Series 320 ePost Wheelbase Adjustment

Operation and Maintenance

100-307-570 A

be certain.

MTS Trademark Information

Proprietary Software

Software Verification and Validation

MTS software is developed using established quality practices in accordance with the requirements detailed in the ISO 9001 standards. Because MTS-authored software is delivered in binary format, it is not user accessible. This software will not change over time. Many releases are written to be backwards compatible, creating another form of verification. The status and validity of MTS's operating software is also checked during system verification and routine calibration of MTS hardware. These controlled calibration processes compare the final test results after statistical analysis against the predicted response of the calibration standards. With these established methods, MTS assures its customers that MTS products meet MTS's exacting quality standards when initially installed and will continue to perform as intended over time.

Manual Part Number	Publication Date
100-307-570 A (English)	March 2015

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Technical Support

How to Get Technical Support

Start with your manuals

The manuals supplied by MTS provide most of the information you need to use and maintain your equipment. If your equipment includes software, look for online help and README files that contain additional product information.

Technical support methods

MTS provides a full range of support services after your system is installed. If you have any questions about a system or product, contact Technical Support in one of the following ways.

Type of Support	Details
Web site	www.mts.com > Contact Us (upper-right corner) > In the Subject field, choose To escalate a problem; Problem Submittal Form
E-mail	Worldwide: tech.support@mts.com Europe: techsupport.europe@mts.com
Telephone	Worldwide: 1 800 328 2255 - toll free in U.S.; +1 952 937 4000 - outside U.S. Europe: +800 81002 222, International toll free in Europe

Outside the U.S.

For technical support outside the United States, contact your local sales and service office. For a list of worldwide sales and service locations and contact information, use the Global MTS link at the MTS web site:

www.mts.com > Global Presence > Choose a Region

Before You Contact MTS

MTS can help you more efficiently if you have the following information available when you contact us for support.

Know your site number and system number

The site number contains your company number and identifies your equipment type (such as material testing or simulation). The number is typically written on a label on your equipment before the system leaves MTS. If you do not know your MTS site number, contact your sales engineer.

Example site number: 571167

When you have more than one MTS system, the system job number identifies your system. You can find your job number in your order paperwork.

Example system number: US1.42460

Know information from prior technical assistance

If you have contacted MTS about this problem before, we can recall your file based on the:

- MTS case number
- Name of the person who helped you

Identify the problem

Describe the problem and know the answers to the following questions:

- How long and how often has the problem occurred?
- Can you reproduce the problem?
- Were any hardware or software changes made to the system before the problem started?
- What are the equipment model numbers?
- What is the controller model (if applicable)?
- What is the system configuration?

Know relevant computer information

For a computer problem, have the following information available:

- Manufacturer's name and model number
- Operating software type and service patch information
- Amount of system memory
- Amount of free space on the hard drive where the application resides
- Current status of hard-drive fragmentation
- Connection status to a corporate network

Know relevant software information

For software application problems, have the following information available:

- The software application's name, version number, build number, and (if available) software patch number. This information can typically be found in the About selection in the Help menu.
- The names of other applications on your computer, such as:
    - Anti-virus software
    - Screen savers
    - Keyboard enhancers
    - Print spoolers
    - Messaging applications

If You Contact MTS by Phone

A Call Center agent registers your call before connecting you with a technical support specialist. The agent asks you for your:

- Site number
- Email address
- Name
- Company name
- Company address
- Phone number where you can be reached

If your issue has a case number, please provide that number. A new issue will be assigned a unique case number.

Identify system type

To enable the Call Center agent to connect you with the most qualified technical support specialist available, identify your system as one of the following types:

- Electrodynamic material test system
- Electromechanical material test system
- Hydromechanical material test system
- Vehicle test system
- Vehicle component test system
- Aero test system

Be prepared to troubleshoot

Prepare to perform troubleshooting while on the phone:

- Call from a telephone close to the system so that you can implement suggestions made over the phone.
- Have the original operating and application software media available.
- If you are not familiar with all aspects of the equipment operation, have an experienced user nearby to assist you.

Write down relevant information

In case Technical Support must call you:

- Verify the case number.
- Record the name of the person who helped you.
- Write down any specific instructions.

After you call

MTS logs and tracks all calls to ensure that you receive assistance for your problem or request. If you have questions about the status of your problem or have additional information to report, please contact Technical Support again and provide your original case number.

Problem Submittal Form in MTS Manuals

Use the Problem Submittal Form to communicate problems with your software, hardware, manuals, or service that are not resolved to your satisfaction through the technical support process. The form includes check boxes that allow you to indicate the urgency of your problem and your expectation of an acceptable response time. We guarantee a timely response—your feedback is important to us.

You can access the Problem Submittal Form at www.mts.com > Contact Us (upper-right corner) > In the **Subject** field, choose **To escalate a problem; Problem Submittal Form**

Preface

Before You Begin

Safety first!

Before you use your MTS product or system, read and understand the safety information provided with your system. Improper installation, operation, or maintenance can result in hazardous conditions that can cause severe personal injury or death, or damage to your equipment and specimen. Again, read and understand the safety information provided with your system before you continue. It is very important that you remain aware of hazards that apply to your system.

Other MTS manuals

In addition to this manual, you may receive additional manuals in paper or electronic form.

You may also receive an MTS System Documentation CD. It contains an electronic copy of the manuals that pertain to your test system.

Controller and application software manuals are typically included on the software CD distribution disc(s).

Documentation Conventions

The following paragraphs describe some of the conventions that are used in your MTS manuals.

