

TOWMASTER

A-frame by Roadmaster

1,700 kilogram capacity A-frame
model number 505-EUJ

Owner's Manual

Entire contents of manual must be read by owner

manufactured by



Time Tested • Time Proven

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Welcome to the ROADMASTER family!

This manual has been prepared to acquaint you with the installation, operation, care and maintenance of your A-frame, and to provide you with important safety information.

Read your owner's manual cover to cover. Understand how to install and operate your A-frame, and carefully follow the instructions and safety precautions.

We thank you for your patronage and greatly appreciate your discerning taste.

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Save this manual

Save this manual for future reference. It contains important sections relative to safety, use, maintenance and other information. Therefore, make sure this manual is always with you when you're towing.

You may download or print a copy of the most current manual at www.roadmasterinc.com (under 'Support').

Your A-frame serial number...

...is located on the interior of one of the A-frame arms.

Write down the serial number in the space below and retain for future reference.

Serial number: _____

All illustrations and specifications contained herein are based on the latest information available at the time of publication. ROADMASTER, Inc. reserves the right to make changes, at any time, without notice, in material, specifications and models, or to discontinue models.

WARNING

Read all instructions before installing the A-frame, or before towing a vehicle. Failure to understand how to properly install or operate the A-frame could result in property damage, personal injury or even death.



Safe towing practices

To ensure your safety and that of your passengers, as well as the safety of others on the road, follow these safe towing practices at all times.

CAUTION

ROADMASTER recommends reversing with the towed vehicle attached be kept to a minimum, and only as a necessity.

Backing up with the towed vehicle attached may cause the towed vehicle to “jackknife,” which could cause non-warranty damage the A-frame.

- **Be sure the vehicle can be towed** before taking it on the road. Failure to properly equip the vehicle will cause severe damage to the transmission or the transaxle, unless the vehicle’s manufacturer has approved the vehicle for flat towing. If this is the case, check the vehicle’s owner’s manual for the proper procedure(s) to prepare the vehicle for towing.

- **The A-frame must be approximately level with the ball hook on the motorhome** – no more than four inches above or below level.

Towing with the A-frame at a severe upward or downward slope may force the coupler off the ball hook on sharp inclines or declines.

- **The steering wheel must be unlocked and free to turn when towing.** Failure to do so can cause severe tire and equipment damage.

- The TowMaster A-frame is rated at a maximum of 1,700 kilograms carrying capacity; therefore **the weight of the towed vehicle and all its contents cannot exceed 1,700 kilograms.**

- **The A-frame must be properly secured with pins before towing.** Unless the A-frame is secured to both vehicles with all appropriate pins, the towed vehicle will detach.

- **Inspect the system before towing** – if any component is damaged, replace it before towing. Also, check the coupler ball clamp and ball socket (Figure 1) for fractures or cracks in the steel.

- **This A-frame is designed for use on paved roads only.** ROADMASTER does

not recommend off-road towing, nor does ROADMASTER warrant the A-frame for off-road use.

- **Never tow a vehicle with one of a comparable weight.** The towed vehicle’s weight should never exceed 40 percent of the towing vehicle’s weight.

Towing a vehicle with one of similar weight will cause the towed vehicle to override the towing vehicle, resulting in “jackknifing.” Serious damage to both vehicles, as well as the towing system could result.

- **Always stand to one side and as close to the motorhome as possible when releasing the A-frame locking**

mechanisms. Never stand between the adjustable arms, or put any part of your body between the adjustable arms, when releasing the A-frame – the towed vehicle may lurch forward when the locking mechanisms are released.

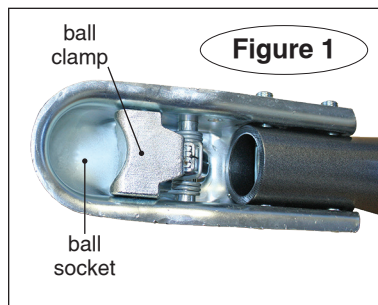
- **Check the motorhome turning radius.** Some motorhome chassis have such a tight turning radius that the motorhome can hit the towed vehicle. Before getting on the road with your towed vehicle, you should test your turning radius in an empty parking lot.

