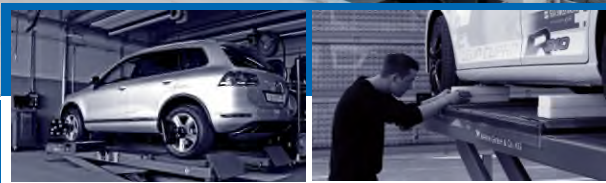




Scissors Lifts

Model: DUO CM 4.2 • DUO CM 5.0 • MSL 4.0 • DUO UC 4.0/5.0

for vehicles up to 5.0 t gross weight



Lifting Technology



More than 20 years experience in the field of scissors lifts. Close cooperation with test organizations involved in vehicle inspection and with all reputable vehicle manufacturers regarding wheel alignment have made MAHA a market leader.

Premium Workshop
Equipment

Welcome to MAHA, the leading manufacturer of workshop equipment



MAHA Maschinenbau Haldenwang GmbH & Co. KG stands for high-tech in the fields of motor vehicle testing and workshop equipment. All over the world, motorcycles, passenger cars, commercial vehicles and special vehicles are measured and inspected on testing devices from MAHA.



The workshop equipment from MAHA covers the complete range of lifting devices from service units to exhaust gas measurement technology. The option to link individual testing devices to universal safety test lines makes MAHA the expert technology partner of vehicle manufacturers, testing organizations and workshops around the world.

Despite all the high-tech, MAHA has not forgotten that business is made locally. For this reason, branches and representatives in over 130 countries provide optimum customer care on-site.

Individual supervision and a high degree of flexibility are strengths of MAHA that has made the company a global player in the international test business for over 40 years. We are committed to continuing this to provide tailor-made solutions and investment security in the future.

MAHA Scissors Lifts & Accessories

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The Right Model for your Application

DUO CM 4.2



Load capacity:

- 4.2 t

Runway length:

- 4.4 m / 4.8 m optional

Max. vehicle wheelbase ca.: *)

- 3.7 m / 4.1 m

Main features:

- For high vehicle throughput
- Rugged design
- All scissors bearings designed for tough workload and long life

Focal area of application:

- Vehicle inspection with very high vehicle throughput

Most important accessories:

- Hydraulic axle play detector PMS 3/X(L) for front axle
- Axle play detector PMS 3/R or PMS 3/D for rear axle
- Wheel-free jack
- Center platform

Target customers:

- Test organizations
- Car dealerships
- Vehicle manufacturers
- Authorized workshops

Additional fields of application:

- Wheel alignment (existing manufacturer recommendations/approvals for wheel alignment)
- Vehicle service

DUO CM 5.0



Load capacity:

- 5.0 t

Runway length:

- 5.2 m

Max. vehicle wheelbase ca.: *)

- 4.5 m

Main features:

- For high vehicle throughput
- Rugged design
- All scissors bearings designed for tough workload and long life

Focal area of application:

- Vehicle service

Most important accessories:

- Wheel-free jack
- Hydraulic axle play detector PMS 3/X(L)

Target customers:

- Commercial operations
- Car dealerships

Additional fields of application:

- Wheel alignment
- Vehicle inspection

*) only approximate information, dependent upon lift equipping

MSL 4.0



Load capacity:

- 4.0 t
- 3.5 t with wheel-free jack

Runway length:

- 4.4 / 4.8 m optional

Max. vehicle wheelbase ca.: *)

- 3.7 m / 4.1 m

Main feature:

- Very low drive-on height of 180 mm with surface mounting (without superstructures)

Focal area of application:

- Dialogue acceptance

Most important accessories:

- Pneumatic axle play detector
- Wheel-free jack

Target customers:

- Car dealerships

Additional fields of application:

- Wheel alignment (from a totally lowered position and from a lifting height of ca. 1.4 m possible)
- Vehicle service

DUO UC 4.0/5.0 W



Load capacity:

- 4.0 t / 5.0 t

Runway length:

- 4.4 m / 5.2 m

Max. vehicle wheelbase ca.: *)

- 3.7 m / 4.5 m

Main features:

- Scissors and runways with very high flexural and torsional rigidity
- Locking of the moving bearing side via 8 locking modules

Focal area of application:

- High precision wheel alignment

Most important accessories: (Standard):

- Precision sliding plates integrated into runway, automatically lockable and highly adjustable
- Compensation plates for turning plates

Target customers:

- Vehicle manufacturers (existing recommendations for wheel alignment)
- Authorized workshops

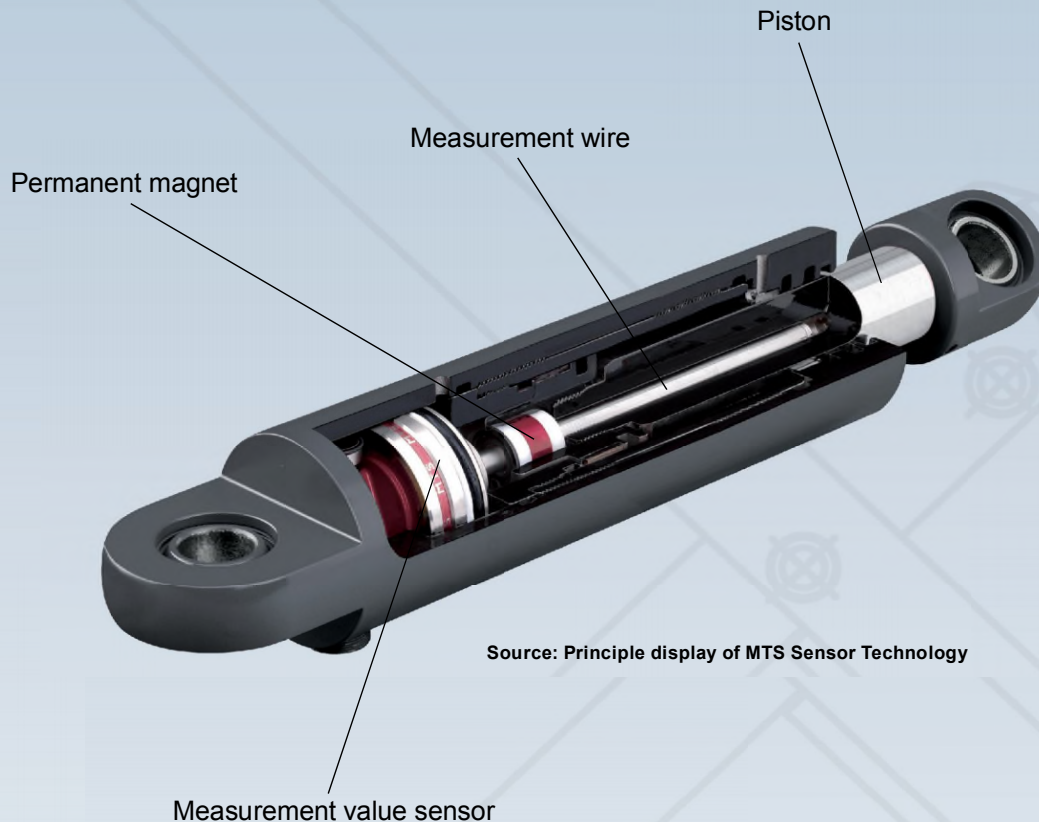
Additional fields of application:

–

The Technology

Advantages of the “Linear-Absolute-Travel Measurement“

The “Linear-Absolute-Travel Measurement“ is used with all current MAHA scissors lift models. The measurement system integrated in the lifting cylinders permanently measures the piston stroke.



