



## ***Trailer Maintenance Manual***

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**THESE INSTRUCTIONS MUST BE READ  
BEFORE OPERATING THE MACHINE**



**THIS MANUAL MUST ALWAYS REMAIN  
WITH THE MACHINE.**

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## MAINTENANCE INTRODUCTION

By law, every employer must make sure that work equipment is maintained in an efficient state, in efficient working order and in good repair. It is important that equipment is maintained so that it is in mechanically good condition. Planned maintenance should be thorough, regular and frequent. Any item that is not functioning correctly should be replaced with genuine NC parts before the trailer is used.

The manufacturer will be in no way liable for damage or personal injury caused by failure to comply with this schedule or the use parts not supplied by the manufacture.

This manual is generic and covers a range of NC trailers. This manual should be use in conjunction with the manual supplied with the trailer.

### Tilly Pass Scheme

Agricultural Trailers are not registered for road use in the UK. Therefore, unlike a commercial Trailer are not subject to an annual Ministry of Transport test. This can result in trailers not being maintained in accordance with the requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER) as recommended in this manual, potentially leaving the trailer in a dangerous, unroadworthy condition.

NC Engineering encourage all UK customers to register their trailer with the Tilly Pass scheme. This is a voluntary scheme for trailers whereby authorised dealers carry out an annual maintenance inspection of the trailer, repair any issues and confirm the trailer has been inspected to PUWER. After a year, the trailer needs rechecked and a new certificate is issued.

You can find more information including dealers that have subscribed to this scheme on the website [www.tilypass.co.uk](http://www.tilypass.co.uk)



## Maintenance and Service Schedule

Warranty will be void if the maintenance schedule is not followed and genuine NC parts used.

Daily	Page
Check operation of all lights	8
Check tyre pressures and the condition of the tyres	8
Grease body tipping pivots	10
Grease tail door cylinders	10
Grease tail door pivots	10
Grease tipping cylinder pivots	10
Grease swivel towing eye (if fitted)	10
Grease K80 spoon (if fitted)	11
Visually check wheel nuts are tight. If any appear loose torque all wheel nuts	14
Check operation of brakes	26
Check all hydraulic, air and electrical connections between tractor and trailer	26
Drain water from air tank (air brakes only)	26
Check operation of park brake	27
Inspect trailer for damage	
Check all safety decals are clean and visible	
<b>Weekly</b>	
Grease bogie pivot pins (if applicable)	10
Grease sprung drawbar	10
Grease all nipples on running gear	10
Check towing eye or K80 spoon for wear	11
Check adjustable or bolt-on hitch bolt torques	11
Check hydraulic hose condition	12
Check wheel nut torque	14
Grease brake cams	17
Check for oil leaks	26
Check airline condition (if fitted)	26
Inspect the trailer for loose nut and bolts	
<b>Every 3 months</b>	
Check brake clearance and wear	14
Check Slack Adjuster setting	17
Grease steering hinges (steering axle only)	19
Grease steering joints (steering axle only)	21
Inspect park brake and cable	27
Test ABS (if fitted)	27
<b>Every 6 months</b>	
Check the axle bearing gap	14
Torque suspension (if applicable)	23
Check sprung drawbar bolts and springs	
<b>Every year</b>	
Steering Axle Hinge gap check	19
Steering axle shock absorber end screw torque check	20
Steering control cylinder fastening screw torque check	21
Steering rod end screw torque check	21
Visually inspect suspension	23
<b>Every 2 years</b>	
Lubricate wheel bearings	16

## Changing Wheels on a Trailer with Rocking Bogie



### **DANGER: -**

**NEVER work under a trailer which is unsupported.**

**NEVER remove more than one wheel at a time.**

**ALWAYS stand clear of the trailer with the wheel removed.**



### **FAILURE TO FOLLOW THIS PROCEDURE COULD RESULT IN SERIOUS INJURY OR DEATH**

1. If loaded, empty the trailer.
2. Ensure trailer is parked on firm level ground.
3. Check trailer is securely hitched to the tractor, apply the tractor park brake, stop the engine and remove the key.
4. Ensure brakes are applied and wheels which are not being removed are chocked.
5. Slightly loosen the wheel nuts of the wheel to be removed.
6. Place jack below centre of bogie.

**Minimum jack & axle stand ratings must be equal to or greater than axle weight (e.g. for 10 tonne axle weight jack must be minimum 10 tonne). The use of a bottle jack is not recommended**

7. Place blocks of hardwood between the bogie and the chassis to prevent the bogie moving. Blocks must be placed front and rear and positioned to prevent the timber splitting.
8. Using the jack slowly raise the bogie enough for a fully inflated wheel to be refitted.
9. Position axle stand below both ends of the bogie, as close to the wheels as possible.
10. Slowly lower axle onto stands. Ensure the trailer is high enough for a fully inflated wheel to be refitted. If not repeat step 6-9.
11. Completely remove wheel nuts.
12. Remove wheel with additional help to remove large wheels. Never remove more than one wheel at a time.
13. To fit new wheel, place the wheel onto the axle hub using additional help.
14. Tighten all wheel nuts.
15. Raise machine from axle stands using the jack.
16. Remove the axle stands and lower the machine fully.
17. Tighten the wheel nuts to the prescribed tightening torque - see general tightening torque recommendations.

## Changing Wheels on a Trailer with Tandem Springs



### **DANGER: -**

**NEVER** work under a trailer which is unsupported.

**NEVER** remove more than one wheel at a time.

**ALWAYS** stand clear of the trailer with the wheel removed.



### **FAILURE TO FOLLOW THIS PROCEDURE COULD RESULT IN SERIOUS INJURY OR DEATH**

1. If loaded, empty the trailer.
2. Ensure trailer is parked on firm level ground.
3. Check trailer is securely hitched to the tractor, apply the tractor park brake, stop the engine and remove the key.
4. Ensure brakes are applied and wheels which are not being removed are chocked.
5. Slightly loosen the wheel nuts of the wheel to be removed.
6. Place jack below axle, as close to wheel as possible ensuring to leave room for an axle stand between the jack and the wheel.

**Minimum jack & axle stand ratings must be equal to or greater than axle weight (e.g. for 10 tonne axle weight jack must be minimum 10 tonne). The use of a bottle jack is not recommended**

7. Using the jack raise the wheel to be removed ensuring other wheels remain on the ground. Raise the trailer until high enough for a fully inflated wheel to be refitted.
8. Position axle stand below axle as close to wheel as possible.
9. Lower axle onto stand.
10. Completely remove wheel nuts.
11. Remove wheel with additional help to remove large wheels.
12. To fit new wheel, place the wheel onto the axle hub using additional help.
13. Tighten all wheel nuts.
14. Raise machine from axle stand using the jack.
15. Remove the axle stand and lower the machine fully.
16. Tighten the wheel nuts to the prescribed tightening torque - see general tightening torque recommendations.

## Lights

Daily check the operation of all lights. This is a physical test of activating each function in turn and getting out of the tractor to ensure the light is working. A helper can be used to assist. Damaged electrical wiring or components must be repaired or replaced before the trailer is used. Details of the electrical schematic and spare part numbers can be found in the operators manual supplied with the trailer.

## LED Control Kit

On some tractors the low current requirement of the LED lights confuses the tractor electronics and it thinks the Trailer/Trailed Implement has suffered a bulb failure. This brings on a warning light in the tractor and causes the indicator's too flash, even after they have been turned off. In other cases, the indicator is a constant light rather than flashing and the stop/tail can also be affected.

The LED controller is an in-line resistor which fools the tractor into thinking a bulb is fitted therefore removing the above issues. In addition, the controller can identify an LED failure and switch off when this occurs allowing the tractor warning light to come on. Cheaper resistance only versions are available but are not legal as they prevent the tractor warning light functioning correctly.

The LED Control kit is available for fitment to an existing Trailer/Trailed Implement and simply plugs into the electrical loom.

Note it is the driver's legal responsibility to check all lighting is functioning correctly.

## Tyres

Always check tyre pressure before use. Actual pressures may be varied to suit journey lengths, ground conditions etc: -

<b>TYRES SIZE</b>	<b>PRESSURE (bar)</b>	<b>MAX. LOAD @ 40Kph (kg)</b>	<b>WIDTH (mm)</b>	<b>DIAMETER (mm)</b>
215/75 R17.5	9	2650	215	775
235/75 R17.5	8.6	3130	235	789
385/65R22.5	6.5	4500	385	1078
445/45 R19.5	9	5150	445	895
445/65R22.5	7	5800	445	1150
560/45R22.5	4	4830	560	1076
560/60R22.5	4	6300	560	1244
600/55 R26.5	4	7000	600	1320
650/50 R22.5	4	6630	650	1208
650/55 R26.5	4	7890	650	1396
710/50 R26.5	4	8160	710	1383