- **Keep the A-frame clean and well-lubricated.** As is the case with most precision equipment, frequent cleaning and care results in better performance and longevity.

Refer to the section titled “Care and cleaning” for further information.

WARNING

Failure to follow these instructions may cause property damage, personal injury or even death.



Connecting the A-frame

Center and adjust the A-frame

Note: it is only necessary to center and adjust the A-frame once for any particular vehicle.

1. Insert both of the towing arms (Figure 2) through the holes in the towed vehicle's fascia and into the threaded holes in the bumper core. Tighten them as much as possible without using a wrench.

Then, as shown in Figure 2, unthread each towing arm just enough so that the holes at the end are parallel with the ground.

2. Holding both of the A-frame arms together, attach either arm to its corresponding towing arm with the included linch pin (Figure 3).

3. Extend the other arm across the towed vehicle and attach it to the other towing arm.

4. Pull the coupler (and the two A-frame arms with it) away from the towed vehicle, as far as they will go. The coupler must be approximately centered between the towing arms on the bumper core.

Both Autowloks (Figure 3) will engage – the buttons will pop up.

5. Using a torque wrench, tighten the two bolts at the yoke (Figure 3) to 71 ft./lbs. (96 N-M).

6. The A-frame is now centered and adjusted to your towed vehicle.

If you wish to tow a different vehicle with the A-frame, untighten the two yoke bolts and repeat the steps above.

To connect the A-frame for towing, follow the steps below.

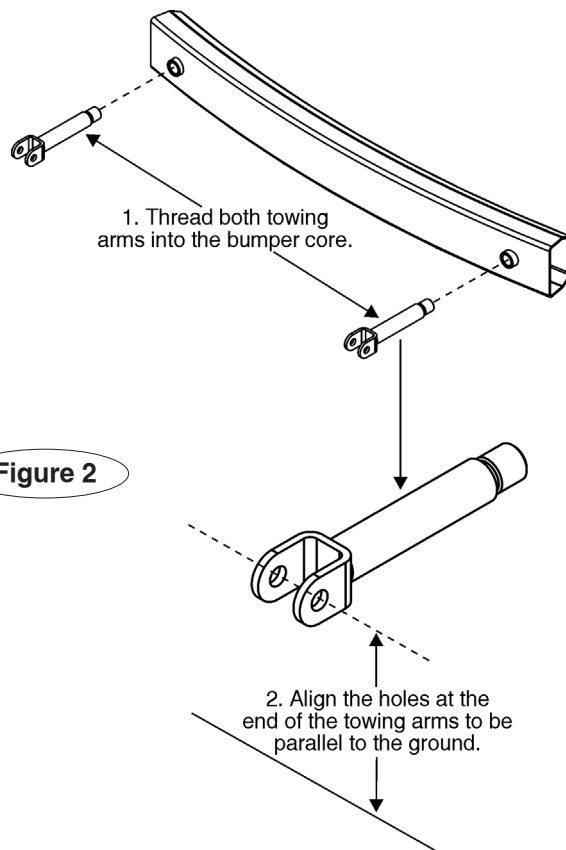


Figure 2

Connecting the A-frame for towing

1. Drive the towed vehicle within three or three-and-a-half feet of the motorhome.

Put the vehicle in gear (park), set the emergency brake and chock one of the wheels.

2. Connect both A-frame arms to the towing arms with the included linch pins.

3. Lift the coupler up and move it forward or backward, as needed, to maneuver it over the ball hook.

If one of the A-frame arms does not slide forward or backward, press down on the Autowlok button to unlock it.

4. Press and hold the coupler locking trigger (Figure 4) and lift the handle (Figure 4) up.

Lower the coupler over the ball hook so that it completely covers it; release the handle.

5. Be certain the coupler is properly locked onto the ball hook – the handle must be completely lowered, as shown in Figure 4, with the coupler completely covering the ball hook, for the coupler to be locked onto the ball hook.

