



MANTIC 9000 SERIES

LOW MOI

The Mantic 9000 series is a 9" (230mm) diameter multiple application clutch system. Available in twin and triple disc configurations with four different plate options. The 9000 series is available as a modular kit as well as in many popular direct fit applications.



MANTIC 7000 SERIES

LOW MOI

The Mantic 7000 series is a 7.25" (185mm) diameter modular racing clutch, available in twin and triple disc configuration. The 7000 series come with rigid centre, undampened cerametallic clutch discs. The discs are available with all popular spline sizes



MANTIC 5000 SERIES

LOW MOI

The Mantic 5000 series is a 5.5" (140mm) diameter modular racing clutch, available in twin and triple disc configuration. The 5000 series come with rigid centre, undampened cerametallic clutch discs. The discs are available with all popular spline sizes.



CONGRATULATIONS ON PURCHASING YOUR NEW MANTIC TRACK SERIES CLUTCH

THIS BOOKLET CONTAINS IMPORTANT INSTALLATION
GUIDELINES WHICH **MUST BE FOLLOWED** TO ENSURE
CORRECT FUNCTION AND PERFORMANCE OF YOUR NEW
MANTIC CLUTCH



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NON-DIRECT FIT KIT INFORMATION

If you are fitting a Mantic Track clutch kit to your own flywheel (i.e. not a flywheel specifically designed by Mantic Engineering to suit the kit), there are a number of considerations.

Mantic non-specific kits are supplied without bolts due to the varying threads that may already be in use on existing flywheels, and differing lengths required. Any bolts used must be a minimum Grade #8

tensile strength, and tightened to 33Nm. Clutches are designed to be mounted with M8 X 1.25 (5/16 UNC) bolts (8 x 9000 kits, 8 x 5000, 6 x 7000 kits). Under no circumstances should the locating holes

in the cover or drive blocks be enlarged. All kits are supplied with special washers for use under the bolts.

Flywheel Design Considerations:

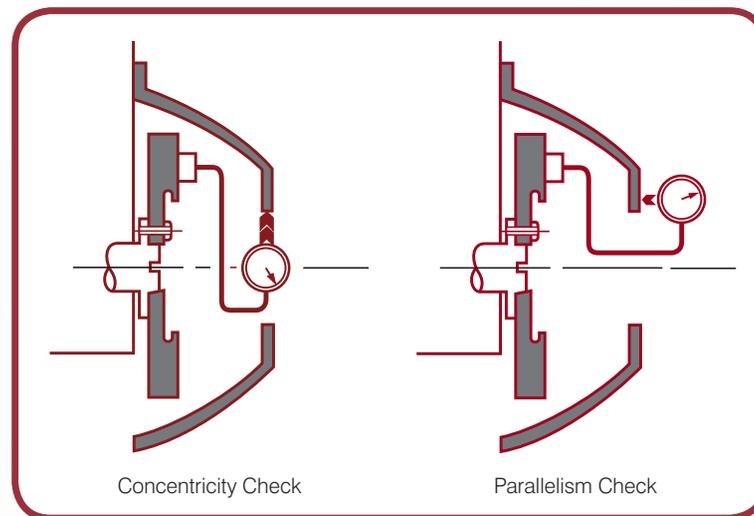
Fitting to an existing 7.25" / 5.5" flywheel: (7000, 5000 series)

(It is essential that the working surface of the flywheel be ground, or the flywheel replaced if cracks are present.)

