WORKSHOP MANUAL 03/2022 EN

AS-MOTOR Flail Mowers

AS 901 SM from 03/2015
AS 701 SM from 03/2015

Service Information

Adjustment, maintenance and repair instructions

Workshop Manual AS-MOTOR Flail Mowers AS 901 and AS 701 SM:

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Introduction

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Preface

This Repair Manual is designed to make it easier for you to properly make adjustments, perform maintenance and make repairs on AS 901 SM and AS 701 SM flail mowers.

As a reference work it will be a useful aid at all times for the tasks that occur in your workshop.

The online service portal "parts&more" is very helpful for all tasks. Please use the online service portal for exploded drawings, parts lists, instructions and orders. It shows you the correct assembly sequence, even for complex parts.

Naturally, good workshop equipment and trained specialists are the prerequisites for faultless maintenance. Please take advantage of our regularly offered service training courses.

With this Workshop Manual we are providing a valuable tool for you and your workshop team.

Regards

AS-MOTOR GERMANY

SERVICE

Validity

This Workshop Manual is based on the following current device versions: (Version 06/2017) (Except for the engines both devices are identical)

- AS 901 SM: from serial number (SN:) (0) 260 15 03 0049, March 2015
- AS 701 SM: from serial number (SN:) (0) 268 15 03 0001, March 2015

The serial number of your respective AS-Motor AS Allmäher is provided at two points on the device:

1. As sticker, on the frame, close to the left front wheel.
2. As an aluminium plate permanently riveted on the link bar

Explanation of the eleven-digit serial number:

Example:

•Device type:	(0) 264
•Model year:	16
•Month:	11
•Consecutive number:	0001

Introduction

Deviating device versions and safety instructions

Deviating device versions

Since the market launch of the AS 901 SM and of the AS 701 SM the machines have been improved on a regular basis.

Significant changes were:

AS 901 and 701 SM:

- **New, reinforced chain drive (chain drive) for use of cage wheels, from 09/2017**
- **Slightly changed cable guidance and Bowden cables for easier operability from season 2017/2018.**
- **Reinforced wheel axle and wheel hubs from season 2017/2018.**
- **New, reinforced self-aligning bearing from 01/2020**

Otherwise the handlebar has been slightly modified for a new Start/Stop switch.

The executing mechanic can view the deviating parts in the parts lists and drawings on our online service portal "www.parts-and-more.org" (PAM) (see section: "parts&more")

In this case the designation of a "handlebar assembly is: "From serial number 0260...".

For future device versions this Workshop Manual will be revised annually. Please ensure on a regular basis that your version of the Workshop Manual is the right one/or is up to date.

Safety instructions for all activities:

Only authorised AS-MOTOR Workshops are allowed to execute the activities cited in this manual.

Comply with the following instructions and the warnings in the respective sections, otherwise accidents with severe injuries can occur and/or the device can be damaged.

Prior to starting work: 

- Before all tasks on the machine, **pull off the spark plug connector.**
- Place the device on a level and non-slip substrate.
- Only use ramps and hoists that are suitable for the device.
- Safeguard the device against rolling off and falling over.
- Let the device cool for at least 20 minutes.
- Close the fuel tap and the tank ventilation.
- Never place the device with petrol in the tank, inside a building where petrol fumes can come into contact with open fire or sparks.
- Do not inhale fuel fumes, they are harmful.
- Use gloves, particularly for tasks on cutting tools.
- Avoid skin contact with fuel and operating fluids.
- This  symbol signals a warning. Failure to comply with the warning can result in accidents, injuries and damage!

Introduction

Notice – original spare parts and technical data

Original spare parts

Important note: ⚠

Only original AS-MOTOR spare parts ensure safety, keep the guarantee intact and protect against damage. Consequently only use original AS-MOTOR spare parts; do not use any imitation or counterfeit parts.

Installation of non-original parts invalidates the guarantee claim and the operating authorisation. Accidents with severe or fatal injuries can be the result.

All original wear parts, all original flails and many original spare parts bear the stamped AS-MOTOR logo, as well as the EXXXXX and/or G 0XXXXXXXX part number.

Accessories – AS 901/701 SM:

- Twin tyres for steep slopes AS 701 SM (see instructions: General information, Tyres sizes)
- Operating hour meter
- Steel hand guard
- Steel wheels (pair) with hub (see instructions: General information, Tyre sizes)
- Tyre sealant „Platfuss-Stop“

Technical data AS 901 and 701 SM:

Type	**AS 701 SM**	**AS 901 SM**
Range of application (temperature)	0 - 30 °C For temperatures below 5 °C, observe the engine manufacturer's information regarding the engine oil.	
Engine, type Manufacturer Type Cylinder capacity Performance Engine speed	One cylinder four stroke engine Briggs & Stratton Series 3 Intek 344 cm^3 7.6 kW (10.3 PS) 3300 min-1	Two cylinder four stroke engine Briggs & Stratton Vanguard, V-Twin 480 cm^3 10.7 kW (14.5 PS) 3500 min^{-1}
Cutting device, type Cutting width Cutting height Growth height	20 Y-flails 70 cm 10-100 mm approx. 120 cm	26 Y-flails 90 cm 10-100 mm approx. x cm
Starting device	Rope start	
Drive Speed forward Speed reverse	Mech. transmission with differential lock 1.1; 1.5; 2.4; 3.0; 3.6 km/h 1.7 km/h	Mech. transmission with differential lock 1.2; 1.6; 2.6; 3.2; 4.0 km/h 1.8 km/h
Maximum area coverage	approx. 2500 m^2/h	approx. 3600 m^2/h
Measures and weight Transport size with packaging L/W/H Max. tyre dimensions L/W/H Weight	 195/112/110 cm 220/84/105 cm 196 kg	 195/112/110 cm 220/104/105 cm 215 kg
Capacities Fuel tank Engine oil Bevel gear oil	 5 litres 1.2 litres SAE 30 or 5W-40 0.25 litres Hypoid SAE 90-API-GL5	 5 litres 1.4 litres SAE 30 or 5W-40 0.25 litres Hypoid SAE 90-API-GL5
Sound level, according to DIN EN 12733 Measured sound level L_{WA} Sound level at working place L_{pA} Measurement uncertainty k	 102.0 dB 91 dB 2.5 dB (A)	 100.0 dB 87 dB 2.5 dB (A)
Vibration emission value according to DIN EN 12733 Hand-arm-vibrations $a_{h,W}$ Measurement uncertainty U	 2.4 m/s^2 1.5 m/s^2	 2.5 m/s^2 1.5 m/s^2
Tyre pressure	1.0 - 2.0 bar	

Online service portal "parts-and-more.org" (PAM)

For all tasks shown in this Workshop Manual the online service portal "parts-and-more.org" is your most important companion. It offers you the following functions for every single AS-MOTOR device:

- Exploded drawings of each assembly
- Spare parts lists for each assembly
- Modification information for parts
- Current availability (online stock) of spare parts
- Spare part ordering function
- Management of current shopping carts and older orders
- FAQ and general technical information
- Guarantee claims
- Device orders (if released)

Access to the online service portal "parts-and-more.org":

Every official AS-Motor dealer has access to the online service portal via his customer number.

Login access to the system occurs via the website:

www.parts-and-more.org

Access data is issued within one to two days after "Dealer first login" using the AS-Motor customer number.

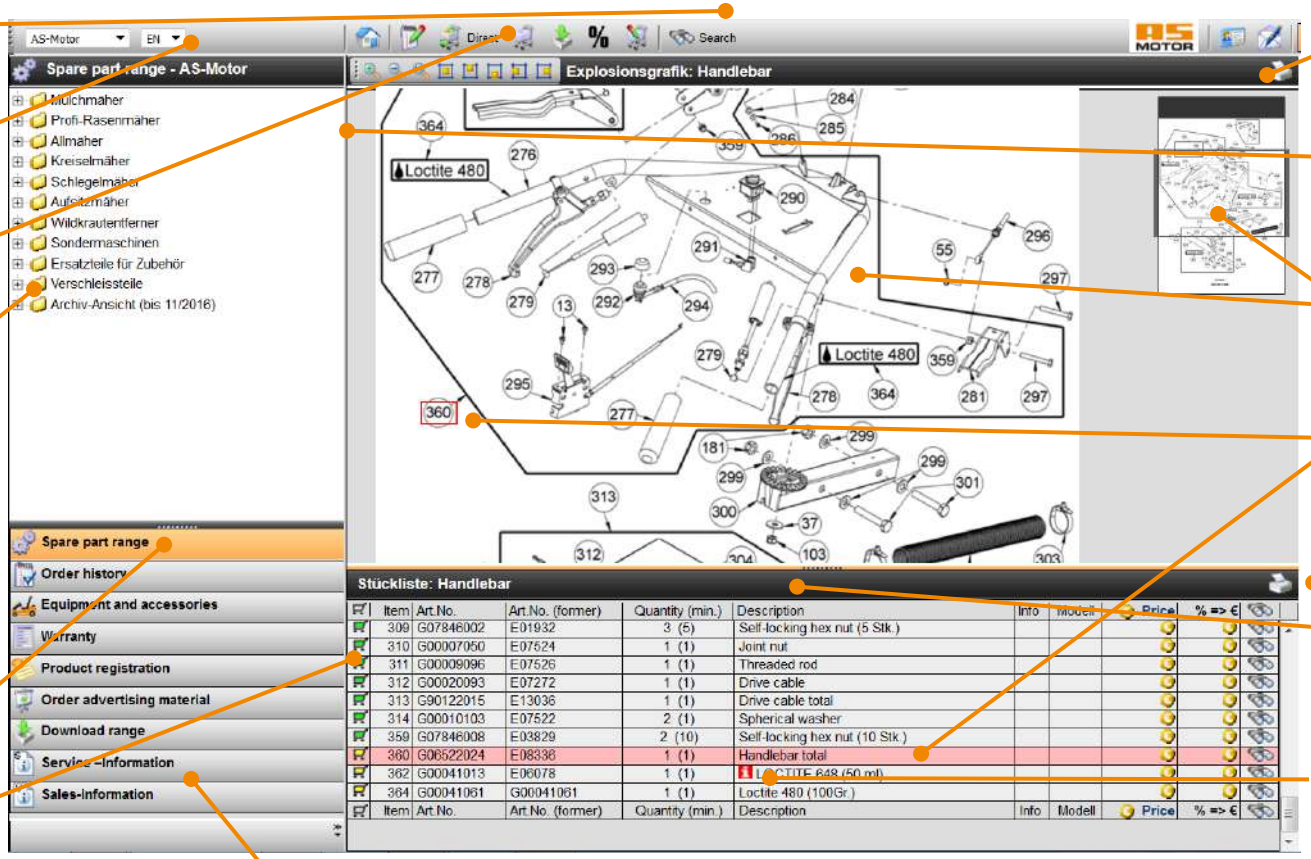
After receipt of the access data (parts ID and password) you can log in via "Immediate login" and use all functions immediately.

For questions concerning "parts-and-more.org" please contact:

- info@as-motor.de or
- service@parts-and-more.info
- AS-Motor Germany +49 7973 9123-0

Introduction

Online Service Portal "parts-and-more.org" (PAM) (2/2)



Parts search

Language selection

Shopping cart

Device and assembly selection

Spare part function

Availability

Important workshop information and workshop manuals

Print function

Magnifying glass function

Complete overview

Parts direct selection highlighted red

Spare parts list

Parts information Change notifications

General information

Frequent faults and rectification (troubleshooting) (1/2)

AS 901 and 701 SM:

Problem	Possible cause	Remedy
Engine does not start	Engine stop switch is set to OFF.	Set engine stop switch to ON.
	Fuel valve is closed.	Open fuel valve.
	Tank ventilation screw is closed.	Open tank ventilation screw.
	No fuel is in the tank.	Refill fuel.
	Choke is open.	Close the choke.
	Spark plug connector is pulled off.	Observe the safety instructions! Put spark plug connector back on.
	Device was tilted – oil leaked into the air filter.	Replace air filter, unscrew spark plug and start several times when the fuel valve is closed, dry the spark plug and screw it back in.
	Engine was flooded due to too many start attempts.	Unscrew spark plug and start several times when the fuel valve is closed, dry the spark plug and screw it back in.
	Air filter is dirty.	Maintain air filter (see also Maintenance and cleaning).
	Spark plug is sooted, damaged, or incorrect electrode gap.	Clean spark plug and check electrode gap (see also Maintenance and cleaning). Replace spark plug if necessary.
	Housing of the mower is jammed.	See also Maintenance and cleaning.
	No oil pressure: Too little engine oil.	Check engine oil level, refill.
	No oil pressure: Slope too steep.	Bring the device into a level position.
	Poor quality, dirty, or old fuel.	Clean fuel system (authorised service centre). Always use fresh fuel.
Engine starts badly	Choke is closed.	Open the choke.
or runs irregularly	Air filter is dirty.	Maintain air filter (see also Maintenance and cleaning).
	Poor quality, dirty, or old fuel.	Always use fresh fuel.
	Spark plug is sooted, damaged, or incorrect electrode gap.	Clean spark plug and check electrode gap (see also Maintenance and cleaning). Replace spark plug if necessary.
No drive when drive lever is actuated	Drive belt is insufficiently tensioned.	See also Checking the drive.
The blade does not rotate	V-belt is insufficiently tensioned or damaged.	Authorised service centre.
	Bowden cable is defective.	Authorised service centre.
Strong vibrations during operation	Unbalance at the blade caused by incorrect sharpening or chips on the blade.	Have blade resharpened and balanced by an authorised service centre. Replace a damaged blade immediately.
	Blade drive shaft is bent due to collisions with foreign objects.	Authorised service centre.
	Engine fastening is loose.	Authorised service centre.
	Blade fastening is loose.	Authorised service centre.
Irregular noises	Loose fastening elements.	Authorised service centre.
	Silencer is defective.	Authorised service centre.
Engine is smoking	Air filter is soiled or drenched with oil.	Maintain or replace air filter (see also Maintenance and cleaning).
	Oil level is too high.	Have authorised service centre lower the oil level to the marking.
Engine gets hot	Ventilation grid is dirty.	Clean ventilation grid.
	Oil level in the engine is too low.	Refill engine oil (see operating instructions of the engine manufacturer).
	Cooling fins of the engine are dirty.	Have cooling fins cleaned by authorised service centre.
Uneven cut, lawn becomes unsightly	Blade is dull or worn.	Have blade resharpened and balanced by an authorised service centre. Replace a damaged blade immediately.
	Speed is too high proportionately to the cutting height.	Reduce speed and/or select the correct cutting height.

General information

Frequent faults and rectification (troubleshooting) (2/2)

AS 901 and 701 SM: (Continued)

	Housing of the mower is heavily contaminated.	Clean.
	Different tire pressure.	the tire pressure.
Mulching result with high plant material not satisfactory	Speed is too high.	Reduce speed.
Mulching result with low plant material not satisfactory	Plant material is ejected too quickly.	Increase speed.
Discharge channel is jammed	Mowed grass was too long or too damp.	Adjust cutting height and mowing speed to the mowing conditions.
	Blade is worn.	Authorised service centre.
	Engine speed is too low despite full power.	Authorised service centre.
The device does not stop when the brake is actuated	Brake is adjusted incorrectly, worn, or defective.	Authorised service centre.
The engine does not switch off	Switching off system is defective.	Close the fuel valve. Authorised service centre.
The tires become flat	Thorns or sharp objects damage the tires.	If necessary, use tire protection gel (authorised service centre).

Other faults (experiential values from the past):

- Gear shift lever is difficult to move: Bowden cable of the traction drive is difficult to move, and thus the drive does not fully decouple. (Machine jerks at standstill when shifting gears)
- Transmission damage: Bowden cable of the traction drive is difficult to move, and thus the drive does not fully decouple. (Machine jerks at standstill when shifting gears) Results in transmission damage
- Transmission damage: Shifting when moving, without disengaging the clutch (stop).
- High flail wear. Cutting height too low
- Cracks in the mowing deck or frame: Imbalance of the flail mowing deck due to missing, worn or partially replaced flails. Bent flail shaft.
- Engine damage: Faulty cleaning of the air filter. More regular or more frequent maintenance of the filter.
- Broken starter: Tearing on the starter rope against compression (16 hp Vanguard) – do not start engine against compression. Do not "jerk" the starter rope.
- Single wheel control does not brake the wheel: Oily/greasy brake pad or worn brake pads – clean or replace.
- Individual drive wheel has less drive force: Clutch discs of the single-wheel control are greasy/oily – remove and clean.
- Frequent flat tyres. Mowing in thorns. Fill with a sealing agent.

General information

Tyre sizes, wheel dimensions, tyre pressures (1/2)

Tyre pressures

A uniform and correct tyre pressure is essential for the following characteristics:

- Traction uphill
- Braking force downhill
- Suspension comfort
- **Safety** ⚠ : The tyre does not come off of the rim!
- Uniform mowing pattern

Rules: ⚠

- Check the air pressure on a regular basis.
- Examine tyres and tyre flanks regularly for damage.
- Replace damaged tyres.
- Only use original AS-MOTOR tyres.

Tips / notes: 👍

- Inflate the tyres with our recommended tyre pressure. In our opinion, these pressures offer an optimum of suspension comfort and traction.
- High tyre pressures have a negative influence on suspension comfort and traction.
- Do not underrange the recommended tyre pressures. Tyres can come off of the rims. ⚠
- Do not exceed the maximum tyre pressures.
- AS-Motor mowers come from the factory with a tyre pressure that is higher than the recommended pressure.
- Tyre sealant can prevent flat tyres.
- Pay attention to the running direction of the tyres, left / right for optimal traction.
- Slow pressure loss of a tyre indicates that there is a thorn in the tyre.
- Tubed tyres cannot be easily used without a tube.

