SBS TRAILERS

INFORMATION & SERVICE MANUAL

1. General Information

1.1 You and your towing vehicle

You are legally obliged to ensure the following:

- That the towing limit recommended by your vehicle manufacturer is greater than the Gross Vehicle Weight (GVW) of your trailer. Your vehicles' towing limit can be found in the vehicles' handbook or on the VIN plate on the chassis.
- That the tow bar fitted to your vehicle is appropriately rated.
- That your driving licence permits you to tow the specified combined weight of your vehicle and trailer.

Failure to do so is breaking the law!

1.2 Your trailer

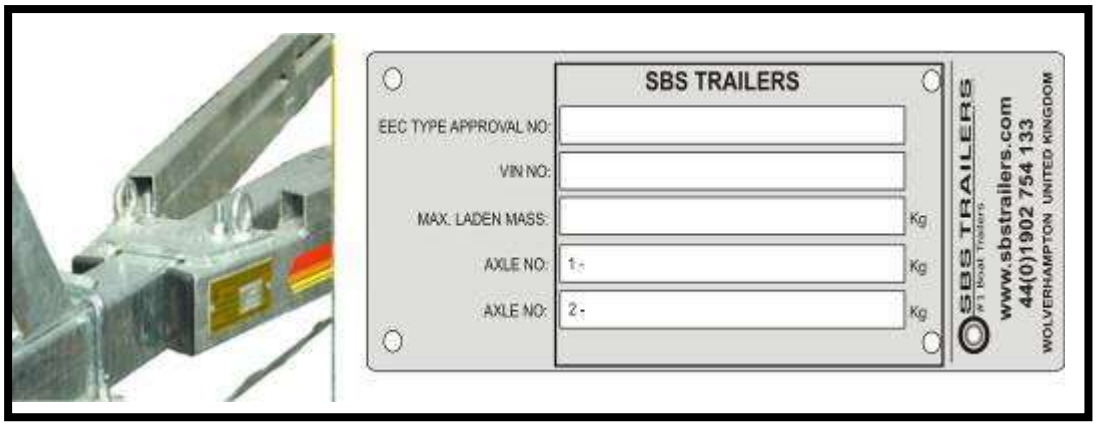
1.2.1 Specification and loading

Your trailer has been specified from information supplied to us about the craft you wish to tow (including weight, length and hull type). Do not attempt to carry any load other than that for which it has been specified.

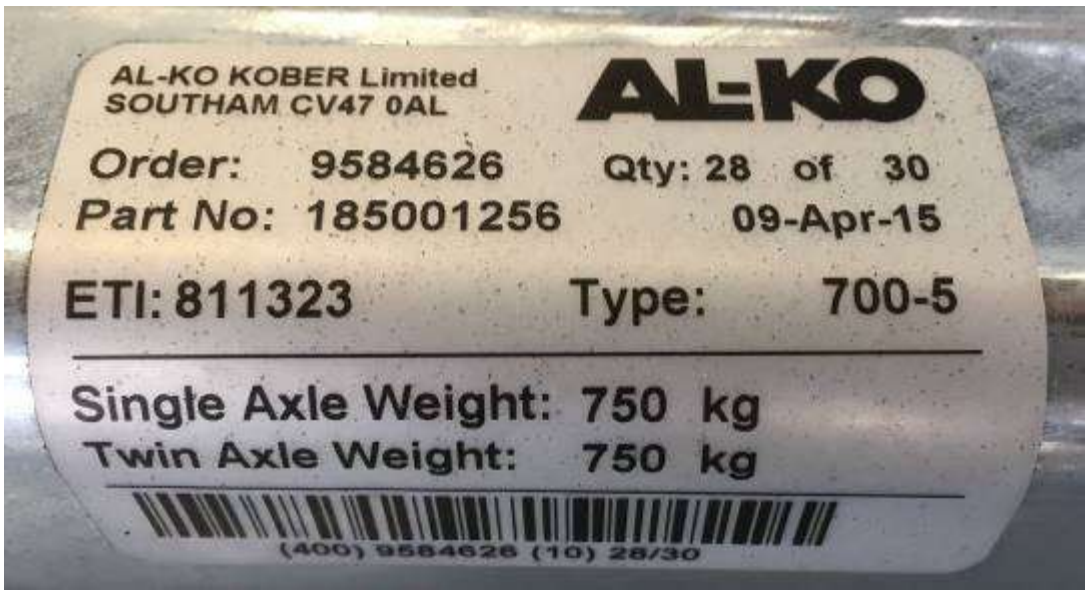
Consult your dealer or SBS Trailers if in doubt.

1.2.2 Identification

The unique serial number of your trailer can be found on the ID Plate at the front on the A-Frame (Fig 1).



The ID Plate displays the trailer model, Serial Number, Max laden mass and Axle weights. Please ensure the ID Plate is kept in a legible condition. It is often the only means of identification and will make ordering spares, accessories or replacement parts easier. Also ensure that you have filled in the relevant information on the cover of this manual and refer to it when contacting us about your trailer.



1.3 Axle plates

- AL-KO axles are identified by the square sticker fitted on the rear of each axle (pictured above). The data on this plate is vital should information about the axle be required.
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- You may wish to make a note of this information for your records as it will help in identifying any parts you may require in the future.

1.4 Capacities

The vehicle weight must not exceed the maximum permissible weight. On tandem axle sets the correct capacity is NOT double that indicated on the axle (i.e. 2x750kgs = 1500kgs). Because of weight transference as axle transverse uneven ground the capacity of each axle is reduced by 100kgs to allow for the excess that may be loaded on one axle at a time. Therefore a tandem set of 2x750kg has a MAXIMUM CAPACITY of 1300kg NOT 1500kg. THIS RULE MUST BE OBSERVED.

Never remove the axle identification plate from the axle tube.

1.5 Torque settings

Axle loading kg		900	1300	1750
Wheel brake type		1637	2051	2361
Bearing size		30/60-37	39/72-37	42/80-42
Flange nut	Clearance (mm	32/36		36/41
	Thread	M24 x 1.5	M24 x 1.5	M27 x 2
	Tightening Torque (Nm)	280-300 290 +/- 10 (214 +/- 7.5 lbs/ft)		
DIN Back nut	Clearance (mm)	36		46
	Thread	M24		M30
	Tightening torque (Nm)	600 to 650 (DO NOT TOUCH – if disturbed return to AL-KO)		700 to 750
Shock absorber attachment (Nm)		86 Nm (63.5 lbs/ft)		
Axle attachment (Nm)		86 Nm (63.5 lbs/ft)		

1.6 Tyre pressure information (at max load, to be used as guideline only)

TYE SIZE	PLY	MAX PSI	MAX BAR
400 x 8	4	60	4.14
520 x 10	4	32	2.21
500 x 10	4	40	2.76
500 x 10	6	60	4.14
500 x 10	8	65	4.48
145 x 10	4	35	2.41
145 x 10	8	42	2.90
155 x 13	4	42	2.90

TYE SIZE	*PLY*	MAX PSI	MAX BAR
165 x 13	4	36	2.48
165 x 13	8	65	4.48
175 x 13	6	50	3.45
175 x 13	8	65	4.48
185/70R13	8	87	6.00
195/50R13	8	80	5.52
175 x 14	8	65	4.48
185 x 14	8	65	4.48

2. Loading, Towing and Unloading

2.1 Loading your trailer

- Recover the craft onto the trailer by using the trailer winch.
- Check the winch and ratchet are undamaged then extend and attach the winch strap to the external bow eye on the hull of the craft.
- Never use any other fitting on the boat to attach the winch strap. To unwind or reel out the strap, securely grip the winch handle and apply force in a clockwise direction so that the ratchet lever can be disengaged. Carefully turn the handle in a counter-clockwise direction. Do not lose control.

Never use the winch to pull the trailer up a slip or to let it down a slip. On many winches the handle cannot be disengaged. If the ratchet lever fails then the handle will also spin violently. Also, never exceed rated capacity – excess load may cause premature failure and could result in serious personal injury.

- Never drive the boat onto the trailer as this can result in serious damage to the hull if you misjudge it.
- Be aware of people in the water trying to help and make sure they stay away from the propeller.
- Wind the winch strap onto the winch reel by turning the winch handle in a clockwise direction with the ratchet lever in up position. The ratchet should produce a loud clicking noise. Make sure that the ratchet lever is in up position and holding the load before releasing the handle.
- Never apply load on the winch with the strap fully extended. Always leave at least three turns of strap on the reel.
- Only operate the winch manually. The winch should not be operated by a motor of any kind. If the winch cannot be cranked easily with one hand then it is probably overloaded.
- Never park your loaded trailer for any length of time with the handbrake on, as the brakes will bind to the drums. Always chock the wheels – do not rely on the handbrake to hold the trailer on an incline.

2.2 Towing your trailer

2.2.1 Attaching the trailer to your towing vehicle

Become methodical about hitching up so you do not forget anything. Use the following instructions to safely attach your trailer to your vehicle.

- Slowly reverse your vehicle to within a few feet of the coupling. You may need a helper to stand with their hands showing you where the hitch is.
- Raise the front of the trailer by means of the jockey wheel assembly to the required height and roll the trailer up to the rear of the towing vehicle. Do not use the winch handle, jockey wheel or any other moving part for pulling or manoeuvring the trailer.

- If the trailer has tandem axles then raising the jockey wheel sufficiently to raise the front wheels off the ground will aid manoeuvrability.
- Lower the trailer by means of the jockey wheel assembly onto the tow ball of the vehicle. Some coupling heads have a locking handle which stays up and automatically locks onto the ball; others have to be held up and may have an indicator to show the ball is in place.
- Once the coupling head appears to be locked on, lower the jockey wheel a few turns to lift the back of the vehicle to prove that the coupling head is on properly, then fully raise the wheel before unclamping it and, finally, locking it fully raised.
- Check that the wheel is not interfering with the operation of the overrun mechanism – this could cause damage to your trailer or your vehicle.
- Attach the safety breakaway cable to the rear of the vehicle. This cable will apply the handbrake if for any reason the trailer becomes detached whilst towing. (Clip the breakaway cable to the special rings that some tow bars have or loop it around the bar making sure not to foul the coupling head. Do not loop it around the tow ball neck unless you can find no alternative).
- Check that the breakaway cable and lighting cables have enough slack for cornering but will not touch the ground.
- From October 2012 all light boards will be supplied with a 13 pin plug. This will be inserted to a junction box by the winch post with a hardwired 'tail' going forward to the car. This is also a 13 pin plug; a 7 pin converter can be supplied if necessary.

2.2.2 Checks before each journey

- If the trailer is laden is the load correctly distributed, i.e. not too much or too little nose weight?
- Is the load within the trailers official payload?
- Is the gross weight being towed within the towing vehicle manufacturers' recommended maximum limit (whether braked or unbraked)?
- Is the load correctly secured?
- Are all of the electrical components undamaged and working correctly?
- Is the correct number plate fitted (both registration and style)?
- Is the breakaway cable or secondary coupling undamaged and correctly connected to a suitable point on the tow bar or towing vehicle and the trailer correctly coupled to the tow ball?
- Are the tyre pressures correct with all tyres free from cuts and bulges and do they have adequate tread (including the spare)? Tyres must have a continuous tread depth of at least 1.6mm on cars, light vans and trailers, across the centre three quarters of the width of the tyre (1mm for other vehicles)
- Are the wheel nuts/bolts tightened to the correct torque?
- Are the mudguards in satisfactory condition and secure?
- Is the coupling height correct, i.e. not excessively nose down or nose up? Make sure that the trailer is level when coupled to the towing vehicle.
- Unless the trailer is very light or unloaded is the nose weight between 50 and 100kg?
- Is the jockey wheel and any corner steadies or prop stands fully wound up and secure?

2.2.3 Driving

2.2.3.1 General

Always keep to the legal limit for the road that you are using. In the UK:

- 30mph limit applies on all roads with street lighting unless signs show otherwise.
- 50mph applies on singles carriageways unless signs show otherwise.
- 60mph applies on dual carriageways, motorways and all other "National Speed Limit" roads.
- You must not travel in the right-hand lane of a motorway with three lanes or more if you are towing a trailer.

- Always drive at a speed that is well within your capabilities and is suitable for the road and weather conditions that prevail at the time.
- If your trailer begins to snake or swerve ease off the accelerator and reduce speed GENTLY. This can happen if you are driving too fast or if load on the trailer is wrongly positioned.
- Do NOT brake sharply on a bend (this could cause a possible jack-knife situation). Reduce speed before bends and use the appropriate gear for the speed that you are travelling then gently accelerate out of the bend.
- When turning with your trailer, the overall length of your towing vehicle and trailer effectively lengthens the wheelbase. Consequently, it is necessary to compensate by slightly widening your turning circle to avoid curbing. Remember that your trailer does not follow the same line around a corner as the towing vehicle, it will cut the corner.

