

Specification for Clutch & Clutch Parts (RC-25)

| Sr. No. | PART No. | NOMENCLATURE | A/C UNI T | Lab Test To Be Carried Out As Per |
|---------------------------------|----------------|---|-----------------|---|
| 1. | 2. | 3. | 4. | 5. |
| SCHEDULE-1 LEB TEST ITEM | | | | |
| 1 | 2724 2520 0215 | Clutch Disc Dia 380(For Clutch- Tata 1618/62 BS-IV &1618/57 BS VI) | Nos. | AS:223:88: AUG:2022 |
| 2 | 2724 2540 0215 | Clutch Cover 380 Dia. Bs-2/3/4/6 (For Tata 1618/62 BS-IV & 1618/57 BS-VI) | Nos. | AS:550:86: JAN:2020 |
| 3 | 2724 2540 8704 | Kit Pressure Spring 330 Dia (For Clutch-Tata 7.5T Ultra Mini Bus BS-III & BS-IV) | Kit | AS:223/3:86: JAN:2020 |
| 4 | B 1304804 | 14" Clutch Assy. With Valeo F510 Facing (For Clutch- Ley. 4/185, 4/169, 4/170, 4/186 BS-III & 1611, 4/197 BS-IV) | Nos. | AS:274:88: AUG:2022 |
| 5 | F 3032422 | Back Plate Four Finger (For Clutch- Ley 4/185, 4/169, 4/170, 4/186 BS-III & 1611, 4/197 BS-IV) | Nos. | AS:521:83: SEP:2016 |
| 6 | F 3650410 | Retainer Spring (For Clutch- Ley4/185, 4/186 BS-III & VK1611.D4R BS-IV) | Nos. | AS:223/1:84: JAN:2018 |
| 7 | P 0941651 | Clutch Repair Kit Major – Four Finger. Consist Of 7 Items B1301504 S/A Of Ret. Spring -4, F 0932015 Pin Eccentric - 4 F 2461311 Cl. Plate Lever-4, F2630114 Pressure Pad-4, F3646910 Cl. Spring-12 F0530115 bush For Lever-4, F3531111 bolt Spl-4, B1301504 s/A Of Ret. Spring-4, F2630114 Pressure Pad-4 F0932015 pin Eccentric-4, F2461311 cl. Plate Lever-4 F0530115 Bush For Lever-4 F3531111 Bolt Spl-4 (For Clutch-Ley 4/185, 4/169, 4/170, 4/186 BS-III & 1611, 4/197 BS-IV) | Kit | AS:522:83: SEP:2016 |
| 8 | P 0941751 | Clutch Repair Kit – Minor Consists Of : Total-40 Pin- 4, Bush-4, Bracket For Lever-8, Spacer-12, Standard Screw-Hex - M10 X 1.5 CP X 25mm Long X GR 8.8 -12(For Clutch LEY 4/185, 4/169, 4/170, 4/186 BS-III & 1611, 4/197 BS-IV) | Kit | AS:522:83: SEP:2016 |

| | | | | |
|-----------------------------|----------------|--|------|------------------------|
| 9 | P 0957351 | Spring Kit-4 Fingers Con Of Items (For Clutch-Ley 4/185, 4/169, 4/170, 4/186 BS-III & 1611, 4/197 BS-IV) | Kit | AS:522:83: SEP:2016 |
| SCHEDULE-2 TATA ITEM | | | | |
| 10 | 312 254 1013 | Locking Wire (For Clutch- Tata 7.5T Ultra Mini Bus BS-III & BS-IV) | Nos. | --- |
| 11 | 2724 2540 0147 | Release Lever Service Kit (For Clutch 380 Dia - Tata 1618/62 BS-IV & 1618/57 BS VI) | Kit | --- |
| 12 | 2724 2540 0148 | Release Lever With Eye Bolt Kit (For Clutch Hold Down Bolt 380 Dia-Tata, 1618/62 BS-V&1618/57 BS VI) | Kit | --- |
| 13 | 2724 2540 0150 | Hold Down Bolt Kit (For Clutch Hold Down Bolt 380 Dia- Tata, 1618/62 BS-IV) | Kit | --- |
| 14 | 2724 2540 0168 | Clutch Release Lever Kit (Full) 330 Dia (For Clutch- Tata 7.5T Ultra Mini Bus BS-III & BS-IV) | Kit | --- |
| 15 | 2724 2540 8602 | Clutch Collector Ring (For Clutch 380 Dia- Tata, 1618/62 BS-IV & 1618/57 BS-VI) | Kit | --- |
| 16 | 2724 2540 8706 | Pressure Spring Kit (For Clutch Pressure Spring Kit.380 Dia- Tata, 1618/62 BS-IV & 1618/57 BS-VI) | Kit | --- |
| 17 | 2724 2560 0198 | Assy. Cross Shaft With Lever Clutch Lever For Tata 1515/55 BS IV | Nos. | --- |
| 18 | 2724 2560 0201 | Clutch Release Bearing (For Clutch-Tata1618/62 BS-IV) | Nos. | --- |
| 19 | 2724 2560 5123 | Clutch Release Fork (Ratio-2) (For Gear Box-Tata 1618/62 BS-IV & 1618/57 BS VI) | Nos. | --- |
| 20 | 5812 2520 0101 | 352 Dia. Assy. Clutch Disc (Organic) (For Clutch Disc- Tata 1515/55 BS-IV) | Nos. | --- |
| 21 | 5812 2540 0101 | 352 Dia. Assy. Clutch Cover (For Clutch 1515/55 BS-IV) | Nos. | --- |
| 22 | 5812 2540 0102 | Pr. Plate With Needle Roller Bearing (For Clutch- Tata 1515/55 BS-IV) | Nos. | --- |
| 23 | 5812 2540 0103 | Release Lever Kit (Full) 352 Dia Organic (For Tata, 1515/55 BS-IV) | Kit | --- |
| 24 | 5812 2540 0104 | Release Lever With Eye Bolt-352 Dia Organic (For Tata,1515/55 BS-IV) | Kit | --- |
| 25 | 5812 2540 0105 | Pressure Spring Kit 352 Dia Organic (For Clutch- Tata, 1515/55 Bs-IV) | Kit | --- |

| | | | | |
|--------------------------------|-----------------------------------|--|------|-----|
| 26 | 5812 2540 8601 | Collector Ring- 352 Dia Organic (For Clutch- Tata, 1515/55 BS-IV) | Kit | --- |
| 27 | 5812 2560 5101 | Clutch Release Yoke (For Clutch- Tata 7.5t Ultra Mini Bus BS-III & BS-IV) | Nos. | --- |
| 28 | 8863 2501 0063/ 2724 2520 0151 | 330 Dia Clutch Disc (For Clutch Tata, Mini Ultra 7.5T BS-III & BS-IV) | Nos. | --- |
| SCHEDULE-3 LEYLAND ITEM | | | | |
| 29 | B 1301501 | 14" Rdc Clutch Cover S/A (Four Fin. Pressure Assy) (For Clutch- Ley 4/185,4/169,4/186BS-III & 1611, 4/197BS-IV) | Nos. | --- |
| 30 | FAS00400 | Cover-Clutch 380 Diaphragm Cover Assembly Clutch For Ley VK 2011.4T6R BS-VI | Nos. | --- |
| 31 | F 7202322 | Face Plate Four Finger. (For Clutch- Ley4/185, 4/169, 4/170, 4/186 BS-III & 1611, 4/197 BS-IV) | Nos. | --- |
| 32 | FAT00500 | Disc-Clutch 380 Dia Organic (For Clutch- Ley. VK2011.4T6R BS-VI) | Nos. | --- |
| 33 | P 0958151 | Clutch Bush Pin Kit- 4 Finger Con. Of 2 Items F0530115 bush For Lever-4, F0932015 pin Eccentric-4 (For Clutch- Ley4/185, 4/169, 4/170, 4/186 BS-III&1611, 4/197 BS-IV) | Kit | --- |
| 34 | B 1M03402 | 330 Dia Organic Clutch Disc Assembly With 1.25" Spline To Suit 400nm To 450nm Engine Torque. (For Clutch Disc For Ley Mini Ls1508.7t6r Bs Vi) | Nos. | --- |
| 35 | B 1M03401 | 330 Dia Diaphragm Clutch Cover Assembly (For Clutch Disc For Ley Mini Ls1508.7t6r Bs Vi) | Nos. | --- |
| 36 | FVB00300 | Release Bearing - Clutch Control 1 Texspin Bearings Limited (For Clutch Disc For Ley Mini Ls1508.7tr Bs Vi) | Nos. | --- |
| SCHEDULE-4 EICHER ITEM | | | | |
| 37 | ID 312580 | Clutch Release Arm (For Clutch Cover Assy. - Eicher 3008 Mini Bus BS-III & BS-IV) | Nos. | --- |
| 38 | ID 312613 | Spring Clutch Release (For Clutch- Eicher Pro 3008 Mini Bus BS-IV) | Nos. | --- |
| 39 | ID 317707 | Cover Assy. Clutch (For Clutch Cover Assy.- Eicher 3008 Mini Bus BS-III & BS-IV) | Nos. | --- |

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|----|-----------|---|------|-----|
| 40 | ID 323210 | Clutch Disc Assy. 330 Dia (For Clutch-Eicher Pro 3008 Mini Bus BS-IV) | Nos. | --- |
| 41 | ID 323211 | Clutch Cover Assy. 330 Dia (For Clutch-Eicher Pro 3008 Mini Bus BS-IV) | Nos. | --- |
| 42 | ID 330934 | Clutch Disc Assy. 310 Dia (For Clutch-Eicher Mini Pro 3008BS-III & BS-IV) | Nos. | --- |

