

VIN:	XXXXXXX	Vehicle:	X'E84/OFF-ROAD VEHICLE/X1 18dX/N47/MANUAL/EUR/RL/2015/01
System Version:	3.47.30.13232	Data Version:	R3.47.30.13232

21 21 500 Removing and installing/replacing the clutch (SAC 228 N45/N46/N45T/N43/N46T/N47)



Special tools required:

- [11 9 260](#)
- [21 2 170](#)
- [21 2 190](#)
- [21 2 250](#)



Important!

Do not clean self-adjusting clutch and flywheel with high pressure cleaner or washing machine as the proper function of adjustment unit and damping springs can no longer be guaranteed.

Clean friction surface only.

Check SAC clutch for wear and damage and replace if necessary.



Necessary preliminary tasks:

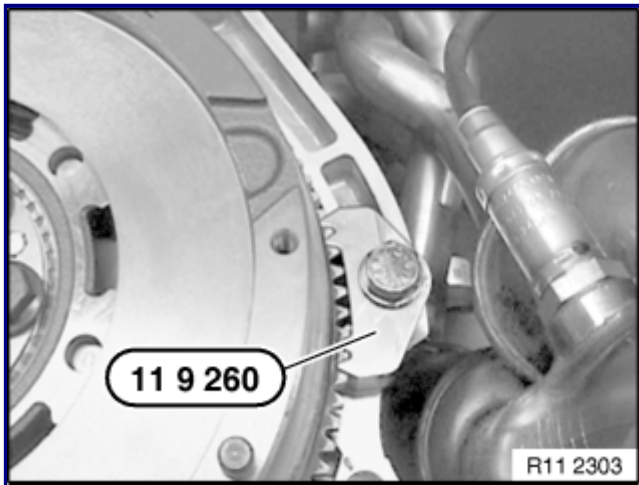
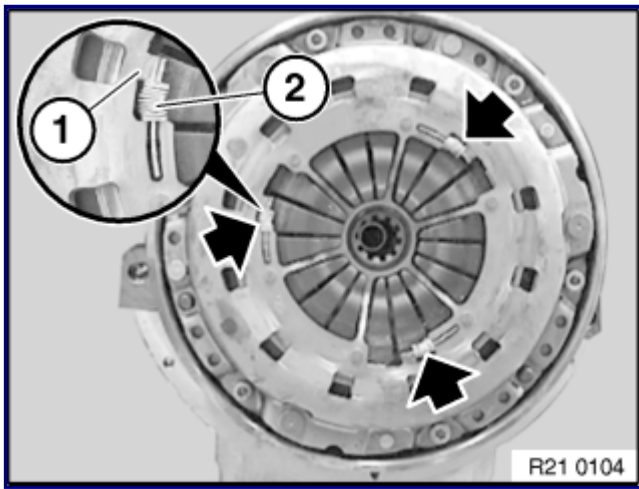
- Remove [transmission](#)

Identification SAC clutch dia. 228 mm (Self Adjusting Clutch):

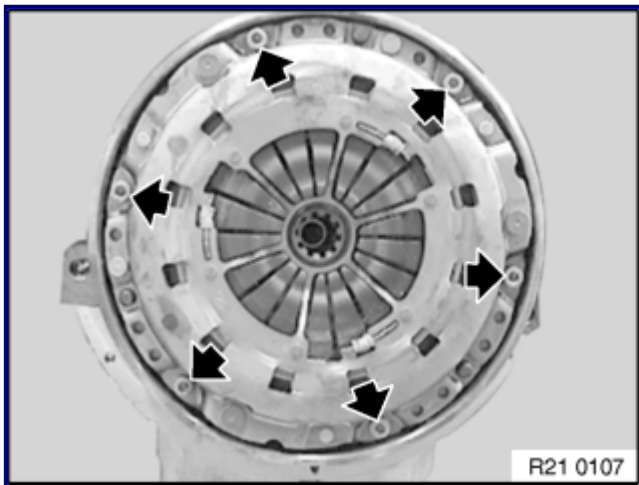
- 3 recesses each with a synchronising key (1) of adjusting ring and a compression spring (2)

Note:

Image shows new position of synchronising keys.



Lock flywheel with special tool [11 9 260](#).



Unfasten bolts and remove SAC clutch from flywheel.

**Important!**

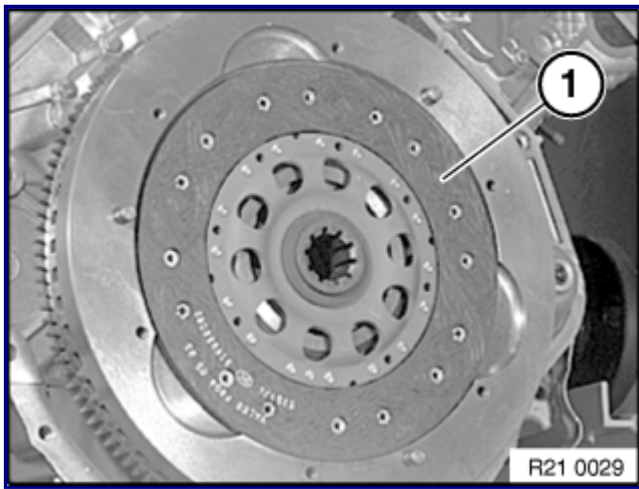
Do not use a special tool to detach SAC clutch from flywheel.

Remove clutch disc (1) from flywheel.

Clean flywheel, check for wear and damage.

Replace damaged flywheel.