2.2.3.2 Reversing

Never reverse a trailer without checking behind you because of the large blind spot. Ideally, have someone see you back, especially in crowded places.

Reversing a trailer is skill that can be mastered with a little perseverance by anyone who has learned the basic theory.

Find somewhere with plenty of space and practice reversing. It helps to have someone who knows how to do it to tell you if and where you are going wrong.

2.3 Unloading your trailer

The first step to safely launching your craft is to check the ground over which the trailer and vehicle will be running. Ensure that it is relatively level and not too soft. Avoid launching on surfaces that are too soft and loose as it may cause difficulties when removing your trailer and vehicle from the launch area. Ensure that there is enough depth of water for your boat to clear any objects in the water or on the sea/river bed. Once you are satisfied with the launch area please follow these instructions to help you launch easily.

- Ensure that all security straps are removed from over the boat and that the light set has been removed from the back of the trailer and unplugged from the vehicle.

- Reverse slowly down to the waters edge with the assistance of somebody in the boat and continue reversing until the boat begins to float.
- If using a bunk style trailer you will need to submerge the trailer (on an average slope slipway) to roughly halfway up to the wheel. With a roller trailer you should be able to launch as soon as your boat has around 300mm clearance of water under the keel once floating.
- Once you have reached this depth, push the boat off the trailer slowly.

Never use the winch to pull the trailer up a slip or to let it down a slip. On many winches the handle cannot be disengaged. If the ratchet lever fails then the handle will also spin violently.

- Be aware of any tidal or stream effects in the water otherwise you may end up with your boat floating in the wrong direction.
- Once your boat has been launched, thoroughly rinse the trailer with fresh water – this will greatly increase the life of your trailer and its parts. In the case of braked trailers, a flush kit is available which can be supplied as OE or a retro fit kit. This will wash out the internal hub and brake mechanism, prolonging its life and effectiveness.

REMEMBER: YOU are responsible for ensuring loads are properly secured and the trailer is in a safe and serviceable condition.

Regular checks will ensure you remain on top of trailer maintenance and DO NOT forget to check the chassis for wear and stress.

Look at all weld points and stress areas to ensure proper frame integrity.

The comments here are intended to be a general guide and cannot be relied upon as an exhaustive list to cover every eventuality. If in doubt about any aspect of trailing or your trailer please call the office for further advice.

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3. General Maintenance

Due to the harsh environment many trailers operate in, the following points should be noted:

- Whilst all components carry manufacturers warranty of 12months against defective parts, immersion in saltwater invalidates some warranties.
- The frame and axle beam together are galvanised and hence offer the best protection against corrosion available. U-bolts, brake back plates, fastenings, winches and other fitments are electro plated which does not offer the extended protection of galvanised parts. Therefore special care of additional protective coatings should be applied to these components.
- The Alko Euro hubs as described in this manual are fitted with the waterproof bearings. However this does not mean they are impervious to the vagaries of saltwater immersion. Regular service inspections are still necessary to ascertain the condition of the bearings, brake shoes, springs etc. The simplest way to do this is with the wheels off the ground. Place the hands on the top of the free wheel and rock back and forth to check for bearing play. A small amount of play should be present. If the wheel rocks excessively – more than 2mm – the bearings are either worn or the flange nut needs to be checked that it is done up to the correct torque.
- Also, at the same time the wheel can be spun. It should spin freely. If a rumbling or grinding noise can be heard it is likely that the bearing is worn and should be replaced. First check that any noise is not due to brakes binding. Once it is determined that the bearing is failing then the hub must be removed (see 5.1.2). If the hub found to be severely corroded then we recommend replacing the complete hub. Order from the hub reference no. stamped on the hub.
- The principle cause of bearing failure, in our opinion, is due to poorly maintained or incorrectly adjusted brake cables. Due to their exposed position on the trailer they suffer from contamination from road salt and dirt and spray before they have even got near a launch site! These cables must be regularly checked to ensure that they allow the brake shoes to release fully. If not they can cause the shoes to bind on the hub causing excessive heat build up which literally boils the grease out of the bearing leading to inevitable failure.

- The winch-webbing strap must also be regularly checked for damage or wear. Replace when worn. As far as possible ensure that during recovery the strap lies flat against itself. This will help prolong its life and avoid snarl-ups.

Following these simple and largely common sense instructions, together with the service details outlined in this manual should ensure years of trouble free trailing.

Remember these suggestions are to be viewed as general guidelines only and we recommend the trailer is always serviced by a trained professional, either at SBS Trailers or one of the many Al-Ko service centres.

4. Function

4.1 Operation of the overrun brake system

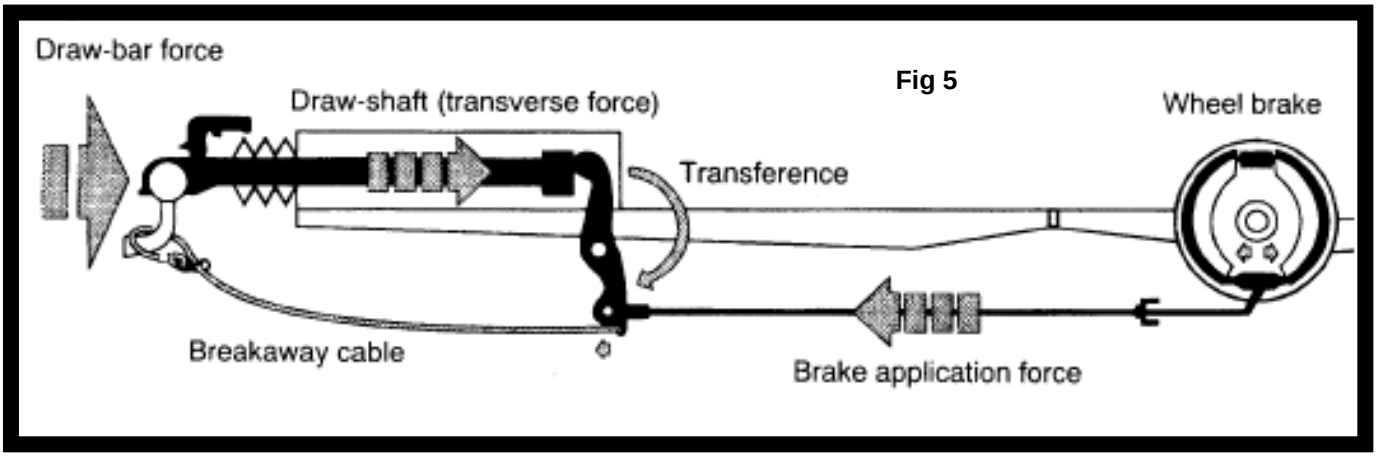


Fig 5

4.2 Service brake

The overrun device can be described as the control device if the overrun brake system. A drawbar force is produced at the coupling point by reducing the speed of the towing vehicle. After the threshold level has been passed, the draw-shaft is pushed in, thus actuating the overrun lever, the wheel brakes (1, 2) are then applied via the expanding clutch (3) – (Fig 6).

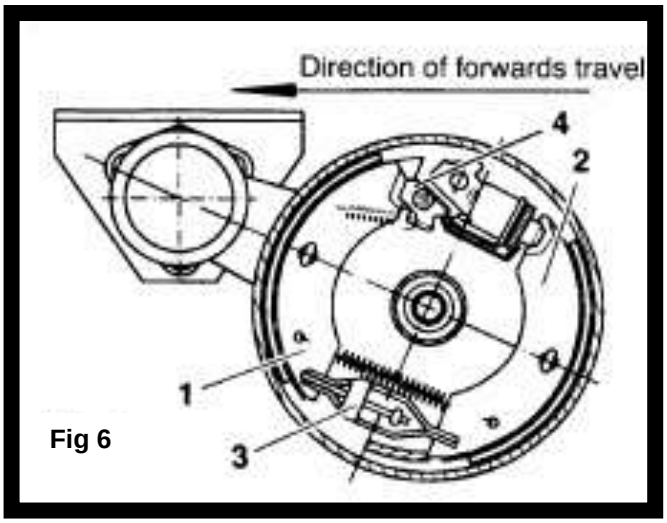


Fig 6

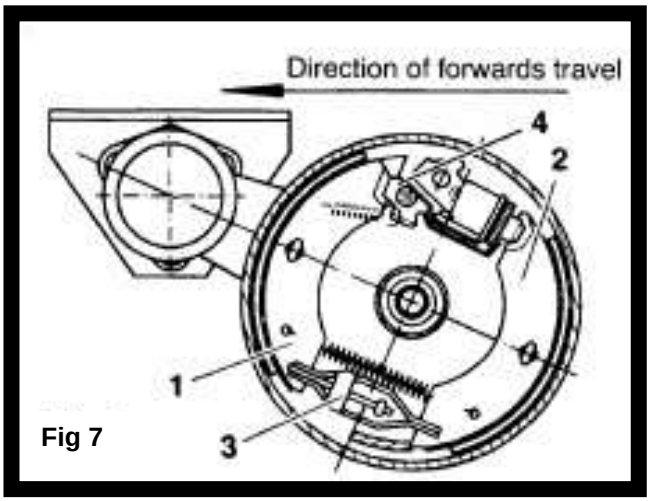


Fig 7

4.2.1 Reversing

When reversing, the towing vehicle pushes in the draw-shaft of the overrun device. The brake shoes (1, 2) are pressed against the brake drum via the transmission lever (4), brake linkage, Bowden cable and expander clutch (3). The brake drum turns backwards, taking the trailing shoe (1) with it. The transmission lever (4) swings back and offsets the whole pedal travel. The braking effect is virtually cancelled out and the bottom plate travels backwards (figs 6 and 7).

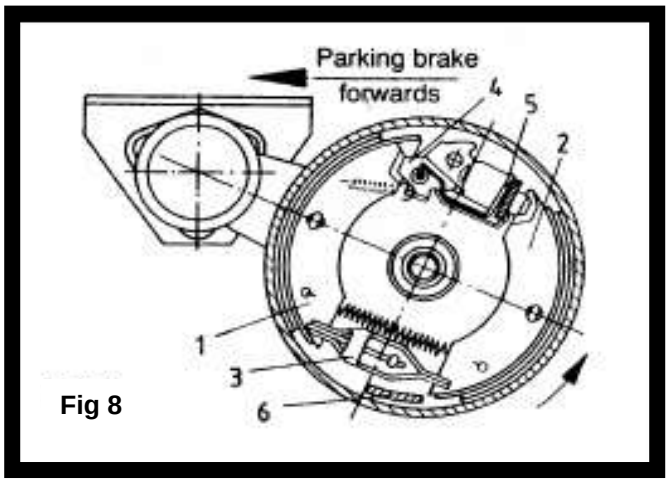


Fig 8

4.2.2 Parking brake

On the spring cylinder version, engage the hand-brake lever right up to the last tooth (90º). On the gas strut handbrake version, pull the handbrake over dead centre. The braking shoes (1, 2) are pressed against the brake drum by the brake linkage, Bowden cables and expander clutch (3), and this applies the trailer brakes (Fig 8).

When the caravan/trailer has been reversed, the brake drum will also rotate backwards. The trailing brake shoe (1) is taken with it and moves the transmission lever (4) back. This lever then pushes the leading brake shoe (2) against the stop (6). The caravan/trailer is then braked.

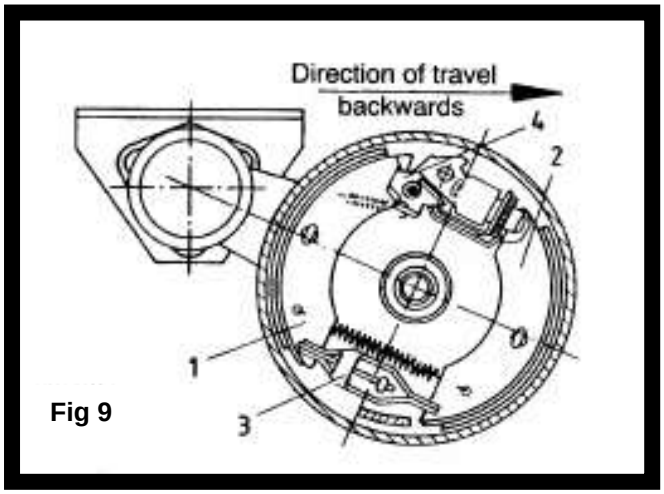
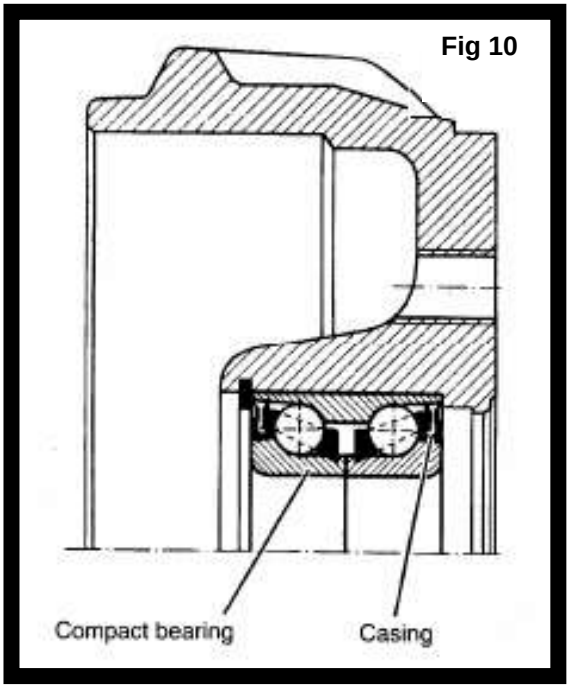


Fig 9

It must be noted that when the handbrake is applied, the vehicle may roll approximately 25cm (10") backwards before the parking brake force is used to its fullest extent.



