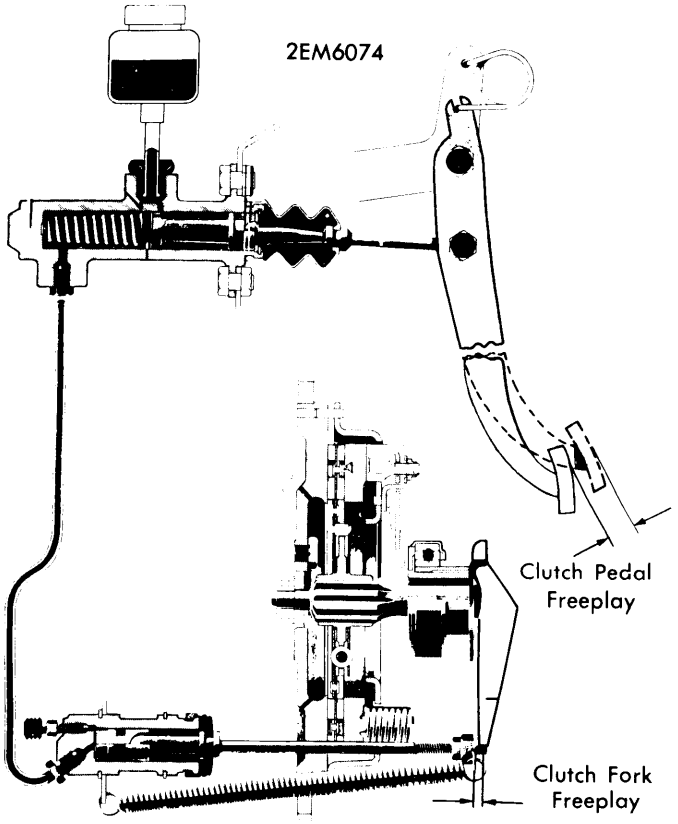
1963-73 BMW (4 CYLINDER ENGINE) HYDRAULIC CLUTCH

1600 (1964-65)
1600-2 (1966-71)
1800 (1963-68)
1800 TI (1963-66)
2000 (After Chassis No. 985060)
2002 (1967-73)
2002tii (1972-73)

NOTE — Some 1600-2 models utilize a mechanical system to actuate clutch. See BMW (4 Cylinder Engine) Mechanical in this section.

DESCRIPTION

Clutch is a dry, single disc type. All 2002 models utilize a diaphragm spring type clutch, all other models utilize a coil spring type. All 1602 and 2002 models use an automatic adjustment system. A hydraulic system is used to engage or disengage clutch.



CLUTCH PEDAL & FORK FREEPLAY MEASURING POINTS

REMOVAL & INSTALLATION

CLUTCH ASSEMBLY

All Models With Longneck Transmission — 1) Pull rubber boot up shift lever. Lift up foam rubber ring and small rubber boot. Pry up spring plate, remove pivot pin and shift lever.

2) Disconnect accelerator linkage from carburetor and ground strap from transmission. Remove starter. Raise vehicle and support with safety stands.

NOTE — Front wheels must be completely off of ground.

3) Disconnect exhaust pipe at manifold, center exhaust pipe mounting bracket and remove muffler. Disconnect drive shaft from transmission and tie to parking brake cable tubes.

4) Disconnect back-up light switch and speedometer cable at transmission. Remove bolt securing hydraulic system hose bracket to transmission.

5) Remove clutch fork return spring. Push back rubber boot on slave cylinder and remove snap ring. Pull slave cylinder out through front and remove push rod.

6) Support engine by attaching a hoist and a suitable lifting fixture (BMW 600) to engine. Separate steering idler arm from chassis and turn steering wheel fully to right.

7) Push steering linkage and idler arm assembly to rear of vehicle as far as it will go. Turn steering wheel back easily and place idler arm on suspension strut rod.

8) Remove clutch inspection cover from transmission and bolts securing transmission to engine. Remove bolt through rubber insulator at transmission crossmember.

9) Remove crossmember and lower transmission. Using hoist, raise front of engine. Remove air cleaner. Pull transmission to rear and lower to remove.

10) Remove clutch assembly bolts alternately in a criss-cross pattern and remove clutch assembly. To install, reverse removal procedure.

11) Use a suitable pilot shaft (BMW 603) to align clutch. Tighten all bolts and nuts to specifications.

All Models With 232 Transmission — 1) From inside drivers compartment, pull rubber boot and foam rubber ring up on gear shift lever. Remove snap ring.

2) Remove starter and disconnect exhaust pipe from manifold. Remove exhaust pipe support bracket. Remove clutch fork return spring. Remove snap ring at slave cylinder and pull slave cylinder forward to remove.

3) On models with self adjusting clutch, remove retaining ring and slide off rubber boot. Remove snap ring and pull slave cylinder forward to remove.

4) Disconnect drive shaft at transmission and remove center support bearing mount. Push drive shaft down, pull back to remove.

5) Remove pivot pin from gear shift and rod union and push gear shift lever up. Remove clutch inspection cover from transmission.

