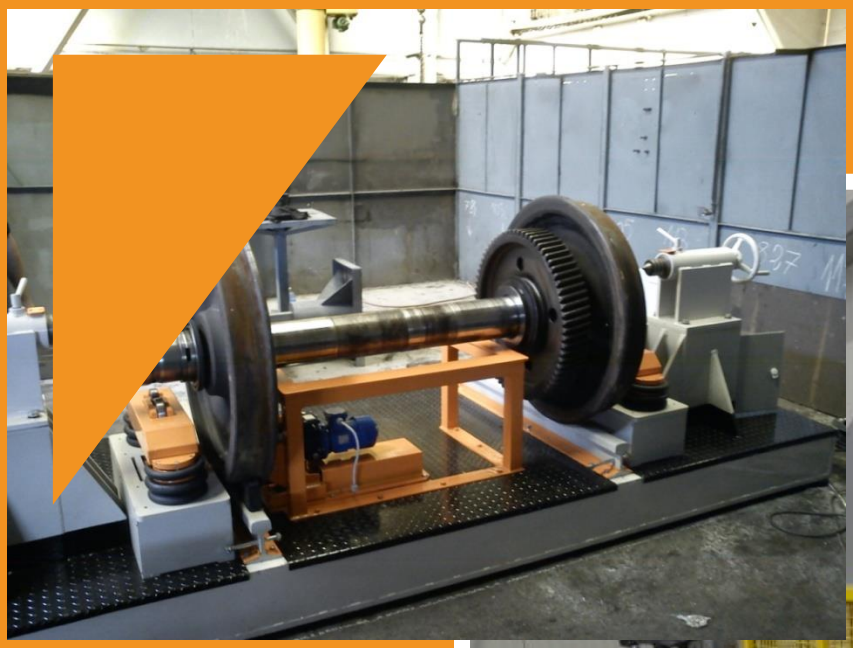

PRODUCT CATALOGUE

ASCO RAIL Sp. z o.o.

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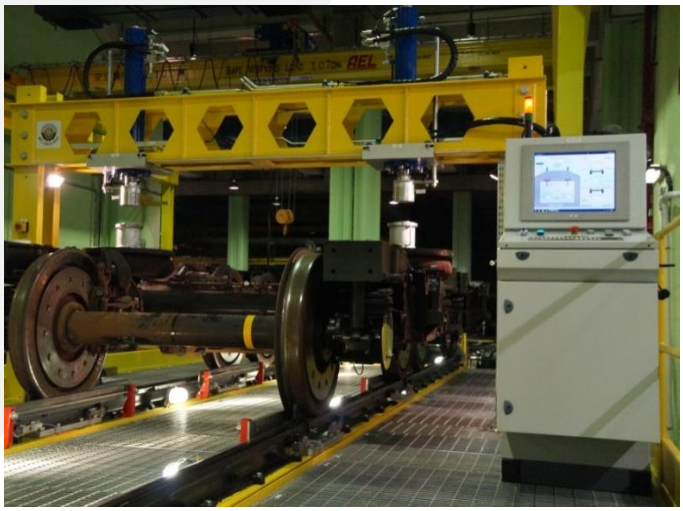



1. TESTS AND MEASUREMENTS OF BOGIES, SPRINGS, BUFFERS, DAMPERS

1.1 BOGIE TEST STAND

Bogie Test Stand is designed for testing railway drive wagon bogies, trailer wagon bogies, locomotive bogies, tram drive bogies, others railway vehicle bogies. The customized software allow all functions to be controlled from the PC with touch screen. Operator of the Bogie Test Stand can program himself new test procedures, add or change bogie parameters or create test reports.

Features

- Testing of the bogie in manual or automatic mode
- Load applied, synchronous or independent
- Measurement of each wheel load on rails, variance of the wheel load
- Measurement of the bogie height from the top of the rail
- Calculation of shim plates for primary suspension and secondary suspension
- Secondary air suspension leakage test - option
- Wheel diameter, back to back wheel measurement measured – option
- Measurement reports as PDF or measurement files.

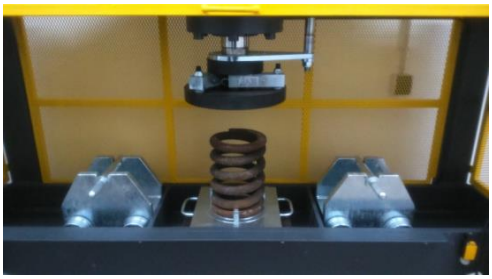
Components

- closed steel construction with rails (version of the test stand can be installed in a pit or leveled with the workshop floor),
- wheel load measuring system in rails
- hydraulic unit
- electrical cabinet with control panel, PLC controller, laptop or built in computer with a database and printer
- customized analysis software Asco Rail

Characteristics	Data
Test load application	2 x 250 kN, synchronously or independent
Measurement error of applied axial load	± 0,1 kN
Measurement accuracy of vertical movement	± 0,1 mm
Accuracy of load monitoring (wheel on rail)	± 2%

1.2 LEAF AND COIL SPRINGS TEST STAND

The Leaf & Coil Spring Test Stand is designed to perform static test of conical bonded rubber spring, leaf & parabolic springs, helical springs and springs sets. Purpose-written software package allow to control the test stand, aid in test data analysis. Operator of the Leaf & Coil Spring Test Stand can program himself new test procedures, add or change springs parameters or create test reports.



Features

- Testing in manual or automatic mode
- Measurement of height of the leaf spring under near zero load and under set by operator load
- Measurement of spring stiffness
- Force/way diagram report
- Testing of the springs in manual or automatic mode
- Operator implement pre-programmed test modes, set tolerances and warning limit values of the springs
- Collect and save measurement data, create reports as PDF or measurement files

Components

- Closed steel frame is designed to support of all main components.
- Load cells are built inside stainless steel material.
- Linear position sensor are installed inside the hydraulic cylinder
- Mobile table for easiest loading/unloading process - option
- electrical cabinet with control panel, PLC controller, laptop or built in computer with a database and printer
- hydraulic unit
- emergency stop and safety crates

Note:

The test stand is designed to test springs according to VPI measurements requirements. Our test stands are Deutsche Bahn Certified

Characteristics	Data
Axial test load (maximum)	180 kN
Actuator stroke	450 mm
Measurement error of applied load	0,1 kN
Measurement accuracy of vertical movement	±0,1 mm

1.3 COIL SPRINGS TEST STAND

The Spring Test Stand is designed to perform static test of conical bonded rubber spring, helical springs and springs sets. Purpose-written software package allow to control the test stand, aid in test data analysis. Operator of the Spring Test Stand can program himself new test procedures, add or change springs parameters or create test reports.

