Operating manual for

Side Slip tester

SSP- 400 / 600 / 1500 - Eco

Despite careful review, mistakes in this publication cannot be entirely ruled out.

This manual has been created for users with technical expertise in the field of vehicle test equipment.

Version number	OM-SSP-400-600-1500-Eco-160816
Language:	German
Date:	16/08/2016

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Contents

1. System description

1.1 Description:

- The track plate is a side floating plate that is mounted on balls. When driving over it, these are move inwards or outwards depending on the track course.
- The deviation from the straight is measured and shown on the relevant display in m/km or mm/m plus or minus
- The specialist can use this device to quickly detect the vehicles' straight driving behaviour
- The quick track tester should not be considered a measuring device, but rather a diagnostic device that only provides information on the vehicles' straight driving behaviour. If there are deviations, these are indicated to the specialist so that he/she can analyse them and rectify the fault in the right place.
- The measurement results from the quick track tester must never compared with those from an axle measurement device. A deviation from the straight must not just be searched for in the track setting or the geometrical driving axles. There are also a number of other parameters such as camber, tyres that are worn on one side, oversizing with different wheel base rims and other to be considered.

1.2 Area of application

- A check with a quick track tester is particularly interesting for double or multiple axles, such as on HGV trailers or semi-trailers.
- From a purely technical perspective, it is very important that two or more axles running in a row are in the absolute same track.
- If this is not the case, the wheels' rolling resistance increases, which causes increased tyre wear and increased fuel consumption on the drawing vehicle.

1.3 Track plate

- No foundation required, simple floor installation with a low installation height of 50 mm or convenient foundation installation
- The various installation sets are available as options
- The hot-dip galvanised track plates have a non-slip chequered plate surface and are equipped with a stable, ball bearing mounted plate guide
- The upstream axle de-tensioning plate eliminates tension in the chassis and ensures that the track check is reliable (this is only required for cars)
- An electronic measurement system supplies the data to a clear display

1.4 Display

1.4.1 Individual track unit

- Simple installation, 240 / 110 V power connection
- The measured values are displayed on the individual track unit's digital display in mm/m positive or negative

- Digital display in mm / m - Positive track - Negative track = -	

2. Important basic information

2.1 Scope of supply

2.1.1 Individual track units:

- Display cabinet with electronic measuring equipment and LED display
- a hot-dip galvanised track test plate with stud plate surface
- an axle de-tensioning plate (only for SSP-400 and SSP- 600)
- 17 m pre-wiring with connection plug
- Operating Manual

2.2 Responsibilities of the manufacturer per:

- Machinery directive 2006/42/EC from 17th. May 2006
- EMC directive 2004/108/EC from 15th. December 2004
- Low voltage directive 2006/95/EC from 12th. December 2006
- EC directive for CE labelling
- DIN EN 60204-1 Electrical equipment for machinery
- GS-EM I 04 - 01 and BGR 157 Testing principles for vehicle maintenance devices, vehicle testing machines and devices
- EC Declaration of Conformity

2.3 Responsibilities of the operating company

- The installation of the device must be carried out by competent specialist personnel
- The device may only be used in accordance with its proper intended use
- Prior to starting up the device, read this operating manual carefully. The operating manual must be easily accessible at all times
- Personal injury caused by not adhering to this operating manual is not covered by the German Product Liability Act
- Sherpa accepts no liability for damage to the test stand or the vehicle resulting from non adherence to this operating manual
- Safety instructions warn of dangers and help prevent damage to personnel and property. Strictly adhere to the safety instructions for your own safety
- The respective valid national and international safety regulations for occupational safety must be respected. Every operator is responsible for compliance with the applicable regulations and must make sure that the relevant current regulations are applied
- The operating manual is a constituent part of the machine. The operating manual must be kept safely and maintained (i.e. updated) throughout the complete service life of the machine
- The operating manual must be passed on to any subsequent owner of the machine

2.4 External interfaces

- Interfaces for PC connection with “Sherlane” test lane

3. Legal note

3.1 Limitation of liability

- As a matter of principle, our liability is restricted to foreseeable damages typical for the contract. We are only liable for damage caused deliberately or due to gross negligence
- This restriction does not apply to cases where persons are injured
- Claims for damages regularly expire two years after the point in time when the damage is detected and reported or after years following the occurrence of the damage at the latest