Next page: **Overview TABLE "Wheels"**

General information

Tyre sizes, wheel dimensions, tyre pressures (2/2)

Model:	Front wheel (FW) / rear wheel (RW):	Tyre size:	Recommended air pressure:	Maximum air pressure:	Tread:	Tubed tyres (TT) / Tubeless (TL):	Standard equipment / optional:
AS 901 and AS 701	RW:	4.80/4.00-8	**18 psi / 1.2 bar to 22 psi / 1.5 bar**	36 psi / 2.50 bar	AS	TT	Series
	Twin tire kit*	4.80/4.00-8	**18 psi / 1.2 bar to 22 psi / 1.5 bar**		AS	TT	Optional (AS 701)
	Steel wheel*						Optional

(*) Notes:

Twin tires:
The AS 901 SM has twin tyres as standard equipment. Further track widening to triple tyres is not permitted! The twin tyres on the AS 701 SM are wider than the mowing deck (project beyond).

Steel wheels:
The AS 901 SM has twin tyres as standard equipment. Further track widening triple wheels through additional steel wheels is not permitted!

Recommendation: Take off the outer wheel set and replace it with a steel wheel. If necessary inflate inner wheel with less air pressure to get more traction to the steel wheel.

Tightening torques

Correct tightening torques are important to ensure a solid connection of components and to avoid damage

Correct tightening torques are safety-relevant on rotating parts, in particular, like flails, belt pulleys and wheels.

The following tightening torques always apply for hexagon bolts, socket head screws with hexagon socket and standard thread in 8.8 quality:

		Bolts with standard thread DIN quality 8.8	**Bolts or nuts with under-head serrations**
Thread:	Width across flats:	Torque in Nm:	Torque in Nm:
M5	8	6 Nm	8 Nm
M6	10	12 Nm	15 Nm
M8	13	25 Nm	35 Nm
M10	17	55 Nm	70 Nm
M12	19	90 Nm	120 Nm

Special tightening torques

In the tables on the following pages the individual torques are presented for essential, special and safety-relevant parts.

Tip / note:

You will find the listed bolts / threaded fittings based on the position number (#XXX) in the exploded drawings of the respective assembly at parts-and-more.org (PAM). The position numbers are the numbers in circles on each part in the exploded drawing. In the parts list below the drawing the position number (Pos.) is also shown and cited by name.

Attention: Several bolts of the engines from Briggs & Stratton and Honda are inch bolts.

Next pages: **TABLE – SPECIAL TIGHTENING TORQUES**

Fuel

AS 901 and AS 701 with Briggs & Stratton engines:

The fuel must fulfil the following requirements:

- Clean, fresh, non-leaded petrol.
- At least 91 octane
- Petrol with an ethanol portion up to 10% (E10) is acceptable.
- Super 95/98 is recommended.
- Fuel stabiliser can be used.
- Fuel ages if it is stored longer than 30 days.
- Due to stagnant fuel residues form in the fuel system or on important parts of the carburettor.
- More extensive information is provided in the engine operating manual from Briggs & Stratton.
- Operating manual and spare parts lists available at:
  - **http://www.briggsandstratton.com/eu/de/support/manuals**

Lubricant (engine oil)

Briggs & Stratton Intek and Vanguard:

The 4-stroke engine can be operated with the following oils:

- SAE 30. Under 4 degrees Celsius the use of SAE 30 results in starting difficulties.
- Synthetic oil 5W-30. Multi-grade oil with the greatest bandwidth at all temperatures.
- 10W-30. Over 27 degrees Celsius, the use of 10W-30 results in increased oil consumption. In this case check the oil level more frequently.

General information

Fuel, lubricants, fill quantities, consumption (2/2)

Fill quantities – engine oil

AS 701 SM, B&S Intek 3-130 344 cc, without filter.

- 1.24 – 1.30 litres

AS 901 SM, B&S Vanguard V-Twin 480 cc.

- 1.36 – 1.42 litres

Tank capacity – fuel

All models have a 5-litre engine without reserve function.

Consumption – fuel

AS 701 SM, B&S Intek 3-130 344 cc

- Min.: 1.46 l/h max. 3.42 l/h max.

AS 901 SM, B&S Vanguard V-Twin 480 cc.

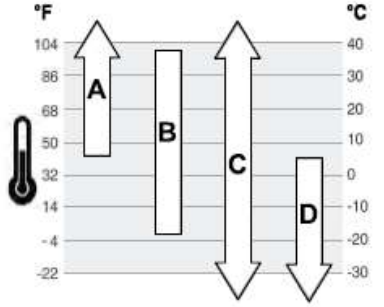
- Max.: 4.7 l/h

Engine code

- AS 701 B+S 21R876 0024-B1
- AS 901 B+S 305772 0001-B1

Note concerning oils for the Briggs & Stratton Intek 3-130 engine and Vanguard V-Twin 480 cc engines:

Die Umgebungstemperaturen bestimmen die richtige Ölviskosität für den Motor. Wählen Sie die beste Viskosität für den voraussichtlichen Temperaturbereich anhand des Diagramms aus.



A	**SAE 30** - Unter 40 °F (4 °C) führt die Verwendung von SAE 30 zu Startschwierigkeiten.
B	**10W-30** - Über 80 °F (27 °C) kann die Verwendung von 10W-30 zu erhöhtem Ölverbrauch führen. Den Ölstand häufiger kontrollieren.
C	**Synthetiköl 5W-30**
D	**5W-30**

Maintenance and cleaning (general information)

To ensure the full functionality, the safety and a long service life of the machine, regular maintenance and cleaning of the machine are essential.

All necessary activities and their intervals are listed on the following pages.

Prior to maintenance

Danger! ⚠ Danger of injury if maintenance and cleaning tasks are performed when the engine is running. Only execute maintenance tasks when the engine is running if this is explicitly required.

Prior to all maintenance and cleaning tasks when the engine is at a standstill:

- Let the device cool for at least 20 minutes.
- Close the fuel tap and the tank ventilation.
- Pull off the spark plug connector.

Warning! ⚠ The device can tip or fall over and cause severe injuries.

The front of the device can be lifted to execute maintenance, repair or cleaning tasks on the underside of the device.

- Only lift the device on a level substrate.
- Only use hoists and ramps that are suitable.
- Only attach hoists on the main frame, only the main frame can bear the weight.
- Safeguard the device against tipping over or falling.
- Stay out of the tipping area.

Clean the device:

- Thoroughly clean the device after each use. Particularly the underside and the flail.
- Clean the air grille, engine cooling unit and engine.
- Clean the transmission housing and transmission fan.
- **Danger of fire!** ⚠ Particularly ensure clean parts on the exhaust system.
- For cleaning use brooms, brushes, damp cloths and wood or plastic spatulas.
- **Do not clean with a high-pressure cleaner!** Very important! Many parts will be damaged through high-pressure cleaners.
- Do not use any aggressive cleaning agents.

Thorough visual inspection:

Check the following for safe operation of the machine:

- Nuts, bolts, screws, fuel lines, air filter for firm seat
- Ignition cable and ignition connector for damage
- Covers, protective cloths, muffler
- Tank, fuel tap, carburettor, engine, air filter.

Check safety functions ⚠

Check parking brake (see section "Operating elements", parking brake)

Ensure that the parking brake functions faultlessly.

Parking brake test: (see section "Steering-brake")

- Place the device on a non-slip substrate, e.g. asphalt or concrete. Switch off engine.
- Release the drive lever. The parking brake is now activated.
- Now attempt to pull the device backwards.

If the parking brake is correctly set, the device can only be pulled with blocked rear tyres. Otherwise: see section, "Operating elements, Drive cable and brake adjustment".

Check flail (see section "Mowing deck", Replacing or turning flails)

Danger! ⚠ There is a considerable danger of injury if the flails are improperly mounted and maintained!

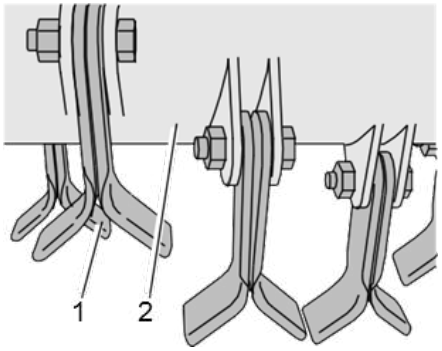
Check the flails and all fastening parts for wear, damage and cracks.

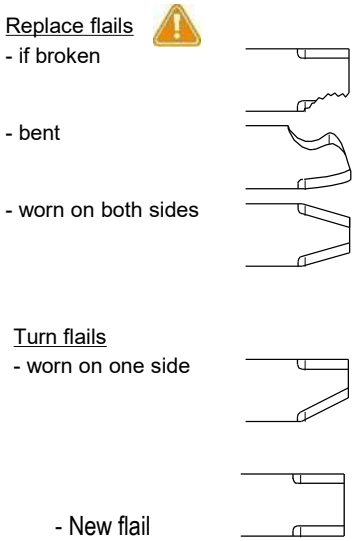
- Before and after each mowing use
- If there are noticeable changes

Immediately replace flail parts and **fastenings** if there is:

- **Damage** or **cracks** (e.g. wear of the flail bolts and nuts) ⚠
- **Wear** that extends beyond the wear indicators of the flails. (Granularity marks on the flails)
- At least once a year or every **50 operating hours**, depending on whether wear is present. Material is subject to fatigue; hairline cracks can develop.

Replacement of the flail is strictly required when the thickness of the flail on the rear edge underranges 1 mm at any point





The flails (**1**) can be mounted on both sides. Turn all flails at the same time, if:

– one side is worn and

– the other side of the flail has not yet been used.

Replace one flail if the flail:

– is broken,

– torn,

– bent or

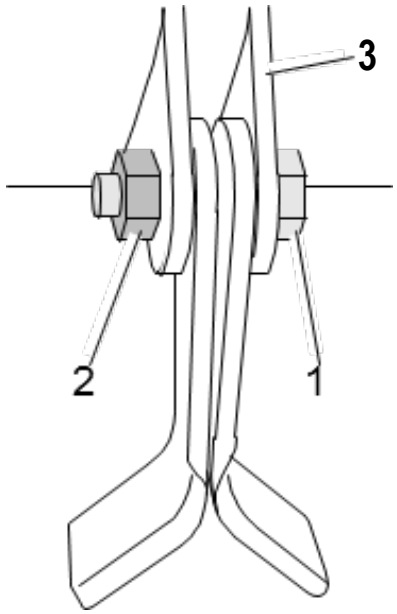
– worn on both sides.

If wear is not uniform there is danger of imbalance.

Replace all flails at the same time, if more than 2 flail pairs are damaged or worn.

At each flail replacement, check the flail shaft (**2**).

Always have replacement flails on hand.



The fastening elements are subject to wear when mowing. Replace the fastening screws (1) and associated nuts (2),

- if they are worn by more than 1 mm in diameter and
- each time a flail is replaced.

Only use original AS-Motor spare parts.

At each flail replacement, check the flail shaft for damage. The fastening lugs (3) must not be damaged, bent or worn out. Contact an authorized workshop if damage, cracks or wear have occurred.

Check fastening elements and flail shaft

Danger!
Wear or damage on the flail shaft and on fastening elements can result in the situation that flails or fastening elements become loose.

Check flail shaft, fastening lugs, fastening screws and associated nuts of the flails.

General information

Maintenance tasks, cleaning and maintenance intervals (4/5)

Vibration (see section "Mowing deck", Replacing or turning flails)

Vibration indicates imbalance in the rotating system. Causes can be:

- One-sided wear of the flail
- Missing parts, or chipping
- Engine or flail fastening damage
- Dull or poorly sharpened flails increase vibration and can cause cracks and breaks.

Check flail clutch and flail brake

At full speed the flail must come to a complete standstill in less than 7 seconds. "Metallic" brake noise indicates a damaged brake pad.

(See section: "Mowing deck", Flail brake maintenance)

Check engine

See section: "Engine"

Important for many years of proper function of an AS-Motor device:

Tip/note:

AS devices contain many ball bearings for a long service life of the machine. Cleaning the machine with steam jets, high pressure cleaners and water damages the ball bearings.
Clean dry!

General information

Maintenance tasks, cleaning and maintenance intervals (5/5)

Component	Action	Maintenance interval	
		A	B
Device	Check for safe working condition (basic inspection).	■	▲
	Clean.	■	
	Customer service.		▲
Fuel	Check fuel level.	■	
	Is the tank cap closed?	■	
Tank, fuel valve, and fuel line	Check parts for leaks and check for good condition.	■	▲
Carburetor	Does the carburetor close again after starting?	■	▲
Ventilation grid	Clean.	■	▲
Engine cooling	Clean.		▲
Spark plug	Check/replace.		▲
Air filter	Maintain.	■	■▲
Blade and fastening components	Check for wear and damage. See chapter Checking the blade.	■	▲
	Change.		▲
Motor brake	Does the blade stop within 7 seconds?	□	▲
Drive lever	Does the device stop when the lever is in zero position?	□	▲
V-belt	Are the belts tensioned correctly, without fissures, and in good condition?		▲
Bowden cables	Check for proper function and ease of movement.	■	▲
Acceleration lever	Check for proper function.	□	▲
Chassis and impact protection	Check for rust and fissures and check the welding seams.	■	▲
	Are all protective devices and covers in place, fastened correctly and properly functioning?	■	▲
Label	Condition of the labels.	■	▲
Engine	See operating instructions of the engine manufacturer.	■	▲
	Check oil level (see operating instructions of the engine manufacturer).	■	▲
	Oil change.		▲
Bevel gear	Check the oil level.		▲
Parking brake	Check.	■	▲
Flammable material	Remove easily flammable debris buildup from the engine and the device.	■	▲
Tyres	Check tyres and, if necessary, the tyre pressure.	■	▲

A Before and after each use.
B Annually or every 50 h.
■ By the user when the engine is not running.
□ By the user when the engine is running.
▲ By the authorised service centre.

Engines

Overview and maintenance schedules (1/2)

Overview

Model: Vanguard 16 HP, vertical engine (model no.: 290000) AS 901

- Design: V-Twin two-cylinder four-stroke OHV engine
- Displacement: 479 ccm.
- Fuel:
  - Petrol, min. RON 91, lead-free
- Power:
  - Nominal 10.7 kW (14.5 hp) at 3,500 rpm. (Factory setting)
- Maximum torque: approx. 33 Nm at 2,900 rpm (gross torque)
- Engine speed:
  - **3,500 rpm on AS 901 SM**
- Spark plug:
  - B&S resistor spark plug 491055
  - Electrode gap 0.76 mm
  - Tightening value 20 Nm
- Operating manual and spare parts lists available at:
  - **http://www.briggsandstratton.com/eu/de/support/manuals**
  - **Model type number: 305772 0004**

Model: B&S Intek Series 3 130 (model no.: 210000) AS 701

- Design: Single-cylinder, four-stroke engine OHV
- Displacement: 344 ccm.
- Fuel:
  - Petrol, min. RON 91, lead-free
- Power:
  - Nominal 7.6 kW (10.3 hp) at **3,300 rpm. (factory setting)**
- Maximum torque: approx. 24 Nm at 2,800 rpm (gross torque)
- Engine speed:
  - **3,300 rpm on AS 701 SM**
- Spark plug:
  - B&S resistor spark plug 491055
  - Electrode gap 0.76 mm
  - Tightening value 20 Nm
- Operating manual and spare parts lists available at:
  - **http://www.briggsandstratton.com/eu/de/support/manuals**
  - **Model type number: 21R876 0024**

Engines

Overview and maintenance schedules (2/2)

Maintenance schedule B&S engines AS 901 and AS 701 SM

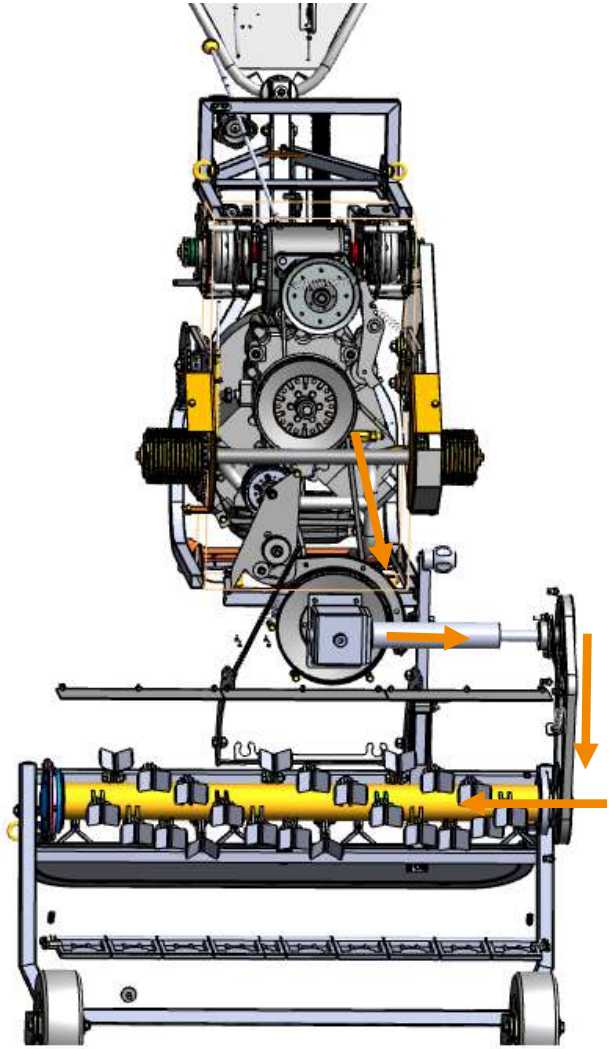
First 5 Hours **
• Change oil [3]
Every 8 Hours or Daily
• Check engine oil level • Clean area around muffler and controls • Clean air intake grille
Every 25 Hours or Annually
• Clean air filter [1] • Clean pre-cleaner (if equipped) [1]
Every 50 Hours or Annually ***
• Change engine oil [4] • Replace oil filter (if equipped) [4] • Service exhaust system
Every 100 Hours or Annually
• Change engine oil [5] • Replace oil filter (if equipped) [5]
Annually
• Replace spark plug • Replace air filter • Replace pre-cleaner (if equipped) • Replace fuel filter (if equipped) • Service fuel system • Service cooling system [1] • Check valve clearance [2]