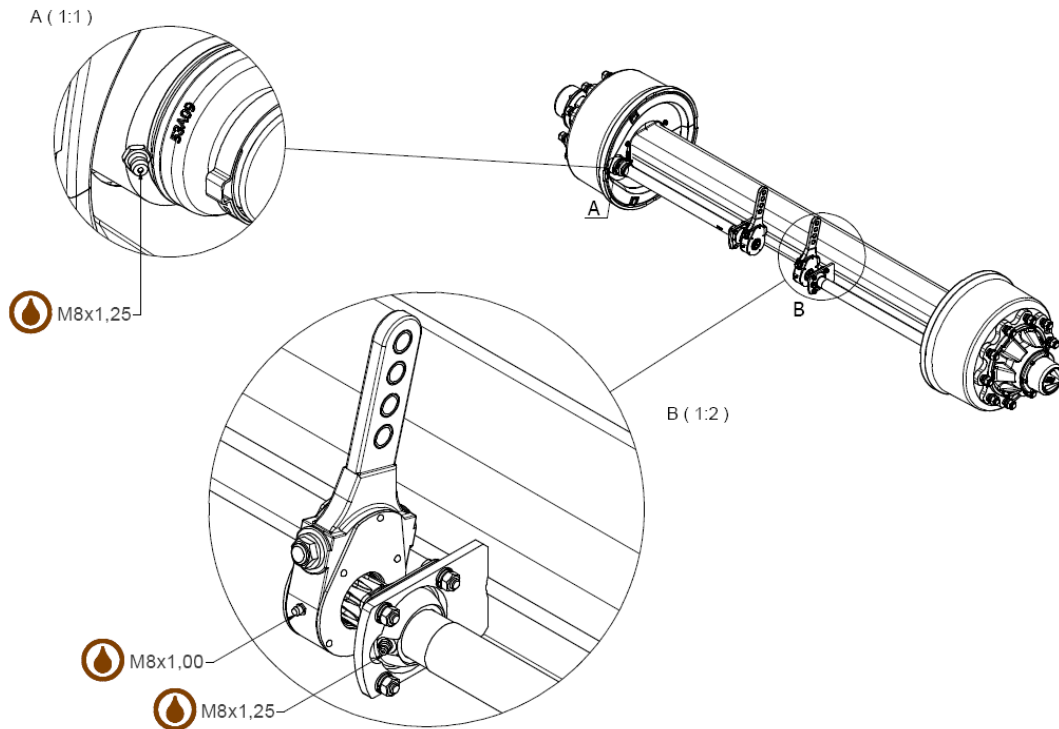
Each tyre brand can have different ratings. Check the ratings on the tyre and never exceed the maximum pressure. For other wheel sizes refer to NC for advice. Daily check for cracks in the tyres as well as heavy wearing on one side of the tyre compared to the other.

## Grease Points

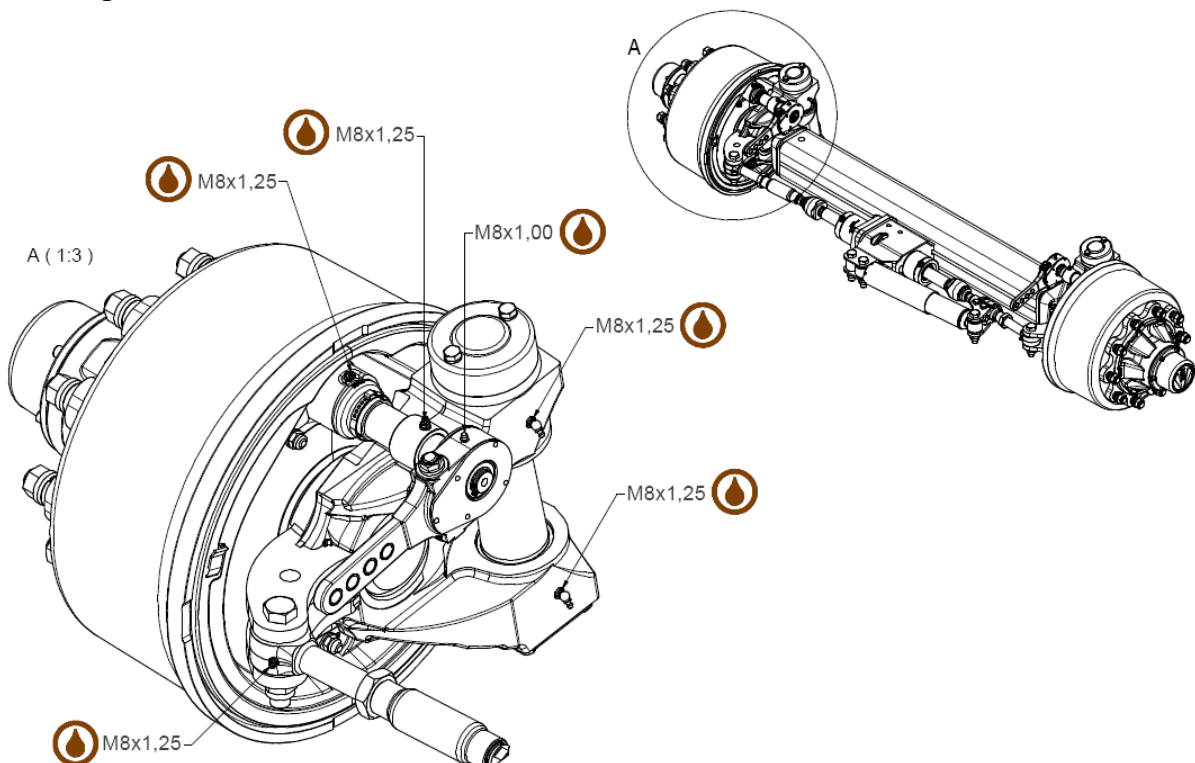
Body tipping pivots, tipping cylinders, rear door pivots and rear door cylinders should be greased daily.

Bogie pivot pins (if applicable), sprung drawbar, brake linkages and all nipples on the running gear should be greased once a week. All grease points are illustrated below: -

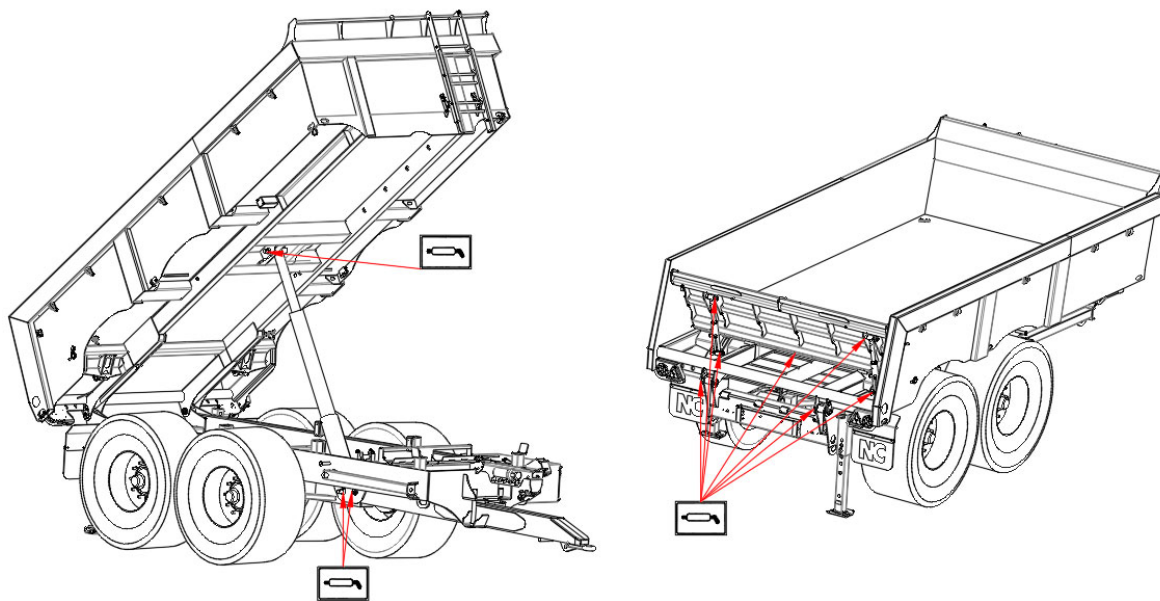
### Standard Axle:



### Steering Axle:



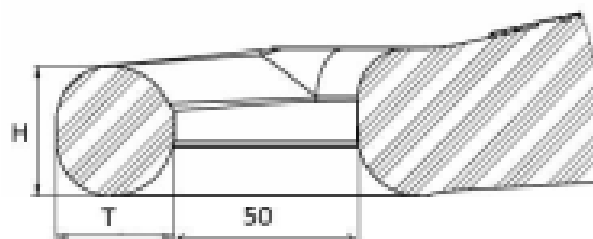
## Body Grease Points:



Trailer in illustration is a 600 Series Dump Trailer. Grease points on other trailers may vary but include tipping cylinders, door pivots, sprung drawbar, door cylinders, steering axle etc.

## Towing Eye

Weekly check the towing eye for wear and ensure it cannot escape from the tractor hitch as the drawbar may lift. The towing eye must be replaced by qualified welder/Technician if wear exceeds any of the following dimensions: -



Description	Nominal Dimension	Wear Dimension
Eye diameter (A)	50.4 mm	52.5 mm
Ring Height (H)	40.0 mm	33.5 mm
Web Front Width (T)	32.5 mm	28.5 mm

## Swivel Hitch

All standard NC Trailers/Trailed Implements are fitted with a welded towing eye conforming to ISO 20019:2001. The swivel hitch is also a traditional towing eye to ISO20019:2001 but allows increased rotation between the tractor and Trailer/Trailed Implement and is recommended for uneven ground conditions. There are two grease nipples on the towing eye shaft which must be greased daily.

## Adjustable Hitch

To adjust remove the bolts and move the towing eye to the required height. Torque bolts to 400Nm and check weekly. If the bolts are damaged, they must be replaced by M20 x 75mm Cap Head Grade 12.9.

## K80 Weld-on Spoon

- 1) Regularly clean the ball from dirt and hard dried grease before coupling.
- 2) Grease the ball coupling before every use using a Lithium soap grease, NLGI class 2 with EP additives.
- 3) The clearance between the K80 spoon and the adjustment screw should be set to maximum 0.5mm. It is also important to pay attention to towing spoons from different manufacturers. NC normally fit Scharmüller K80 spoons. A poorly adjusted keeper will result in dissimilar wear of the K80 ball and the K80 spoon and may result in damage to the coupling system or disconnection of the trailer or the tractor, in case of a negative vertical load. After an accident or disconnection, the K80 keeper must be replaced.
- 4) If the diameter of the ball cup exceeds 82mm the coupling must be replaced.