4.3 Wheel bearing

The wheel bearing is a double-row inclined ball bearing. It has the following advantages over normal bearings:

- No adjustment necessary.
- Easy to maintain (lubricated for life and sealed).
- Protected against dirt ingress (sealed unit).
- Less sensitive to seizure than a taper roller bearing
- All trailers from 2007 onwards are fitted with waterproof bearings.

The bearing must not be pressed out of the drum as this may damage the bearing and brake drum.

REMEMBER: YOU are responsible for ensuring loads are properly secured and the trailer is in a safe and serviceable condition.

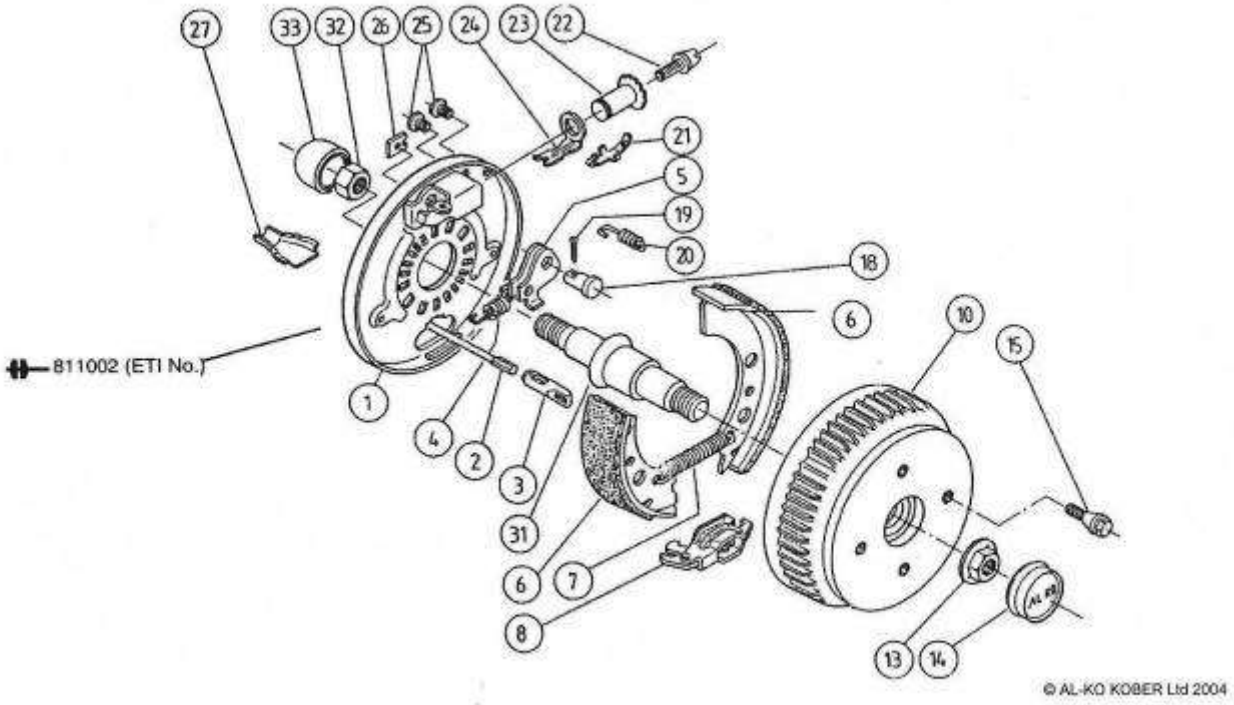
Regular checks will ensure you remain on top of trailer maintenance and DO NOT forget to check the chassis for wear and stress.

Look at all weld points and stress areas to ensure proper frame integrity.

The comments here are intended to be a general guide and cannot be relied upon as an exhaustive list to cover every eventuality. If in doubt about any aspect of trailing or your trailer please call the office for further advice.

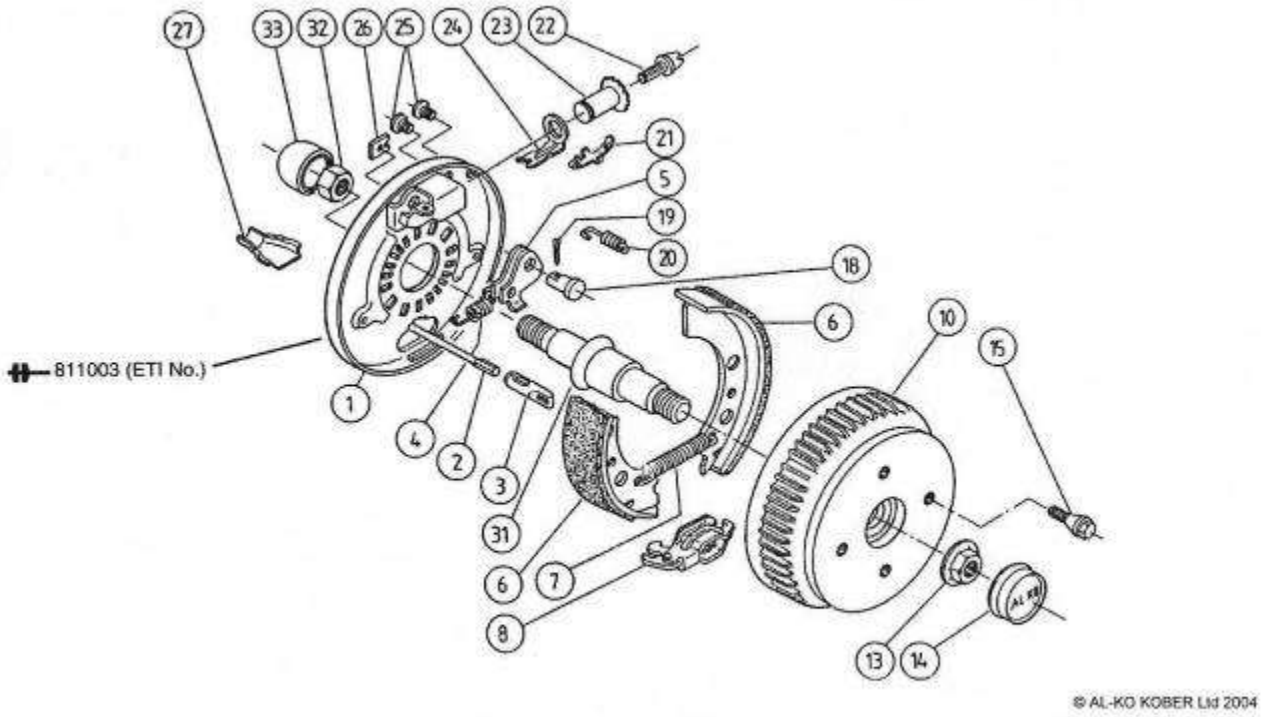
4.4 AL-KO hubs

4.4.1 AL-KO 2051 Euro Hub



Item	Description	AL-KO Item No.	Item	Description	AL-KO Item No.
1	Backplate Welded LH up to 650kg	571376		Up to 750 kg 139.7 x 4/M12 x 1.5	578826
	Backplate Welded RH up to 750kg	586406		Up to 750 kg 140 x 5/M14 x 1.5	578825
	Backplate Welded RH up to 650kg	571377		Up to 750 kg 112 x 5/M12 x 1.5	586450
	Backplate Welded LH up to 750kg	586407			
			13	Flange Nut	581200*
2	Detachable Bowden Cable		14	Dust Cap	581197*
	Outer Cable Length:		15	Wheel bolt:	
				Conical M12 x 1.5	2081670018
	350mm	299707		Spherical M12 x 1.5	2081670020
	530mm	299708		Spherical M14 x 1.5	2081670002
	770mm	299709			
	890mm	299710	18	Bearing Bolt	368651
	1020mm	299711	19	Split Pin 4 x 20 – DIN 94	700192
	1130mm	299712	20	Shoe Retaining Spring	2088800003*
	1320mm	299713			
	1430mm	299714	21		
	1620mm	299715	22		
	1790mm	299716	23	Adjuster Assembly Complete	387706
			24		
3	Cable Eye	373188			
	Pressed Version	604262	25	Plastic Plug	373245
			26	Cover Plate	2382610002*
4	Reverse Lever Spring	2187370003	27	Bowden Cable Shell	371387
5	Reverse Lever LH	571386			
	Reverse Lever RH	571387	31	Stub Axle	
6	Brake Shoe	ECS-BRCMP02		Stabilform up to 900kg	583563
7	Pull-off Spring	2182000007		Stabilform 900kg – 1300kg	581043
8	Expanding Clutch	571510		Forged S/A 900kg – 1500kg	583664
10	Brake Drum Complete:				
	98 x4/M12 x 1.5 Up to 650kg	573191	32	Locking Nut	702881
	100 x 4/M12 x 1.5 Up to 650kg	573192	33	Cover	581196
	101.6 x 4/M12 x 1.5 Up to 650kg	610949		* Included with ECS-BRCMP02 (item 6)	
	112 x 5/M12 x 1.5 Up to 650kg	573193			