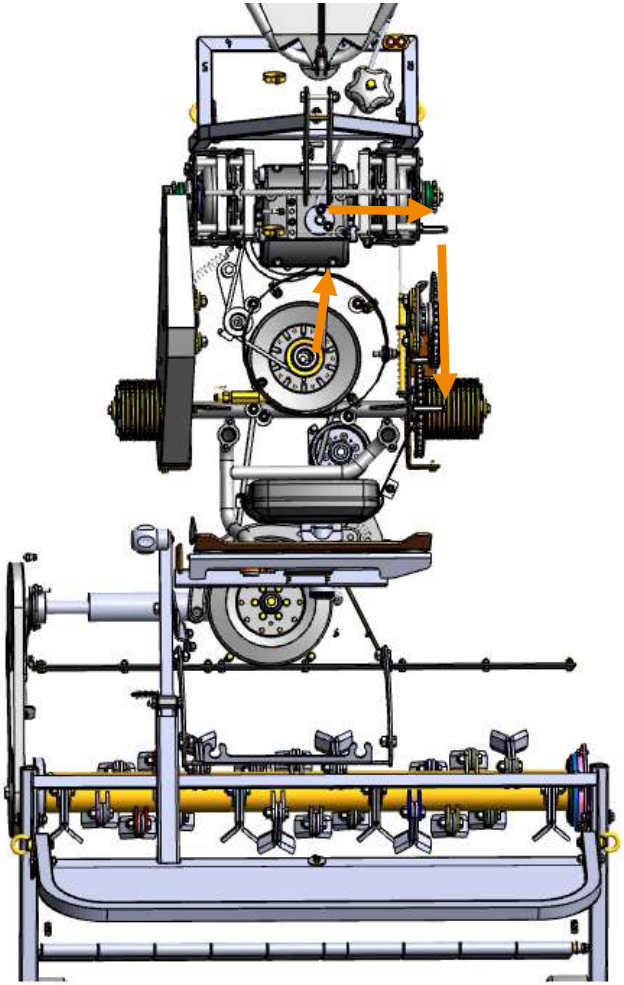
[1] In dusty conditions or when airborne debris is present, clean more often.
[2] Not required unless engine performance problems are noted.
[3] Only engines without oil filter.
[4] Engine without oil filter or with standard black oil filter (see ***Specifications*** page for part number).
[5] Engines with high-efficiency yellow or orange oil filter (see ***Specifications*** page for part number).

** Not Vanguard
*** Vanguard every 100 hours or yearly

Engine

Force curve





Important notes:

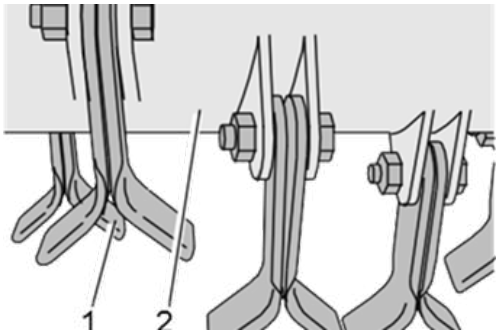
Turn the flails:

When the flairs are turned to the unused side, always replace one flail pair after the other, and **always remount them at the same, original position**. Do not mix any flails.

Replace individual flail pairs:

A **maximum of two new** flail pairs can be installed in a used flail set. No more! If the flail set is already severely worn, then imbalance can already occur.

Do not weld on the flail shaft!



Imbalance:
The flail shaft rotates at approx. 3,000 rpm. Missing flails, imbalance due to wear, damaged flails or damaged flail shaft generate strong vibrations.

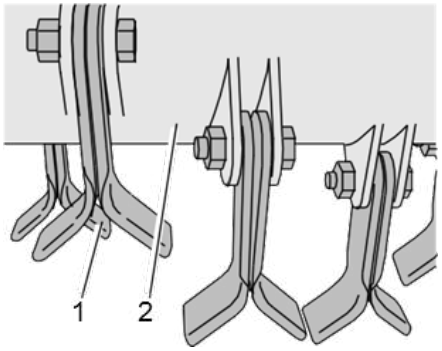
Vibration indicators:

- Tangible vibration on the handlebar
- Loose screws or screws falling out
- Consistent recurrence of loose threaded unions
- Covers or exhaust falling off
- Cracks in the frame or sheet metal elements

In this case **always check the flails first and/or replace them**. If after replacement improvement does not occur, the flail shaft must be inspected.

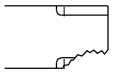
Mowing deck

Flail replacement / turning (2/2)

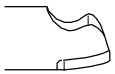


Replace flails

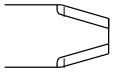
- if broken



- bent

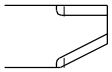


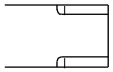
- worn on both sides



Turn flails

- worn on one side





- New flail

The flails (**1**) can be mounted on both sides. **Turn all flails at the same time**, if:

– one side is worn and

– the other side of the flail has not yet been used.

Replace one flail, if the flail is:

– broken

– torn,

– bent or

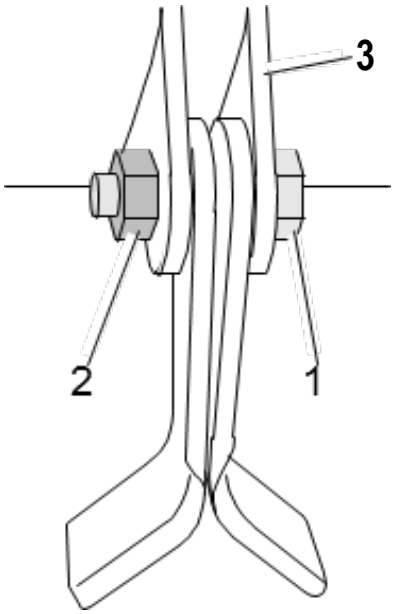
– worn on both sides.

If wear is not uniform there is danger of imbalance.

Replace all flails at the same time, if more than 2 flail pairs are damaged or worn.

At each flail replacement, check the flail shaft (**2**).

Always have replacement flails on hand.



The fastening elements are subject to wear when mowing. Replace the fastening screws (**1**) and associated nuts (**2**),

- if they are worn by more than 1 mm in diameter and
- each time a flail is replaced.

Only use original AS-Motor spare parts.

At each flail replacement, check the flail shaft for damage. The fastening lugs (3) must not be damaged, bent or worn out. Contact an authorized workshop if damage, cracks or wear have occurred.

Check fastening elements and flail shaft

Danger!

Wear or damage on the flail shaft and on fastening elements can result in the situation that flails or fastening elements become loose.

Check flail shaft, fastening lugs, fastening screws and associated nuts of the flails.

Mowing deck

Replacing the flail belt (angular gear to the mowing unit) (1/2)

Take off the side cover of the belt drive.

Check for damage, indicated by abrasion in the lower area.

View of the belt drive with tensioning pulley.

Trick for de-tensioning the belt. Introduce a flat bar over the rear belt pulley and press the tensioning pulley upward. Attention: Danger of injury due to spring tension.

Flat bar introduced.

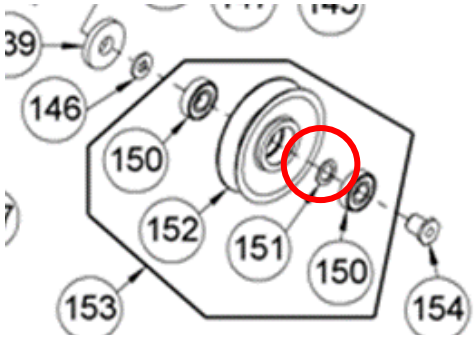
Tension pulley pressed upward. Flail belt is offloaded.

With the tensioning pulley pressed upward, take the belt off of the tension pulley.

Mowing deck

Replacing the flail belt (angular gear to the mowing unit) (2/2)

Take off the flail belt by turning the belt pulleys.

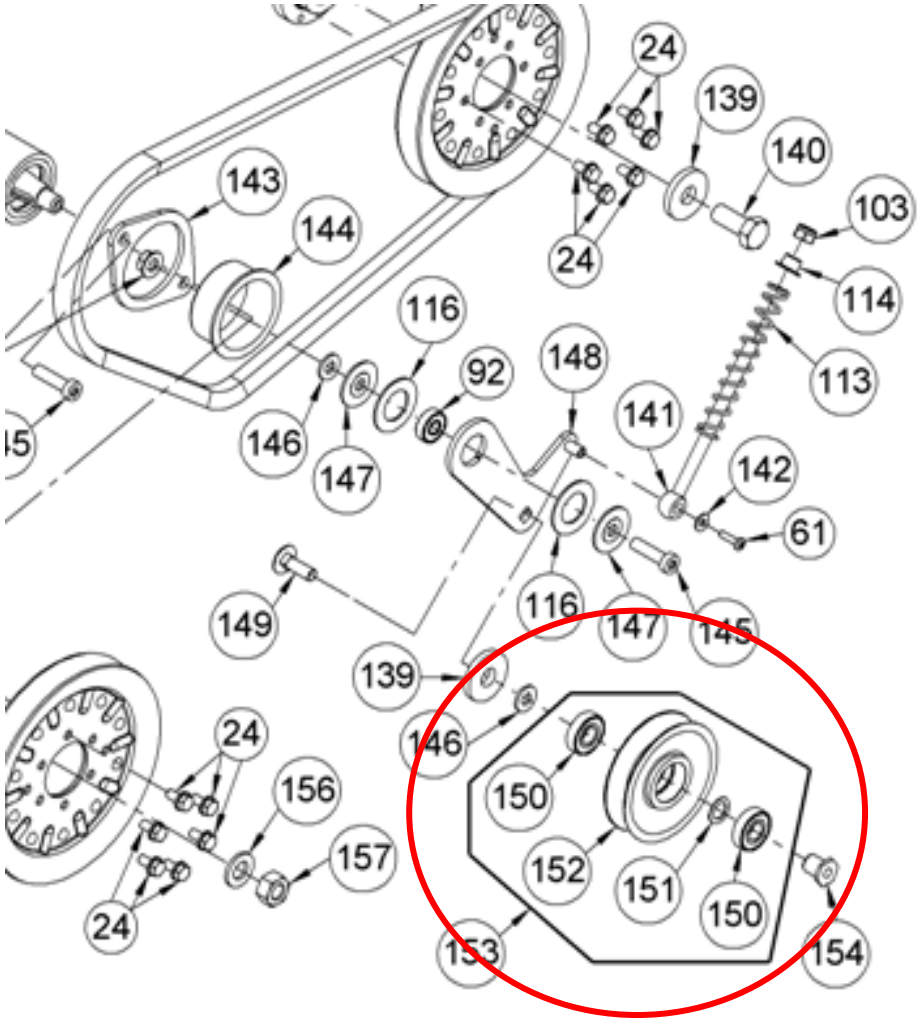


Tip/note:

Check the bearing of the tensioning pulley. If the bearing should be replaced, please do not forget the feather key #151 between the ball bearings. Check the tensioning pulley for ease of movement.

Z ➡ A

Re-assemble in the reverse sequence.



Mowing deck

Replacing the flail belt (engine to the angular gear unit) (1/2)

Safely park the machine. Comply with the safety instructions on page 4.

Flail belt (to the angular gear) with tensioning pulley.

Unscrew rear floor plate.

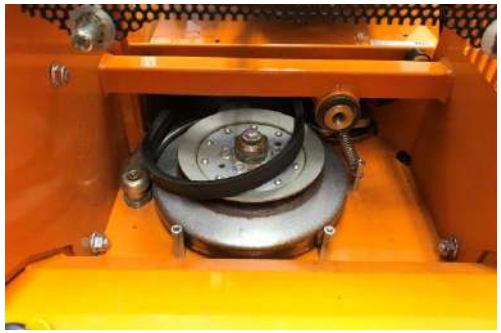
Take off front cover.

View of the belt pulleys of flails and drive.

Take off front belt cover.

Mowing deck

Replacing the flail belt (engine to the angular gear unit) (2/2)



Take flail belt off of the belt pulley.

Take flail belt off of the rear belt pulley.

Unscrew the belt guide of the tensioning pulley.

Take out belt guide of the tensioning pulley and pull the flail belt to the rear.

Z ➡ A

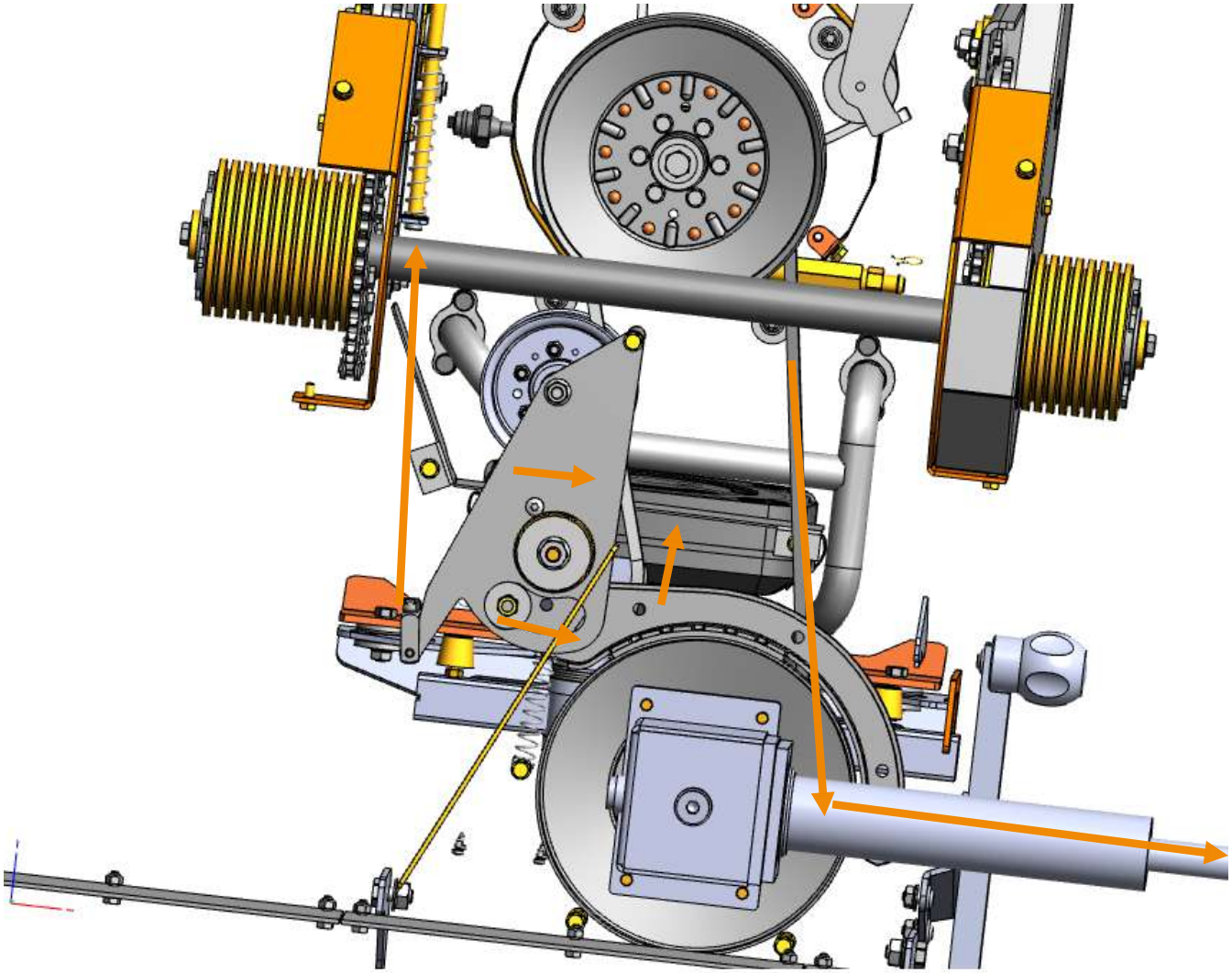
Re-assemble in the reverse sequence.

Tip/note:

If possible rub talcum powder/magnesium powder into the new belt. This prevents over-aggressive coupling of the belt.

Mowing deck

Force curve blade brake



Mowing deck

Flail brake maintenance (1/2)

Take off the cover of the front belt pulley.

Unscrew the belt cover.

Take off belt cover.

Take flail belt off by hand.

Unhook tension spring of the brake lever.

Unhooked tension spring.

Mowing deck

Flail brake maintenance (2/2)

View of the belt pulley with brake drum and the brake lever.

Lift brake lever upward and out.

Inspect the brake pad. Flail must be come to a standstill within seven seconds.

Z ➡ A

Assembly in the reverse sequence.

Mowing deck

Bearing replacement – flail shaft (1/5)

Take off flail belt (angular gear to the mowing deck).

(See section: Mowing deck, Replacing the flail belt (angular gear to the mowing unit))

Take feather key off of the shaft and replace if necessary.

Take belt pulley off of the flail shaft.

Unscrew all four screws of the flail shaft (right). Only unscrew and remove the lower two screws. Leave the upper two screws loose, as a safeguard.