- Measurement system integrated in cylinder, completely protected against dirt, moisture, temperature fluctuations
- Non-contact measurement system making it free of wear and tear
- Synchronization regulation automatically compensates position deviation
- The operator is freed from leveling of runways and wheel-free jack
- Lift stops lowering movement automatically at one-sided collision with an obstacle (no diagonal light barrier needed)
- Programmable holding point for ergonomic working height
- No keys or inductive sensors needed to determine relevant lifting heights “Lift lowered/Lift up/CE Stop height“, meaning less cables and components within the lift
- Short lifting-/lowering time of the optional wheel-free jack (load dependent ca. 10/10 s)
- Two parallelly switched lifting cylinders, for less system pressure, ensuring high lifetime of hydraulic components

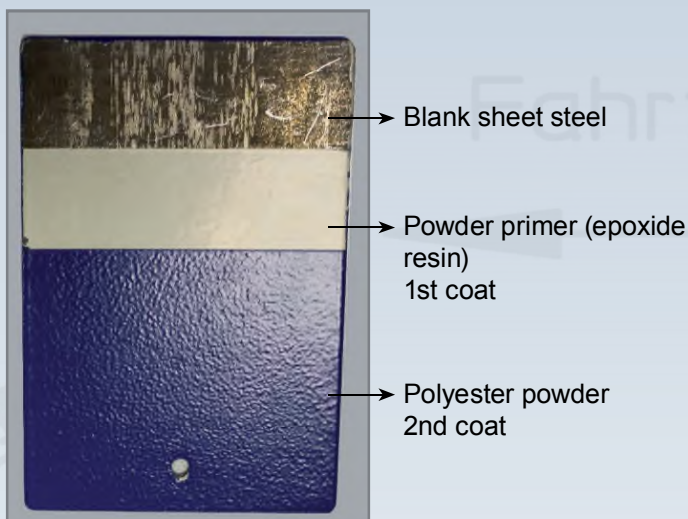
Corrosion Protection

Aggressive winter spreading agents, cleaning agents as well as brake fluid and refrigerants have a corrosive effect on the lift. Using design measures MAHA significantly influences the resistance of mechanical parts against corrosion.

With model MSL and DUO UC the floor plates have two-coated powder painting as standard delivery. This consists of a powder primer (1st coat) and a powder coating (2nd coat). Pipe profile and poorly accessible areas are cavity sealed, welding seams with silicon protection.

Further optional corrosion protection possibilities:

- Zinc spraying and then powder paint coating
- Hot dip galvanizing (not possible with lifts used for wheel alignment due to thermic deformation)
- Two-coat powder painting (other components)



Two-coat-powder paint coating
(sample sheet)



Hot dip galvanized screws or screws with a zinc-aluminum coating are used at corrosion-critical spots. The hydraulic screws have a zinc-nickel coating.



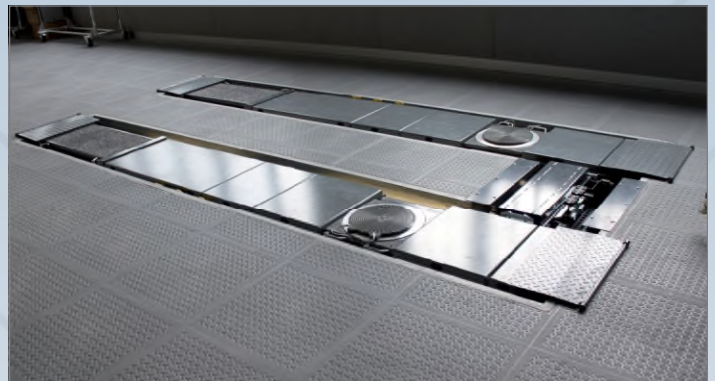
Numerous metal contact surfaces are separated from one another by synthetic/rubber elements

Installation Variations - Inground

In comparison to four-column lift scissors lifts are extremely space-saving.
Two possible installation variations:
Flush-floor (inground) in a foundation or surface mounted (above-ground).

Advantages of Inground Installation:

- Safe and easy drive-on
- No problem for vehicles with low ground clearance
- Low working place length
- Version in rectangular foundation with optional grating
- Version in strip foundation possible (crosswise drive-over)
- Strip foundation ideal with tight drive-on conditions, no steps or tripping spots
- MAHA scissors lifts have a lifting height of min. 2070 mm, i.e. remaining effective height in strip foundation min. 1850 mm
- Optionally the DUO CM 4.2 U can have drive-over axle load of 10 t*

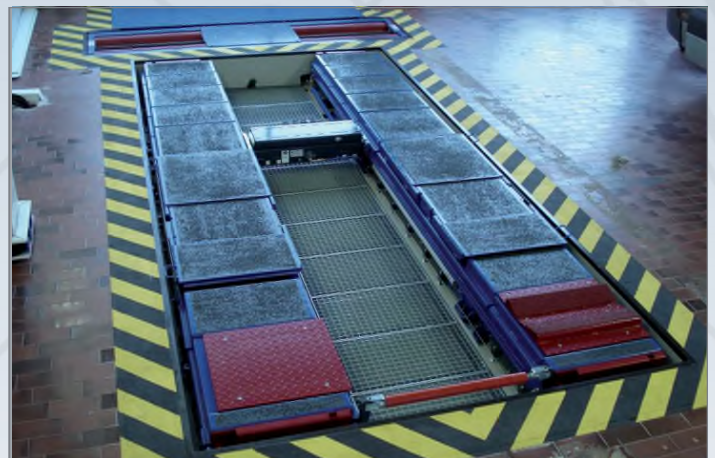


DUO CM in strip foundation (equipped for wheel alignment)



Effective height of min. 1850 mm with installation in strip foundation

Optional axle lift in conjunction with axle lift floor cover with installation in strip foundation. Grated floor cover is lifted and lowered synchronous with lift using an air bellow. A lowering of the floor cover is only possible in the "Park position" of the axle lift. The lifted axle lift floor cover can be loaded up to 200 kg.



