



Agraline AS 10

Users manual

Use together with video on youtube

<https://www.youtube.com/watch?v=Uf8RU187KXY>





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1. GENERAL INFORMATION

Read these operating instructions carefully before using the wheel aligner and keep them in a safe place.

WMS Wagner GmbH and its sales partners cannot be held responsible for damage resulting from incorrect use of the device and the resulting claims.

Furthermore, we assume no liability for the correctness and completeness of the vehicle databases.

The lasers of the system are laser class II, output less than 1 mW. This is a regulation of European union. Due to different rules and regulations in countries outside EU, the export of this unit is not allowed.

Maintenance work may only be carried out by authorized specialist personnel.

The guarantee is generally 12 months from the date of purchase and applies to damage to the wheel alignment system for which we are responsible, in no event any damage resulting therefrom. Claims of this kind are generally to be brought to us or our trading partners.

The following points must generally be checked before the wheel alignment and subsequent axis adjustment:

- No wear in all joints and bearings in the wheel suspension
- The suspension is in perfect condition
- Tire pressure according to specifications
- Loading and weight distribution according to specifications

Manufacturer-specific specifications (vehicle loading, tank content) must be observed when preparing and carrying out the wheel alignment.

The wheel alignment procedures must also be adhered to (change of track when lifting, angle of wishbones or drive shafts, height of the body).

It should be noted that complete measurement sequences can be prescribed by the vehicle manufacturer.

2. SAFETY INSTRUCTIONS

2.1 Legend of symbols

General warning sign



Warning of hand injuries



Warning of infrared radiation



2.2 General safety information

All instructions in the operating instructions that are given in the individual chapters apply. The following measures and safety instructions must also be observed.

2.3 Safety instructions for the product

When working on the vehicle, there is a risk of injury from the vehicle rolling away. Therefore, the following information must be observed.

- Also place automatic vehicles in the park position.
- Secure the vehicle against rolling away.

2.4 Safety measures risk of injury

In order to avoid incorrect handling and resulting injuries to the user or destruction of the device, please observe the following safety instructions:

Only assemble the device according to the assembly instructions.

- Protect the product from prolonged exposure to the sun.
- Protect the product from water (not waterproof).
- Protect the product from hard impacts (do not drop).
- Service the product regularly.

2.5 Safety measures infrared radiation

The radiation is laser class II, less than 1mW. For use in EU only.

- Never look directly into the laser beam.
- Provide good room lighting. Never use the unit with bad light conditions.
- Avoid tripping hazards.
- Secure mechanical parts against falling over / loosening.
- Avoid reflections of the measuring beam.



3. Intended Use

For correct measurement keep magnets clean. Keep your hands away from magnets while attaching. Use unit only in day light situation or good light situation. Don't look into the laser beam. For trained personal only.

power supply	charger AC48, 230 V
Operating voltage	4,8 V

Axle measuring system measuring ranges / accuracy:

toe	+/- 20 mm
camber	+/- 45°
castor	+/- 45°
Kpi	+/- 45°
toe-out-on-turn	+/- 5°

The wheel alignment system may only be operated by trained personnel.

Training courses are offered by the manufacturer or by his authorized representatives for an instruction fee.