Hazard conventions

Hazard notices may be embedded in this manual. These notices contain safety information that is specific to the activity to be performed. Hazard notices immediately precede the step or procedure that may lead to an associated hazard. Read all hazard notices carefully and follow all directions and recommendations. Three different levels of hazard notices may appear in your manuals. Following are examples of all three levels. (for general safety information, see the safety information provided with your system.)

Danger: Danger notices indicate the presence of a hazard with a high level of risk which, if ignored, will result in death, severe personal injury, or substantial property damage.

Warning: Warning notices indicate the presence of a hazard with a medium level of risk which, if ignored, can result in death, severe personal injury, or substantial property damage.

Caution: Caution notices indicate the presence of a hazard with a low level of risk which, if ignored, could cause moderate or minor personal injury or equipment damage, or could endanger test integrity.

Other special text conventions

	**Important:** Important notices provide information about your system that is essential to its proper function. While not safety-related, if the important information is ignored, test results may not be reliable, or your system may not operate properly.
	**Note:** Notes provide additional information about operating your system or highlight easily overlooked information.
	**Recommended:** Recommended notes provide a suggested way to accomplish a task based on what MTS has found to be most effective.
	**Tip:** Tips provide helpful information or a hint about how to most efficiently accomplish a task.

Example: Examples show specific scenarios relating to your product and appear with a shaded background.

Special terms

The first occurrence of special terms is shown in italics.

Illustrations

Illustrations appear in this manual to clarify text. They are examples only and do not necessarily represent your actual system configuration, test application, or software.

Electronic manual conventions

This manual is available as an electronic document in the Portable Document File (PDF) format. It can be viewed on any computer that has Adobe Acrobat Reader installed.

Hypertext links

The electronic document has many hypertext links displayed in a blue font. All blue words in the body text, along with all contents entries and index page numbers, are hypertext links. When you click a hypertext link, the application jumps to the corresponding topic.

Safety

Safety Overview

In this chapter, the safety features of the wheel base adjustment system are described. In order to ensure the safety of the operator, the following sections should be studied carefully.

General Safety Requirements

Warning:

Though the installation meets the fundamental safety and health requirements, hazardous situations may still occur.

Remain alert towards hazardous situations.

Be especially careful with loosely hanging clothing and/or body parts.

Warning:

Always be aware of moving parts.

Failure to do so may lead to permanents injuries or death.

Stay clear of the system while it is being operated.

Despite taking precautionary safety measures, there are still a number of situations remaining that call for special attention. Below, there is a list of a number of issues to which must be observed in order to ensure the safety of the operator. The supplier is neither liable, nor responsible for accidents occurring due to a failure to follow safety guidelines or resulting from use of the equipment for any reason other than its designed purpose.

- Each and every person who is to work on or with this machine must familiarize him or herself with the content of this user manual.
- It is prohibited to use the installation for any purpose other than the one specified by the manufacturer. Unauthorized or improper use of the equipment may result in increased risk of injure or machine failure.
- Immediately replace failing parts or components, leakages, etc.
- Avoid overcharging and improper use of this machine.
- Local legally binding work and safety regulations and instructions must always be obeyed. This also applies to environmental laws.
- If staff detects errors or hazards, the supervisor responsible must be notified immediately.
- The skills and discretion of the employer and the staff are paramount to maintain a high degree the safety when operating this machinery.
- Safety measures and devices, such as fixed protections or covers, may never be removed or bypassed while the installation is in operation, unless described in this user manual.

- Testing of the machine may only be carried out by staff specifically trained to do so, since circumstantial hazardous conditions may occur. When operating the machine keep persons clear of moving parts and electric shock.
- The installation may not be installed in a domestic environment or in any environment only suitable for light industry.
- Modifications carried out by unauthorized personnel, especially modifications dealing with the operation of the safety features and devices, may lead to severe unintended consequences. Any modification unauthorized by MTS / Roehrig Systems Corporation voids the warranty.
- Similar to all hoists, the following restrictions also apply: loads may not be transported while being hoisted (in suspended position), without being properly secured. Also, under no circumstances may any persons be under or on the loads. Letting loads (objects) drop must be avoided. Hoisting cables and guide wires must be carefully inspected and damaged cables, wires, and chains are to be cut to pieces immediately, in order to avoid their further use.

Hazard Placards

Hazard Placard Placement

Hazard placards contain specific safety information and are affixed directly to the system so they are plainly visible.

Each placard describes a system-related hazard. When possible, international symbols (icons) are used to graphically indicate the type of hazard and the placard label indicates its severity. In some instances, the placard may contain text that describes the hazard, the potential result if the hazard is ignored, and general instructions about how to avoid the hazard.

Hazard Warning Icons

Following are hazard warning icons used on MTS products. These icons indicate hazards that can result in personal injury or equipment damage. They are typically placed on or near the area of concern. They are intended to alert the user to possible hazardous conditions or hazardous situations. Warning icons are available in three sizes:

- Large (lg)—96.5 mm diameter (3.80 in)
- Medium (med)—57.2 mm diameter (2.25 in)
- Small (sm)—33.0 mm diameter (1.30 in)

Part Number	Icon	Description
057-230-001 (lg) 057-230-101 (med) 057-230-201 (sm)		General warning. Possible hazard(s) exists in the vicinity where this icon is located. Refer to the manual for additional information.
057-230-002 (lg) 057-230-102 (med) 057-230-202 (sm)		Voltage hazard. High voltage exists in the vicinity where this icon is located. Be aware of possible electrocution when working in areas noted with this icon.
057-230-004 (lg) 057-230-104 (med) 057-230-204 (sm)		Strong magnetic field. Keep objects that are sensitive to magnetic fields away from areas noted with this icon. For example floppy disks, credit cards with magnetic data strips, and so on.
057-230-009 (lg) 057-230-109 (med) 057-230-209 (sm)		Eye damage hazard. Wear appropriate personal protective equipment. For example, safety goggles.
057-230-012 (lg) 057-230-112 (med) 057-230-212 (sm)		Hand crush hazard from moving parts in a sideways direction. Stay alert and be aware of possible moving parts. It is recommended to keep clear of areas noted with this icon.
057-230-013 (lg) 057-230-113 (med) 057-230-213 (sm)		Foot crush hazard. Stay alert and be aware of possible moving parts. It is recommended to keep clear of areas noted with this icon.