DUO CM in rectangular foundation with (optional) grating, (equipped for vehicle inspection test)



Axle lift floor cover

* Vehicle gross weight max. 10 t or axle load max. 10 t with wheelbase min 3.0 m

Installation Variations - Surface Mounted

Advantages of Surface Mounted Installation

The flat design of MAHA scissors lifts creates the ideal condition for easy drive-on. High strength materials and an innovative lifting technology enable this flat design.

MSL 4.0 A:

The MSL scissors lift is ideal for surface mounted installation due to the low drive-on height of only 180 mm (without superstructures). Short drive-on ramps create a small working area length.



DUO CM 4.2 A:

The DUO CM 4.2 A has the option “Tilting of the Runways” in two variations (hydraulic or manual). Thanks to the front-sided lifting of the runway, the “bend” between the drive-on ramp and the runway is minimized.

Optionally available alu-step drive-on ramps as an additional drive-on assistance. Due to their low weight these can be attached to the steel ramps manually when needed.



DUO UC 4.0/5.0 A:

The DUO UC has a very low drive-on height of 230 mm (variation without wheel-free jack) due to the sliding plates integrated level into the runways and the high flexural rigidity.

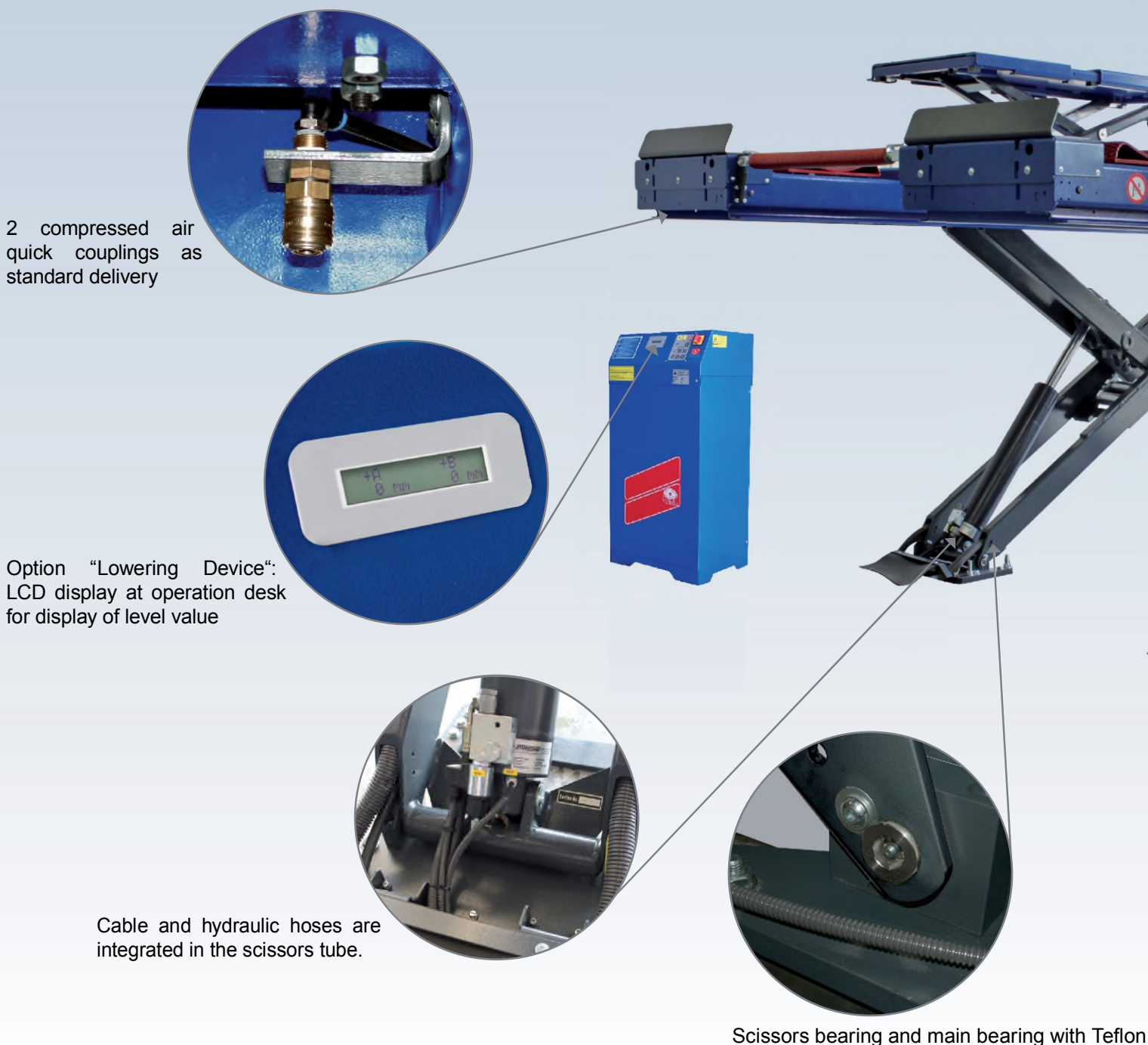


Scissors Lift MSL 4.0

For Cars and Vans up to 4.0 t gross weight.

Low drive-on height for dialogue/service acceptance and wheel alignment.
Lifting heights for wheel alignment: completely lowered and to a height from 1.4 m to 2 m.