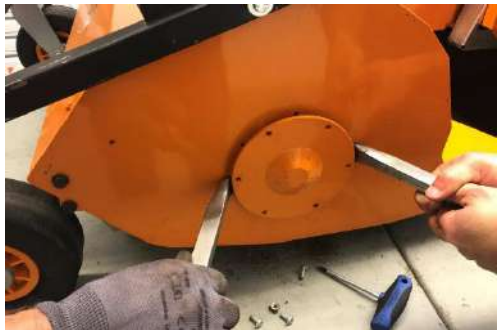
Unscrew the lock screw of the belt pulley and pull off the belt pulley by hand.

Tightening torque: 120 Nm

Unscrew the cover on the other side.

Mowing deck

Bearing replacement – flail shaft (2/5)



Pull off the cover uniformly.

Now the flail shaft is hanging on the two screws left on the right side.

Ball bearing of the left side with lock screw and washer.

Attention!

New locking screw

G60420072!

Left side of the flail shaft.

Unscrew the outer-most flail pair on the left side for extending the flail shaft.

Unscrew and remove the remaining two screws on the right side. In this process, firmly hold the flail shaft.

Attention: ⚠ Flail shaft can fall.

Mowing deck

Bearing replacement – flail shaft (3/5)

Now move the flail shaft slightly out through the opening on the left side, and take the flail shaft out of the mowing unit.

Removed flail shaft with bearings.

With a puller, uniformly pull off the flange of the flail shaft on the side of the belt pulley.

(Puller shown here: built in-house)

The ball bearing can now be pulled off. Remount with a suitable tool.

Flange with ball bearings. Clean and grease the bearing seat before installation.

To replace the ball bearing on the other side, unscrew the lock screw and pull off the bearing.

Mowing deck

Bearing replacement – flail shaft (4/5)

Clean bearing seats of the mowing deck.

Re-install the flail shaft.

Again move something through the opening of the left side.

Secure on the other side with two of the four screws.

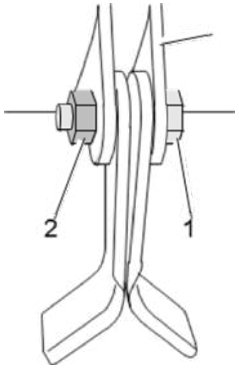
Clean and the cover of the flail shaft and grease the bearing seat.

Mount the cover on the bearing and centre it in the opening of the mowing deck.

Mowing deck

Bearing replacement – flail shaft (5/5)

New locking screw since:
701 since SNR.: 026820110018
901 since SNR.: 026020030046
Tightening Torque pos. 425
110-115Nm



Tip/note:

Comply with the instructions for replacement of the flails on page 22.

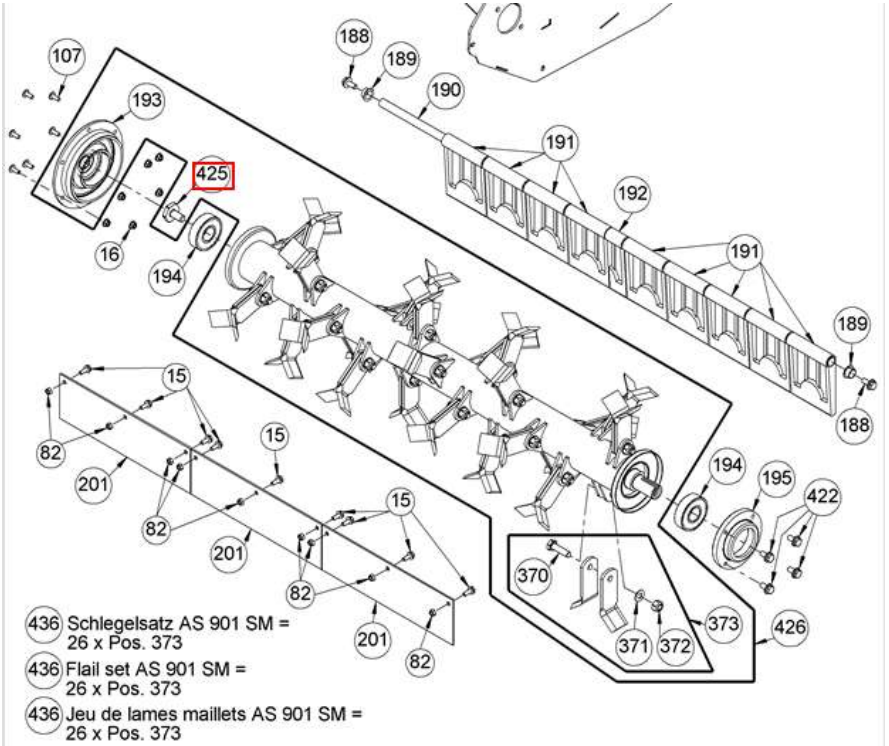
Z ➡ A

Perform the rest of the assembly in the reverse sequence.

- Screws
- Feather key
- Belt pulley
- Flail pair
- Belt
- Belt cover

Tip/note:

Comply with the tightening torques of bolted connections on page 12.



Mowing deck

Belt tensioner – flail belt (1/3)

To access the belt tensioner, remove the rear cover.

Belt tensioner visible.

To tension the belt, the belt tensioner presses on the belt from the outside.

Take off the front cover plate.

Front cover plate.

This makes the flail clutch cable accessible.

Mowing deck

Belt tensioner – flail belt (2/3)

The complete belt tensioner is now exposed. Unhook the cable and the tension springs.

Take off the front cover.

Unhook tension spring of the brake lever.

Lift the brake lever upward and out.

Tension spring of the belt tensioner can be unhooked from below or from the front.

Unscrew the belt guide of the tensioning pulley and dismount the belt tensioner.

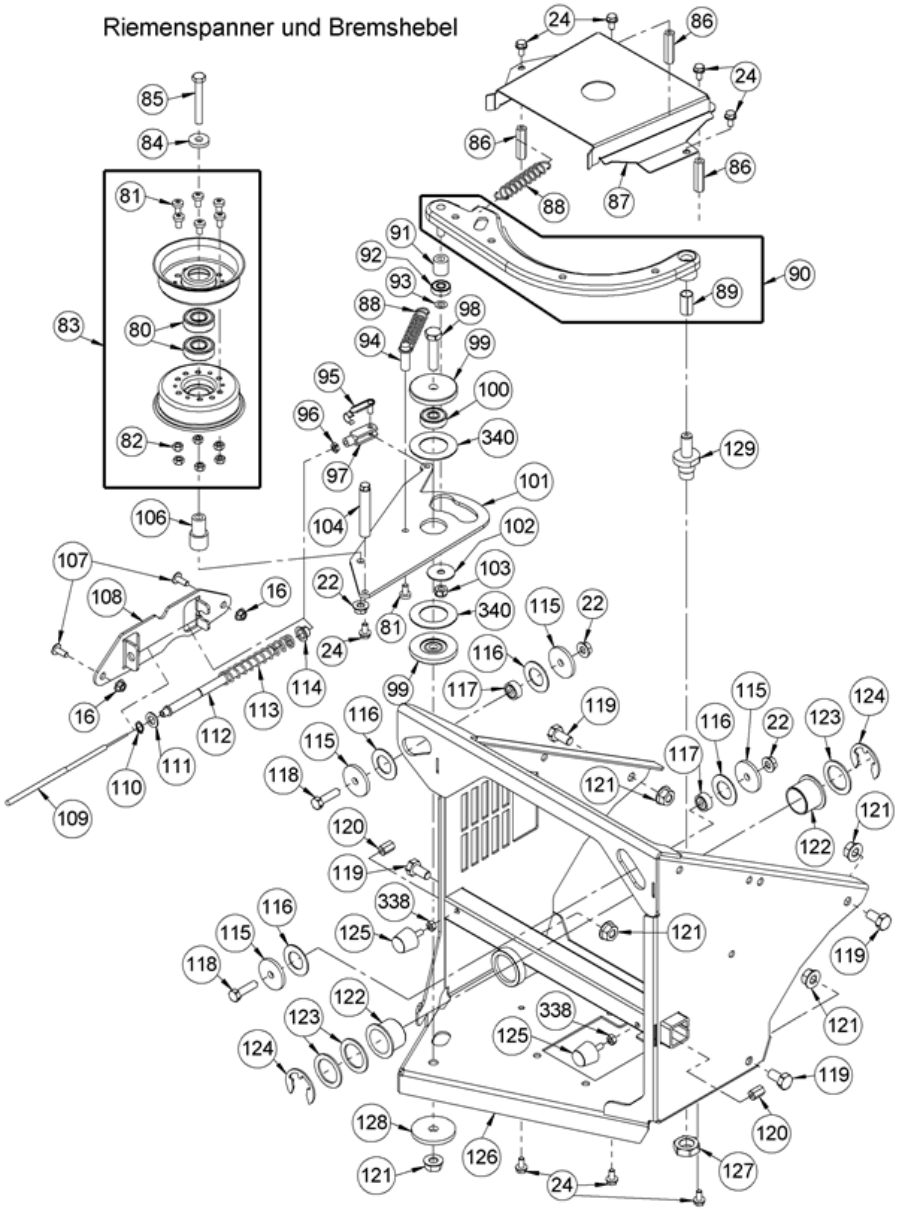
(The flail belt can remain on the belt pulleys or it can be taken off)

Mowing deck

Belt tensioner – flail belt (3/3)

Belt tensioner complete.

Position with the belt tensioned.



Mowing deck

Removing the angular gear unit (1/4)

Take off the cover of the front belt pulley.

Unscrew the belt cover.

Take flail belt off by hand.

Unhook tension spring of the brake lever.

Lift brake lever upward and out.

View of the belt pulley and brake drum.

Mowing deck

Removing the angular gear unit (2/4)

Unscrew the belt pulley from the belt pulley hub.

Take off belt pulley with brake drum.

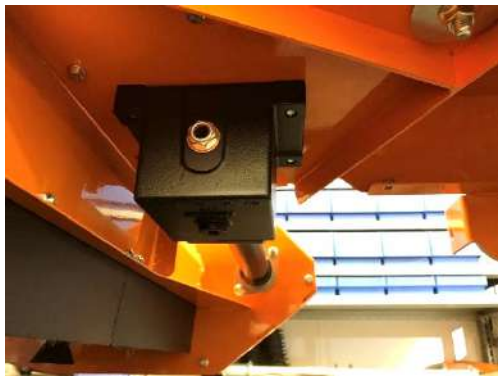
Angular gear unit is now exposed.

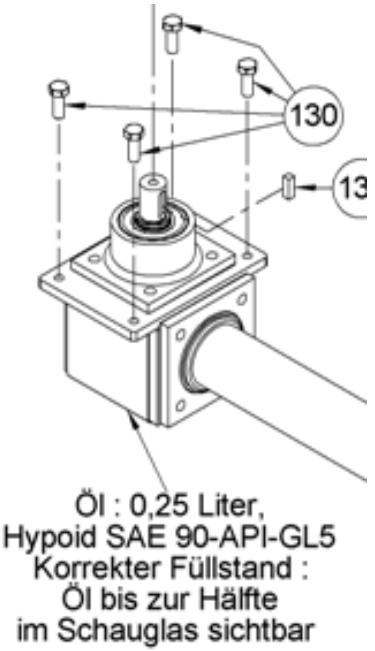
The brass screw is the vent screw of the transmission. New oil can also be filled in here. On the underside there is an oil drain screw.

Unscrew the angular gear unit.

Tip/note:

The angular gear unit is **maintenance-free**. If oil must be changed, you will find the data here.





Mowing deck

Removing the angular gear unit (3/4)

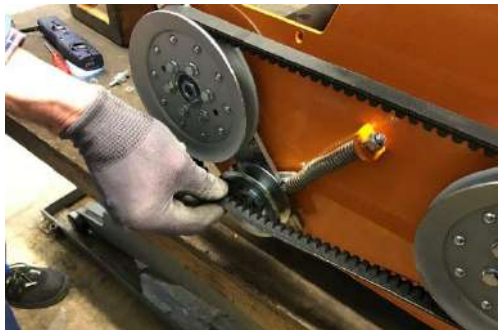
Unscrew the belt cover.

Belt drive of the flail shaft.

Offload the tensioning roller with a flat bar.

Attention: ⚠

Danger of injury due to spring tension!



Take belt off of the tension pulley.

Take the belt off of the belt pulley of the angular gear.

Unscrew the central screw of the belt pulley hub.

Unscrew the belt pulley.

Take off belt pulley.

Pull the belt pulley off of the belt pulley hub.

Pulled off belt pulley hub.

Unscrew and take out the angular gear unit.

Z ➡ A

Assembly in the reverse sequence.

Mowing deck

Self-aligning bearing (version from model year 01/2020) (1/4)

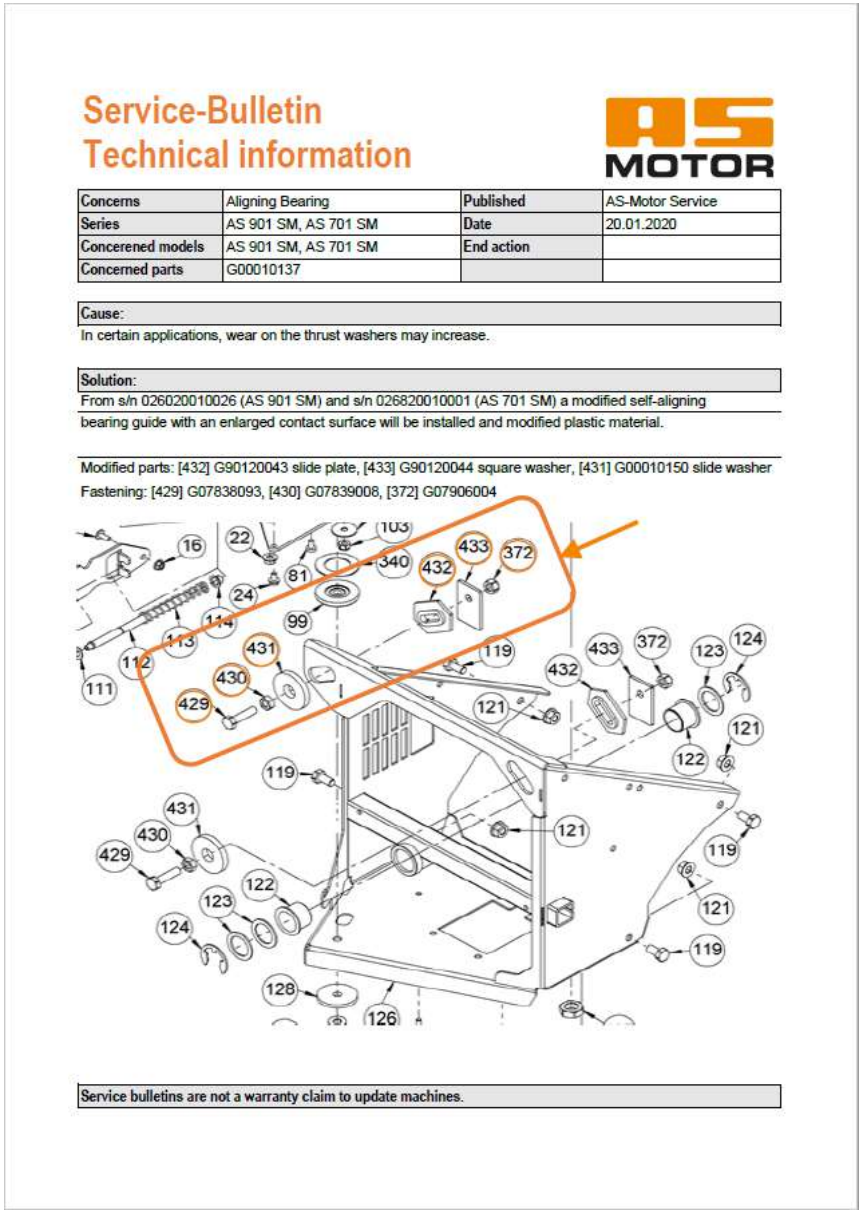
Note concerning the self-aligning bearing:

Problem:

In a few cases if the self-aligning bearing of the AS 901 SM and AS 701 SM are subjected to excessive stress, increased wear can occur on the thrust washers.

Solution:

In these cases, please replace the old thrust washers with the new reinforced self-aligning bearing. The new self-aligning bearing is installed as standard equipment from 01/2020.



Service-Bulletin
Technical information

Concerns	Aligning Bearing	Published	AS-Motor Service
Series	AS 901 SM, AS 701 SM	Date	20.01.2020
Concerened models	AS 901 SM, AS 701 SM	End action	
Concerned parts	G00010137		

Cause:
In certain applications, wear on the thrust washers may increase.

Solution:
From s/n 026020010026 (AS 901 SM) and s/n 026820010001 (AS 701 SM) a modified self-aligning bearing guide with an enlarged contact surface will be installed and modified plastic material.

Modified parts: [432] G90120043 slide plate, [433] G90120044 square washer, [431] G00010150 slide washer
Fastening: [429] G07838093, [430] G07839008, [372] G07906004

Service bulletins are not a warranty claim to update machines.

Mowing deck

Self-aligning bearing (version from model year 01/2020) (2/4)

Demount the cover and rubber

Demount the belt cover

Remove the cover and heating shield

Remove the belt

Demount the bowden cable of the blade clutch

Demount the muffler

Remove the frame bolts on each side

Mowing deck

Self-aligning bearing (version from model year 01/2020) (3/4)

Remove the circlip

Pull the frame parts appart

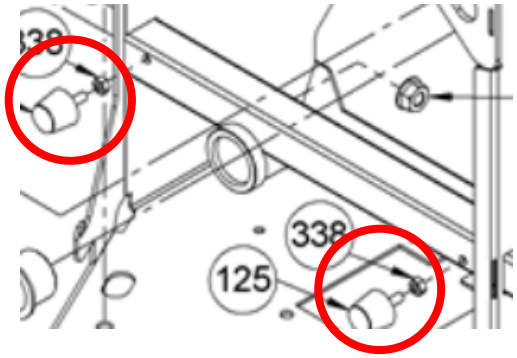
Important: Support the handle bar!

