



PRODUCT CATALOGUE

CATALOGUE PRODUITS ATELIERS FERROVIAIRES

BUILT TO LAST*

* "Conçu pour durer"



A PROPOS D'ASCO RAIL & EuroTools Precision

EuroTools SARL spécialiste d'outils de contrôle et d'instruments de mesure dimensionnelle est partenaire privilégié du fabricant polonais ASCO Rail pour le développement et la vente d'instruments de mesure et d'équipements de bancs d'essais en France.

Le rapprochement des 2 sociétés s'est fait de façon naturelle pour une synergie en termes de collaboration et surtout pour apporter aux clients français un support technique et service commercial d'une qualité irréprochable.

Depuis le début de son activité en 1988, ASCO RAIL est considérée comme l'un des leaders du secteur ferroviaire pour la maintenance et l'exploitation des véhicules ferroviaires. L'activité principale de la société est la conception, la fabrication et la distribution de tous les instruments et dispositifs de diagnostic nécessaires au cours du processus de réparation et d'exploitation des véhicules ferroviaires.

Au cours de ses 35 années d'activité, Asco Rail a participé à de nombreux projets, non seulement en Pologne, où l'entreprise est basée, mais aussi dans toute l'Europe, en Asie, en Asie du Sud-Est et dans le Pacifique.

L'expérience acquise par l'entreprise et ses précieux ingénieurs au fil des ans, comparée aux différents marchés sur lesquels ASCO Rail est présent, permet de garantir un service professionnel et complet à tous les clients, en fonction de leurs besoins.

ASCO Rail conçoit et fabrique des équipements qui apportent un soutien technique pendant les processus d'inspection, de réparation et de maintenance des véhicules ferroviaires et de tous leurs composants (par exemple, banc d'essai pour ressorts à lames et à air, banc d'essai pour bogies, banc d'essai pour amortisseurs, banc d'essai pour pantographes, machine à monter les roues, machine à nettoyer les essieux montés et bien d'autres équipements encore). Asco Rail fournit également un service complet de maintenance et de réparation pour tous les véhicules ferroviaires (tels que les locomotives, wagons, ...) qui couvre P1 à P5.

Notre implication sur le marché ferroviaire et la compréhension de l'importance de la proximité nous permettent d'améliorer constamment la technologie et le service afin d'être en mesure d'offrir au client final un produit adapté et sur mesure en fonction des attentes, spécifications ou normes en vigueur du pays.

Connaissance, passion, qualité et durabilité... telle est notre signature et notre identité commune.

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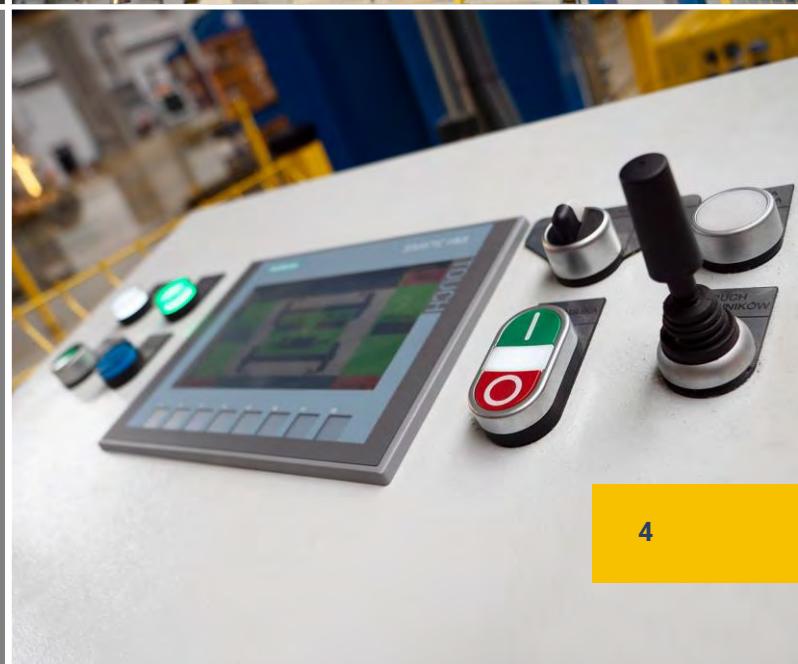
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ESSAIS ET MESURES DE BOGIES, SUSPENSIONS, TAMPONS, 1. AMORTISSEURS etc...

TESTS AND MEASUREMENTS OF BOGIES, SPRINGS, BUFFERS, DAMPERS E.T.C.

- 1.1 BANC D'ESSAI DE BOGIES
- 1.2 BANC D'ESSAI SUSPENSION PRIMAIRE
- 1.3 BANC D'ESSAI SUSPENSION PNEUMATIQUES (SECONDAIRE)
- 1.4 BANC D'ESSAI DE RESSORTS À SPIRALE ET À LAMES
- 1.5 BANC D'ESSAI DE TAMPONS
- 1.6 BANC DE MONTAGE ET DE DÉMONTAGE DE TAMPONS
- 1.7 STATION DE DIAGNOSTIC AVEC RÉSISTANCE À EAU POUR LOCOMOTIVES DIESEL
- 1.8 BANC D'ESSAI D'AMORTISSEURS
- 1.9 BANC D'ESSAI D'ATTELAGES DE SCHARFENBERG
- 1.10 BANC D'ESSAI DE PANTOGRAPHES



1.1 BANC D'ESSAIS DE BOGIES

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 BANC D'ESSAI SUSPENSION PRIMAIRE COIL SPRINGS TEST STAND

The Spring Test Stand is designed to perform a static test of conical bonded rubber spring, helical springs and springs sets. It can be manufactured with a system enabling buckling measurement. Dedicated software package allows to control the test stand, aid in test data analysis. Fully customizable by the operator with new test procedures, different springs parameters or specific test reports required by the user.

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.

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) | 180 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 | 650 mm |

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



1.3 BANC D'ESSAI SUSPENSION PNEUMATIQUE (SECONDAIRE)

AIR SPRINGS TEST STAND

The Spring Test Stand is designed to perform a static test of elements of pneumatic suspension as well as a test of coil springs and rubber springs. Dedicated software package allows to control the test stand, aid in test data analysis. Fully customisable by the operator with new test procedures, different springs parameters or specific test reports required by user.