Features

- Testing in manual or automatic mode
- Measurement of height of the spring under near zero load and under set by operator load
- Measurement of spring stiffness
- Force/way diagram report
- Testing of the bowing angle and force of the spring - option
- Operator implement pre-programmed test modes, set tolerances and warning limit values of the springs
- Collect and save measurement data, create reports as PDF or measurement files

Note:

The test stand is designed to test springs according to VPI measurements requirements. Our test stands are Deutsche Bahn Certified

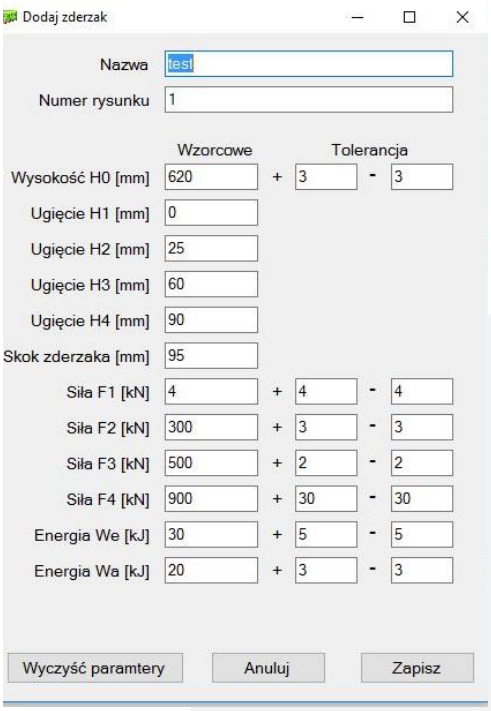
Components

- Closed steel frame is designed to support of all main components.
- Load cells are built inside stainless steel material
- Linear position sensor are installed inside the hydraulic cylinder
- Mobile table for easiest loading/unloading process
- electrical cabinet with control panel, PLC controller, laptop or built in computer with a database and printer
- hydraulic unit
- emergency stop and safety crates

Characteristics	Data
Axial test load (maximum)	60 kN
Actuator stroke	600 mm
Measurement error of applied load	0,1 kN
Measurement accuracy of vertical movement	±0,1 mm
Loading and & unloading table	650 mm

1.4 BUFFER TESTING STAND

The Buffer Test Stand is designed for to perform static test of solid elastomer and rubber buffers, ring springs buffers, hydrodynamic or hydrostatic buffers. Software allow to control the test stand, aid in test data analysis. Operator of the Buffer Test Stand can program himself new test procedures, add or change buffer parameters or create test reports.



Features

- Testing in automatic mode
- Laser measurement of free state height of the buffer
- Measurement of preload buffer force
- Measurement of buffer force under pre set deflection
- Measurement of the maximal deflection
- Calculating of absorbed and dissipated energy of the buffer
- Stability test is carried out in bumpers with a hydrodynamic or hydrostatic system - option
- Force-stroke diagram report
- Operator implement pre-programmed test modes, set tolerances
- Collect and save measurement data, create reports as PDF or measurement files. Aid in data analysis

Components

- Closed steel frame is designed to support of all main components
- Load cells are built inside stainless steel material
- Linear position sensor are installed inside the hydraulic cylinder
- Mobile table for easiest loading/unloading process
- Electrical cabinet with control panel, PLC controller, built in computer with a database and printer
- hydraulic unit
- Emergency stop and safety crates

Characteristics	Data
Axial test load (maximum)	1000 kN
Actuator stroke	450 mm
Measurement error of applied load	0,1 kN
Measurement accuracy of vertical movement	±0,1 mm
Loading and & unloading table	available

1.5 BUFFER DEMOUNTING STAND

The Buffer Demounting Stand is designed to demount solid elastomer and rubber buffers, ring springs buffers.

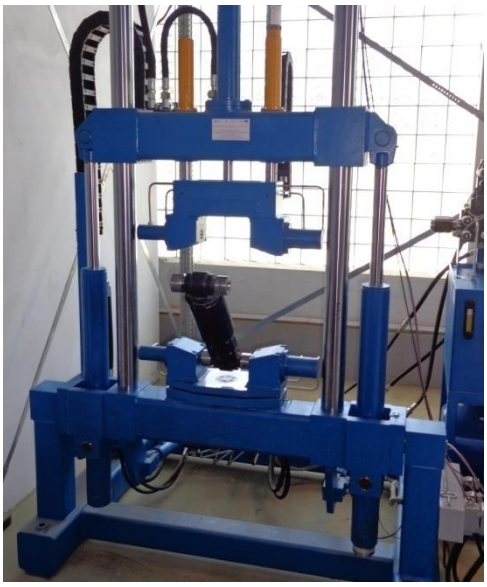
Components

- Closed steel frame is designed to support of all main components
- Mobile table for easiest loading/unloading process
- electrical cabinet with control panel, PLC controller, laptop or built in computer with a database and printer
- hydraulic unit
- emergency stop and safety crates

Characteristics	Data
Axial test load (maximum)	500 kN
Actuator stroke	400 mm
Measurement error of applied load	1%
Measurement accuracy of vertical movement	±0,1 mm
Loading and & unloading table	available

1.6 DAMPER TESTING STAND

The Damper Testing Stand is designed for to perform tests of oleo-pneumatic shock absorbers KTO with applied automatic cycle of test performance and registration of results. Test results are stored on hard disc of the computer, and they may be later printed out in a form of compulsory protocol form sheets accompanied with automatically generated characteristics charts.



Features

- Testing in automatic mode. Testing is done by giving speed in to-and-from motion to one of dampers' ends, with the other end fixed firmly
- Maximum damping force at tension
- Maximum damping force at compression
- Hysteresis loop damping force, working stroke of tested shock absorber
- Operator implement pre-programmed test modes, set tolerances
- Collect and save measurement data, create reports as PDF or measurement files. Aid in data analysis

Components

- Rigid mechanical structure
- Mounting clamps (upper&lower) hydraulic driven
- Drive servomotor initiating the to-and-fro motion
- Electrical cabinet with control panel, PLC controller, built in computer with a database and printer
- Hydraulic unit.
- Emergency stop and safety crates

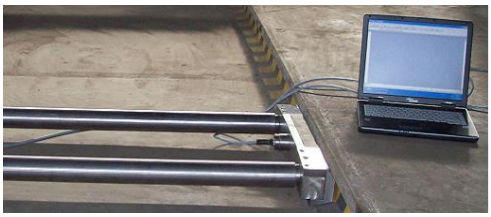
Characteristics	Data
Maximum acceleration	m/s 0 – 0,4
Maximum stroke	600 mm
Maximum test force	50 kN
Accuracy of measured stroke	± 2%
Angle adjustment range	Up to +90
Resolution of load monitoring	<100 N




2. WAGON AND BOGIE FRAME MAINTENANCE

2.1 PORTABLE STATIC/DINAMIC WAGON WEIGHTING SYSTEM

Portable Wagon Weighting system is designed for weighing different types of rolling stock such as locomotives, tractive units, wagons, metros, undergrounds and trams. The system is a modular one and can be designed for static or in move weighting of the rolling stock.



Features

- Complex type: portable system can be transported and installed at different measuring locations
- Measurement of weight of each wheel
- Measurement of weight of each axle
- Measurement of weight of wagon
- Wheel load variance measurement
- Data transfer format

Components

- Modular measuring system equipped with sensors for each axle
- Industrial PC for data processing
- Analysis software Asco Rail

Characteristics	Data
Max. wheel load	150 kN
Speed of the passing rolling stock	up to 5 km/h
Measuring cell length	120 mm
Measuring direction	both
Measurement accuracy	+/- 0,5% in rage of 30 mm from the load cel axis +/- 1,0% in rage of 30-60 mm from the load cell axis
Accuracy of load monitoring (wheel on rail)	± 2%
Rail profile type	all
Power supply	Built in batteries, 8 hours of continuous work

2.2 BOGIE FRAME GEOMETRY DIMENSIONS MEASURING STAND

The Bogie Frame Geometry Dimensions Measuring Stand is a universal stand that allows for the measurement and assessment of the technical condition of the bogie frame, both for freight and passenger wagons. Additionally, it makes it possible to measure three-axle bogies. The measurements are made with special measuring instruments (Please ref: 2.4, 2.5) . Their types and numbers depend on the measuring lists used by the client.

