

DESTINATION

Tow bar **M-311** is designed for towing a trailer. This ball hook has a current certification of approval authorizing the product with **E20** certification sign.

FITTING CONDITIONS

Tow bar **M-311** can be used and operated in a car with proper technical conditions of body elements. Those parts cannot be mechanically damaged. The ball hook has to be installed and operated in a car according to this instruction. All bolts and nuts in ball hook have to be screwed down with proper torque (Mo). Torque values are given below:

M8	-	25 (Nm)	M12	-	85 (Nm)
M10	-	50 (Nm)	M16	-	200 (Nm)

OPERATION CONDITIONS

The tow bar **M-311** has a rating plate describing correct and safe loads of the hook:

Typ: M-311	Tow bar catalogue number.
A50-X	Tow bar class (compressing device)
E20 55R-01 4088	Tow bar certification of approval number
D = 6,4 kN	Theoretical related force working on a ball hook
S = 50 kg	Max permissible vertical load of the hook ball
R = 1000 kg	Max permissible load of towing trailer

D - force is calculated using the following formula:

$$D = g \times \frac{T \times R}{T + R} \text{ kN}$$

T-technically permissible maximum mass in tonnes of the towing vehicle (also towing tractors) including, if necessary, the vertical load of a centrale axle trailer.
R-technically permissible maximum mass in tonnes of the full trailer with drawgal free to move in the vertical plane or of the semi-trailer.
g-acceleration due to gravity (assumed as 9,81 m/s²)

During operating individual elements of ball hook should be kept in a proper technical condition and protected from corrosion. The trailer must be linked with an elastic joint with proper durability (cord, chain) while towing. It is necessary to check periodically bolt joints during operating the ball hook. If screws are eased, it is necessary to screw them down.

FITTING

The tow bar **M-311** is made up of the following elements:

1. Towbar mainframe	- 1 piece	9. Special washer Ø30/Ø10,5x3	- 13 pieces
2. Tow ball (ACS-2011)	- 1 piece	10. Bolt M10x35	- 13 pieces
3. Tow ball socket (ACS)	- 1 piece	11. Bolt M12x25	- 4 pieces
4. Electrical socket	- 1 piece	12. Bolt M12x35	- 4 pieces
5. Right support	- 1 piece	13. Spring washer Ø10,2	- 13 pieces
6. Left support	- 1 piece	14. Spring washer Ø12,2	- 8 pieces
7. Right strengthening	- 1 piece	15. Round washer Ø13,0	- 8 pieces
8. Left strengthening	- 1 piece	16. Nut M12	- 2 pieces

Please follow the installation fitting instruction below in order to ensure correct installation of the towbar:

1. Installation does not require removal of the rear bumper of the car while require its cutting.
2. On the bottom of the bumper bumper unhook the attachments.

3. Make an undercut in the bumper according to the fig. 1.
4. Attach the strengthenings (7, 8) to the stringers and screw loosely in points A, B using bolts M10x35 (10) with washers Ø30/Ø10,5x3 (9), spring washers Ø10,2 (13).
5. The supports (5, 6) attach to the stringers and screw loosely in points C, D using bolts M10x35 (10) with washers Ø30/Ø10,5x3 (9) and spring washers Ø10,2 (13).
6. Slide the towbar mainframe (1) between the supports (5, 6) and screw using bolts M12x35 (12) with round washers Ø13,0 (15), spring washers Ø12,2 (14) and nuts M12 (16).
7. Tighten all screws.
8. Attach the tow ball socket (3) and electrical plate (4) to the towbar mainframe (1) using bolts M12x25 (11) with round washers Ø13,0 (15), spring washers Ø12,2 (14).
9. Fasten the attachments of the bumper.
10. Put ball (2) to the socket (3) in accordance with attached instruction.

Caution:

Different types of (2) may be attached to the (1) only if:

1. The adapted tow has its own information label with homologation number
2. D and S values are equal or higher than (1) values.
3. Tow ball centre-point is in accordance with the drawing.

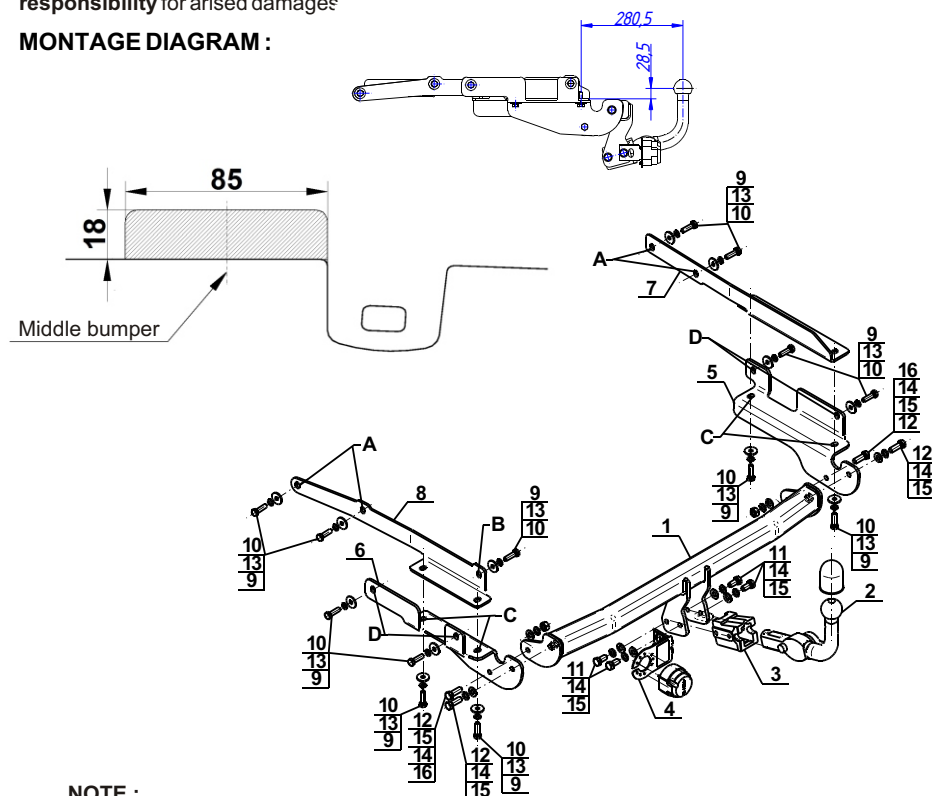
Obeying this instruction assures correct montage and the M-311 tow bar operating.

After assembling of the tow bar **M-311** you have to get entry in cars **registration book**.

CAUTION :

Check if all bolts and nuts are correctly tightened after 1000km. Keep tow ball clean, grease and cased. All mechanical damages of tow bar excludes its further exploitation. Damaged ball hook **cannot be repaired**. In case of braking the rules of montage or improper usage manufacturer **do not take responsibility** for arised damages

MONTAGE DIAGRAM :



NOTE :

Bunch of wires is not included (in total price).