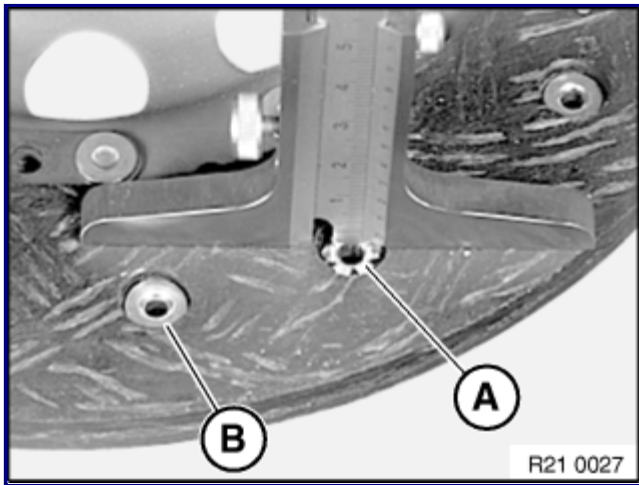
Check grooved ball bearing in crankshaft for ease of movement and tightness and if necessary replace grooved ball bearing.



### Important!

Always replace clutch discs fouled e.g. by oil, cleaning agent.

Check clutch disc for damage and friction rust in hub profile and replace if necessary.



Check clutch disc for wear:

Measure lining protrusion at lining rivets at closing head (A) in each case.

### Note:

Rivet connection

- A) Closing head
- B) Swage head

Replace clutch disc if lining protrusion at closing head (A) is less than 1 mm.

Push clutch disc onto the cleaned transmission input shaft and check for easy movability.



### Important!

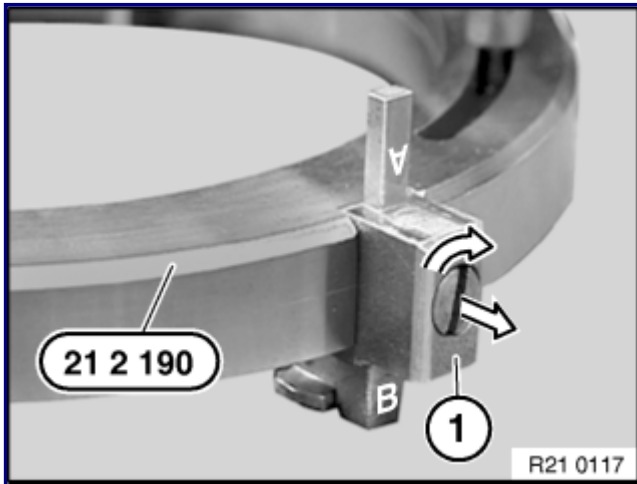
Do not clean self-adjusting clutch and flywheel with high pressure cleaner or washing machine as the proper function of adjustment unit and damping springs can no longer be guaranteed.

Clean friction surface only.

Check SAC clutch for wear and damage and replace if necessary.



## Reinstalling removed SAC clutch and clutch disc:



### *Note:*

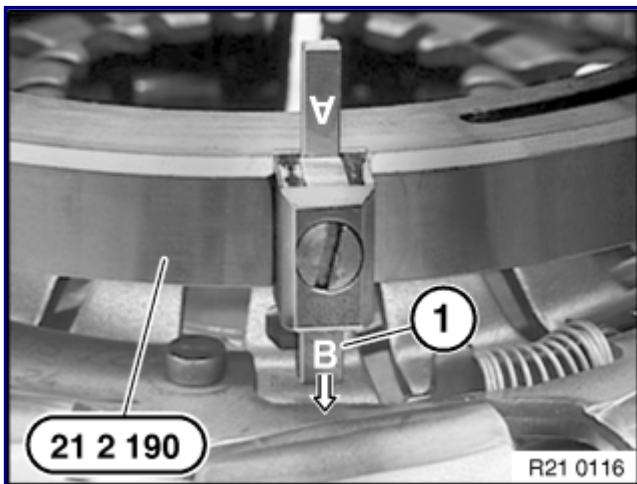
Before installing special tool [21 2 190](#) in self-adjusting clutch:  
Adjust retaining pin to "A" or "B".

A SAC clutch with plastic adjusting ring

B SAC clutch with steel adjusting ring

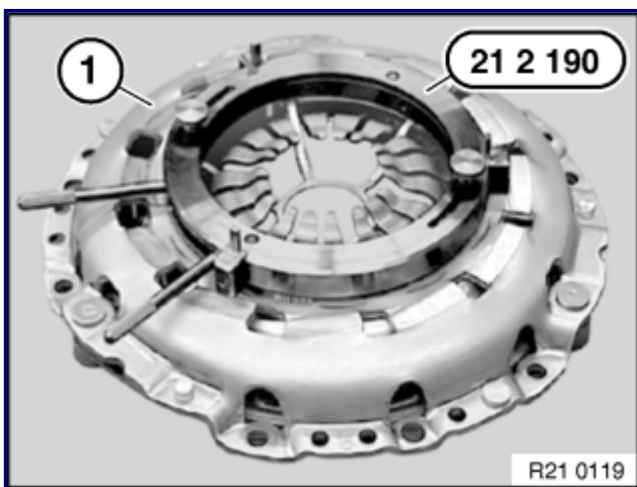
### **Pre-adjustment:**

Pull out handle (1) and through 180° into position "A" or "B".



### *Note:*

Retaining pins (1) or locking hooks of special tool [21 2 190](#)  
must engage in recesses of self-adjusting clutch.