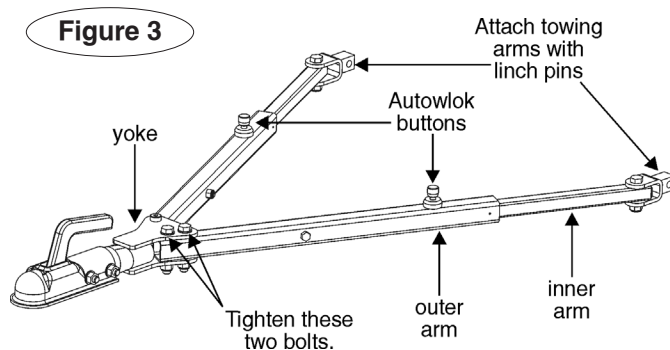


Figure 3

! WARNING

If the coupler is not properly locked onto the ball hook, as described above, it will release during towing. The A-frame will separate from the motorhome, which may cause property damage, personal injury or even death.

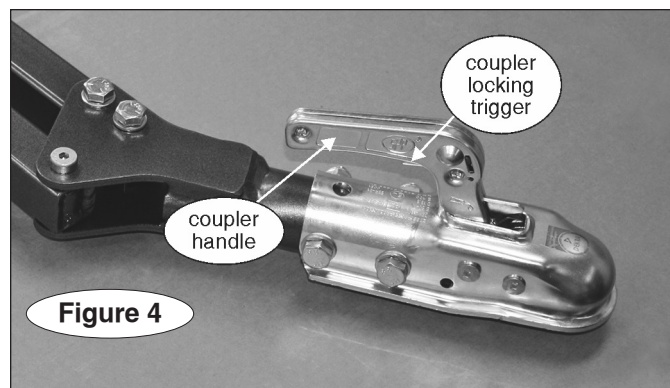


Figure 4

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Connecting the A-frame

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6. Plug in the lighting power cord, according to the supplier's instructions and verify that all lighting systems are functioning.

Before towing the vehicle, make certain that the steering is unlocked, the transmission is in the proper setting, and the emergency brake is released. Remove the wheel chock.

Check the owner's manual for the proper towing procedures or requirement(s) for the vehicle to be towed.

WARNING

Do not tow the vehicle until the A-frame is properly attached with all pins, or the vehicle will detach, which may cause property damage, personal injury or even death.

When you drive away, steer briefly to the left and then to the right, to extend, self-center and lock the A-frame.

Always stop at this time. Check the A-frame to ensure that both arms are locked, before assuming highway speed. Additionally, check the other components of your towing system, to ensure that they are fully engaged.

WARNING

Both A-frame arms must be locked before towing. If they are not, the momentum of the towed vehicle will apply excessive force to the A-frame arms and other components of the towing system, which may cause the towing system to fail, resulting in property damage, personal injury or even death.

Disconnecting the A-frame

1. Disconnecting the A-frame is essentially the reverse of connecting it.

Before you begin, always try to park on level ground, with the towed vehicle in line with the motorhome. This will eliminate most of the tension between the two vehicles, allowing for an easier disconnect.

2. Chock one of the wheels, to prevent a runaway vehicle.
3. Push down on the Autowlok buttons to release the locking mechanisms.

WARNING

When the locking mechanisms are released, the towed vehicle may surge forward. For this reason, always stand to one side when disconnecting the A-frame. Never stand between the adjustable arms, or put any part of your body between the adjustable arms.