FEATURES

- Leakage test,
- 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 (optional),
- The operator implemented pre-programmed test modes, set tolerances and warning limit values of the springs,
- Collecting and saving measurement data, creating reports as PDF or measurement files.

COMPONENTS

- Closed steel frame is designed to support all main components,
- Adapters dedicated to elements of pneumatic suspension,
- Load cells are built inside with stainless steel material,
- Linear position sensors 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) | 200 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 |

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



BANC D'ESSAI DE RESSORTS À SPIRALE 1.4 ET À LAMES

COIL AND LEAF 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.

| 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 |

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



1.5 BANC D'ESSAI DE TAMPONS

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 preset 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 |



1.6 BANC DE MONTAGE ET DE DÉMONTAGE DE TAMPONS BUFFER MOUNTING AND 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 |



1.7 STATION DE DIAGNOSTIC AVEC RÉSISTANCE À EAU POUR LOCOMOTIVES DIESEL

DIAGNOSTIC STATION WITH WATER RESISTOR FOR DIESEL LOCOMOTIVES

Diagnostic station with water resistor manufactured by ASCO RAIL enables full diagnostics of diesel locomotives.

FEATURES:

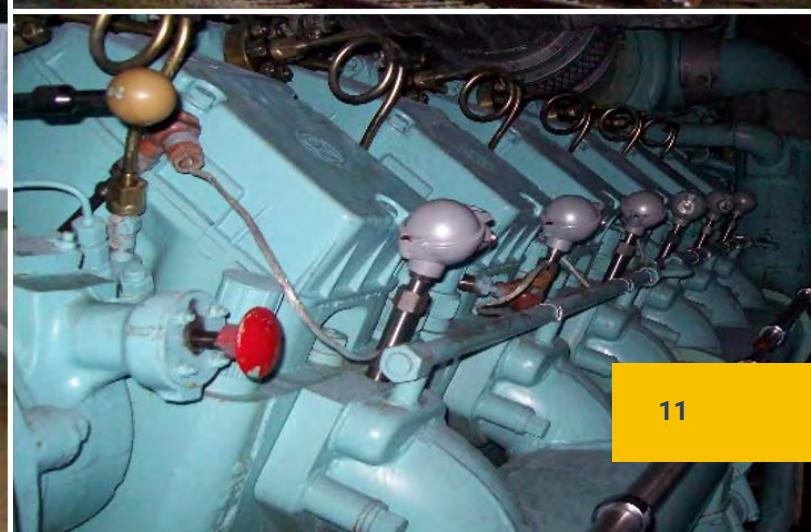
- Maximum damping force at tension,
- Isolation resistance, absorption coefficient of electrical machines, traction battery parameters, performance of power generators,
- Time and unit fuel consumption under specified states of engine performance, unit fuel consumption in transient states of engine performance, measurement of long-term fuel consumption,
- Exhaust gases analysis.

COMPONENTS:

- Steering and storage room,
- Water resistor with steering devices and suitable converters, also with signaling adapted to loading power generators,
- Computer measuring system with suitable converters,
- Device for fuel consumption measurement.

*All characteristics given in the table are only for reference, and their values can be modified according to the customer needs.

| CHARACTERISTICS | DATA |
|---|---|
| Maximum current | 8500 A |
| Maximum voltage | 1500 V |
| Current stabilization accuracy | 5% |
| Dissipated power in surrounding temp. range -15°C do +20°C | Continuous power: 800 kW, hour power 1200 kW, maximum power 2600 kW |



1.8 BANC D'ESSAI D'AMORTISSEURS

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 – 0,3 |
| Maximum stroke | 600 mm |
| Maximum test force | ± 40 kN |
| Accuracy of measured stroke | ± 2% |
| Angle adjustment range | Up to +90 |
| Accuracy of force measurement | <100 N |



1.9 BANC D'ESSAI D'ATTELAGES DE SCHARFENBERG

SCHARFENBERG COUPLERS TEST STAND

The purpose of the device is to ensure proper testing of Scharfenberg couplings. The device enables tensile and compressive load tests 750 kN at a speed of 0.05 m/s and allows for adequate stress (forces tension and compression) of tested couplings up to 1000 kN, maintaining this load for 2 minutes. The computer system of the device enables full analysis of measurement data and their recording.

FEATURES:

- Testing in automatic mode; the test is carried out by moving one end of the coupler at different speeds in both directions, the other end then being rigidly attached to the bench structure,
- Maximum damping force at tension,
- Maximum damping force at compression,
- Hysteresis loop damping force, working stroke of tested coupling,
- The operators implements pre-programmed test modes, sets tolerances,
- Collecting and saving measurement data, creating reports as PDF or measurement files,
- Aid in data analysis.

COMPONENTS:

- Body with hydraulic drive (S) with force converter (Ps) and distance converter (Pd),
- Hydraulic drive with steering system and equipment,
- Steering system and electrical power supply,
- Electrical cabinet with control panel, PLC controller,
- Emergency stop.

| CHARACTERISTICS | DATA |
|-----------------|--------------------------|
| Maximum load | 1000 kN |
| Dimensions | 3 500 x 1 200 x 1 000 mm |
| Weight | 3000 kg |



1.10 BANC D'ESSAI DE PANTOGRAPHES

PANTOGRAPH TEST BENCH

Test stand is intended to test current collectors (pantographs) of the railway vehicles.

THE COMPUTER SYSTEM ENABLES THE REGISTRATION OF MEASUREMENT DATA, INCLUDING:

- Time of collector lifting to the nominal height,
- Fall time of the collector from the nominal height,
- The height of the pantograph head in a folded state from the level of the insulator bracket,
- Static contact force in the operating range,
- Contact force,
- Lowering force,
- Freedom of rotation of the pantograph head,
- Holding force in the folded position,
- Checking the correct functional operation and tightness of the pneumatic system,
- Lateral deviation,
- Tilt of pantograph head,
- Measuring the wear of slider pad,
- Measurement of insulation resistance,
- The dielectric strength test.