Testing bench allows for the measurements of:

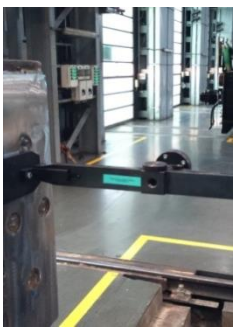
- a bogie frame curvature
- distortion and side deformations
- back-to-back distance of the axle bearing embrasure

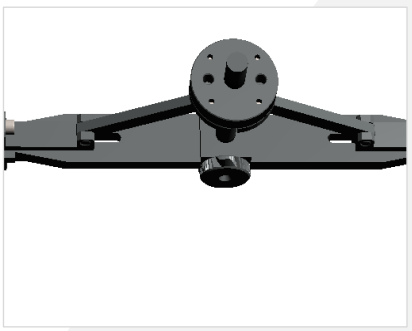
Characteristics	Data
measurement range	Two axle, three axle, loco bogie frames
accuracy	0,1 mm
weight	0,6 kg

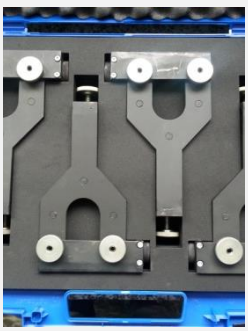
Complete set to be delivered include:	
a measuring device	1
case	1

2.3 POSITIONING BASES FOR BOGIE FRAME MEASUREMENT

The bases are designed for determining the centre of the axle box shape of the bogie 1XT. It is necessary for carrying out the cross measurements of a frame of the wagon bogies. The instrument can be delivered in two versions: A and B, according to the clients' needs.







Characteristics	Data
positioning	Hot axle box opening
weight	4 kg

Complete set to be delivered include:	
positioning bases	4
case	1

2.4 BOGIE FRAME MEASURING INSTRUMENT

The instrument is designed for:

- measuring the longitudinal and transverse spacing of axle box,
- cross measurements of bogie frames,
- determine the difference between two measurements,
- measuring the distance between two points, edges, faces.

Basic characteristics

- handy,
- accurate,
- light,
- readable and large display,
- possibility of calibration by the user.

Characteristics	Data
measurement range	1600 - 3000 mm
measurement accuracy	0,1 mm
resolution	0,1 mm
weight	5 kg

Complete set to be delivered include:	
instrument	1
check pattern	1
positioning tips for point to point measurement	2
case	1

2.5 CENTRE PIVOT POSITIONING MEASURING INSTRUMENT

The measuring instrument is used for establishing the position of centre pivot. This instrument is designed for measurements of the length of the bogie frame, frame's width and longitudinal and transversal displacement of the centre pivot.

Characteristics	Data
measurement range	1600 - 3000 mm
measurement accuracy	0,1 mm
weight	5 kg

Complete set to be delivered include:	
instrument	1

2.6 WEAR GAUGE FOR CENTRE PIVOT/BOLSTER BOWL

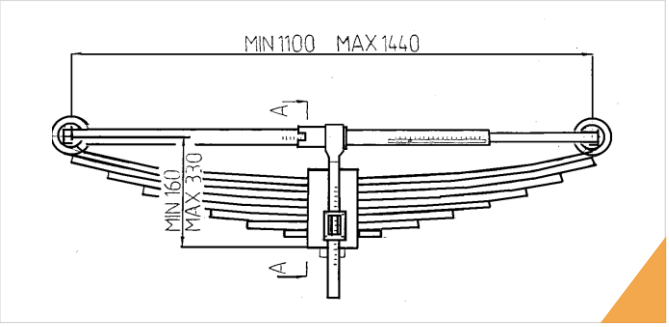
The measuring instrument is used for checking the wear of the bolster bowl.

Characteristics	Data
Instrument material	Stainless steel
weight	0,5 kg

Complete set to be delivered include:	
instrument	1

2.7 LEAF SPRINGS MEASURING INSTRUMENT

The device is designed for measuring the height and spacing of the gaps of a wagon leaf spring, and can also be used for checking the symmetry of the spring.



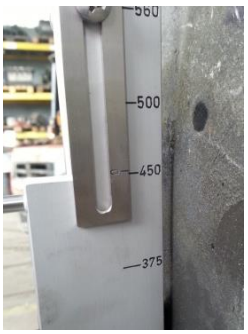
Characteristics	Data
measurement range eye to eye distance	1100 - 1400 mm
measurement range height of the spring	160 - 330 mm
measurement accuracy	1 mm
weight	5 kg

Complete set to be delivered include:	
instrument	1

2.8 BUFFER PLATE WEAR MEASURING INSTRUMENT

The device is designed for:

- wear measurements of convex buffer's shield with curvature radius Ru = 1500 mm and Ru = 2750 mm
- wear measurements of buffer's shield: round, truncated, rectangular.



Characteristics	Data
measurement range of convex buffer	375 - 560 mm
measurement range of rectangular buffer	400 x 560 mm
measurement accuracy	0,1 mm
weight	1 kg

Complete set to be delivered include:	
instrument	1
case	1

2.9 BUFFER HEIGHT MEASURING INSTRUMENT

The instrument is designed for measuring the distance between the buffer axis and the upper surface of the rail head




Characteristics	Data
measurement range	920 - 1100 mm
accuracy	0,1 mm
weight	0,6 kg

Complete set to be delivered include:	
a measuring device	1
case	1

2.10 BUFFER TO BUFFER DISTANCE MEASURING INSTRUMENT

The instrument is designed for measuring the distance between the buffers' axis. The instrument is based on the top of the buffers' bushing.


Characteristics	Data
measurement range	1700 - 1780 mm
accuracy	1 mm
weight	0,6 kg

Complete set to be delivered include:	
a measuring device	1
case	1

2.11 INSTRUMENT FOR SCHARFENBERG COUPLER TO RAIL HEAD DISTANCE MEASUREMENT

The instrument is designed for measuring the distance between the top of the rail head and Scharffenberg coupler.

Characteristics	Data
measurement range	500 - 1090 mm
accuracy	0,1 mm
weight	6,2kg

Complete set to be delivered include:	
a measuring device	1

2.12 TAPER GAUGE

The instrument is designed for measuring the gaps of the side bearer.

Characteristics	Data
measurement range	4 - 24 mm
accuracy	0,1 mm
measuring step	2 mm
weight	0,5 kg

Complete set to be delivered include:	
a measuring device	1

2.13 COUPLER SHACKLE WEAR GAUGE

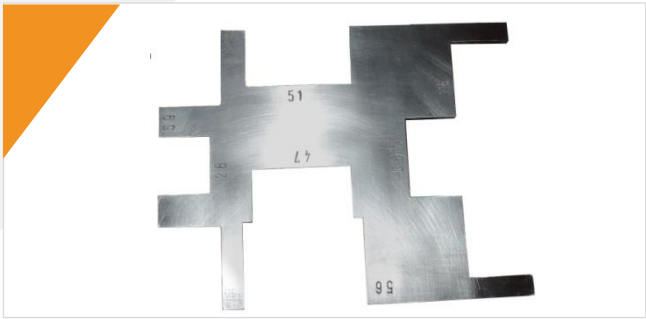
The instrument is designed for checking the dimensions of the coupler shakle.

Characteristics	Data
Diameter limit value	According to client's requirement
gauge material	stainless steel
weight	0,1 kg

Complete set to be delivered include:	
a measuring device	1
case	1

2.14 COUPLING HOOK WEAR GAUGE

The instrument is designed for checking the dimensions of the coupler hook.