CAUTION

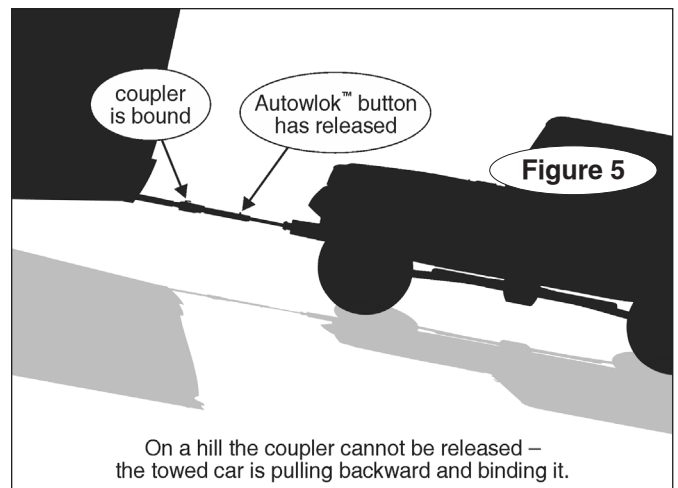
Never use a hammer or mallet to disconnect the Autowlok buttons. The A-frame arms will not automatically lock if the Autowlok buttons are damaged.

4. Pull back on the coupler locking trigger and lift the handle (Figure 4) to release the coupler. Lift the coupler

WARNING

Do not tow a vehicle with a ball hook or any supplementary equipment rated less than the actual weight of the towed vehicle and all its contents.

If any supplementary towing equipment is not rated at the weight of the towed vehicle and all its contents it may fail during towing, causing property damage, personal injury or even death.



off the ball hook.

Note: if you must park on an uphill incline, you may find that you cannot release the coupler even with the Autowlok buttons released. The weight of the towed vehicle trying to roll back (Figure 5) is binding the coupler in place.

Allow the towed vehicle to idle forward just enough to
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Disconnecting the A-frame

continued from previous page

take the tension of this weight off the coupler. Then hold the vehicle in position by first applying the emergency brake, then shifting into park.

Once the tension is off, pull back on the coupler locking lever to release the coupler.

5. Pull the lynch pins from both of the A-frame arms to disconnect them; collapse the arms.

6. Store the A-frame in any covered location that will protect it from the elements.

Care and cleaning

As is the case with most precision equipment, frequent cleaning and care results in better performance and longevity. Use the following guidelines to keep your A-frame clean and well-lubricated.

Always clean the A-frame before lubricating. Use a water-soluble cleaner such as Voom RV (part number 9911) – it does an exceptional job of breaking down road film, dirt and grease.

CAUTION

Do not use petroleum-based products to clean or lubricate the A-frame. Petroleum will attract dirt and dust, which will make the arms difficult to slide.

Clean all moving components, paying special attention to the inner arms and the locking mechanisms. Spray a liberal amount of cleaner on the inner arms and into the Autowlok buttons (Figure 3). Then, spray cleaner into the hole under each Autowlok button. Push and release each button, to work the cleaner into the locking mechanism.

Push each Autowlok button down, and retract and extend each A-frame arm several times. As the arm closes, the cleaner will lift dirt and debris from the interior of the outer

arm and the locking mechanism. Wipe the dirt and debris off and repeat, if necessary, until each arm is clean.

After cleaning the A-frame, wipe any remaining cleaner away.

Now that you have a clean, dry A-frame, use a dry silicone aerosol, such as LubeMaster (part number 747), to lubricate the A-frame – spray a liberal amount of silicone into all moving components, including the Autowlok buttons.

Flex the A-frame components, and push and release the Autowlok buttons, to work the lubricant in.

CAUTION

Always clean the locking mechanisms, as described above, before lubricating them. Silicone coats and covers in a thin layer. If it is not removed, it will reduce the clearance for the locking mechanisms, preventing proper operation.

Lubricate the coupler ball socket and ball clamp. The manufacturer's instructions are on the next page

Coupler information

Following are the coupler manufacturer's operation, latching and maintenance instructions, for your reference.

Assembling, operating and maintenance instruction of coupling heads ZSK and BC type

1. Introduction

Coupling heads are made in accordance with the Directive 94/20/EWG and the Regulations ECE-R55. Coupling heads are of great importance for road safety, therefore numerous tests have been carried out to confirm their reliability. Nevertheless, to ensure their reliability it is essential that coupling heads are properly assembled, operated and maintained. Therefore, please read this instruction very carefully and follow all the directions.