* All characteristics given in the table are only for reference, and their values can be modified according to the customer needs.

| CHARACTERISTICS | DATA |
|---|--|
| Supply voltage | 3 x 400V + 10%, -15% L1 + L2 + L3 + N + PE |
| Frequency of the supply voltage | 50Hz ± 10%, |
| Installed capacity | ≤ 1kW |
| Stroke of the height measurement module | nominal 1300 mm |
| Stroke of the bowing measurement module | 280 mm |
| Measurement accuracy | 1 mm |
| Pantograph contact force measurement | ± 40 KG (392,4 N) |
| Pantograph bowing force measurement | ± 50 KG (490,5 N) |
| Measurement accuracy | 1 N |
| Speed of the measuring module | adjustable 10 – 62 mm/s |



ENTRETIEN DU WAGON

2. MAINTENANCE DU CHÂSSIS DE BOGIE

WAGON AND BOGIE FRAME MAINTENANCE

- 2.1 SYSTÈME MODULAIRE DE PESAGE STATIQUE/DYNAMIQUE DU CHÂSSIS
- 2.2 BANC DE MESURE DES DIMENSIONS GÉOMÉTRIQUES DU CHÂSSIS DE BOGIE (reprofilage)
- 2.3 INSTRUMENT DE MESURE DU CHÂSSIS DE BOGIE
- 2.4 OUTILS DE POSITIONNEMENT POUR LA MESURE DU CHÂSSIS DE BOGIE
- 2.5 INSTRUMENT DE MESURE DU POSITIONNEMENT DU PIVOT CENTRAL
- 2.6 GABARIT DE CENTRAGE : longueur du châssis de bogie, la largeur du châssis et le déplacement longitudinal
- 2.7 INSTRUMENT DE MESURE DES RESSORTS À LAMES
- 2.8 INSTRUMENT DE MESURE DE L'USURE DE LA SURFACE DES TAMPONS
- 2.9 INSTRUMENT DE MESURE DE LA HAUTEUR DE TAMPONNEMENT
- 2.10 INSTRUMENT DE MESURE DE LA DISTANCE ENTRE LES TAMPONS
- 2.11 INSTRUMENT DE MESURE DISTANCE ENTRE L'ATTELAGE SCHARFENBERG ET LE CHAMPIGNON DU RAIL
- 2.12 AUGE D'ÉPAISSEUR ÉTAGÉE CONIQUE
- 2.13 GABARIT D'USURE DE LA MÂCHOIRE D'ATTELAGE
- 2.14 GABARIT D'USURE D'ATTELAGE (manille)
- 2.15 GABARIT D'USURE DE LA LIAISON D'ATTELAGE
- 2.16 INSTRUMENT DE MESURE DE LA BOÎTE D'ESSIEU CHAUDS (dimensions C et H bogies 1XT et 1XTa)



2.1 SYSTÈME MODULAIRE & PORTABLE DE PESAGE STATIQUE/DYNAMIQUE DU CHÂSSIS

PORTABLE STATIC/DYNAMIC WAGON WEIGHING SYSTEM

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

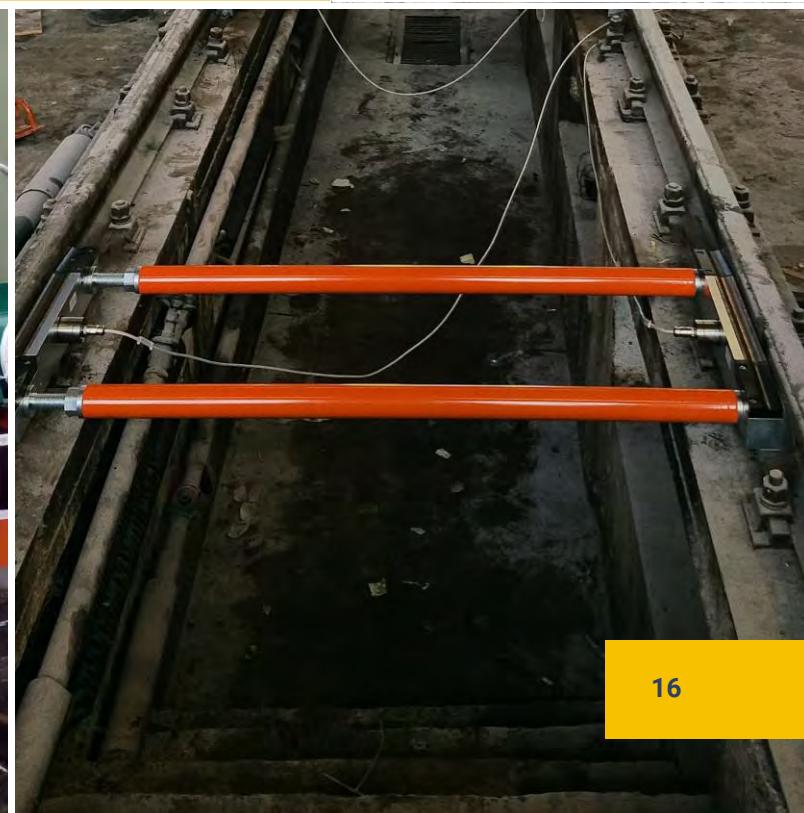
FEATURES:

- 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 |
|------------------------------------|---|
| Maximum 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% w zakresie 30 mm od osi celi obciążenia +/- 1,0% w zakresie 30-60 mm od osi czujnika tensometrycznego |
| Rail profile type | all |
| Power supply | built in batteries, 8 hours of continuous work |



2.2 BANC DE MESURE DES DIMENSIONS GÉOMÉTRIQUES DU CHÂSSIS DE BOGIE

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:

- Bogie frame curvature,
- Distortion and side deformations,
- Back-to-back distance of the axle bearing embrasure.

| CHARACTERISTICS | DATA |
|-----------------------------------|----------|
| Height of the stand with supports | 1 280 mm |
| Length of the stand | 4 500 mm |
| Width of the stand | 2 800 mm |



2.3 INSTRUMENT DE MESURE DU CHÂSSIS DE BOGIE

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.

FEATURES:

- Handy,
- Accurate,
- Light,
- Readable and large display,
- Possibility of calibration by the user.