4.4.2 AL-KO 2361 Euro Hub

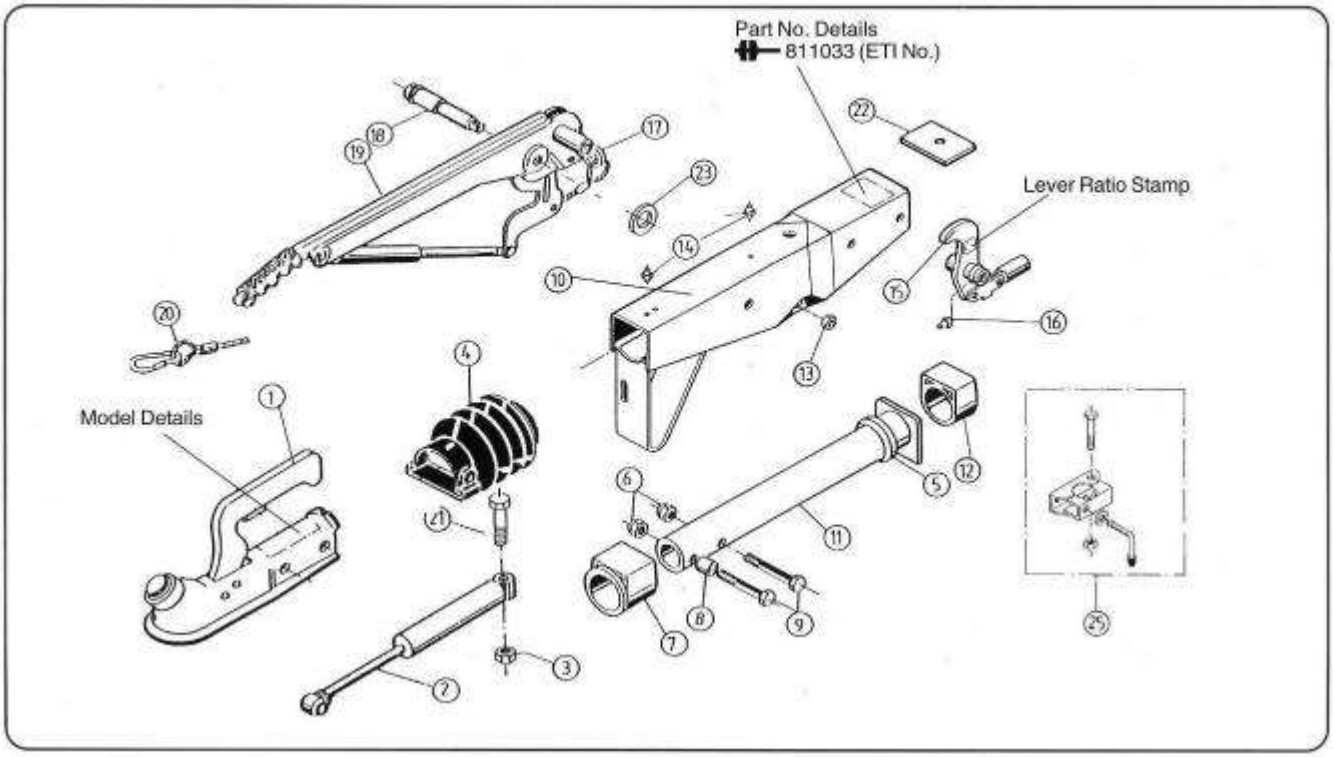


Item	Description	AL-KO Item No.	Item	Description	AL-KO Item No.
1	Backplate Welded LH	572372	13	Flange Nut	582506*
	Backplate Welded RH	572373	14	Dust Cap	582505*
			15	Wheel bolt:	
				Conical M12 x 1.5	2081670018
	Detachable Bowden Cable			R12 Spherical M12 x 1.5	2081670020
2	Outer Cable Length:			R14 Spherical M14 x 1.5	2081670002
	350mm	247281		Wheel Nut:	
	530mm	247282		Spherical M16 x 2	F14631002
	770mm	247283		Conical M16 x 2	602439
	890mm	247284			
	1020mm	247285	18	Bearing Bolt	368651
	1130mm	247286	19	Split Pin 4 x 20 – DIN 94	700192
	1320mm	247287	20	Shoe Retaining Spring	2088800003*
	1430mm	247288			
	1620mm	247289	21		
	1790mm	247290	22		
			23	Adjuster Assembly Complete	387706
3	Cable Eye		24		
	Cast Version	371388			
	Pressed Version	604262			
4	Reverse Lever Spring	2187370003	25	Plastic Plug	373245
5	Reverse Lever LH	571386	26	Cover Plate	2382610002*
	Reverse Lever RH	571387	27	Bowden Cable Shell	371387
6	Brake Shoe (Pair)	ECS-BRCMP06			
7	Pull-off Spring	2082000007	31	Stub Axle	582541
8	Expanding Clutch	571510	32	Locking Nut	703112
10	Brake Drum Complete:		33	Cover	582542
	112 x 5/M12 x 1.5	573194			
	139.7 x 4/M12 x 1.5	610529		* Included with ECS-BRCMP06 (item 6)	
	140 x 5/M14 x 1.5	578834			
	165.1 x 5/M16 studs	578835			

4.5 Coupling heads

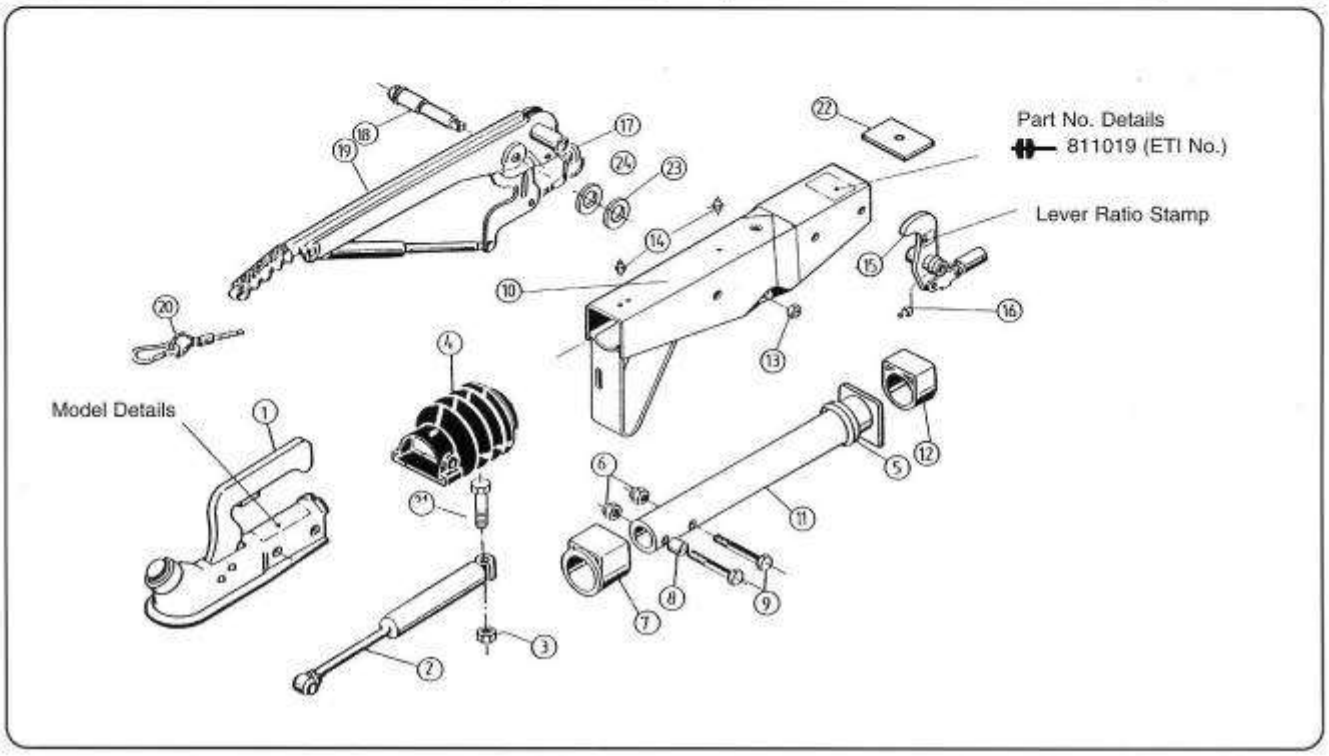
4.5.1 AL-KO 161S to suit 70mm box

Item	Description	Part No.	Item	Description	Part No.
1	Coupling Head (50 mm)	Quote Model Details	17	Burst Ring	2045470102
			18	Handbrake Pivot Bolt	581145
2	Damper	370556	19	Handbrake Assy (Includes Burst Ring	
3	Hexagon Nut M12 DIN 985 - 10 A3C	702750		Item 17 & Breakaway Cable Item 20)	220096
4	Gaiter	366356	20	Breakaway Cable	209157
5	Bump Rubber	371372		NOTE: For Overruns Produced from Jan '94	
6	Hexagon Nut M12 DIN 985-10 A3C	702750		Onwards Order Assembly Part No.	380843
7	Front Bearing Bush (Not Reamed)	353943		(Includes Items 17 & 20)	
8	Spacer	370559	21	Hexagon Bolt M12 x 90 DIN 931	700312
9	Hexagon Bolt M12 x 70 DIN 931	700061	22	Reinforcement Plate	581699
10	Housing Complete with Bearings	Quote Part No. & ETI No.	23	Washer 19.2 x 34 x 3 DIN 125	370693
			24	Jockey Wheel Clamp Kit Complete :-	
11	Overrun Shaft	571873		Pressed Steel Clamp (Illustrated)	293020
12	Rear Bearing Bush (Not Reamed)	353942		Cast Clamp (Not Illustrated)	285750
13	Hexagon Nut M12 DIN 985-10 A3C	702750			
14	Grease Nipple AM 8 x 1	2171710001			
15	Overrun Lever :-				
	Lever Stamped 27	380265			
	Lever Stamped 25	380692			
16	Grease Nipple AM 6 (Included in Item 15)	700203			



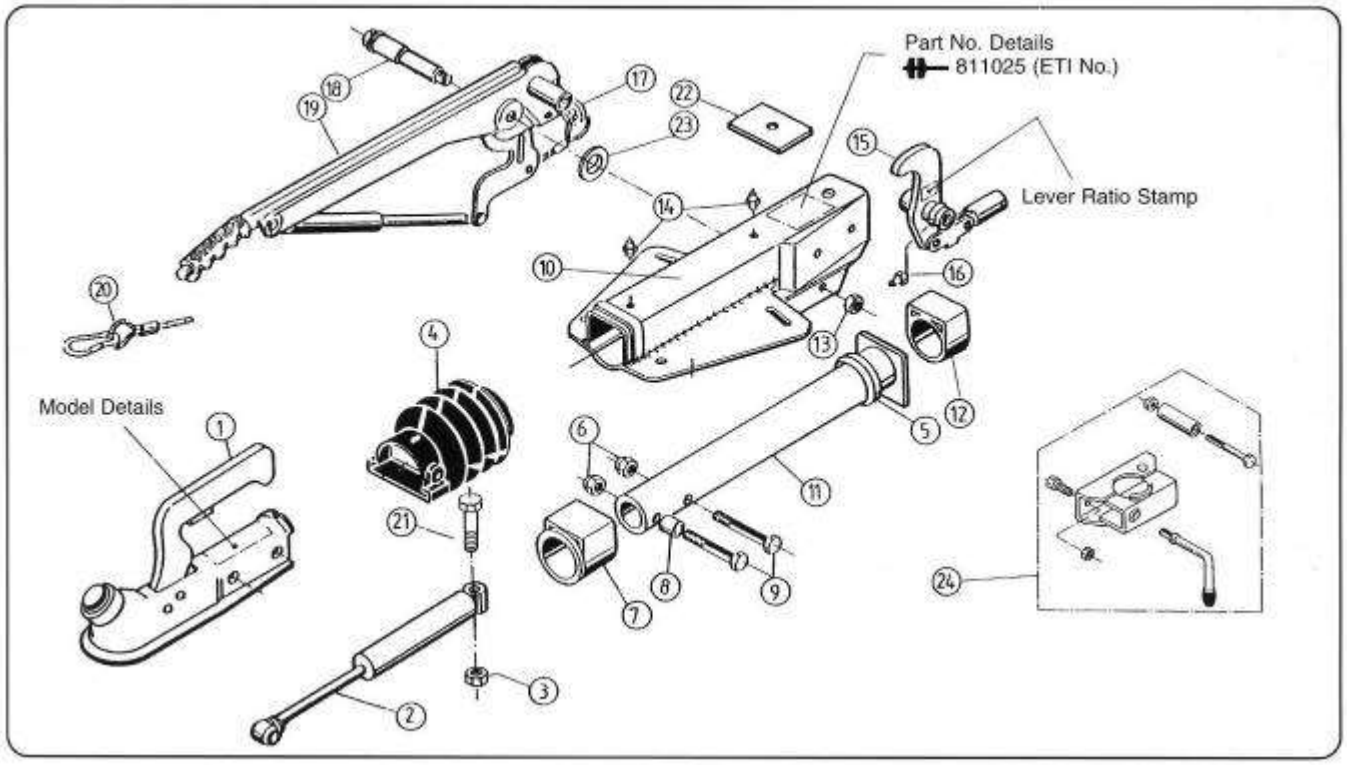
4.5.2 AL-KO 251S to suit 80mm box

Item	Description	Part No.	Item	Description	Part No.
1	Coupling Head (50mm)	Quote Model Details	16	Grease Nipple AM 6 (Included in Item 15)	700203
2	Damper	370589	17	Burst Ring	2045470102
3	Hexagon Nut M12 DIN 985 - 10 A3C	702750	18	Handbrake Pivot Bolt	2077710503
4	Gaiter	366356	19	Handbrake Assy (Includes Burst Ring Item 17 & Breakaway Cable Item 20)	219010
5	Bump Rubber	371372	20	Breakaway Cable	209157
6	Hexagon Nut M12 DIN 985 - 10 A3C	702750		NOTE: For Overruns Produced from Jan '94 Onwards Order Assembly Part No. (Includes Items 17 & 20)	380843
7	Front Bearing Bush (Not Reamed)	353943	21	Hexagon Bolt M12 x 105 DIN 931	700313
8	Spacer	357242	22	Reinforcement Plate	581699
9	Hexagon Bolt M12 x 75 DIN 931	701249	23	Washer 17.2 x 30 x 3 DIN 125	700625
10	Housing Complete with Bearings	Quote Part No. & ETI No.	24	Washer 17 x 27 x 2	700273
11	Overrun Shaft	571874			
12	Rear Bearing Bush (Not Reamed)	353942			
13	Hexagon Nut M12 DIN 985 - 10 A3C	702750			
14	Grease Nipple AM 9 x 1	375900			
15	Overrun Lever :-				
	Lever Stamped 27	380265			
	Lever Stamped 30	380285			
	Lever Stamped 33.5	380527			



