Emergency stop engaged	Reset the emergency stop button
Isolator set to 'Off'	Set isolator switch to 'On'
Unit unplugged	Check connection to power supply

Mixer does not rotate to horizontal or vertical

Possible Cause	Action
The load exceeds the SWL	Reduce mass of load
Airline not connected	Connect airline

Mixer does not rotate

Possible Cause	Action
The load exceeds the SWL	Reduce mass of load
Emergency stop engaged	Reset emergency stop button
Door and lid open	Close door and lid
Mixer head not fully horizontal	Check head is horizontal, operate the hydraulics to raise head if not.

Other

Possible Cause	Action
Rocking or movement of the frame	Adjust jacking screw foot
Bouncing of the drum	Check drum are in good condition and round. Reduce speed mixing speed

Consumables

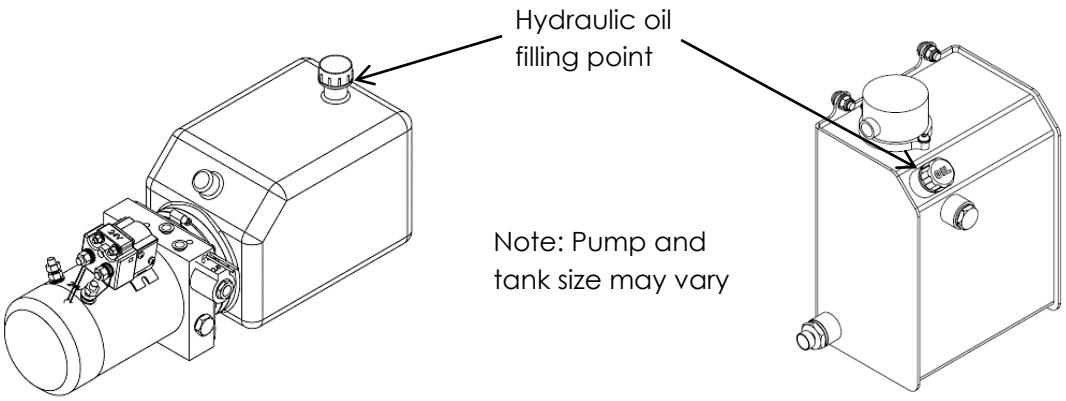
All unit consumables are available from STS. The unit must be fitted with original STS consumables unless otherwise stated. Any deviation from original consumables may result in injury to personnel or damage to the unit and will invalidate the warranty.

Touch Up Paint

Approved touch up paint should be used on any damaged painted surfaces, the surface should be rust free before painting with a non-aluminium based paint. STS use RAL 5010 for their blue paint.

Oil Replacement

STS stackers are factory-equipped with 32-grade oil for the hydraulic system. It is recommended to use as stated or an equivalent when replacing hydraulic oil.



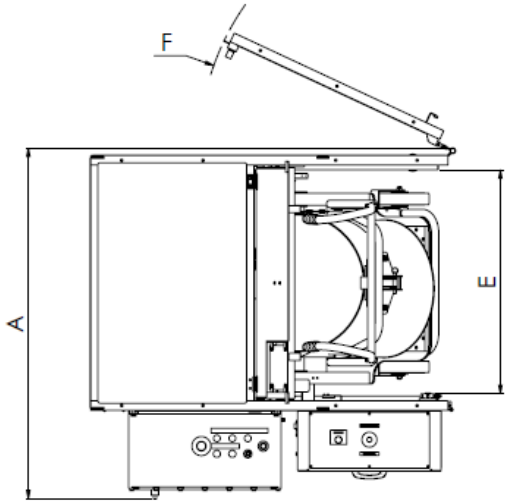
When replacing oil, fill oil to the line or to the middle of the sight glass. Operate all unit functions to their full extents. Return unit head to its lowest position and recheck the oil level, top up if required.

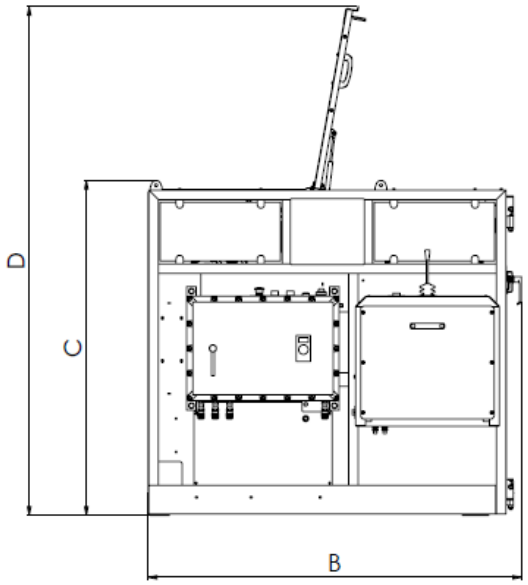
Polycarbonate Guarding Replacement

The polycarbonate guarding should be replaced if damaged. These are available from STS. When replacing, there is one bolt per guard that acts to earth the guard to the chassis. Ensure this is refitted.

Section V - Technical Specification

General Arrangement





Designation	Description	Dimension (mm)
A	Maximum width	1500
B	Maximum length	1600
C	Unit height	1406
D	Unit height (Lid open)	2136
E	Loading access	900
F	Door opening Radius	1064

NOTE: ALL DIMENSIONS +/- 10MM.

SWL. *300kg*
System Voltage. 230V
Max Noise Level. *79dbA*

Net Mass. 606kg
Nominal Power. *0.75kW*

Section VI - Decommissioning the Unit

If the unit is to be out of service for more than a month, e.g. for commercial reasons, it must be stored in a frost-free and dry room. All necessary measures must be taken before, during and after decommissioning as described hereafter. Decommissioning and recommissioning must only be performed by a suitably competent individual as decided by the company the equipment is intended for use with.

NOTE: Personal Protective Equipment (PPE) must be worn at all times, see 'Section I – Correct Use and Application' for more information.

Prior to Decommissioning

- Thoroughly clean the unit.
- Check the hydraulic oil and replenish if necessary (if applicable).
- Apply a thin layer of oil or grease to any non-painted mechanical components.

Final Decommissioning and Disposal

Final decommissioning or disposal of the unit must be performed in accordance with the regulations of the country of use. In particular, regulations governing the disposal of batteries, fuels and electronic and electrical systems must be observed. The unit must only be disassembled by trained personnel.

Recommissioning

- Reconnect the battery, first ensuring that the battery undamaged (if applicable).
- Follow the annual servicing check list located in 'Maintenance Checklist'.
- Follow the pre-start checklist located in 'Pre-start Inspections'.

Safety Tests to be Performed at Intervals and After Unusual Incidents.

Perform a safety check in accordance with national regulations. The unit must be inspected at least annually or after any unusual event by a qualified inspector. The inspector shall assess the condition of the unit from purely a safety viewpoint, without regard to operational or economic circumstances.

For further help contact STS:

Technical Support Line: +44 (0) 1736 851050

In the interest of all concerned it is essential that equipment of our manufacture is used only for the purposes for which it has been designed and it must be used in accordance with the instructions which are supplied.