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|----------------|---|----------|
| Measurement range | 1600 – 3000 mm | Measuring instrument | 1 |
| Measurement accuracy | 0.1 mm | Check pattern | 1 |
| Resolution | 0.1 mm | Positioning tips for point-to-point measurement | 2 |
| Weight | 5 kg | Case | 1 |

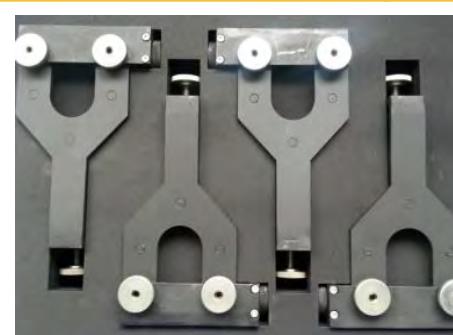


2.4 OUTILS DE POSITIONNEMENT POUR LA MESURE DU CHÂSSIS DE BOGIE

POSITIONING BASES FOR BOGIE FRAME MEASUREMENT

The bases are designed for determining the center 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.

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|-----------------|----------------------|--------------------------------------|----------|
| Positioning | Hot axle box opening | Positioning bases | 4 |
| Weight | 4 kg | Case | 1 |



2.5 INSTRUMENT DE MESURE DU POSITIONNEMENT DU PIVOT CENTRAL 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 | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|----------------|--------------------------------------|----------|
| Measurement range | 1600 – 3000 mm | | |
| Measurement accuracy | 0.1 mm | Measuring instrument | 1 |
| Weight | 5 kg | | |



2.6 GABARIT DE CENTRAGE : longueur du châssis de bogie, la largeur du châssis et le déplacement longitudinal

WEAR GAUGE FOR CENTRE PIVOT/BOLSTER BOWL

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

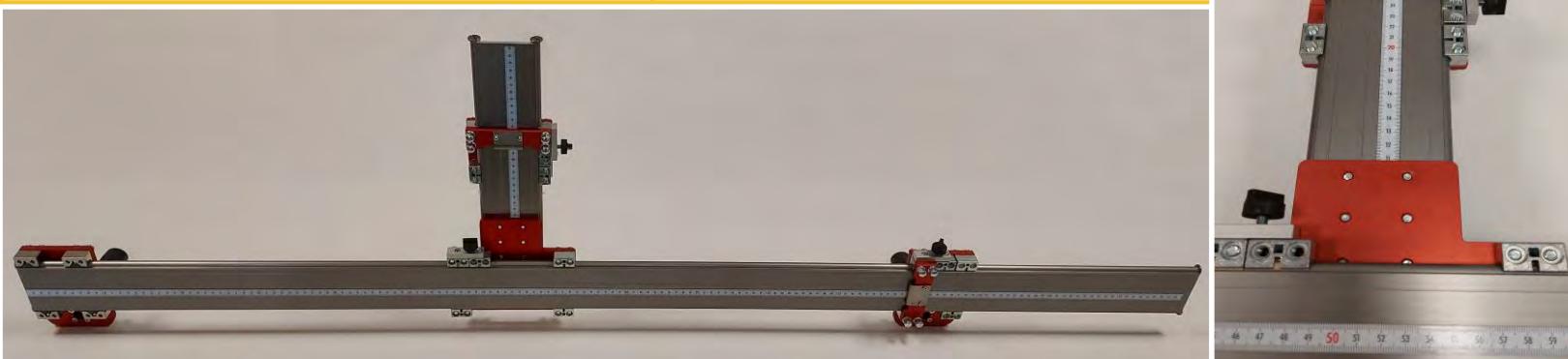
| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|---------------------|-----------------|--------------------------------------|----------|
| Instrument material | stainless steel | | |
| Weight | 0.5 kg | Measuring instrument | 1 |



2.7 INSTRUMENT DE MESURE DES RESSORTS À LAMES 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.

| PARAMETR | WARTOŚĆ | ZESTAW ZAWIERA | ILOŚĆ |
|-----------------------------------|----------------|--------------------|-------|
| Zakres pomiarowy rozstępu otworów | 1100 – 1400 mm | Przyrząd pomiarowy | 1 |
| Zakres pomiarowy wysokości resora | 160 – 330 mm | | |
| Dokładność pomiaru | 1 mm | | |
| Waga | 5 kg | | |



2.8 INSTRUMENT DE MESURE DE L'USURE DE LA SURFACE DES TAMPONS BUFFER PLATE WEAR MEASURING INSTRUMENT

The device is designed for:

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

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|---|--------------|--------------------------------------|----------|
| Measurement range of convex buffer | 375 – 560 mm | Measuring instrument | 1 |
| Measurement range of rectangular buffer | 400 x 560 mm | | |
| Measurement accuracy | 0.1 mm | | |
| Weight | 1 kg | | |



2.9 INSTRUMENT DE MESURE DE LA HAUTEUR DE TAMPONNEMENT **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 | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|---------------|--------------------------------------|----------|
| Measurement range | 920 – 1100 mm | Measuring instrument | 1 |
| Measurement accuracy | 0.1 mm | | |
| Weight | 2.5 kg | | |

2.10 INSTRUMENT DE MESURE DE LA DISTANCE ENTRE LES TAMPONS **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 | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|----------------|--------------------------------------|----------|
| Measurement range | 1700 – 1780 mm | Measuring instrument | 1 |
| Measurement accuracy | 1 mm | | |
| Weight | 3.5 kg | | |

2.11 INSTRUMENT DE MESURE DISTANCE ENTRE L'ATTELAGE SCHARFENBERG ET LE CHAMPIGNON DU RAIL

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 Scharfenberg coupler.

