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## MOUNTING INSTRUCTION CLUTCH SIP SUPERSPORT

clutches SIP art. no's 9344xxxx, clutch SIP BFA Race and clutch SIP BFA 306

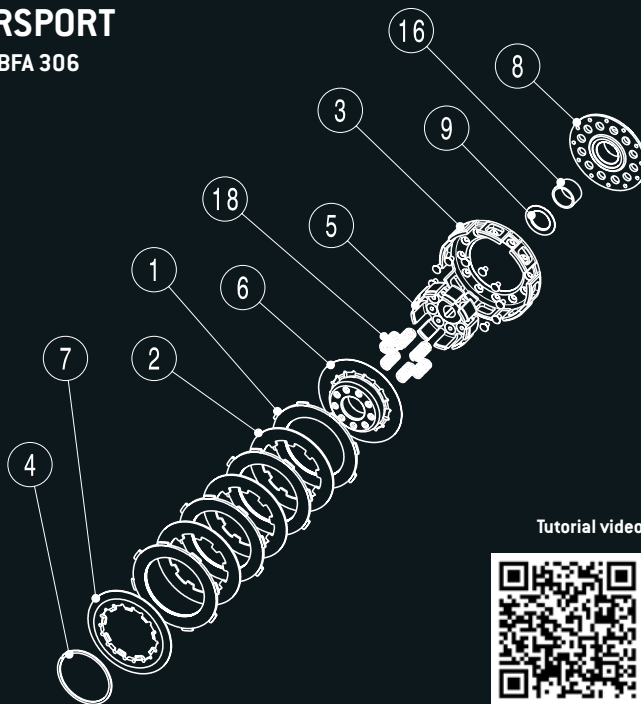
### Clutch dismantling from engine

#### 1. Preparation

- › Park vehicle on concrete plain and even floor
- › Remove rear wheel and if necessary exhaust
- › Remove clutch cover (disattachment of clutch cable is NOT needed)

#### 2. Clutch removal

- › Remove pressure plate of clutch
- › Hold clutch basket with tool SIP art. no. 90991000
- › Untighten the central nut with castle nut tool or size 19 wrench
- › Pull clutch with puller tool SIP art. no. 93332800



Tutorial video



### Assembly of outer clutch basket

#### 1. Outer Basket

- › Select the pinion gear [8] and the big outer basket [3]
- › Remove all oil or dirt remainders on basket and gear surface
- › Apply drops of Loctite 638 glue to the basket (see foto A)

#### 2. Pinion gear

- › One dot loctite on each big face between the 12 diameter 6 holes (see A)
- › Apply loctite to the thread of the 12 M6 sunk head screws [11]
- › Fix the pinion gear to the basket by attaching the 12 sunk head screws [11]



#### 3. Screw tightening

- › Tighten the 12 sunk head screws [11] with torque wrench size TX25
- › Torque value is 8 Nm
- › Tightening sequence crosswise (12 o'clock, 6 o'clock, 3, 9; 11, 5, 2, 8; 10, 4, 1... )

#### 4. Workshop hint

- › A big screwdriver in the bench vise blocks the basket from rotating while tightening the screws [see foto B]





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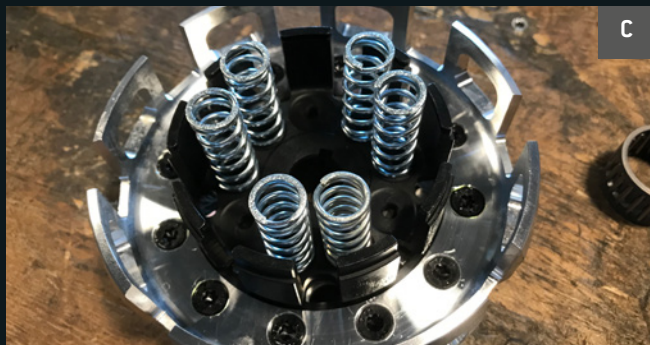
## Build of friction plates cluster

### 1. Bearing and ring

- > Grease needle bearing [16] and insert it to the pinion gear [8]
- > Grease separation ring [9] and put it down into the groove of the pinion gear [8]
- > **Note:** The outside chamfer [9] must point to the pinion gear

### 2. Inner basket

- > Grease the bearing running surface of toothed or slot-type inner basket [5]
- > Insert the inner basket [5] to outer basket assembly
- > Place springs as in picture D; every 3rd location is free (any other symmetric pattern will work too)



### 3. Application hint

- > Clutch pressure can be varied by altering springs hardness and number
- > Carbon friction plates need hard springs, cork plates grip with lower spring tension.
- > **Note:** The pattern of spring positioning must always be symmetrical!

### 4. Base plate

- > Place base plate [6] on top of the springs
- > The arms of inner basket [5] must stick through the base plates holes
- > Apply screws with nuts M5 of mounting tool and compress the baseplate step by step evenly (see foto D)



### 5. Plates insertion

- > Drop gear box oil [SAE30 / 75-W140] on surface of base plate
- > Insert friction plate [1] and drop gear box oil on top
- > Insert first parting disc 2.0mm thickness [2] and drop gear box oil on top

### 6. Parting discs

- > Insert 2nd friction plate and 2nd parting disc of 2.0mm
- > Always spill oil between discs
- > The third parting disk is the thin 1.5mm disc
- > **Note:** Aluminum >Race< parting discs 93440200 are all of same thickness 1.8mm



### 7. Circlip

- > Close inner basket with cover disc [7]
- > Lock plates cluster with circlip [4]
- > **Note:** If circlip is too long (no gap), cut one end by knife

### 8. Assembly finish

- > Release nuts of M5 screws of mounting tool evenly
- > Remove M5 screws of tool from clutch assembly
- > **Note:** The plates cluster remains axially loose within outer basket, until clutch is mounted to crankshaft.