- 1: When using an existing 7.25" or 5.5" flywheel, the PCD (Pitched Circle Diameter) of the Mantic 7000 / 5000 clutch is the same as used currently by most clutch companies.
- 2: When using these flywheels it is possible to bolt the clutch to the flywheel from the clutch (out) side into the existing threaded holes.
- 3: Ensure that the bolts are the correct length not to foul, that they are #Grade 8 (minimum) tensile strength, and the supplied washers are used under the head of each bolt. Tension the clutch to 33Nm.
- 4: The only modification needed in this instance is to ensure that there is a -1.5mm deep groove cut into the flat surface of the clutch working area to locate the drive blocks. This groove is essential for the operation of the clutch to ensure that the height of the clutch is to correct specification.
- 5: Check and adjust pedal throw / bearing travel as specified below. A pedal stop may need to be fitted

BEFORE YOU START

Before fitting your Mantic clutch kit it is important to check the vehicle for driveline alignment. Poor alignment will cause premature failure of your clutch. The standard size clutch with sprung clutch discs can handle the typical alignment of a production vehicle, however smaller and more particularly solid center clutch discs require more accurate alignment to obtain the maximum life and performance expected from this style of clutch kit. The bell housing must be checked for concentricity and parallelism. This can be done using a dial indicator mounted on the crankshaft. The maximum run out allowable is 0.15mm (0.0059") T.I.R (Total Indicator Reading) and the maximum out of parallelism is 0.15mm (0.0059") T.I.R.



If misalignment is present you will need to find the cause.

- Inspect all dowels and dowel holes for condition.
- Clean all mating surfaces.
- Inspect block flange for damage.
- Inspect the block flange for out of parallelism.

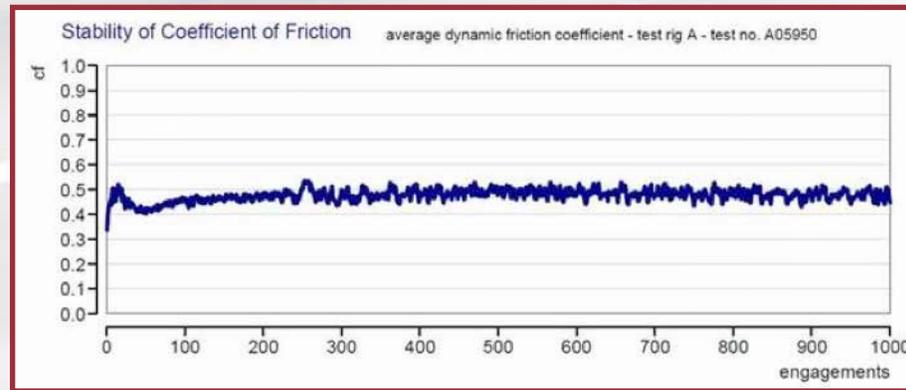
REMEMBER - IF MISALIGNMENT IS PRESENT, FITTING A NEW CLUTCH KIT WILL NOT FIX THE CAUSE OF THE PROBLEM AND THE MISALIGNMENT WILL QUICKLY DESTROY THE NEW CLUTCH.

BEDDING IN PROCEDURE

This product is a specially engineered to offer an increase in torque capacity while still maintaining a level of driveability often not associated with products of this type.

As a result you must ensure that the product is appropriately “broken-In” before heavy or spirited driving. The breaking-in process allows the friction surfaces to mate with each other in order to create full contact and allows the clutch to operate at its intended performance.

During the initial bedding in phase, the co-efficient of friction of the clutch discs will drop, and then slowly increase over time to a stable level. See graph below.



Failure to appropriately break-in the clutch may result in glazing or crumbling of the friction surfaces resulting in shudder, slippage and noise during operation and not allow the clutch to transmit the torque to its maximum ability.

To correctly break-in your new Mantic clutch we recommend operating the vehicle in normal driving conditions such as regular city driving. The clutch must be actuated regularly at low RPM such as take-off and normal shifting for at least the first 500kms.

During break-in if the vehicle RPM increases at a rate not proportionate with the normal rotation of the wheels you must back off the throttle to ensure you do not generate excessive heat. If excessive heat is generated it will not allow the product to reach its potential.

WARNING: FAILURE TO COMPLY WITH THE BEDDING IN PROCEDURE WILL VOID THE WARRANTY OF YOUR MANTIC CLUTCH KIT.