2. Range of application

Coupling heads can be used only with those trailers where the required parameters marked on the trailer casing have not been exceeded. All coupling heads are to be coupled with A class tow-hook balls (50 mm in diameter) that are made in accordance with the Directive 94/20/EWG and the Regulations ECE-R55.

Ranges of rotation – see **Figure A**

3. Assembling instruction

A coupling head should be fastened so that the coupling point of the trailer (with horizontal positioning of the bodywork, the maximum permissible "Pmax" axle load and properly placed load) does not exceed the permissible S value (vertical thrust) engraved on the body of the coupling head, and is 430 ±35 mm above the surface of the tyre adhesion to the ground – see **Figure B**. All deviations must be taken into consideration when approving the trailer construction. Coupling heads (depending on a design) may be fastened onto pipe shafts (round or square), V-shaped shafts and inertia brake couplings.

3.1. Assembling to a pipe shaft (round or square)

The casing of the coupling head should be placed on the shaft, properly positioned to the holes and screwed down with 2 bolts, 2 self-retaining nuts, 4 washers and 2 distancing jointing sleeves – see **Figure C**. When there are three vertical fastening holes, only two are to be used i.e. the front fastening hole and one of the rear ones.

3.2. Assembling to a V-shaped shaft

The recommended way of fastening the coupling heads of ZSK-750K and BC-800L type to a V-shaped shaft with steel sections that are up to 24 mm wide and up to 60 mm high with the use of a connector, horizontally placed 4 fastening screws M12x35 (ISO 4017), 4 self-retaining nuts, M12 (ISO 7040), and 8 washers 12.5 mm inside diameter (ISO 7090), is shown in detail in – see **Figure D**.

The other method of fastening the coupling heads of ZSK-750K and BC-800L type to a V-shaped shaft with steel sections that are up to 30 mm wide and over 60 mm high with the use of a connector, 2 vertically placed fastening screws M12 x 35 (ISO 4017), 2 self-retaining nuts M12 (ISO 7040) and 4 washers 12.5 mm inside diameter (ISO 7090) – see **Figure E**.

It is obligatory to check if all the bolts are screwed down properly after 1,000 kilometers.

4. User's manual


In order to couple and uncouple the trailer safely one should


- Make sure that there is a vacant space round the ball of the hook to exclude possible collisions with the spare wheel, frame and other bodywork elements.
- The trailer should be loaded properly, without exceeding the permissible total weight "Pmax," so that the thrust on the coupling ball does not exceed the "S" value (marked on the body of the coupling head) – see **Figure B**.
- To make sure that the coupling head is properly fixed it is important to check the position of the indicator and the clearance between the coupling head and the ball of the hook – see **Figure F**.
- If the coupling between the ball and the coupling head slackens e.g. clatters start occurring during driving, it means that either the ball or the coupling head is used up and should be replaced at once. The diameter of the ball should be at least 49.13 mm. If the value is smaller it indicates that the coupling ball is used up.
- If a coupling head should get damaged or deformed in an accident or because of overload, it should instantly be replaced.
- Being of great importance for road safety, coupling heads should not be altered in any way.

5. Operating instructions of BC and ZSK type coupling heads

- In order to open the coupling head, push the safety bolt 'R' with the index finger upward and turn the coupling handle 'D' forward – see **Figure G**.
- The coupling head is opened when the indicator is in the OPEN position – see **Figure F**.

- In order to couple a coupling head, place the opened coupling head on the ball and push the coupling handle 'D' downward – see **Figure H**, until the bolt 'R' clicks outside.

- The coupling head is coupled properly if the safety bolt 'R' clicks outside and the indicator is in position  – see **Figure F**.

- If the indicator is in position  – see **Figure F**, it means that either the coupling head is fixed incorrectly or that the parts of the coupling head or the ball are worn and should be replaced immediately.

