Assembly rules for LPS couplings

The alignment of the couplings is the main aspect to be taken care of during the assembly phase in order to maximize not only the life of the coupling but also that of the other components of the gearbox.

A precise alignment also allows the coupling to absorb any changes in position between the two shafts during operation, within the limits of the misalignment performance, as shown in the attached table of page 5 and also present in the catalog. This performance is only guaranteed if the alignment is within the tolerances detailed in these instructions.

- **Installation**

  Disassemble the two hubs from the coupling body and proceed with their cold or hot keying according to the required hole tolerances. It is important that the internal surface of the flange is aligned with the end surface of the shaft head (Fig. 1).

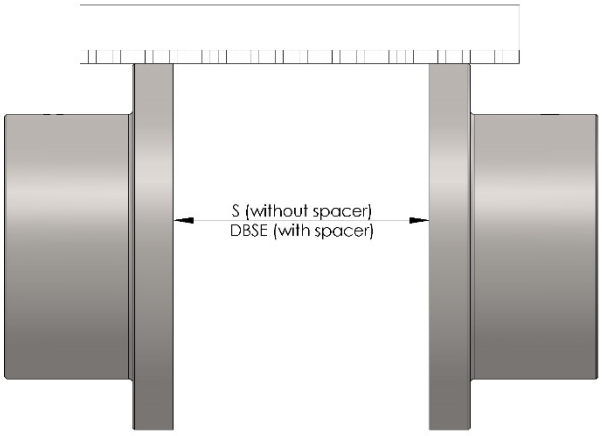


Fig.1

In this way, the correct measurement of the DBSE value will be obtained and it will, therefore, be possible to assemble the DBSE group that is supplied pre-assembled. In case of low DBSE values (up to 180mm) and based on the size, we recommend making a first check of the alignment with a metal line on the 4 quadrants of the external hub diameter (0°/90°/180°/270°) in order to be able to intervene, as a first adjustment, before mounting the DBSE. This is useful in case of major alignment errors. Before mounting the DBSE group, check, as in Section 2), the alignment of the hub flanges in both axial and radial directions. Once the position of the two hubs has been checked, mount the DBSE group (Fig. 2):

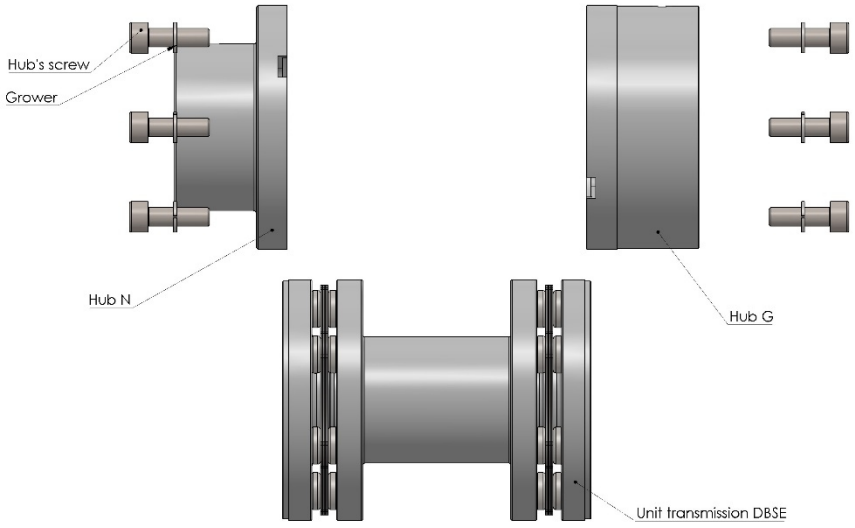


Fig.2

Depending on the size, the assembly of the pre-assembled DBSE differs:

- From size 12 to size 0170:

it is necessary to manually compress the DBSE to be able to insert it into the gap between the two hubs. This will then center on the respective female centerings of the two hubs, thus positioning itself so as to remain in place freely and self-supporting. Now fix it using the supplied screws and washers. The hubs are equipped with two small side seats that allow the insertion of a flat head to aid in the positioning and also the removal of the DBSE in case of need.