Technology and Product Advantages

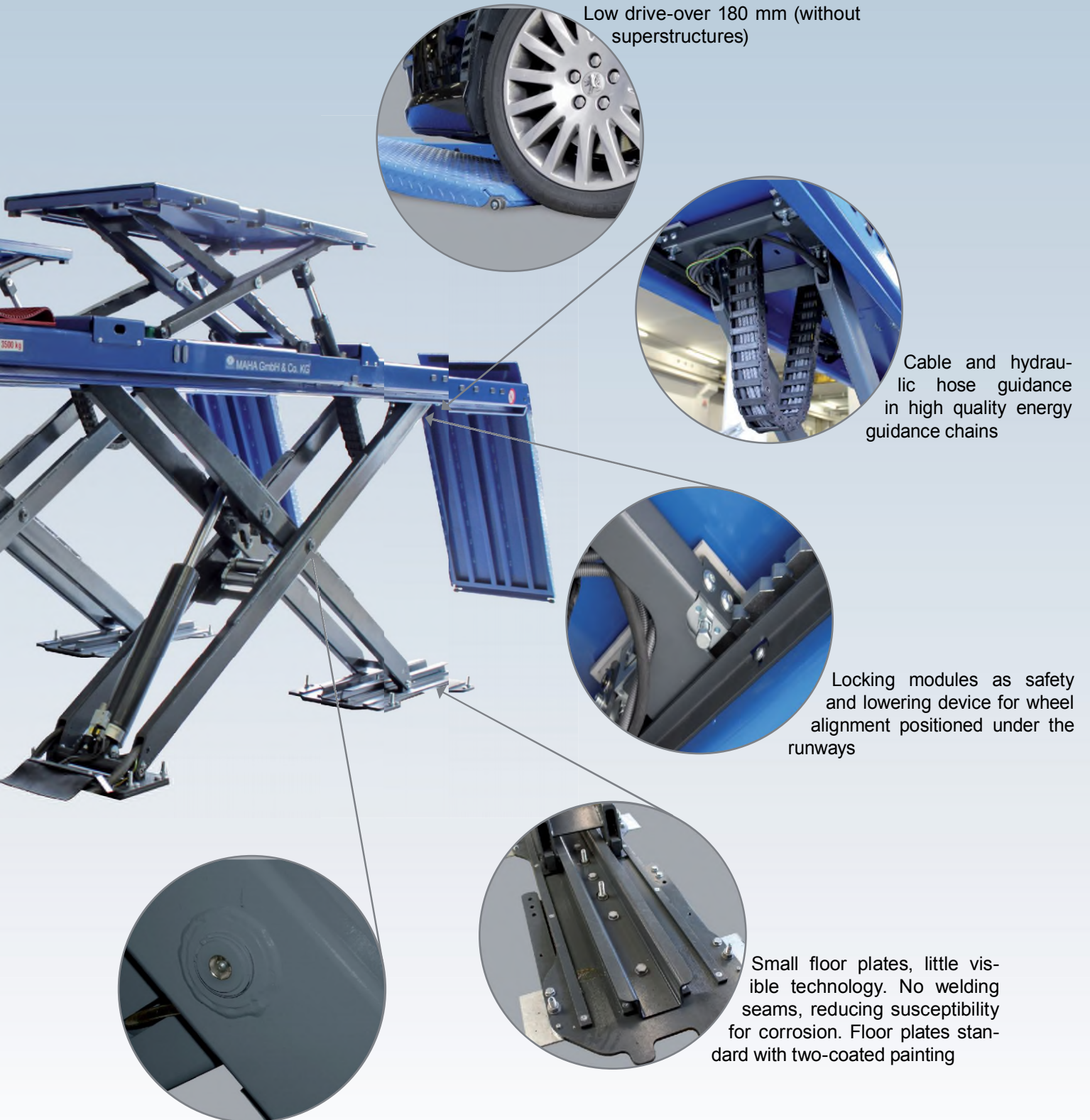


2 compressed air quick couplings as standard delivery

Option "Lowering Device": LCD display at operation desk for display of level value

Cable and hydraulic hoses are integrated in the scissors tube.

Scissors bearing and main bearing with Teflon



Low drive-over 180 mm (without superstructures)

Cable and hydraulic hose guidance in high quality energy guidance chains

Locking modules as safety and lowering device for wheel alignment positioned under the runways

Small floor plates, little visible technology. No welding seams, reducing susceptibility for corrosion. Floor plates standard with two-coated painting

sliding bearing and lubrication nipple.

MSL 4.0 - Options

Level Compensation Plates - in conjunction with Wheel-free Jack:

Uniform level across the entire runway length.



Pneumatic Axle Play Detector:

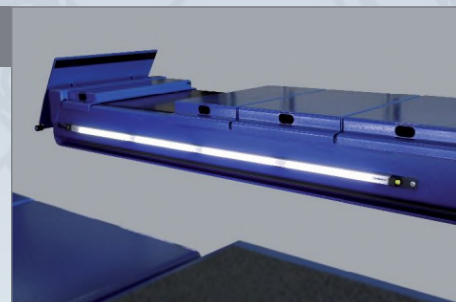
Combined rotation and linear movement by eccentric rotation point of the test plates. Test plates movable as either singular or synchronous using radio handlamp.

(Not in conjunction with wheel alignment)



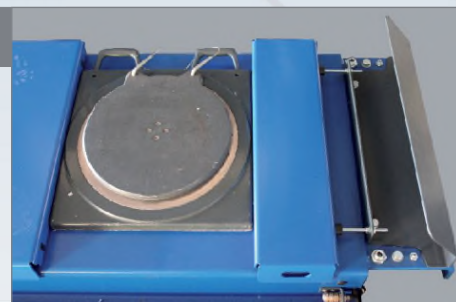
Illumination:

Two-fold and four-fold illumination on the runway (optional: LED).



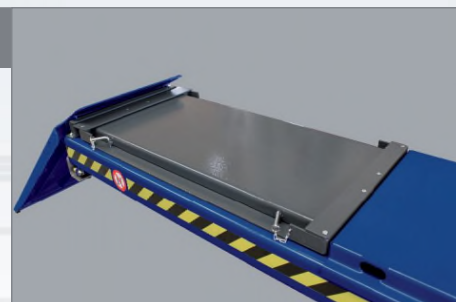
Compensation and Support Plates for the Turning Plates:

Turning plates secure against slippage in longitudinal direction. The inside width between the compensation plates can be adjusted continuously from 450 - 500 mm – suitable for all available turning plates.



Sliding Plates:

Sliding plates with possible rotational movement +/- 5° and a lateral movement of +/- 50 mm.



MSL 4.0 - Options

Manual Pump for EMERGENCY DOWN:

- In operations desk
- Recommended for wheel alignment version



Axle Lift:

With the axle lift AL II 2.0 / 2.6 (PH) the long extension length for wheel alignment makes it possible to lift the axle at the suspension without compressing the wheels.



Pneumatic Floor Cover:

Pneumatic floor cover (axle lift position) for strip foundation



Wheel-free Jack:

- The entire vehicle is raised wheel-free
- Generous extension length




Scissors Lift DUO CM - as Test Lane Lift

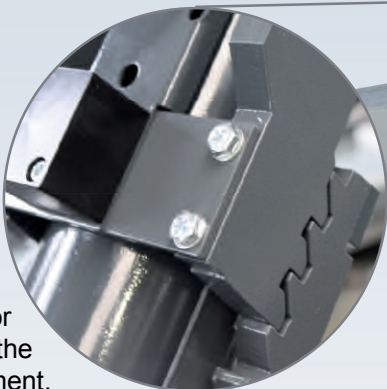
For Cars and Vans up to 5.0 t Gross Weight

The universal high performance scissors lift for test organizations and workshops.