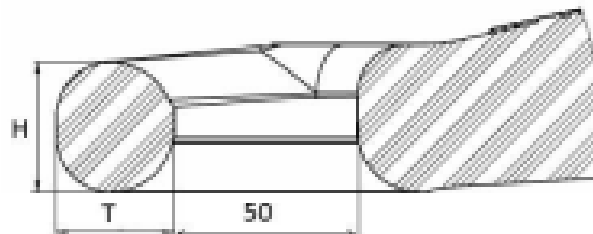
## K80 Bolt-on Spoon

If removing the K80 spoon and replacing with an alternative the replacement must have the same bolt pattern and be rated for the vertical load applied to the hitch and the maximum weight of the trailer. Torque bolts to 560 +/-30Nm and check weekly. If the bolts are damaged, they must be replaced by M20 x 70mm long Grade 10.9.

## Bolt-on 50mm Agricultural Towing Eye

If removing the 50mm agricultural eye and replacing with an alternative the replacement must have the same bolt pattern and be rated for the vertical load applied to the hitch and the maximum weight of the trailer. Torque bolts to 290 +/-20Nm and check weekly. If the bolts are damaged, they must be replaced by M20 x 70mm long Grade 10.9.

If the hitch exceeds the following it must be replaced: -



Description	Nominal Dimension	Wear Dimension
Eye diameter (A)	50.0 mm	51.5 mm
Ring Height (H)	35.0 mm	30.0 mm
Web Front Width (T)	32.5 mm	28.5 mm

## Hydraulic Hoses

**Danger: -**

**Hydraulic hose lines may only be replaced by qualified personnel.**

**Risk of skin and eye irritation and of infection through contact with hydraulic oil.**

**Danger due to possible high operating temperatures of the oil.**

**Risk of injury from hydraulic lines bursting.**

**Danger of high-pressure injection due to hydraulic oil escaping at high pressure.**



Weekly check hydraulic hoses and fittings. Replace if any of the following defects are found:

- Damage to the outer layer (chafing marks, cuts, cracks).
- Embrittlement of the outer layer of the lines (cracking).
- Deformations that do not correspond to the natural shape of the hose, both pressureless and pressurised. (Delamination, blistering, pinch points, kinks).
- Leakage.
- Damage (deformation) of the hose fitting (sealing function impaired).
- Hose moving out of the fitting.
- Corrosion of the fitting that reduces the function and strength.

See below table for working pressures, burst pressure and bend radius of hoses

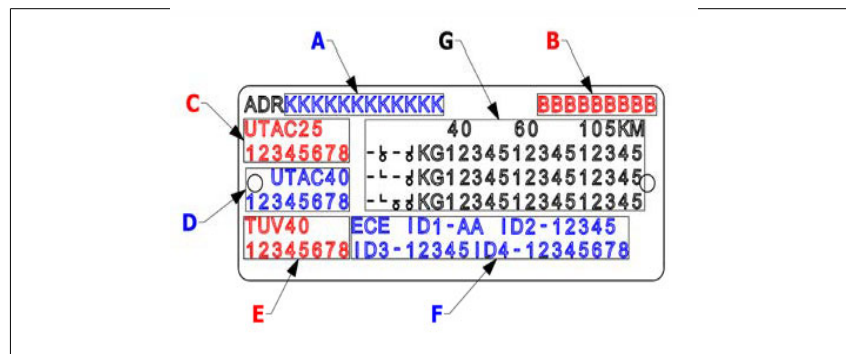
Size	Working Pressure		Burst Pressure		Bend Radius	
	Bar	PSI	Bar	PSI	mm	Inches
¼"	225	3265	900	13060	100	3.94
3/8"	180	2610	720	10440	130	5.12
½"	160	2320	640	9280	180	7.09
5/8"	130	1885	520	7540	200	7.87
¾"	105	1525	420	6100	240	9.45
1"	88	1275	352	5100	300	11.81
1 ¼"	63	915	252	3660	420	16.54
1 ½"	50	725	200	2900	500	19.69
2"	40	580	160	2320	630	24.80

## Axles

NC Trailers are normally fitted with ADR axles. It is important that brakes are kept in proper working order therefore regular service and adjustment should be carried out. Brakes should be tested before using for the first time and after the first laden journey. Thereafter check and test the brakes before use.

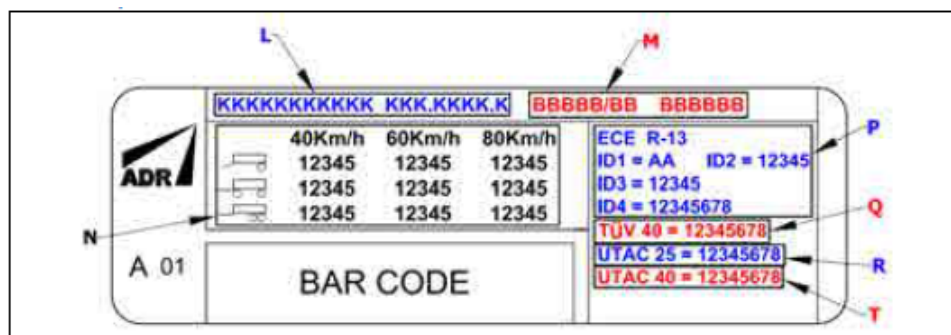
### Axle Identification plate

Each axle is fitted with an identification plate to enable replacement parts to be ordered. If ordering axle spares you may be asked to quote this number.



The metallic ID plate can be read as follows: -

- A: axle identification code
- B: order identification code
- C: UTAC approval report identification code at 25kph
- D: UTAC approval report identification code at 40kph
- E: StVZO approval report identification code at 40kph
- F: ECE-R13 approval identification data
- G: maximum axle capacity data referencing the application and speed

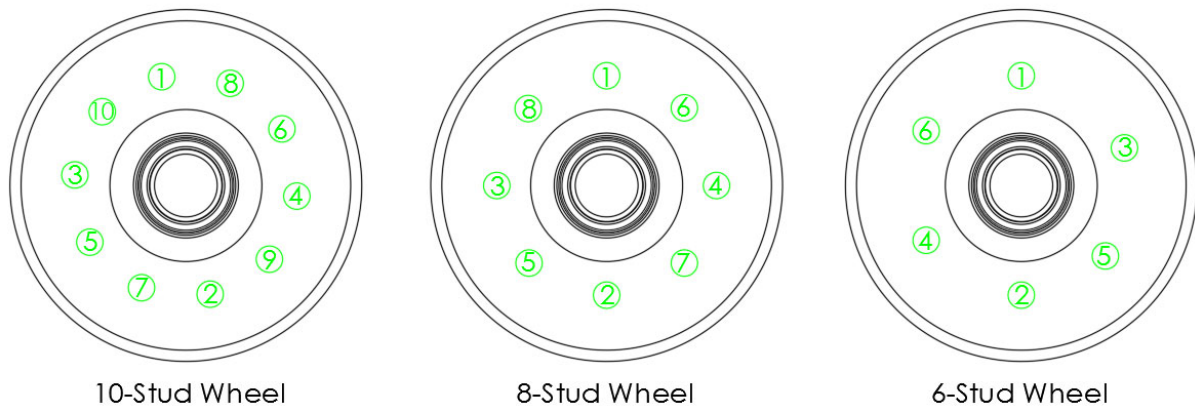


The adhesive ID plate can be read as follows: -

- L: axle code
- M: customer code
- N: Carrying capacity of the axle
- P: ECE-R13 test report data or EU 2015/68 test report data
- Q: StVZO at 40kph test report data
- R: UTAC at 25kph test report data
- T: UTAC at 40kph test report data

## Wheel Nut Torque

**NEVER** use impact wrenches to tighten the wheel nuts as the impact torque may be excessive. Wheel nuts should be tightened in the following sequence, using a torque wrench. If a torque wrench is not available, use a wrench with an extension.



Torque wheel nuts upon delivery and every load for the first ten loads. Thereafter wheels nuts should be visually checked daily and torqued weekly. Repeat every time the wheels are changed or removed.

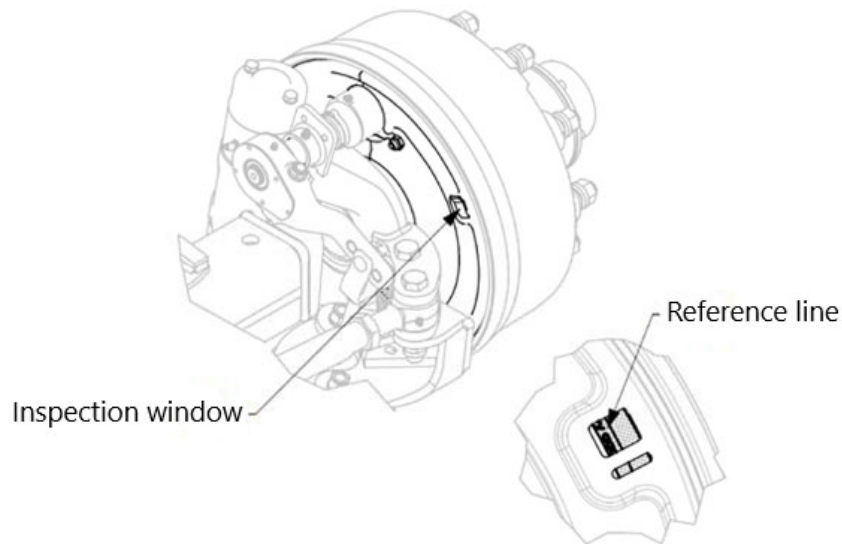
Wheel nuts are normally nut and washer, if any other type is fitted e.g. wheel nut with collar contact NC for torque setting. Standard torque settings: -

Axle	No. of Studs	Bolt Size (mm)	Torque (Nm)	Lever (mm)	Applied force (kg)
ADR or Granning	8	18	270	450	60
HOS	8	18	290	480	60
ADR	8	20	350	600	60
Granning or HOS	8	20	380	650	60
ADR	10	22	450	800	60
HOS	10	22	510	850	60
Granning	10	22	650	1080	60

## Brake Clearance and Wear

Every 3 months check brake wear. Open both inspection windows on the rear of the brake and check friction material thickness outside the reference line.

