



MANTIC STREET ER² FEATURES:

1. **Capable of transmitting up to 60% more Torque than a standard Clutch Kit.** This overall Torque Capacity increase has been achieved by higher clamp loads, Increased Mean Effective Radius (ER²) of the friction area, better cooling of the pressure plate and higher coefficient of friction materials on the Clutch Disc. This directly equates to a higher Torque capacity.
2. **Patented Pressure Plate groove design.** The groove design enhances the performance in 2 ways. Firstly it increases the Torque Capacity of the Cover Assembly by up to 8% over a non grooved plate and secondly it assists with cooling which in-turn enables the friction material to operate at lower temperatures and therefore at a higher coefficient of friction. Again this enhances the torque capacity of the clutch.
3. **Highest strength anti burst SG Iron material used for the Pressure Plate.** Performance vehicles typically operate at higher rpm than standard vehicles. To ensure there is no possibility of failure of the pressure plate at these high rpm it has been manufactured from SGI or Spheroidal Graphite Iron. This is 3 times stronger than the standard Grey Cast Iron.
4. **Increased clamp load.** By altering the pivot point of the pressure plate higher clamp loads have been achieved. This directly equated to higher Torque capacity.
5. **Increased Strap strength to cater for heavier down shifting.** During normal driving the Straps are in tension and can cope with far more force with this type of loading. However during down shifting heavy compressive loads can be imparted. When this happens the straps can buckle. This is the reason for the higher strength design straps.
6. **Dual material Clutch Disc.** The clutch disc has the standard organic facing ring in contact with the ER² grooved Pressure Plate and a segmented cermetallic facing on the Flywheel side. The Cermetallic material has a higher coefficient of friction. This increases the Torque capacity of the clutch.
7. **Increased Clutch Disc Torque Capacity.** The Clutch disc has been "Up Sprung" to increase its Torque Capacity. Heavier duty Damper springs have replaced the standard springs so that the increased Torque Capacity of the Cover Assembly can be transmitted through the Clutch Disc without the springs bottoming out.
8. **Larger Clutch Disc Mean Effective Radius.** The button shape of the segmented cermetallic facing has the effect of moving the "Mean Effective Radius" further out. This increases the Torque capacity of the clutch.
9. **Cover assembly and clutch disc designed as a matched pair.** In order to get the most out of a cover assembly the clutch disc compressed thickness must be matched to the cover assembly due to the variation of clamp load as the clutch disc thickness varies. ER² clutch discs and cover assemblies have been made to the optimum set up position to obtain the highest clamp load through the life of the Clutch.

Higher Torque Capacity

Several techniques were used to achieve this goal.

Firstly the clamp load of the Cover Assembly was increased by modifying the pivoting point of the diaphragm on the pressure plate.

Secondly the groove pattern on the friction surface was specifically designed to increase the Mean Effective Radius of the pressure plate and assist in heat removal.

Also, the thicknesses of the clutch plate and pressure plate were finely tuned to give the maximum load possible for the life of the clutch

Higher Strength

The pressure plate was redesigned to be made from Spheroidal Graphite Iron castings. These castings are 3 times stronger than the previous Grey Cast Iron pressure plates. The clutch discs were designed to use high performance friction face materials as well as upgrading of the torque springs to cope with the increased torque capacity of the clutch system



QUALITY, QUALITY, QUALITY.

The Mantic Street Series with ER² clutch kit is made from the best materials available. Each component is manufactured to tightest tolerances to ensure the product is capable of performing and outlasting standard clutch kits when used in performance vehicles. The following processes help ensure these standards are met:

1. The pressure plate is manufactured from Spheroidal Graphite Iron which is 3 times stronger than the standard material used.
2. Each pressure plate is inspected for any casting defects such as voids, porosity, inclusions or cracks after machining.
3. Each pressure plate is balanced to +/- 15gm.cm after machining
4. After assembly of the cover assembly the cover is balance again to +/-30gm.cm
5. Each cover assembly is checked for clamp load, bearing load, finger height, finger run out and lift before being released for sale.
6. The cover is zinc plate to protect from corrosion and to provide a bright professional finish
7. The covers are packed and handled to prevent metal on metal contact so that the product presents as a new well finished component to the customer
8. The clutch discs are made with a highly durable friction material to cope with the loads they will be subjected to in performance vehicles
9. The clutch discs have heavier duty torque springs installed to handle the higher torque of performance vehicles

Mantic Street Series ER² cover assembly

The Mantic Street Series ER² pressure plate is manufactured from a Spheroidal Graphite casting material which has a yield strength 300% higher than Original Equipment castings. The materials increased yield strength is evident when comparing its microstructure to standard grey cast iron. This casting material is especially useful in Performance applications where higher clutch operating speeds, temperatures and load transfer are experienced and required i.e. Heavy up shifting and down shifting and high rev driving/racing. The cover assembly also incorporates greater than 20% clamp load than a standard cover assembly for this vehicle application this translates to more torque transfer.