- From size 0280 onwards:

To facilitate the compression of the DBSE, use the compression screws, always with a smaller diameter than the hub screws, and inserted on the spacer flange side. The compressed DBSE can be positioned between the two hubs. Once the DBSE has been positioned, remove the compression screws so that the DBSE expands and centers on the hubs and fasten the DBSE to the hubs with the screws and washers provided (Fig. 3)

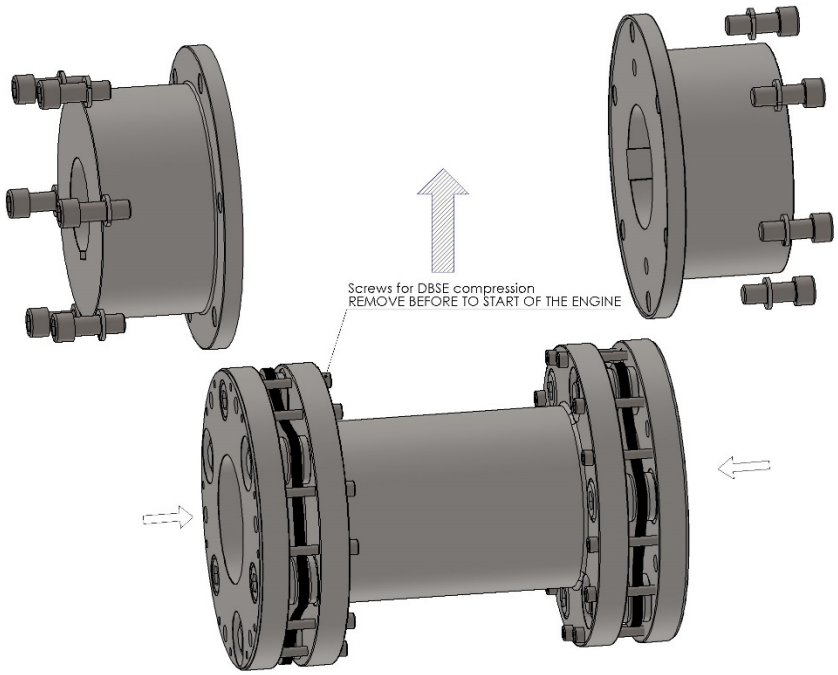


Fig.3

Important: Remove the compression screws before starting the engine to avoid damage to the coupling and driving/driven unit.

The hub fixing screws are standard DIN912 (UNI5931) cylindrical head screws, class 8.8 and have the following recommended tightening torques:

Tightening torques valid for the hubs/DBSE fixing screws					
Size / screw	**Tightening torque** ***Nm***		**Size / screw**	**Tightening torque** ***Nm***	
	8.8	*Stainless steel A4*		*8.8*	*Stainless steel A4*
12 / m6	10.4	7	2100 / m24	691	426
18 / m6	10.4	7	2600 / m24	691	426
32 / m8	24.6	15	3700 / m27	1010	770
72 / m10	50.1	30	5200 / m30	1370	1050
120 / m12	84.8	51	6800 / m30	1370	1050
180 / m12	84.8	51	9000 / m33	1550	1300
280 / m14	135	82	11000 / m33	1550	1300
430 / m16	205	126	15000 / m36	1998	1600
590 / m16	205	126	18000 / m36	1998	1600
704 / m18	283	176	22000 / m36	1998	1600
910 / m20	400	247	26000 / m39	2585	1700
1250 / m20	400	247	32000 / m39	2585	1700
1600 / m24	691	426			

Dimension **S** of the recessed hexagon always follows the DIN912 (UNI5931) standard