Allocation Sheet RC-25 CLUTCH & CLUTCH PARTS 2023-24

| Sr. No. | PART NO. | A/C | ABD | AML | BHJ | BVN | BRD | BLR | BRC | GDR | HMT | JND | JMN | MSN | NDD | PLN | RJT | SRT | TOTAL |
|---------|-----------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| 1 | 2724 2520 0215 | Nos. | 8 | 10 | 5 | 10 | | 5 | 50 | 0 | 25 | 10 | 20 | 20 | 10 | 5 | 70 | 10 | 258 |
| 2 | 2714 2540 0215/ 2724 2540 0215 | Nos. | 4 | 0 | 10 | 0 | 2 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 5 | 2 | 3 | 0 | 41 |
| 3 | 2724 2540 8704 | Kit | 20 | 10 | 30 | 0 | 100 | 0 | 25 | 50 | 0 | 20 | 10 | 5 | 5 | 20 | 30 | 0 | 325 |
| 4 | B 1304804 | Nos. | 25 | 20 | 20 | 10 | 20 | 10 | 10 | 20 | 25 | 25 | 20 | 20 | 25 | 25 | 30 | 10 | 315 |
| 5 | F 3032422 | Nos. | 20 | 0 | 25 | 30 | 10 | 10 | 10 | 20 | 10 | 20 | 20 | 40 | 40 | 30 | 10 | 50 | 345 |
| 6 | F 3650410 | Nos. | 20 | 0 | 5 | 0 | 8 | 0 | 12 | 20 | 15 | 15 | 10 | 30 | 20 | 10 | 0 | 50 | 215 |
| 7 | P 0941651 | Kit | 20 | 20 | 2 | 30 | 20 | 10 | 20 | 20 | 20 | 20 | 10 | 10 | 15 | 10 | 10 | 30 | 267 |
| 8 | P 0941751 | Kit | 20 | 20 | 2 | 0 | 10 | 10 | 8 | 20 | 20 | 20 | 10 | 10 | 20 | 20 | 0 | 15 | 205 |
| 9 | P 0957351 | Kit | 25 | 0 | 0 | 0 | 20 | 20 | 20 | 20 | 0 | 20 | 10 | 10 | 10 | 15 | 0 | 10 | 180 |
| 10 | 312 2541 013 | Nos. | 10 | 10 | 4 | 0 | 10 | 0 | 10 | 0 | 20 | 20 | 6 | 10 | 10 | 20 | 10 | 20 | 160 |
| 11 | 2724 2540 0147 | Kit | 15 | 20 | 40 | 5 | 100 | 5 | 80 | 20 | 0 | 40 | 25 | 15 | 5 | 20 | 120 | 0 | 510 |
| 12 | 2724 2540 0148 | Kit | 15 | 20 | 40 | 0 | 50 | 0 | 80 | 20 | 0 | 0 | 25 | 0 | 5 | 30 | 0 | 0 | 285 |
| 13 | 2724 2540 0150 | Kit | 15 | 20 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 25 | 0 | 5 | 0 | 100 | 0 | 185 |
| 14 | 2724 2540 0168 | Kit | 20 | 10 | 30 | 0 | 60 | 0 | 25 | 50 | 10 | 10 | 20 | 100 | 10 | 20 | 50 | 0 | 415 |
| 15 | 2724 2540 8602 | Kit | 15 | 10 | 20 | 100 | 80 | 5 | 50 | 30 | 0 | 80 | 50 | 20 | 10 | 30 | 120 | 25 | 645 |

| Sr. No. | PART NO. | A/C | ABD | AML | BHJ | BVN | BRD | BLR | BRC | GDR | HMT | JND | JMN | MSN | NDD | PLN | RJT | SRT | TOTAL |
|----------------|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|
| 16 | 2724 2540 8706 | Kit | 8 | 10 | 2 | 0 | 70 | 0 | 25 | 15 | 0 | 30 | 10 | 0 | 5 | 20 | 50 | 0 | 245 |
| 17 | 2724 2560 0198 | Nos.. | 10 | 0 | 2 | 0 | 5 | 0 | 10 | 10 | 0 | 5 | 6 | 2 | 5 | 3 | 10 | 5 | 73 |
| 18 | 2724 2560 0201 | Nos. | 10 | 0 | 2 | 5 | 5 | 0 | 2 | 8 | 5 | 10 | 20 | 5 | 0 | 5 | 10 | 10 | 97 |
| 19 | 2724 2560 5123 | Nos. | 15 | 0 | 40 | 40 | 50 | 15 | 30 | 20 | 10 | 60 | 20 | 9 | 0 | 5 | 80 | 25 | 419 |
| 20 | 5812 2520 0101 | Nos. | 50 | 10 | 0 | 20 | 30 | 25 | 15 | 50 | 40 | 30 | 40 | 50 | 50 | 30 | 60 | 10 | 510 |
| 21 | 5812 2540 0101 | Nos. | 20 | 0 | 0 | 5 | 10 | 25 | 25 | 0 | 20 | 20 | 20 | 0 | 40 | 10 | 10 | 10 | 215 |
| 22 | 5812 2540 0102 | Nos. | 10 | 0 | 40 | 20 | 20 | 0 | 0 | 10 | 15 | 30 | 10 | 20 | 10 | 30 | 10 | 25 | 250 |
| 23 | 5812 2540 0103 | Kit | 20 | 15 | 10 | 10 | 30 | 20 | 20 | 0 | 40 | 10 | 30 | 15 | 25 | 30 | 50 | 20 | 345 |
| 24 | 5812 2540 0104 | Kit | 20 | 0 | 40 | 0 | 30 | 20 | 10 | 0 | 10 | 20 | 10 | 10 | 25 | 15 | 0 | 0 | 210 |
| 25 | 5812 2540 0105 | Kit | 7 | 0 | 13 | 0 | 5 | 5 | 5 | 5 | 0 | 2 | 0 | 2 | 2 | 8 | 2 | 0 | 56 |
| 26 | 5812 2540 8601 | Kit | 20 | 5 | 30 | 15 | 15 | 15 | 15 | 0 | 20 | 25 | 20 | 40 | 30 | 25 | 25 | 15 | 315 |
| 27 | 5812 2560 5101 | Nos. | 20 | 10 | 20 | 10 | 10 | 5 | 10 | 20 | 0 | 10 | 20 | 3 | 25 | 5 | 10 | 0 | 178 |
| 28 | 8863 2501 0063/ 2724 2520 0151 | Nos. | 10 | 0 | 3 | 15 | 10 | 0 | 10 | 0 | 10 | 5 | 10 | 10 | 20 | 20 | 5 | 20 | 148 |
| 29 | B 1301501 | Nos. | 20 | 0 | 20 | 20 | 20 | 0 | 0 | 20 | 20 | 5 | 20 | 0 | 40 | 2 | 5 | 0 | 192 |
| 30 | FAS 00400 | Nos. | 10 | 10 | 25 | 10 | 15 | 10 | 12 | 10 | 10 | 10 | 5 | 10 | 20 | 25 | 15 | 25 | 222 |
| 31 | F 7202322 | Nos. | 10 | 10 | 10 | 20 | 5 | 10 | 10 | 5 | 0 | 20 | 15 | 5 | 10 | 30 | 20 | 5 | 185 |

| Sr. No. | PART NO. | A/C | ABD | AML | BHJ | BVN | BRD | BLR | BRC | GDR | HMT | JND | JMN | MSN | NDD | PLN | RJT | SRT | TOTAL |
|----------------|-----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|
| 32 | FAT 00500 | Nos. | 20 | 5 | 20 | 10 | 15 | 5 | 15 | 5 | 10 | 10 | 10 | 10 | 25 | 5 | 5 | 10 | 180 |
| 33 | P 0958151 | Kit | 10 | 10 | 2 | 0 | 15 | 0 | 0 | 10 | 20 | 20 | 6 | 10 | 10 | 10 | 0 | 0 | 123 |
| 34 | B 1M03402 | Nos. | 26 | 12 | 10 | 25 | 15 | 26 | 20 | 18 | 35 | 19 | 14 | 22 | 10 | 24 | 25 | 19 | 320 |
| 35 | B 1M03401 | Nos. | 13 | 6 | 5 | 12 | 8 | 13 | 10 | 9 | 16 | 10 | 7 | 11 | 5 | 12 | 12 | 10 | 159 |
| 36 | FVB00300 | Nos. | 26 | 12 | 10 | 25 | 15 | 26 | 20 | 18 | 35 | 19 | 14 | 22 | 10 | 24 | 25 | 19 | 320 |
| 37 | ID 312580 | Nos. | 150 | 20 | 2 | 50 | 10 | 5 | 50 | 5 | 0 | 10 | 15 | 30 | 20 | 10 | 0 | 15 | 392 |
| 38 | ID 312613 | Nos. | 20 | 0 | 10 | 30 | 10 | 5 | 10 | 0 | 0 | 20 | 0 | 15 | 30 | 10 | 0 | 25 | 185 |
| 39 | ID 317707 | Nos. | 10 | 8 | 5 | 5 | 15 | 0 | 35 | 5 | 5 | 0 | 0 | 5 | 15 | 10 | 0 | 0 | 118 |
| 40 | ID 323210 | Nos. | 30 | 0 | 40 | 10 | 20 | 20 | 10 | 0 | 0 | 15 | 15 | 10 | 10 | 25 | 6 | 20 | 231 |
| 41 | ID 323211 | Nos. | 30 | 0 | 15 | 10 | 10 | 20 | 10 | 30 | 0 | 5 | 10 | 2 | 10 | 10 | 2 | 0 | 164 |
| 42 | ID 330934 | Nos. | 20 | 20 | 0 | 20 | 20 | 20 | 20 | 0 | 20 | 20 | 2 | 20 | 25 | 30 | 4 | 20 | 261 |

Note:- Material must be supplied as per delivery schedule given by division consignee/Controller of Store.