Pedal effort is controlled to no greater than an 8% increase over standard. This is not discernable tho the average driver.

Mean Effective Radius

By adding the groove to the Mantic Street Pressure Plate, the inside radius of the friction face has effectively been increased. The first 8mm of the pressure plate has all but been removed and added to this, there is progressively less material removed as the radius increases. The net effect of this is to move the effective inside radius further out.

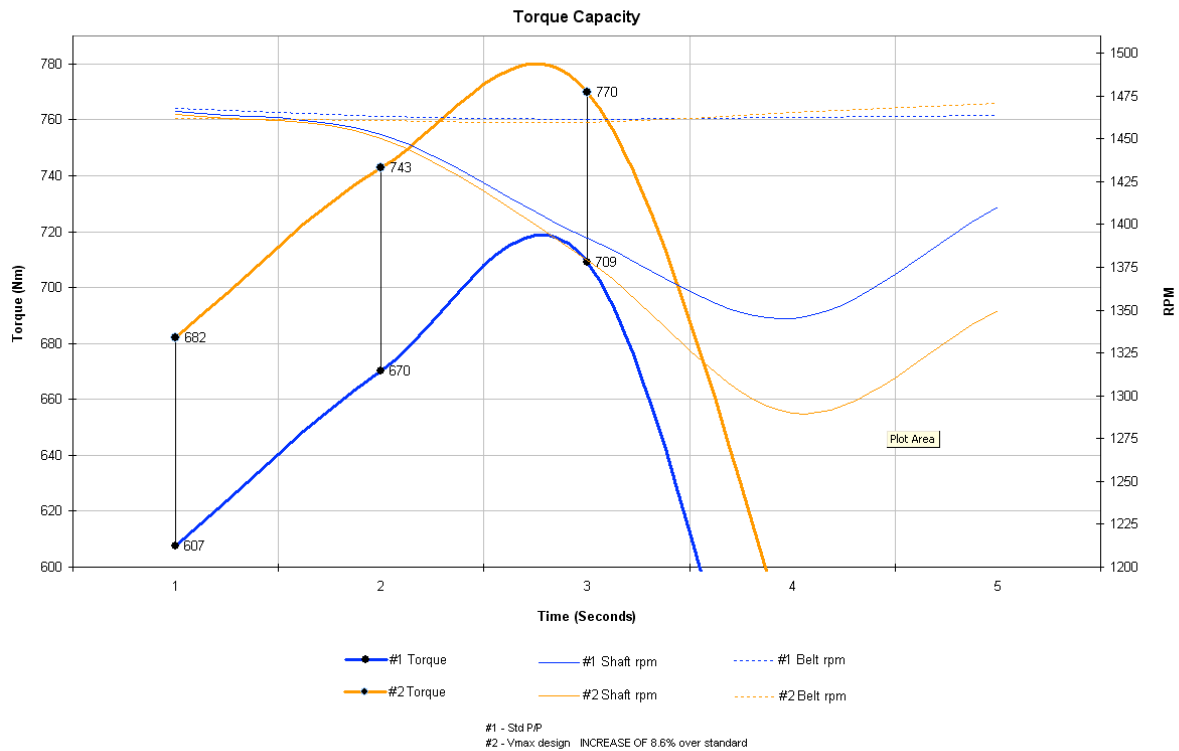
When comparing the Mean Effective Radius (ER²) of the grooved version to the No groove version, the grooved version is further out. This increases the Torque Capacity of the clutch as Torque Capacity is directly related to the Mean Effective Radius i.e. the bigger the radius, the greater the torque drive capability.



GROOVES vs NO GROOVES

The Graph displays the torque capacity of a Cover assembly with the ER² grooves on the Pressure Plate as compared to the same Cover Assembly with out the ER² grooves. The measurements were taken on the Clutch Industries Dynamometer. The solid Orange line shows the maximum Torque Capacity of the grooved version at 780Nm and the standard at 720Nm.

The ER² grooves increase the torque capacity by over 8%



The dashed lines represent the Dynamometer driving motor speed which remains close to 1470 rpm during the test. The thin lines represent the Dynamometer speed which shows when the clutch is beginning to slip i.e. slowing down. You will note that maximum torque is achieved when the clutch is slipping by 70 rpm.