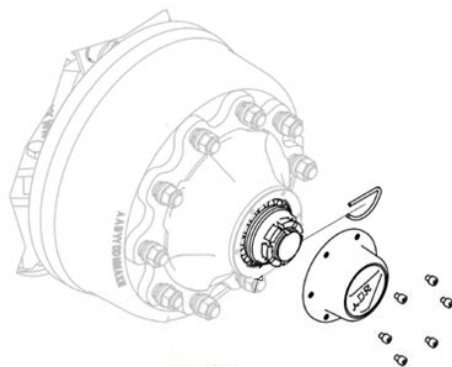
The reference line should always be clearly visible, and, for safety it is recommended to replace the brake friction material when material thickness outside the line is reduced to 2mm. Always use original parts as the same type as those to be replaced.



### Bearing Gap Check (flanged hub-cap version)

After the first 200 working hours and then annually ensure the wheel bearings do not rock. To check lift the axle with a jack until the wheel is off the ground and rotates freely. Refer to Changing the Wheels section for how to safely jack the trailer. Insert a lever between the ground and tyres and force the wheel up to find any gaps. To adjust: -

1. Remove the flanged hub cap by removing the 6 bolts.
2. Remove the pin from the nut.
3. Tighten the nut while simultaneously rotating the wheel until the hub is slightly braked.
4. Rotate the nut until a slot with the hole on the spindle is found and insert the pin.
5. Ensure the hub rotates manually with slight resistance.
6. Top up grease on the visible part of the bearing, reassemble the hub cap and tighten the 6 bolts.



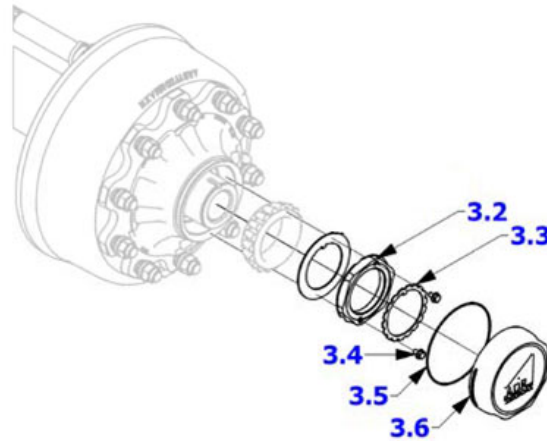
Missing or damaged hubcaps must be replaced **IMMEDIATELY** to prevent dirt penetrating into the hub.

### Bearing Gap Check (Teknoax version with screw-in hub cap)

After the first 200 working hours and then annually ensure the wheel bearings do not rock. To check lift the axle with a jack until the wheel is off the ground and rotates freely. Refer to Changing the Wheels section for how to safely jack the trailer. Insert a lever between the ground and tyres and force the wheel up to find any gaps. To adjust: -

1. Remove the hub cap (3.6) and gasket (3.5).

2. Remove the screws (3.4) and rack (3.3)
3. Tighten the nut (3.2) while simultaneously rotating the wheel until the hub is slightly braked.
4. Reposition the rack (3.3) and secure it to the nut (3.2) with the screws (3.4).
5. Ensure the hub rotates manually with slight resistance.
6. Top up grease on the visible part of the bearing, reassemble the hub cap (3.6) being careful that its seal is integral.

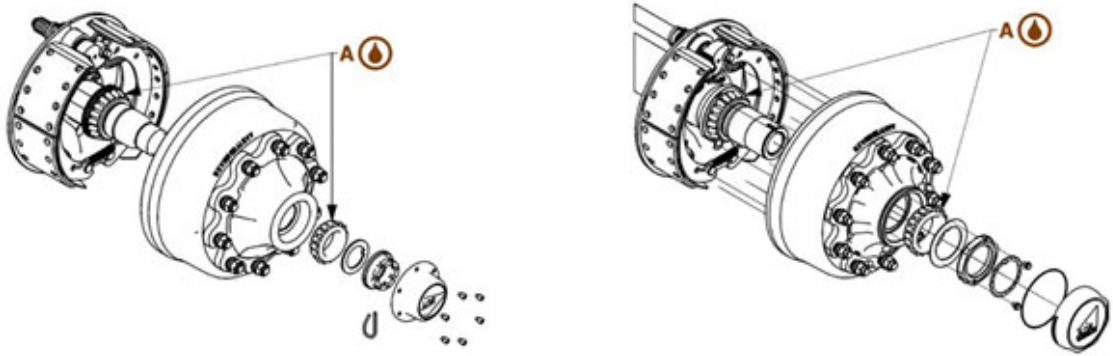


Missing or damaged hubcaps must be replaced **IMMEDIATELY** to prevent dirt penetrating into the hub.

### Grease Hub Bearings

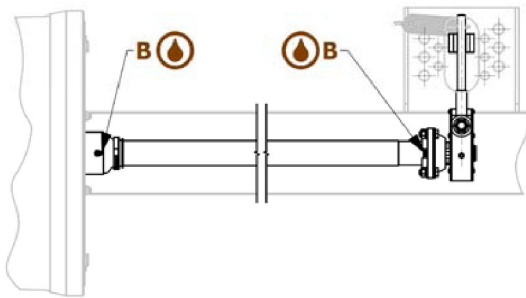
Every 2 years, as with the bearing gap check, lift the axle with a jack until the wheel rotates freely, then: -

1. For flanged hub cap remove the hub cap, pin in the nut and nut. For Teknoax version remove the hub cap and gasket, remove the screws, rack and nut.
2. Remove the hub complete with drum and bearings from the spindle.
3. Perform this operation on one wheel at a time to avoid mixing components and for the safety of the Maintenance staff.
4. Clean the brake, check general conditions and wear. Replace any worn or damaged parts. Remove any lubricant residue that could affect good braking.
5. Remove all used grease residue, clean the bearings and gaskets. Replace any damaged parts.
6. Grease the housing and bearing rollers (point A in illustration). Each bearing requires about 150g.
7. Reassemble all parts as indicated in the illustration with the help of bushings to avoid alignment errors that could damage the bearings.
8. Before reassembling the nut apply a layer of grease on the bearing, reassemble and adjust the nut as per the Bearing Cap Check section.



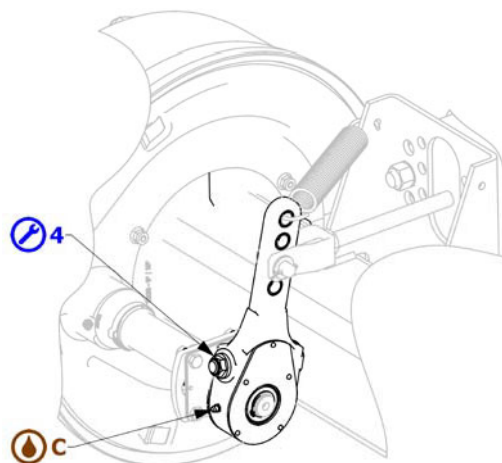
### Grease Brake Cam

Weekly grease the points (B) on the brake cam illustrated below so that new grease leaks from the housings. Grease penetration of the brakes is not admitted. Repeat this lubrication after each wash with a high-pressure hose.

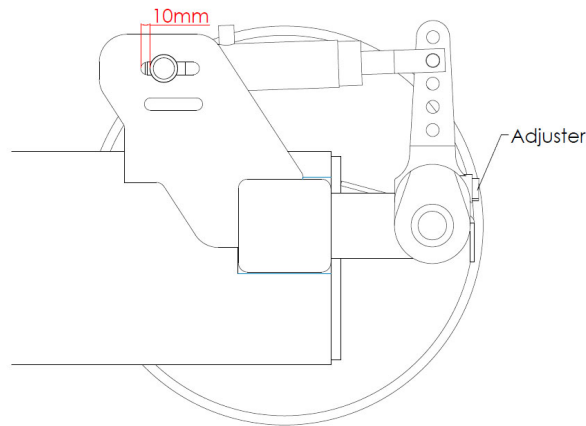


### Slack Adjusters

Every 3 months ensure the brake cylinders rod movement does not exceed 40-45mm at full braking. To tighten the brakes, turn the nut (4) on the front of the slack adjuster clockwise. To slacken the brakes, turn the nut in the opposite direction.



When adjusting, some free play should be left on the lever to allow the brake shoes to fully retract. To achieve this, manually pull the adjuster tight. There should be approximately 10mm (3/8") left between the ram bolt and the rear of the slot as shown below. If this is more, or less than 10mm adjust accordingly.