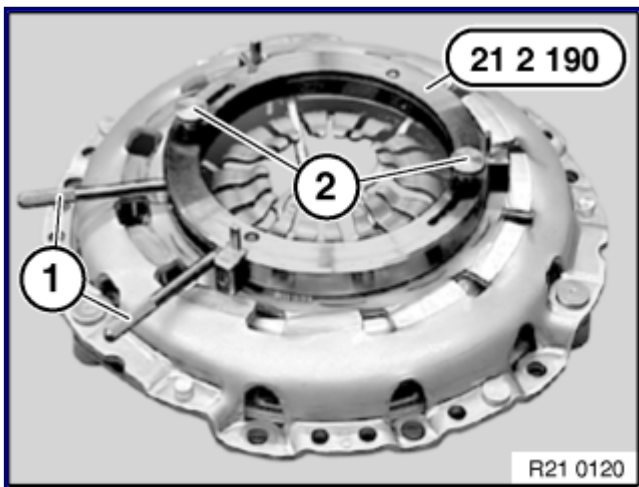


Set SAC clutch (1) down on a clean surface.

Insert special tool [21 2 190](#) in SAC clutch (1).

Press special tool [21 2 190](#) together at handles (1) as far as it  
will go and grip firmly.

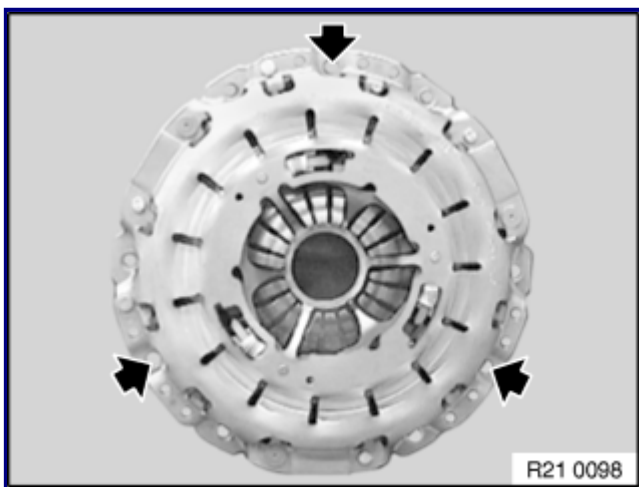
At same time tighten down knurled screws (2).



Adjustment ring of SAC clutch is now secured in its original position (wear position).

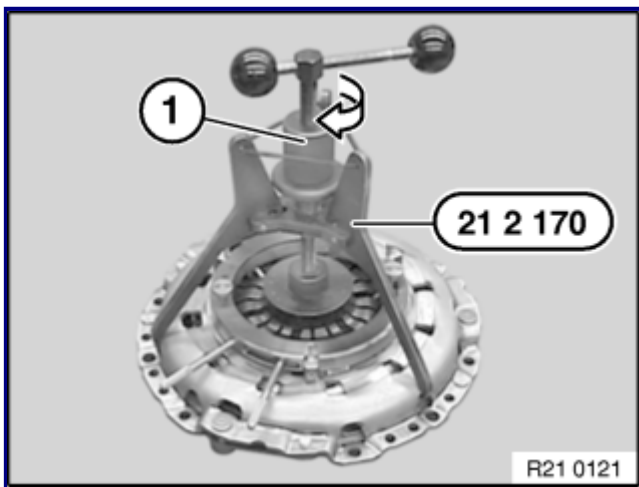
**Important!**

Do not reset adjusting ring to new position.



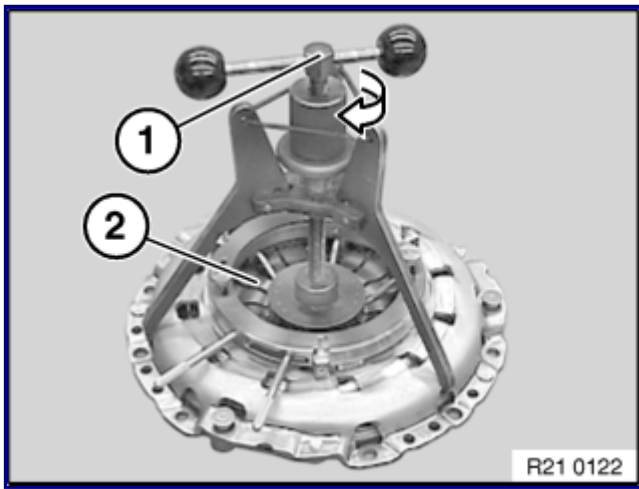
*Note:*

Fit special tool [21 2 170](#) only in area of bore holes for dowel pins.



Fit special tool [21 2 170](#) and tighten down at knurled screw (1).

Screw in spindle (1) until diaphragm spring (2) is tensioned up to stop.