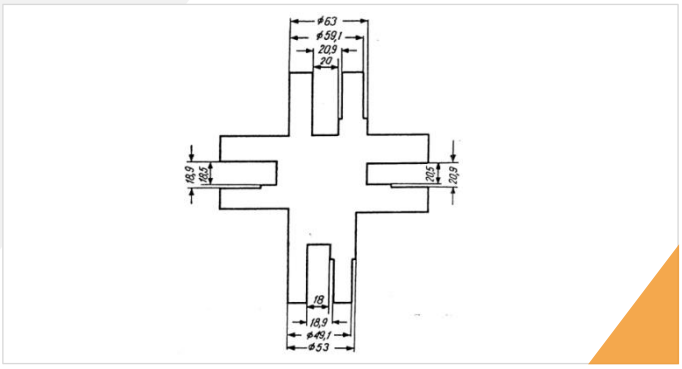


Characteristics	Data
Dimension limit value	According to client's requirement
gauge material	stainless steel
weight	0,1 kg

Complete set to be delivered include:	
a measuring device	1
case	1

2.15 COUPLER LINK WEAR GAUGE

The instrument is designed for checking the dimensions of the coupler links.

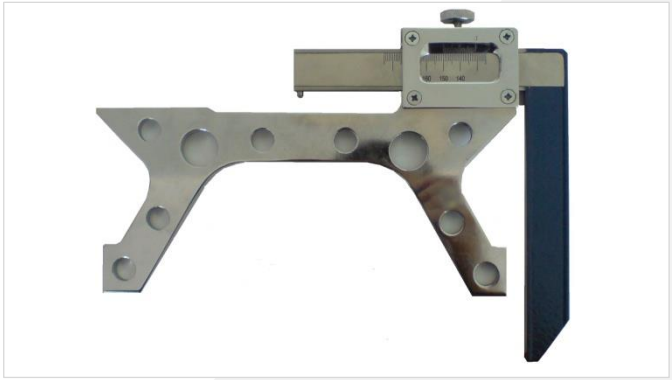


Characteristics	Data
Dimension limit value	According to client's requirement
gauge material	chrome plated
weight	0,1 kg

Complete set to be delivered include:	
a measuring device	1
case	1

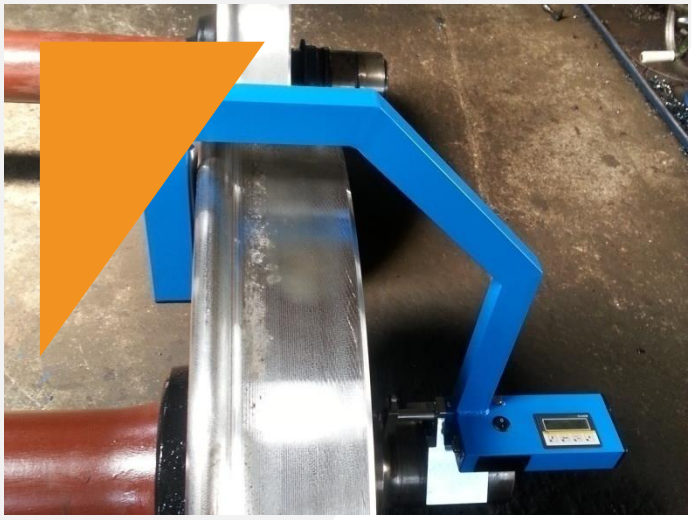
2.16 INSTRUMENT FOR AXLEBOX MEASUREMENT

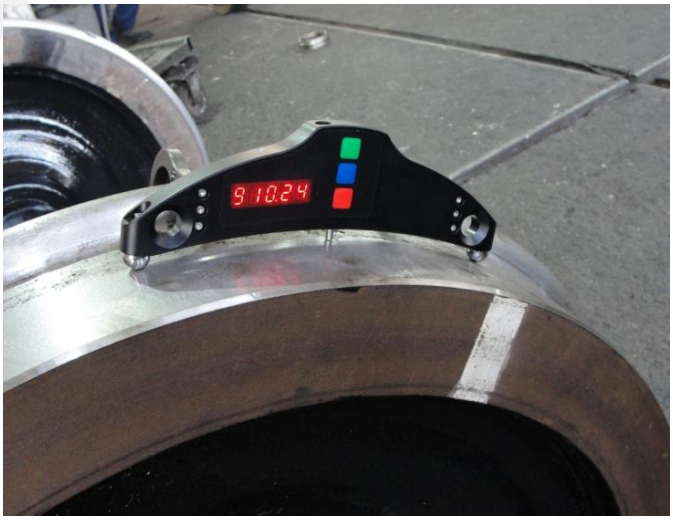
The instrument is designed for measuring the dimension c of the hot axle boxes of the bogies 1XT and 1XTa.



Characteristics	Data
Measurement range	55 - 75 mm
accuracy	0,1 mm
gauge material	chrome plated
weight	0,1 kg

Complete set to be delivered include:	
a measuring device	1





3. WAGON AND BOGIE FRAME MAINTENANCE

3.1 WHEELS & ROTORS MOUNTING AND DEMOUNTING PRESS

Wheel Set Mounting And Demounting Press is designed for cold mounting and dismounting of axle components, including wheel discs, brake discs, gears on shaft axle of the wheel set.

Features

The press is furnished with:

- Control box for press with programmable controller (PLC) with touch screen that enables the control of machine functions (selection of force, speed, piston stroke)
- Industrial computer with IT system (integrated with control box) that enables entering of necessary data (operator, wheel's serial number, date, pressing parameters), as well as registration and archiving of technological processes (force/distance diagram to be compared with nominal diagram)
- Set of converters for the execution of necessary measurements
- Hydraulic station with servo-motor
- Overhead crane for wheel set transport to and out of the press
- Set of accessories necessary for transport and hoisting of sub-assemblies
- High pressure pump with accessories for support of wheel disassembly process
- Main switch, overload protection, phase control system, emergency stop buttons

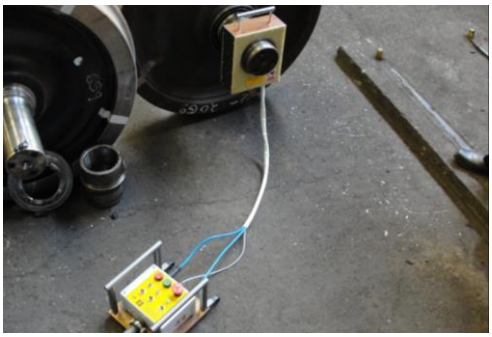
Components

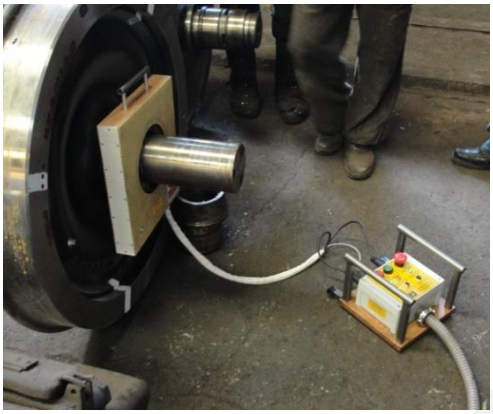
- Frame
- Fixed beam
- Hydraulic feeder
- Reaction beam
- Electrical switchboard
- Control box for press
- Overhead crane
- Technological tooling hydraulic unit.
- electrical cabinet with control panel, PLC controller, laptop or built in computer with a database and printer.
- customised analysis software Asco Rail
- customized analysis software Asco Rail

Characteristics	Data
Piston Force	2500 kN
Stroke	500 mm
Working speed	1 - 5 mm/s
Distance between main column and resistance column (adjustable)	500 - 2250 mm
Measurement error of applied axial load	±0,1 kN
Measurement accuracy of vertical movement	±0,1 mm
Accuracy of load monitoring (wheel on rail)	± 2%
Nominal Voltage	415 V ± 10%, 3-phase, 4-wire, 50 Hz
Installed power	approx. 7 kW

3.2 INDUCTION HEATING UNIT

The Induction Heating Unit is designed forthe thermal assembly and dismantling of: bearing rings, support rings axle of the wagon, small gears of traction motors and rotors and degaussing of the axle and sleeve after the thermal assembly process (with additional equipment: degaussing system).





