

## TOW BAR O-230

Opel Zafira  
(1999 - 2005)

## FITTING AND OPERATION MANUAL.

### Nr kat. O-230

#### DESTINATION

Tow bar O-230 for a Opel Zafira 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-230 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 ( $M_o$ ). Torque values are given below :

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

#### OPERATION CONDITIONS

The tow bar O-230 has a rating plate describing correct and safe loads of the hook :

Typ: O-230	The tow bar for Opel Zafira
A50-X	
e20 0158-00	
D = 9,3 kN	Tow bar class ( compressing device )
S = 75 kg	Tow bar certification of approval number
R = 1600 kg	Theoretical related force working on a ball hook
	Max permissible vertical load of the hook ball
	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  $9,81 \text{ m/s}^2$ )

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-230 for Opel Zafira is made up of the following elements :

1. Towbar mainframe	- 1 piece	8. Bolt M10x35	- 2 pieces
2. Tow ball	- 1 piece	9. Bolt M12x65	- 2 pieces
3. Electrical socket plate	- 1 piece	10.Bolt M12x110	- 4 pieces
4. Right cantilever	- 1 piece	11.Flat washer 10,5	- 2 pieces
5. Left cantilever	- 1 piece	12.Flat washer 13,0	- 6 pieces
6. Flat bar with nut M10	- 2 pieces	13.Spring washer 10,2	- 2 pieces
7. Distance sleeve 20/ 12,5x70	- 4 pieces	14.Spring washer 12,2	- 6 pieces
		15.Nut M12	- 6 pieces

Follow the general directions in order to fit O-230 tow bar properly:

1.Rear bumper cutting is not required.

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2. Demount rear bumper and the metal strenghtening.
3. Take the towbar for peaces.
4. In back strip find fabrical pointed places and make a drill 12,5 ( in one wall), and next drill holes to 20 for (7).
5. Tak from the back strip the plastic blindness.
6. Into drilled holes insert (7).
7. From under of chasis side member insert (6) in place fabrically made for that, one each side.
8. From under of chasis side member place (4) and (5) and screw using (8) with (13) (11) with placed before (6).
9. To the back strip of (1) and screw using (10) with (12) (14) (15) through (7) and (4) and (5).
10. Screw (2) to (1) using (9) with (12) (14) and (15), and screw on left side of (2) element (3).
11. Screw strenghtening of bumper and mount the bumper.
12. Check if all screws and nuts are correctly tightened.

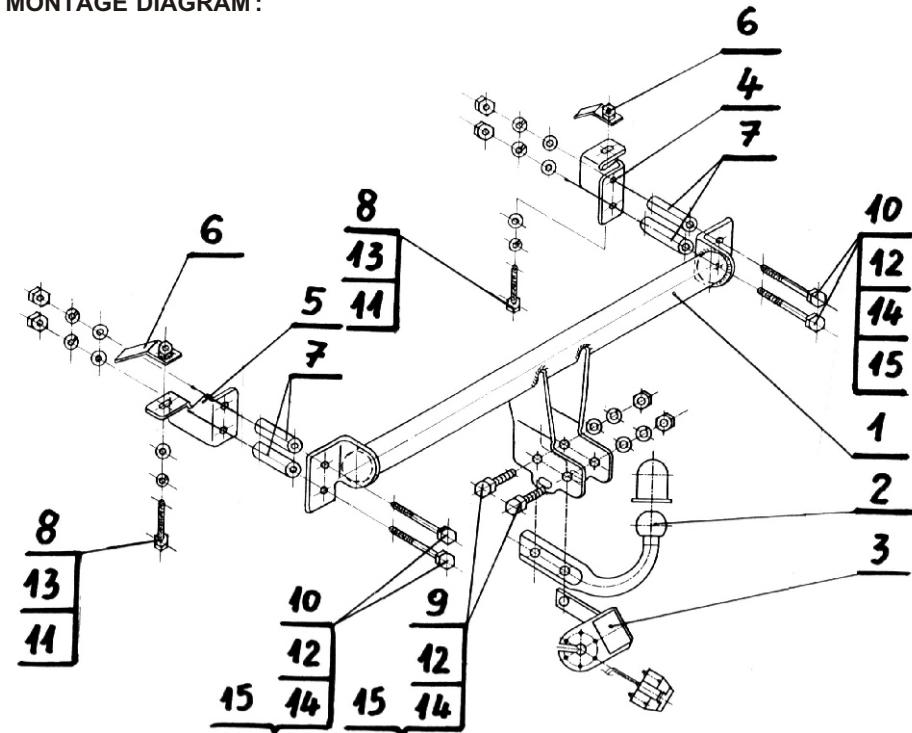
Obeying this instruction assures correct montage and the tow bar operating in a Opel Zafira.

After assembling of the tow bar O-230 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).

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