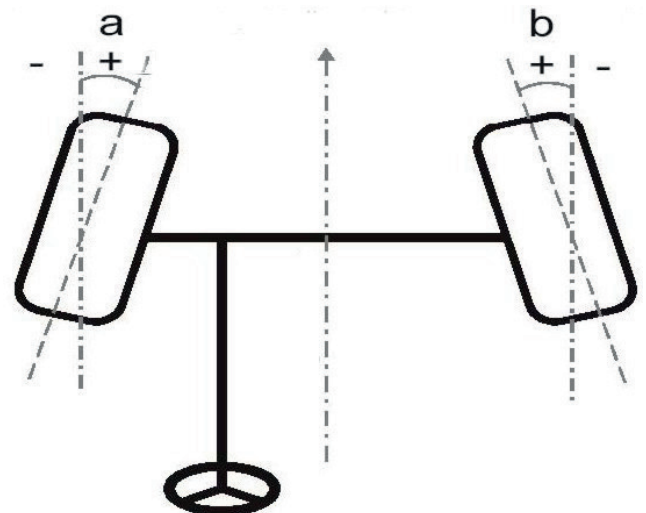
4. Chassis-relevant technical terms

4.1 Toe(total toe)

The toe is the position of the wheels on an axle viewed from above. If the distance between the two wheels in the direction of travel is closer to the front than to the rear, then one speaks of a toe-in, with identical values the toe is zero, in the case of wheels closer to the rear one speaks of toe-out (often marked with „N“ or „-“, not allowed confuse with „after-run“). The toe is given either in mm or in degrees and minutes.

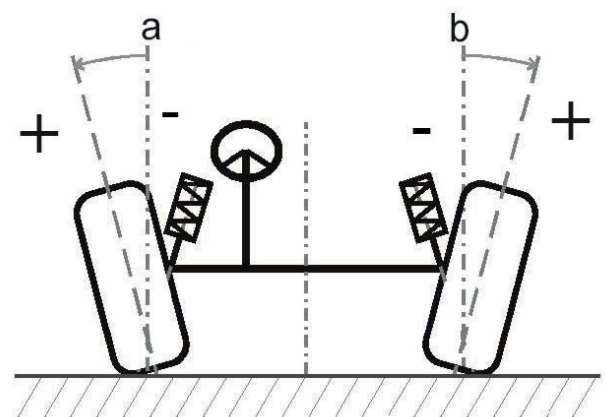
4.2 Single toe

The lane can also be viewed individually (left / right) in relation to the vehicle center line; this is then referred to as “single lane”. The relation to the center line of the vehicle is less important than the relation to the steering gear and thus to the steering wheel. In order to set a steering wheel straight for „Drive straight ahead“, the individual lane must be set.



4.3 Camber

The camber describes the position of the wheel when viewed from the front or the rear (horizontal). If the upper part of the wheel is further away from the center of the vehicle than the lower part, this is called a positive camber. If the lower part of the wheel is further from the center of the vehicle than the upper part, this is known as a negative camber.

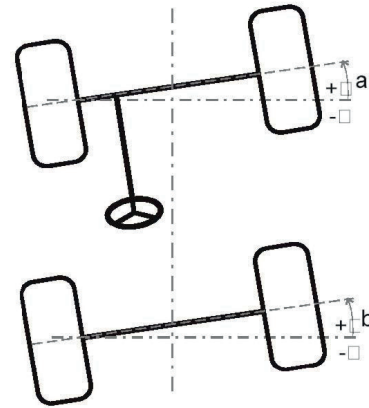


4.4 Misalignment

Axial offset describes the inclination of the axles or the axle line to the geometric axle line (right angle to the vehicle center line).

- If the right wheel is in front of the left wheel (in the direction of travel), this is called a “positive axle offset”.
- If the right wheel is behind the left wheel, this is referred to as a „negative axle offset“.

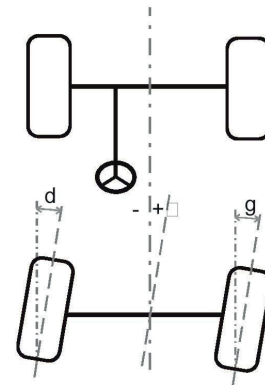
Another term in this context is the „geometric travel axis“. This denotes the perpendicular (90 °) to the rear axle.



4.5 Driving axis angle-trust line

The bisector of the two individual tracks on the rear axle is called the „driving axis angle“.