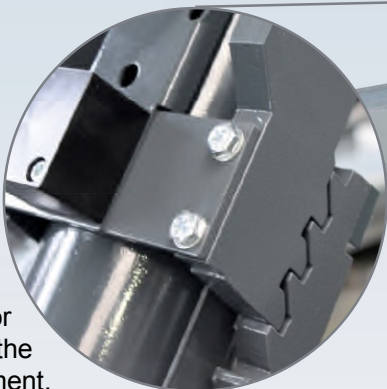
Technology and Product Advantages



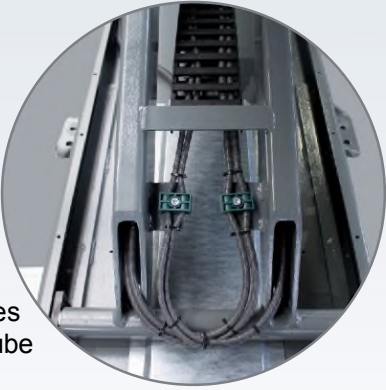
High powered drive unit - designed for extreme number of lifting procedures




The usable runway length is increased by the optional roll-off protection. Retraction at a lowered position is low noise and without floor contact.



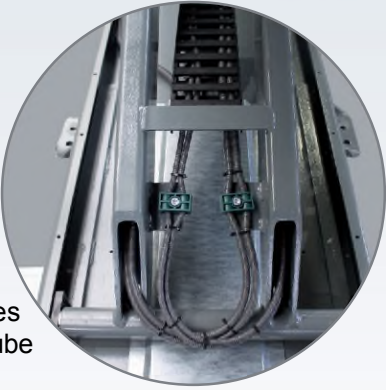
The pneumatically activated latch serves as a safety against downward movement with hydraulic leakage and for mechanical placement on the cylinder locks for wheel alignment.



Cable and hydraulic hoses placed within the scissor tube and in energy guidance chain.



Cavity sealing within the scissor tube and runways, silicone grouting at coupling joint



CE-Stop:
The CE-Stop (acoustic w
pinch and crush spots. O
infra-red light barriers ar
crush protection for wor
sons can be found (e.g. t

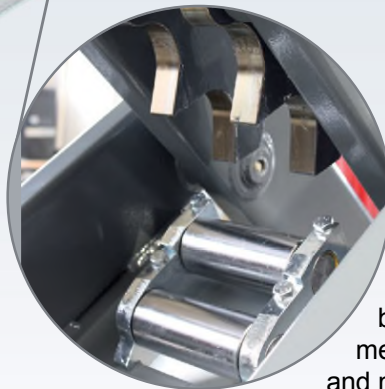


With the generous lifting height of ca. 2100 mm ideal for installation in a strip foundation or in conjunction with a center platform. Effective lifting height with this installation version min. 1850 mm

Axle play detector hydraulic: High forces and defined travel of the test plates possible, high test efficiency



Scissors main bearing with Teflon sliding bearing and lubrication nipple, high service life and emergency operation qualities.



The cylinder raising support with step lever and rollers conducts a pure rolling movement. No sliding movement between the moving parts, meaning it is low noise, and wear and maintenance-free.

(warning signal) secures all optionally longitudinal side... available offering extra... working areas in which per... test stations).

Scissors Lift DUO CM - for Wheel Alignment

For Cars and Vans up to 5.0 t Gross Weight

High flexural and torsional rigidity. Ideally suited for wheel alignment.



Technology and Product Advantages

The DUO CM 4.2 can be adjusted in all degrees of freedom. Almost all vehicle manufacturers have issued approvals for this lift for use in wheel alignment.



Option "Lowering Device": LCD display at operations desk for display of the level value



2 compressed air quick couplings (in a run-way) as standard delivery



The large runway length of max. 4.8 m (DUO CM 4.2) and 5.2 m (DUO CM 5.0) makes it ideal for 3D wheel alignment



Option lowering device: each runway is exactly aligned after welding.



Adjustable bearing enables independent alignment of runway to scissors.

DUO CM - Options

Options in General

Automatic Roll-off Protection:

- Larger effective runway length
- Low noise operation
- No contact to floor



Incline Position (DUO CM 4.2 A):

- Hydraulic or mechanic
- For easier drive-on and drive-off



Axle Lift:

With the axle lift AL II 2.0 / 2.6 (PH) the long extension length for wheel alignment makes it possible to lift the axle at the suspension without compressing the wheels.



Pneumatic Floor Cover

“Park Position for Axle Lift“

- In conjunction with strip foundation or center platform
- Raises and lowers automatically with the lift



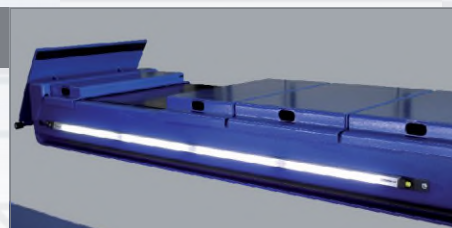
Longitudinal Light Barrier for Crush Protection on Runway Outer Side:

- Expanded crush protection
- Lift stops automatically when a body part is in a danger zone



Illumination:

Two-fold and four-fold illumination on the runway (optional: LED).



DUO CM - Options

Aluminum Step Ramp

- For vehicles with low ground clearance
- Low net weight, attach to the steel ramp when needed
- Total ramp length: 2.5 m



Wheel-free Jack

- The entire vehicle is raised wheel-free
- Large extension lengths



Options for Wheel Alignment

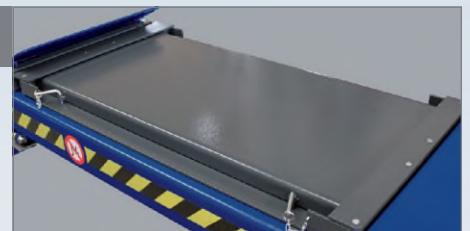
Manual Pump for EMERGENCY DOWN:

- In operation desk
- Recommended for versions used with wheel alignment



Sliding Plates:

- Possible rotation movement +/- 5°
- Lateral movement from +/- 50 mm



Compensation and Support Plates for Turning Plates:

The turning plates are secured against slippage in longitudinal direction. When not in use turning plates can be removed from the lift and the hole closed with additional compensation plates. (optional).