Part Number	Icon	Description
057-230-030 (lg) 057-230-130 (med) 057-230-230 (sm)		No step hazard. Do not step or put weight on surfaces with this icon attached.
057-230-017 (lg) 057-230-117 (med) 057-230-217 (sm)		Rotating spindle hazard. Keep body parts, loose clothing, long hair, and so on, clear of areas noted with this icon.
057-230-038 (lg) 057-230-138 (med) 057-230-238 (sm)		Skin injection hazard; release of fluid pressure. High pressure fluid and penetrate skin. Do not tamper with fittings or hoses. Wear appropriate protection such as safety goggles and gloves. Maintain safe pressure levels.

Hazard Action Icons

Following are hazard action icons used on MTS products. These icons indicate recommended actions that will minimize the chance of personal injury or equipment damage. They are typically placed on or near the area of concern. They are intended to alert the user to actions that should be taken. Action icons are available in three sizes:

- Large (lg)—76.2 mm diameter (3.00 in)
- Medium (med)—58.8 mm diameter (2.00 in)
- Small (sm)—38.1 mm diameter (1.50 in)

Part Number	Icon	Description
057-237-501 (lg) 057-237-601 (med) 057-237-701 (sm)		Read the manuals.
057-237-501 (lg) 057-237-601 (med) 057-237-701 (sm)		Lock out electrical power.
057-237-504 (lg) 057-237-604 (med) 057-237-704 (sm)		Wear gloves

Part Number	Icon	Description
057-237-506 (lg) 057-237-606 (med) 057-237-706 (sm)		Wear eye protection.
057-237-511 (lg) 057-237-611 (med) 057-237-711 (sm)		Maintain safe pressure.
057-237-512 (lg) 057-237-612 (med) 057-237-712 (sm)		General action. Refer to the manuals for additional information.
057-237-503 (lg) 057-237-603 (med) 057-237-703 (sm)		Lift point.

Hazard Prohibition Icons

The following hazard prohibition icons are found on MTS products and indicate actions that should not be performed. Performing any of these actions could cause personal injury or equipment damage. They are typically placed on or near the area of concern. They are intended to alert the user to actions that should not be taken. Prohibition icons are available in three sizes:

- Large (lg)—76.2 mm diameter (3.00 in.)
- Medium (med)—58.8 mm diameter (2.00 in.)
- Small (sm)—38.1 mm diameter (1.50 in.)

Part Number	Icon	Description
057-240-001 (lg) 057-240-101 (med) 057-240-201 (sm)		Do not step here. This is not a step.
057-240-008 (lg) 057-240-108 (med) 057-240-208 (sm)		No Pacemakers.

Safety Features and Residual Risks

This section describes all the safety features that are present on the system and identifies the residual risks that remain for the operator.

Emergency Stop

In an emergency, the emergency stop button must be activated so that the installation will stop immediately. The emergency stop devices should be used only when there is an immediate danger to a person or to the machine. In all other situations, stop the machine by following the proper procedure.

After usage of the emergency stop devices, it is imperative that the complete installation be checked. The installation will stop immediately after an emergency stop. Since it is an undetermined stop, all actual positions of the installation must be checked before restarting the installation.

An emergency stop is colored red with a yellow background.

Emergency Stop

Below is a photo of the two different emergency stops:

- Push button on the electrical cabinet.
- Life line in the pit.

Emergency Stops

The emergency stop causes the following:

- Shutdown of the electrical supply of the drive for the wheelbase adjustment.
- The clamping magnets will stay in position.
- The 4 poster will stop shaking.

When operating the emergency stop the power supply of the PLC stays enabled. The emergency stop can be reset with the button “reset alarms”.

Protective Shielding

The protective shielding around the 4 Poster may not be removed. The guard on the threaded spindle may only be removed by authorized personal. If the cover has been removed, the following regulations are applicable:

- The installation must be in stationary situation.
- The installation is free of power. The main switch on the cabinet, must be “off”.
- All energy sources must be locked.
- The protective shielding should only be removed if it is necessary to perform work on the machine.

After the completion of a repair or a maintenance process, the protection guards must be replaced immediately.

Other Protection

Lighting

The lighting in the direct area and in the pit, around the installation is adequate. In the pit some additional lighting may be required for maintenance or for to assist the operator.

Electrical risks

The electrical circuitry is designed and built according to all applicable rules and regulations. Only certified material has been used. A good grounding protects individuals against the effects of electricity. For more details on the electrical system, refer to the relevant section in this file.

The sensors are all low and safe voltages.

Residual Risks

For operator and maintenance personal

During movement of the wheelbase adjustment, an operator must be aware of the following hazards:

- Danger of clothes, hair, or jewelry that could be caught in the system
- Risk of injury to the feet
- Risk of injury to the fingers
- Hazards dismantling protection equipment
- When replacing parts and major units, that they are carefully fastened and secured so there is no danger of them falling. Use only suitable lifting equipment whose maximum capacity is not exceeded
- Motors may become hot. To avoid burns, let these components cool down sufficiently before any repairs or cleaning operations are performed
- Contact with moving parts of the installation when the protection guards are removed may result in a mechanical obstruction or damage to the equipment

Electro-mechanical, pneumatic and hydraulic work must only performed by individuals with expertise and who are authorized to do so.