**ASRTU SPECIFICATION FOR
CLUTCH PLATE ASSEMBLY FOR TATA & LEYLAND VEHICLES**

0.0 SPECIFICATION No.: AS:223:88:AUG:2022

1.0 SCOPE :

- 1.1 This standard prescribes requirements & methods of testing of Clutch Plate Assembly for Tata & Leyland vehicles.
- 1.2 This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shall be compatible with the original equipment.
- 1.3 The supplier shall provide detail drawings and specifications to the purchasing/inspecting authority whenever such information is specifically called for.
- 1.4 The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components. If any of the samples fail in any one or more tests specified, the sample shall be considered as not having met the requirements of this specification.
- 1.5 It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished by performing the tests specified in this standard.
- 1.6 Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.
- 1.7 This specification supersedes earlier specifications including **AS:223:86:JAN:2020**, in view of **increase in Test quantity at Sr. No. 3.2 from previous minimum 1 No. to minimum 02 No's. (Reference: MOM of 88th Specification Sub Committee Meeting.)**

2 APPLICATION :

- 2.1 This specification covers the Clutch Plate Assembly of different sizes to be used on Tata and Leyland Vehicles. Requirements for clutch plate assemblies are given in Table 1.
- 2.2 Part numbers covered in this specification and given in Table 1 are only for reference & identification of the component.

3.0 TEST AND REQUIREMENTS :**3.1 Visual Examination :**

The Component when examined visually, shall be free from defects such as distortion, scoring, tool marks, cracks etc.

3.2 Test Quantity :

Minimum 2 number's shall be supplied for testing.

3.3 Dimensions :

Dimensions of the component shall strictly conform to those as prescribed by the Chassis manufacturer for their O.E. components.

The clutch disc when checked using standard clutch shaft, the assembly shall slide freely. There shall not be any looseness, lateral or radial play. The clutch plate shall meet the requirements of Sr. No. 1 of Table- 1.

3.4 Torque v/s Deflection :

Component shall be held firmly in the hub & outer friction linings are turned through angle as prescribed in Sr. No. 2 Table 1 in clockwise & anticlockwise direction by applying torque. The relationship between torque and deflection in degrees shall be plotted and torque per degree is calculated as per the following formula.

The torque per unit deflection, shall be calculated as below.

$$\text{Torque per unit Deflection} = \frac{\text{Max Torque} - \text{Precompression Torque}}{\text{Total Twist angle}}$$

The component shall meet the requirement laid down at Sr.No.2 of Table- 1.

3.5 Damping Energy :

The damping energy measured when the component tested as per clause 3.4 above through 2.5° in clockwise and 2.5° in anti- clockwise direction at 0.1 Hz. frequency. The component shall absorb the energy mentioned at Sr.No.3 of Table- 1.

3.6 Endurance Test :

The component shall be subjected to $\pm 2.5^\circ$ deflection for one million times at a rate of 300 - 750 cycles per minute. After the test, clutch plate shall be evaluated as per clause 3.4 and 3.5. The component shall meet the requirement given at Sr.No.4 of Table -1.

4.0 SUPPLY CONDITIONS :**4.1 Marking :**

Components shall be marked with the manufacturer's trade mark and part number.

4.2 Packing :

Components shall be suitably packed to avoid damage during transit/handling.

TABLE -1
REQUIRMENTS FOR CLUTCH PLATE ASSEMBLY FOR TATA & LEYLAND

| Sr. No | Nomenclature | Tata Reinforced Clutch HV-280 | Tata 310 mm clutch | L/L 13" (330 mm) Clutch | L/L 14" (356 mm) Clutch | L/L 14" (356 mm) Clutch | TC 310 mm Clutch | TATA 1618 |
|--------|---|-------------------------------|---|------------------------------|--|--|--|------------------------------|
| | PART NUMBERS COVERED IN STANDARD (for reference & Identification of Component Only) | -- | 2523 2500 0108, 2523 2520 0108, 2573 2520 0170, 2573 2520 0708, 2573 2520 1010, 2573 2540 0108, 2573 3520 0108, 2574 2520 0108, 2763 2520 0106, | - | B1300206, B1300209, B1300230, B1300430, F3410064, F4300430, K1300104, P1300206, P4000430 | B1300104, B1300200, B1300207, B1300208, B1300210, B1300212, B1300213, B1300215, B1301803, B1305701, B1312103, B1700204, B3100430, F1300104, F1300208, F1300209, F3056914, F9900053, K1300208, P9900053 | 2563 2520 0106, 2563 2520 0107, 2616 2520 0101, 2646 2520 0101, 2673 2520 0107, 2763 2420 0107, 2763 2520 0102, 2763 2520 0105, 2763 2520 0107 | 2724 2520 0215 |
| 1 | Dimesnions (Cl. No. 3.3) | | | | | | | |
| 1.1 | Outer diameter (mm) | 280 | 310 | 330 | 352 | 352 | 310 | 380 |
| 1.2 | Inner diameter (mm) | 165 | 178 | 200 | 216 | 216 | 190 | 223 |
| 1.3 | Total Frictional Area | 798 | 1030 | 1082 | 1238 | 1238 | 1030 | 1496 |
| 1.4 | No. of Damper springs | 8 | 8 | 8 | 6 | 8 | 6 or 7 or 8 | 8 |
| 1.5 | Lining thickness | 3.5 or 4.0 | 4.2 | 6.35 | 6.2 | 6.2 | 4.2 | 3.5 |
| 1.6 | Thickness of Clutch | 10 | 11.6 | 14 | 14.4 | 14.4 | 11 | 11.7 |
| 2 | Torque per Degree Angular Deflection, (kgf.m/Deg) | 13.7 ± 20 % At ± 2.50° Angle | 13.18 ± 20 % At ± 3.30° Angle | 16.5 ± 20 % At ± 2.50° Angle | 14.34 ± 20 % At ± 4.65° Angle | 19.0 ± 20 % At ± 3.50° Angle | 21.0 ± 20 % At ± 3.30° Angle | 22.0 ± 20 % At ± 3.30° Angle |
| 3 | Damping Energy per cycle at ± 2.5° (5° total) | 0.80 ± 20 % | 1.10 ± 20 % | 0.63 ± 20 % | 0.63 ± 20 % | 0.63 ± 20 % | 1.5 ± 20 % | 2.5 ± 20 % |
| 4 | Endurance Cycles (Nos) | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ |

TABLE -2
WEIGHTAGE MARKS FOR CLUTCH PLATE ASSEMBLY FOR
TATA AND LEYLAND VEHICLES
AS:223:88:AUG:2022

| S.No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|-------|--|------------|----------------|-----|
| 1. | Visual Examination | 3.1 | 8 | T |
| 2. | Torque V/s Deflection Test (Before Endurance) | 3.4 | 20 | P |
| 3. | Torque V/s Deflection Test (After Endurance) | 3.4 | 20 | P |
| 4. | Endurance Test | 3.6 | 50 | P |
| 5. | Marking | 4.1 | 2 | T |
| | | Total | 100 | |

Note : If any test is not done then the marks of that test would be added to the marks of endurance test.

P = Proportionate marks shall be considered.

T = Total marks shall be considered.

ASRTU SPECIFICATION FOR CLUTCH PARTS

0.0 SPECIFICATION NO. : AS:223/1:84:JAN:2018

1.0 SCOPE :

- 1.1 This standard prescribes requirements and methods of testing for Clutch Parts.
- 1.2 This is a purchase specification and does not include manufacturing details. The parts / material supplied against this specification shall be compatible with the original equipment.
- 1.3 The supplier shall provide detail drawings and specifications to the purchasing/ inspecting authority whenever such information is specifically called for.
- 1.4 The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components. If any of the samples fail in any one or more tests specified, the sample shall be considered as not having met the requirements of this specification.
- 1.5 It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished either by performing the tests specified in this standard.
- 1.6 Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.
- 1.7 This specification supersedes earlier specifications including AS:223/1:83:SEP:2016

2.0 APPLICATION :

- 2.1 This specification is applicable for Clutch Parts to be used on Tata & Leyland vehicles, covered under part numbers given in Table 1. Description of items and respective part numbers are detailed in Table 1.
- 2.2 Part numbers are given for reference and identification of component.

3.0 TESTS AND REQUIREMENTS:

- 3.1 **Test Quantity:**
Minimum 2 number shall be supplied for testing.
- 3.2 **Surface Conditions :**
The component shall be free from surface cracks and any other manufacturing defects. The components shall be tested for the tests as detailed in Table-1.