4.5.3 AL-KO 251S delta

Item	Description	Part No.	Item	Description	Part No.
1	Coupling Head (50mm)	Quote Model Details	15	Overrun Lever:-	
				Lever Stamped 27	380265
2	Damper	370589		Lever Stamped 30	380285
3	Hexagon Nut M12 DIN 985 - 10 A3C	702750	16	Grease Nipple AM 6	700203
4	Gaiter	366356		(Included in Item 15)	
5	Bump Rubber	371372	17	Burst Ring	2045470102
6	Hexagon Nut M12 DIN 985 - 10 A3C	702750	18	Handbrake Pivot Bolt	581145
7	Front Bearing Bush (Not Reamed)	353943	19	Handbrake Assy (Includes Burst Ring	
8	Spacer	357242		Item 17 & Breakaway Cable Item 20)	220099
9	Hexagon Bolt M12 x 80 DIN 931	700945	20	Breakaway Cable	209157
10	Housing Complete with Bearings	Quote Part No. & ETI No.		NOTE: For Overruns Produced from Jan '94 Onwards Order Assembly Part No. (Includes Items 17 & 20)	380843
11	Overrun Shaft	571874			
12	Rear Bearing Bush (Not Reamed)	353942	21	Hexagon Bolt M12 x 90 DIN 931	700312
13	Hexagon Nut M12 DIN 985 - 10 A3C	702750	22	Reinforcement Plate	581699
14	Grease Nipple AM 8 x 1	2171710001	23	Washer 19.2 x 34 x 3 DIN 125	370693
			24	Jockey Wheel Clamp Kit Complete :-	
				Pressed Steel Clamp (Illustrated)	293020
				Cast Clamp (Not Illustrated)	285750



4.5.4 Info for all AL-KO couplings

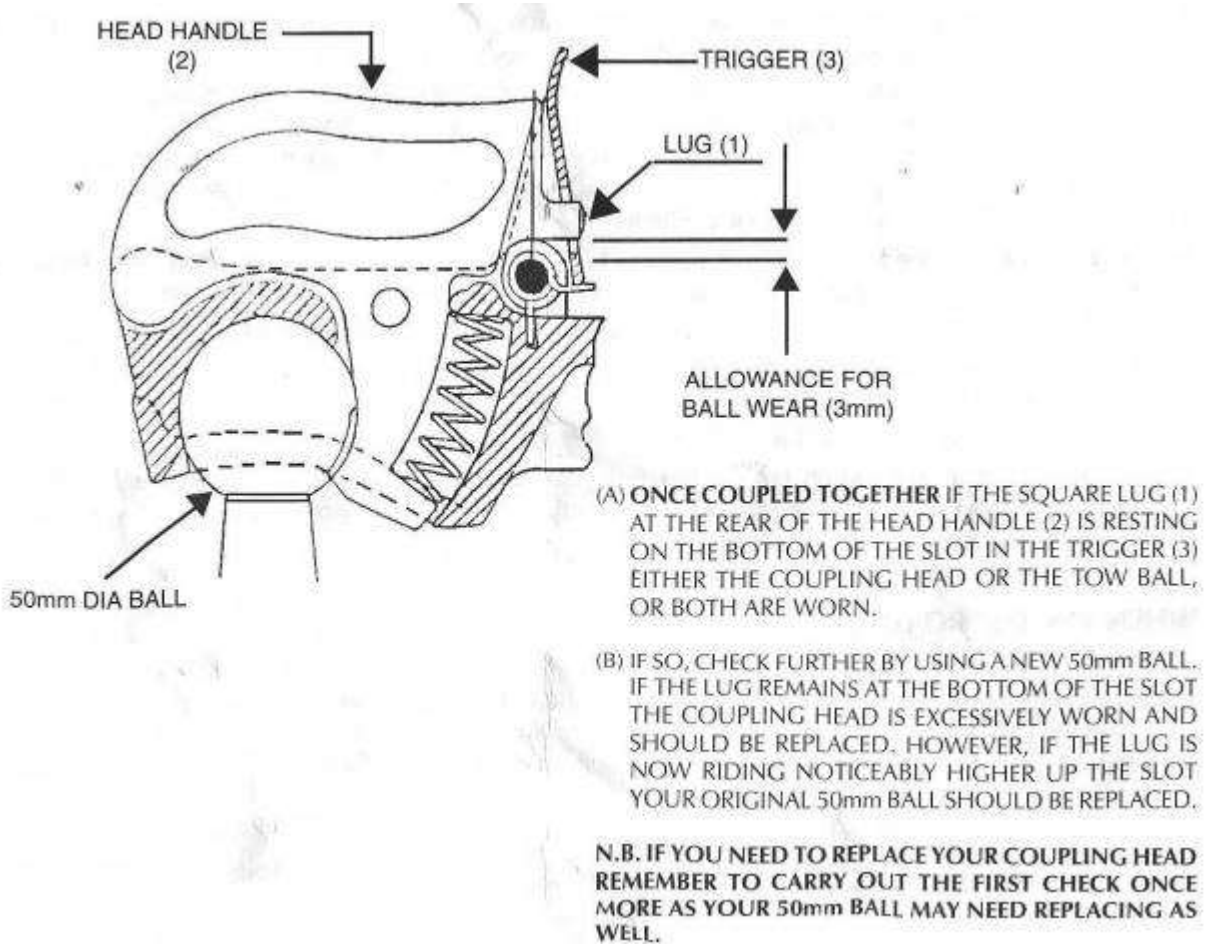
The coupling head is designed to engage automatically with the international 50mm towing ball recommended by British Standards Institution, National Caravan Council, Society of Motor Manufacturers and Traders and ISO.

AL-KO coupling heads incorporate a correct attachment indicator.

Coupling heads should never be drilled.

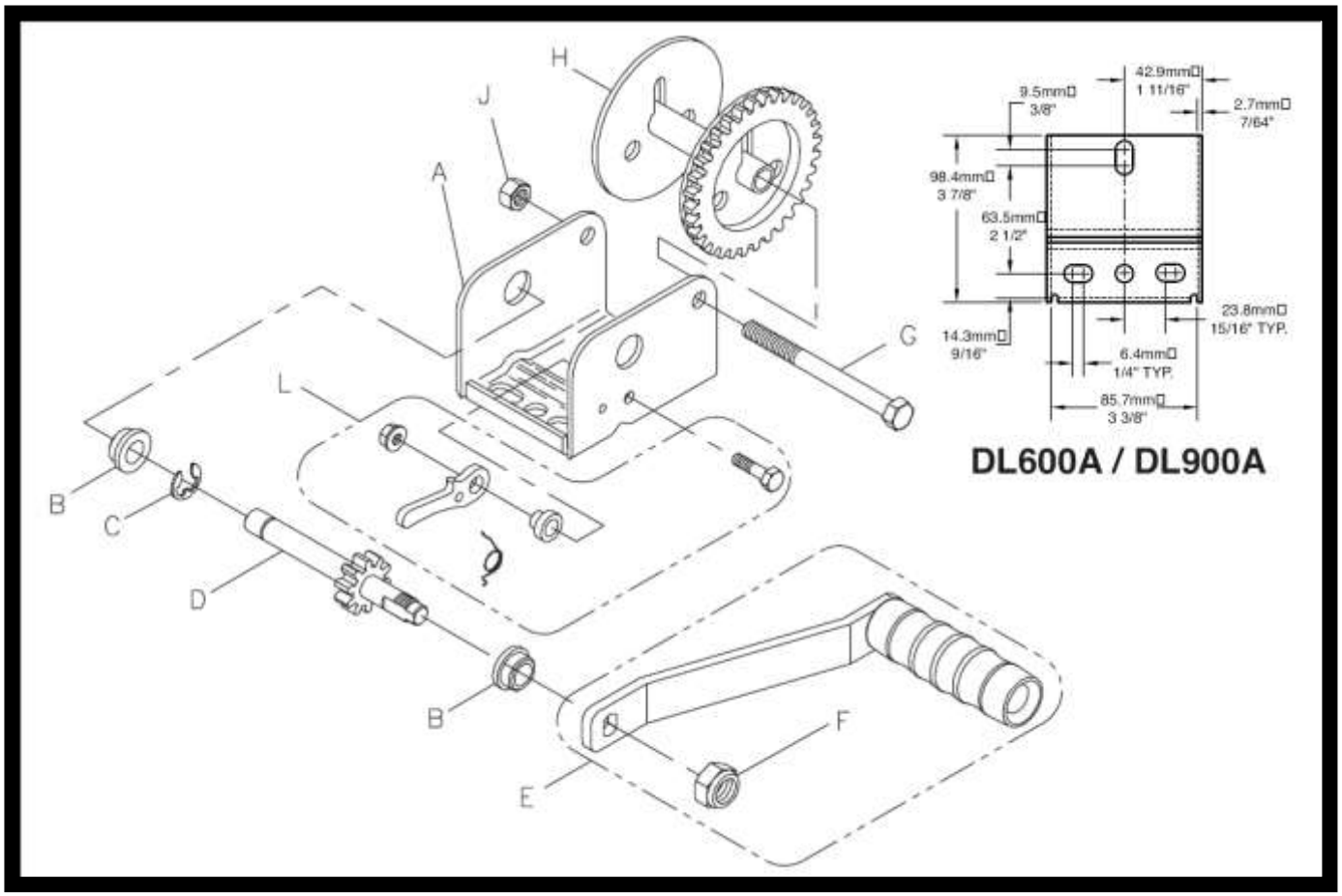
AL-KO produce several types of coupling head each having provision for an anti-theft device as an optional extra which consists of a key operated brass insert. The anti-theft device comes complete with two keys. Securing the coupling head inhibits movement of the locking catch, making it possible to lock the coupling whether or not the towing ball is connected.

4.5.4 Bradley coupling head

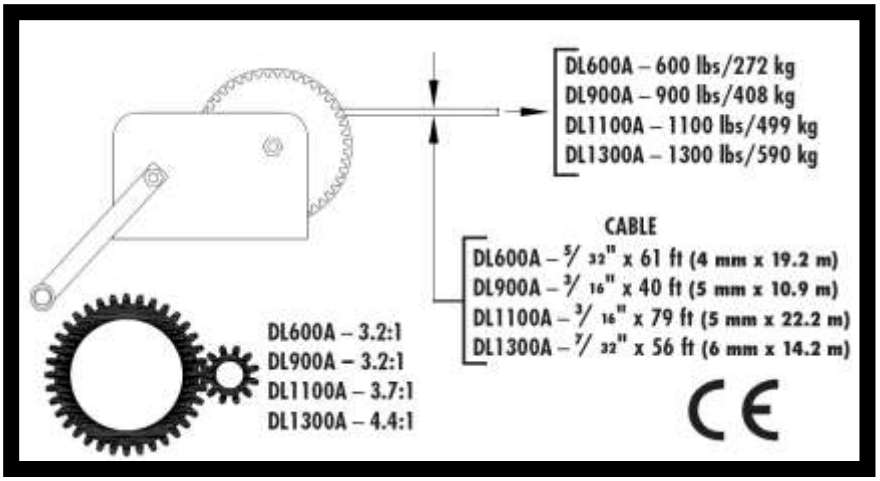


4.6 Winches

4.6.1 900lb winch



Ref	Description
A	Base - DL600A
A	Base - DL900A
B	Bushing
C	E-Ring
D	Drive Shaft - DL600A
D	Drive Shaft (DL600A Threaded Both Ends), Opt.
D	Drive Shaft - DL900A
E	Handle 7" w/Nut
E	Handle 6" w/Nut
E	Handle 5"
F	Nut
G	Reel Shaft
H	Reel (5/8" Hub) - DL600A
H	Reel (1" Hub), Opt. - DL 600A
H	Reel (5/8" Hub) - DL900A
H	Reel (1" Hub), Opt. - DL900A
J	Locknut
L	Ratchet Kit



Some winch spares may need to be ordered in specially. Please call for details.