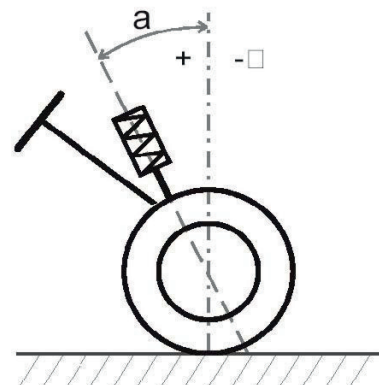
The driving axis angle influences the steering wheel center position and results from the sum of the individual toe angles of the rear axle (sum of the bisectors as perpendicular to the rear axle).



4.6 Castor

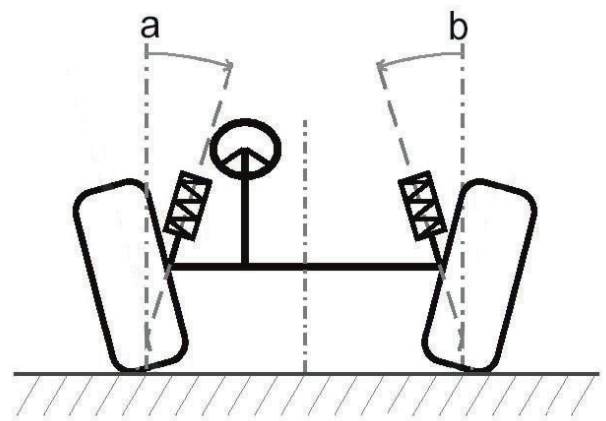
Trail is the angle through the center point the upper suspension and viewed from the side through the center of the wheel.

The overrun is controlled by swiveling the wheels measured (10 ° or 20 ° steering angle).



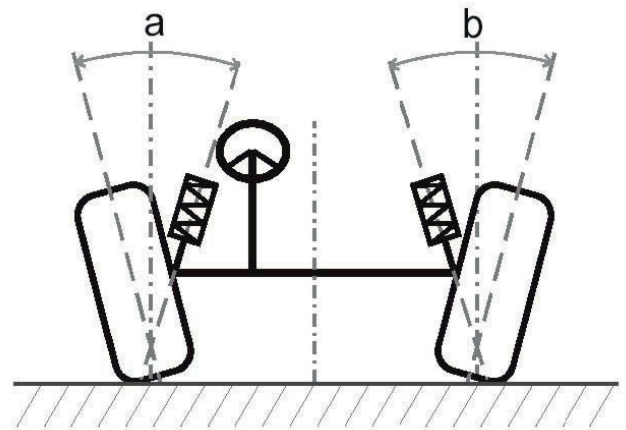
4.7 Kin pin inclination KPI

The KPI describes the angle of the wheel suspension to the vertical, viewed from the rear or the front (not shown)



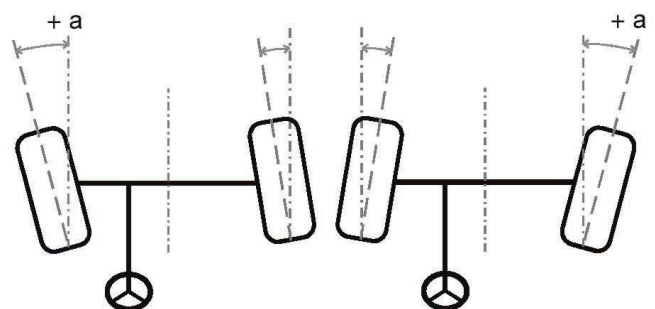
4.8 Included angle

KPI + camber



4.9 Toe-out-on-turn

Difference in the steering angle between the wheel on the inside and outside of the curve (the wheel on the inside of the curve must describe a smaller curve radius than the outside of the curve).



4.10 Steering wheel center position

The steering wheel is locked in the middle position to adjust the suspension (note the blue point on the screen) (not shown)



5. Device description

The AS 10 wheel aligner can be used to determine and set all chassis-relevant values on a tractor, tractor unit or trailer (total toe, individual toe, axle tilt, camber, toe-difference angle, caster). Moving the vehicle is not necessary for this.