TABLE 1

| Nomenclature and Part No. | Material | Hardness | Microstructure | Tensile Impact & strength |
|--|---|--|---|---|
| Rear Case Cover, Tata 1210-D 312 261 1918 | Ferritic Malleable Cast Iron, Grade A IS:2108:1977 OR Spherodised graphite iron grade SG 400/12 or 500/7 IS:1865:1974 | 149 BHN Max. For SG 400/12 201 BHN Max. for SG 500/7 170 – 241 BHN | Graphite mostly in lump form, matrix mostly ferritic Graphite mainly spheroidal form uniformly distributed all over the matrix, matrix shall be ferritic for grade SG 400/12 and pearlite plus ferrite for SG 500/7 | -- -- |
| Withdrawal Plate Leyland 274611 (New F 3030122) | Malleable Cast Iron, Grade E or superior to IS:2640:1977 OR Spherodised graphite iron grade SG 400/12 or 500/7 IS1865:1974 | 149 - 201 BHN for SG 400/12 201BHN Max. for SG 500/7 170 – 241 BHN | Pearlitic Malleable Cast Iron Free from micro porosity Graphite mainly spheroidal form uniformly distributed all over the matrix, matrix shall be ferritic for grade SG 400/12 and pearlite plus ferrite for SG 500/7 Free from micro porosity | -- -- |
| Clutch Withdrawal Sleeve, Leyland 283917 / F 3430111/ F 3432311 | Low alloy case carburising Steel 15 NI /1 M12 IS:1570: 1961 / EN 353 | Case:58 - 62 HRC Core:27 - 33 HRC | Case: Carbide globules in the matrix of tempered martensite Case depth: 0.8-1.2mm. Core: Tempered martensite plus ferrite. | -- |
| Release Fork Clutch Padal, Tata 312 293 1211 | Medium Carbon Steel C 40 IS:1570:1961 / SAE 1038 / EN 8 | 200 - 260 BHN | Hardened & tempered | UTS: 70 Kg/mm ² (min.) Izod Impact (min) 16.5 kgm |
| Clutch Release Lever, Leyland B1500109 /34502 A | Carbon Steel EN 3C/070 M20/SAE 1022 C15 Mn-75 IS-1570 | 120-180 BHN | Normalised. | UTS : 45 Kg/mm ² (Min) Izod Impact(min) 10 kgm |
| Clutch Plate Lever, Leyland F2461311E | EN32B to BS570-1955 C15 Mn75 | Surface Hardness 56-60 HRC | Case hardened with Case depth 0.7-1.0 mm | - |

| | | | | |
|---|---|---|---|-------|
| Bearing Housing, Leyland L/L 274230/ F1831122/ F 1835022 | Grey Cast Iron Grade 20 IS:6331:1987 | 160 - 220 BHN | Graphite flakes mostly A type, size 4 – 6. Matrix mostly pearlitic. Phosphide eutectic cells distributed in the matrix. | -- |
| | OR Ferritic Malleable Iron Grade BM 340 | 150 max | Graphite is in the form of Temper Carbon Nodules. Matrix Ferritic. | -- |
| | OR Spherodised graphite iron grade SG 400/12 or 500/7 IS:1865:1974 | For SG 400/12 201 BHN Max. For SG 500/7 170 – 241BHN | Graphite mainly spheroidal form uniformly distributed all over the matrix, matrix shall be ferritic for grade SG 400/12 and pearlite plus ferrite for SG 500/7 | -- |
| Ball pillar of Clutch withdrawal mechanism Leyland Ref. Part no. F0900400 | Medium Carbon steel like EN-8/ C40/ SAE1038/1040/ 1039 | <u>On Ball Surface:</u> 55 HRC Min | Induction Hardened and tempered Structure. Case shall cover complete wearing / sliding surface of spherical shape of ball Pillar <u>Case:</u> Carbide globules in the matrix of tempered martensite <u>Case depth:</u> 1.5 mm Minimum. <u>Core:</u> Tempered martensite plus ferrite | ----- |
| Retainer Spring of Clutch withdrawal mechanism Leyland Ref. Part no. F3650410 | EN42/ SAE 1074/SAE 1080 | 500-580 VPN | Fully hardened and tempered Structure | ----- |

4.0 SUPPLY CONDITIONS :**4.1 Rust Preventive Coating :**

The component shall be coated with suitable rust preventive coating.

4.2 Marking :

The component shall be marked with the manufacturer's identification mark and part number.

4.3 Packing :

The components shall be suitably packed to avoid damage during transit / handling.

4.4 Construction :

Dimensions of the component shall strictly conform to those as prescribed by the Chassis manufacturer for their O.E. components.

WEIGHTAGE MARKS FOR CLUTCH PARTS
AS:223/1:84: JAN:2018

| Sr. No | Test Parameter | Clause No. | Marks Allotted | | | | | | | | | P/T |
|--------|-------------------------|------------|------------------------|---------------------------|-----------------------------------|---------------------------|-------------------------------|------------------------------|-------------------------|-------------------------------|-----------------|-----|
| | | | Rear Case Cover , Tata | Withdrawal Plate, Leyland | Clutch Withdrawal Sleeve, Leyland | Release Fork, Pedal, Tata | Clutch Release Lever, Leyland | Clutch Plate, Lever, Leyland | Bearing Housing Leyland | Ball Pillar, Leyland | Retainer Spring | |
| 1. | Surface Condition | 3.2 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | T |
| 2. | Material | 3.3 | 25 | 25 | 25 | 20 | 20 | 25 | 25 | 25 | 25 | T |
| 3. | Hardness | 3.3 | 25 | 25 | Case –15 Core – 10 | 15 | 15 | 25 | 25 | 25 | 25 | P |
| 4. | Microstructure | 3.3 | 30 | 30 | Micro – 20 Case depth – 10 | 20 | 20 | 30 | 30 | Micro – 20 Case depth – 10 | 30 | T |
| 5. | Tensile Strength | 3.3 | -- | -- | -- | 15 | 15 | -- | -- | -- | -- | P |
| 6. | Impact Strength | 3.3 | -- | -- | -- | 10 | 10 | -- | - | -- | -- | P |
| 7. | Rust Preventive Coating | 4.1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | T |
| 8. | Marking | 4.2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | T |
| | | Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | |

P = Proportionate marks shall be considered.

T = Total marks shall be considered.

If any of the test is not done its marks shall be added to 'Hardness'

ASRTU SPECIFICATION FOR CLUTCH PRESSURE PLATE SPRINGS

0.0 SPECIFICATION NO. : AS:223/3:86:JAN:2020

1.0 SCOPE :

- 1.1 This standard prescribes requirements and methods of testing for Springs meant for Clutch Pressure Plate.
- 1.2 This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shall be compatible with the original equipment.
- 1.3 The supplier shall provide detail drawings and specifications to the purchasing/ inspecting authority whenever such information is specifically called for.
- 1.4 The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components'. If any of the samples fail in any one or more tests specified, the sample shall be considered as not having met the requirements of this specification.
- 1.5 It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished by performing the tests specified in this standard.
- 1.6 Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.
- 1.7 This specification supersedes earlier specifications including AS:223/3:61:OCT:2000.

2.0 APPLICATION :

- 2.1 This specification covers the requirements of Springs for Clutch Pressure Plate to be used on Tata and Leyland Vehicles.
- 2.2 Part numbers are given for reference & identification of the component.

3.0 TEST AND REQUIREMENTS :

3.1 Visual Examination :

The springs shall be examined for squareness, grinding of ends, straightness. and shall be free from defects.

3.2 Dimensions :

Dimensions of the springs shall strictly conform to those as prescribed by the Chassis manufacturer for their O.E. components or the component shall have dimensions as specified at Sr. Nos. 2 to 5 of Table 1.

3.3 Load Test :

The spring shall have stiffness to support the loads at the specified heights. For a set, the observed load shall not differ more than 3 Kg from each other.

3.4 Endurance Test :

The spring shall be subjected to one million cycles by deflecting from 90% of specified free height to shut height + 3 mm. After the test, loss in the load at the specified height shall not be more than 2 kg. There shall not be any failure.

4.0 SUPPLY CONDITIONS :**4.1 Rust Preventive Coating :**

Springs shall be treated against corrosion.

4.2 Packing :

Components shall be suitably packed to avoid damage during transit/handling.

TABLE – 1**CLUTCH PRESSURE PLATE SPRING CHARACTERISTIC**

| Sr No | Nomenclature | Tata Standard Clutch 280mm dia | | | Tata Reinforced Clutch 280mm dia | | |
|-------|---------------------------|--------------------------------|---------------------|-------------------|----------------------------------|-----------------|-------------------|
| | | API | C.A. | API | REPCO | C.A. | RANE |
| 1. | No. of Springs per set | 9 | 9 | 9 | 9 | 9 | 9 |
| 2. | Free Length (mm) | 62±1 | 61.5±1 | 57±1 | 57±1 | 54.5±1 | 56±1 |
| 3. | Wire Diameter (mm) | 4.2 | 4.2 | 4.5 | 4.5 | 4.75 | 4.5 |
| 4. | Outer Diameter (mm) | 28 | 28 | 28 | 28 | 29.5 | 28 |
| 5. | Max. Shut Height (mm) | 36 | 35.7 | 36 | 36.8 | 36 | 36 |
| 6. | Load in Kg. at length, mm | 78±3.5 at 39.5 | 78.5±3.5 at 39.5 | 87.5±4 at 39.5 | 90±4.5 at 40 | 87±5 at 39.5 | 87.5±4 at 39.5 |
| 7. | Endurance Cycles | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ |