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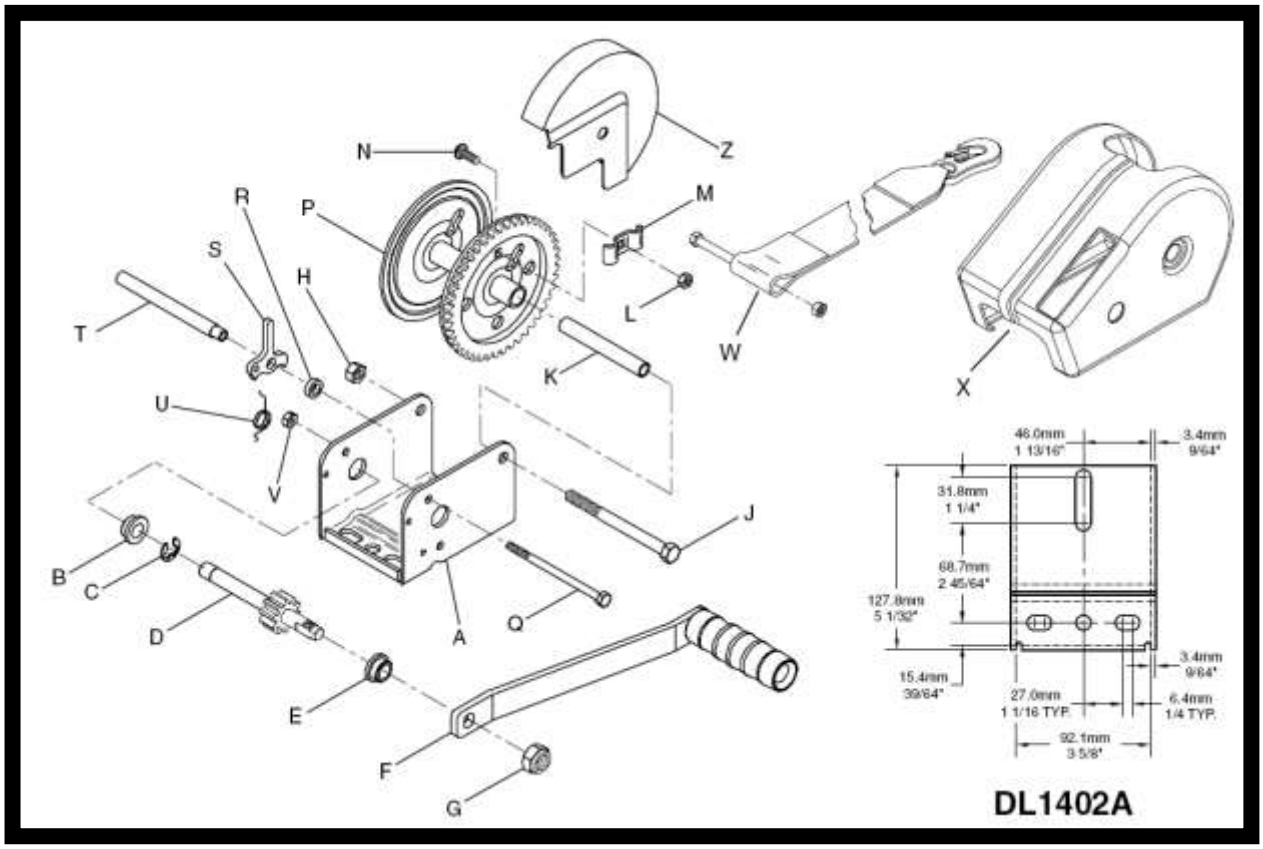
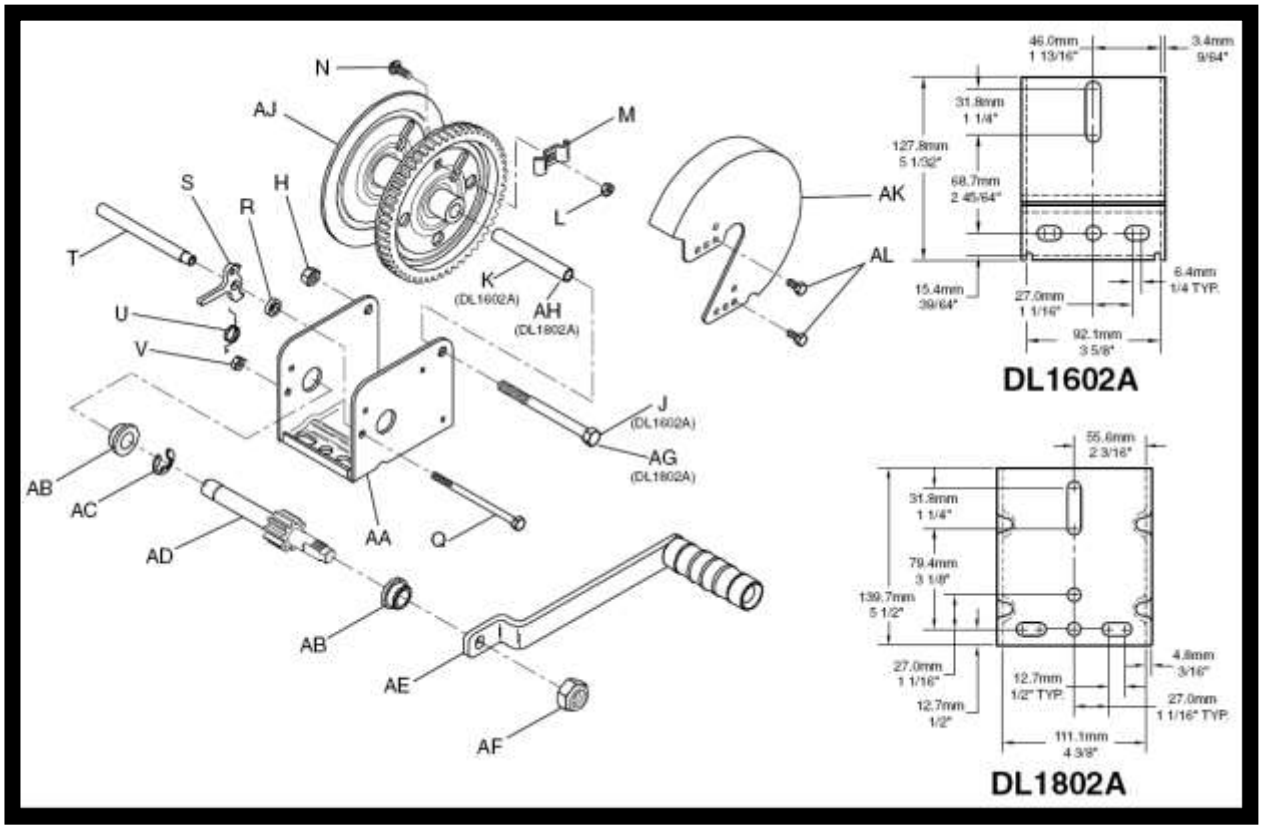
4.6.2 1400lb winch & 1800lb single speed winch





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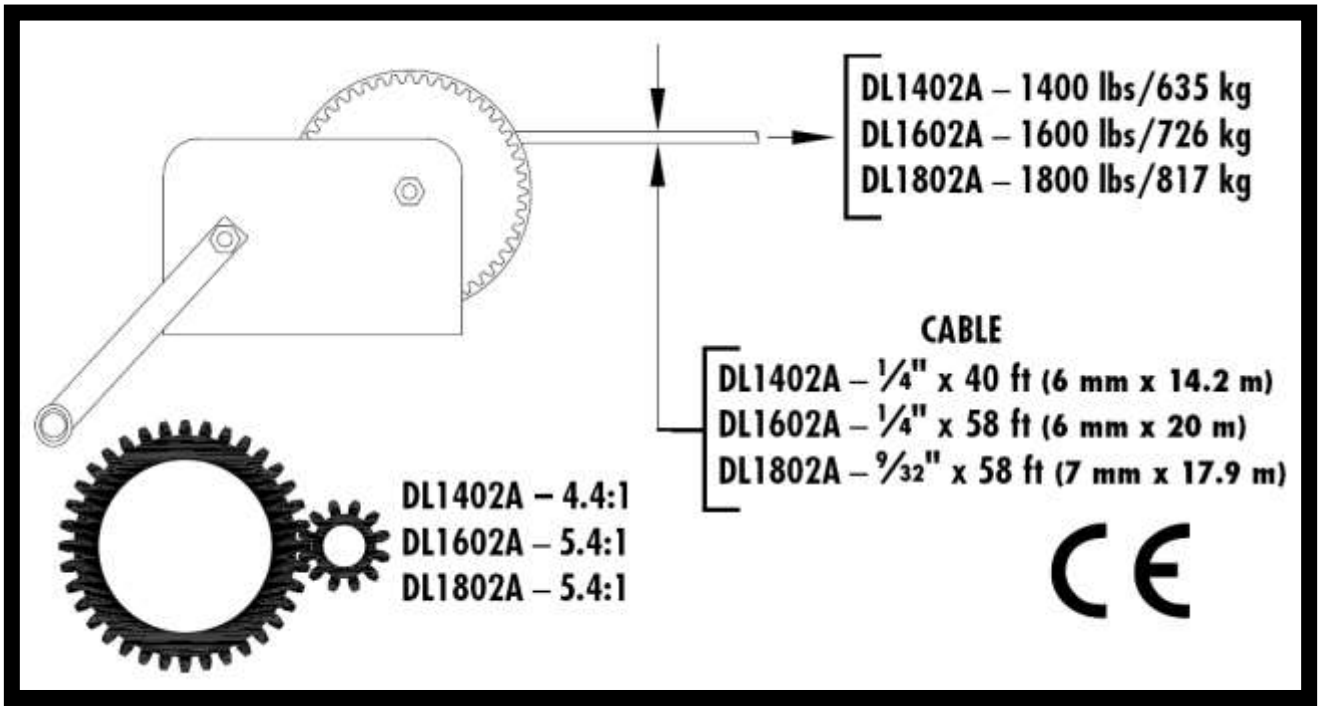
GREAT BRITISH BOAT TRAILERS

Ref	Description	
A	Base - DL1402A	
B	Bushing	
C	E-Ring	
D	Drive Shaft	
E	Bushing	
F	Handle	
G	Nut	
H	Locknut	
J	Reel Shaft - DL1402A & DL1602A	
K	Spacer - DL1402A & DL1602A	
L	Nut	Rope Clamp Kit
M	Rope Clamp	
N	Carriage Bolt	
P	Reel (7/8" Hub)	
P	Reel (1-7/8" Hub), Opt.	
Q	Bolt	Ratchet Kit DL1402A
R	Spacer	
S	Ratchet Lever	Ratchet Kit DL1602A
T	Ratchet Sleeve	
U	Spring	Ratchet Kit DL1802A
V	Locknut	

Ref	Description
W	Strap, Opt. - 20'
X	Hand Winch Cover Kit, Opt.
Z	Gear Cover, Opt.
AA	Base - DL1602A
AA	Base - DL1802A
AB	Bushing
AC	E-Ring
AD	Drive Shaft - DL1602A
AD	Drive Shaft - DL1802A
AE	Handle
AF	Nut
AG	Reel Shaft - DL1802A
AH	Spacer - DL1802A
AJ	Reel (1-1/8" Hub) - DL1602A
AJ	Reel (2-1/2" Hub), Opt. - DL1602A
AJ	Reel (1-1/8" Hub) - DL1802A
AJ	Reel (2-1/2" Hub), Opt. - DL1802A
AK	Gear Cover, Opt.
AL	Screw, Opt.



Some winch spares may need to be ordered in specially. Please call for details.

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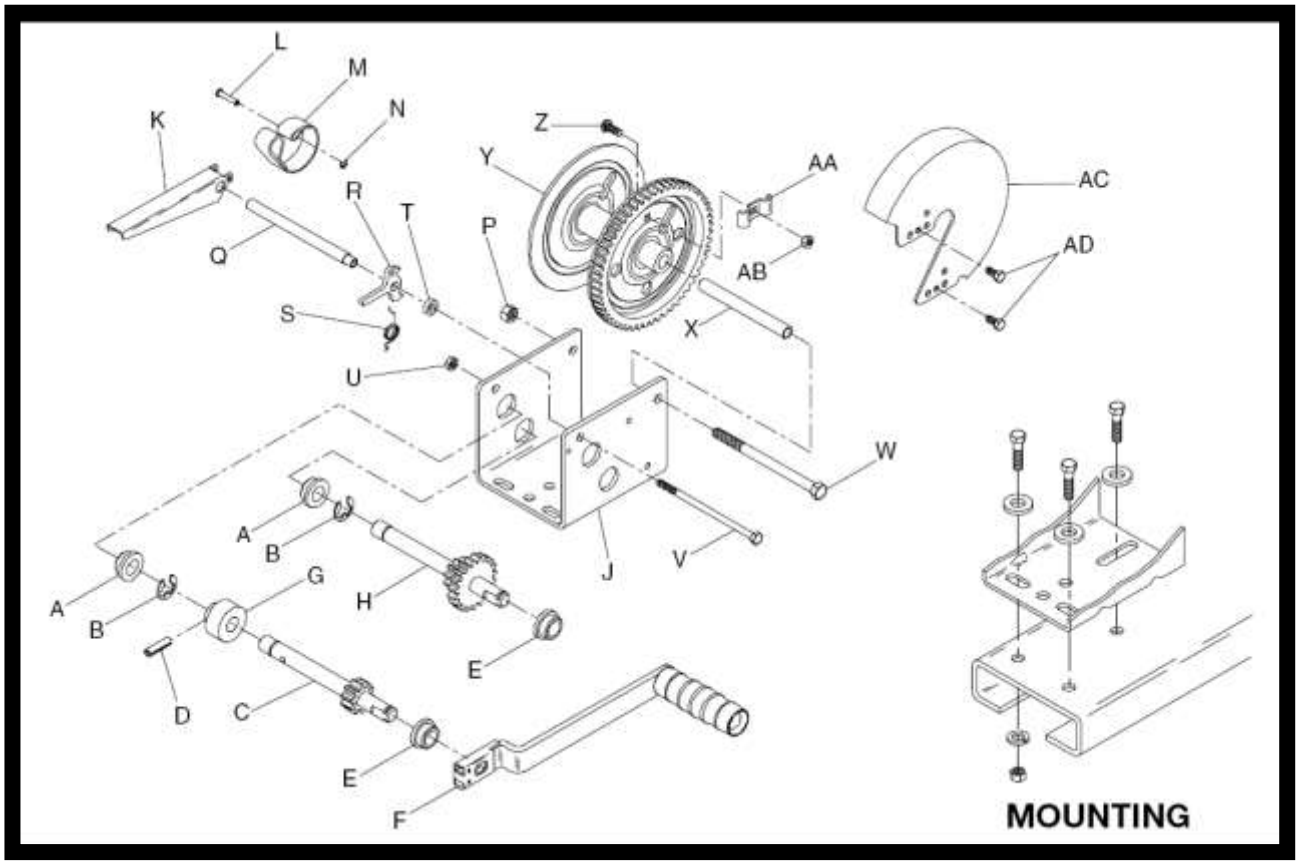
4.6.3 1800lb 2 speed winch & 2500lb 2 speed winch