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|---------------|--------------------------------------|----------|
| Measurement range | 500 – 1090 mm | Measuring instrument | 1 |
| Measurement accuracy | 0.1 mm | Check pattern | 1 |
| Weight | 6.2 kg | Case | 1 |



2.12 JAUGE D'ÉPAISSEUR ÉTAGÉE CONIQUE

TAPER GAUGE

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

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|-----------|--------------------------------------|----------|
| Measurement range | 4 – 24 mm | | |
| Measurement accuracy | 0.1 mm | | |
| Measuring step | 2 mm | | |
| Weight | 0.5 kg | | |



2.13 GABARIT D'USURE DE LA MÂCHOIRE D'ATTELAGE COUPLER SHACKLE WEAR GAUGE

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

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|-----------------------------------|--------------------------------------|----------|
| Diameter limit value | According to client's requirement | | |
| Gauge material | Stainless steel | Measuring instrument | 1 |
| Weight | 0.2 kg | | |

18,9
18,5
48,8
50
51
18
26
34
30
18,9
28,9
37,4
32,9

Sprawdzian różnicowy do ustalenia zużycia pałaka sprzęgu

18,9
18,5
18
26
34
37,4
32,9

Sprawdzian różnicowy do ustalenia zużycia pałaka sprzęgu

2.14 GABARIT D'USURE D'ATTELAGE (manille) COUPLING HOOK WEAR GAUGE

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

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|-----------------------|-----------------------------------|--------------------------------------|----------|
| Dimension limit value | According to client's requirement | | |
| Gauge material | Stainless steel | Measuring instrument | 1 |
| Weight | 0.2 kg | | |

57
38
27
35
39
32
51

Sprawdzian haka cieglowego nr 1.
Prüfmittel für Zughaken Nr 1.

56
116
28
47
38,5
59
51

Sprawdzian różnicowy haka cieglowego

56
116
28
47
38,5
59
51

2.15 GABARIT D'USURE DE LA LIAISON D'ATTELAGE 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 | Stainless steel |
| Weight | 0.1 kg |
| COMPLETE SET TO BE DELIVERED INCLUDE | |
| Measuring instrument | 1 |



2.16 INSTRUMENT DE MESURE DE LA BOÎTE D'ESSIEU CHAUDS (dimensions C et H bogies 1XT et 1XTa) INSTRUMENT FOR AXLEBOX MEASUREMENT

The instrument is designed for measuring the dimensions C and H of the hot axle boxes of the bogies 1XT and 1XTa.

CHARACTERISTICS

DATA

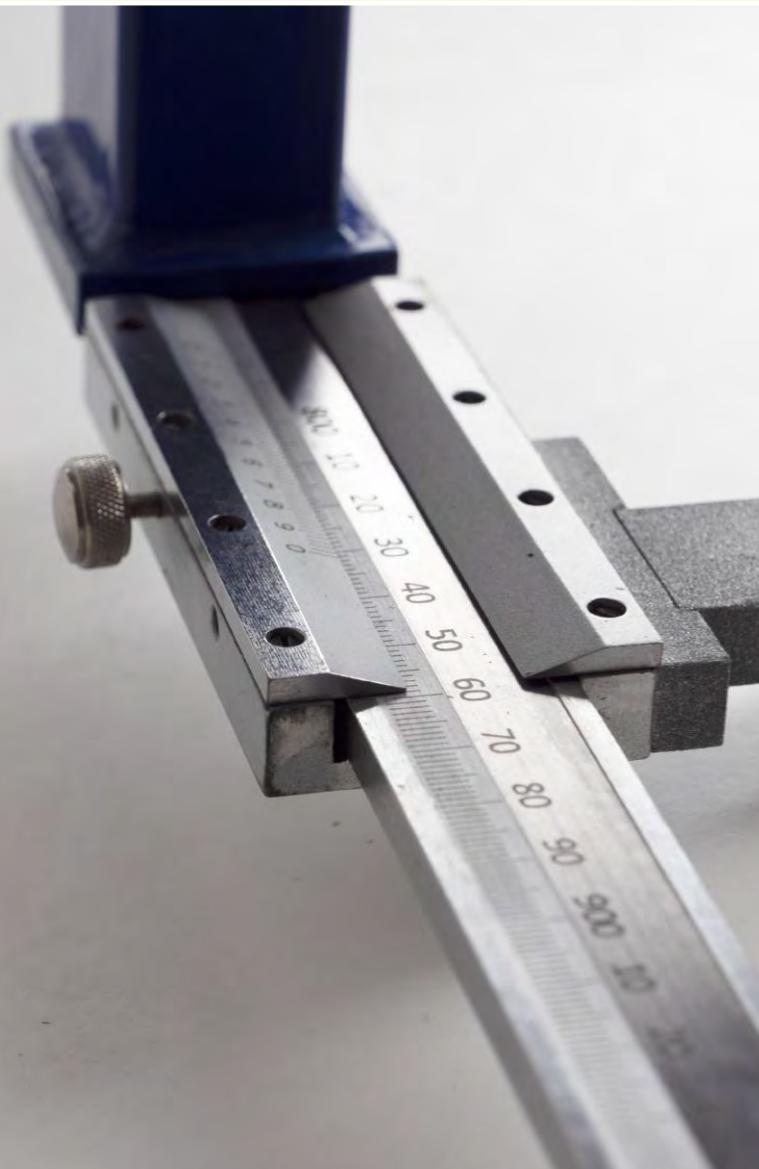
| | |
|---|--------------------------------|
| Measurement range | C: 55 – 75 mm, H: 140 – 160 mm |
| Measurement accuracy | 0.1 mm |
| Gauge material | chrome plated |
| Weight | 1.5 kg |
| COMPLETE SET TO BE DELIVERED INCLUDE | |
| Measuring instrument | 1 |



3. MESURE DES ROUES

WHEELSETS MEASUREMENT

- 3.1 PRESSE DE MONTAGE & DÉMONTAGE DE ROUE
- 3.2 UNITÉ DE CHAUFFAGE PAR INDUCTION
- 3.3 INSTRUMENT DE MESURE DE L'ÉCARTEMENT DES ROUES À AFFICHAGE ÉLECTRONIQUE
- 3.4 INSTRUMENT DE MESURE DE L'ÉCARTEMENT DES ROUES FACE À FACE
- 3.5 INSTRUMENT DE MESURE DU DIAMÈTRE DES ROUES
- 3.6 INSTRUMENT DE MESURE ÉLECTRONIQUE DU DIAMÈTRE DES ROUES
- 3.7 INSTRUMENT DE MESURE DES CREUX DES ROUES
- 3.8 JAUGE DE CONTRÔLE qR (Go/NoGo)
- 3.9 GABARIT DE CONTRÔLE DES TOLÉRANCES
- 3.10 INSTRUMENT DE MESURE LASER PROFIL DES ROUES - PROFILOMÈTRE (Sh, Sd, qR)
- 3.11 PROFILOMÈTRE - JAUGE DE MESURE DES COTES Sh, Sd, qR et 0 (épaisseur du bord)
- 3.12 INSTRUMENT DE MESURE DE LA SYMÉTRIE DES ROUES (cotes C et C')



3.1 PRESSE DE MONTAGE & DÉMONTAGE DE ROUE

WHEEL PRESS STAND MOUNTING/DEMOULDING

Wheelset 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 wheelset.