**TABLE – 1 contd..
CLUTCH PRESSURE PLATE SPRING CHARACTERISTIC**

| Sr No | Nomenclature | Tata 310mm dia Part No. 257325408713 | Tata 310mm dia Part .No. 257425408701 | Tata 330mm Dia Part .No. 2724 2540 8704 | Leyland 13" | Leyland 14" |
|-------|----------------------------|--------------------------------------|---------------------------------------|---|-----------------|-----------------|
| 1. | No. of Springs per set | 12 | 12 | 9 | 12 | 12 |
| 2. | Free Length (mm) | 73±1 | 69.00±1 | 73±1 | 118.8±2 | 118.8±2 |
| 3. | Wire Diameter (mm) | 4.5 | 4.75±0.1 | 5.0 ± 0.1 | -- | 4.5 |
| 4. | Outer Diameter (mm) | -- | 38.5±0.25 | 36.5 ± 0.1 | -- | 35 |
| 5. | Coil Inner Dia (mm) | -- | 29.0±0.25 | 26.4 ± 0.01 | -- | -- |
| 6. | Max. Shut Height (mm) | -- | 36.1±0.3 | 35 ± 0.1 | 58 | 61.2 |
| 7. | Load in Kg. at length (mm) | 59.5±4.5 at 41 | 66.5±4.0 at 41 | 115 ± 5 at 41 mm | 68±4 at 66 | 68±4 at 66 |
| 8. | Endurance Cycles | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ |
| 9. | Material | -- | Grade 2D IS:4454 (Part-III)-1975 | -- | -- | -- |

**WEIGHTAGE MARKS FOR CLUTCH PRESSURE PLATE SPRINGS
AS:223/3:86:JAN:2020**

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-----------------------------------|-------------|-----------------------|-----|
| 1. | Visual Examination | 3.1 | 3 | T |
| 2. | Dimensions | 3.2 | 15 | P |
| 3. | Load Test | 3.3 | 25 | P |
| 4. | Variation in load in complete set | Table 1 (7) | 25 | P |
| 5. | Endurance Test | Table 1 (8) | 30 | P |
| 6. | Rust Preventive Coating | 4.1 | 2 | T |
| | | | ----- 100 ----- | |

Where material is not specified, the marks would be added in endurance parameter.

P = Proportionate marks shall be considered.

T = Total marks shall be considered.

**ASRTU SPECIFICATION FOR CLUTCH DISC 14" (INDUCTION HARDENED)
LEYLAND.**

0.0 SPECIFICATION NO. : AS:274:88:AUG:2022

1.0 SCOPE :

- 1.1 This standard prescribes the requirements and methods of testing for Clutch Disc14" (Induction Hardened) Leyland vehicle.
- 1.2 This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shall be compatible with the original equipment.
- 1.3 The supplier shall provide detail drawings and specifications to the purchasing/inspecting authority whenever such information is specifically called for.
- 1.4 The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components'. If any of the samples fail in any one or more tests specified, the sample shall be considered as not having met the requirements of this specification.
- 1.5 It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished either by performing the tests specified in this standard.
- 1.6 Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.
- 1.7 This specification supersedes earlier specifications including **AS:274:83:SEP:2016**, in view of **increase in Test quantity at Sr. No. 3.2 from previous minimum 2 No's to minimum 03 No's. (Reference: MOM of 88th Specification Sub Committee Meeting.)**

2.0 APPLICATION :

- 2.1 This specification covers the requirements of Clutch Disc14" (Induction Hardened) 8 Window Type to be used on Leyland vehicles under Part Nos. AL 355063, B1300216 A, B1300209, B1304804.
- 2.2 Part numbers are given for reference and identification of the component.

3.0 TEST AND REQUIREMENTS :

3.1 Visual Examination:

The Component when examined visually, shall be free from defects such as distortion, scoring, tool marks, crack etc.

3.2 TEST QUANTITY :

Minimum 3 samples shall be supplied for testing.

3.3 Dimensions :

Dimensions of the component shall strictly conform to those as prescribed by the Chassis manufacturer for their O.E. components.

The clutch disc when checked using standard clutch shaft, the assembly shall slide freely. There shall not be any looseness, lateral or radial play. The Clutch Plate shall meet the requirement of Table-3

4.0 SCHEDULE OF TEST :

- a) Sample 'A' : For Material Test as per Table-1A or Table-1B
- b) Sample 'B' : For Dimensional Test as per Table 3 & Performance Test as per Table 2

5.0 MARKING : The material shall be identified with manufacturers Trade name/mark, Part No.

6.0 PACKING : The material/Items shall be so packed that they do not get damaged during transit and handling.

7.0 This induction hardened 14" Clutch Disc is interchangeable with the existing 14" Clutch Disc.

8.0 The induction hardening is introduced on "Clutch Disc Windows" for Damper Springs in 14" size, Axial spring clutch.

Table –1(A): Material & Metallurgical Requirements

| Sr. No. | Item | Clutch Disc14" (Induction Hardened) Leyland vehicle (Ref. Part No's AL 55063, B1300216 A & B1300209) |
|---------|------------------|---|
| 1 | Carrier Plate | Low Carbon Steel with Case carburised & Hardened |
| | | Case Depth:0.2 to 0.4 |
| | | 580 - 850 VPN |
| 2 | Retainer Plate | Low Carbon Steel with Case carburised & Hardened |
| | | Case Depth:0.2 to 0.4 |
| | | 580 to 850 VPN |
| 3 | Hub | EN-15/EN-9/EN-15B |
| | | Forging |
| | | 32 to 42 HRC on Boss 38 to 44 HRC on Flange |
| | | 48 to 54 HRC - on Windows at Induction Hardened Portion |
| | | Case Depth: 0.5 to 1.5 |
| | | |
| | | |
| | | |
| 4 | Stop Pin | EN - 32B (Low Carbon Steel)/ EN1A 5(Low Carbon Sulphurised & Leaded variety) |
| | | |
| 5 | Segment | Hardened and tempered steel, C-80 /C45/45C8,IS:2507, Gr.1 (OR) 5C6/55C8/IS:2507,Gr.2/IS:1570 (Part II) 1979 |
| | | 238 - 500 VPN/20-33 HRC |
| 6 | Facing Rivet | Brass |
| 7 | Segment Rivet | EN-2B/10C4/15C4,IS:1570 (Part II)-1979/ C 15, IS: 1570-1961 |
| 8 | Damper Spring | IS:4454(Part-III), Grade 1 D or Grade 2 D |
| 9 | Wave Washer | EN - 42F/SAE 1074/1080 or IS:2507, Gr.5/6 |
| | | 400 - 500 VPN |
| 10 | Shim or friction | EN - 42F/ SAE 1010,No.1 Temper |
| | Washer | 170 - 500 VPN |

Table –1(B): Material & Metallurgical Requirements

| Sr. No. | Item | Clutch Disc14" (Induction Hardened) Leyland vehicle (Ref. Part No's B1304804) |
|---------|--------------------------------------|--|
| 1 | Retainer Plate | Low Carbon Steel with Case carburised & Hardened |
| | | Case Depth:0.2 to 0.4 |
| | | 580 to 850 VPN |
| 2 | Carrier Plate is Integrated with Hub | EN-15/EN-9/EN-15B with Hardened & Tempered Forging |
| | | 32 to 42 HRC on Boss 35 to 44 HRC on Flange |
| | | 50 HRC (min.) - on Windows at Induction Hardened Portion |
| | | Case Depth: 0.5 to 1.5 |
| 3 | Stop Pin | EN - 32B (Low Carbon Steel)/ EN1A 5(Low Carbon Sulphurised & Leaded variety) |
| 4 | Segment | Hardened and tempered steel C-80/C45/45C8,IS:2507, Gr.1 (OR) 5C6/55C8/IS:2507,Gr.2/IS:1570 (Part II) 1979 |
| | | 238 - 500 VPN/20-33 HRC |
| | | |
| 5 | Facing Rivet | Steel/ Brass/ Aluminium |
| 6 | Segment Rivet | EN-2B/10C4/15C4,IS:1570 (Part II)-1979/ C 15, IS: 1570-1961 |
| 7 | Damper Spring | IS:4454(Part-III), Grade 1 D or Grade 2 D |
| 8 | Wave Washer | EN - 42F/SAE 1074/1080 or IS:2507, Gr.5/6 |
| | | 400 - 500 VPN |
| 9 | Shim or friction Washer | EN - 42F/ SAE 1010,No.1 Temper |
| | | 170 - 500 VPN |

Table –2 : Performance Requirements (Winding up Torque Characteristics)

| Sr. No. | Parameters | Specified |
|---------|--|------------------|
| 1 | Performance Test Torque per degree | 15.2±20 kgfm/Deg |
| 2 | Endurance Test No. of Cycles to be covered without any failure when tested for a Windup Angle ± 2.5° | 5 Millions |
| 3 | Percentage Drop In Windup Torque after the Endurance Test | 20% Max. |

Table –3: Dimensions (in mm)

| Sr. No. | Parameters | Specified |
|---------|---|--|
| 1 | Driven Plate, O.D. | 352.6 ⁺⁰ _{-1.0} |
| 2 | Driven Plate, I.D. | 216.0 ^{+1.0} ₋₀ |
| 3 | Clamped Thickness | 13.7/14.4 |
| 4 | Hub Length | 38.25 ± 0.3 |
| 5 | Individual facing Thickness | 6.35 ± 0.1 or 6.2 ± 0.1 |
| 6 | Straight Sided Spline: i) Outer Dia. ii) Inner Dia. iii) Width iv) No. of Splines | 38.46 / 38.20 30.84/ 31.09 5.89/5.94 10 |
| 7 | No. of Clutch Hole Rivet | 40 Nos. |
| 8 | No. of Windows | 8 or 6 |
| 9 | No. of Rivets per facing | 20 Nos |