FITTING TO A NON MANTIC FLYWHEEL

(9000, 7000, 5000 series)

1. Re-drill the flywheel with the correct mounting bolt pattern and PCD (Pitched Circle Diameter). This should be done by a specialist engineer to ensure absolute accuracy.
2. If working with a Type 1 kit (refer "Type 1: Flywheels with Non-tapped holes"), machine a -1.5mm deep groove on the working surface of the flywheel to locate the clutch drive blocks as per the dimensions in the diagram below. This groove is essential for the operation of the clutch to ensure that the heights of the clutch are to correct specification.
3. If mounting the clutch with bolts coming from the rear of the flywheel, a groove must be machined into the rear of the flywheel to locate the bolt heads. (Refer page 9)
4. Ensure that the bolts are the correct length not to foul, that they are #Grade 8 (minimum) tensile strength, and the supplied washers are used under the nut of each bolt. Tension the bolts to 33Nm.
5. If mounting the clutch with bolts coming from the front of the flywheel, it is vital that there be sufficient material for the threads to ensure the structural integrity of the flywheel.
6. Ensure that there is a -1.5mm deep groove cut into the flat surface of the clutch working area as per the diagram on page 9. This groove is essential for the operation of the clutch to ensure that the heights of the clutch are to correct specification.
7. Check and adjust pedal throw / bearing travel as specified below. A pedal stop may need to be fitted.

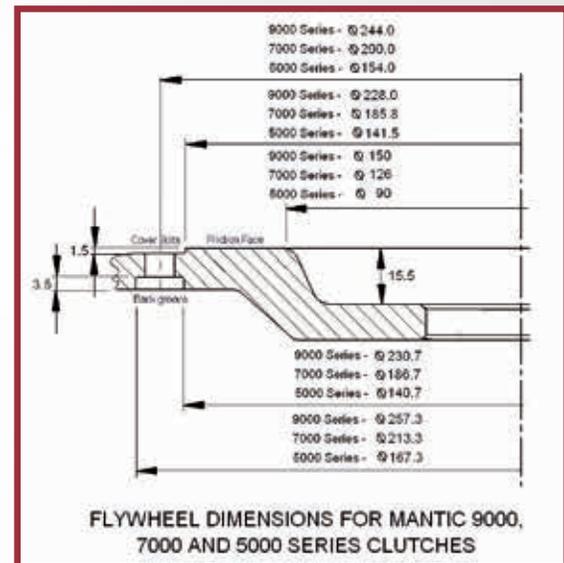
Flywheel design considerations:

When installing a Mantic kit that is not a "Direct Fit Kit" i.e. it does not come with a purpose fit flywheel, it is important that the flywheel being made conforms to the dimensions in the sketch below as a minimum to ensure correct fitment.

When modifying an existing flywheel to the above specifications, it is critical that there be sufficient strength remaining to maintain the structural integrity of the flywheel. Mantic accepts no responsibility for the subsequent failure of such a modified flywheel.

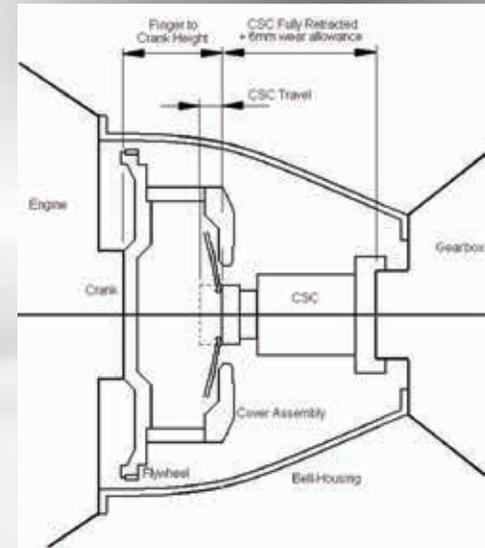
Do not use with cast iron flywheels.