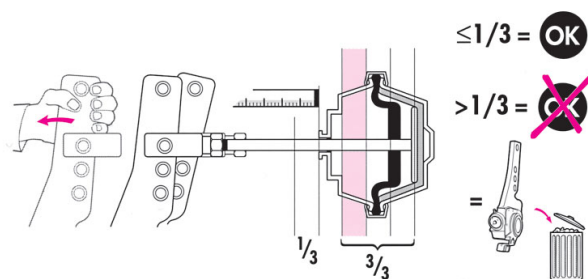


Weekly grease the Slack adjusters through point C. Repeat this lubrication after each wash with a high-pressure hose.

### Automatic Slack Adjusters

An Automatic slack Adjuster will not allow “over-stroking” of the brake cylinder. Do not attempt to override the pre-set clearance and check for wear every 3 months.

The Automatic Slack Adjusters should be replaced when re-adjustment is required due to free travel exceeding 1/3 of the total brake chamber stroke. Note free travel refers to the clearance between the lining and the brake drums. Prior to replacement check all linkages, camshaft bearings and brake fixtures.

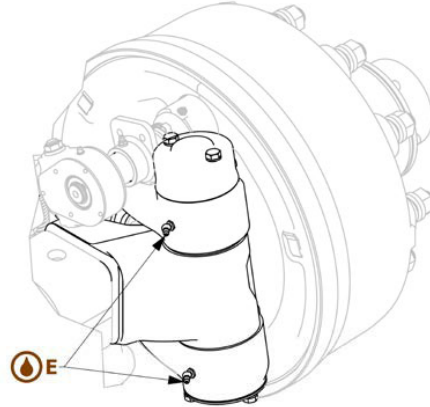


Automatic Slack Adjusters should only be replaced by a suitably trained Technician.

## Steering Axles

### Greasing Steering Hinges

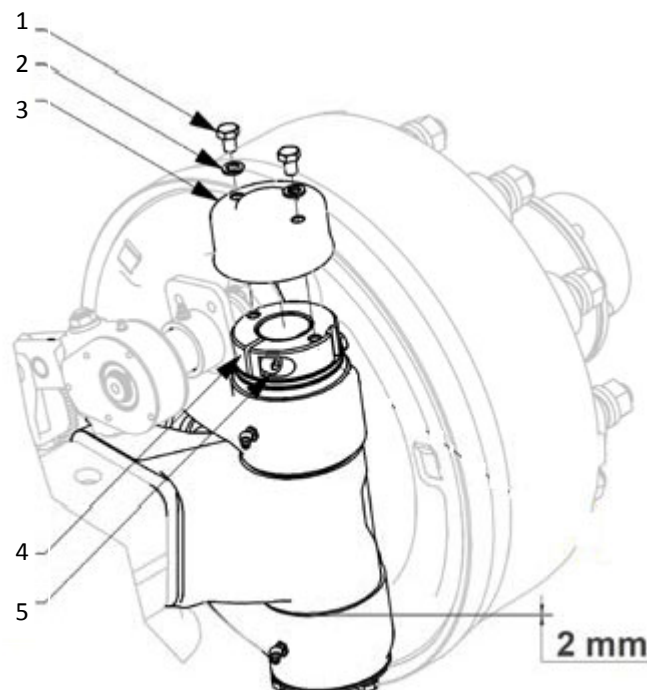
Every 500 working hours lubricate with grease using the grease points indicated in the illustration until new grease leaks from the housings. Repeat the operation even after each vehicle wash with high pressure equipment.



### Steering Hinge Gap Check

After the first 10 km at full load, then every 1500 working hours check that the gap between the steering arm and relevant support is not under 2 mm. If the gap is smaller, adjust the hinge pin as follows: -

1. Remove the cover 3;
2. Loosen the screws to free regulation nut rotation 4;
3. Rotate the nut clockwise to restore the required gap;
4. Block the nut with the screw 5;
5. Reassemble the cover 3 and secure it with the screws 1 and elastic washers 2;
6. If the O-ring in the cover 3 is damaged, replace with an original ADR spare part.

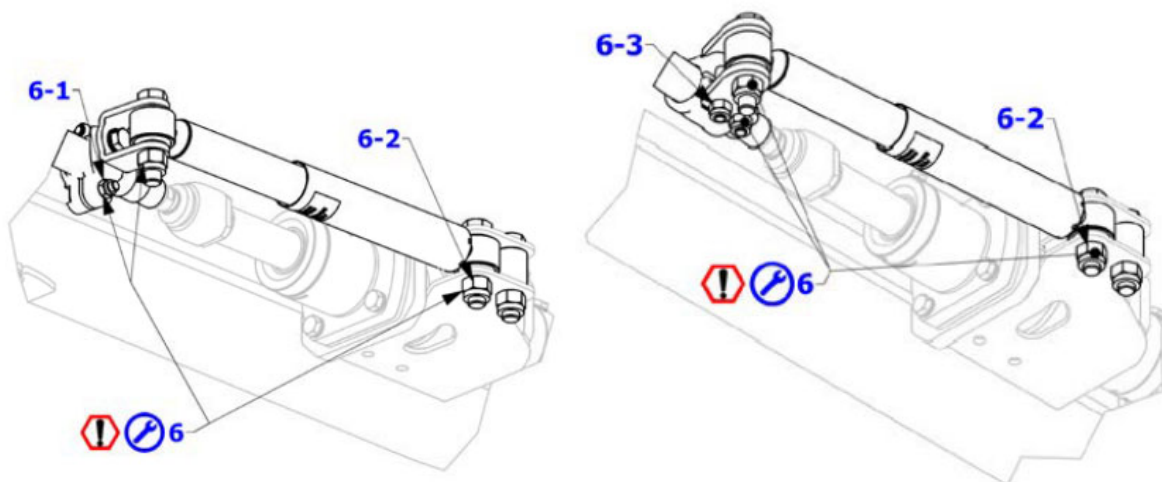


Torque instructions for the regulation nut 4 and lock screw 5

Part	Thread	Tightening torque (Nm)
4	M42	350 ± 10
	M48	450 ± 10
	M55	500 ± 10
	M75	600 ± 10
5	M10	78

### Shock absorber end screw torque check

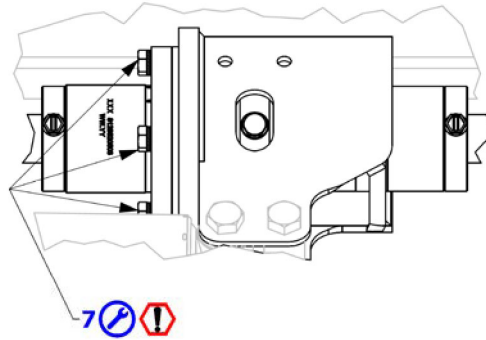
Every 1500 working hours check screw torque using a torque wrench and referring to the table at the bottom of the page. The two possible variations are illustrated. If the self-locking nuts loosen with the nylon ring they must be replaced. Check shock absorber end silent block conditions. If worn or damaged replace the shock absorber.



ID	BOLT	NUMBER OF PARTS TO BE TIGHTENED	TIGHTENING TORQUE (Nm)
6-1	M12	1	70 min / 90 max
6-2	M20	3	400 min / 450 max
6-3	M14	2	120 min / 150 max
7	M14	4	180 min / 200 max

### Steering control cylinder fastening screw torque check

Every 1500 working hours or every 25000km travelled check screw torque indicated in the illustration with a torque wrench. Steering cylinder fastening screw torque is indicated in the table on the previous page.

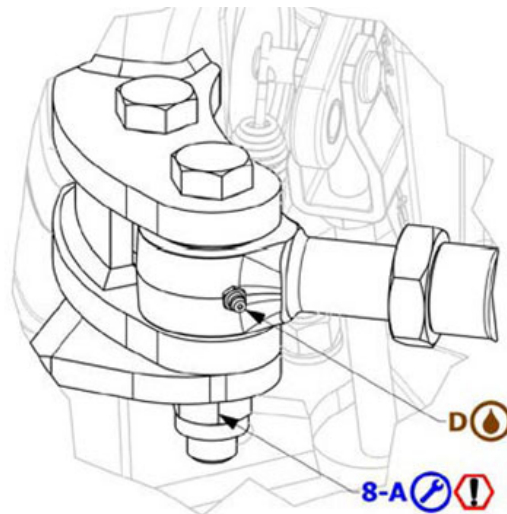


### Grease steering joints.

Every 500 working hours (every 8500 km travelled) or after every wash with pressure jets lubricate with grease using the grease points indicated in the illustration until new grease leaks from the housings.

### Steering rod end screw torque check.

Every 1500 working hours (every 25000km travelled) check screw torque indicated in the illustration with a torque wrench.

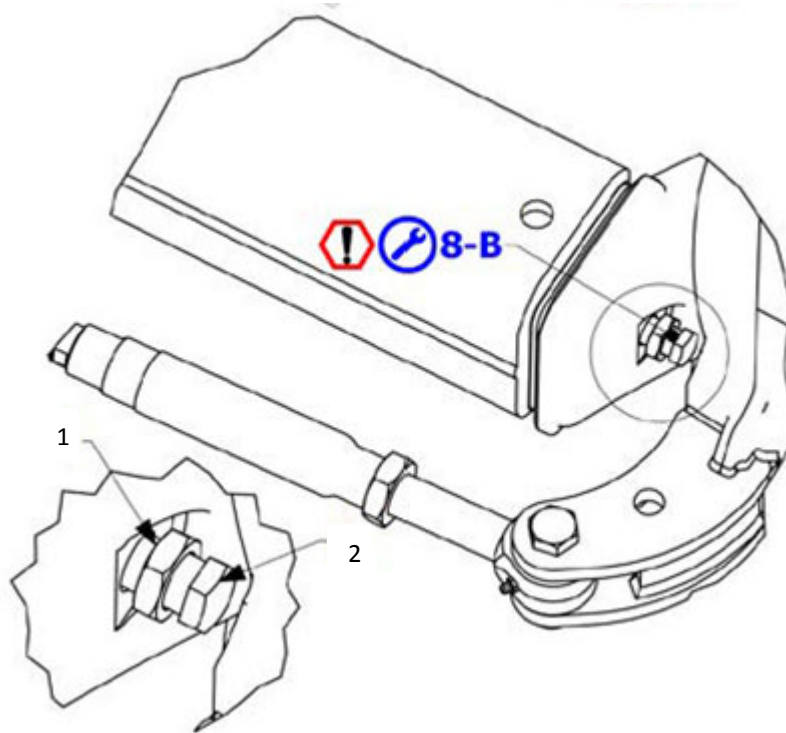


### Steering Angle Adjustment.

Maximum steering angle is pre-set at the factory and should not be increased in order to prevent tyre damage.