The adjustment of the total toe is made in relation to the rear axle. Likewise, the steering cylinder position can be included in the measurement.

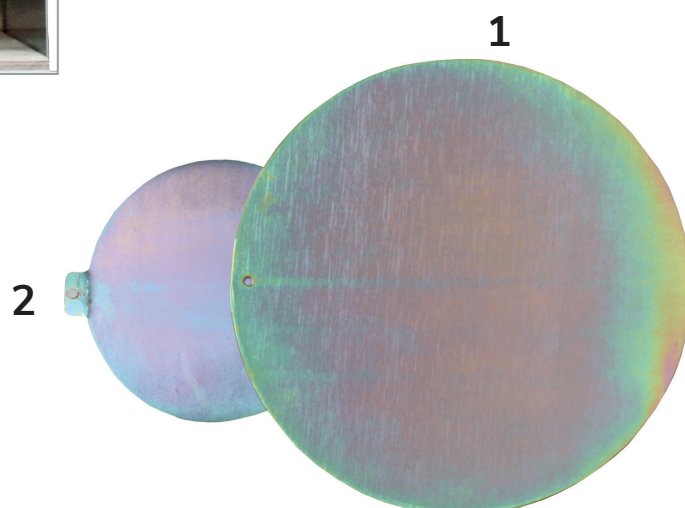
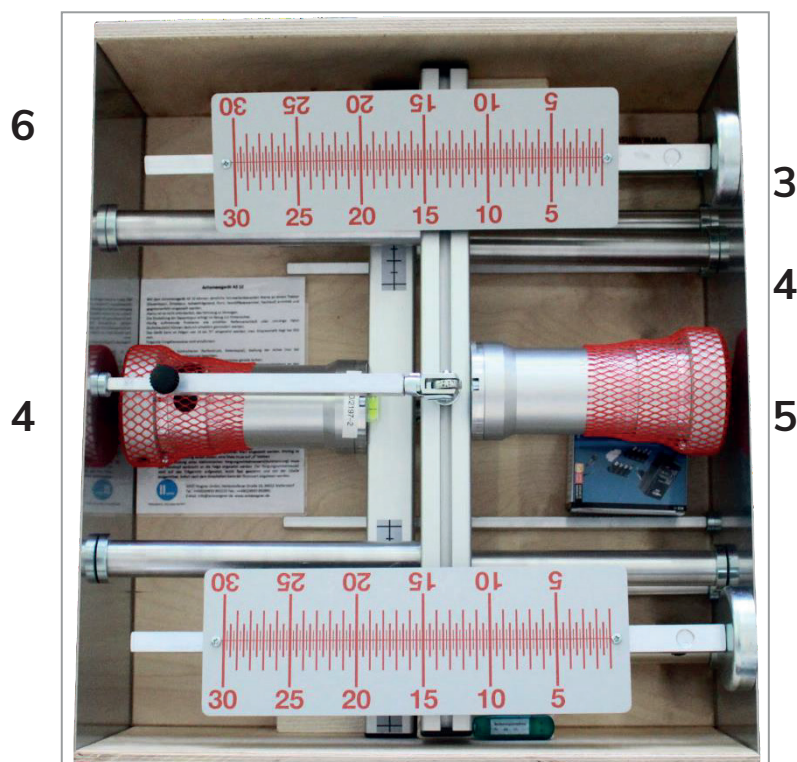
Frequently occurring problems such as increased tire wear or bumpy ride (rocking) can thus be significantly reduced.

The device can be used on rims from 16 to 70". Offset max. 550 mm.

6. Scope of delivery

art.nr.	description
3110	Agraline AS 10

- 1 upper turn table
- 2 basic turn table
- 3 magnetic gauges
- 4 magnetic legs
- 5 laser measuring head
- 6 wooden case





7. Technical specifications

Dimensions of the device (packed)

Dimensions of the Agraline AS 10 system when packaged (LxBxH) 60x60x30 cm
plus parcel (LxBxH) 30x15x200 cm

We recommend you to watch the product video of the Agraline AS 10 / AS 20:

- USB device (enclosed)
- www.wmswagner.de
- www.youtube.com - Kanal WMS WagnerGmbH
<https://www.youtube.com/watch?v=Uf8RU187KXY>

8. Instructional Manual



The wheel alignment should be performed on level ground. When handling lasers, observe the safety regulations. Do not look into the laser beam.