Always inform the operators before starting maintenance or repairs.

Always follow the maintenance and inspection procedures as described in this manual. The periodic inspection and replacement of parts must be followed as described.

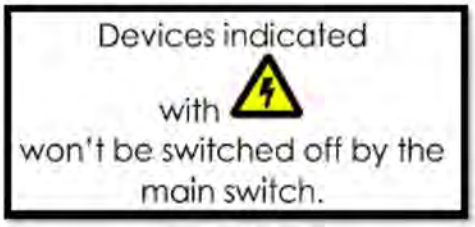
We recommend that new employees are educated about the dangers of the work, as well as how to prevent the various dangers. This should be repeated at least once a year. Training must be documented with signed certificate of the trained worker.

Voltages on the installation

In some parts of the base installation are not touch-safe voltages. This means that contact with bare wires should be avoided. The following non-contact safe voltages are:

- Power lines to power switch

Voltages not possible to shut down are indicated as follows:



Inappropriate Use

In practice, machines are often used incorrectly, which compromises safety. The following use is not recommended under any circumstances:

- Bridging switches
- Using the emergency stop for anything other than an emergency situation or safety checks

Periodic Testing of Safety Circuits

The safety circuits should be tested on a regular basis. This process is described below:

1. Start machine
2. Press the emergency stops. Repeat for all safety devices on the system. The installation should stop immediately.
3. Unlock the emergency stop. The system remains off.
4. Reset the emergency stop by pressing the reset button. The system remains off.
5. Start the machine using the start button.

Warning:

If the system reacts differently than described in the test procedure.

Personnel can be at risk of serious injury or death.

The system must be shut down immediately and remain shut down until the machine is repaired.

Description of the Machine

Machine/Automation Identification

The wheelbase adjustment has an identification plate attached to the system.

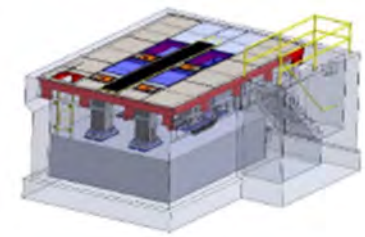
Function of the Machine

The wheel base adjustment system is a part of the ePost 4 Poster (hardware and software), which allows the wheelbase of the actuators to be adjusted. This section is an explanation of the wheelbase adjustment system.

Generally the wheelbase adjustment consists of the following:

- Seismic mass (complete with steel frame in the concrete)
- Grout plates (base floor plates on the concrete)
- Front base plate (connection for the ePost front post to the grout plates)
- Rear base plate (connection for the ePost rear post to the grout plates, and adjustable wheelbase foreseen)
- Platform (covers around the 4 Poster)

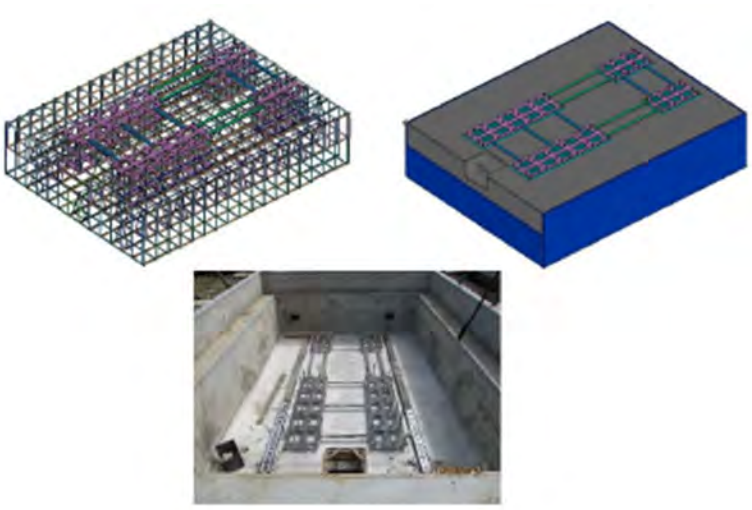
ePost System



Seismic Mass

The pit is first lined with a isolating foam. Then the steel frame and steel structure is placed into the pit. The pit is then filled with concrete to create the seismic mass.

Seismic Mass



A total of 88 M20 anchors are installed in the steel frame. The dimensions of these M20 anchors are very important to the placement of the grout plates and the rest of the installation.

Grout Plates

On the concrete, the grout plates will be placed and secured with M20 nuts. It is important that these 8 grout plates are in a proper position in relation to each other and that they are properly leveled.

Grout Plates

Front Bed Plates

The complete ePost equipment and installation consists of 4 actuators. Two in the front and two in the rear.

The front bed plates are the connection between the 2 front actuators and the grout plates. It is possible to adjust the actuator a small amount in X-direction and Y-direction with the 4 M20 adjustment bolts. The front actuators will be mounted on the top of the front bed plates.

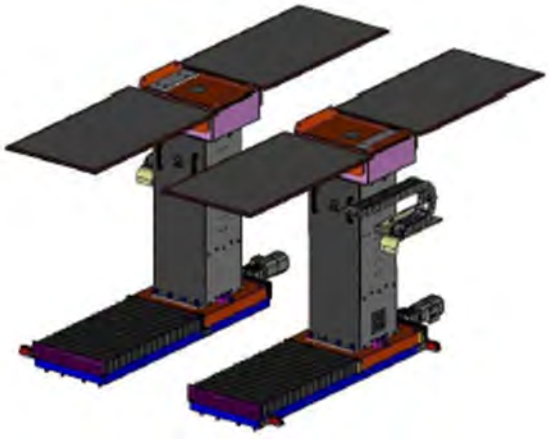
Front Actuators

On the top of the actuators there are drip-pans. This pan is in place to collect debris, trash, and any liquids that may spill during testing. There are 2 drains per pan.