If required by operating conditions, proceed as follows to change the steering angle:-

1. Loosen the counter nut 1 until the screw head is reached;
2. Adjust the admissible steering angle using the screw 2.
3. Tighten the counter nut 1 using a torque wrench following the instructions in the table;
4. Repeat the operation on the opposite side of the steering axle.



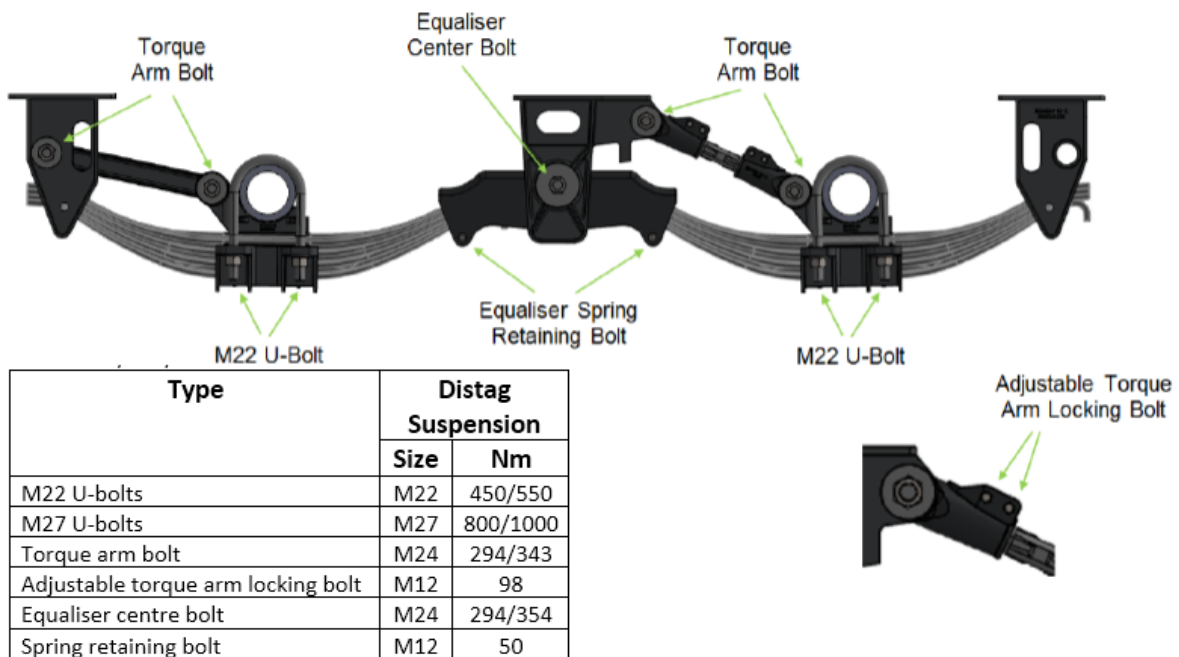
### Part torque instructions

id	Bolt	Number of parts to be tightened	Tightening torque (Nm)
8-A	M 20	4	400 min / 450 max
8-B	M 18	2	580 min / 610 max
9-1-A	M 16	4	180 min / 220 max
9-1-B	M 20	4	400 min / 450 max
9-2-A	M 20	4	400 min / 450 max

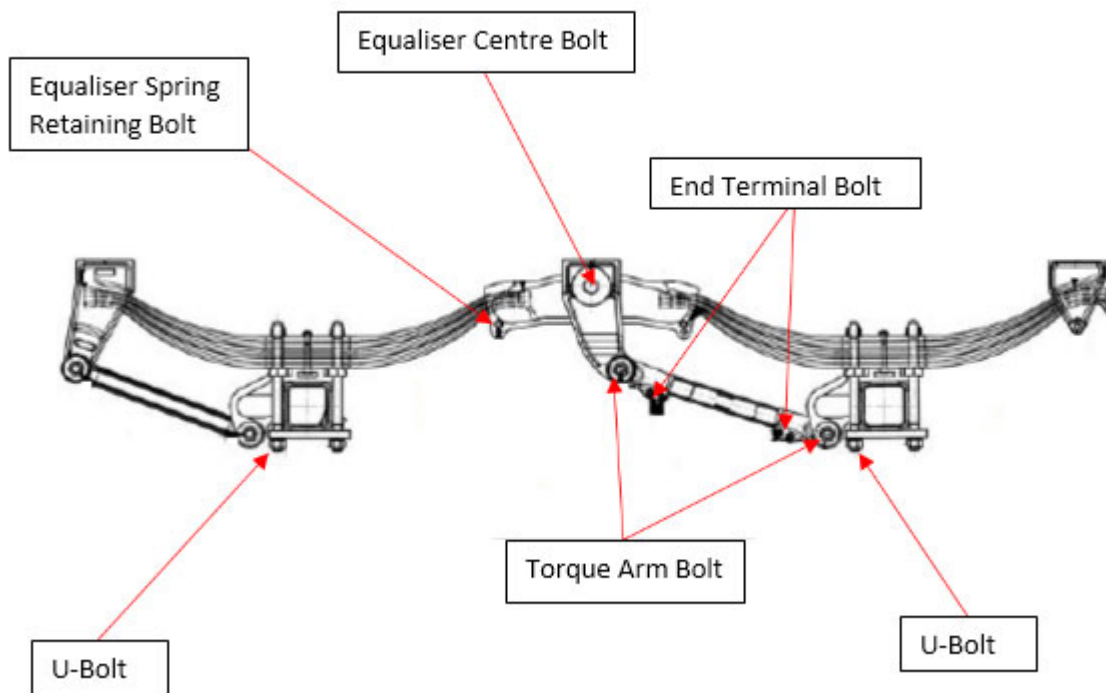
## Suspension (if fitted)

Each part of the suspension must be torqued as stipulated below: -

1. Service and maintenance should be carried out after the first laden journey, and thereafter every 6 months.
2. All bolts should be tightened to the recommended torque setting in the table.
3. When tightening torque arm and centre hanger bolts with taper bushes, ensure the torque arm or equaliser is centrally located and not contacting the hanger. Check clearance and wear of taper bushes in centre hanger and torque arm assemblies.
4. Yearly visual inspection of spring, hangers, Saddles and clamp plates; thoroughly clean and inspect for cracks and deformation.
5. Under harsh or intensive operating conditions, maintenance should be carried out more frequently.



NOTE\* Suspension fitted may vary from illustration



Type	ADR Suspension	
	Size	Nm
M22 U-bolts	M22	450/500
M27 U-bolts	M27	600/720
Equaliser Center Bolt	M27	270/300
Torque Arm Bolt	M24	100/120
End Terminal Bolt	M12	80/100
Equaliser Spring Retaining Bolt	M12	80/100

Failure to torque or inspect the suspension could lead to axle misalignment and tyre wear. If this happens contact your local NC dealer to arrange for realignment.

### General Maintenance

1. Daily check all safety decals are clean and legible. If a decal needs replaced, you will find the part number on the bottom of the sticker or in this manual.
2. Every 3 months check function of the park brake and ensure cables are not frayed and that all cable grips are tight.
3. Never wash the trailer with a pressure washer as this may remove paint. Wash with a low-pressure hose and a brush. Paint will not achieve its maximum strength until approximately 2-4 weeks after application.

## **Laying Up Protection**

If the trailer is to be parked up for a prolonged period: -

1. Apply a light coating of rust inhibitor to the 7-pin plug and any other electrical connections.
2. Wash the machine thoroughly.
3. Repaint any damaged areas to prevent rust.
4. Inspect the trailer and replace worn or damaged parts.
5. Replace missing or damaged decals. If a decal needs replaced, you will find the part number on the bottom of the sticker or in this manual.
6. If the hydraulic door is left in the closed position, the cylinder rods should be lightly oiled. For safety reasons it is preferable for the door to be left in the open position. If it must be left closed ensure the safety pins are engaged.
7. Cover the ends of all quick release hydraulic and brake couplings.
8. Grease all nipples.

## Brakes

NC Trailers are supplied as standard with hydraulic brakes which are limited to 40kph in the UK. Daily check brake function and carry out maintenance tasks on the axles and slack adjusters as detailed in this manual.

Hydraulic brake schematic can be found at the rear of this manual.

## Air Only Brakes

If Road Traffic legislation allows Trailers/Trailed Implements to be used at speeds above 40kph high speed axles must be fitted and most countries will require air brakes and possibly automatic slack adjusters & ABS. Always check legislation in country of use before exceeding 40kph. To operate the air brakes: -

- Connect the Trailer/Trailed Implement as per the guidance in the operator's manual.
- Connect both the red and yellow air lines to the tractor. Ensure both connections are secure and leak free.
- Allow the air tank to build up pressure and test the brakes by depressing the pedal before moving off. With single diaphragm chambers the brakes will not work until the minimum air pressure is achieved.