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.

| 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 |
| Nominal voltage | 415 V ± 10%, 3-phase, 4-wire, 50 Hz |
| Installed power | Approx. 7 kW |



3.2 UNITÉ DE CHAUFFAGE PAR INDUCTION POUR MONTAGE ET DÉMONTAGE INDUCTION HEATING UNIT

The Induction Heating Unit is designed for the 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).

FEATURES:

- 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 | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|---|-----------------------------|--------------------------------------|----------|
| Power supply | 400/230 V, ± 10%, 50 Hz | Induction heating unit | 1 |
| Maximum power consumption | 35.0 kW | Coils (inductors) | 2 |
| Heated part diameter Ø: | 140 do 250 mm | Temperature sensor | 1 |
| The cooling system of the control cabinet | air ventilators | Transport case | 1 |
| 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 | | |



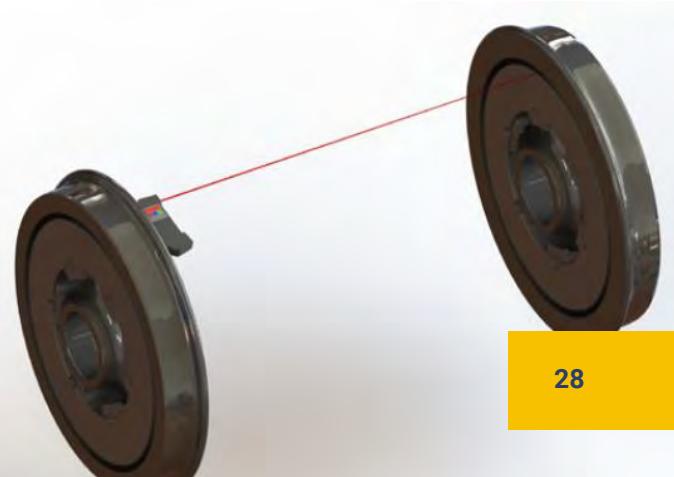
3.3 INSTRUMENT DE MESURE DE L'ÉCARTEMENT DES ROUES À AFFICHAGE ÉLECTRONIQUE BACK-TO-BACK WHEEL DISTANCE MEASURING INSTRUMENT ELECTRONIC DISPLAY

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

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 | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|---|---|----------|
| Measurement range | 1360 ± 15 mm (or other at client's request) | Measuring instrument | 1 |
| Measurement accuracy | 0.3 mm | Smartphone to visualization and record the measurement results (wireless connection with instrument) - optional | 1 |
| Resolution | 0.01 mm | Charger | 1 |
| Battery | rechargeable battery 4 x AA 1,2V | Cable for computer connection - optional | 1 |
| Weight | 0.85 kg | Case | 1 |



3.4 INSTRUMENT DE MESURE DE L'ÉCARTEMENT DES ROUES FACE À FACE 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 wheelsets.

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|---|--------------------------------------|----------|
| Measurement range | 1345 – 1375 mm (or other at client's request) | | |
| Measurement accuracy | ± 0.1 mm | Measuring instrument | 1 |
| Weight | 3 kg | | |



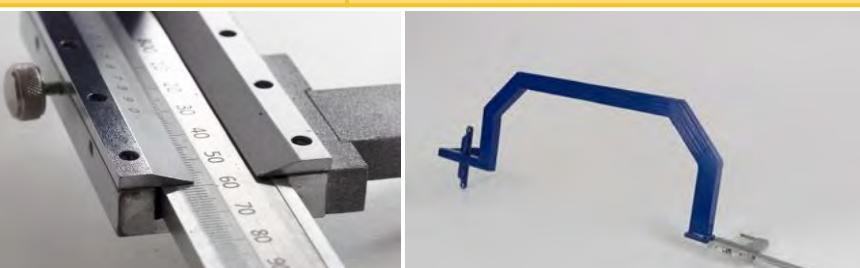
3.5 INSTRUMENT DE MESURE DU DIAMÈTRE DES ROUES WHEEL DIAMETER MEASURING INSTRUMENT

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

The device is available in two versions:

- 1) with metre scale,
- 2) with digital display.

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|----------------------|--|--------------------------------------|----------|
| Measurement range | A) 600 – 800 mm B) 800 – 1050 mm C) 1050 – 1270 mm | Measuring instrument | 1 |
| Measurement accuracy | ± 0.1 mm | | |
| Reading of results | metre scale or digital display | | |
| Weight | 3.5 kg | | |



3.6 INSTRUMENT DE MESURE ÉLECTRONIQUE DU DIAMÈTRE DES ROUES

ELECTRONIC WHEEL DIAMETER MEASURING INSTRUMENT

The instrument 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 wheelsets. 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 PDA).

| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|--------------------------|--|---|----------|
| Measurement range | A) 400 – 750 mm B) 400 – 950 mm C) 600 – 1400 mm | Measuring device | 1 |
| Measurement accuracy | 0.2 mm | Calibration set - optional | 1 |
| Battery | 2 x AA | Charger set | 1 |
| Resolution | 0.01 mm | Software – optional | 1 |
| Internal memory capacity | up to 1000 measurements | Smartphone to visualization and record the measurement results (wireless connection with instrument) - optional | 1 |
| Weight | 2 kg | Case | 1 |



3.7 INSTRUMENT DE MESURE DES CREUX DES ROUES

WHEEL FLAT SPOTS MEASURING INSTRUMENT

The instrument is designed for measuring the depth of the holes, flat spots and buildup on the wheel treads. Wheel tread defects are measured via the dial indicator with 0.01 accuracy.

| CHARACTERISTICS | DATA | COMPLETE SET INCLUDE | QUANTITY | |
|---|--------------------|----------------------|----------|--|
| Measurement range | 0 – 10 mm | Measuring instrument | 1 | |
| Measurement accuracy | 0.01 mm | | | |
| Measurement base | wheel roll surface | | | |
| Distance between the basis point on the wheel | 100 mm | | | |
| Weight | 0.8 kg | | | |