Demount the bolts of the old self-aligning bearing

Drill the hole to 10.5mm

Tighten the new bolts with **50 Nm**

Put the friction disk on the bolt



Demount the bump stop

The bump stoppers are no longer needed

Mowing deck

Self-aligning bearing (version from model year 01/2020) (4/4)

Put the frame parts together

Install the circlip

Put the friction disk into the frame

Put the square washer on

Tighten the nut

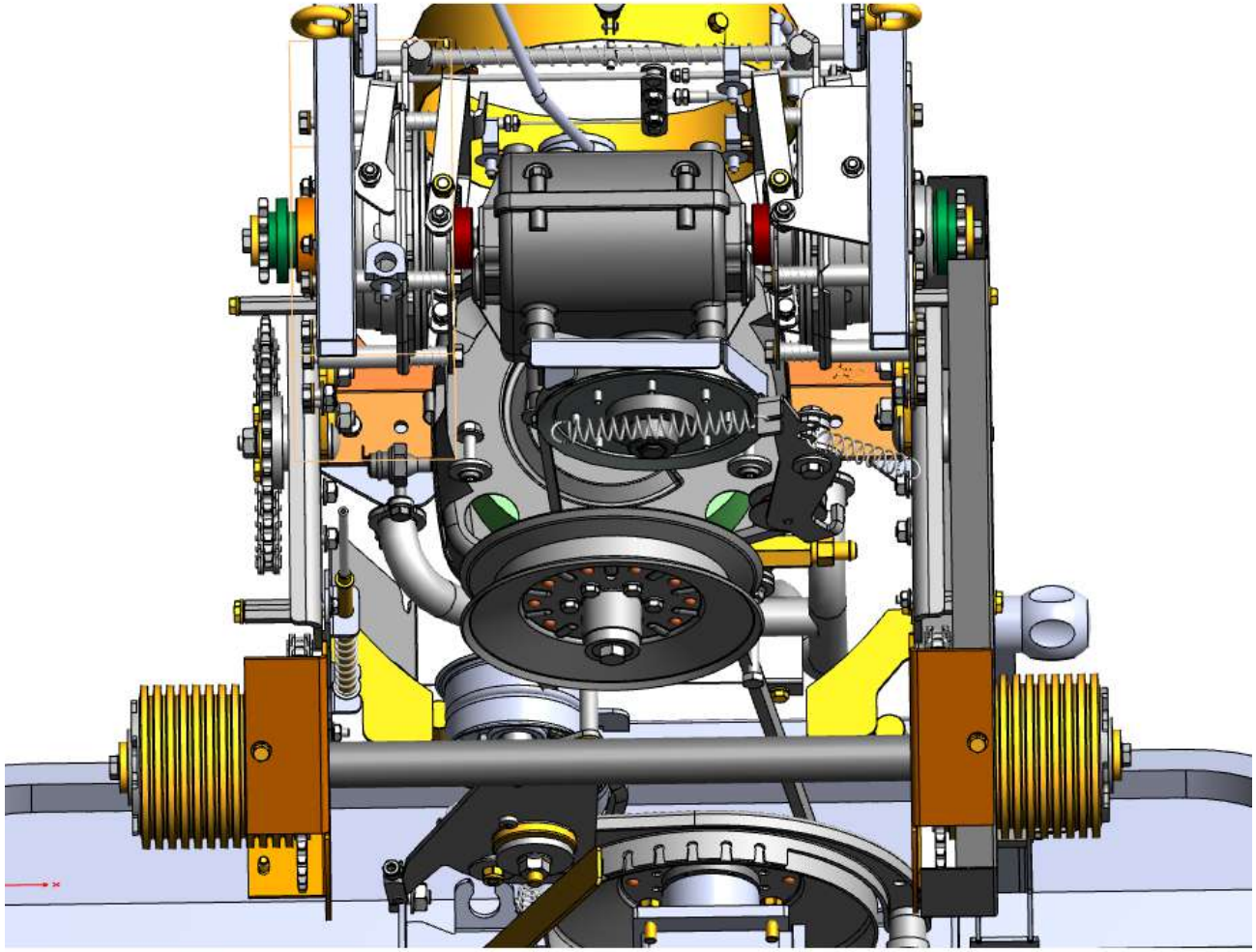
Important: Thight the square washer so hard, that the washer can glide

Assembly in the reverse sequence.

Z ➡ A

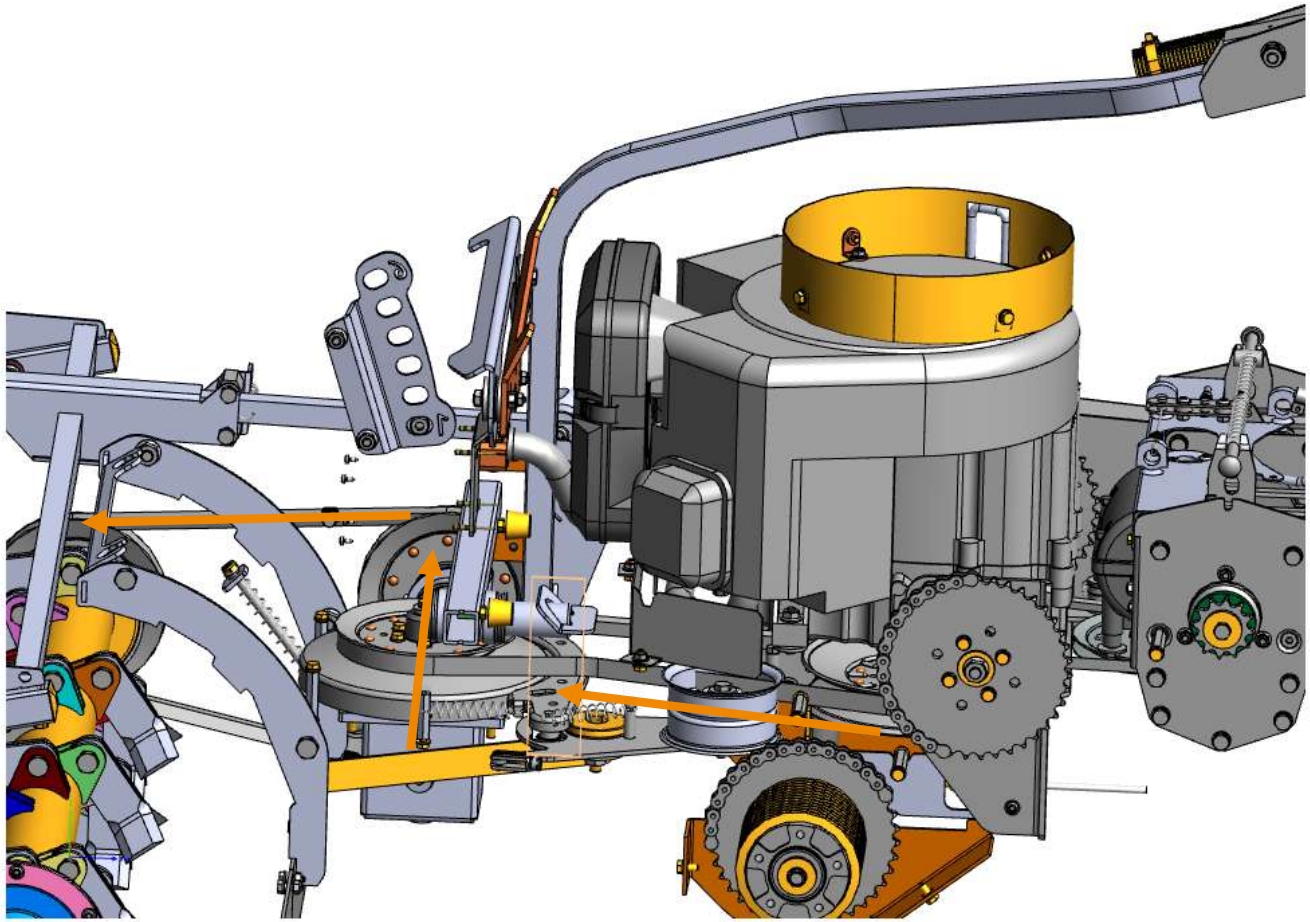
Drive

Force curve drive line



Drive

Force curve



Drive

Replacing the drive belt (1/3)

Safely park the machine. Comply with the safety instructions on page 4.

In order to replace the drive belt, **first the flail belt must be taken off.**

Unscrew rear floor plate.

View of the belt pulleys of flails and drive.

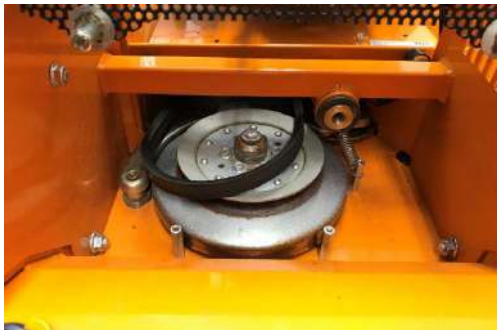
Flail belt (to the angular gear) with tensioning pulley.

Take off front cover.

Take off front belt cover.

Drive

Replacing the drive belt (2/3)



Take flail belt off of the belt pulley.

Take flail belt off of the rear belt pulley.

Now the drive belt above can be taken off.

View of the drive belt pulley with drive belt.

Unscrew the belt guide.

Unscrew belt tensioner.

Take the drive belt off of the belt pulley.

Unhook the tension spring of the belt tensioner.

Now, take out the drive belt with the complete belt tensioner.

Drive belt taken off.

Check belt tensioner. Check tensioning roller and ball bearing.

Z ➡ A

Re-install in the reverse sequence.

Important:

Please pay attention to the belt guidance **within** the guide plate.

Ensure that the drive belt is correctly seated on the engine hub!

Drive

Chain drive (version to model year 08/2017) (1/4)

Note concerning the chain drive:

Problem:

For the AS 901 SM in a few cases if the chain drive is under high load, the situation can occur that the fastenings of the sprockets bend. This can cause the drive chain to come off. This is particularly the case when using steel wheels.

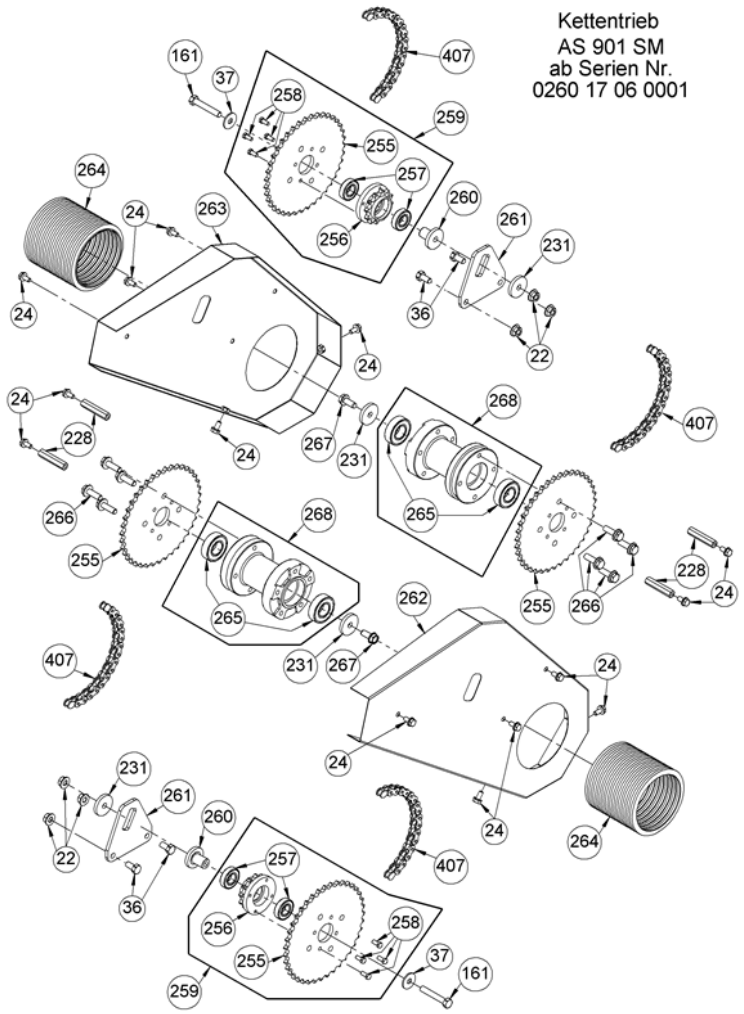
Solution:

In these cases, please replace the old chain drive with the new chain drive, which is reinforced with endless chains. The new chain drive is installed as standard equipment from 09/2017.

Conversion time:

Approx. 30 minutes.

Chain drive (version to model year 08/2017):



Drive

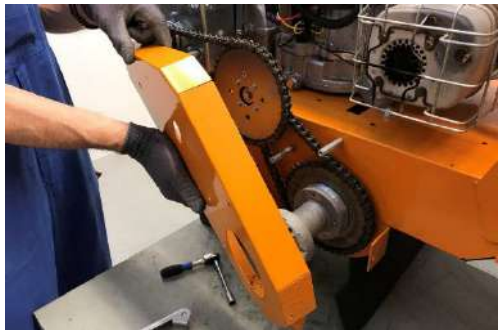
Chain drive (version to model year 08/2017) (2/4)

Safely park the machine.

Prop up the machine so that the rear wheels are free.

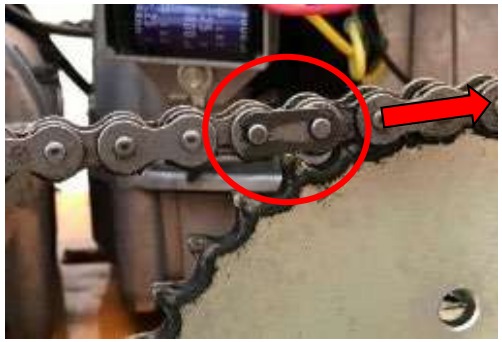
Take off the wheels left and right.

Pull out the protective sleeves left and right.



Take off the chain covers left and right.

Exposed chain drive.



Open the chain locks of all four chains.

Attention: ⚠

Closed side of the chain lock must always be installed in the direction of rotation!

With a screwdriver, push the chain lock to the side and take off the locking link.

Take off all chains.

Check the wheel hubs to ensure that the ball bearings are in order.

Unscrew sprocket 39 teeth.

Check chain tension plate for bending and/or straightness. If bent, **convert to new system.** (See section: Drive, chain drive conversion (to new version from model year 09/2017))

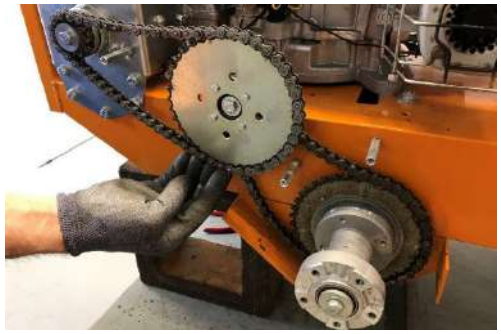
Z ➡ A

Assembly in the reverse sequence.

Continued next page.

Drive

Chain drive (version to model year 08/2017) (4/4)

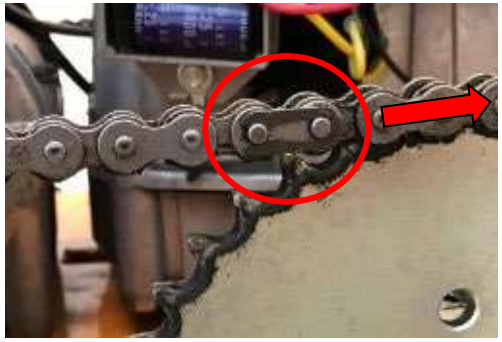


After installing the chains, press the still loose sprocket upward to tension both chains.

Tensioned chains.

Maintain the upward pressure and forcefully tighten the central screw of the sprocket.

Tightening torque 30 Nm.



Attention: ⚠

Closed side of the chain lock must always be installed in the direction of rotation!

Ensure that the chains are not over-tensioned at any point.

Test: Activate the drive lever, transmission on "N" and turn wheel hubs by hand.

Note concerning the chain drive:

Problem:

For the AS 901 SM in a few cases if the chain drive is under high load, the situation can occur that the fastenings of the sprockets bend. This could cause the drive chain to come off. This is particularly the case when using steel wheels.

Solution:

In these cases, please replace the old chain drive with the new chain drive, which is reinforced with endless chains. The new chain drive is installed as standard equipment from 09/2017. From this point on no spare parts will be available for the old chain drive. If necessary, please upgrade to the new chain drive on both sides.

Conversion time: Approx. 30 minutes.