Basic characteristics:

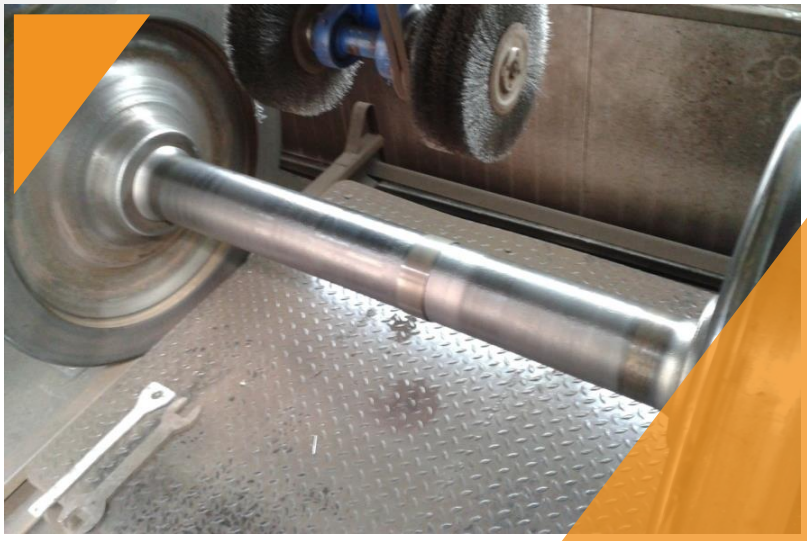
- short heating times,
- the possibility to charge heating to high temperatures,
- high efficiency of the device – energy transmission to charge directly by inductor, no useless thermal insulations reducing efficiency,
- energy saving,
- downsizing of inductor by using device of high-frequency operating.

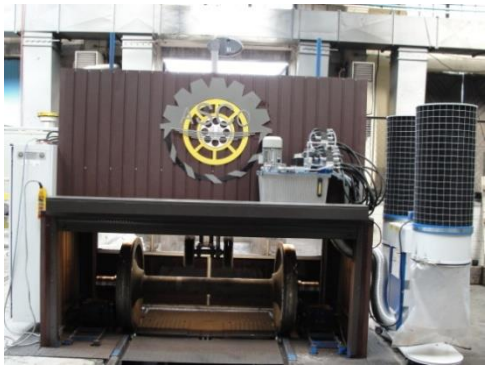
Characteristics	Data
power supply	400/230V +/-10%/50Hz,
the maximum power consumption	35,0 kW
heated part diameter Ø:	140 mm to 250 mm
the cooling system of the control cabinet	air ventilators
the cooling system of the coils	compressed air
maximum range of temperature control:	200°C
temperature sensor	yes
display	control panel with a keypad
time control:	0 – 500 s
degaussing module	optional
dimensions	580 x 510 x 840 mm

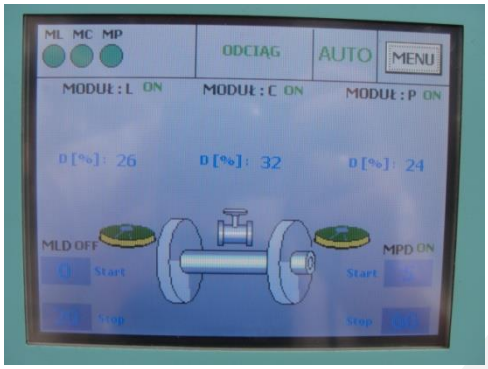
Complete set to be delivered include:	
Coils (inductors)	2 (1-for inner bearing ring, 1-labyrinth ring)
temperature sensor	1
induction heater control cabinet	1

3.3 WHEELSET CLEANING MACHINE

The cleaning machine is intended for cleaning wheel sets of freight wagons (wheels with no gears and brake discs) prior to non-destructive tests.







Basic characteristics:

- cleaning of axes (including inner wheel hub)
- cleaning of wheel: inner side and outer side of the wheel
- cleaning of the wheel hub outer and inner side
- dust exhaustion system
- steel brushes cleaning

Characteristics	Data
power supply	400/230V +/-10%/50Hz,
Diameter range of wheelsets	800 - 1100 mm
heated part diameter Ø:	140 mm to 250 mm
the cooling system of the control cabinet	air ventilators
the cooling system of the coils	compressed air
maximum range of temperature control:	200°C
temperature sensor	yes
display	control panel with a keypad
time control:	0 – 500 s
degaussing module	optional
dimensions	580 x 510 x 840 mm

Complete set to be delivered include:	
Coils (inductors)	2 (1-for inner bearing ring, 1-labyrinth ring)
temperature sensor	1
induction heater control cabinet	1

3.4 BACK TO BACK WHEEL DISTANCE MEASURING INSTRUMENT ELECTRONIC DISPLAY

The device is designed for measuring the distance of the inner wheel faces of the wheel sets.

Features

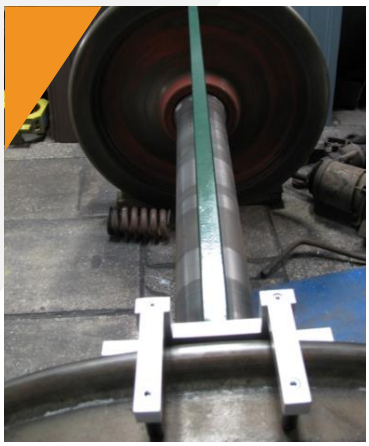
- Measurement of the wheel inner face distance
- Calculating the average of the measurements
- Measuring the differences between measured values and characteristics defined by a manufacturer
- Saving the measuring data to the memory
- Mechanical measurement with electronic display of the results

Characteristics	Data
measurement range	1360 ± 15 mm (or other at client's request)
accuracy	0,1 mm
battery	built-in Li-ion rechargeable battery
internal memory capacity	up to 2000 measurements
weight	2 kg

Complete set to be delivered include:	
a measuring device	1
check pattern	1
charger	1
Cable for computer connection	1
case	1

3.5 BACK TO BACK WHEEL DISTANCE MEASURING INSTRUMENT

The instrument is designed to perform manual, mechanical measurement of the distance of the inner wheel faces of the wheel sets.



Characteristics	Data
Measurement range of the wheel faces inner distance	1345 – 1375 mm
Measurement error	± 0,1 mm
weight	1 kg

Complete set to be delivered include:	
a measuring device	1
case	1

3.6 ELECTRONIC WHEEL DIAMETER MEASURING INSTRUMENT

Electronic gauge is designed for measuring wheel rolling circle diameter (amount of wear) of railway, metro and tram in the course of checkup, examination, repair and formation of wheel sets. Measurements are made directly on rolling stock without wheel set roll-out.