Ref	Description
A	Bushing (2)
B	E-Ring (2)
C	Drive Shaft - DL1800A, 2000A, 2500A
C	Drive Shaft - DL3200A
C	Dr. Shaft w/Hole - DL1800A thru 2500A
C	Dr. Shaft w/Hole - DL3200A
D	Pin (Optional)
E	Bushing (2)
F	Handle
G	Drum (Optional)
H	Drive Shaft - DL1800A
H	Drive Shaft - DL2000A
H	Drive Shaft - DL2500A
H	Drive Shaft - DL3200A
H	Drive Shaft - DL2500A, Spec. Opt.
J	Base - DL1800A
J	Base - DL2000A
J	Base - DL2500A
J	Base - DL3200A
K	Brake Lever (Optional)
L	Brake Pin (Optional)
M	Brake Band (Optional)
N	E-Ring (Optional)
P	Locknut

Ref	Description	
Q	Sleeve	Ratchet Kit
R	Ratchet	
S	Spring	
T	Spacer	
U	Locknut	
V	Bolt	
W	Reel Shaft - DL1800A, 2000A	
W	Reel Shaft - DL2500A	
W	Reel Shaft - DL3200A	
X	Spacer (Reel)	
Y	Reel (1-1/8" Hub) - DL1800A, 2000A	
Y	Reel (2-1/2" Hub) - DL1800A, 2000A, Opt.	
Y	Reel (1-1/8" Hub) - DL2500A	
Y	Reel (2-1/2" Hub) - DL2500A, Opt.	
Y	Reel (1-1/8" Hub) - DL3200A	
Y	Reel (2-1/2" Hub) - DL3200A, Opt.	
Z	Carriage Bolt	Rope Clamp Kit
AA	Rope Clamp	
AB	Nut	
AC	Gear Cover - DL1800A, 2000A, Opt.	
AC	Gear Cover - DL2500A, Opt.	
AD	Screw (Optional) (2)	

Some winch spares may need to be ordered in specially. Please call for details.

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4.6.4 Information for all winches

IMPORTANT SAFETY INFORMATION

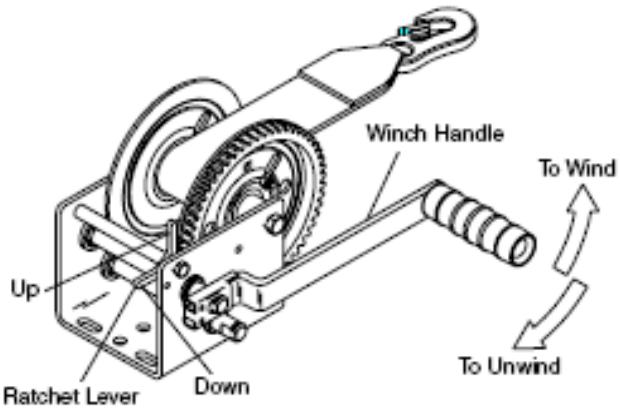
- This winch is built for multi-purpose hauling and pulling operations. It is not recommended for lifting applications. For lifting, use a self-locking winch. DL winches are not to be used as hoists for lifting, supporting or transporting people, or for loads over areas where people could be present.
- Respect this winch. High forces are created when using a winch, creating potential safety hazards. It should be operated and maintained in accordance with instructions. Never allow children or anyone who is not familiar with the operation of the winch to use it.
- Maintain a firm grip on the winch handle at all times, and never release the handle when ratchet lever is in unlocked position with a load on the winch. Otherwise, handle will spin violently, which could cause personal injury.
- Check for proper ratchet operation on each use of the winch. Do not use if damaged. Seek immediate repairs.
- Never use the winch handle as a convenient handle for pulling or maneuvering the entire trailer or other equipment. Never pull on the winch handle against a locked ratchet.
- Never exceed rated capacity. Excess load may cause premature failure and could result in serious personal injury. This winch is rated with three layers of line on the hub. Using more layers of line or a large hub increases the load on the winch.
- Never apply load on winch with cable or rope fully extended. Keep at least three full turns of cable or rope on the reel.
- Secure load properly. When winching operation is complete, do not depend on winch to support load.
- Operate with hand power only. This winch should not be operated with a motor of any kind. If the winch cannot be cranked easily with one hand, it is probably over-loaded.

WINCH MOUNTING AND CABLE ATTACHMENT – For maximum strength and safety, (and compliance with SAE Standard J1853) this winch should be mounted with three ⅜" or M10 bolts, washers, and lock washers. (Use grade 5 or 8 for DL2500A, 2500AB, DL3200A & 3200AB). See parts drawing.

Select a winch line with breaking strength at least 1-1/2 times the winch rating and a hook 1-1/2 times stronger than the line. If steel cable is selected, the optional reel with large hub may extend cable life. (The above combination meets SAE Standard J1853 for boat trailer winches).

Attach cable or rope by either method described in sketch. If nylon strap is used, it should have a loop sewn in one end and be attached using a ⅜" x 3¼" long bolt and locknut. Use a locknut, not a nut and lockwasher. Insert bolt through slots in both reel sideplates so that nut is on gear side. Tighten only until snug with bolt in bottom of slot next to reel hub.

OPERATING INSTRUCTIONS – Attach winch handle securely to primary drive shaft (upper or low speed shaft). Make sure that handle clip engages with groove in drive shaft. Wind line on winch reel by turning winch handle in counterclockwise direction with ratchet lever in "down" position. The ratchet should produce a loud, sharp, clicking noise. Make sure that ratchet lever is in "down" position and holding load before winch handle is released. To unwind or reel out line, securely grip winch handle and apply force in counterclockwise direction so that ratchet lever can easily be moved to "up" position. Carefully turn handle in clockwise direction. Do not lose control. If handle is attached to intermediate (lower or high speed) shaft, operate as described above, reversing clockwise and counterclockwise. The winch can be converted to wind line on to the underside of the reel. To do this, carefully examine ratchet assembly and remove it from winch.



Do not lose small parts. Turn the lever over and reassemble. Do not over tighten bolt. Check operation to insure the ratchet lever rotates fully without binding.

WINCH MAINTENANCE – This winch has been fully lubricated at the factory; but, for continued smooth performance and increased life, occasional greasing of gears and reel shaft and an occasional drop of oil on drive shaft bearings are recommended. Keep winch in good working order. Damaged or severely-worn parts create unnecessary dangers and could result in personal injury or property damage.

NOT FOR THE MOVEMENT OF HUMAN BEINGS

5. Servicing and Repair

5.1 Brakes

5.1.1 Adjusting the wheel brakes

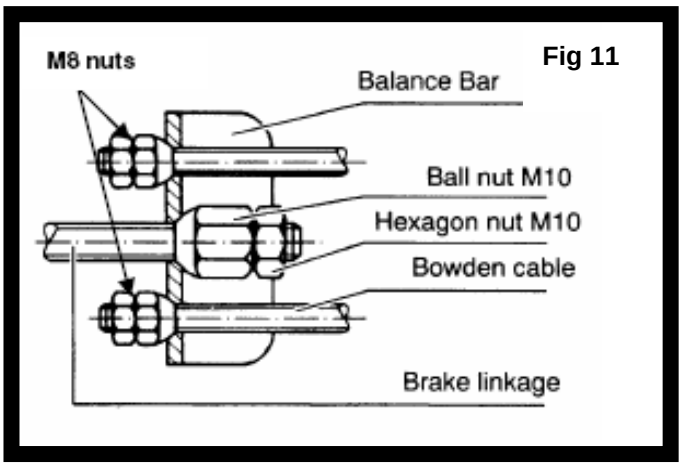


Fig 11

Before adjusting the wheel brakes <u>always</u> rotate the wheel(s) in the forward direction.

- Lift the caravan/trailer using a lifting platform.
- Ensure the coupling head and overrun draw shaft are fully extended.
- Release the handbrake completely.
- Completely release the brake linkage on the balance bar (ball nut and hexagon nut, Fig 11)

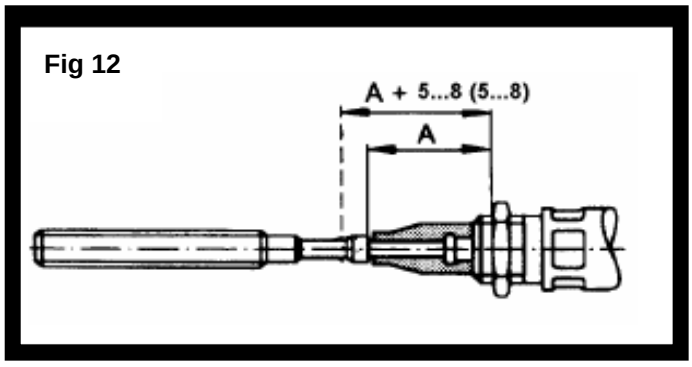


Fig 12

- Check the free play in the wheel brake.

The free play should be as uniform as possible for 2 and 4 wheel brakes respectively.

Nominal: 4-6mm on single axle
6-8mm on tandem axles

Measured on the Bowden inner cable where attached to abutment (bracket) on axle tube (on tandem axles the abutment is always on the forward axle).

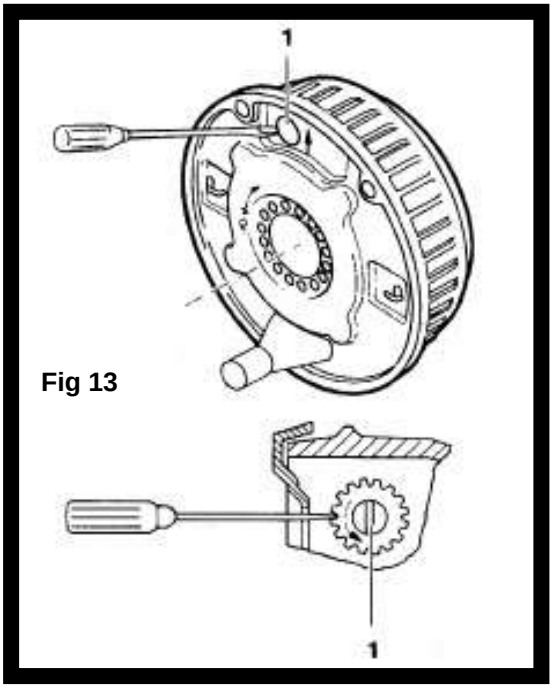


Fig 13

- Only ever set or adjust the wheel brake by means of the adjuster screw (1). Adjust in the direction of the arrow and release against the direction of the arrow (Fig 13).

- Reconnect the brake linkage to the balance bar and apply the handbrake hard several times to allow the braking system to settle. Apply preload by tightening the ball nuts (i.e. the inner Bowden cables are easily pulled out, 1-2mm)

- Use a locknut to locate the ball nuts to the hexagon nuts. Lubricate the contact surfaces of the ball nuts (Fig 11).