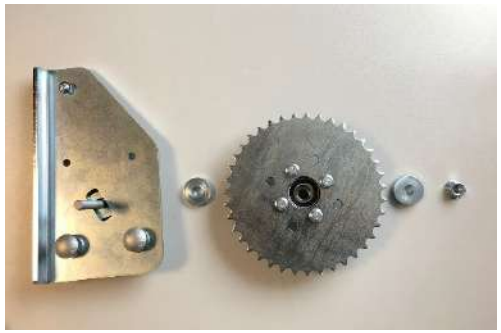
Chain drive (version from s/n):

AS 901 s/n 026017080001 ; AS701 s/n 026817080001

New chain drive system from 09/2017 on:		
No.:	Quantity:	Item:
Pre-assembled module:		
G06525075	**2**	**Complete chain wheel hub**
consists of:	2	Kettenrad 39 Z G06525073
	2	Kettenradnabe G06525074
	8	M6x12 G00009016
	4	Rillenkugellager G07830003
	2	Distanzscheibe G00010144
Other necessary parts:		
G06525070	1	Kettenspannplatte rechts
G06525071	1	Kettenspannplatte links
G06525072	2	Druckplatte
G00024078	4	Spannhülse
G07827027	2	Flachrundschraube M10x60
G07827026	4	Flachrundschraube M10x30
G00007051	6	Sperrzahnmutter M10
G06525069	4	Endloskette 59 Glieder
G00009159	1	Linsen Flanschkopfschraube
G00007041	1	Sperrzahnmutter
G07809011	6	Scheibe
G00010145	4	Scheibe

Drive

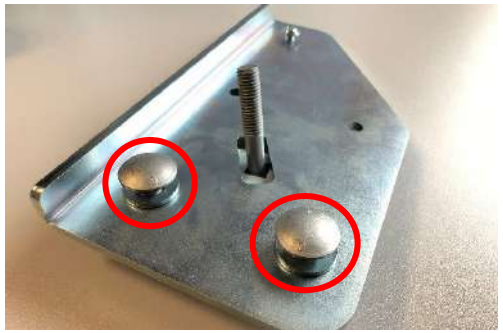
Chain drive (version from model year 09/2017) (2/9)



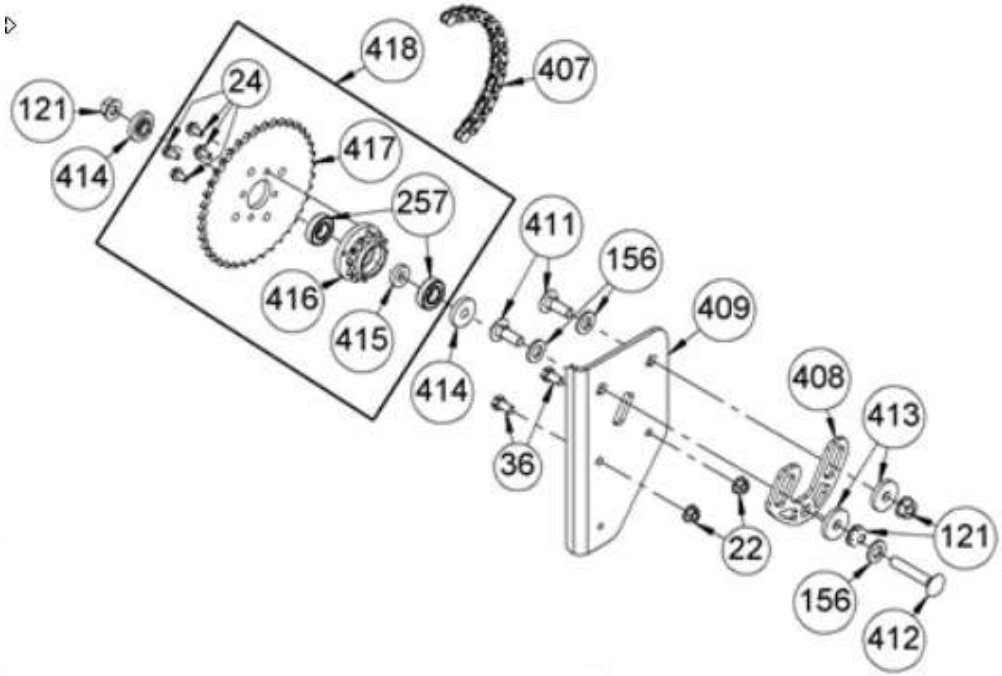
New parts

Do not forget the spacer

Do not forget the disc



Do not forget the disc



Engine Mount (Carrier) from 09/2017

With the change of sprocket also the axle was strengthened

AS 901 from s/n 026017080001

AS 701 from s/n 026817080001

Service-Bulletin
Spare part information

Concerns	Engine mount	**Published**	AS-Motor Service
Series	AS 901SM, AS 701SM, AS 84LB	**Date**	01.10.2017
Concerened models	AS 901SM, AS 701SM, AS 84LB	**End action**	
Concerned parts			

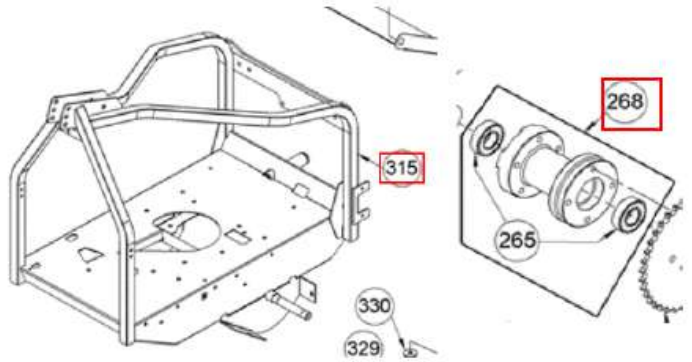
Cause:

The engine mount G90120008 was modified. The production from 09/2017 contains stronger wheel axels with struts.

Solution:

If the **old** engine mount G90120008 were ordered, the **new** engine mount G90120036, wheel hubs G90121010 and bearings be shipped.
The wheel hubs G90121002 are still available for the replacement.

Designation	Before	New from 09/2017
Engine mount	G90120008	G90180012
Wheel hub	G90121002	G90121010



Service bulletins are not a warranty claim to update machines.

Drive

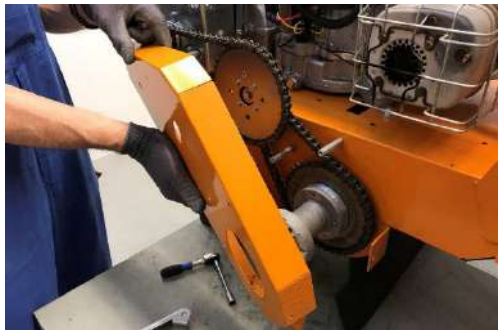
Chain drive (version from model year 09/2017) (4/9)

Safely park the machine.

Prop up the machine so that the rear wheels are free.

Take off the wheels left and right.

Pull out the protective sleeves left and right.



Take off the chain covers left and right.

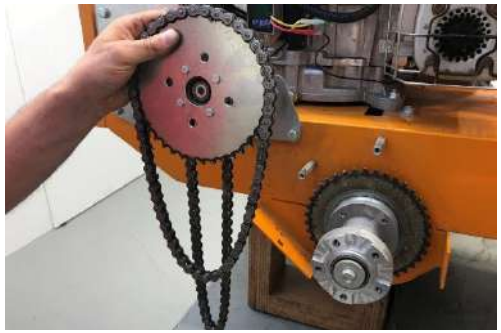
Exposed chain drive.

Unscrew central sprocket 39 teeth.

Drive

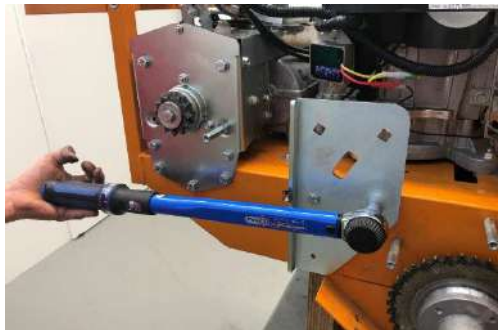
Chain drive (version from model year 09/2017) (5/9)

Take off upper chain.



Take off lower chain.

Unscrew chain tension plate.



Mount new chain tensioning plate.

Tightening torque: 35 Nm

The two screws with nuts from the inside.

Drill a third hole with a 6 mm bit.

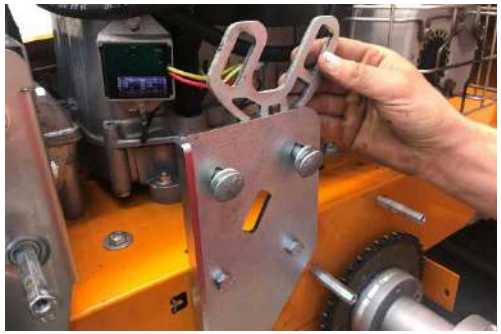
Only on the right side. The hole is already present on the left side.

Tighten the central locking screw (Torx) with 25 Nm.

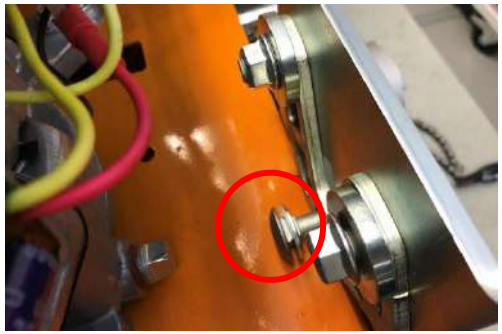
View of the assembly from the rear.

Insert carriage bolts with washers.

Square hole of the sprocket is centred in the aperture.



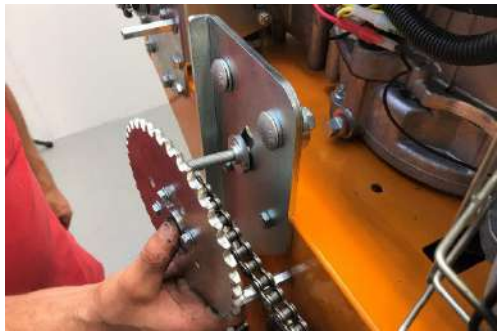
Fit on the adjustment plate this way.



Insert long carriage bolt with washer.

Fit on clamping sleeve.

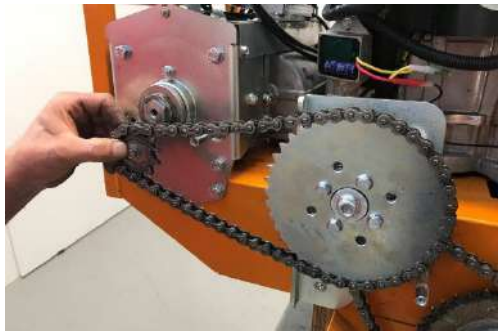
Place first, **new endless chain** on the wheel hub. Do not continue to use the chains with chain lock.



Place the chain on the small pinion of the chain wheel and fit on sprocket. There is an O-ring between the two ball bearings of the sprocket.

Fit on second clamping sleeve and screw on lock nut. Only tighten lightly by hand.

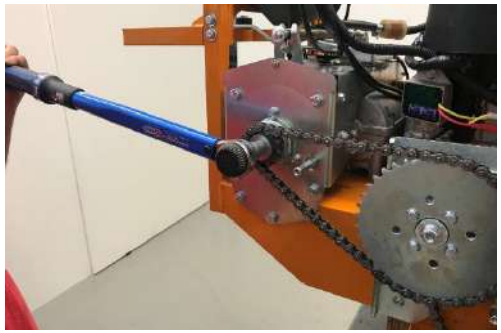
Unscrew rear drive pinion.



Pull the upper endless chain onto the sprocket, then pull it onto the pinion. Now firmly refasten the pinion.

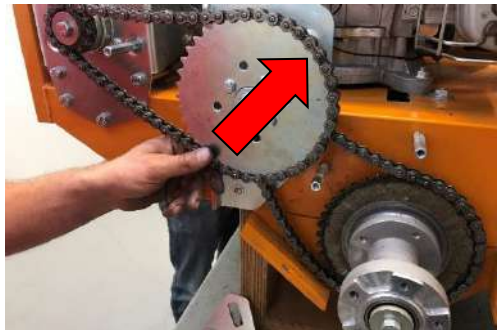
Drive

Chain drive (version from model year 09/2017) (8/9)

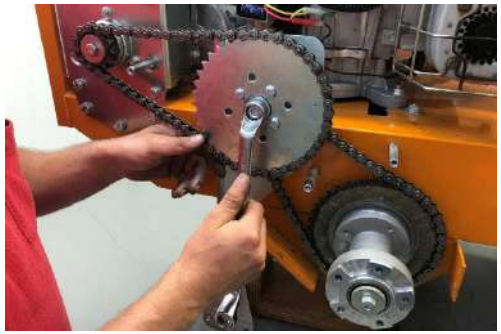


Tighten the drive gear.

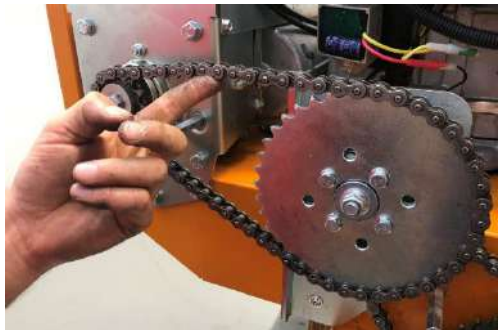
Tightening torque: 30 Nm



Press the sprocket that is still loose upward to tension both endless chains. Do not over-tension.



Fix the slightly tensioned chains in place by tightening the sprocket.



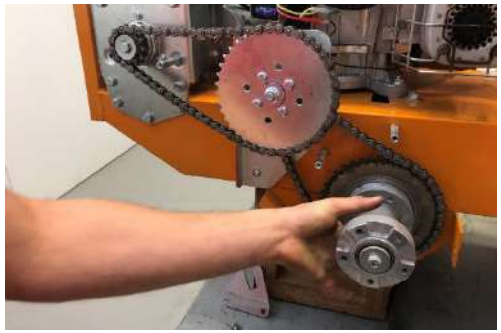
Check the chain tension. Here: a little too loose.

Always check the tension of both chains. Repeat the procedure if chains are too loose or too tight.

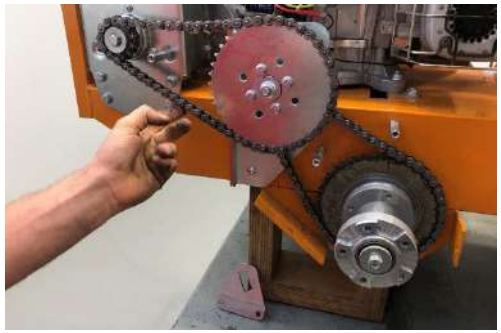
Move drive lever to the right and continue to turn the chain drive by hand 90 degrees (1/4 turn). Transmission in position "N".

Drive

Chain drive (version from model year 09/2017) (9/9)



Check the chain tension every 90 degrees (1/4 turn).



A chain must not run too tightly at any point !!! ⚠

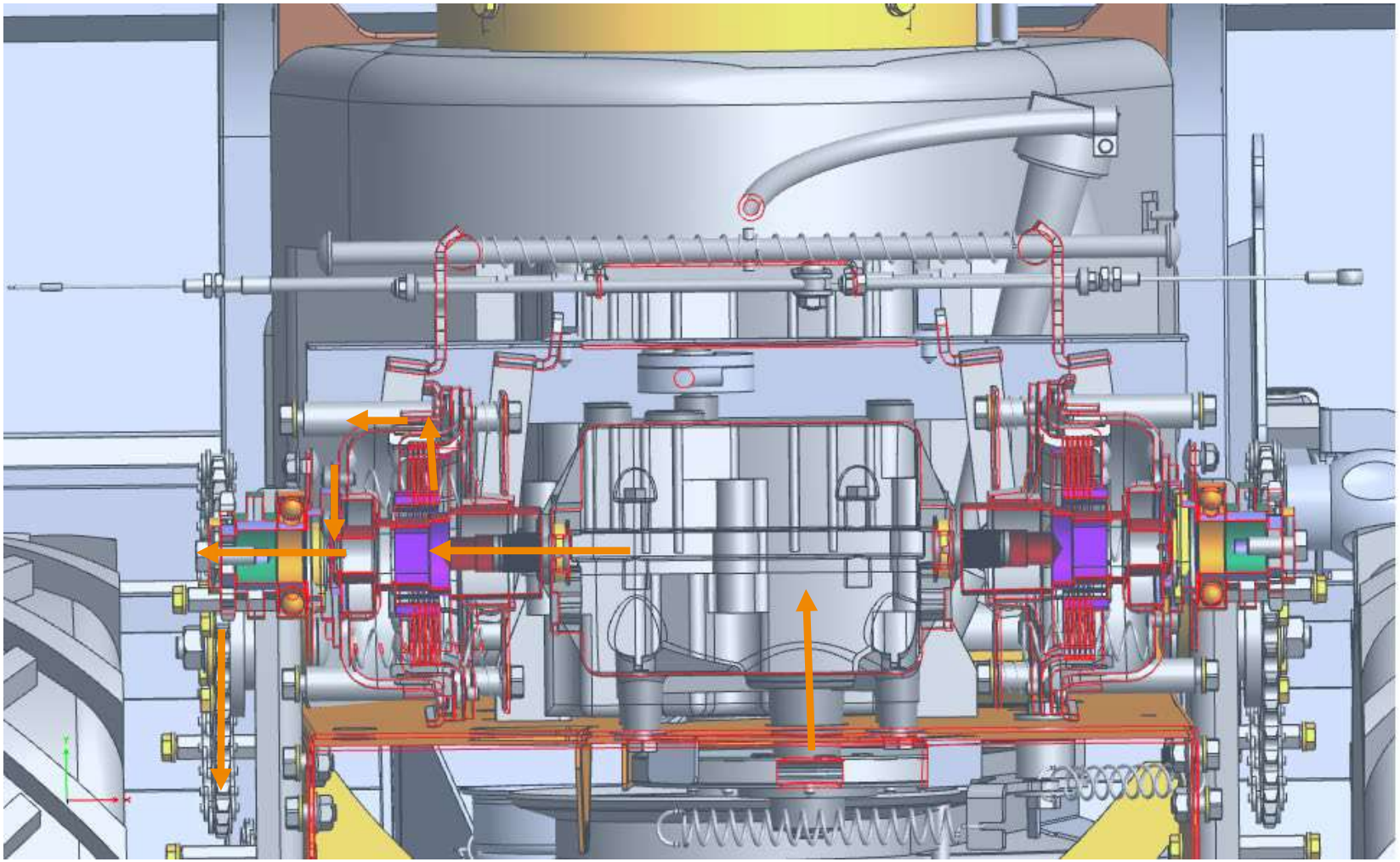
If necessary, slightly loosen the sprocket again and readjust. Repeat the check.