Double Latch:

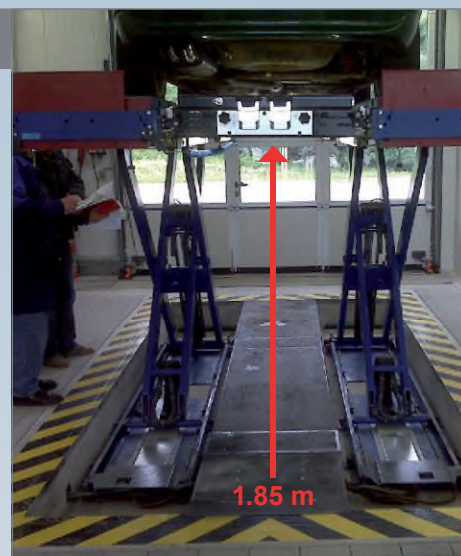
- Additional stability within the scissors arm
- Not possible in conjunction with wheel-free jack



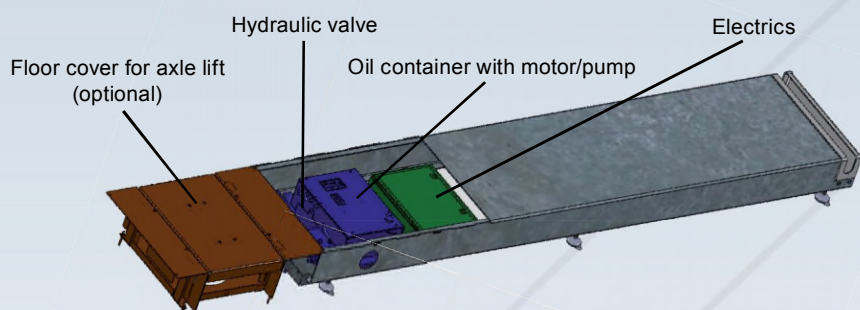
DUO CM - Options for Vehicle Inspection

Center Platform:

- Large casing made of stainless steel, mounted between the scissors in rectangular foundation
- All hydraulic and electronics integrated
- Small operating box with optically appealing stainless steel panel, no large operating desk
- Small operating box for wall attachment or on pedestal (option)
- Short and easily accessible hydraulic hoses within the center platform. Time and cost saving when exchanging old hydraulic hoses.
- Easy, cost effective rectangular foundation
- Sufficient effective lifting height 1.85 m of DUO CM lift in conjunction with center platform
- Granulate coating for anti-slip surface
- Drive-over wheel load 1.5 t for maneuvering in critical retraction range
- High corrosion protection with standard two-coated powder painting
- Lift Emergency Down outside of danger zone via cable pull



Center platform facilitates an effective lifting height of 1850 mm



Operating unit with optically appealing stainless steel panel for wall attachment or free-standing pedestal

Radio Handlamp for Axle Play Detector:

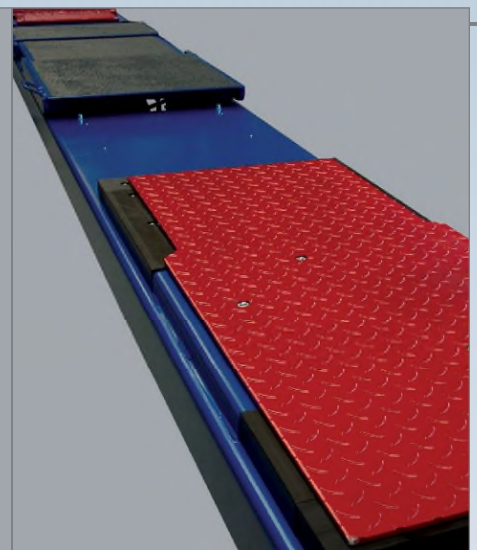
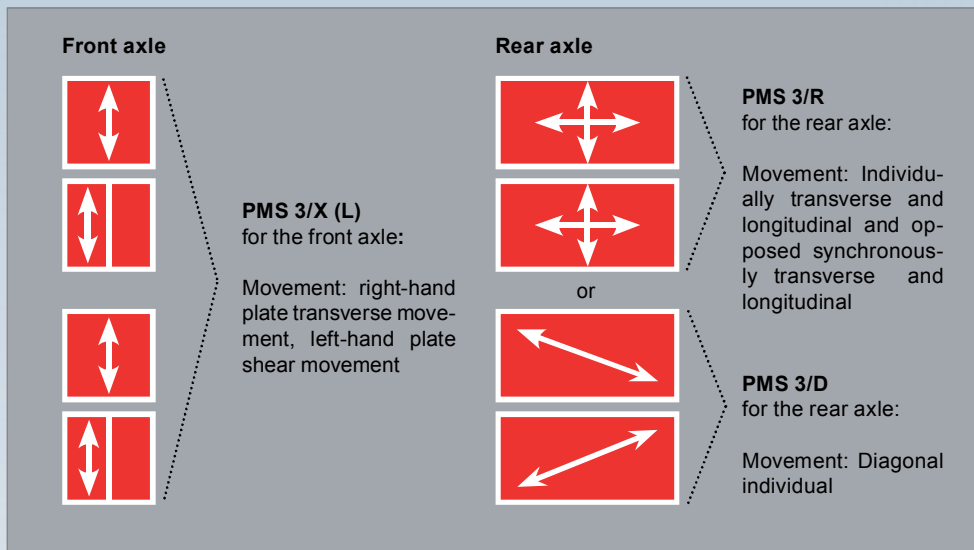
- Small size for excellent handling L x W x H = 190 x 60 x 36 mm, low weight and ergonomic form as well as anti-slip, rubber surface
- Shatter resistant casing
- LED lighting with intense lighting power and low electrical consumption
- Battery 3.6 VDC / 2100 mAh with high capacity (ca. 7 h constant light with fully charged battery possible, recharging time ca. 6 h with completely discharged battery)
- Various fixing and storage possibilities via loop, clip and (removable) magnet
- Rugged, mechanical transmission key
- Rugged foil keypad as function keys



DUO CM - Options for Vehicle Inspection

Axle Play Detector:

- Hydraulic unit with lift unit
- High test forces and defined travel path of the test plates
- Quick determination of defects and wear on steering parts, wheel bearing, springs and suspension



PMS 3/XL:

- In conjunction with the MAHA Headlight Tester positioned in front of the lift
- All four wheel contact surfaces of the vehicle are at the same level
- Rear prism halves raises and lowers automatically and synchronously with the lift

Lift lowered:



Rear prism halves are automatically lowered, all four wheel contact surfaces are level.

Lift raised:



Rear prism halves are automatically extended for axle test.

Due to the optimum position of the wheel-free jack in relation to the axle play detector, as well as the asymmetric wheel-free jack extension, vehicles with both long and short wheelbases can be lifted directly with the wheel-free jack. Pushing of the vehicle on the lift is not necessary.



Scissors Lift DUO UC

For Cars and Vans up to 5.0 t Gross Weight.

For high precision wheel alignment

Technology and Product Advantages

Sliding plates pneumatically lockable at operating desk, for high user comfort (version without wheel-free jack)

Height adjustable precision sliding plates (version without wheel-free jack):

- Minimum breakaway torque: 5 Nm at 500 kg wheel load
- Minimum displacement force: 15 N at 500 kg wheel load

Wheel contact surfaces adjustable independently with respect to runways.