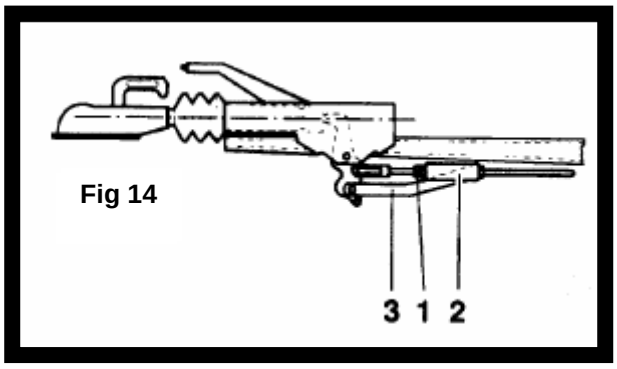


Fig 14

- On the spring cylinder version (2), adjust the locking nuts M10 (1) to the spring cylinder until there is approximately 1mm free play between the tension bar (3) and the self-locking hexagon nuts M10 (Fig 14). N.B on some chassis the locking nuts (1) are replaced with a single Nylock (self-locking) nut.

Check the setting

- Apply the handbrake lever up to the first or second tooth and when the wheels are turned in the direction of travel, check whether there is equal braking resistance. On the gas strut version; hold the handbrake lever on the first tooth manually.

When adjusting the wheel brake, only turn the wheels in the forward direction so that reverse mode is not actuated.

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5.1.2 Servicing the wheel brakes

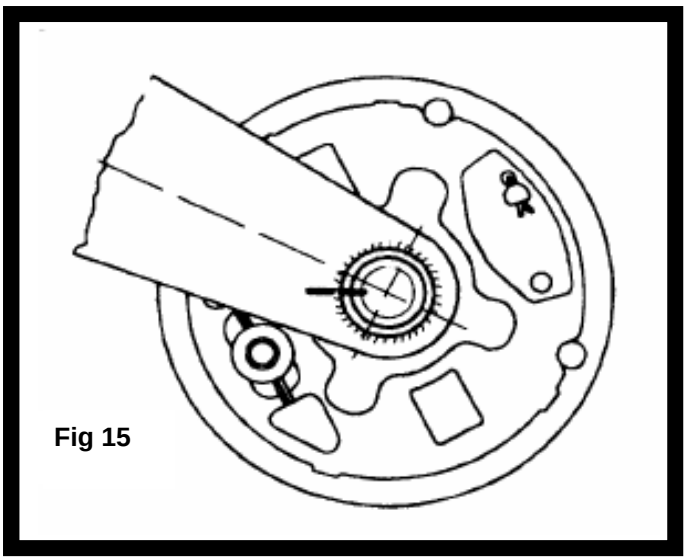


Fig 15

- Remove the wheel rim and tyre.
- Mark the position of the plastic cap on the rocker arm with a felt tip pen so that any movement can be detected (Fig 15).

If the stub axle or back nut are moved in any way this will alter the toe-in and camber (resulting in excessive and unequal tyre wear). Should such movement take place the axle will have to be removed and returned to AL-KO to be re-aligned and or repaired.

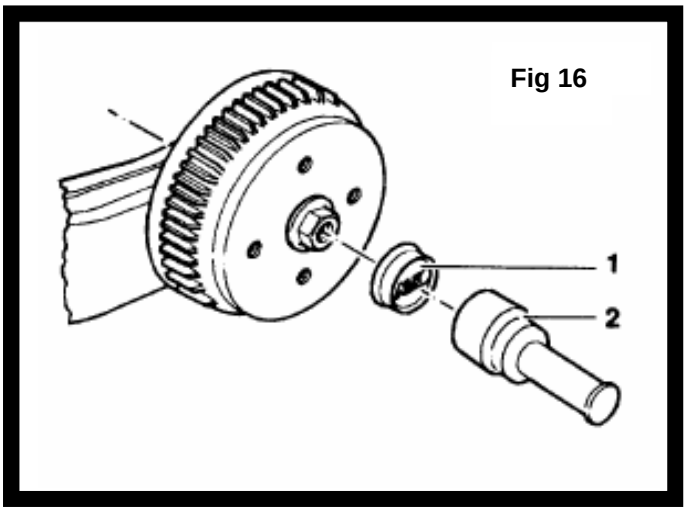


Fig 16

- Knock cap (1) with a hammer and a blunt chisel from below. When reinstalling, use a new cap (1) and locate using a former (2) (Fig 16).
- Unscrew the flanged nut. When refitting, use a new self-locking flanged nut.
- Before fitting a new flanged nut, a small amount of the special mineral grease (AL-KO Part No. 800052) must be applied to the stub axle thread.

Note the tightening torque. The wheel bearing free play is adjustable via the tightening torque of the flanged nut (Section 1.6, Torque Settings).

- Replace worn brake drums showing grooves or significant corrosion.

Brake drums must not be re-skimmed.

- Completely release the handbrake. Loosen the linkages if necessary.

- Turn the brake drum slightly by hand and remove. If necessary, hit the cooling fins with a rubber mallet.

REMEMBER: YOU are responsible for ensuring loads are properly secured and the trailer is in a safe and serviceable condition.

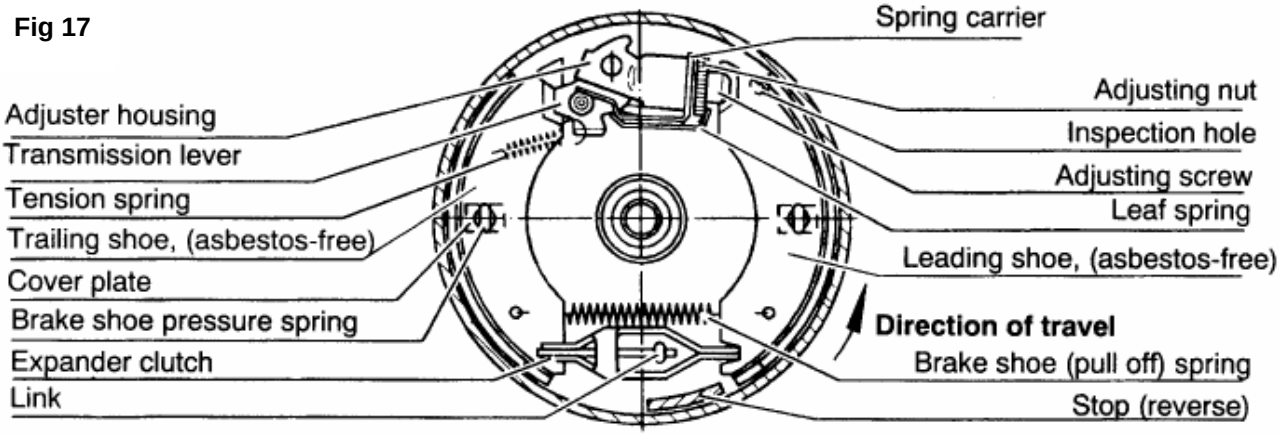
Regular checks will ensure you remain on top of trailer maintenance and DO NOT forget to check the chassis for wear and stress.

Look at all weld points and stress areas to ensure proper frame integrity.

The comments here are intended to be a general guide and cannot be relied upon as an exhaustive list to cover every eventuality. If in doubt about any aspect of trailing or your trailer please call the office for further advice.

5.1.3 Visual checks

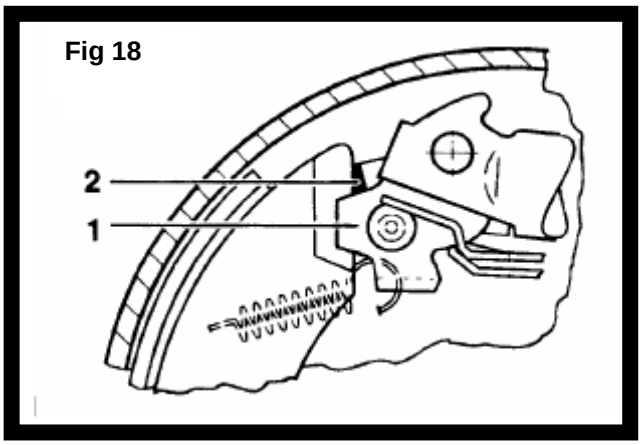
Fig 17



- Check the condition of the brake shoes

The wear on the shoes is greatest where the inspection hole opening is located on the brake back plate. In the case of the simplex brake, the leading shoe (overrun shoe in the direction in which the drum turns) is pressed against the brake drum. The secondary shoe (trailing shoe) is pressed away from the drum against the direction in which the drum turns. This is why the two brake shoes have different degrees of wear.

Fig 18



- The transmission lever (1) must be abut on the adjusting housing (2) stop.

5.1.4 Function tests

- Check that the expander pivot, adjusting nut and transmission lever are moving smoothly. Check the adjuster housing and adjuster assembly are lubricated (use Molybdenum Disulphide grease).

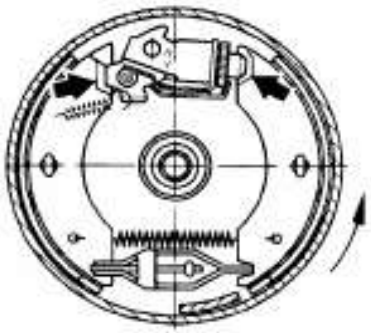
- Check the tension on the leaf spring and check that the adjusting nut is properly engaged.

- Check the pressure on the brake shoe pressure springs.

5.2 Replacing the brake shoes

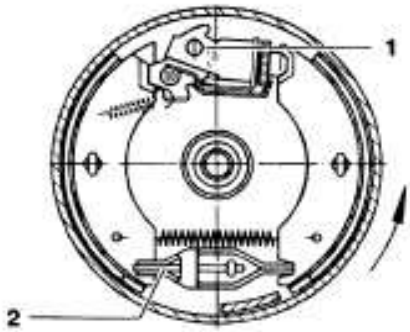
- If the individual parts are to be removed from the wheel brake, the Bowden cable on the balance bar must be loosened and unhooked from the expander clutch.
- Replace brake shoes where linings have a residual thickness of less than 2mm. **Use genuine AL-KO replacement parts.**
- Also replace the shoe pressure springs and cover plate if required.

Fig 19



- On type **1637**, the left and right brake shoes are different. The embossed markings (see arrows) must be followed when fitting brake shoes (Fig 19).
- On types **2051** and **2361**, the left and right shoes are identical.
- Replace the brake shoe pressure springs if any signs of weakness.

Fig 20



5.2.1 Expanding clutch

- Lubricate stiff expander lever pivots.
- Replace expanders that have seized-up pivots.
- Note the correct position for fitting:

Expander lever pivot arm (2) to transmission lever pivot bolt (1) (Fig 20). The two pivot points must always be on the same side of the overall assembly.

If the above instructions are not followed the brake application stroke will be altered and the braking effect impaired.

5.2.2 Return springs

- Replace relaxed or damaged return (pull off) springs.

5.2.3 Transmission lever

- Remove stiff transmission levers and lubricate the pivot bolt.
- Replace seized-up transmission levers together with pivot bolts.
- If the transmission lever does not abut on the adjusting housing stop, the extension spring must be replaced (Fig 18).

5.2.4 Adjusting assembly

- Lubricate stiff adjusting nuts using Molybdenum Disulphide grease.
- Unscrew the adjusting screw and lubricate the thread.
- Replace seized-up adjusting screw together with adjusting nuts.

5.2.5 Leaf springs (adjuster housing)

- Replace relaxed leaf springs.

N.B. The adjuster screw, nut and leaf springs are only supplies as a complete assembly. The part numbers for these are as follows: -

System 1637 - 387706
System 2051 - 387323
System 2361 - 387323

All friction points must be lubricated with Molybdenum Disulphide grease (AL-KO Part No. 800098)

5.3 Changing worn or damaged brake cables

Remove the control mechanism at the centre of the axle.
Slacken and drop cable end from the centre axle bracket and detach cables.
To refit, reverse the procedure.

6. Troubleshooting

Symptom	Possible Cause	Remedy
Braking effect too weak	Towing-shaft pushes in fully	Adjust
	Linings not bedded in	Will wear off after the vehicle has braked several times.
	Linings damaged	Replace the shoe set
	Friction losses too great	Ensure that the transmission linage, including the brake control rod, is moving smoothly
	Corrosion of the tow-shaft	
Reversal is sluggish or impossible	Only occurs if the braking system has been set too tightly	Re-adjust the braking system
Brake overheats during forward travel	Set incorrectly	Re-adjust the braking system
	Braking system is not released properly during forward travel	Release the handbrake
		Check the transmission linkage and transmission lever of the overrun device (check that they are moving smoothly)
	Wheel brake soiled	Clean
	Cable or Bowden cable buckled	Replace Bowden cable
	Return springs weak or broken	Replace springs
	Rust beginning to form in the brake drum	Replace the brake drum (see page 9) and also the brake shoes if necessary
Handbrake effect too weak	Linings not bedded in	Will wear off after the vehicle has braked several times.
	Friction losses too great	Ensure that the transmission linage, including the brake control rod, is moving smoothly
	Set incorrectly	Re-adjust the braking system
Jerky braking	Defective shock absorber on the overrun device	Replace the shock absorber
	Too much free play in the braking system	Re-adjust the braking system

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