6. Maintenance

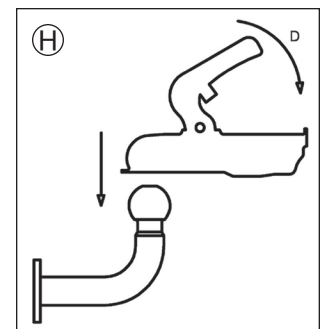
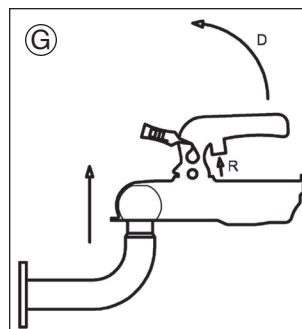
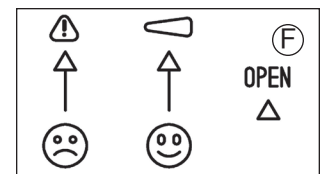
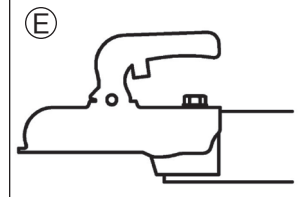
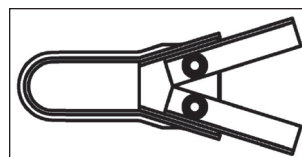
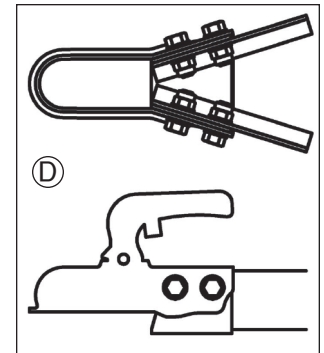
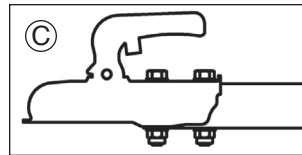
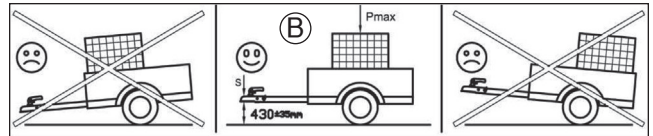
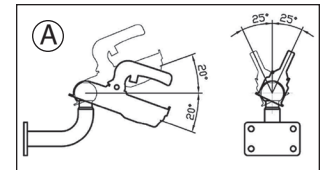
Proper maintenance will provide easy exploitation and proper functioning of a coupling head. To ensure that all joints and bearings should be lubricated – see **Figure G**, and the holding clamp should be cleaned and lubricated regularly.