**DANGER: -**

**ALWAYS ensure the air system is pressurised before operation.**



- Daily drain any water in the air tank daily by pushing the drain valve located on the side of the Trailer/Trailed Implement or by pulling the cable on the base of the air tank.
- The red line provides a constant air pressure to the Trailer/Trailed Implement. If for any reason the red line fails, the brakes will automatically be applied.
- If the Trailer/Trailed implement is to be moved with the red line disconnected the tank must be drained.

**CAUTION: -**

**With the air drained the brakes DO NOT work so this should only take place with the Trailer/Trailed Implement unladen but securely connected via the towing eye and only in a flat, level yard for a short distance.**

Air brake schematic can be found at the rear of this manual.

## Dual Air/Hydraulic Brakes

With this system it is possible to operate the brakes via either air (see below) or hydraulics (see Operation section of manual). If both are fitted it is advised to use air when possible.

If using the air brakes, ensure the hydraulic pipes are not connected to the tractor and there is no pressure left in the system. If the hydraulic brakes are to be used ensure both the red and yellow air lines are not connected to the tractor and the air tank is drained.

Dual air/hydraulic brake schematic can be found at the rear of this manual.

## **Hydraulic/Air Brakes Loadsensing**

The system is pre-set in the factory and should not be adjusted without contacting NC as brakes are a safety critical component.

## **ABS**

If a fault occurs the light will remain on after start-up or will come on during operation. If the light remains illuminated a Wabco or Haldex agent can connect to the diagnostic interface and diagnose the fault. Note that the most common failure is a damaged susie lead or plug.

ABS schematic can be found at the rear of this manual.

## **ABS Ready**

A Trailer/Trailed Implement with suspension and air brakes may have been built for possible retrofit of ABS in the future. These Trailers/Trailed Implements will have all the ABS brackets fitted to the chassis and exciter rings, complete with sensors in an axle. To check if your Trailer/Trailed appliance is ABS ready look at the rear of the front hub on a tandem axle machine or centre axle on a tridem. If ABS ready a short cable will protrude from the rear of the hub and be cable tied to the axle. This is the lead for the ABS sensor and connects to the ABS unit which can be ordered from NC. Fitment can only take place via an approved agent or at NC.

## **Handbrake**

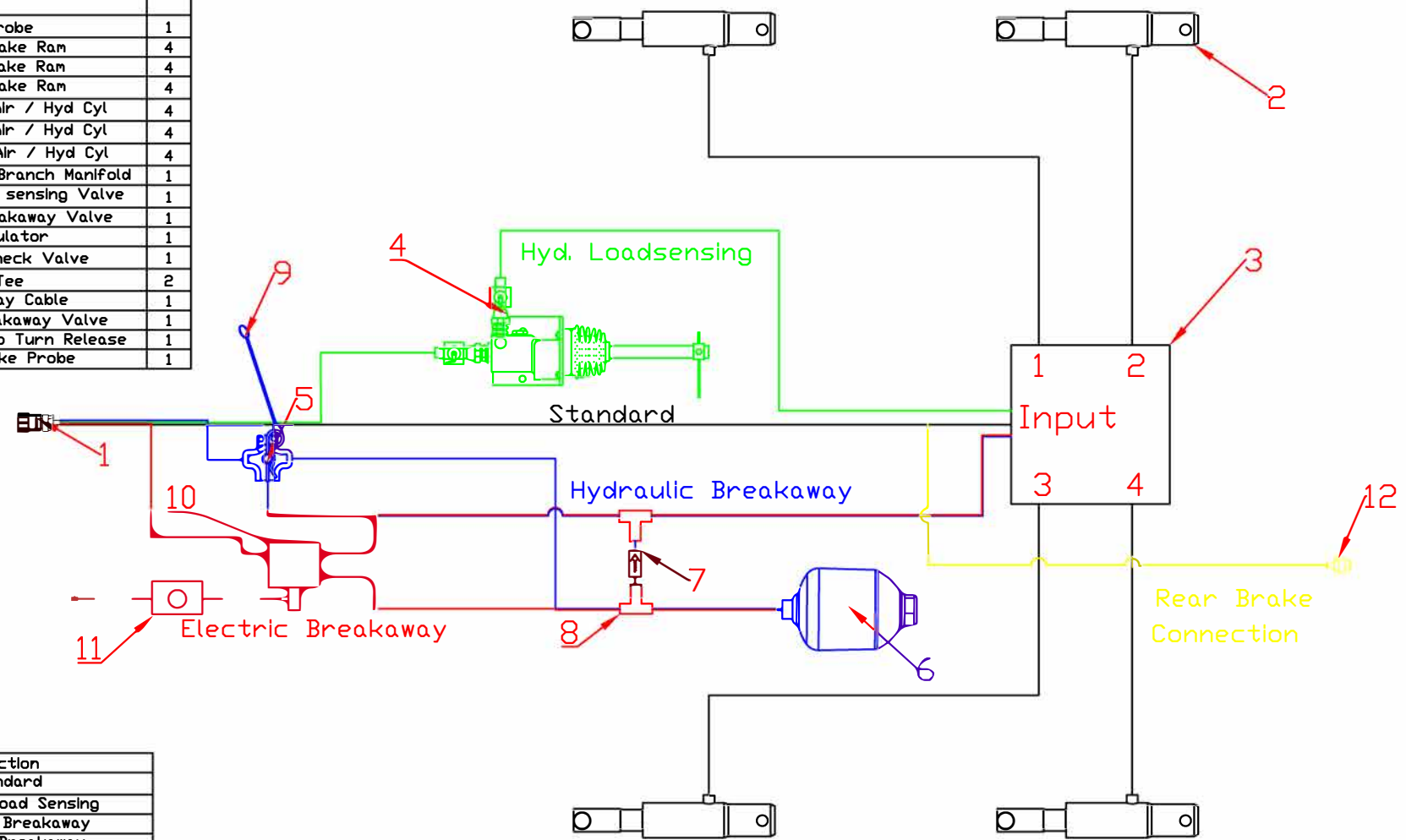
To release the handbrake push it hard backward towards the body of the trailer this will disengage the latch.

There must be enough free play in the cable to allow the suspension to move fully without applying the brakes. If the handbrake is released from being fully on there will usually be sufficient spring back in the cable. However, to ensure there is enough free play the lever should be left in the rearward position to allow more cable to unwind if necessary.

Check all clips are tight & the cable is not frayed. Replace if necessary.

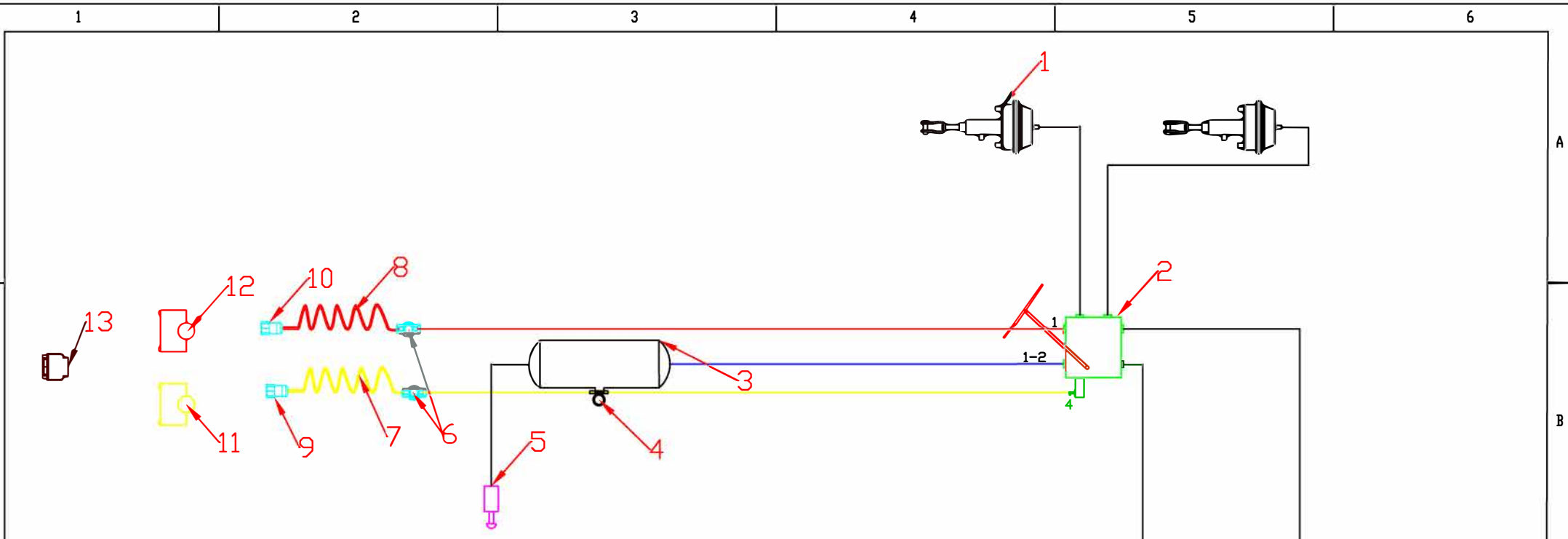
Part Number Breakdown			
Item Number	NC Part Number	Description	Qty
1	HYF-1003-517	1/2" Probe	1
2	HYR-1001-325	25mm Brake Ram	4
2	HYR-1001-326	30mm Brake Ram	4
2	HYR-1001-327	35mm Brake Ram	4
2	MTL-2012-000	Type 16/25 Air / Hyd Cyl	4
2	MTL-2012-005	Type 20/30 Air / Hyd Cyl	4
2	MTL-2012-008	Type 24/35 Air / Hyd Cyl	4
3	HYF-1004-040	Brake Block 4 Branch Manifold	1
4	HYV-1015-411	Hydraulic Load sensing Valve	1
5	HYV-1015-412	Hydraulic Breakaway Valve	1
6	HYV-1015-413	Accumulator	1
7		3/8" InLine Check Valve	1
8	HYF-1003-317	3/8" Tee	2
9	MTL-3010-005	Breakaway Cable	1
10	HYV-1015-415	Electric Breakaway Valve	1
11	ELEC-1505-052	Emergency Stop Turn Release	1
12	HYF-1003-511	Rear Brake Probe	1