Rear Bed Plates

The rear bed plate is the connection between 2 rear actuators and the grout plates in the rear. It is possible to adjust the actuator a small amount in the Y-direction with the 2 M20 adjustment bolts. The rear actuators will be mounted on top of the front bed plates. The unit is designed to have wheelbase adjustment in X-direction. This movement will be controlled by an electric drive. The wheelbase can be adjusted anywhere from 240.03 cm to 355.6 cm (94.5 in to 140 in).

Rear Actuators



On the top of the actuators there are drip-pans. This pan is in place to collect debris, trash, and any liquids that may spill during testing. There are 2 drains per pan.

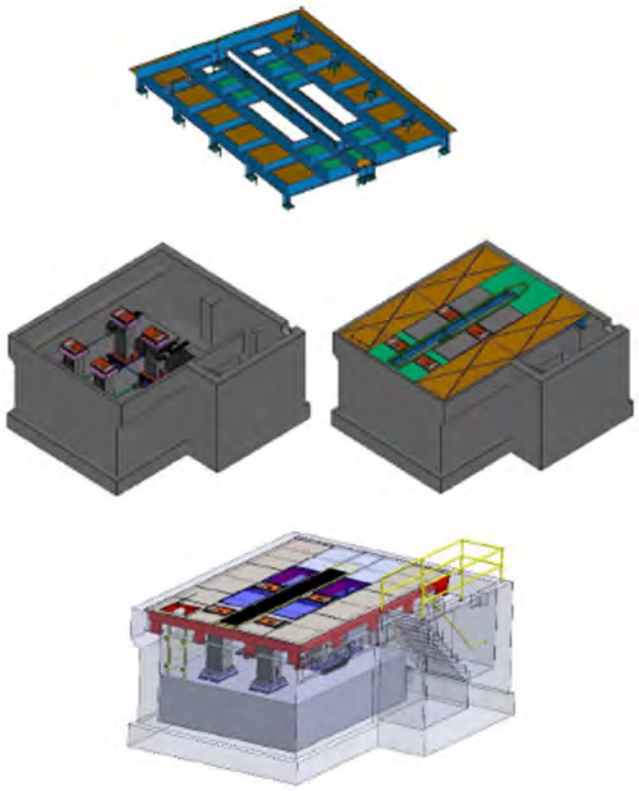
Wheelbase slider plates are mounted together with the drip-pan. These ramps are provided to drive the car onto the actuator's wheel pan.

Platform

When the actuators are placed in the pit, a free space is created between the actuators and the pit walls. A steel structure is installed to close the gaps. The complete weight of the car will come onto the platform while driving the

car in position; therefore, all required strength calculations have been performed.

Platform



Operation of the Machine

The wheelbase adjustment contains an electric drive with a ball-screw spindle. The drive has an encoder to output the correct position of the rear actuator.

Two limit-switches are used to prevent the movement from exceeding the range of motion of the wheelbase 240.03 cm to 355.6 cm (94.5 in to 140 in

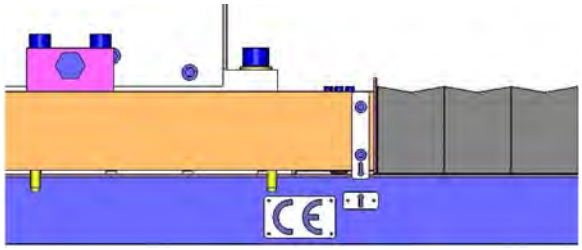
The bed plate is mounted on 4 spring loaded ball rollers. These rollers have enough vertical force so that the rear actuators can easily roll. When the actuators are in position, the bed plate must be fixed to the steel grout plate. This will be done by 2 electromagnets per actuator.

To protect the steel grout plate and to cover the ball-screw, a bellow cover is installed on both sides.

Wheelbase Bellows Installed and Removed

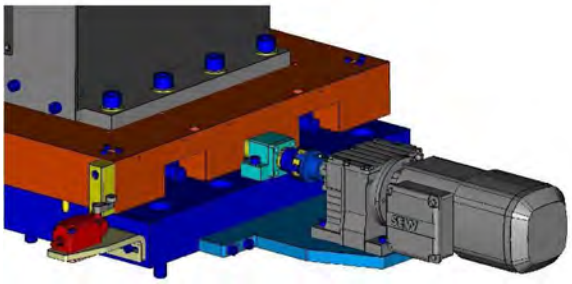
A “zero wheelbase” position is marked at the side. This is required to calibrate the encoder to zero, if necessary.

Zero Wheelbase Position



The drive is attached to a coupling and the spindle is mounted on bearings. The connection block has 2 limit-switch locator blocks. These blocks will activate the limit-switches when the movement has reached the end its travel.