The following procedure is recommended for performing wheel alignment:

- 1 Check the tire pressure and joint clearance on the vehicle and note the position of the axle (only with parallelogram suspension). Correct the tire pressure to the prescribed value if necessary.

Before reaching the measuring station, the position prescribed for the toe setting (according to the manufacturer) must be set for axles with parallelogram suspension and the steering must be steered straight ahead. If these settings are only adjusted after the vehicle is already at the setting location, this can lead to incorrect measurements. In the case of parallelogram suspension, the center position should be reached automatically by exceeding the speed threshold.

- 2 Steer the vehicle straight in relation to the steering axle before driving onto the measuring site. The rims of the front axle must be cleaned at the contact points of the measuring heads, since exact contact of the measuring head is of considerable importance for the measurement result. Place the 2-part rotating plates directly in front of the wheels of the steering axle and drive over them. Place the straight lower part on the ground and the curved upper part on the lower part. Visually inspect the joints and bearings of the steering axle (check the play of the steering, etc.).

- 3 Place the measuring heads with the magnetic spacers on the rims between the wheel studs.

Now move the magnetic spacers so that they are as close as possible to the planet set between the wheel studs. Observe the attached spirit level. The measuring head must be mounted horizontally.

- 4 Place a magnetic scale in the center of the rear wheel on one side and set any value (15). Repeat this procedure with the 2nd magnetic scale.

- 5 Attach a magnetic scale opposite to the other tractor side on the rim. Aim the lasers of the measuring heads at the scales.



- 6 Now align the front axle with the rear axle, observing the lasers on the magnetic scales. The length of both magnetic scales is set on one side of the vehicle. One of the magnetic scales of the same length is placed opposite on the other side of the vehicle at the symmetrical point.

Example:
Display left 15, display right 19.
Add both values, halve the summed value (result 17). Then steer to the value "17".
- 7 Place the toe scale on the ground directly in front of the steering axle. Using the lasers, bring both boards to "0" by adjusting the length.

Start on the left side in the direction of travel and pull the toe scale to "0". On the right side in the direction of travel, hold the rod and pull the sliding panel to "0".

Check that both lasers light up at „0“.
- 8 Now determine the diameter of the rim (from horn to horn) at the steering axle. Calculate 5 times the value and mark this point with chalk. Measure from the toe scale, which is in front of the wheel. Then place the toe scale set to "0" on the mark. Parallelism to the steering axis is important.
- 9 Swivel both laserst o the scales and move the scalse on one side to "0". Attetion, the length is no longer changed.

On the other scale, the total toe value can be read off.
- 10 Now set the steering axis to the specified value. It is important to important to pay attention to both scales, one scale must remain at "0".



- 11 When using an optional electronic clinometer (camber measurement), the measuring head must be placed vertically against the rim. The clinometer is placed on the support tube, slightly tightened and aligned with the level. Immediately after switching on, the camber value can be read. To do this, the "ABS" symbol for "Absolute measurement" must light up in the display.
- 12 Towed vehicles are always adjusted to their hitching point (ball head, towing eye or king pin).

A special scale (trailer scale ALS or tridem scale) is available for this purpose.
- 13 To center the steering cylinder, perform the wheel alignment as described.