Warning: Modifications to and/or production of a suitable flywheel for use with Mantic products should only be carried out by qualified individuals. Mantic accepts no responsibility for flywheels which are not produced by Mantic. Flywheel specifications must be appropriate for use in the installed application.



RELEASE BEARINGS

1. It is important that the correct length, travel and diameter release bearing/concentric slave cylinder/hydraulic release bearing is installed with your new Mantic clutch to ensure correct actuation.
2. Calculate the distance from the installed clutch diaphragm finger tip to the mounting base of the release bearing.
3. Measure the fully compressed height of the release mechanism.
4. The measurement in 1. Must be 4 to 6mm more than the measurement in 2. (This is to allow for wear of the friction material i.e. as the clutch disc(s) wear the diaphragm finger height increases). If it is more than 6mm, spacers must be placed under the CSC, or adjust the throwout mechanism to achieve this measurement. If it is less than 4mm, a CSC that is shorter or increase your bell housing length with a spacer.
5. The bearing travel must be within the maximum and minimum figures shown in the table below. If the travel is higher than the maximum the diaphragm can be over stroked and cause non release or damage the diaphragm. If the travel is below the minimum the clutch will not release fully making shifting gears difficult or not possible.



The bearing contact diameter and travel required is shown in the table below.

Mantic Kit Type	Contact Face Type	Bearing Travel Max	Bearing Travel Min	Bearing Contact Dia Max	Bearing Contact Dia Min
9000 Racing Series (Cushioned discs)	Flat	11.5mm	11.0	68mm	47mm
9000 Racing Series (Non-Cushioned discs)	Flat	7mm	5mm	68mm	47mm
7000 Series	Radial	7mm	5mm	50mm	46mm
5000 Series	Radial	7mm	5mm	42mm	38mm

Note: It may be necessary to use a pedal stop to prevent over stroking.

Clutch Type	Release Load lbs/kg	Diaphragm Finger Height in/mm	Overall Height in/mm	Cover to flywheel bolt torque lb.ft/Nm
9000 2 disc	275lbs / 125kg	2.81in / 71.5mm	3.2in / 81.5mm	24 ft lb / 33Nm
7000 3 disc	440lbs / 200kg	2.39in / 60.6mm	3.02in / 76.8mm	24 ft lb / 33Nm
7000 2 disc	440lbs / 200kg	1.12in / 29.1mm	1.74in / 44.3mm	24 ft lb / 33Nm
5000 3 disc	440lbs / 200kg	1.15in / 29.1mm	1.85in / 47mm	24 ft lb / 33Nm
5000 2 disc	440lbs / 200kg	1.44in / 36.7mm	2.15in / 54.6mm	24 ft lb / 33Nm

Height is measured from flywheel drive block mounting surface. Direct fit to most 5.5in / 7.25in flywheel bolt patterns. The flywheel must be modified. Cover to flywheel bolts must be minimum grade #8. M8 x 1.25 or 5/16 UNC must be used. Refer to fitting instructions & specifications included in this booklet for custom design of Non-Mantic flywheels.

DIRECT FIT KIT ASSEMBLY PROCEDURE

There are two types of installations for Direct fit Mantic Clutch kits:

- Type 1: Flywheels that have non-tapped cover assembly to flywheel holes.
- Type 2a: Flywheels that have tapped cover assembly to flywheel holes. Push Type Cover.
- Type 2b: Flywheels that have tapped cover assembly to flywheel holes. Pull Type Cover.

Assembly is dependent on which flywheel is present in the kit received.

TYPE 1: FLYWHEELS WITH NON TAPPED HOLES

1. Unpack all of the Clutch Kit components and check that all parts are supplied.
2. Check clutch discs slide freely on the transmission input shaft.
Remove all labels and clean the friction surfaces of the Flywheel, Pressure Plate and Intermediate Plates i.e. using a cleaning fluid such as paint thinners or acetone.