When the chain tension of both chains matches, tighten the central screw with **60 Nm**.

Now firmly tighten the other carriage bolts with **60 Nm**.

Force curve

Drive clutch



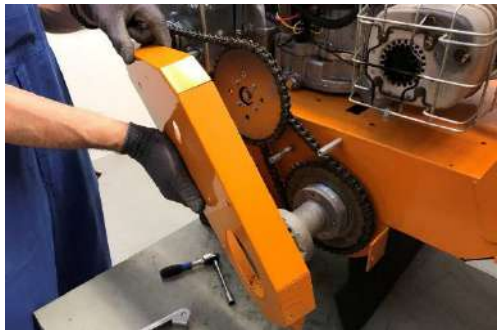
Drive

Steering-brake disassembly / assembly (single wheel brake clutch) (1/4)

Safely park the machine!

Prop up the device on the rear so that the drive wheels are freely suspended off the ground.

Take off both drive wheels.



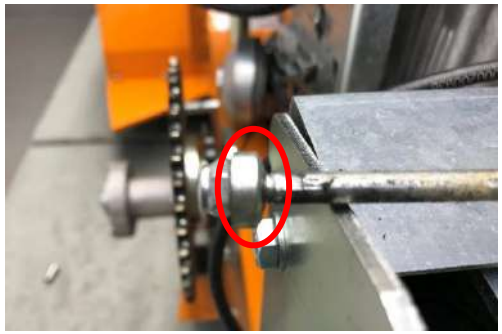
Take off the chain guard left and right. Take off the upper drive chains.

(See section: Drive, chain drive)

Unhook the spring pin.

Take off spring pin.

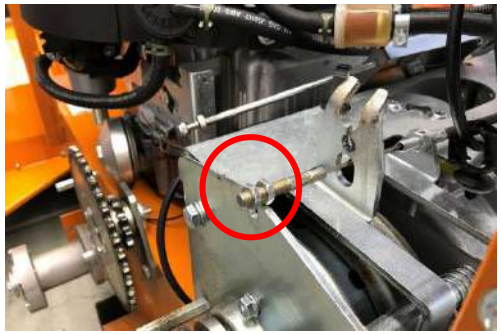
Unscrew and move out the threaded rods of the traction drive.



Pay attention to the install direction of the spherical washer. Ball shape towards the transmission.

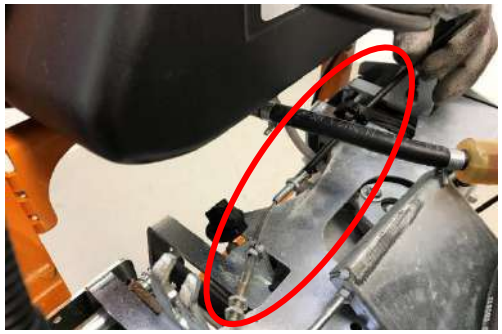
Unscrew and move out the threaded rods of the traction drive on the other side.

Both threaded rods of the drive cable are now moved out of the brake levers of the brake clutch.



Unscrew steering-brake cable. The cable for the left side comes from the left lever via the right side and is mounted left. The cable sleeve is guided by plastic line holders.

Unhook the steering-brake cable.



Cable routing:

The cable for the left side comes from the left lever via the right side and is mounted left. The cable sleeve is guided by plastic line holders.

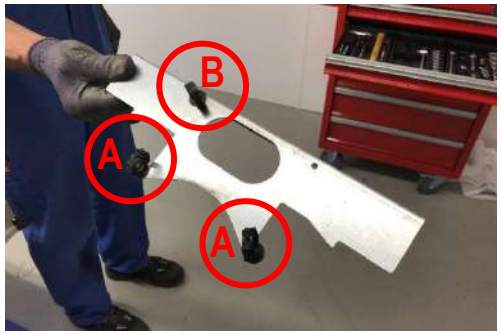
The cable for the right side comes from the right lever via the left side and is mounted on the right. The cable sleeve is guided by plastic line holders.

Illustration: Cover plate with the cable guides.

Removed threaded rods and steering-brake cables.

Now screw on the transmission cover.

Take off transmission cover.



Removed transmission cover with the line holders for the two steering-brake cables (A) and drive cable (B).

Unscrew the shift lever.

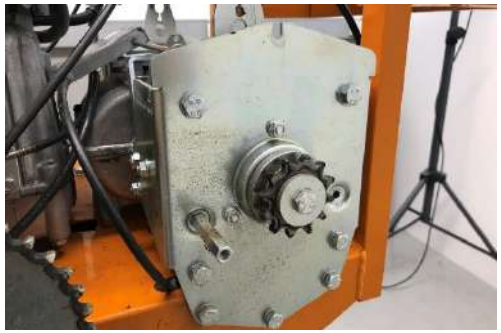
When reassembling secure bolt with Loctite 270. "Wobbling" can damage the flange and cause wear!

Attention:

Do not lose the black sealing ring!

Now the two steering-brakes left and right can be removed.

Steering-brake disassembly / assembly (single wheel brake clutch) (4/4)



Steering-brake left.

Unscrew three screws.

Taking off the steering-brake

Steering-brake taken off.

Assembly in the reverse sequence.

Z ➡ A

Do not wash the steering-brake with high-pressure cleaners!!

Steering-brake – dismantling / repair (clutch and brake pads) (1/9)

Note concerning the steering-brake:

The two single-wheel steering-brakes each consist of two components.

First, the clutch basket **(A)** with the clutch and second, the brake plate **(B)** with the brake pads.

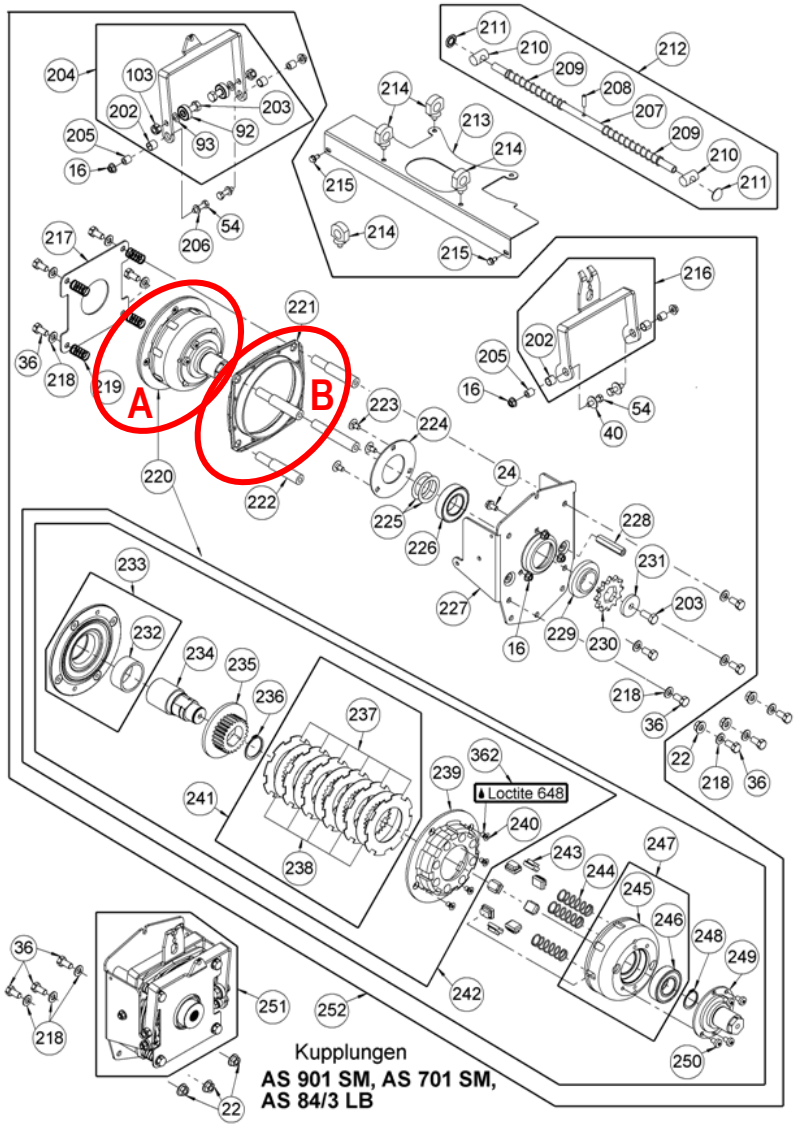
The brake plate is a wear part and must at some time be replaced. If the brake pads become too thin, they can tear off. In this case the symptom is a metallic brake noise and poor braking effect. If the brake pads are greasy or oily, the braking effect leaves something to be desired. In this case clean brake pads with a brake pad cleaner.

The clutch basket with the clutch is an extremely robust part. Only water and high pressure cleaners can affect it. Sluggishness is the result.

It is possible that oil and grease can also get into the clutch. In this case the symptom is no drive or weak drive on one wheel. In this case the clutch must be completely dismantled and the discs must be cleaned.

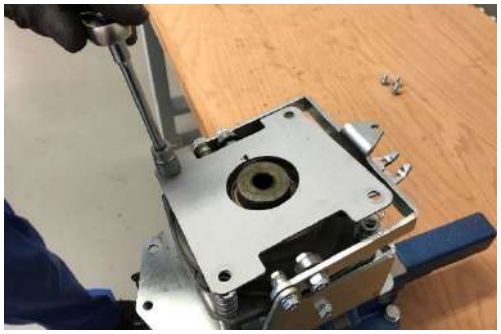
Important for keeping the steering-brake in good condition:

- **Do not clean** it with a high-pressure cleaner (water)
- **No oil or grease** on the clutch and brake pads.



Remove steering-brake.

(See section: Drive system, steering-brake – disassembly / assembly)



Dismantle the steering-brake:

Unscrew base plate.

Carefully tension the steering-brake in a vice.

Function test:

- Is the mechanism freely movable?
- Are the brake pads present?
- If pressed, does the clutch open?

Take off the four compression springs.

Is the bearing of the clutch easy to move?

Clutch with the activation plate (brake lever) of the brake.

Steering-brake – dismantling / repair (clutch and brake pads) (3/9)

Unscrew the activation plate of the brake.

Unscrew sprocket 12 teeth.

Tightening torque: 30 Nm

Check the two ball bearings of the activation plate.

Take off the entire clutch basket.

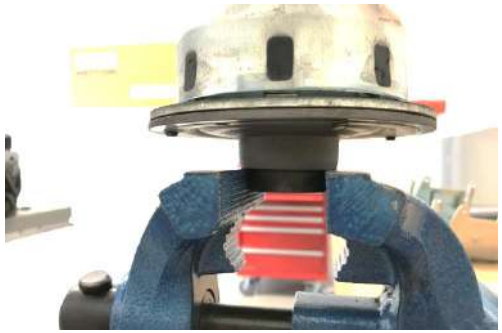
Turn over the steering-brake and carefully clamp it in on clutch hub. Not on the clutch basket.

Take off the brake plate. Replace if brake pads are broken or worn.

Brake plate with the four brake pads. Riveted.

Clutch bearing. Check the ball bearing.

Clutch basket with pinion flange.



Clamp in clutch on the clutch hub. Not on the slide bearing!

Unscrew the pinion flange.

Pay attention to the O-ring when re-installing. (Not present for all machines)

Steering-brake – dismantling / repair (clutch and brake pads) (5/9)

Take off circlip.

Pull the clutch cup off of the clutch hub. Do not lever it off!

Take off clutch cup. Attention: The three compression springs can come out.

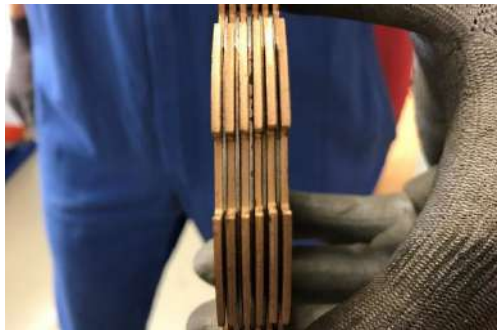
Unscrew and remove the four screws of the clutch basket.

The six outer discs (bronze) and the five inner discs (steel) are visible.

Take out and clean the disc pack.

Remove all grease and oil. Clean with steel wool. Only replace if visibly defective.

Steering-brake – dismantling / repair (clutch and brake pads) (6/9)



Stratification of the disc pack.

Stratified disc pack. Apertures of the discs one precisely above the other.

Reassembly of the clutch:

First an outside disc (bronze)

Insert apertures of the clutch basket precisely in the apertures of the disc pack.

Then an inside disc (steel), etc.

Secure the screws of the clutch basket with Loctite 270. ⚠

Place the three compression springs in the clutch cup.

Fit the clutch basket precisely on the springs of the clutch cup, and press the clutch hub into the clutch bearing.

Press the clutch bearing precisely to just a little above the seat of the circlip. Not further.

Install circlip on the clutch hub.

Function test:

The clutch can be uniformly pressed together and it reopens.

The compression springs are correctly seated and not loose.

Screw the pinion flange back on. Forcefully tighten the screws.

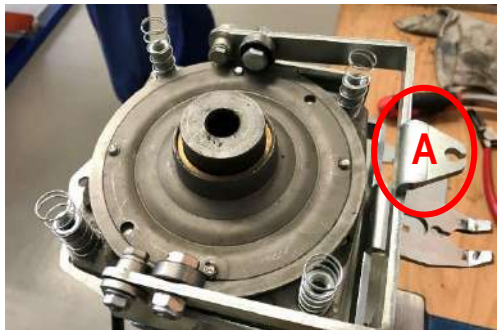
Turn the steering-brake and fasten the drive pinion with lock washer and screw.

Fit brake plate on the clutch bearing.

Counter with drive change and tighten with **30 Nm**.

Fit on clutch basket and press into the bearing.

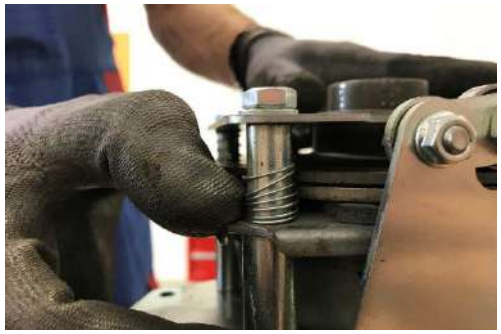
Fit on the four compression springs.



Mount the activation plate.

Attention:

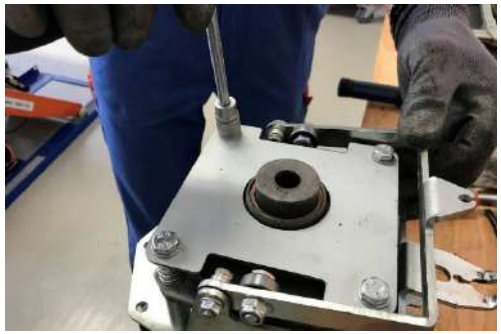
Cable lug **(A)** upward!



Place on the base plate and lightly fix it in place.

Attention:

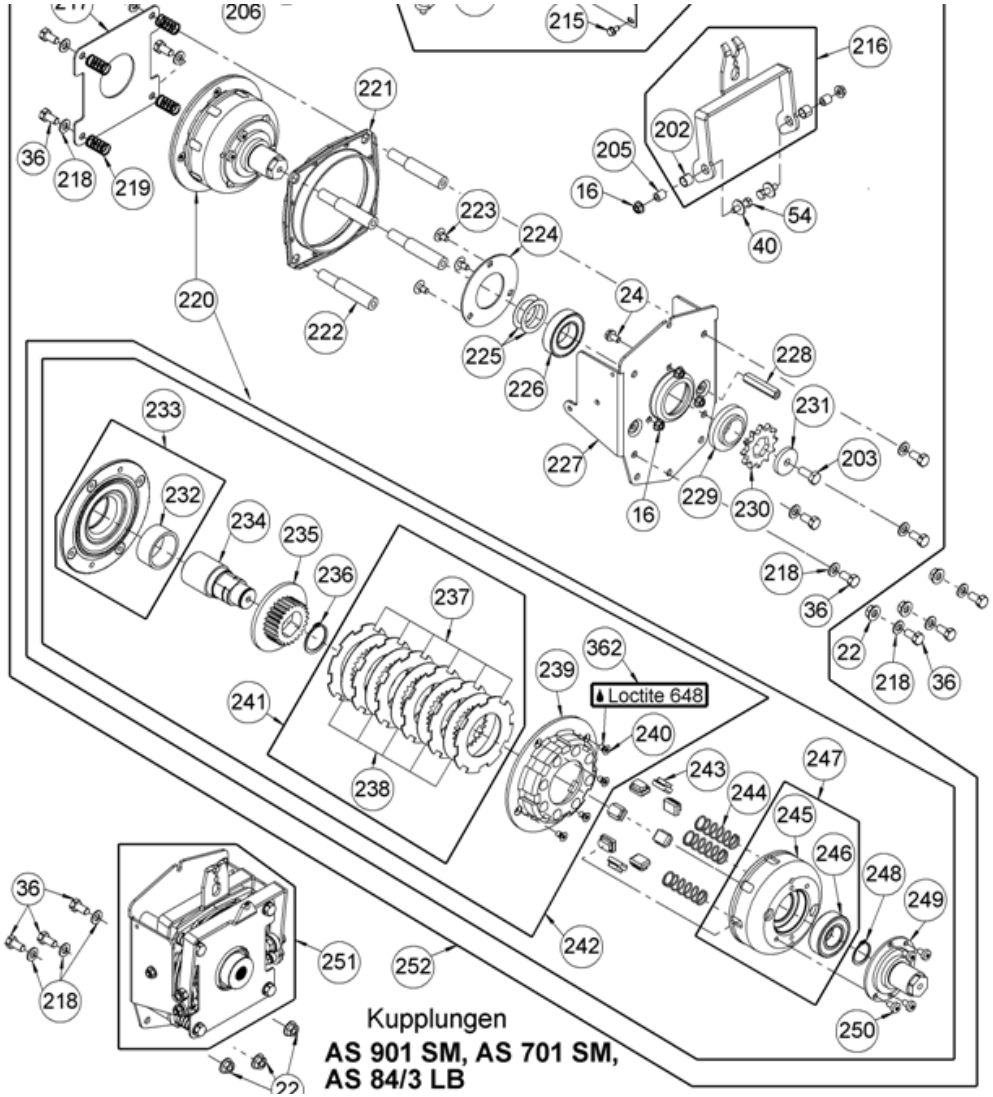
Do not jam the four compression springs! Test!