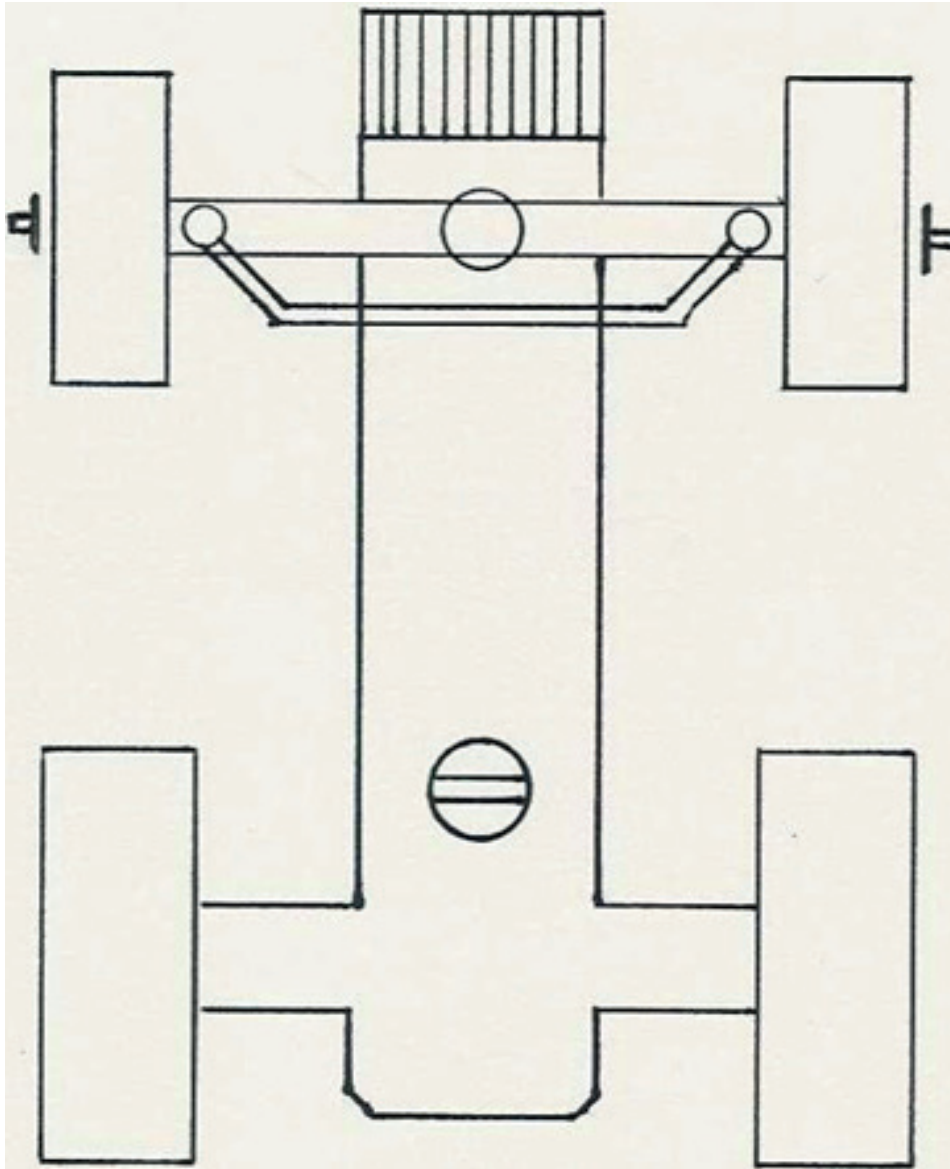
After this measurement, steer the cylinder by measuring the piston to the center position. Now swivel both lasers to the magnetic scales on the rear axle.

The symmetry of the laser points has changed due to the steering movement. Add the values of both scales in the usual way, halve the sum value and adjust this halved value by turning the track rods.

Finally, check the overall toe again.
- 14 Proceed in the same way when setting a tail steering:
 - First set the total toe.
 - Now steer the rear steering axle to the point that represents fast road travel or the locked position of the rear steering axle. Now attach the two magnetic scales of equal length to the front axle or to the frame in the area of the front axle.
 - By twisting the single toe rods, set the symmetrical.