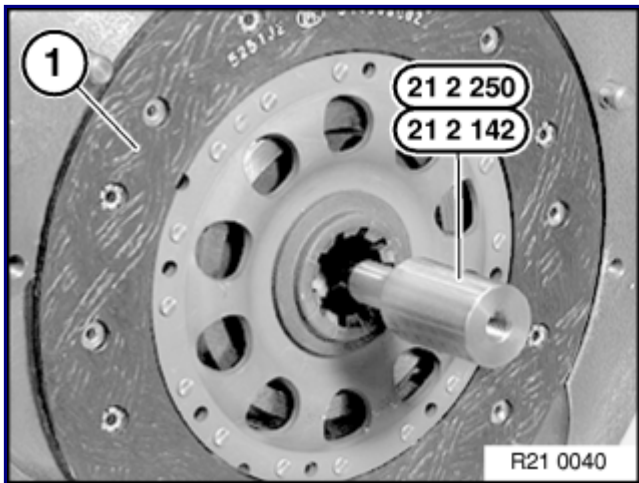


### Important!

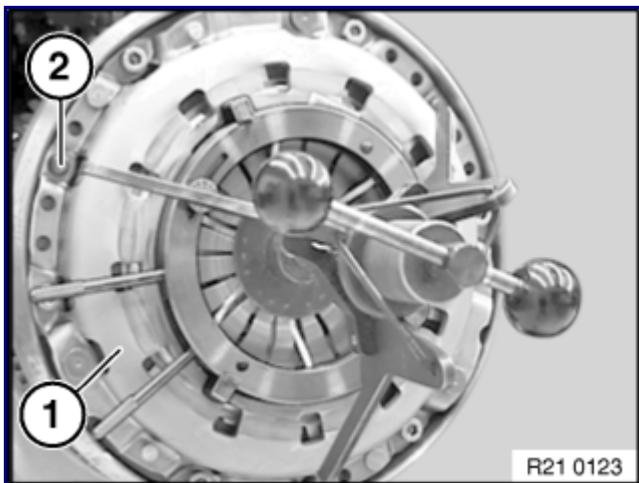
Handle clutch disc with care. Do not touch surfaces of friction linings.

Install clutch disc in correct position.

Pay attention to text "engine end" / "transmission side".



Centre clutch disc (1) with special tool [21 2 250](#).



Fit SAC clutch (1) on flywheel.

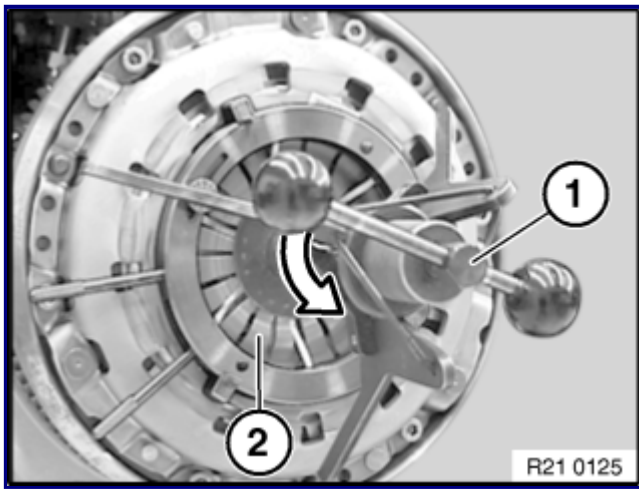
Pay attention to dowel pins (2).

SAC clutch (1) must be secured by way of dowel pins (2).

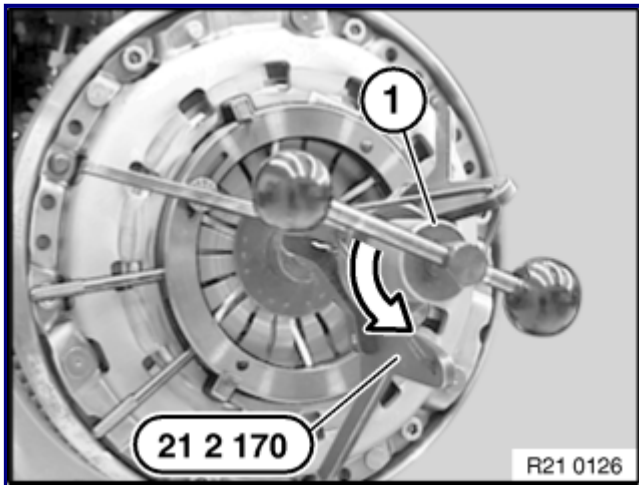
Install and tighten down screws.

Tightening torque: [21 21 1AZ](#).

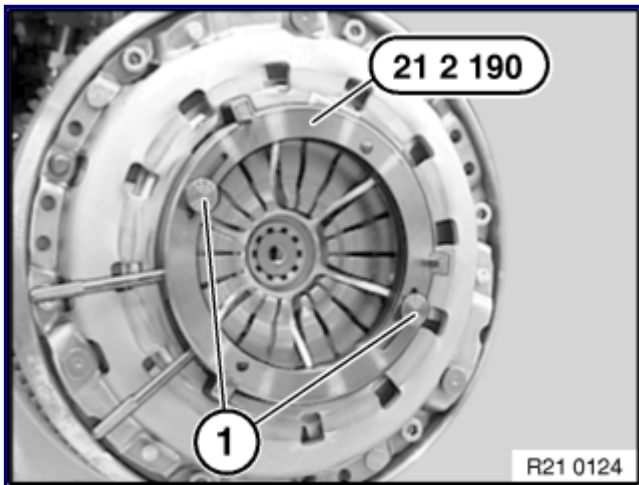




Release spindle (1) until load is fully removed from diaphragm spring (2).



Release knurled screw (1) and remove special tool [21 2 170](#) from SAC clutch.



Release knurled screws (1) and remove special tool [21 2 190](#) from SAC clutch.