3.8 JAUGE DE CONTRÔLE qR (Go/NoGo)

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 | 0.1 kg | |
| COMPLETE SET INCLUDE | QUANTITY | |
| Gauge GO / NO GO type | 1 | |



3.9 GABARIT DE CONTRÔLE DES TOLÉRANCES Go / NoGo

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 | NOTE: The instruments are design to suit VPI measurements requirements |
|-----------------------------|--|--|
| Wheel parameters | S1002/h28/e32,5/6,7%, other on request | |
| Gauge material | Stainless steel | |
| Weight | 0.4 kg | |
| COMPLETE SET INCLUDE | QUANTITY | |
| Gauge GO / NO GO type | 1 | |
| Check pattern for the gauge | 1 | |



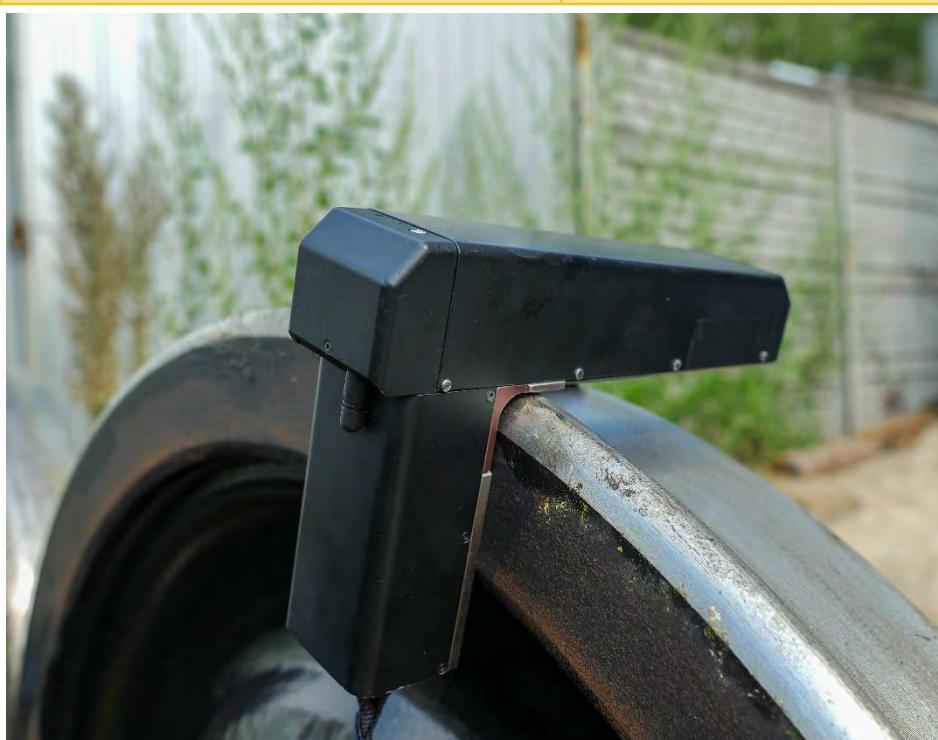
3.10 INSTRUMENT DE MESURE LASER PROFIL DES ROUES - PROFILOMÈTRE (Sh, Sd, qR)

LASER WHEEL PROFILE MEASURING INSTRUMENT

THE 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 | COMPLETE SET INCLUDE | QUANTITY |
|---|--|--|----------|
| Measurement range | | Measuring device | 1 |
| Flange height Ow (Sh) | 20 -45 mm | Calibration set - optional | 1 |
| Flange thickness Og (Sd) | 20 -50 mm | Software | 1 |
| Flange slope qR | 1 -15 mm | Smartphone to visualization and record the measurement results (wireless connection with profilometer) | 1 |
| Measurement accuracy | | Charger set | 1 |
| Flange height Ow (Sh) | ±0,1 mm | Cables for computer or connection | 1 |
| Flange thickness Og (Sd) | ±0,1 mm | Case | 1 |
| Flange slope qR | ±0,2 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 5400 mAh for standard IKP and 2400 mAh for Short and SShort | | |



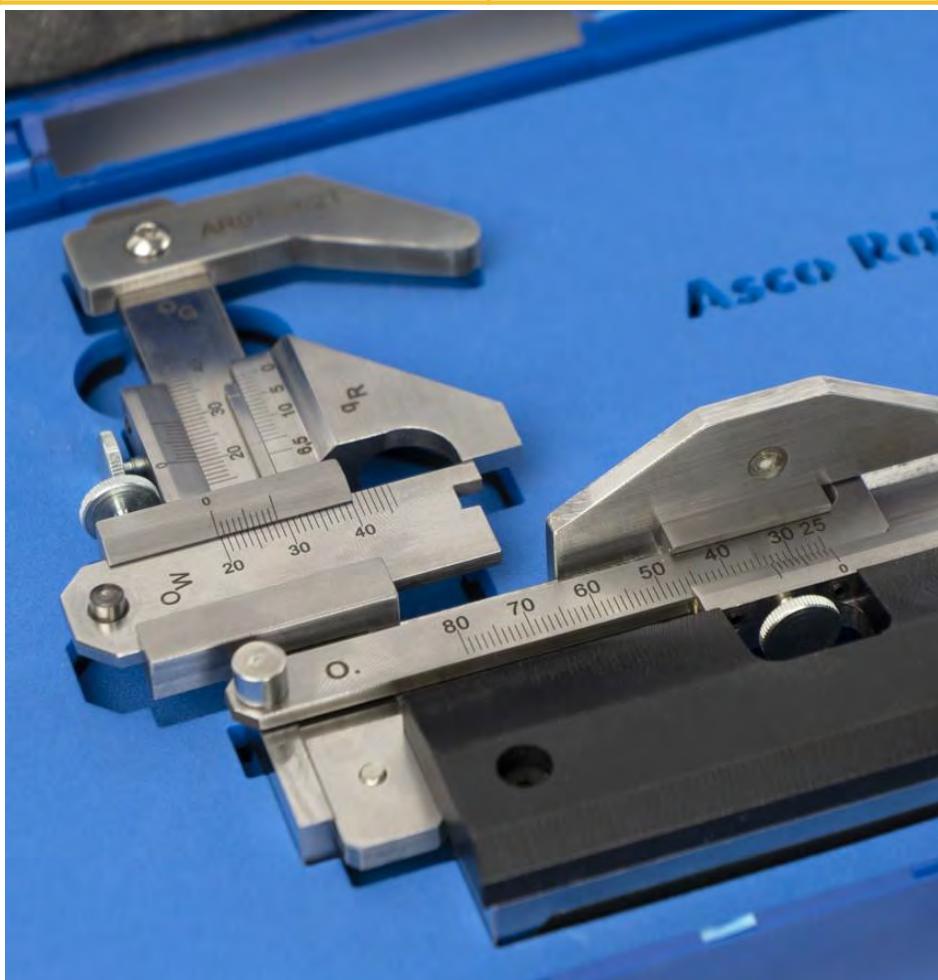
3.11 PROFILOMÈTRE - JAUGE DE MESURE DES COTES Sh, Sd, qR et O (épaisseur du bord)