Tighten the base plate.

Install the steering-brake.

See section: Drive system, steering-brake – assembly / disassembly.



Drive

Transmission removal (1/2)

Disassemble the steering-brakes. (See section: Drive system, steering-brake – assembly / disassembly)

Remove steering-brakes left and right.

Steering-brakes removed left and right.

To do this, take off the drive belt. (See section "Drive system, Replacing the drive belt)

Take off the circlip of the transmission belt pulley.

Pull belt pulley off of the transmission.

Unscrew and take off transmission.

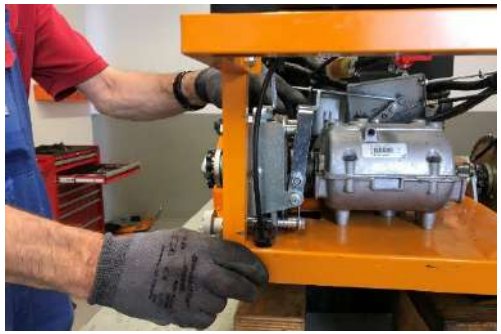
Drive

Transmission removal (2/2)

Transmission model:

"Peerless H 700 – 46"

Shaft seal is available on PAM.
(In-house design from AS-Motor)



Re-install the transmission in the reverse sequence.

- Transmission
- Steering-brake
- Belt pulley
- Drive belt

Tip/note:

Transmissions break down when:

- Gears are shifted while the device is in motion
- The Bowden cable of the traction drive rubs (on the handlebar stop) and thus the traction drive is no completely disengaged in the shift process. **Note: Machine jerks when shifting gears.**

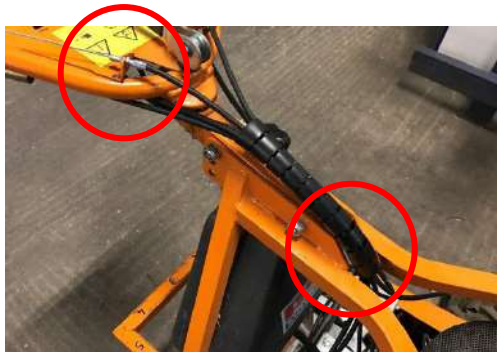
Please **check the drive cable!**

(See also section: Operating elements, Drive cable replacement)

New cable layout from 09/2017 with new Bowden cable for the drive system. Cable runs centred through the frame. Less friction.

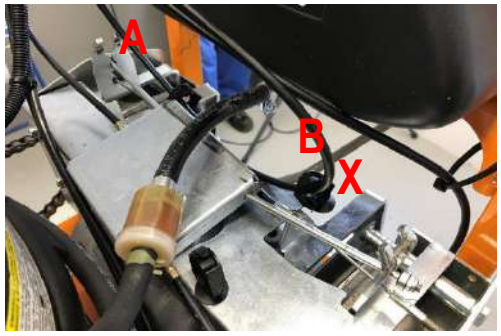
Operating elements

Steering-brake cable – mounting / adjustment

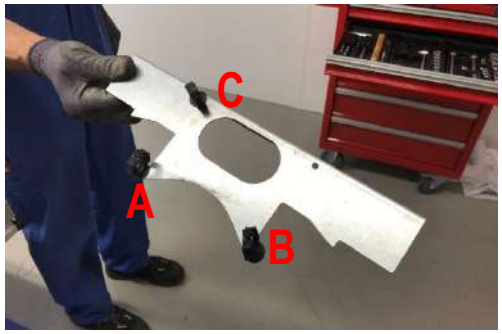


New cable layout from 09/2017. Run cables through the middle of the frame. Reduces the friction on the end stop of the drive cable!

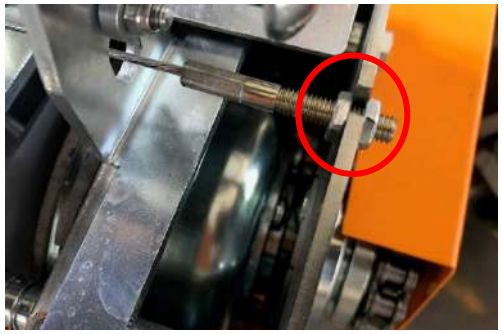
The end of the steering-brake cable is fastened to the threaded rod on the clutch bearing plate and the cable sleeve is fastened on the brake plate (brake arm). Fasten each end with lock nuts.



The left steering-brake lever (A) is routed from the right, through the cable holder (X) and goes to the left xxxx. The right steering-brake lever (A) is routed from the left, through the cable holder (X) and goes to the right xxxx.



Cable holder (line holder) on the cover plate. Right steering-brake cable (A), left steering-brake cable (B), lower drive cable (C).



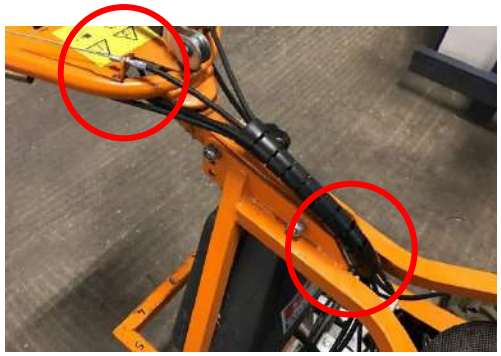
Installation/adjustment:

Fix the cable end in place on the plate of the clutch bearing with two lock nuts. The steering-brake cable runs through the brake arm. Thread projects approx. 3 mm.

Adjust the cable tension via the adjustment screw on the brake lever. **Adjust** the cable **so that there is no play.**

Operating elements

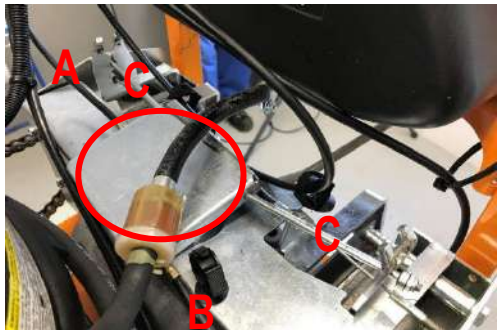
Drive cable – replacement / adjustment (1/2)



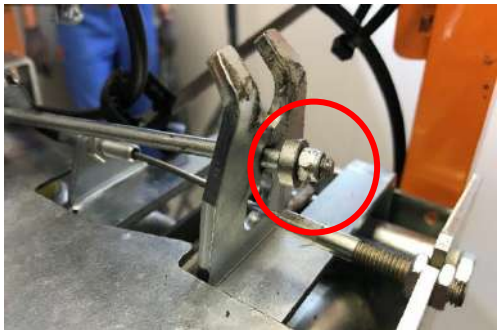
New cable layout from 09/2017. Run cables through the middle of the frame. **Reduces the friction** on the end stop of the drive cable!

Put older machine versions cables as shown for better performance.

The lower drive cable runs with a cable spring to the tensioning roller of the traction drive.

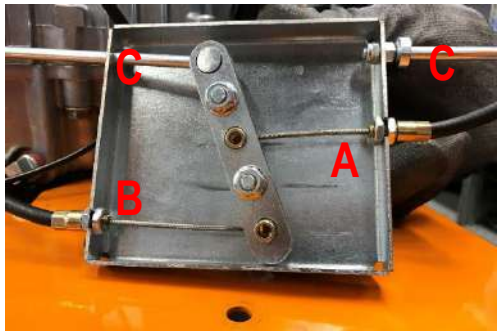


Activating the drive lever opens the parking brake via the two threaded rods of the traction drive control element and tensions the belt tensioner.

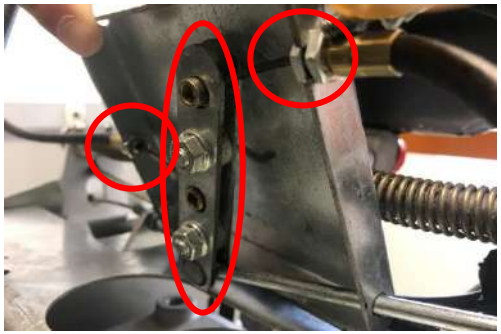


Installation/adjustment:

Threaded rods left and right project two thread turns out of the self locking nuts.



View looking into the traction drive control element. Upper traction drive cable (A), lower traction drive cable (B) and threaded rods of the parking brake (C).



Mount upper and lower drive cable on the base plate. Nipples of the cables are fixed in place on the Bowden cable plate.

Operating elements

Drive cable – replacement / adjustment (2/2)

Drive lever not activated.
Machine in parking brake.

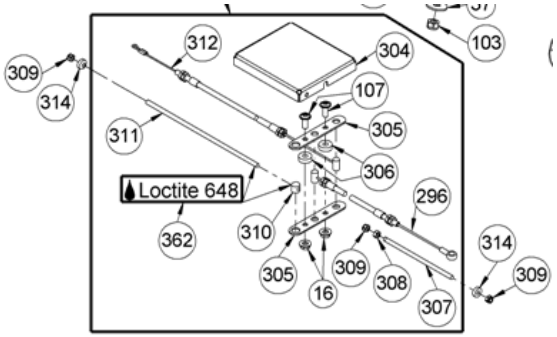
Drive cable activated, tensioning roller tensions the drive cable, parking brake disengaged. Bowd cable plate on the right side distended.

(From the operator's perspective)

Factory adjustment at activated traction drive (drive lever).

Distance of the Bowden cable plate to the base plate approx. 1 cm.

Adjust the distance via the end stop of the upper drive cable.



Important:

Regularly oil the Bowden cable here!

If the cable moves with difficulty this can result in the situation that the drive system will not be properly disengaged in the shift procedure, and consequently the transmission will be damaged! This is indicated by the machining "jerking" slightly when shifting gears.

Operating elements

Replacement of the flail clutch cable (1/3)

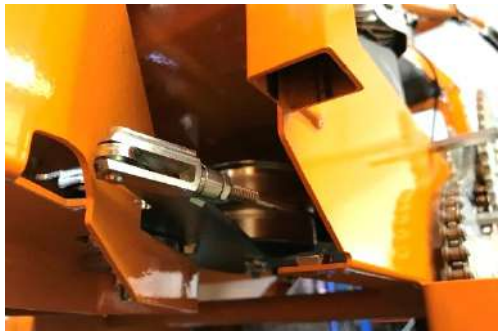
Flail clutch cable on the left side of the handlebar.

First unscrew the cover plate on the floor.

To do this unscrew the five screws.

Then unscrew the rear cover plate.

In front of the left front wheel, on the transition to the mowing deck, the flail clutch cable appears.



It is fastened on the lever of the tensioning roller.

Open the spring-loaded pin and unhook the cable.

Unscrew the fork head from the cable.

Flail clutch cable without fork head.

View of the flail clutch cable from the rear.

Pull the cable out through the spring tube to the rear.

Pull in a new cable.

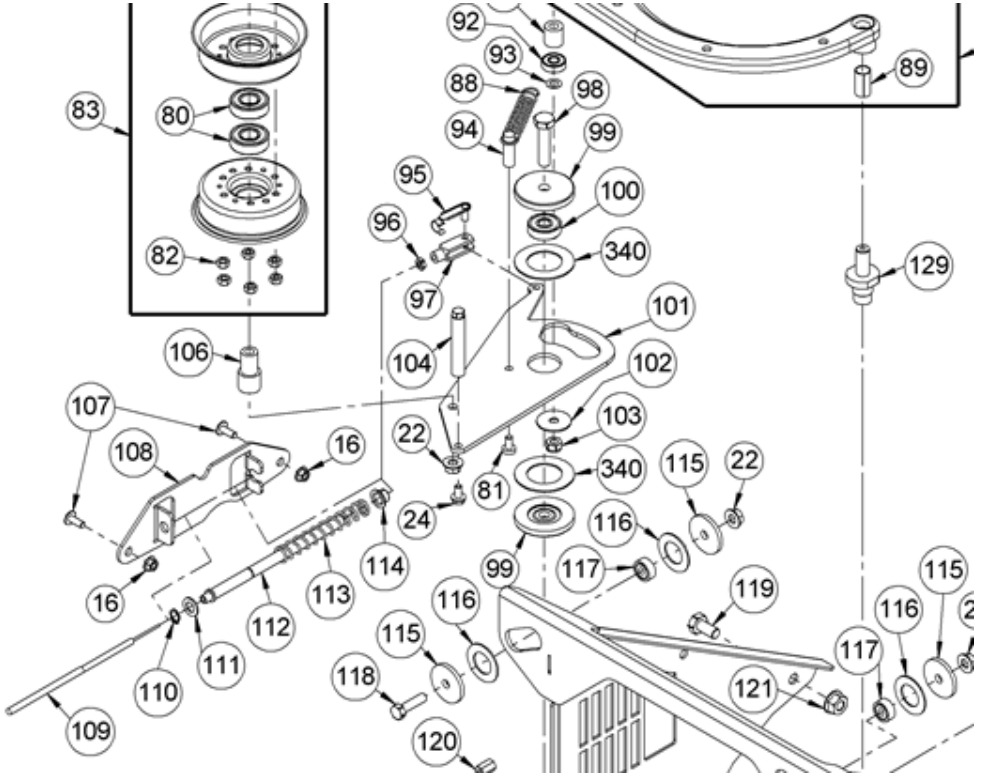
Operating elements

Replacement of the flail clutch cable (3/3)

Fasten the cable on the lever

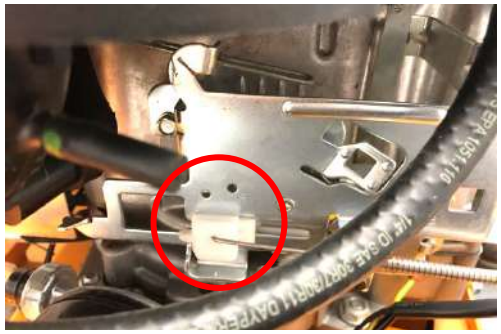
Mount the cable stop.

Factory setting of the cable stop.



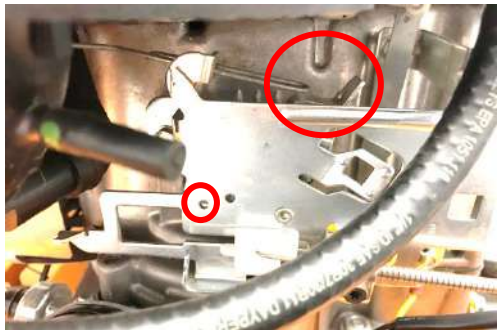
Operating elements

Accelerator cable adjustment – AS 701



AS 701 SM:

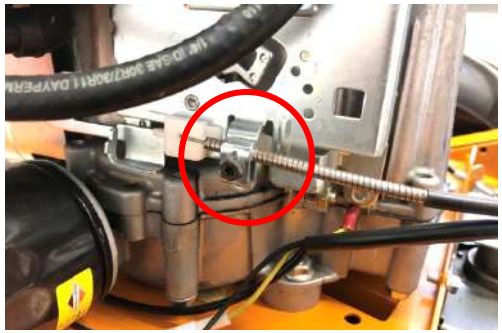
Idle position of the throttle lever.



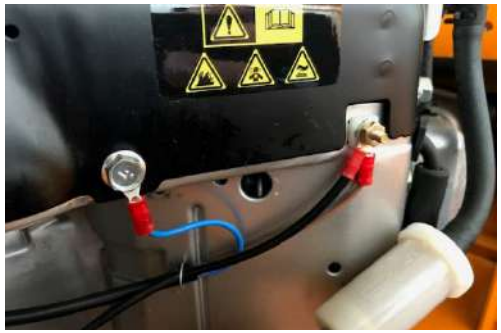
Full throttle position of the throttle lever. The control bores are up to +/- 2 mm one above the other.

Choke position of the throttle lever.

Choke lever is completely closed.



Adjustment via the cable stop.



AS 901 engine

AS 901 with old start switch.

AS 901 with new start switch.

AS 901 cabling – handlebar with old start switch.

AS 901 cabling – handlebar with new start switch.

AS 701 engine

(oil pressure switch)

Electrical system

Cabling AS 901 / AS 701 (2/2)

AS 701 engine

AS 701 engine

AS 701 with new start switch.

AS 701 cabling – handlebar with new start switch.

AS 701 with old start switch.

AS 701 cabling – handlebar with old start switch.

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