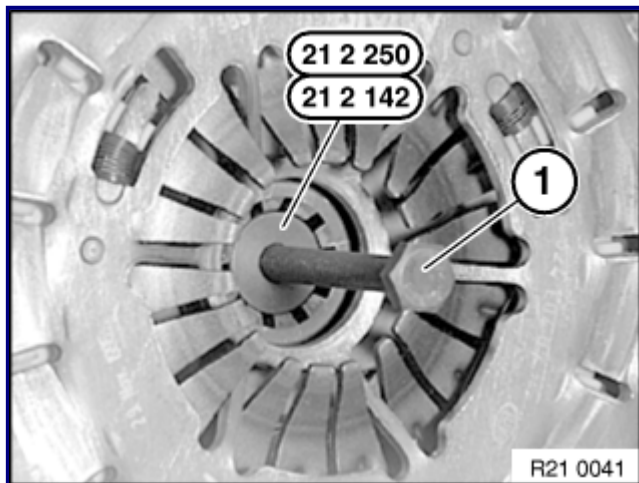
### Important!

If special tool [21 2 190](#) cannot be removed from self-adjusting clutch.

proceed as follows:

- Fit special tool [21 2 170](#) on self-adjusting clutch again and secure

- Screw in spindle up to diaphragm spring.
- Screw in spindle approx. 1 turn over contact pressure of diaphragm spring.
- Remove special tool [21 2 190](#) from self-adjusting clutch
- Remove special tool [21 2 170](#) and [21 2 190](#) from self-adjusting clutch



[21 2 250](#) Withdraw special tool from clutch disc with aid of accompanying screw (1).

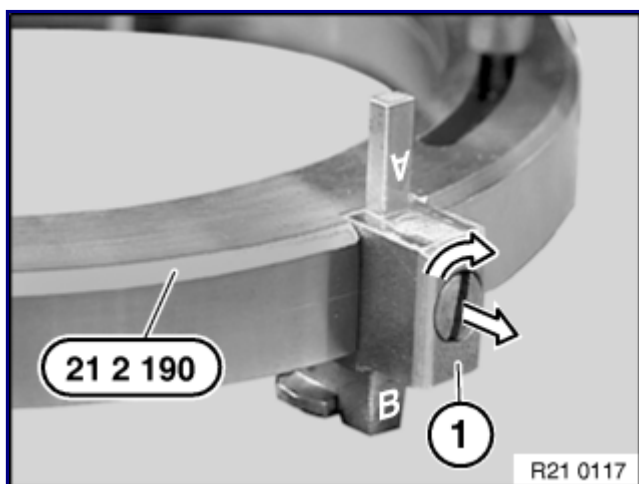


**Installing removed SAC clutch with new clutch disc:**



**Important!**

Before installing an SAC clutch which has been in service with a new clutch disc: always reset adjusting ring in new position.



*Note:*

Before installing special tool [21 2 190](#) in self-adjusting clutch: Adjust retaining pin to "A" or "B".

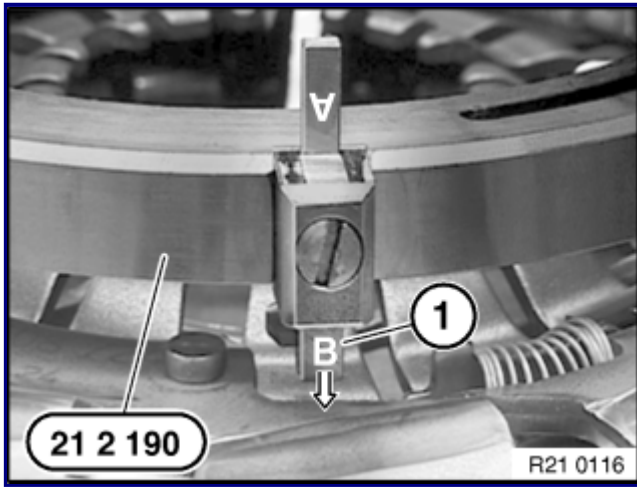
A SAC clutch with plastic adjusting ring

B SAC clutch with steel adjusting ring

**Pre-adjustment:**

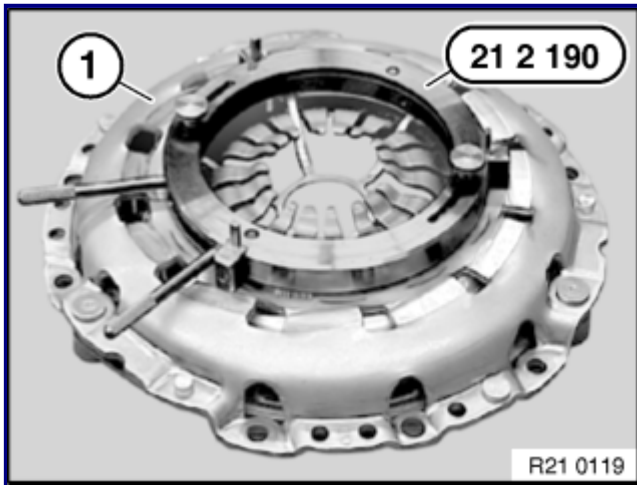
Pull out handle (1) and through 180° into position "A" or "B".





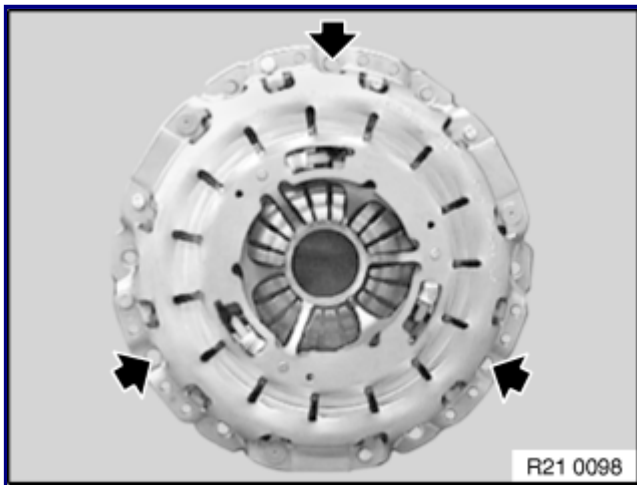
*Note:*

Retaining pins (1) or locking hooks of special tool [21 2 190](#) must engage in recesses of self-adjusting clutch.