CALIPER FOR RAILWAY WHEELS PROFILE MEASUREMENT

The instrument 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 | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|--------------------------|------------|--------------------------------------|----------|
| Measurement range | | Measuring instrument | 1 |
| Flange height Ow (Sh) | 20 – 36 mm | Case | 1 |
| Flange thickness Og (Sd) | 15 – 36 mm | | |
| Flange slope qR | 0 – 13 mm | | |
| Rim thickness O | 25 – 80 mm | | |
| Measurement accuracy | | | |
| 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 | | |



3.12 INSTRUMENT DE MESURE DE LA SYMÉTRIE DES ROUES (cotes C et C')

WHEEL SYMMETRY 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.

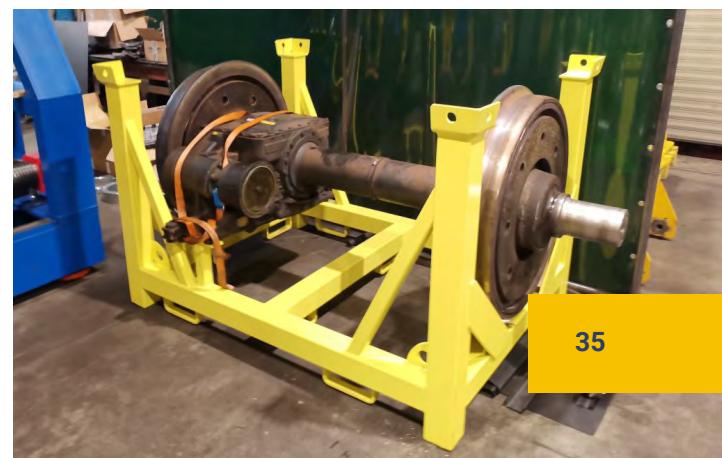
| CHARACTERISTICS | DATA | COMPLETE SET TO BE DELIVERED INCLUDE | QUANTITY |
|--------------------------|--|--------------------------------------|----------|
| Measurement range | 185 – 265 mm (or other at client's request) | Measuring instrument | 1 |
| Wheel diameter range | 600 – 1200 mm | Calibration set | 1 |
| Measurement accuracy | 0.1 mm | Case | 1 |
| Battery | 2 x AA | | |
| Internal memory capacity | up to 2000 measurements | | |
| Weight | 4 kg | | |



**ÉQUIPEMENTS TECHNOLOGIQUES UTILISÉS DANS LA
 MAINTENANCE DES COMPOSANTS MÉCANIQUES**
4. DES VÉHICULES FERROVIAIRES

**TECHNOLOGICAL EQUIPMENT USED IN THE
 REPAIR OF MECHANICAL COMPONENTS OF
 RAIL VEHICLES**

- 4.1. CHARIOT - TROLLEY DE MANUTENTION DES TAMPONS D'ARRÊT
- 4.2. CHARIOT DE MANUTENTION DES SUSPENSIONS À LAMES
- 4.3. SYSTÈME DE STOCKAGE DES BOGIES
- 4.4. REMPLACEMENT DES BOGIES
- 4.5. SYSTÈME DE STOCKAGE DES ESSIEUX MONTÉS
- 4.6. COLONNES DE LEVAGE



4.1 CHARIOT - TROLLEY DE MANUTENTION DES TAMPONS D'ARRÊT 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 characterized by a simpler lifting process and a better ergonomic design and, as a result, faster assembling and disassembling process

| CHARACTERICS | DATA |
|--|----------------------|
| Maximum lift weight | 150 kg |
| Lifting height (from ground till buffer support point) | 1500 mm |
| Dimensions (length, width, height) | 1495 x 600 x 1825 mm |
| Weight | 80 kg |

4.1



4.2



4.2 CHARIOT DE MANUTENTION DES SUSPENSIONS À LAMES 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 characterized by a simpler lifting process and better ergonomic design and, as a result, faster assembling and disassembling process.

| CHARACTERICS | DATA |
|---|----------------------|
| Maximum lift weight | 150 kg |
| Lifting height (from ground till springs support point) | 980 mm |
| Dimensions (length, width, height) | 1720 x 720 x 1510 mm |
| Weight | 80 kg |

36

4.3 SYSTÈME DE STOCKAGE DES BOGIES BOGIE STORAGE SYSTEM

The system allows storage of bogie frames or complete bogies. The configuration and dimensions of the system components corresponds to the customer requirements.



4.4 REMPLACEMENT DES BOGIES BOGIES REPLACEMENT

Bogie replacement during maintenance.



4.5 SYSTÈME DE STOCKAGE DES ESSIEUX WHEELSET STORAGE SYSTEM

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



4.6 COLONNES DE LEVAGE LIFTING COLUMNS

- The columns have a microprocessor control which ensures full synchronization of the set and safety,
- The lifts have several electrical protections, including incorrect connection of the columns and the operation of the lift,
- The configuration and dimensions are adjusted to the customer's requirements,
- There is a possibility of retrofitting the device with other lifting attachments,
- The control column has a main control panel containing all control options,
- Large and solid bases for maximum stability under load,
- Steel transport wheels.



CONTACT

Pour obtenir des informations plus détaillées sur l'ensemble de la gamme de produits ou pour télécharger notre catalogue, veuillez consulter notre site web : www.eurotools-precision.com ou contacter nos spécialistes.

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