3. Insert the Cover Assembly mounting bolts through the flywheel from the engine side of the flywheel Pic 1. Ensure the heads of the bolts fit snugly into the groove on the engine side of the flywheel Pic 2.



Pic 1



Pic 2

4. Bolt the Flywheel to the engine crankshaft with the bolts supplied. Use a suitable Loctite (Loctite 272) on the threads and tighten to the manufacturer's specification.

5. Slide the drive blocks onto the clutch mounting bolts supplied, making sure the heads of the bolts are still in the groove on the back of the flywheel Pic 3. (To check put your finger through the hole in the flywheel opposite each bolt and feel that the head is in place Pic 4)



Pic 3

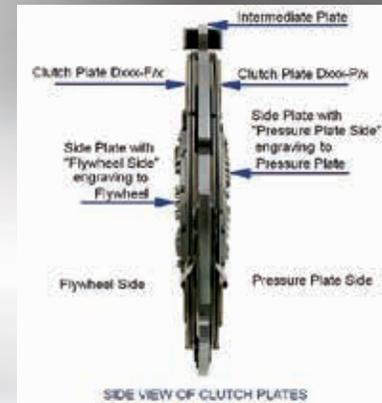


Pic 4

6. Mount the clutch disc with the side marked "Flywheel Side" against the flywheel and insert an alignment tool through the clutch disc spline Pic 5.



Pic 5

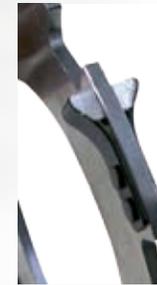


Pic 6

7. Assemble the intermediate plate onto the drive blocks as shown. Note: Care must be taken when handling the intermediate plate spring clips (9000 series only Pic 7) as they are factory set for release. If they are damaged in any way the clutch may not operate as designed. The Foam Packing must be removed just before installation Pic 8. Make sure the heads of the bolts are still in the groove on the back of the flywheel.



Pic 7



Pic 8

8. Mount the Clutch Disc with the side marked "Pressure Plate Side" against the Cover or Pressure Plate over the alignment tool and onto the intermediate plate. For overall clutch plate orientation refer to Pic 6
9. Assemble the pressure plate onto the drive blocks with the pivot point facing upwards.
10. Slide the Cover Assembly over the clutch mounting bolts (Pic 9) and make sure the Drive blocks are sitting on the correct mounting surface of the Flywheel (Pic 10) and Cover Assembly (Pic 11) and that all of the heads of the bolts are still in the groove on the back of the flywheel.



Pic 9 MOI



Pic 10



Pic 11

Cover slides over bolts

Ensure Blocks do not ride up on the step on the Flywheel or Cover during assembly

TYPE 2A: FLYWHEELS WITH TAPPED HOLES. PUSH TYPE CLUTCH

1. Unpack all of the Clutch Kit components and check that all parts are supplied.
2. Check clutch discs slide freely on the transmission input shaft. Remove all labels and clean the friction surfaces of the Flywheel, Pressure Plate and Intermediate Plates i.e. using a cleaning fluid such as paint thinners or acetone.
3. Bolt the Flywheel to the engine crankshaft with the bolts supplied. Use a suitable Loctite (Loctite 272) on the threads and tighten to the manufacturer's specification.

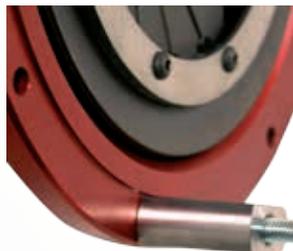
4. On a flat workbench install all the cover bolts with lock washers through the cover assembly as shown (Pic 12). Ensure the supplied lock washers are used. (failure to use the supplied lock washers may result in the bolts working loose and the clutch failing).