Set SAC clutch (1) down on a clean surface.

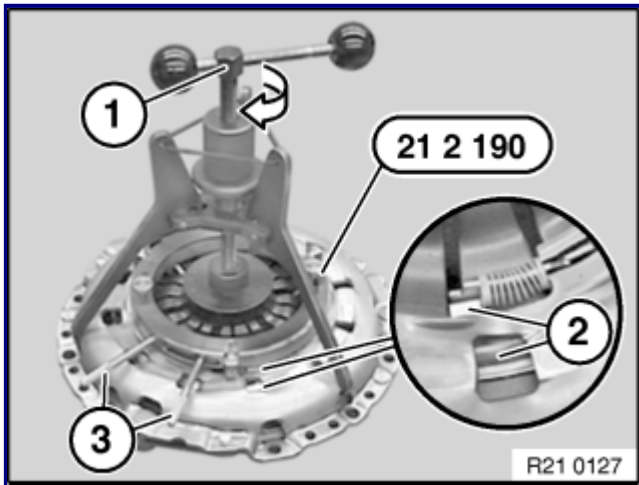
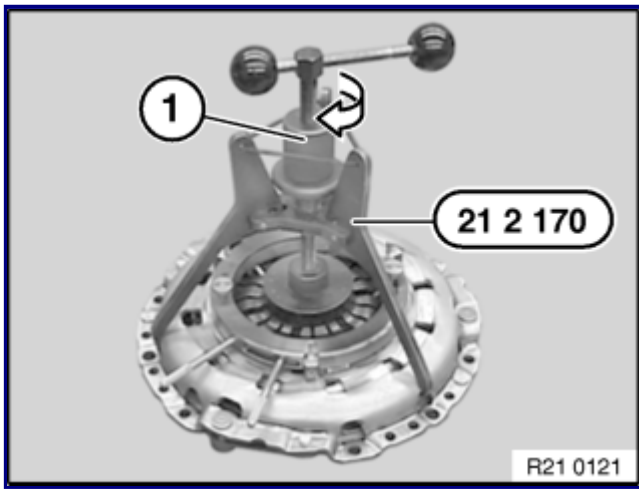
Insert special tool [21 2 190](#) in SAC clutch (1).



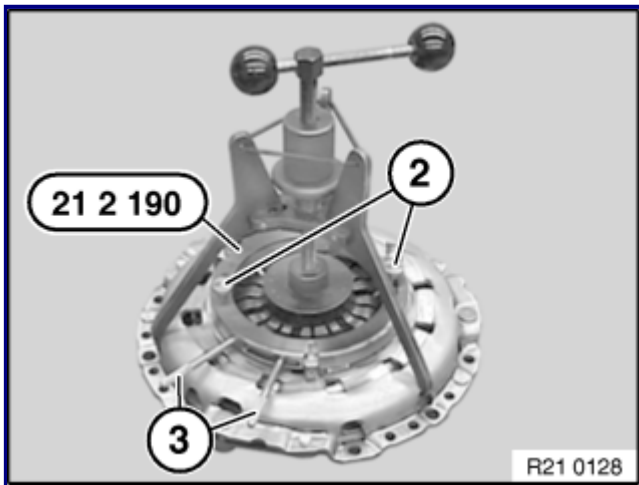
*Note:*

Fit special tool [21 2 170](#) only in area of bore holes for dowel pins.

Fit special tool [21 2 170](#) and tighten down at knurled screw (1).



Screw in spindle (1) until adjustment ring of SAC clutch (2) can be turned with special tool [21 2 190](#) at handles (3).

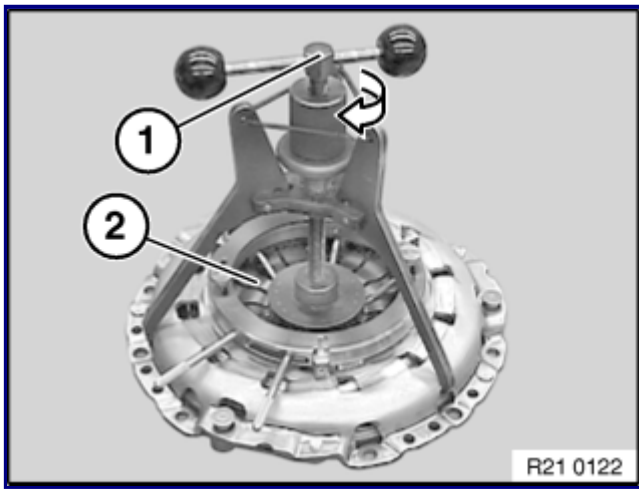


Press special tool [21 2 190](#) together at handles (3) as far as it will go and grip firmly.

At same time tighten down knurled screws (2).

Adjustment ring of SAC clutch is now secured in new position.

Screw in spindle (1) until diaphragm spring (2) is tensioned up to stop.