**WEIGHTAGE MARKS FOR CLUTCH DISC 14" (INDUCTION HARDENED)
LEYLAND (AS:274:88:AUG:2022)**

| Sr.No. | Test Parameter | Clause No. | Marks Alloted | | P/T |
|--------|--|--|---------------|-------------|-------------|
| | Material & Metallurgical Requirements | | Table-1(A) | Table-1(B) | |
| 1 | Carrier Plate | Sr. No. 1 of Table-1A | 3 | -- | T |
| 2 | Retainer Plate | Sr. No. 2 of Table-1A Sr. No. 1 of Table-1B | 3 | 3 | T |
| 3 | Hub or Hub is integrated with Carrier Plate: Material Hardness Microstructure | Sr. No. 3 of Table-1A or Sr. No. 2 of Table-1B | 2 6 2 | 3 7 3 | T P P |
| 4 | Stop Pin | Sr. No. 4 of Table-1A or Sr. No. 3 of Table-1B | 1 | 1 | T |
| 5 | Segment | Sr. No. 5 of Table-1A or Sr. No. 4 of Table-1B | 2 | 2 | T |
| 6 | Facing Rivet | Sr. No. 6 of Table-1A or Sr. No. 5 of Table-1B | 2 | 2 | T |
| 7 | Segment Rivet | Sr. No. 7 of Table-1A or Sr. No. 6 of Table-1B | 2 | 2 | T |
| 8 | Damper Spring | Sr. No. 8 of Table-1A or Sr. No. 7 of Table-1B | 4 | 4 | T |
| 9 | Wave Washer | Sr. No. 9 of Table-1A or Sr. No. 8 of Table-1B | 2 | 2 | T |
| 10 | Shim or friction Washer | Sr. No. 10 of Table-1A or Sr. No. 9 of Table-1B | 2 | 2 | T |
| | Performance Requirements | | | | |
| 11 | Torque per degree | Sr no 1 of Table-2 | 9 | | P |
| 12 | No. of cycles completed | Sr no 2 of Table-2 | 20 | | P |
| 13 | Percentage Drop in wind-up torque after the endurance | Sr no 3 of Table-2 | 15 | | P |
| | Dimensions | | | | |
| 14 | Driven Plate O.D. | Sr no 1 of Table-3 | 5 | | T |
| 15 | Driven Plate I.D. | Sr no 2 of Table-3 | 5 | | T |
| 16 | Clamped Thickness | Sr no 3 of Table-3 | 4 | | T |
| 17 | Hub Length | Sr no 4 of Table-3 | 2 | | T |
| 18 | Individual Facing Thickness | Sr no 5 of Table-3 | 5 | | T |
| 19 | Spline Details | Sr no 6 of Table-3 | 4 | | T |
| | | Total | 100 | | |

Note : The tests which are not possible to conduct at moment, the marks of such test would be added in Torque per degree and no. of cycles completed test equally under Performance Data.

P = Proportionate marks shall be considered.

T = Total marks shall be considered.

**ASTRU SPECIFICATION FOR CLUTCH BACK PLATE
FOR LEYLAND (F 3032422)**

0.0 SPECIFICATION NO.: AS:521:83:SEP:2016

1.0 SCOPE:

1.1 This standard prescribes requirements and methods of testing for Clutch Back Plate for Leyland (F 3032422)

1.2 This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shall be compatible with the original equipment.

1.3 The supplier shall provide detail drawings and specifications to the purchasing/ inspecting authority whenever such information is specifically called for.

1.4 The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components'. If any of the samples fail in any one or more tests specified, the sample shall be considered as not having met the requirements of this specification.

1.5 It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished by performing the tests specified in this standard.

1.6.1 Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.

1.7 This specification supersedes earlier specification AS:521:81:MAR:2014

2.0 APPLICATION:

2.1 The specification covers the requirement for Clutch Back Plate for Leyland covered under the part No. mentioned below.

Clutch Back Plate F 3032422

2.2 Part number is given for reference and identification of the components.

2.3 Attached Representative sketches / Drawings of above components are for identification.

3.0 TESTS AND REQUIREMENTS

3.1 Test Quantity:

Minimum one sample shall be supplied for testing.

3.2 Dimensions:

Dimensions of the components of the assembly shall strictly conform to those as prescribed by the Chassis manufacturer for their OE components requirements or as specified in the drawing and in the specification for individual component.

3.2 SPECIFICATION FOR CLUTCH BACK PLATE FOR LEYLAND (F 3032422)

3.2.1) Clutch Back Plate (F3032422):

| Sr.No | Parameters | Requirements | |
|----------|--|---|---|
| 3.2.1 a) | Surface Condition | The component shall have smooth surface finish and free from casting defects. | |
| | | Type A | Type B |
| 3.2.1 b) | Material The component shall be made out of | Grey Cast Iron grade FG 200 | FG 300 as per IS:6331:1987 |
| 3.2.1 c) | Hardness BHN (at 187.5kg load) | 170 - 220 | 210 - 260 |
| 3.2.1 d) | Tensile Strength (Test Specimen prepared from the component) | 20 Kg/mm ² (Min.) | 30 Kg/mm ² (Min.) |
| 3.2.1 e) | Microstructure | Graphite flakes are predominantly Type A distribution with little quantity of D and E, ASTM size 2 to 4 Matrix lamellar pearlite with ferrite, if Present not to exceed 15%. | Graphite flakes are predominantly Type A distribution with little quantity of D and E, ASTM size 3 to 5 Matrix lamellar pearlite with ferrite or carbide, if present not to exceed 5%. |

4.0 SUPPLY CONDITIONS:**4.1 Rust Preventive Coating:**

The Component shall be coated with rust preventive coating.

4.2 Marking:

The Component shall be marked with manufacturer's trade mark and part number.

4.3 Packing:

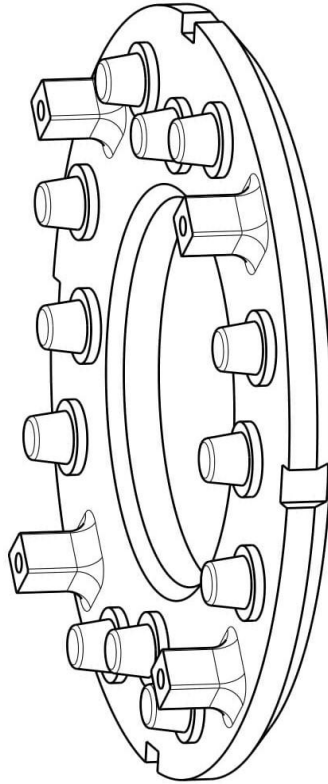
The Component shall be packed suitably to avoid any damage during transit / handling.

**WEIGHTAGE MARKS FOR CLUTCH BACK PLATE
FOR LEYLAND (F 3032422)
AS:521:83:SEP:2016**


(1) Clutch Back plate (F3032422):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.1 (a) | 5 | T |
| 2. | Material | 3.2.1 (b) | 20 | T |
| 3. | Hardness | 3.2.1 (c) | 25 | P |
| 4. | Tensile strength | 3.2.1 (d) | 25 | T |
| 5. | Microstructure | 3.2.1 (e) | 20 | P |
| 6. | Marking | 4.2 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

SCALE : 1:3



PART NO. - F3032422

| | | |
|---|--|-------------|
|  | CENTRAL INSTITUTE OF ROAD TRANSPORT | |
| TITLE: - CLUTCH BACK PLATE LEYLAND F3032422 | | |
| AS:521:81:MAR:2014 | | |
| C.I.R.T./CMM DRG NO. - F3032422 | | |
| PREPARED BY | | APPROVED BY |

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ASTRU SPECIFICATION FOR CLUTCH REPAIR KIT & SPRING KIT FOR LEYLAND

0.0 SPECIFICATION NO.: AS:522:83:SEP:2016

1.0 SCOPE:

- 1.1 This standard prescribes requirements and methods of testing for Clutch Repair Kit & Spring kit for Leyland
- 1.2 This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shall be compatible with the original equipment.
- 1.3 The supplier shall provide detail drawings and specifications to the purchasing/inspecting authority whenever such information is specifically called for.
- 1.4 The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components'. If any of the samples fail in any one or more tests specified, the sample shall be considered as not having met the requirements of this specification.
- 1.5 It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished by performing the tests specified in this standard.
- 1.6 Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.
- 1.7 This specification supersedes earlier specifications including AS:522:81:MAR:2014

2.0 APPLICATION:

- 2.1.0 This specification covers the following components.
- 2.1.1 **Clutch repair kit Major (P0941651) consist of Pin for lever, Bush for lever, Clutch plate lever, Pressure pad, Bolt, Retainer spring, clutch spring at Annexure A**
- 2.1.2 **Clutch repair kit Minor (P0941751) consist of Pin for lever, Bush for lever, Clutch plate lever, Pressure pad, Bolt, Retainer spring at Annexure B**
- 2.1.3 **Spring Kit (P0957351 / F3646910) consist of Clutch spring at Annexure C**
- 2.1.4 **Clutch Repair Kit (P 0912251) of Pin for Lever, Bush for Lever, Clutch Plate Lever, Pressure Pad and Bolt at Annexure D**
- 2.2 Part number is given for reference and identification of the components.
- 2.3 Attached Representative sketches / Drawings of above components are for identification.

3.0 TESTS AND REQUIREMENTS

3.1 Test Quantity:

One complete kit shall be supplied for testing.

3.2 Dimensions:

Dimensions of the components of the assembly shall strictly conform to those as prescribed by the Chassis manufacturer for their OE components requirements or as specified in the drawing and in the specification for individual component.