Features

- Measurement of the wheel rolling diameter without need of wheel set roll-out
- Calculating the average of the measurements
- verification, registration and identification of measured wheels (optionally with tablet)
- Saving the measuring data to the memory(optionally with tablet)

Characteristics	Data
measurement range	600 - 1300 mm (or other at client's request)
accuracy	0,2 mm
battery	2 x AA batteries
resolution	0,01 mm
internal memory capacity	up to 2000 measurements
weight	0,5 kg

Complete set to be delivered include:	
measuring device	1
calibration set	1
software – optional	1
device (tablet, PDA) to visualization and record the measurement results (wireless connection with a measuring device)	1
charger set	1
case	1

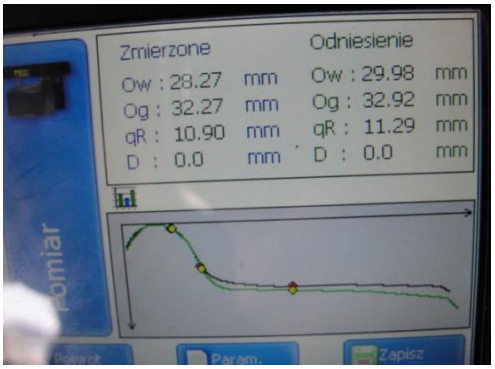
3.7 WHEEL DIAMETER MEASURING INSTRUMENT

The instrument is designed to perform manual, mechanical measurement of the wheel diameter.

Characteristics	Data
Measurement range	A) 600 – 800 mm, B) 800 – 1050 mm, C) 1050 – 1270 mm
Measurement error	± 0,1 mm
Reading of results	metre scale
weight	1,5 kg

Complete set to be delivered include:	
measuring device	1

3.8 LASER WHEEL PROFILE MEASURING INSTRUMENT



A laser wheel profile measuring instrument is designed for the measuring of

- wheel flange height
- wheel flange thickness
- wheel flange slope
- full profile scanning and analyze of wheel rolling surface
- maintaining of electronic wear data base
- control of tolerances and sorting in the course of checkup, examination, repair and formation of railway wheel sets

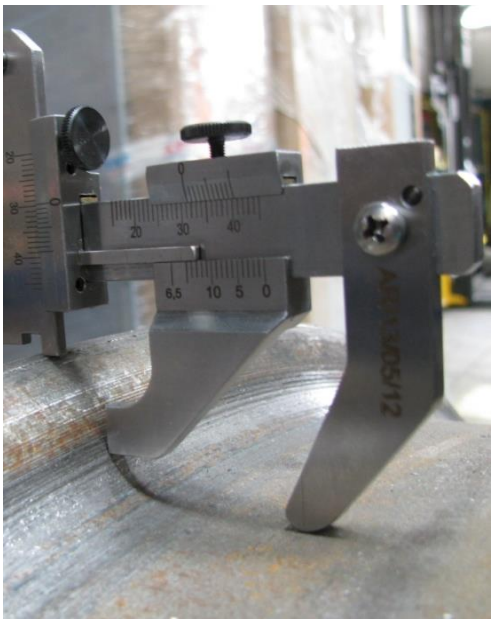
Characteristics	Data
Measurement range	
flange height Ow(Sh)	20 - 45 mm
flange thickness Og(Sd)	20 - 50 mm
flange slope qR	1 - 15 mm
rim thickness	36 - 100 mm
Measurement error	
flange height Ow(Sh)	±0,05 mm
flange thickness Og(Sd)	±0,05 mm
flange slope qR	±0,1 mm
The number of measurements that can be taken before battery recharge is not less than	5000 for Standard IKP and 2200 for Short and Super-short
profilometer dimensions	Standard: 214 x 156 x 54 mm Short: 201 x 114 x 54 mm Super-short: 213,5 x 90 x 54 mm
resolution	0,01 mm
weight	0,6 kg
Power supply (laser scanning module)	3,7V, Li-ion rechargeable battery 5400mAh for standard IKP and 2400mAh for Short and SShort

Complete set to be delivered include:	
a measuring device	1
calibration and control set	1
software (a computer programme)	1
device (tablet, PDA) to visualization and record the measurement results (wireless connection with profilometer)	1
chargers set	1
cables for computer or printer connection	1
case	1

3.9 CALIPER FOR RAILWAY WHEELS PROFILE MEASUREMENT

The device is designed for measuring the parameters of external profile of railway wheel:

- flange height Ow (Sh)
- flange thickness Og (Sd)
- flange slope qR
- rim thickness O (optional)



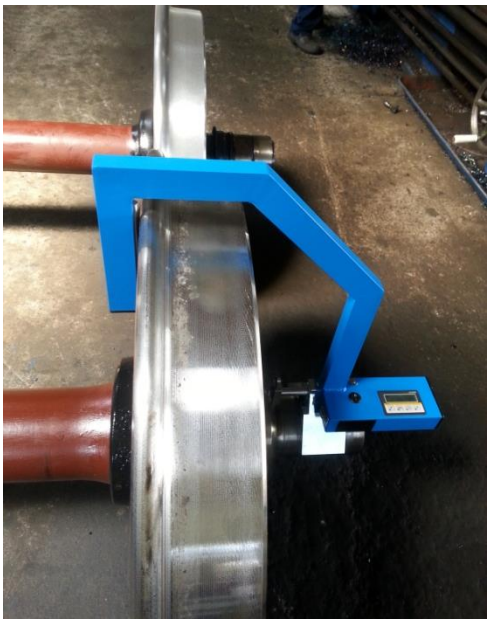
Characteristics	Data
Measurement range	
flange height Ow(Sh)	20 - 36 mm
flange thickness Og(Sd)	15 - 36 mm
flange slope qR	0 - 13 mm
rim thickness O (optional)	25 - 80 mm
Measurement error	
flange height ow(sh)	0,1 mm
flange thickness og(sd)	0,1 mm
flange slope qr	0,5 mm
rim thickness O	0,1 mm
weight	0,6 kg

Complete set to be delivered include:	
a measuring device	1
check pattern	1
charger	1
Cable for computer connection	1
case	1

3.10 WHEEL SYMETRY MEASURING INSTRUMENT

An electronic device is designed for the measuring of:

- measuring the distance between wheels inner surface and axle toe C-C',
- measuring the difference in this distance for both wheel set.

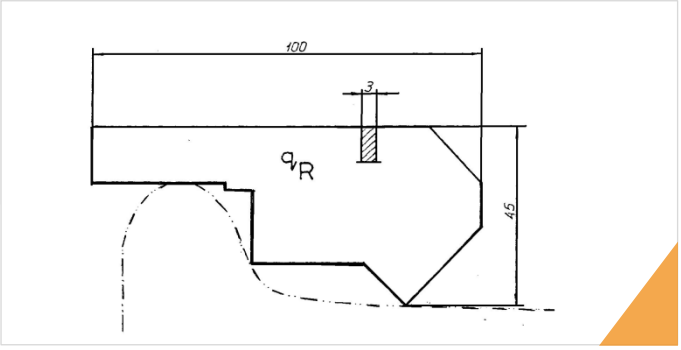


Characteristics	Data
measurement range	190 – 260 mm (or other at client's request)
wheel diameter range	600 – 1200 mm
accuracy	0,1 mm
battery	2 x AA batteries
internal memory capacity	up to 2000 measurements
weight	4 kg

Complete set to be delivered include:	
instrument	1
a calibration device	1
heavy duty carry case	1
operation manual	1

3.11 DIMENSION CHECK GAUGE

The instrument is designed for checking the qR dimension of the wheel flange. The instrument is go/no go type.