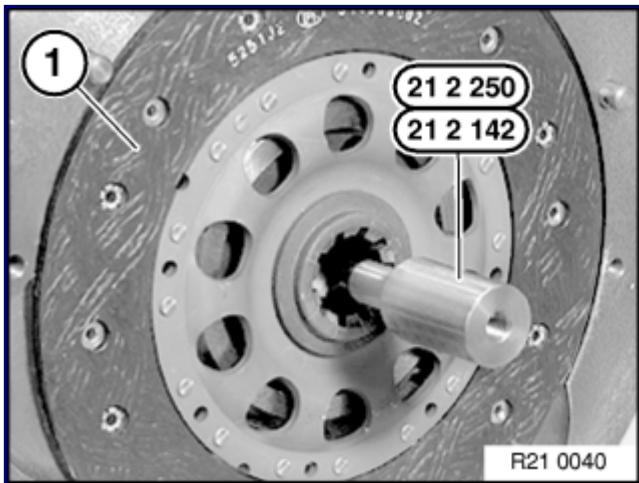


### Important!

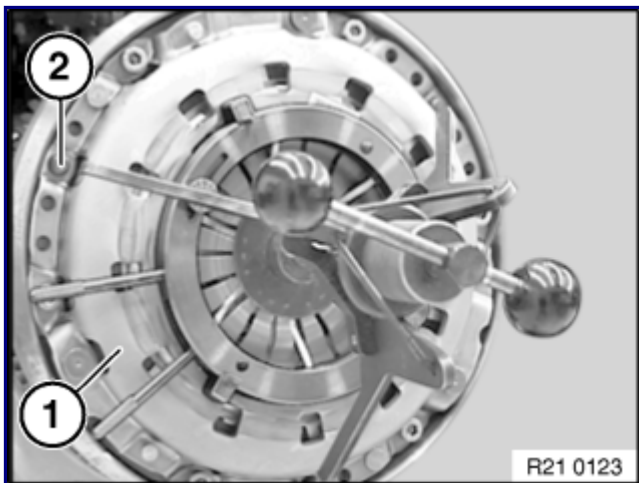
Handle clutch disc with care. Do not touch surfaces of friction linings.

Install clutch disc in correct position.

Pay attention to text "engine end" / "transmission side".



Centre clutch disc (1) with special tool [21 2 250](#).



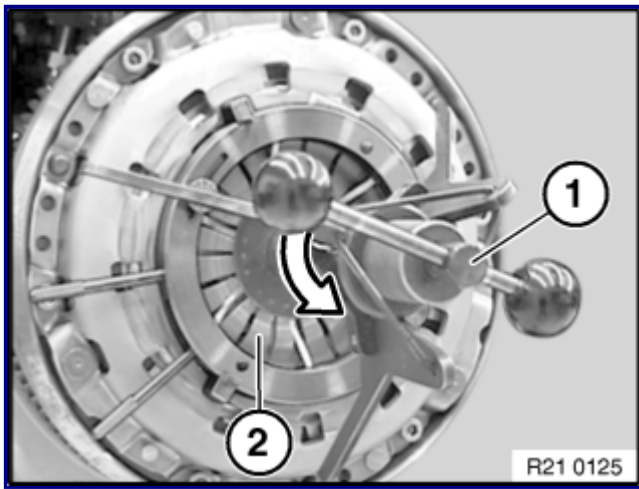
Fit SAC clutch (1) on flywheel.

Pay attention to dowel pins (2).

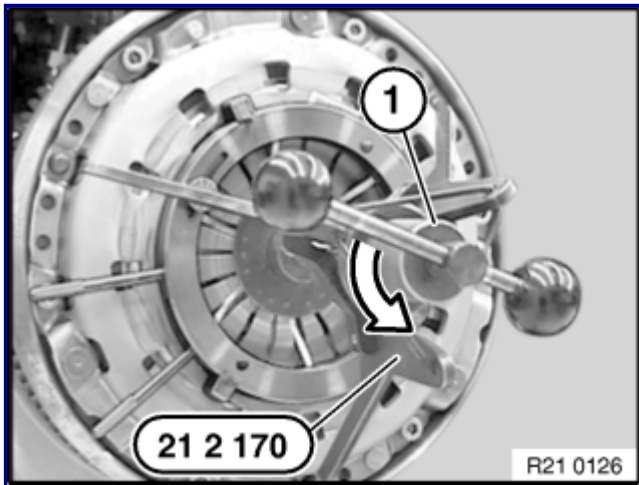
SAC clutch (1) must be secured by way of dowel pins (2).

Install retaining screws of SAC clutch and tighten down.

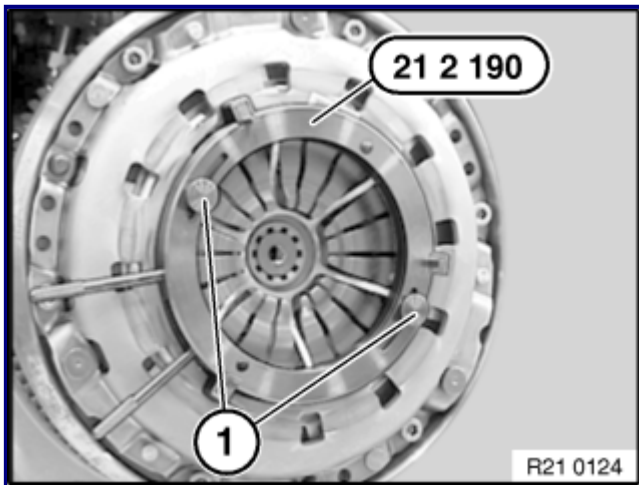
Tightening torque: [21 21 1AZ](#).



Release spindle (1) until load is fully removed from diaphragm spring (2).



Release knurled screw (1) and remove special tool [21 2 170](#) from SAC clutch.



Release knurled screws (1) and remove special tool [21 2 190](#) from SAC clutch.