3.2 SPECIFICATION FOR CLUTCH REPAIR KIT & SPRING KIT FOR LEYLAND

3.2.1) Pin for lever (F0932015):

- 3.2.1 a) **Surface Condition:** Component shall be free from surface cracks.
- 3.2.1 b) **Material** : The component shall be made out of Case Carburising Steel like En 3 or Equivalent.
- 3.2.1 c) **Hardness in HRC** : 58 ± 3 HRC

3.2.2) Bush for Lever (F0530115):

- 3.2.2 a) **Surface Condition:** Component shall be free from surface cracks.
- 3.2.2 b) **Material** : The component shall be made out of EN 32B
- 3.2.2 c) **Hardness in HRA** : 78 HRA (min.)
- 3.2.2 d) **Microstructure** : Case Hardened structure.
Case Depth: 0.2 – 0.7mm.

3.2.3) Clutch Plate Lever (F2461311/ F 2430511):

- 3.2.3 a) **Surface Condition** : Component shall be free from surface cracks.
- 3.2.3 b) **Material** : The component shall be made out of Case Carburising Steel like En 32B / C15Mn75 / IS: 1570:15C8.
- 3.2.3 c) **Hardness in HRC:** 57 - 61 HRC.
- 3.2.3 d) **Microstructure** : Case Hardened & Tempered structure.
Case Depth: 0.5 – 0.8 mm.

3.2.4) Pressure Pad (F2630114):

- 3.2.4 a) **Surface Condition:** Component shall be free from surface cracks.
- 3.2.4 b) **Material :** The component shall be made out of
Low carbon steel (i) EN 202 or (ii) EN 32 B
- 3.2.4 c) **Hardness in HRA :** 79 HRA (min.)
- 3.2.4 d) **Microstructure :** Case carburised, Hardened & Tempered structure.
Case Depth: 0.5 ± 0.2 mm.

3.2.5) Bolt (F3531111):

- 3.2.5 a) **Surface Condition :** Component shall be free from surface cracks.
- 3.2.5 b) **Material :** The component shall be made out of
(i) EN3/IS:1570-C20/C15/SAE-1023
or (ii) EN15/AIS11.54
- 3.2.5 c) **Hardness VPN :** 250 – 320 VPN.
(at 5 kg Load)
- 3.2.5 d) **Microstructure :** Hardened and Tempered structure.

3.2.6) S/A of Retainer Spring (B1301504):

- 3.2.6 a) **Surface Condition:** Component shall be free from surface cracks.
- 3.2.6 b) **Material :** The component shall be made out of (i) SAE
1060/IS: 4454:GRADE2 or (ii) IS:4454: Part I
GRADE 3 or Equivalent
- 3.2.6 c) **Hardness in HRC :** 48 ± 3 HRC.
- 3.2.6 d) **Microstructure** Hardened & Tempered structure.

3.2.7) Clutch Spring (P0957351/F3646910):

- 3.2.7 a) **Surface Condition:** Component shall be free from surface cracks.
- 3.2.7 b) **Material :** The component shall be made out of
IS: 4454 (PART-III)GRADE2D/IS:1570:55Cr70
/SAE 5155/EN11
- 3.2.7 c) **Hardness in VPN :** 500 – 575 VPN.
- 3.2.7 d) **Microstructure** Hardened & Tempered structure

4.0 SUPPLY CONDITIONS:**4.1 Rust Preventive Coating :**

The components given in Table 1 shall be treated for one of the rust preventive coating such as Plastic powder Coating, Blackodising, Phosphatising Galvanising, Flash Chrome Plating, Nickel Plating, Passivating and Cadmium Plating.

4.2 Marking:

The components given in Table 1 shall be marked with the manufacturer's trade mark and part no.

Table 1

| Sr. No | Item No. | Component name |
|--------|----------|--------------------|
| 1) | 3.2.1 | Pin for Lever |
| 2) | 3.2.2 | Bush for lever |
| 3) | 3.2.3 | Clutch plate Lever |
| 4) | 3.2.5 | Bolt |

4.2 Packing:

The component shall be suitably packed to avoid damage during transit/handling.

**WEIGHTAGE MARKS FOR CLUTCH REPAIR KIT & SPRING KIT
FOR LEYLAND
AS:522:83:SEP:2016**

Note: All components of the Clutch Repair kit & spring kit carry equal marks when complete repair kit is being test evaluated.

(1) Pin for lever (F0932015):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.1 (a) | 10 | T |
| 2. | Material | 3.2.1 (b) | 40 | T |
| 3. | Hardness | 3.2.1 (c) | 40 | P |
| 4. | Marking | 4.2 | 10 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(2) Bush for Lever (F0530115):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.2 (a) | 5 | T |
| 2. | Material | 3.2.2 (b) | 30 | T |
| 3. | Hardness | 3.2.2 (c) | 30 | P |
| 4. | Microstructure | 3.2.2 (d) | 25 | T |
| 4.a | Case depth | 3.2.2 (d) | 5 | P |
| 5. | Marking | 4.2 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(3) Clutch Plate Lever (F2461311/ F 2430511):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|-----------------------|-----|
| 1. | Surface Condition | 3.2.3 (a) | 5 | T |
| 2. | Material | 3.2.3 (b) | 30 | T |
| 3. | Hardness | 3.2.3 (c) | 30 | P |
| 4. | Microstructure | 3.2.3 (d) | 25 | T |
| 4.a | Case depth | 3.2.3 (d) | 5 | P |
| 5. | Marking | 4.2 | 5 | T |
| Total | | | ----- 100 ----- | |

(4) Pressure Pad (F2630114):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|-----------------------|-----|
| 1. | Surface Condition | 3.2.4 (a) | 10 | T |
| 2. | Material | 3.2.4 (b) | 30 | T |
| 3. | Hardness | 3.2.4 (c) | 30 | P |
| 4. | Microstructure | 3.2.4 (d) | 25 | T |
| 4.a | Case depth | 3.2.4 (d) | 5 | P |
| Total | | | ----- 100 ----- | |

(5) Bolt (F3531111):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|-----------------------|-----|
| 1. | Surface Condition | 3.2.5 (a) | 5 | T |
| 2. | Material | 3.2.5 (b) | 30 | T |
| 3. | Hardness | 3.2.5 (c) | 30 | P |
| 4. | Microstructure | 3.2.5 (d) | 30 | T |
| 5. | Marking | 4.2 | 5 | T |
| Total | | | ----- 100 ----- | |

(6) S/A of Retainer Spring (B1301504):

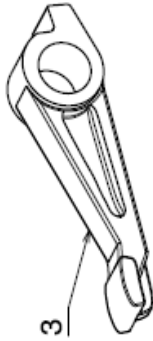
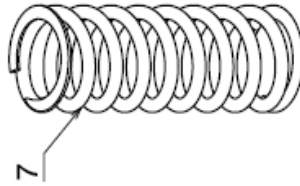
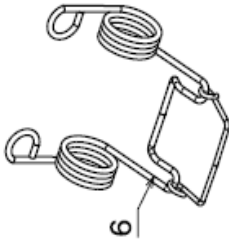
| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|-----------------------|-----|
| 1. | Surface Condition | 3.2.6 (a) | 10 | T |
| 2. | Material | 3.2.6 (b) | 30 | T |
| 3. | Hardness | 3.2.6 (c) | 30 | P |
| 4. | Microstructure | 3.2.6 (d) | 30 | T |
| Total | | | ----- 100 ----- | |

(7) Clutch Spring (P0957351 / F3646910):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------|------------|-----------------------|-----|
| 1. | Surface Condition | 3.2.7 (a) | 10 | T |
| 2. | Material | 3.2.7 (b) | 30 | T |
| 3. | Hardness | 3.2.7 (c) | 30 | P |
| 4. | Microstructure | 3.2.7 (d) | 30 | T |
| Total | | | ----- 100 ----- | |

SCALE-1:2

ANNXURE A



PART NO. P0941651
CONSIST OF

- 1) PIN FOR LEVER F0932015 QTY-04 NOS
- 2) BUSH FOR LEVER F0530115 QTY-04 NOS
- 3) CLUTCH PLATE LEVER F2461311 QTY-04 NOS
- 4) PRESURE PAD F2630114 QTY-04 NOS
- 5) BOLT F3531111 QTY-04 NOS
- 6) S/A OF RETAINER SPRING B1301504 QTY-04 NOS
- 7) CLUTCH SPRING P0957351/F3646910 QTY-12NOS



CENTRAL INSTITUTE OF ROAD TRANSPORT

**TITLE: - CLUTCH REPAIR KIT MAJOR
P0941651 LEYLAND**

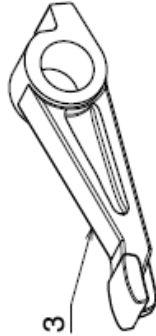
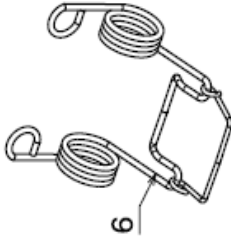
C. I. R. T. /CMM DRG NO. - P0941651

PREPARED BY _____ APPROVED BY _____

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SCALE - 1 : 2

ANNEXURE - B



PART NO. P0941751
CONSIST OF

- 1) PIN FOR LEVER F0932015 QTY-04 NOS
- 2) BUSH FOR LEVER F0530115 QTY-04 NOS
- 3) CLUTCH PLATE LEVER F2461311 QTY-04 NOS
- 4) PRESURE PAD F2630114 QTY-04 NOS
- 5) BOLT F3531111 QTY-04 NOS
- 6) S/A OF RETAINER SPRING B1301504 QTY-04 NOS