Wheelbase Drive Coupling

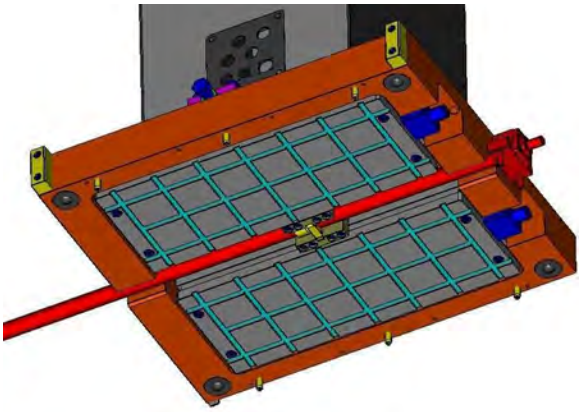


A large chamber is milled in the bottom of the bed plate. The 2 electromagnets are mounted into this chamber. Both magnets are dimensionally the same.

Between the magnets a sliding mechanism for the threaded nut. This nut is in direct connection with the spindle.

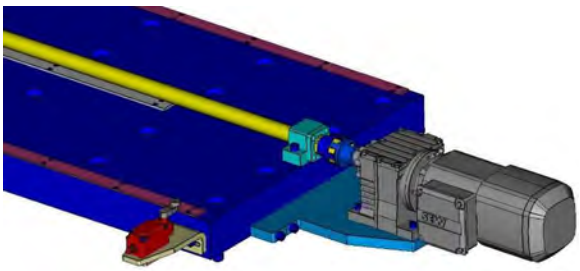
The spring loaded ball rollers are mounted on the four corners. These will apply a force so the magnets do not scrub over the steel bed plate.

Wheelbase Bottom



The ball rollers run over a steel spring strip on the side of the steel bed plate. The threaded nut also has a support underneath for better sliding.

Steel Spring Strips



Control

Controls

Description

The controls are installed on an electrical cabinet with a touch screen. The main power switch is located on the left hand side of the cabinet.

Main Power Switch

Inside the cabinet is everything required for the automation of the wheelbase adjustment system. The control box for the electromagnets are also integrated into this the electrical cabinet.

Inside View Electrical Cabinet

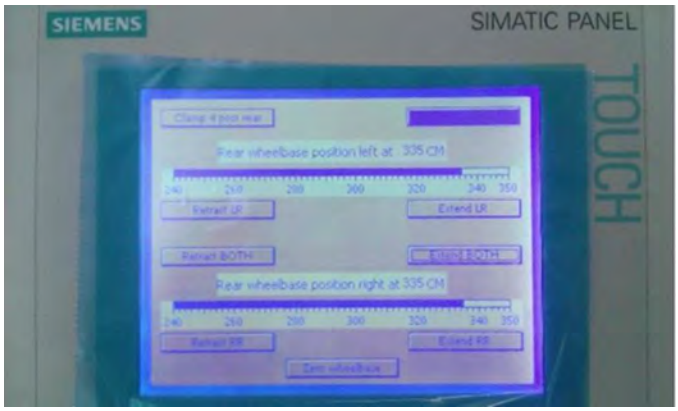
The front door of the cabinet contains the following:

- controls on button
- controls off button
- reset alarms button
- lamp test button
- an emergency stop button
- key switch local/remote
- a beeper

Control Buttons

Above the buttons is a Siemens touch screen used to move both of the rear actuator sides at the same time or move each side individually. The touch screen is only active when the key is switched to local (manual mode).

Touch Screen



To activate the instillation, first press the ‘controls on’ button. This button will now illuminate and will only go out if ‘controls off’ or the local emergency stop is depressed. Further you have two options with the key switch, ‘remote’ or ‘local’ control. See it as an automatic or manual mode of the installation.

Remote Control

The installation will wait until a button is pushed on the controller screen. An analog voltage will come in from the controller. When this signal is stable, a digital input from the controller also will be set.

At this moment, the incoming analog value will be compared with the actual positions of the left and the right slide. When one or both is not equal, the magnets will unclamp and the slides will move to the requested position. When both slides are in position, the installation will send a digital output to let the controller know that the left and the right sides are in position. The magnets will then clamp again which will also send a digital output signal to the controller to let it know the wheelbase clamps are on.

When the installation is in automatic, the controller can be in manual. In this configuration the operator can move each slide (left, right) manually to a desired position. The clamps will release the moment a slider is commanded to move forward or backward. The operator can also switch the wheelbase clamps back on manually.

Local Control

The operator can clamp or unclamp the magnets and move the slides together or each slide individually. In local control it is also possible to move the slides back to their position prior to being adjusted. This feature is useful when performing maintenance such as changing the motor. This can be done with the ‘zero wheelbase’ button. This button is password secured. With the correct password the operator can move the sliders to the mechanical zero position.

The mechanical zero position is the position where there is 240 cm (94.5 in) between the center of the front and the rear posts. After setting the sliders to the mechanical zero position, hold the ‘zero wheelbase’ button for minimum 3 seconds until the button starts flashing. The flashing button is the signal that the offset is set correctly. Labels are posted on the side of the installation in case the operator forgets any of the controls.

Start

Important:

Before adjusting the wheelbase, the operator must be aware how the installation can be stopped. Please read the entire chapter on controls to understand the normal stop process.

Important:

The operator must do a visual check before starting the installation.

A boot of the system can be described as follows:

1. Make an electrical connection with the provided cables.
2. Switch on the power with the main switch.
3. Unlock all emergency stops when required.
4. Place the program switch into the correct program position.
5. Use the touch panel to adjust the position of the actuators.

Stop

Emergency Stop

If an acute dangerous situation arises, with the use of the emergency stop the installation can be immediately stopped. This makes the installation charged in a ‘safe state.’ The various emergency services, positions, and operation are described in the “Safety” on page 13. Thoroughly read and understand “Safety” on page 13, so that emergency situations can be handled in a swift and effective manner.

Important:

All safety facilities should stay in a perfect condition. It is of paramount importance to perform checks and appropriate maintenance at regularly scheduled intervals to maintain the safety equipment.