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## Clutch mounting to engine

### 1. Crankshaft flange

- › Check the condition of the woodruff key and the slot in the groove in the crankshaft
- › Choose the correct thickness of washer between crankshaft bearing and clutch (depending on engine type)

### 2. Nut tightening

- › Push clutch on crankshaft
- › Make sure woodruff key matches the slot in inner basket and IS NOT rotated out of position and twisted by clutch insertion
- › Tighten M12 screw and securing washer to minimum 45 Nm\* (tool 93442500)

### 3. Clutch cover

- › Check condition of actuating pin and apply pressure plate
- › SIP recommends ball-bearing pressure plates (e.g. SIP art. no. 50041000, 50055000)
- › Check condition of clutch cover o-ring (no. 92130000)
- › Fit clutch cover and tighten 3x M6 screws to 6 Nm

### Tutorial video



## Hints and troubleshooting:

- › \* tightening torque: Sophisticated crankshafts made of heavy duty steel alloys (race crankshafts) can support much higher tightening torques. 45 Nm is the standard Piaggio recommendation, 70 - 80 Nm are also possible in a lot of applications.
- › Clutch adjustment: Clutch cable/lever must feel soft at the very start of actuation. This is when the actuating pin moves to the pressure plate. If the whole pressure of the clutch springs is instantly felt from the very beginning of lever motion, than the actuating pin is not separating from pressure plate. In this case no oil can enter the gap; bronze pins will melt, if no ball bearing is present in pressure plate.
- › Clutch pressure and transmitted torque can be adjusted with stronger and softer clutch springs. Vespa PK XL2 -type is matching. Also the number of inserted springs changes the pressure.
- › If clutch is slipping, even though actuation (lever) is not pulled, check the distance between clutch cover (actuating pin) and pressure plate. There must be a gap! Distance (gap) can be increased by using clutch-cover-spacers e.g. 17640000, 1761000, 17642000, 17652000, 17650000.
- › Gear box oil: SIP recommends SAE30 (art. no. 14050000) or 75W-140 specified oils (art. no. 14020000).
- › In case of high power applications, woodruff key type mountings can be improved by adding flange mounting fluid (e.g. Loctite 638, 14105000) but which requires heat for clutch removal. SIP recommends to upgrade to toothed-type crankshaft flange (e.g. SIP art. no. 45029300, 45021730) and toothed type clutch SIP Performance art. no. 93441xxx or also 93247100, 93405500, 78245900 ...
- › If clutch is not separating at all, but actuating force feels okay: Try tapered clutch washer art. no. 11351920.
- › In general, Carbon clutch plates require higher clutch force but resist to heat better (race use, strong springs). Cork plates have a higher coefficient of friction and transmit more power with less actuating pressure. But they are more likely to become burned on the surface at overload.
- › See our dedicated mounting tutorial video: <https://sip.shop/kupplungmontage>





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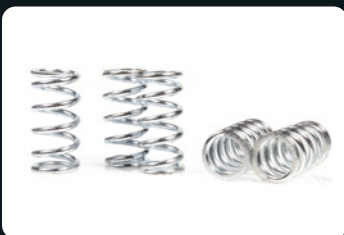
Pos.	Name	spare part no.	woodruff key tooth flange	
			93440000	93441000
1	friction discs Cosa SIP Alu	93440100	4	4
2	parting discs Road	93440250	3	3
3	outer basket for 4 discs type Cosa	93440300	1	1
4	circlip Piaggio 73x67x1,3	28601900	1	1
5	Inner basket slot	93440500	1	0
5	Inner basket teeth	93441500	0	1
6	base plate	93440600	1	1
7	cover plate SIP logo	93440700	1	1
8	pinion gear	various	1	1
9	seperation-ring	93440900	1	1
11	screws M5 x 8mm p0.8 (12 pcs.)	88833870	12	12
16	bearing needle 24x28x17	90084800	1	1
18	springs PK XL 2 standard	82875000	6	6
24	Tool compressor and puller	93442400	1	1
25	Tool rotation blocking	93442500	1	1

All pressure plates are fitting: gen. Piaggio 21580900, SIP 50055000, SIP XT2000 50041000



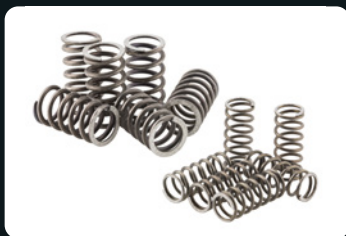
PARTING DISCS RACE Art. no. 93440200

for clutch SIP Supersport 9344, Aluminum, less weight, better friction, cnc-machined, 3 pcs., thickness 1.8 mm



CLUTCH SPRINGS RACE Art. no. 82874100

for clutch SIP Supersport 9344 and PK XL2 Reinforced, hardness XL, max. 9 pieces



CLUTCH SPRINGS SPORT Art. no. 82875000

for clutch SIP Supersport 9344 and PKXL 2 Reinforced, hardness L, max. 9 pieces



PRESSURE PLATE 2.0 Art. no. 50055000

for all classic Vespa clutches, reduced wear of actuating pin, ball bearing, black nitrided



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