Pic 12



Pic 13



Pic 14

5. Install the drive blocks (Pic 13) over the clutch mounting bolts and ensure the drive blocks are sitting on the correct mounting surface of the Cover Assembly (Pic 14). Ensure the drive blocks are not riding up onto the step.

6. Place the pressure plate on to the assembly. (Pic 15)
7. Place the clutch disc with the side plate marked "Pressure Plate" facing the Pressure Plate (Pic 16)



Pic 15



Pic 16

8. Assemble the intermediate plate onto the drive blocks as shown Pic 17. Note: Care must be taken when handling the intermediate plate spring clips (9000 series only) as they are factory set for release. If they are damaged in any way the clutch may not operate as designed. The Foam Packing must be removed just before installation Pic 8.



Pic 17

9. Place the remaining Clutch Disc “Flywheel Side” onto the intermediate plate. Ensure the side marked “Flywheel Side” facing up. Refer Pic 18.
10. The components can now be carefully rotated to vertical position ready for installation onto the flywheel. Ensure the bolts do not fall out Pic 19. Insert the Clutch alignment tool into the already assembled components. Refer Pic 20.



Pic 18

11. Lift the assembled components into place (Pic 21) onto the flywheel and hand tighten the bolts into the flywheel until finger tight. Ensure the clutch aligning tool is engaged with the flywheel spigot. Ensure the drive blocks have seated correctly on the Flywheel and Cover Pic 10 & Pic 11 (i.e. not sitting up on the machined step that positions the drive blocks). Now tighten with torque wrench each bolt one half a turn at a time, always tightening the bolt diagonally opposite the previously tightened bolt. The final torque for the bolts is 33Nm. Then remove the Clutch Aligning tool. When the bolts are tightened the fingers of the diaphragm should now be even. (No variation of the heights of each diaphragm finger). If there is variation of over 1mm the cover has not been fitted correctly and should be loosened and checked as per the procedure above.



Pic 19



Pic 20



Pic 21

TYPE 2B: FLYWHEELS WITH TAPPED HOLES. PULL TYPE CLUTCH

1. Unpack all of the Clutch Kit components and check that all parts are supplied.
2. Check clutch discs slide freely on the transmission input shaft. Remove all labels and clean the friction surfaces of the Flywheel, Pressure Plate and Intermediate Plates i.e. using a cleaning fluid such as paint thinners or acetone.
3. Bolt the Flywheel to the engine crankshaft with the bolts supplied. Use a suitable Loctite (Loctite 272) on the threads and tighten to the manufacturer's specification.
4. Screw the supplied installation rods (threaded) into the flywheel as shown in pic 23. These rods will greatly assist when trying to assemble the clutch kit to the vehicle



Pic 23



Pic 24



Pic 25

5. Mount first clutch plate (refer label for orientation). Mount intermediate plate. Mount second clutch plate (refer label for orientation). Mount pressure plate. Insert clutch aligning tool (Pic 24). Mount cover assembly (Pic 25) **making sure the pivot ring is installed between the diaphragm and cover.**

6. Install the supplied cover bolts to hold every other drive block (finger tight only), remove the threaded assembly rods, and install the remaining cover bolts. Refer Pic 26 right.
7. Now tighten with torque wrench each bolt one half a turn at a time, always tightening the bolt diagonally opposite the previously tightened bolt. **The final torque for the bolts is 33Nm.** Then remove the Clutch Aligning tool. When the bolts are tightened the fingers of the diaphragm should now be even. (No variation of the heights of each diaphragm finger). If there is variation of over 1mm the cover has not been fitted correctly and should be loosened and checked as per the procedure above.



Pic 26

CONCENTRIC SLAVE CYLINDERS

Some applications using Concentric Slave Cylinder type throw-out mechanisms require a spacer to be fitted under the CSC. If a spacer is included in the packaging of the kit, it must be installed under the CSC.

Example CSC Spacer pic shown.





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