Stopping the Installation

If it’s necessary to stop the process, it can be done by pushing the ‘controls off’ button.

Switching off the Installation

To turn off the wheelbase adjust, make sure that the motion has stopped and then move the main power switch to the 0 position.

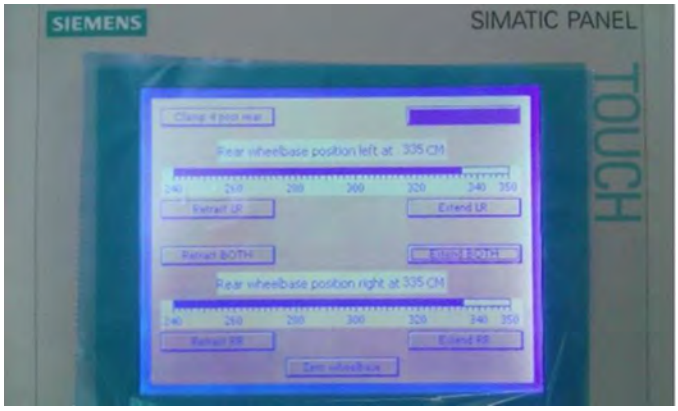
Important:

Check if the main switches are turned off, the main valves are closed so there is no inlet and outlet to the installation and the electromagnets are energized.

Display Functions

The display can be used when the installation is in the ‘local’ mode. When the switch is in ‘remote’ mode, this means the motion will be controlled through the equipment.

Display Touch Screen



The following buttons are shown on the display:

Display Buttons	Description
Clamp 4 post Rear	This activates the 4 electromagnets (2 per actuator) on the rear actuators. The equipment will then stay in a fixed and clamped position. This clamping is ALWAYS required before a car can be placed onto or removed from the test position. While shaking the vehicle the magnets must be clamped.
Unclamp 4 post Rear	This activates the 4 electromagnets (2 per actuator) on the rear actuators. The electromagnets must be unclamped before the wheelbase can be adjusted.
Retract LR	Retract the left wheelbase in the 240 cm (94.5 in) direction.
Extend LR	Extend the left wheelbase in the 355 cm (140 in) direction.
Retract Both	Retract the left and right wheelbase together.
Retract RR	Retract the right wheelbase in the 240 cm (94.5 in) direction.
Extend RR	Extend the right wheelbase in the 355 cm (140 in) direction.
Zero Wheelbase	Put the encoders back in a zero position at the 240 cm (94.5 in) point.

Cleaning

General

Cleaning of the installation is largely at the discretion of the operator, but first take note of the appropriate regulations before beginning the cleaning process.

When using cleaning products, please follow the instructions on the packaging.

Warning:

Do not make contact between voltage parts and liquids, to avoid a potential short circuit.

Warning:

Avoid unnecessary contact with chemicals. If there is contact, wash hands, etc. This is especially necessary if there is contact with food afterwards.

Caution:

Avoid using compressed air.

Small parts and dust will be blown away; however, they can land in areas with moving parts (such as in wheelbase adjustment, ball rollers, magnets, etc.) cause increased wear, malfunction, or component failure.

Use a broom and dust pan or vacuum to clean up dust and small parts.

Cleaning when the Installation is Stopped

Cleaning should only be performed when the installation is shut down. For safety, lock all the power sources or push an emergency switch. A reset is required before a restart can be performed.

Use a soft bristled brush in combination with a vacuum cleaner. For the removal of dust, use a cloth dampened with alcohol.

Caution:

Do not use compressed air to remove dust.

The dust will only be relocated and not removed. It can penetrate into moving parts and can cause increased wear, malfunction, or component failure.

Use a broom and dust pan or vacuum to clean up dust and small parts.

The pit and the area around the pit should be cleaned with a brush on a weekly schedule.

Maintenance

General

The maintenance personal are responsible for the following:

- Performing maintenance checks at the required intervals
- All technical maintenance

Maintenance Intervals

Several maintenance checks should be performed on a regular bases. A maintenance list can be found below and will mark which parts should be checked and pre-emptive maintained. In the technical description of the parts there will be a description of the required maintenance procedures. The procedures must be followed as written.

Daily check:

- General visual inspection of the installation.

Weekly check:

- General control check of the controls on damages
- Electrical cabling: check of damages and corrosion
- Check of the different detections of their operation
- Inspection and lubricate the bearings
- Inspection and lubrication of the threated spindle
- Inspection of the ball rollers
- Inspection of the steel bed plate (dust, debris, etc…)
- Inspection of the PE100 material at all places
- Inspection of the SS material at all place

Maintenance of the Drives

The wheelbase adjustment is driven by 2 separate drives. It's involving the following type of drive:

- A00056131 SEW R27DRS71M4/AS7-y (SSI-interface)

Specification:

- **Axe dimension (mm):** 5x50mm
- **Company factor**: 5,6
- **Design:** M1
- **Efficiency (IE):** IE1
- **Weight (Kg):** 12kg.
- **IP Code:** IP54
- **ISO F/B:** F
- **Input Cable/Connector position:** X
- **Terminal box position:** 0°

- **Brand:** SEW
- **Options:** AS7w-y: (SSI interface) absolute encoder
- **Voltage (V):** 230/400V
- **Current (A):** 2,7/1,55A
- **Motor Speed:** 1380rpm
- **Typenr:** R27DRS71M4/AS7 -.y.(SSI Interface)
- **Output Torque (Nm):** 21Nm
- **Output Speed:** 246rpm Output Ratio: 5,6
- **Power (kW):** 0,55kW

Please start with the inspections and maintenance after reading the following instructions and the technical description of SEW.