Characteristics	Data
qR parameter limit value	6,5 mm
gauge material	Stainless steel
weight	0,2 kg

Complete set to be delivered include:	
gauge GO type	1

3.12 WHEEL THREAD GAUGE & CHECK PATTERN

The instrument is designed for checking the external outline of wheel flange. The instrument is go/no go type.

Characteristics	Data
Wheel parameters	S1002/h28/e32,5/6,7%, other on request
gauge material	Stainless steel
weight	0,6 kg

Complete set to be delivered include:	
gauge of the type GO/NO GO	1
check pattern for the gauge	1

Note: *The instruments are design to suit VPI measurements requirements.*

3.13 SURFACE ROUGHNESS TESTER

The portable roughness tester has a piezoelectric sensor with integrated probe.The tester has a large measuring range for most materials.

Characteristics	Data
Wheel parameters	S1002/h28/e32,5/6,7%, other on request
gauge material	Stainless steel
weight	0,6 kg

Complete set to be delivered include:	
surface roughness tester	1
calibrate sample with the nominal value Ra	1
charger	1
USB data cable	1
transport case	1
surface roughness tester	1
calibrate sample with the nominal value Ra	1

4. WAGON AND BOGIE FRAME MAINTENANCE

4.1 BUFFER HANDLING TROLLEY

The trolley is designed for disassembly, assembly and transport of wagon's buffers. The trolley consists of a two-wheeled construction, hydraulic system for bumpers lifting and lowering and mobile bumper gripper.

The device is powered by a hydraulic pomp, which allows for an easier lifting of the buffers. This solution enables managing the passengers and freight wagons' buffers by one person.

In comparison to the earlier versions, this trolley is characterised by a simpler lifting process and a better ergonomic design and, as a result, faster assembling and disassembling process

Characteristics	Data
Maximum lift weight:	150 kg
Dimensions (length, width, height):	1495 x 600 x 1825 mm
Weight:	80 kg
Lifting height (from ground till springs support point)	1500 mm

4.2 LEAF SPRING HANDLING TROLLEY

The trolley is designed for disassembly, assembly and transport of wagon's leaf springs. The device allows for performing the operation by one person, while maintaining the maximum of safety. The trolley consists of a frame with wheels, handle, gripper and a hydraulic pomp. The lifting process is based on a hydraulic pomp, which allows for an easier lifting of the springs. In comparison to the earlier versions, this trolley is characterised by a simpler lifting process and better ergonomic design and, as a result, faster assembling and disassembling process.

Characteristics	Data
Maximum lift weight:	150 kg
Dimensions (length, width, height):	1720 x 720 x 1510 mm
Weight:	80 kg
Lifting height (from ground till springs support point)	980 mm

4.3 BOGIES AND BOGIE FRAMESSTORAGE SYSTEM

The system allows storage of bogies frames or complete bogies.

The configuration and dimensions of the system components corresponds to the customer requirements .

IRIS Certification

BUREAU VERITAS Certification

C E R T I F I C A T E

awarded to

MTL ASCO RAIL Sp. z o.o.
Wielowiejska 53
44-120, Pyskowice
Poland

BUREAU VERITAS CERTIFICATION

confirms, as an IRIS approved certification body, that the Management System of the above organization has been assessed and found to be in accordance with the

International Railway Industry Standard (IRIS) Revision 02, June 2009

for the activity of Maintenance
for the scopes of certification: 3 (Guidance), 18 (Rolling stock)
for the products of bogies, locomotives and other railway vehicles

Certificate valid from: 22/04/2015 Certificate valid until: 21/04/2018*

Current date: 15/04/2015
Certificate-Register-No: POL -IR - 000 563

* Providing that the subsequent surveillance audits are successful before the validity date of the previous audit.
Certification body address: 67/71 Boulevard du Château, 92200 Neuilly-sur-Seine, France

BUREAU VERITAS
Certification

Certificate

Awarded to

MTL ASCO RAIL Sp. z o.o.

ul. Wielowiejska 53, 44-120 Pyskowice, Poland

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

STANDARDS

ISO 9001:2008

SCOPE OF SUPPLY

DESIGN, MANUFACTURING AND DISTRIBUTION OF MACHINES, INSTRUMENTS AND DEVICES FOR CONTROL AND MEASURINGS REQUIRED IN REPAIR AND MAINTENANCE OF RAIL VEHICLES AND RAILWAYS INFRASTRUCTURE. MODERNIZATION, REPAIR, MAINTENANCE AND SERVICE OF RAIL VEHICLES AND THEIR SUBASSEMBLIES INCLUDING BOGIES AND WHEELSETS, POWER GENERATORS, ELECTRIC MACHINES .

Approval Date: **30 March 2015**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: **29 March 2018**

To check this certificate validity please call: +48 22 549 04 00
Further clarification regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

Issue Date: 30 March 2015

Certificate Number: **PL004748**

Piotr Popławski
Local Technical Manager

PCA
POLSKIE CENTRUM AKREDYTACJI
CERTYFIKACJA SYSTEMÓW ZARZĄDZANIA
AC 081
QMS

MIX
Paper from responsible sources
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Akkreditiertes Kalibrierlabor
nach DIN EN ISO/IEC 17025
für mechanische und elektrische Messgrößen
Anerkannt für eisenbahntypische Prüfungen

DB Systemtechnik GmbH
Qualitätssicherung Prüfmittel
Kalibrier- und Prüfstelle
Emilienstraße 45, 09131 Chemnitz, Tel.: (0371) 493 2010 Fax: (0371) 493 2030

DB Mobility Networks Logistics

PRÜFBERICHT

Nr. 038345-43710000-7275-16

Prüfgegenstand	:	Federprüfmaschine
Identnummer	:	01/PRS/15
Auftraggeber	:	SEMA AG Neuenhäuser Straße 6-8 29221 Celle
Auftragsnummer	:	201.16.0630-001
Tag der Prüfung	:	24.02.2016
Ort der Prüfung	:	beim Auftraggeber
Prüfergebnis	:	Zum Zeitpunkt der Prüfung entsprach der Prüfgegenstand den Bedingungen, welche die Grundlage der Prüfung bildeten. Einschränkungen auf Seite 2 unter Punkt 11.

Der Prüfbericht umfasst 4 Seiten und 1 Anlage(n)

Gültigkeitsdauer: Dieser Prüfbericht wird ungültig, wenn technische Veränderungen am Prüfgegenstand vorgenommen werden, Fehler des Prüfgegenstandes einschließlich der Anzeigeeinrichtung erkannt oder vermutet werden, im übrigen nach Ablauf des Bestätigungsintervalls.

Ort, Datum	Leiter	Bearbeiter
Chemnitz, 25.02.2016		Langer U.