All hydraulic hosing is 3/8"



Colour	Function
Black	Standard
Green	Hydraulic load Sensing
Blue	Hydraulic Breakaway
Red	Electric Breakaway
Yellow	Hydraulic rear brake connection
Full lines represent hydraulic hoses	
Dashed lines represent 2 core electric cable	

Drawing No. DTSH04-A		Qty. / MC 1	Material Dump Trailer	Projection 	Unless otherwise specified dimensions are in mm & tolerances are: decimals tolerance x ±0.5 xx ±0.1 xxx ±0.02	Drawn By RS Sheet 1 Of 1	Finish NA Date 04/07/2019 Page Number 28
Description Hydraulic Braking Components			Machine Ref. Dump Trailer	NC Engineering (Hamiltonsbawn) Ltd. 2 Killyrudden Road, Hamiltonsbawn, Co. Armagh, N. Ireland BT61 9SF Tel: (028) 38 871970 Fax: (028) 38 870362.			
Do Not Scale							

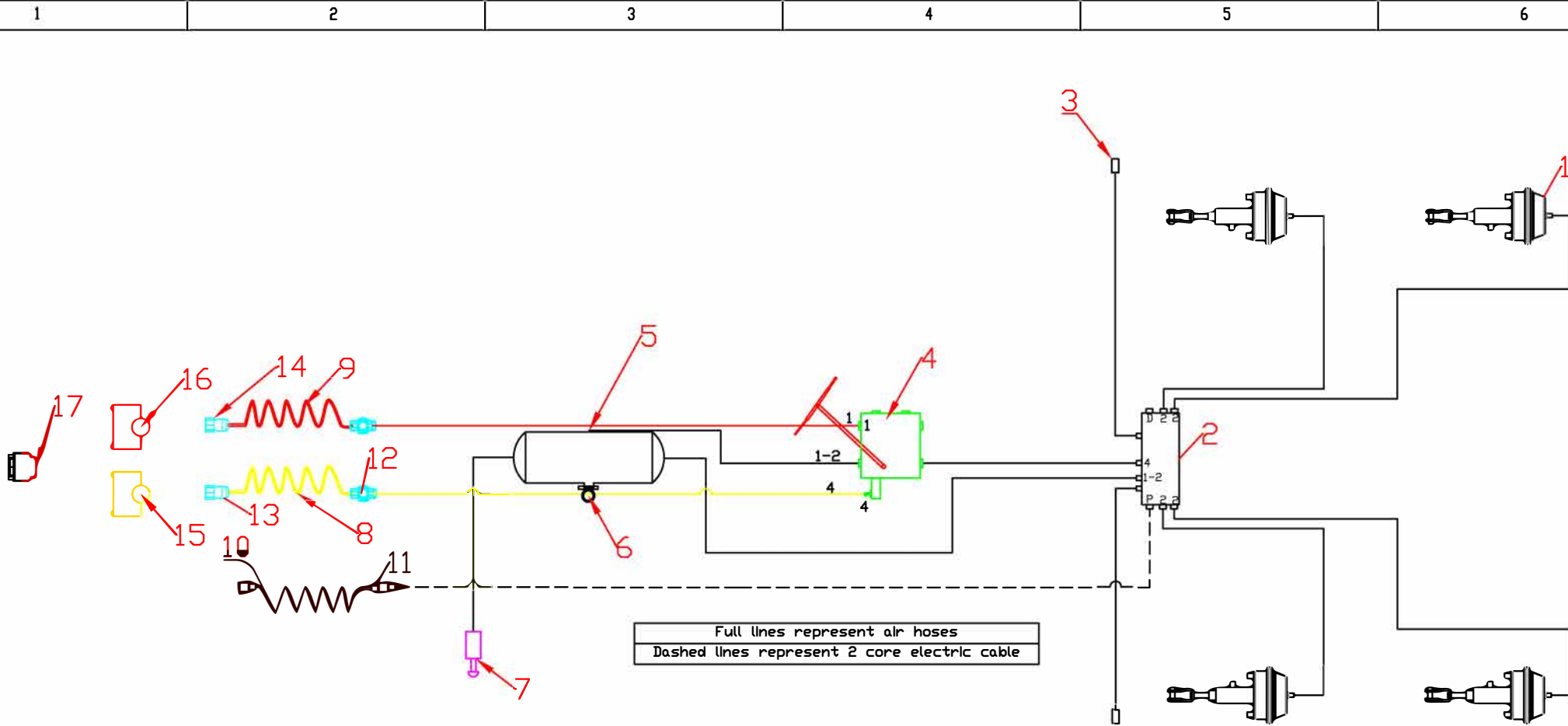


Please specify trailer serial number to enable correct cylinders to be supplied

Part Number Breakdown

Item Number	NC Part Number	Description	Qty
1	MTL-2012-018	Type 16 Air Brake Cylinder	4
1	MTL-2012-020	Type 20 Air Brake Cylinder	4
1	MTL-2012-021	Type 24 Air Brake Cylinder	4
1	MTL-2012-000	Type 16 / 25 Dual Brake Cylinder	4
1	MTL-2012-005	Type 20 / 30 Dual Brake Cylinder	4
1	MTL-2012-028	Type 24 / 35 Dual Brake Cylinder	4
2	MTL-2010-011	6 Port Relay Valve	1
2	MTL-2010-007	6 Port Relay Valve c/w Load sensing Valve	1
3	MTL-2010-480	60L Air Tank	1
4	MTL-2010-630	M22 Drain Valve	1
5	MTL-2010-307	Drain Valve	1
6	MTL-2010-110	M22 End Line Filter	2
7	MTL-2010-062	M22 End Yellow Suzle Line	1
8	MTL-2010-060	M22 End Red Suzle Line	1
9	MTL-2010-015	Yellow Q/R Coupling M22	1
10	MTL-2010-014	Red Q/R Coupling M22	1
11	MTL-2010-101	Palm Coupling Yellow M22	1
12	MTL-2010-100	Palm Coupling Red M22	1
13	MTL-2010-375	Duomatic Coupling	1

Drawing No. <b>DTSH05-A</b>		Qty. / MC 1	Material	Projection 	Unless otherwise specified dimensions are in mm & tolerances are: decimals tolerance x ±0.5 xx ±0.1 xxx ±0.02	Drawn By <b>RS</b>	Date <b>04/07/2019</b>
Description <b>Air Brake Components</b>			Machine Ref. <b>Dump Trailer</b>			Sheet 1 Of 1	Page Number 29
The information contained in this drawing is the sole property of NC Engineering (Hamiltonsbawn) Ltd . , any reproduction in part or whole without the written permission of NC Engineering (Hamiltonsbawn) Ltd . is prohibited.					<b>Do Not Scale</b>	NC Engineering (Hamiltonsbawn) Ltd. 2 Killyrudden Road, Hamiltonsbawn, Co.Armagh, N.Ireland BT61 9SF Tel: (028) 38 871970 Fax: (028) 38 870362.	



Full lines represent air hoses  
Dashed lines represent 2 core electric cable

Part Number Breakdown

Item Number	NC Part Number	Description	Qty	Item Number	NC Part Number	Description	Qty
1	MTL-2012-018	Type 16 Air Brake Cylinder	4	8	MTL-2010-062	M22 End Yellow Susle Line	1
1	MTL-2012-020	Type 20 Air Brake Cylinder	4	9	MTL-2010-060	M22 End Red Susle Line	1
1	MTL-2012-000	Type 16 / 25 Dual Brake Cylinder	4	10	MTL-2010-031	12v ABS Susle c/w 2 Plugs	1
1	MTL-2012-005	Type 20 / 30 Dual Brake Cylinder	4	11		Power Lead c/w ABS Socket	1
2		12v ABS Valve	1	12	MTL-2010-110	M22 End Line Filter	2
3		ABS Sensor Lead	2	13	MTL-2010-015	Yellow Q/R Coupling M22	1
4	MTL-2010-200	6 Port Relay Valve	1	14	MTL-2010-014	Red Q/R Coupling M22	1
4	MTL-2010-007	6 Port Relay Valve c/w Load sensing Valve	1	15	MTL-2010-101	Palm Coupling Yellow M22	1
5	MTL-2010-480	60L Air Tank	1	16	MTL-2010-100	Palm Coupling Red M22	1
6	MTL-2010-630	M22 Drain Valve	1	17	MTL-2010-100	Duomatic Coupling	1
7	MTL-2010-307	Dump/Park Valve	1				

NA  
Date 04/07/2019  
Page Number 30

Drawing No. DTSH07-A  
Qty. / MC 1  
Material  
Projection  
Machine Ref. Dump Trailer

Unless otherwise specified  
dimensions are in mm  
& tolerances are:  
decimals tolerance  
x ±0.5  
xx ±0.1  
xxx ±0.02

Drawn By RS  
Sheet 1 Of 1  
NC Engineering (Hamiltonsbawn) Ltd.  
2 Killyrudden Road, Hamiltonsbawn,  
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