Cut-out and compensation plates for turning plate standard delivery

Protected tracks for axle lift, "no dirt collection"

Low maintenance and wear and tear-free raising support





Runways in lowered position adjustable independently of lifted position

Runway width 630 mm for all conventional vehicles

Runways adjustable independently of the scissors

Lack of welding seams, open floor plates - "no dirt collection" offer high corrosion protection, floor plates delivered standard with two-layers of powder paint coating

Rugged foil keyboard, two-line LCD display for display of level values left/right

Operations desk with ideal dimensions and practical storage tray

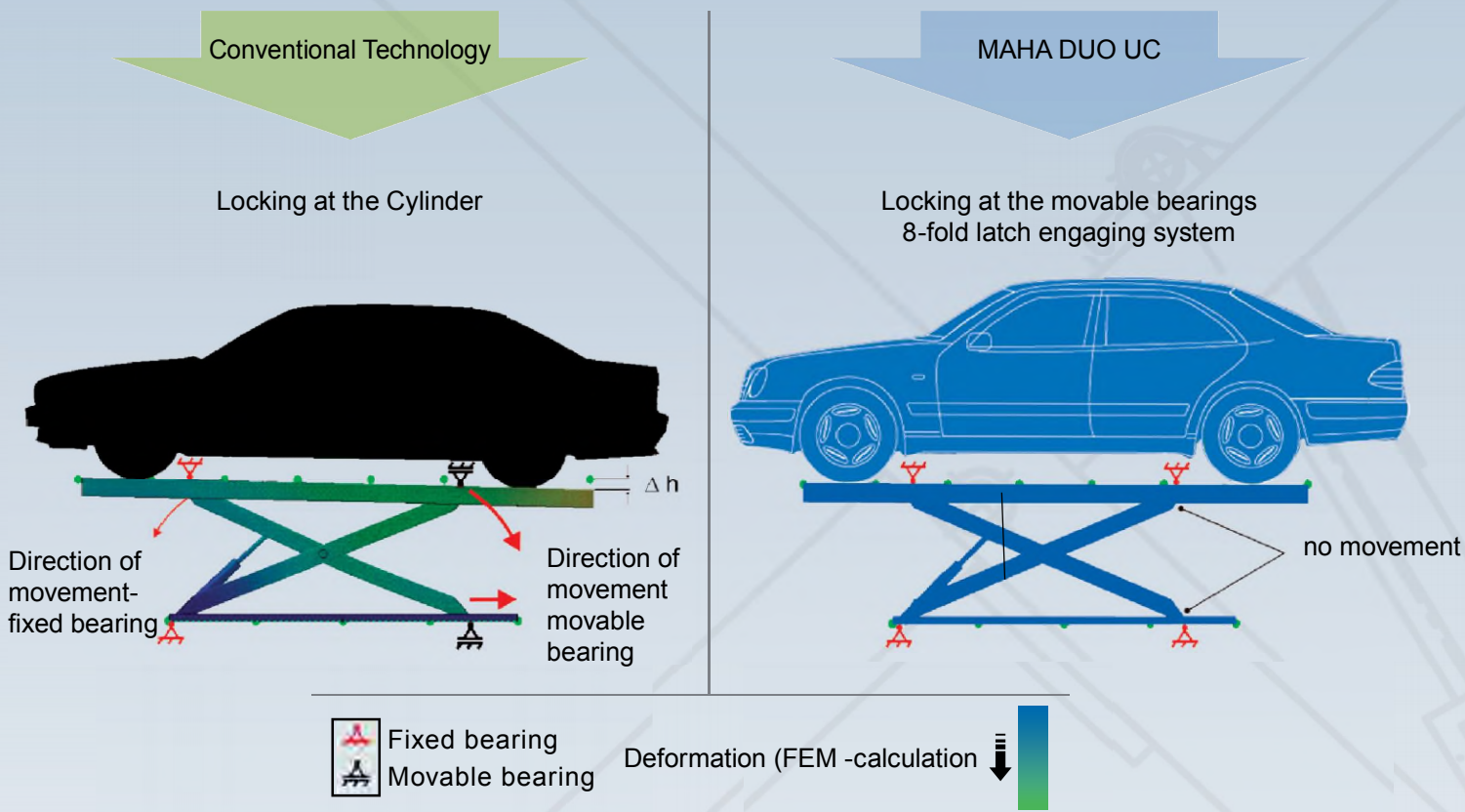
Scissors main bearing and scissors fixed bearing with sliding bearing and additional lubrication possible

Scissors Lift DUO UC

For Cars and Vans up to 5.0 t Gross Weight.

For high precision wheel alignment

Technology and Product Advantages



Locking at the Cylinder

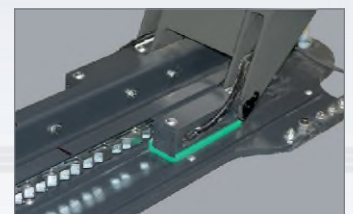
In the case of conventional locking at the cylinder (almost all manufacturers) the movable bearings move under load in the horizontal direction thereby lowering the wheel contact points in the vertical direction.

DUO UC 4.0/5.0 W:

Locking at the movable bearing

Due to the lowering device, consisting of eight locking modules, the movable bearings of the scissors are locked thereby providing:

- Symmetric lever conditions through 4 fixed bearings during locking
- Maximum flexural and torsional rigidity
- Minimal level change of the wheel contact points under load



DUO UC - Options

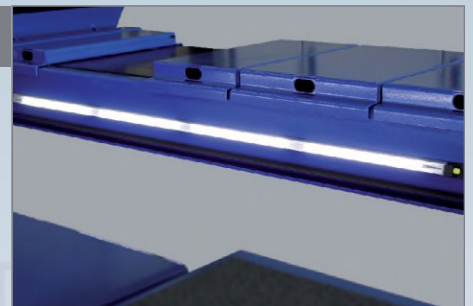
Pneumatic Floor Cover:

Pneumatic floor cover with defined axle lift positions for strip foundation



Illumination:

Two-fold and four-fold illumination at the runway (optional: LED)



Axle Lift:

In particular with wheel alignment the axle lift AL II 2.0 / 2.6 (PH) long extension zone makes it possible to lift the axle without compressing the wheels.



Wheel-Free Jack:

- The entire vehicle is raised wheel-free
- Generous extension length



Wheel-Free Jack (Option)*

Technology and Product Advantages

Using the optional wheel-free jack the entire vehicle can be lifted wheel-free quickly and safely.

- Support plates have the identical width as the lift runways
- Extensions with extremely large adjustment range up to a max. of 2100 mm - lifting of small vans also possible



The support plates and extensions are **granulate coated as standard delivery**. This creates high anti-slip protection when climbing out of the vehicle.