6) Support engine by placing a wooden block between oil pan and crossmember. Disconnect speedometer cable and back-up light switch at transmission.

7) Remove crossmember and transmission to engine bolts. Turn steering completely to right and remove remaining transmission to engine bolts. Pull transmission to rear to remove.

8) Remove clutch assembly retaining bolts alternately in a criss-cross pattern. To install, reverse removal procedure. Use a suitable pilot shaft (BMW 603) to align clutch.

9) Push drive shaft center support forward .08" (2 mm) and tighten bolts to specifications. Tighten all remaining nuts and bolts to specifications.

1963-73 BMW (4 CYLINDER ENGINE) HYDRAULIC CLUTCH (Cont.)

CLUTCH MASTER CYLINDER

1) Siphon brake fluid out of clutch master cylinder reservoir until level is below "MIN" line. Pull topping up line out of master cylinder and disconnect line to slave cylinder.

2) Pull carpet away from around pedal and disconnect master cylinder push rod from pedal assembly. Remove master cylinder retaining bolts and remove cylinder.

3) To install clutch master cylinder, reverse removal procedure. Make sure sealing plug is installed on topping up line and bleed hydraulic system. See *Hydraulic System Bleeding.*

CLUTCH SLAVE CYLINDER

1) Siphon brake fluid out of clutch master cylinder reservoir until level is below "MIN" line. Pull retaining ring back on slave cylinder and remove circlip.

2) Remove line from master cylinder and pull slave cylinder out toward front. To install, reverse removal procedure. Bleed hydraulic system. See *Hydraulic System Bleeding.*

CLUTCH RELEASE BEARING & FORK

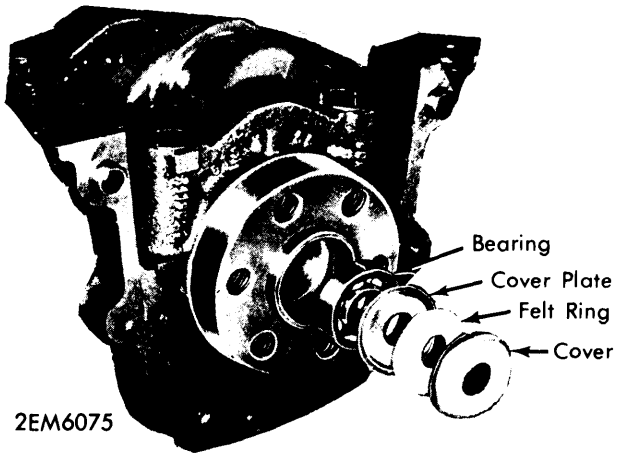
1) Remove transmission as previously outlined. Remove clutch slave cylinder from mount in transmission. Lift clutch fork retaining spring over ball stud.

2) Remove clutch fork and release bearing out through front of transmission. Pull release bearing off of clutch fork.

3) To install, reverse removal procedure. Apply Molykote Longterm 2 lubricant to release bearing clips and ball stud.

CLUTCH PILOT BEARING

1) With clutch assembly removed as previously outlined, rotate pilot bearing in crankshaft end and check for noise or roughness.



PILOT BEARING COMPONENTS

2) If bearing is defective, pull out of crankshaft with a suitable puller. Pack new bearing with high temperature multi-purpose grease.

3) Install cover plate with imprint facing out. Lubricate felt ring and drive in cover to stop.

ADJUSTMENT

NOTE — With the exception of bleeding hydraulic system, no adjustment of clutch actuating system is necessary on all 1602 models and 2002 models from chassis number 1 665 200 on. The following adjustment procedures are for 1600, 1800, 2000 and 2002 (before chassis number 1 665 200) models.

PEDAL ADJUSTMENT

1) When pedal is in fully up position, pedal must lie against limit stop. Distance between pedal plate and horn ring must be between 5.7-5.9" (145-150 mm).

2) If distance is less than 5.3" (135 mm), an oversize master cylinder push rod of 4.37" (111 mm) length must be installed. If distance is 5.3-5.5" (135-140 mm), an oversize push rod of 4.29" (109 mm) length must be installed.

NOTE — Distance should never exceed 5.9" (150 mm) under any circumstances.

CLUTCH FORK FREE PLAY

1) To obtain specified clearance between release bearing and clutch, the correct amount of pedal free play must be obtained.

2) Loosen locknut on slave cylinder push rod and adjust ball nut until clutch fork has free play of .12" to .14" (3.04-3.55 mm).

HYDRAULIC SYSTEM BLEEDING

Attach a suitable hydraulic system bleeder to master cylinder. Open bleeder plug and allow system to bleed. Bleeding operation is complete when air bubbles are no longer seen in container.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Clutch-to-Flywheel	12 (1.6)
Fluid Pressure Line-to-Cylinders	12 (1.6)
Master Cylinder Retaining Bolts	15 (2.0)
Transmission-to-Engine (8 mm Bolts)	18 (2.5)
Transmission-to-Engine (10 mm Bolts)	34 (4.7)
Clutch Pedal Through Bolt	24 (3.3)