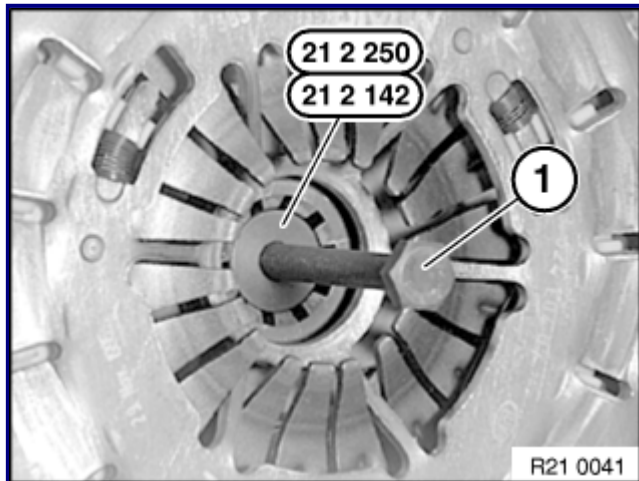
### Important!

If special tool [21 2 190](#) cannot be removed from self-adjusting clutch.

proceed as follows:

- Fit special tool [21 2 170](#) on self-adjusting clutch again and secure

- Screw in spindle up to diaphragm spring.
- Screw in spindle approx. 1 turn over contact pressure of diaphragm spring.
- Remove special tool [21 2 190](#) from self-adjusting clutch
- Remove special tool [21 2 170](#) and [21 2 190](#) from self-adjusting clutch



[21 2 250](#) Withdraw special tool from clutch disc with aid of accompanying screw (1).



**Installing new SAC clutch:**



**Important!**

Handle clutch disc with care. Do not touch surfaces of friction linings.

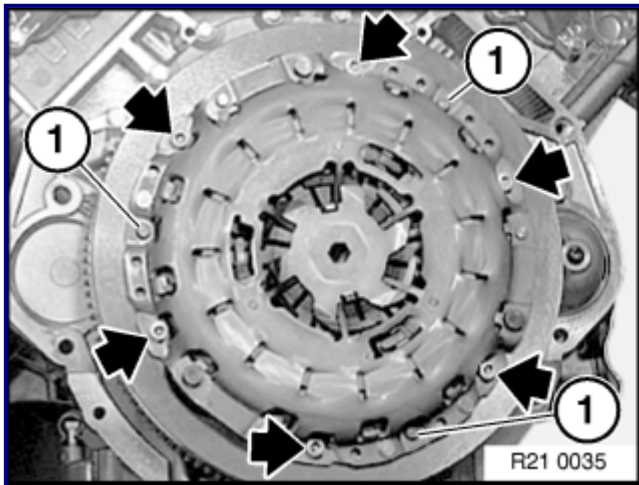
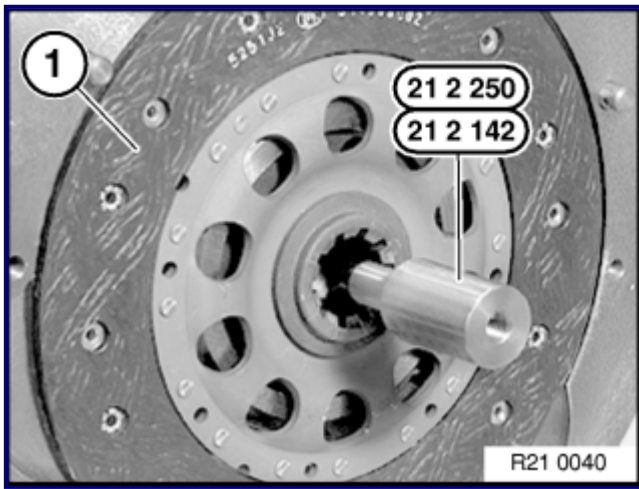
Install clutch disc (1) in correct position.

Note designation for "engine side"/"transmission side".

The [clutch disengagement module](#) contained in the new AT clutch set absolutely **must** be installed.

Centre clutch disc (1) with special tool [21 2 250](#).





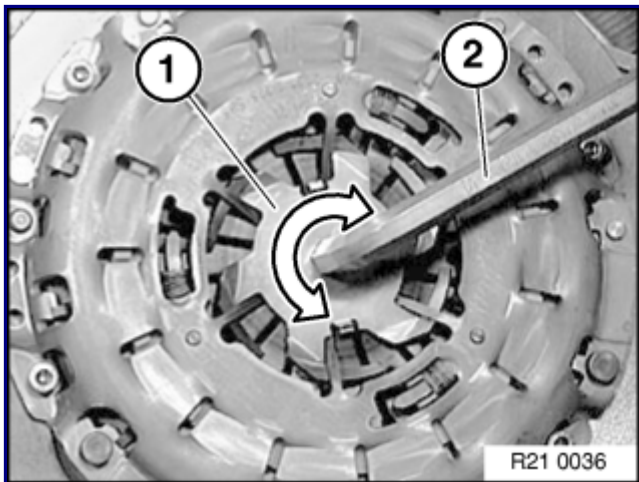
Push SAC clutch onto dowel pins (1) located in flywheel and screw down.

Tightening torque [21 21 1AZ](#).



### Important!

Locking piece (1) may only be removed with SAC clutch screw-mounted!



Carefully unscrew locking piece (1) clockwise or anticlockwise with a hexagon socket wrench 14 A/F (2).

### Note:

A slight snapping of the plate spring while unscrewing is possible.

[21 2 250](#) Withdraw special tool from clutch disc with aid of accompanying screw (1).