High anti-slip properties between support blocks and plates when lifting the vehicle due to granulate coating



In conjunction with wheel alignment/compensation plates:
The support plates can also be extended in totally retracted position i.e. must not be pushed in for complete lowering of the wheel-free jack.

- Problem-free lifting of vehicles with low ground clearance
- High operating comfort



* not available for DUO UC 4.0 W

Technical Data

	DUO CM 4.2	DUO CM 5.0	MSL 4.0	DUO UC 4.0	DUO UC 5.0
Load capacity CE	4.2 t	5.0 t	4.0 t	4.0 t	5.0 t
Total dimensions L x W (surface installation, runway length standard) without compensation/sliding plates with compensation/sliding plates	5900 x 2075 mm 5900 x 2075 mm	6700 x 2210 mm 6700 x 2210 mm	5400 x 2210 mm 5700 x 2210 mm	5700 x 2210 mm --	6500 x 2210 mm 6800 x 2210 mm
Runway length (standard) LF	4400 mm	5200 mm	4400 mm	4400 mm	5200 m
Runway length optional	4800 mm	-	4800 mm	-	-
Runway width BF	617 mm	630 mm	630 mm	630 mm	630 mm
Drive-on height (surface mounting) without accessories / wheel-free jack with accessories / wheel-free jack	240 mm 290 mm	290 mm 340 mm	180 mm 230 mm	230 mm 230 mm	230 mm 280 mm
Lifting height H max. (surface mounted)	2075 mm	2140 mm	2100 mm	2100 mm	2100 mm
Lifting-/lowering time load dependent ca.	45 s/45 s	50 s/40 s	45 s/45 s	45 s/45 s	45 s/45 s
Short lifting- / lowering time load dependent ca. (optional)	20 s/20 s	30 s/30 s	-	-	-
Hydraulic unit	2.5 kW	2.5 kW	5.5 kW	5.5 kW	5.5 kW
Hydraulic oil quantity	40 l	40 l	30 l	30 l	30 l
Power supply	3 x 400 V / 50 Hz	3 x 400 V / 50 Hz	3 x 400 V / 50 Hz	3 x 400 V / 50 Hz	3 x 400 V / 50 Hz
Weight incl. packing	2700 kg	3200 kg	2500 kg	2700 kg	2900 kg
Wheel-free Jack					
Load capacity	3.5 t	3.5 t	3.5 t	-	3.5 t
Extension length LR	1400 – 2100 mm	1400 - 2100 mm	1480 - 2100 mm	-	1400 – 2100 mm
Lifting height HR	450 mm	450 mm	500 mm	-	500 mm
Lifting-/lowering time load dependent ca.	10 s/10 s	10 s/10 s	10 s/10 s	-	10 s/10 s

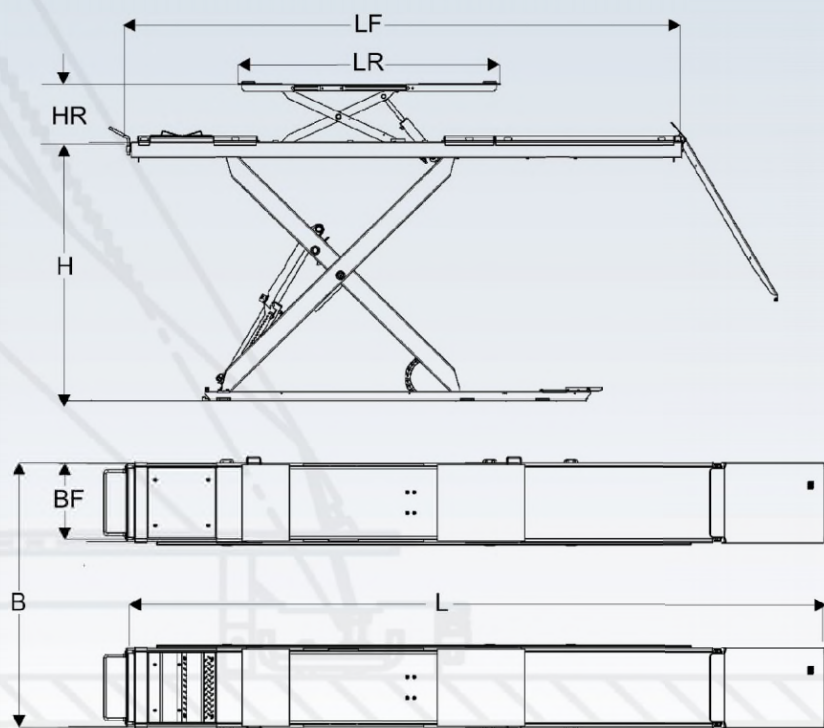


Diagram: DUO CM 4.2 A with PMS 3/X, wheel-free jack and compensation plates

Accessories

	DUO CM 4.2	DUO CM 5.0	MSL 4.0	DUO UC 4.0	DUO UC 5.0
Installation surface	++	++	++	++	++
Installation inground (also strip foundation)	++	++	++	++	++
Extended runway 4.8 m	O	-	O	-	-
Short lifting-/lowering time	O	O	-	-	-
Roll-off protection automatic	O	O	-	-	-
Wheel-free jack 3.5 t	O	O	O	-	O
Illumination 2-/4 fold	O	O (only 4-fold)	O	O	O
Illumination LED 2/4 fold	O	O	O	O	O
Shockproof socket	O	O	-	-	-
Lowering device and equipping for wheel alignment	O	O	O	S	S
Recommendation of vehicle manufacturers for wheel alignment	++	-	-	-	++
Grating with inground installation	O	-	-	-	-
Center platform	O	-	-	-	-
Inclination with surface mounting	O	-	-	-	-
Axle play detector hydraulic for front axle	O	O	-	-	-
Axle play detector hydraulic for rear axle	O	-	-	-	-
Axle play detector pneumatic for front axle	-	-	O	-	-
Axle lift 2.0/2.6 t	O	O	O	O	O
Floor compensation for axle lift in strip foundation	O	O	O	O	O
10 t load drive-over*	O	-	-	-	-

Symbols: ++ suitable
 O option
 - not suitable
 S standard

* Vehicle gross weight max. 10 t or axle load max. 10 t with wheelbase min 3.0 m

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DIN EN ISO 9001:2008
 ISO 14001:2004
 DIN EN 16001:2009
 DIN EN ISO/IEC 17025:2005

• MAHA Maschinenbau Haldenwang GmbH & Co. KG
 Hoyen 20 · 87490 Haldenwang · Germany
 Tel.: +49 (0)8374-585-0 · Fax: +49 (0)8374-585-497
 Internet: www.maha.de · E-Mail: sales@maha.de