3.2 Warranty

- We provide a 12 month warranty to guarantee that our deliveries are free from defects
- This period starts at the time when the goods are delivered to the ordering party. This does not apply to the delivery of used products. All warranty claims are excluded in such cases
- Within the scope of the warranty, our obligation is restricted to repairing and/or substitute delivery at our own discretion
- Liability for secondary damages arising from defects as well as lost earnings is excluded
- The right of the contractual parties to withdraw from the contract after an attempted but unsuccessful repair and/or an inability to provide a substitute, is reserved

3.3 Documentation

3.3.1 Operating manuals: per DIN EN 62079

- Insofar as they are not a constituent part of the operating manual, the following documents are available, amongst others:
- SherlanePC operating instructions
- Installation plan / installation instructions
- Spare parts list

4. Safety

4.1 Conventions for safety instructions

- Prior to starting up the device, read this operating manual carefully. The operating manual must be easily accessible at all times
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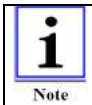
	**Danger**: A risk to persons can result from not carefully following or complying with the instructions

	**Warning**: Damage to the device can result from not carefully following or complying with the instructions

	**Note**: Additional information is supplied

4.2 Requirements for personnel

- The test bed must only be started up by authorised specialist personnel
- The test bed must only be operated by trained specialist personnel

4.3 Safety-relevant environmental conditions

- The test plates must be installed so that people cannot inadvertently step on them

4.4 Installation, removal

- See "Installation, commissioning"

4.5 Compliance with the operating manual

- The operating manual must always be complied with in all respects
- The operating manual must be kept safely in the immediate vicinity of the machine and must be available to all persons involved with the machine at all times
- The operating manual must be passed on to any subsequent owner of the machine

4.6 Safety signage on the machine

- The test equipment's test plate is floating
- The test equipment must be safeguarded with a peripheral warning marking or with a cordon.

5. Technical specifications

5.1 Identification:

- The type plates are located on the display and in the track plate

5.1.1 Technical specifications for the display:

-	LED display size for numbers	75	mm
-	Display range	0 -19	mm / m
-	Display cabinet dimensions	(W x H x D) 700 x 320 x 60	mm
-	Supply voltage	240 / 110 V, 50 / 60 Hz	16 A slow fuse
-	Weight	4	kg
-	Housing paint, powder coated	black	RAL 9011

5.1.2 Technical specifications for SSP test plates:

-	Hot-dip galvanised test plates with	stud plate	
-	Plate bearing	low-wear ball bearing	
-	Measurement system, maintenance-free	electronic DMS measuring system	
-	Supply voltage	DC 5	V
-	Dimensions of **SSP-400** track plate	(L x W x H) 750 x 500 x 50	mm
-	Dimensions of track levelling plate for **SSP-400**	(L x W x H) 250 x 500 x 50	mm
-	Dimensions of **SSP-600** track plate	(L x W x H) 750 x 750 x 50	mm
-	Dimensions of track levelling plate for **SSP-600**	(L x W x H) 250 x 750 x 50	mm
-	Dimensions of **SSP-1500** track plate	(L x W x H) 750 x 990 x 50	mm
-	**SSP-400** weight	60	kg
-	**SSP-600** weight	65	kg
-	**SSP-1500** weight	90	kg

6. Set-up conditions / installation / maintenance

6.1 Set-up conditions

6.1.1 Local requirements for delivery and assembly

- There must be good vehicular access to the assembly location for transport vehicles or devices
- The customer must provide a mobile hoist with the load-bearing capacity required for the test bed for unloading, moving and setting up at the assembly location
- The customer must ensure that the assembly location is free of hazardous substances
- Assembly can only be carried out if the temperature and environmental conditions are tolerable and represent decent working conditions
- The assembly location must allow safe working

6.1.2 Foundations and floor

- Requirements on the foundations and the floor's load-bearing capacity are stipulated in the respective foundation/installation plans

6.1.3 Supply connections

- The electrical mains connection must be provided by the customer at the assembly location of the display

6.2 Installation location

- The system is not designed for use outdoors
- The track plate can be installed in both the left and right side of the lane
- The track plate must be installed on a level lane
- The track plate must be installed so that it can be driven over straight in the lane

6.2.1 Total spatial requirements

- The total spatial requirements depend on the vehicles to be tested

6.2.2 Environmental conditions

- The test bed meets the requirements of protection class IP 54 (dust and splashed water protected).
- It is designed for operating temperatures from minus 10°C to plus 60°C
- The track plate must not be submerged in water

6.2.3 The display

- The display should be easily visible from the vehicle along the complete test section