Warning:

Always make sure that the main switch is turned off and locked so that the installation is completely de-energized.

The system can move unexpectedly if the main switch is still on.

To avoid the risk that the engine is starting accidentally, turn off the main switch and lock it.

Warning:

Allow the system to cool sufficiently.

Hot surfaces and oil will cause burns on contact.

Allow sufficient time for the system and oils to cool before touching or doing maintenance on the system.

Caution:

Improper maintenance can cause damage to the engine or reduction drive.

The engine and the reduction drive can be damaged by not following the documented maintenance procedures.

Follow the document maintenance procedures to prevent damage to the engine and reduction drive.

Strict compliance of the inspection and maintenance intervals is absolutely necessary to ensure safe working conditions. Filling the reduction drive with the wrong oil can cause irreversible damage to the motor or reduction drive. Do not mix synthetic oils with minerals oils. Mineral oil is the standard lubricant. Before separating the axel connections, be sure there is no torsion or tension present within the system. During maintenance and inspection work take extra care that foreign objects do not get inside the reduction drive. Do not clean with a high pressure

cleaning system, water can enter into the reduction and seals can be damaged. After any repairs or maintenance do a functional test of the motor and reduction drive.

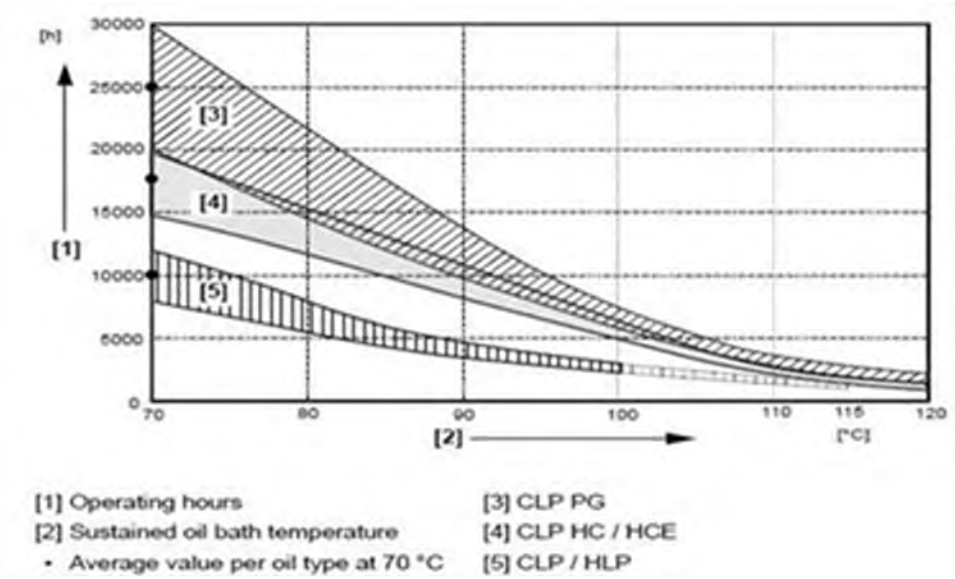
Inspection and Maintenance Intervals

In the table below the different maintenance intervals can be found:

Maintenance Interval	Actions
Every 3.000 hours or at least every 6 months	Check oil and oil level Check running noises for bearing damages Visual control of seals and leaks
Depending the operating conditions (see below) or at least every 3 year	Change the mineral oils Change the bearing grease of the different bearings Change the oil seals
Depending the operating conditions (see below) or at least every 5 year Depending external factors	Change the synthetic oils Change the bearing grease of the different bearings Change the oil seals Change the surface or the anti-corrosion layer at the outside of the motor / reduction

For more information about the work procedure to check oil levels, change oils, change bearing grease, etc. see the technical description of SEW, supplied with this your documentation.

Maintenance Intervals



Troubleshooting

Troubleshooting and Error Messages

Faults are reported on the touch screen display.

With prolonged software malfunctions, a system reset can help (turn main switch on/off).

If problems persist, contact the manufacturer.

Disposal

General

This chapter describes the procedure to be followed to scrap the installation. This is a general method and an executive should perform the following actions.

Disposal

Dispose of the installation involves the following operations:

1. Switch off the equipment
2. Disassemble and disconnect
3. Remove and destroy the nameplate with the CE marking
4. Complete dismantling, reuse and disposal of the machine parts. The disassembly of the machine parts can be completed using the discretion of the person in charge. Disposal should be done according to current regulations.

Remarks

For disassembly, all electrical parts must be first fully discharged and disconnected

Oil, grease, cooling water and other liquids must be separated according to current regulations

Removal of feather or parts under tension must be done carefully so it does not cause injury

Technical Specifications

Technical Specifications

Some specifications are system specific and should be added to this chart after system installation. The technical specifications are as follows:

Registration Number: 320-4K Wheelbase Adjust

Serial number: ePost _____

Year of construction: _____

Dimensions of rear bed plate: 2258 mm (88.9 in) Length x 641.6 mm (25.3 in) Wide x 76.8 mm (3. in) Height

Movement: 1100 mm (43.3 in)

Weight: Max recommended weight 1134.0 kg (2500 lbs)

Electricity: At the electrical cabinet 480V, 50/60 Hz, 3 phase

Control: HMI unit with PLC control

MTS Systems Corporation
14000 Technology Drive
Eden Prairie, Minnesota 55344-2290 USA
Toll Free Phone: 800-328-2255 (within the U.S or Canada)
Phone: 952-937-4515 (outside the U.S. or Canada)
E-mail: info@mts.com
Internet: www.mts.com

ISO 9001 certified QMS