9. Measurement protocol



Total toe front axle _____
Actual value _____
Target value _____

Type:
Owner:
Assembler:
Comment:

License plate:
Chassis number:

KM/Operating hours:
Chassis number:

10. Master sheet - Equipment

Device designation : AS10.....

Device number : AS 10/.....

Measuring head equipment : 100 R-11,0

Laser : VLM 11, laser class II power output less than 1mW

Laser adjustment: right angle parallelism

Battery: 4,8 V-Block, 1300 mAh, F2x2, Charging time 6,5 h

Spacer : magnet 40 mm, 4 x.....4 x

Turntables :

Track scales : piece, Scale 50 / 2,5.....

Magnet-/ touchscales :

Additional equipment : Charger AC 48, Transport case.....



11. Maintenance and cleaning

As with any device, the product should be handled with care.

- Regularly lubricate moving parts with acid- and resin-free grease or oil.
- Tighten the fastening screws regularly.
- Clean the product regularly with non-aggressive cleaning agents.
- Commercially available household cleaners in conjunction with a damp, soft cleaning cloth use.
- Replace damaged accessories immediately.
- Use only original spare parts.

12. Warranty

We give a voluntary 12-month guarantee on all hardware components as standard.

WMS Wagner does not accept any guarantee for damage caused by external influences or force majeure.

Changes or repairs made to the products that have not been approved by WMS Wagner, as well as the improper use of WMS Wagner products lead to the immediate expiry of the guarantee.

For misprints we accept no liability.

13. Environmental conditions

Requirement for using the product

To be able to use the device, please note the following.

- Vehicle system is working properly.
- No errors stored in the control unit error code memory.
- Any vehicle-specific preparations have been carried out.
- The axis geometry is set correctly.
- Both the calibration device and the utility vehicle should be on level ground with a maximum angular deviation of 3 °.

14. Battery change

Replace type SUB-C batteries. Ask your dealer for technical support. After battery replacement an calibration of the unit is required.

To replace batteries, do the following.



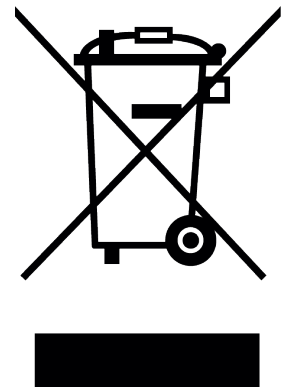
15. Disposal

Power tools, accessories and packaging should be recycled in an environmentally friendly manner.

Do not throw the power tool in the household waste!

Rechargeable batteries / batteries:

Do not dispose of rechargeable batteries / batteries in household waste, in fire or in water. Accumulators / batteries should be collected, recycled or disposed of in an environmentally friendly way.



For EU countries only:

In accordance with European Directive 2012/19 / EC on waste electrical and electronic equipment and its implementation in national law, power tools that are no longer usable must be collected separately and recycled in an environmentally friendly manner. According to Directive 2006/66 / EC, defective or used batteries must be recycled.

Since this device is used exclusively for commercial purposes (B2B), it must not be handed over to public waste disposal companies.

The device can be disposed of at:

WMS Wagner GmbH
Industriestraße 10
94363 Oberschneiding
info@wmswagner.de

16. Declaration of conformity

WMS Wagner confirms that the Agraline AS 20 fulfills the necessary and relevant safety requirements of one or more directives and standards.



17. Data sheet

If you would like to have your wheel aligner checked by WMS Wagner GmbH customer service, print out the following form and send it with the measuring heads to WMS Wagner GmbH for checking.

You can also download the accompanying letter from our homepage www.wmswagner.de and enclose it with the measuring heads.

Please ensure sufficient protective packaging for the transducers.

Name and address of the customer

Phone/Fax/Email:

Repair Cost estimate

Device / serial number:

Purchase- / delivery date:

Description of the fault/defect:

Package contents:

Location, Date

Signature customer



PRÄZISION, DIE MAN SPÜRT.

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