Table of tightening moments for screws

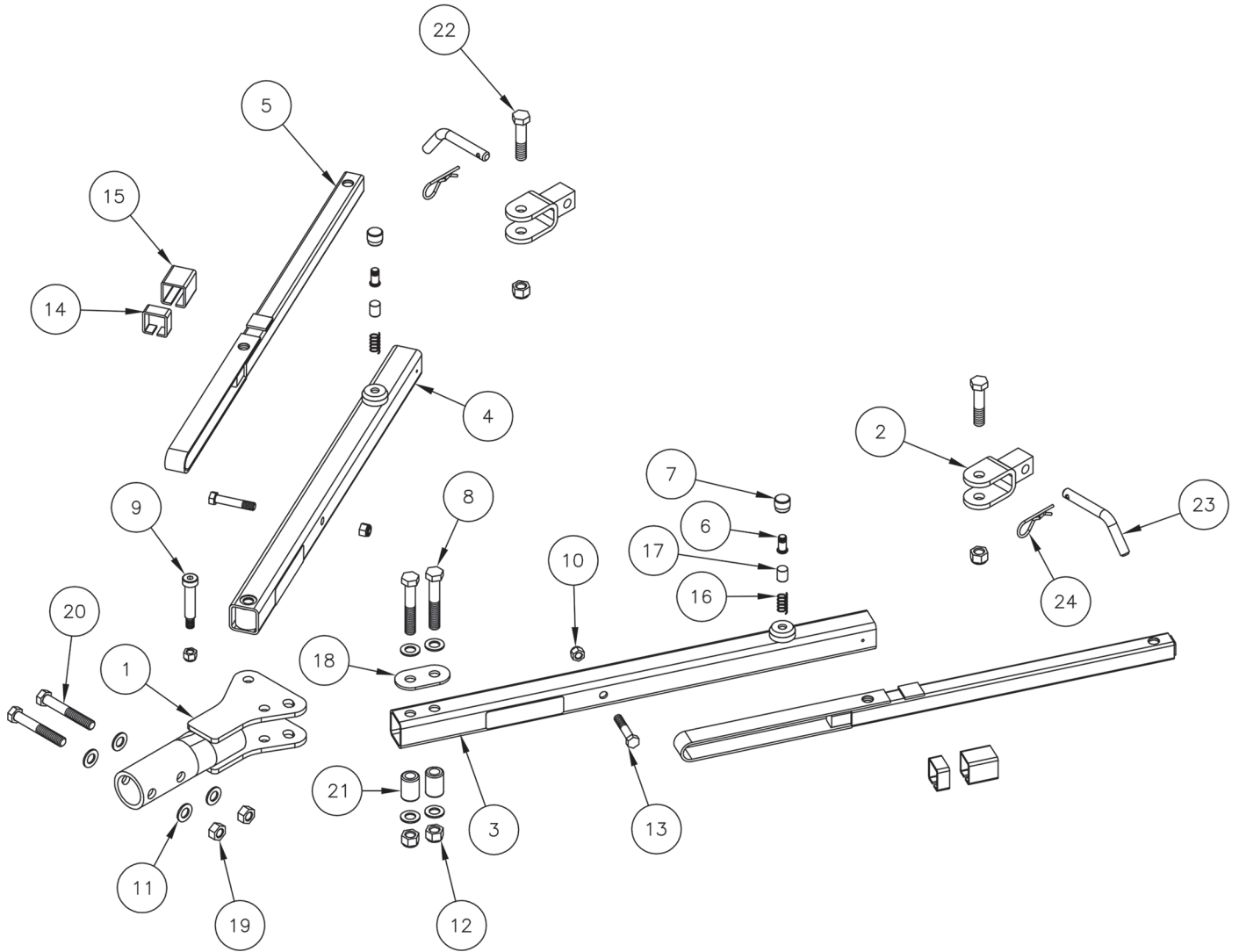
Screw Size	Resistance Class	Tightening Moments
M10	8.8	46 Nm
M12	8.8 / 10.9* / 12.9**	79 Nm / 115 Nm / 137 Nm
M14	10.9*	180 Nm

* Use for fitting the ball couplings of permissible maximum mass of a trailer above 1500kg to 2999kg.

** Use for fitting the ball couplings of permissible maximum mass of a trailer above 3000kg.



TowMaster parts



Item Number	Quantity	Part Number	Description
1	1	C-002851A	Yoke
2	2	C-002848	Universal joint
3	1	C-002863	Driver side outer arm
4	1	C-000915	Passenger side outer arm
5	2	C-000901	Inner arm
6	2	A-000301	Button pin
7	2	A-000302A	Button cap
8	2	350101-00	1/2-13 x 3" grade 5 hex bolt
9	1	350376-00	1/2" x 2" socket head shoulder bolt
10	3	350255-00	3/8" nylon locknut
11	8	355720-00	M12 flat washer
12	4	350263-00	1/2" nylon locknut
13	2	350059-00	3/8-16 x 2" grade 5 hex bolt
14	2	500011-00	5/8" plastic bushing

Item Number	Quantity	Part Number	Description
15	2	500012-00	3/4" plastic bushing
16	2	200001-00	Button spring
17	2	A-000826	Button plunger
18	1	A-004976	Arm spacer
19	2	357212-50	M12 x 1.75 nylon locknut
20	2	357211-80	M12 x 1.75 x 80mm grade 5 hex bolt
21	2	A-001413	Outer arm insert
22	2	350098-00	1/2-13 x 2 1/4" grade 5 hex bolt
23	2	B-002851	M12 draw pin
24	2	357039-00	1/8" R-clip

Not shown
50 mm coupler..... MP1945