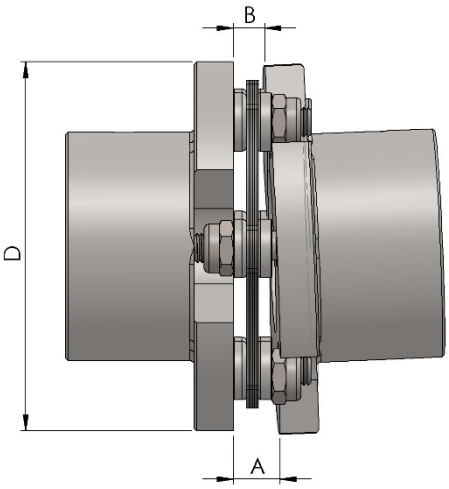
The DBSE dimension has a large axial positioning tolerance. In any case, it is advisable to install the DBSE group at its nominal project value. However, it is possible to have a distance between the shafts up to 1mm higher than the nominal dimension of the DBSE. In this way, the DBSE will still be aligned and with a small axial pulling force in the two opposite directions. The DBSE that works in these conditions can help solving any relevant vibration problems. It is highly not recommended to have a shaft spacing smaller than the DBSE of the coupling.

- **Simultaneous check of the alignment**

A simple simultaneous check procedure of the radial/angular alignment is as follows:
Measure the **S** dimension in 4 or 6 points along the diameter outside of the coupling. Obtain the maximum and minimum dimensions and apply the following formula:

$$\frac{A-B}{D} = dimensionless\ comparison\ value$$

Where:
A = maximum S value (mm)
B = minimum S value (mm)
D = maximum diameter of the coupling
(OD dimension in the catalog) (mm)



Based on the number of screws of the coupling, the obtained value obtained must be **less** than:

0.003 for 6-hole couplings
0.002 for 8-hole couplings

This formula must be satisfied on both sides.

- **Table for max misalignment performance during the work**

Size	Nominal Torque	Misalignment					
		Axial without spacer	*Axial with Std spacer*	*Angular without*	*Angular with spacer*	*Parallel with spacer*	*Parallel Without spacer*
	Nm	*±mm*	*±mm*	*°*	*°*	*±mm*	*±mm*
0012	120	0,75	1,5	0,75	1,5	0,3	0,02
0018	175	0,75	1,5	0,75	1,5	0,4	0,02
0032	320	0,75	1,5	0,75	1,5	0,5	0,02
0072	720	1	2	0,75	1,5	0,6	0,03
0120	1150	1,25	2,5	0,75	1,5	0,7	0,03
0180	1800	1,4	2,8	0,75	1,5	0,8	0,03
0280	2800	1,4	2,8	0,75	1,5	0,9	0,03
0430	4250	1,4	2,8	0,75	1,5	1,1	0,04
0590	5900	1,4	2,8	0,75	1,5	1,2	0,04
0704	7040	1,4	2,8	0,75	1,5	1,3	0,04
0910	9100	1,5	3	0,75	1,5	1,4	0,04
1250	12450	1,5	3	0,75	1,5	1,5	0,04
1600	15900	1,5	3	0,75	1,5	1,5	0,05
2100	20400	1,5	3	0,75	1,5	1,7	0,06
2600	25600	1,5	3	0,75	1,5	1,7	0,06
3700	37000	1,8	3,6	0,75	1,5	2	0,06
5200	52000	1,8	3,6	0,75	1,5	2	0,07
6800	65700	2,3	4,6	0,75	1,5	2,1	0,07
9000	83000	2,3	4,6	0,75	1,5	2,1	0,07
11000	105000	3	6	0,75	1,5	2,5	0,08
15000	135000	3	6	0,75	1,5	2,5	0,08
18000	167000	3,5	7	0,75	1,5	3	0,08
22000	210000	4	8	0,75	1,5	3,5	0,09
26000	259000	4	8	0,75	1,5	3,5	0,09
32000	310000	4	8	0,75	1,5	3,5	0,1