6.2.4 PC displays

- The instructions of the respective manufacturer are to be observed for PC displays

6.3 Assembly conditions

6.3.1 Safety

- Assembly must only be carried out by trained specialist personnel

6.4 Installation

6.4.1 Displays

- When installing on a pedestal, the floor conditions on the foundation plan must be considered
- A canopy or a cover must provided if installed outdoors
- Connect the display’s mains cable to a socket

6.5 Maintenance

- Check that the test plate can move freely
- The guide rails for the test plates must be cleaned and lubricated
- Contamination that could affect the test plates’ friction value must be removed
- In particular, care should be taken to ensure that the water can flow off freely and cannot be blocked

7. Commissioning / operation

7.1 Switching the test system on

- Observe the safety regulations
- The test system must be unladen
- The test bed mains cable must be plugged in
- The electronic system performs a self-test and configures the system

7.1.1 Display unit self-test

- All parts of the display show 999 999 and then go blank,
- 888 888 and then go blank, and so on until reaching 000 000
- the display's log type is then shown
- e.g. AP-1.03 software version of the display,
- e.g. U-1.04 e.g. subaddress of the display
- a segment sequence test then occurs
- e.g. 123456; the display test is now complete
- The test bed now sends its information with

	Company ID	- 
	Product ID	- 
	Software status, e.g.	- 
The automatic	zero adjustment now takes place	- 
The system is ready to test when	**0.0 _ is displayed**	- 

- If the display does not show zero, an inspection is required!
- Please contact the nearest Sherpa service partner or Sherpa directly

7.2 Test run:

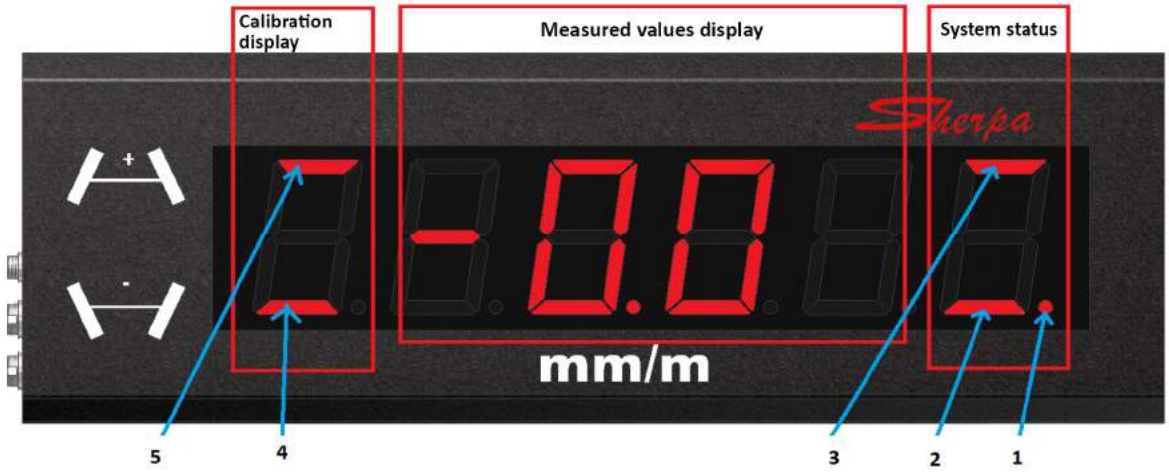
- Drive slowly (< 5 km/h) over the test plate with one wheel on an axle; do not steer while driving over the plate and ensure that the vehicle does not vibrate excessively.
- The result is displayed immediately after driving over the plate.
- The measured values are shown on the digital displays and overwritten by the next test. The measured values are deleted and the display returns to the zero position after approximately 30 seconds
- Apart from the test, an automatic zero calibration of the measurement system takes place roughly every 2 minutes

7.2.1 Measured values display

- The track deviation is displayed digitally in mm/m.
- If the wheel run is positive, the measured value is displayed
- If the wheel run is negative, a minus sign is displayed in front of the measured value

8. System status indications on the display

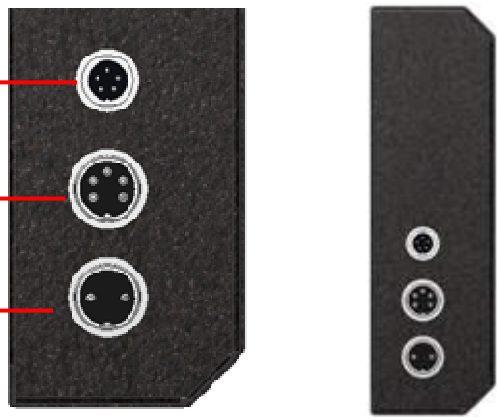
- The display has 6 digital places. These display both the measured value and the system status.
- The middle places are used as the measured values display and the outermost left and right places as the system status and calibration status displays.