DB Systemtechnik GmbH
Qualitätssicherung Prüfmittel
Kalibrier- und Prüfstelle
Emilienstraße 45, 09131 Chemnitz, Tel.: (0371) 493 2010 Fax: (0371) 493 2030

Angaben zur Prüfung

1.	**Identifikation des Prüfgegenstandes**		
1.1.	Hersteller	:	MTL ASCO
1.2.	Bauart/Typ	:	Federprüfmaschine 180 kN
1.3.	Baujahr	:	2015
1.4.	DB MM-Barcode	:	10047275
1.5.	Messbereich	:	Anwendungsbereich von 10 bis 175 kN für Druckkräfte
1.6.	kleinster ablesbarer Ziffernschritt	:	0,01 kN
1.7.	Standort	:	Keller Montagehalle
2.	**Bestätigungsintervall**	:	36 Monate nach Betreiberangaben
3.	**Bestätigungs- PA**	:	----------
4.	**Verfahrensanweisung**	:	V-06-02
5.	**Grundlage der Prüfung**	:	DIN EN ISO 7500-1 / Beiblatt 2 und DIN EN 10002 Teil 2
6.	**Verwendete Prüfmittel**	:	Die verwendeten Normale sind rückgeführt auf nationale Normale.
6.1.	Prüfnormal für die Kraftmessung	:	200 kN Präzisionskraftaufnehmer der GK 00 Nr.033030158
6.2.	Anzeigeeinheit für die Kraftmessung	:	Messverstärker MGC plus Nr. D 801026681
6.3.	Prüfnormal für die Länge	:	Innenmessschraube Nr. 2179
6.4.	Hilfsmittel	:	Präzisionsrahmenrichtwaage Nr. 3840
7.	**Messverfahren**	:	Direkte Messung zwischen dem Prüfnormal und dem Prüfgegenstand.
8.	**Umgebungsbedingungen**		
8.1.	Temperatur zum Zeitpunkt der Prüfung	:	(20 ± 2) °C
8.2.	Luftdruck zum Zeitpunkt der Prüfung	:	----------
9.	**Messunsicherheit**		
9.1.	Messunsicherheit des Kraftnormales	:	± 0,12 % v.MW
9.2.	Messunsicherheit der Anzeigeeinheit	:	± 0,0025 % v. EW
9.3.	Messunsicherheit bei der Längenmessung	:	fges (4 + L / 100) µm ; (L = Länge der Verlängerungen in mm)
10.	**Einzelheiten zur Instandhaltung**	:	keine
11.	**Einschränkungen**	:	Die Maschine ist nur zur Prüfung von Plattfedern geeignet.
12.	**Bemerkung**	:	Die einzelnen Messwerte und Messergebnisse befinden sich auf der(n) Folgeseite(n).
13.	**Kennzeichnung**	:	Es wurde eine Prüfplakette mit dem nächsten Prüfdatum angebracht.

DB Systemtechnik GmbH
Qualitätssicherung Prüfmittel
Kalibrier- und Prüfstelle
Emilienstraße 45, 09131 Chemnitz, Tel.: (0371) 493 2010 Fax: (0371) 493 2030

Messblatt über die Maschinengeometrie und Längenmessung

1. Aufstellbedingungen und Maschinengeometrie

Lfd. Nr.	Bezeichnung		Einheit	Zulässige Abweichung	Festgestellte Abweichung	Toleranz-ausnutzung in %
1	waagerechte Aufstellung des Maschinenbettes	- linkes Bett	mm / m	0,5	0,37	74
		- rechtes Bett	mm / m	0,5	0,40	80
		- unter dem Stempel	mm / m	0,5	0,40	80
2	senkrechte Stellung des Arbeitskolbens	- in Bettrichtung	mm / m	0,5	0,44	88
		- senkrecht zur Bettrichtung	mm / m	0,5	0,44	88
3	Parallelität der Druckplatten für die Prüfung von Schraubenfedern (0,1 mm / 100 mm bis 500 mm Druck-plattenabstand)	- in der X-Achse links	mm	k. A.	keine Prüfung	k. A.
		- in der X-Achse rechts	mm	k. A.	keine Prüfung	k. A.
		- in der Y-Achse vorn	mm	k. A.	keine Prüfung	k. A.
		- in der Y-Achse hinten	mm	k. A.	keine Prüfung	k. A.

2. Fehler der Längenmesseinrichtung und Aufbiegung der Maschine

Lfd. Nr.	Bezeichnung		Einheit	Zulässige Abweichung	Festgestellte Abweichung	Toleranz-ausnutzung in %
1	Genauigkeit der Wegmess-einrichtung	1. Messpunkt: 204,90 mm	mm	0,5	0,072	14
		2. Messpunkt: 254,90 mm	mm	0,5	0,100	20
		3. Messpunkt: 304,90 mm	mm	0,5	-0,030	6
		4. Messpunkt: 354,90 mm	mm	0,5	-0,080	16
		5. Messpunkt: 404,90 mm	mm	0,5	0,150	30
2	Änderung der Weganzeige bei maximal Kraft	1. Messpunkt: bei 20 kN	mm	1,0	0,00	0
		2. Messpunkt: bei 175 kN	mm	1,0	-0,70	70

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Emilienstraße 45, 09131 Chemnitz, Tel.: (0371) 493 2010 Fax: (0371) 493 2030

Messblatt über die Kraftmessung

Messwerte

1. Messreihe aufwärts		2. Messreihe aufwärts		3. Messreihe aufwärts		4. Messreihe abwärts	
Istwerte in kN	Sollwerte in kN	Istwerte in kN	Sollwerte in kN	Istwerte in kN	Sollwerte in kN	Istwerte in kN	Sollwerte in kN
10,0	10,083	10,0	10,074	10,0	10,060	10,0	10,074
20,0	20,018	20,0	19,996	20,0	19,983	20,0	20,021
40,0	39,888	40,0	39,841	40,0	39,870	40,0	39,851
60,0	59,762	60,0	59,673	60,0	59,718	60,0	59,678
80,0	79,519	80,0	79,502	80,0	79,544	80,0	79,514
100,0	99,352	100,0	99,323	100,0	99,362	100,0	99,308
120,0	119,173	120,0	119,103	120,0	119,175	120,0	119,150
140,0	138,967	140,0	138,927	140,0	138,973	140,0	138,974
160,0	158,769	160,0	158,743	160,0	158,767	160,0	158,751
175,0	173,606	175,0	173,642	175,0	173,623	175,0	173,628

Messergebnisse

Bezugs-wert	Spannweite aus Messreihe 1 - 3		Mittelwert v.Sollwerten	Anzeigeabweichung des Prüflings		Umkehrspanne des Prüflings	
in kN	in kN	in % v.MW	in kN	in kN	in % v.MW	in kN	in % v.MW
10,0	0,023	0,229	10,072	-0,072	-0,715	-0,014	-0,141
20,0	0,035	0,177	19,999	0,001	0,005	-0,038	-0,191
40,0	0,047	0,118	39,866	0,134	0,336	0,020	0,049
60,0	0,089	0,149	59,717	0,283	0,473	0,040	0,067
80,0	0,042	0,053	79,522	0,478	0,601	0,030	0,038
100,0	0,038	0,039	99,345	0,655	0,659	0,053	0,054
120,0	0,072	0,060	119,150	0,850	0,713	0,026	0,021
140,0	0,045	0,033	138,956	1,044	0,752	-0,002	-0,001
160,0	0,026	0,016	158,759	1,241	0,782	0,015	0,010
175,0	0,036	0,021	173,624	1,376	0,793	-0,004	-0,003

Auswertung und Einschätzung

kleinster Ziffernschritt 0,010 kN
maximale Restanzeige des Prüflings -0,020 kN

Lfd. Nr.	Bezeichnung	Einheit	Zulässige Abweichung nach Kl. 1,0	Festgestellte Abweichung	Toleranz-ausnutzung in %
1	max. Anzeigeabweichung	% v.MW	± 1,0	0,793	79
2	max. Spannweite	% v.MW	1,0	0,229	23
3	max. Umkehrspanne	% v.MW	1,5	-0,191	13
4	rel. Auflösung bei 10 % v.EW	% v.MW	0,5	0,100	20
5	relative Restanzeige	% v.EW	± 0,1	-0,011	11

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