

DESTINATION

Tow bar **O-113** for a **Opel Astra II (Wagon)** 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 **O-113** 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 **O-113** has a rating plate describing correct and safe loads of the hook:

Typ: O-113	The tow bar for Opel Astra II (Wagon)
A50-X	Tow bar class (compressing device)
e20 0234-00	Tow bar certification of approval number
D = 8,5 kN	Theoretical related force working on a ball hook
S = 75 kg	Max permissible vertical load of the hook ball
R = 1500 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 **O-113** for **Opel Astra II (Wagon)** is made up of the following elements:

1. Towbar mainframe	- 1 piece	9. Bolt M12x120	- 4 pieces
2. Electrical socket plate	- 1 piece	10. Bolt M12x100	- 2 pieces
3. Tow ball	- 1 piece	11. Bolt M12x35	- 1 piece
4. Right flat bar	- 1 piece	12. Bolt M10x35	- 1 piece
5. Left flat bar	- 1 piece	13. Flat washer 10,5	- 1 piece
6. Distance sleeve 17,3/ 12,5x85	- 4 pieces	14. Flat washer 13,0	- 8 pieces
7. Special washer 35/ 10,5x6	- 1 piece	15. Spring washer 10,2	- 1 piece
8. Distance insert	- 2 pieces	16. Spring washer 12,2	- 7 pieces
		17. Nut M12	- 7 pieces

Follow the general directions in order to fit **O-113** tow bar properly:

1. Rear bumper cutting **is not required**.
2. Pull off the fitted carpet in the boot.
3. Drill 4 holes 12,5 in the factory-made marked points, vertically down through the chassis rail (two holes on the each side).
4. Enlarge previously drilled holes from 12,5 to 17,5 from the boot side also but only through one wall.
5. Put (6) into drilled holes, put, (4) and (5) flat bar and insert (9) then.
6. Put the mainframe (1) from the bottom of chassis rails and screw with (17) along with (16) and (14).
7. Screw the towbar mainframe to the towing lug through factory-made holes, using: (11) along with (14), (16), (17) and (12) along with (15), (13) and special (7). (situated between towing lug support and tow handle).
8. Screw tow ball (3) with electrical socket plate (2) and distance insert (8) to towbar mainframe (1), using bolts (10) with (14) and (16) with (17).
9. Check if all bolts and nuts are correctly tightened.

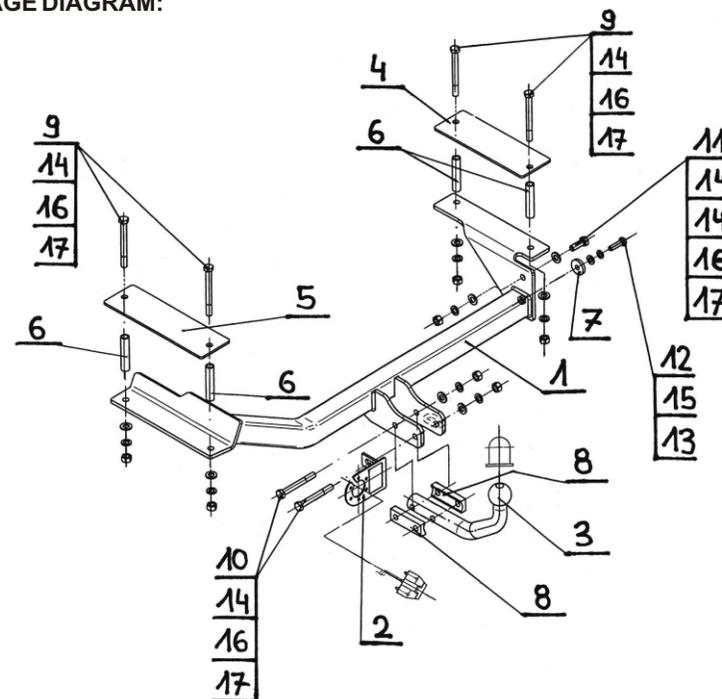
Obeying this instruction assures correct montage and the tow bar operating in a Opel Astra II (Wagon).

After assembling of the tow bar **O-113** you have to get entry in cars **registration book** in a quality control station.

CAUTION:

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 unproper usage manufacturer **do not take responsibility** for arised damages.

MONTAGE DIAGRAM:



NOTE:

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