No.	Designation	Reaction	Description
1	Communication status	Flashing or flickering decimal point	The decimal point only flashes when a sensor is connected to the display. As soon as data is being transmitted between the sensor and the display, you can also see the decimal point “flickering”.
2	Measurement plate is ready	On/off	This bar is always displayed if the measurement plate is at zero and the test bed is ready for a new measurement.
3	Stable measured value	On/off	Displayed when the measured value is “stable” outside the zero position. Becomes
4	Service / calibration switch	On/off	Illuminate as soon as the sensor detects that the magnet is in the service / calibration position. The bar switches to continuous test mode from bottom to top after approximately 3 seconds.
5	Continuous test mode	On/off	Displayed approximately 3 seconds after the magnet has been moved to the test/calibration position.

8.1 Connection plugs on the display

- RS-485 interface for Sherlane ASA, intelligent sensors.
- RS-485 interface for Sherlane ASA, intelligent sensors.
- Electrical power connection



9. Test mode

- In test mode, you can check whether the amount of lateral plate displacement corresponds to the display
- The minimum value display of 0.4mm and the peak load display are switched off to do this.
- The display continuously shows the value currently measured on the track plate in mm.

9.1 Call test mode

- Place the calibration magnet onto the sensor's calibration point when the plate is at idle (centre position).
- The bar is displayed to the left at the bottom and then switches to the top; the system is in test mode
- The plate can be moved to the side and the deflected amount compared with the display.
- As soon as the magnet is removed, the bar at the top left extinguishes and the system returns to normal mode.

10. Calibration

- Unscrew the cover plate from the track mechanics; the shifting mechanism frame and the inner parts become visible

- When the plate is in the idle position, the tension spring for the attachment points on both sides must be adjusted to a length of approximately 65 mm using the adjustment screw. **(Figure 1)**

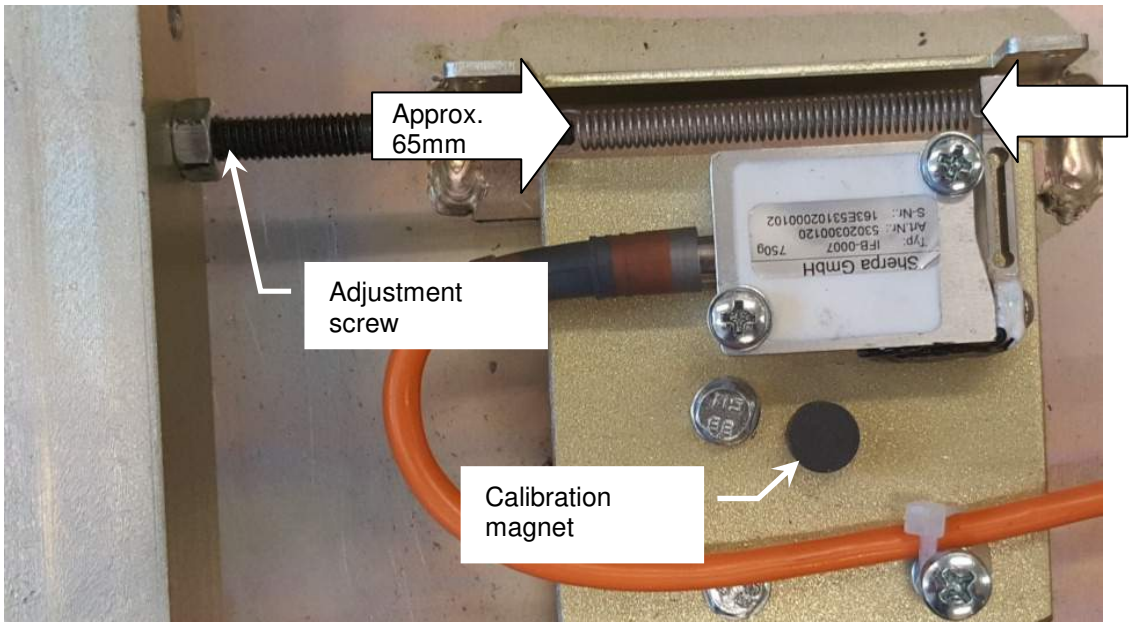


Figure 1: Adjusting the sensor

Attention:

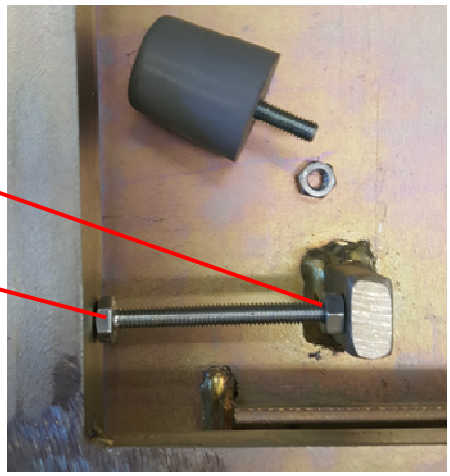
- **For systems built as of 2016 and with software version V1.06, the track plate in the lane does not have to be installed on the left, but can also be installed on the right. If installed on the left, the plate has to be moved to the left to calibrate and if installed on the right, the plate has to be moved to the right. The sensor saves the corresponding calibration side as "+ track" (positive)**

- A "calibration aid" is available for each track plate:
- 1x M6x65 hexagon bolt
- 1x M6 hexagon nut
- Calibration label
- Calibration magnet

10.1 PMS- 400 / 600 / 1500 calibration

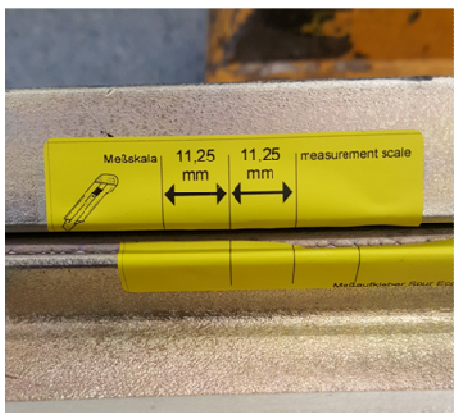
PMS-400/PMS-600 track plate

- Measurement label
- Rubber buffer



- M6 nut
- M6x65 bolt

- Remove the rubber buffer and insert the hexagon bolt.



- Move the test plate 11.25mm to the left or right until the lines match.
- The exact position can be set using the hexagon bolt.

10.1.1 Calibration procedure:

Step	Description	Display	Figure
1	When starting calibration	The display is at 0	
2	Move the measurement plate 11.25mm to the left or right and fix in position	A random value (>8mm) is displayed	
3	Place the magnet on the sensor's calibration position and hold	The bar is displayed on the left at the bottom and moves to the top The calibration value of 11.3 (rounded) is displayed.	
4	Remove the magnet	The measured value of 15.0mm is displayed	
5	Release the fixing and allow the plate to swing to the middle position	The measured values display returns to 0	

Attention:

- **Do not store the magnet directly next to the sensor after removing from there. Minimum spacing approximately 5cm**

10.2 Information on the measured values display in mm / m and calibration

- The test plate is shorter than the mm/m measurement unit. Therefore, the mm/m value must be replaced with the value of the real plate length when calibrating.
- The measurement plate for the ECO is 750mm long. The calibration value is therefore multiplied by 0.75.
- The calibration point is at + 15.0 mm/m.
- Adjustment path on the test bed = 15.0 X (1/plate length in m) = 15 X (1/0.75m)= 15 X (0.75) = 11.25mm.

10.3 Laying the sensor cables in the test mechanism

PMS-1500

11. EC Declaration of Conformity

We hereby declare that our test equipment in the version we have placed on the market conforms to the relevant fundamental health and safety requirements of the applicable EC Directives due to its design and construction.

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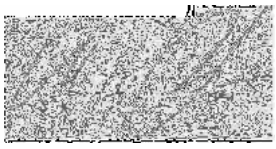
Machine designation:	Quick track tester
Type:	SSP
Version	400 / 600 / 1500 - Eco
Machine number:	_____
EC Machinery Directive:	2006 / 42 / EC from 17th. May 2006
EMC directive:	2004 /1 08 / EC from 15th. December 2004
RL electrical operating materials:	2006 / 95 / EC from 12th. December 2006

This declaration shall become null and void should any alterations be made to the machine without our express approval.

Mühldorf, 2016



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Manfred Rischke

12. Notes