CENTRAL INSTITUTE OF ROAD TRANSPORT

TITLE:- CLUTCH REPAIR KIT MINOR
P 0941751 LEYLAND

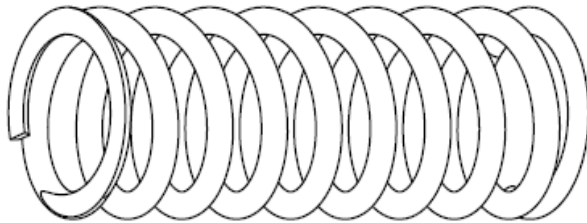
C.I.R.T./CMM DRG NO. - P 0941751

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ANNEXURE - C


SCALE - 1:1



CLUTCH SPRING KIT

CONSIST OF

- 1) CLUTCH SPRING P0957351 / F3646910 QTY - 12NOS

| | | | |
|---|--|--|--|
|  | | CENTRAL INSTITUTE OF ROAD TRANSPORT | |
| TITLE: - CLUTCH SPRING KIT LEYLAND P0957351 / F3646910 | | | |
| | | | |
| C. I. R. T. / CMM DRG NO. - P 0957351 | | | |
| PREPARED BY | | APPROVED BY | |

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SCALE - 1:2

ANNXURE D



Clutch Repair Kit Leyland P0912251

CONSIST OF

- 1) PIN FOR LEVER F0932015 QTY - 03 NOS
- 2) BUSH FOR LEVER F0530115 QTY - 03 NOS
- 3) CLUTCH PLATE LEVER F2430511 QTY - 03 NOS
- 4) PRESURE PAD F2630114 QTY - 03 NOS
- 5) BOLT F3531111 QTY - 03 NOS



CENTRAL INSTITUTE OF ROAD TRANSPORT

**TITLE: - CLUTCH REPAIR KIT MAJOR
P0912251 LEYLAND**

C.I.R.T./CMM DRG NO. - P0912251

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**ASTRU SPECIFICATION FOR CLUTCH COVER ASSEMBLY
(380MM DIA. COIL TYPE) PARTS FOR TATA**

0.0 SPECIFICATION NO.: AS:550:86:JAN:2020

1.0 SCOPE :

- 1.1 This standard prescribes requirements and methods of testing for Clutch Cover Assembly 380 mm Dia. Coil Type Parts for Tata.
- 1.2 This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shall be compatible with the original equipment.
- 1.3 The supplier shall provide detail drawings and specifications to the purchasing/ inspecting authority whenever such information is specifically called for.
- 1.4 The material offered against this specification shall conform to this specification in full. The tests shall be carried out on the part directly or on the specimen prepared from the components'. If any of the samples fail in any one or more tests specified, the sample shall be considered as not having met the requirements of this specification.
- 1.5 It is the manufacturer's prime responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished by performing the tests specified in this standard.
- 1.6 Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.

2.0 APPLICATION :

- 2.1 This specification covers the part no. 2724 2540 0215 of Clutch Cover Assembly 380 mm Dia. Coil Type Parts for Tata vehicle.
- 2.2 Part number is given for reference and identification of the components. Other Part Numbers have same / similar application and having same design and construction of components can also be tested.

3.0 TESTS AND REQUIREMENTS

3.1 Dimensions:

Dimensions of the components of the assembly shall strictly conform to those as prescribed by the Chassis manufacturer for their OE components requirements or as specified in the drawing and in the specification for individual component.

3.2 SPECIFICATION FOR CLUTCH COVER ASSEMBLY 380 MM DIA. COIL TYPE TATA

3.2.1) CLUTCH COVER:

3.2.1 a) **Surface Condition :** The Component shall have smooth surface finish and free from casting defects.

3.2.1 b) **Material :** Spheroidal graphite iron grade SG 600/3 as per IS:1865:1991

3.2.1 c) **Hardness :** 190 to 270 HBW

3.2.1 d) **Ultimate Tensile Strength :**

i) UTS on Test Bar separately cast : 600 MPA, Min.

ii) UTS on test piece prepared out of component : 500 MPA, Min.

3.2.1 e) **Microstructure :** Graphite present shall show mainly spheroidal form, uniformly distributed all over the matrix. Matrix shall consist of pearlite plus ferrite.

3.2.2) PIN (SHORT AND LONG):

3.2.2 a) **Surface Condition :** Component shall be free from surface cracks.

3.2.2 b) **Material :** Case Carburising Steel like En 32B

3.2.2 c) **Hardness in HRA :** 76 HRA (Min.).

3.2.2 d) **Microstructure :** Case hardened & tempered
Case Depth: 0.3 - 0.7 mm.

3.2.3) RELEASE LEVER :

3.2.3 a) **Surface Condition :** Component shall be free from surface cracks.

3.2.3 b) **Material :** Case Carburising Steel like En 2A Steel (low carbon steel).

3.2.3 c) **Hardness in HRA :** 76 HRA (min.)

3.2.3 d) **Microstructure :** Case Hardened & Tempered
Case Depth: 0.6 ± 0.2 mm.

3.2.4 U-TYPE SPRING:

- 3.2.4 a) **Surface Condition** : Component shall be free from surface cracks.
- 3.2.4 b) **Material** : SAE 1060
- 3.2.4 c) **Hardness** : 400 – 500 HV
- 3.2.4 d) **Microstructure** : Hardened and Tempered.

3.2.5 NEEDLE BEARING ROLLERS:

- 3.2.5 a) **Surface Condition** : Component shall be free from surface cracks.
- 3.2.5 b) **Material** : En31/ SAE - 52100.
- 3.2.5 c) **Hardness** : 700-850 HV.
- 3.2.5 d) **Microstructure** : Hardened and tempered Structure.

3.2.6 EYE BOLT / SUPPORT FOR RELEASE LEVER:

- 3.2.6 a) **Surface Condition** : Component shall be free from surface cracks.
- 3.2.6 b) **Material** : Medium Carbon Steel En 15AM
- 3.2.6 c) **Hardness** : 240 – 300 HV.
- 3.2.6 d) **Microstructure** : Hardened and Tempered Structure.

3.2.7 ADJUSTING NUT (ROUND) :

- 3.2.7 a) **Surface condition** : The component shall be free from surface cracks
- 3.2.7 b) **Material** : Medium Carbon Steel En-15 AM
- 3.2.7 c) **Hardness** : 200 – 300 HV.
- 3.2.7 d) **Microstructure:** Hardened and Tempered Structure.

3.2.11 CLUTCH WITHDRAWAL PLATE / CLUTCH COLLECTOR RING:

- 3.2.11 a) Surface condition :** The component shall be free from surface cracks.
- 3.2.11 b) Material :** Case Carburising Steel like EN32B
- 3.2.11 c) Hardness :** 76 HRA (Min.).
- 3.2.11 d) Microstructure :** Case Hardened and Tempered.
: Case depth – 0.6 ± 0.2 mm.

3.2.12 WASHER PLATE FOR COVER BOLT:

- 3.2.12 a) Surface condition :** The component shall be free from surface cracks.
- 3.2.12 b) Material :** EN 9.
- 3.2.12 c) Hardness :** 150-200 HV
- 3.2.12 d) Microstructure :** Annealed Structure consist of globular pearlite plus ferrite.

3.2.13 COVER BOLT:

- 3.2.13 a) Surface condition :** The component shall be free from surface cracks.
- 3.2.13 b) Material :** Medium carbon steel – En8
- 3.2.13 c) Hardness :** 250-320 HV
- 3.2.13 d) Microstructure :** Hardened and Tempered Structure.

4.0 SUPPLY CONDITIONS:

4.1 Rust Preventive Coating:

The component shall be coated with suitable rust preventive coating.

4.2 Marking:

The component shall be marked with the manufacturer's trade mark and part No.

4.3 Packing:

The component shall be suitably packed to avoid damage during transit/handling.

**WEIGHTAGE MARKS FOR CLUTCH COVER ASSEMBLY (380MM DIA. COIL TYPE)
PARTS FOR TATA**

AS:550:86:JAN:2020

Note: All components of the Assembly carry equal marks when complete assembly is being test evaluated.

(1) CLUTCH COVER:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.1 (a) | 10 | T |
| 2. | Material | 3.2.1 (b) | 20 | T |
| 3. | Hardness | 3.2.1 (c) | 15 | P |
| 4. | Tensile Strength | 3.2.1 (d) | 30 | T |
| 5. | Microstructure | 3.2.1 (e) | 20 | T |
| 6. | Marking | 4.2 | -- | T |
| 7. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(2) PIN (SHORT AND LONG):

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.2 (a) | 10 | T |
| 2. | Material | 3.2.2 (b) | 30 | T |
| 3. | Hardness | 3.2.2 (c) | 30 | P |
| 4. | Microstructure | 3.2.2 (d) | 25 | T |
| 4.a | Case depth | 3.2.2 (d) | | |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(3) RELEASE LEVER:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.3 (a) | 15 | T |
| 2. | Material | 3.2.3 (b) | 30 | T |
| 3. | Hardness | 3.2.3 (c) | 20 | P |
| 4. | Microstructure | 3.2.3 (d) | 20 | T |
| 4.a | Case depth | 3.2.3 (d) | 10 | |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(4) U-TYPE SPRING:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.4 (a) | 10 | T |
| 2. | Material | 3.2.4 (b) | 30 | T |
| 3. | Hardness | 3.2.4 (c) | 20 | P |
| 4. | Microstructure | 3.2.4 (d) | 35 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(5) NEEDLE BEARING ROLLERS:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.5(a) | 10 | T |
| 2. | Material | 3.2.5 (b) | 30 | T |
| 3. | Hardness | 3.2.5 (c) | 20 | P |
| 4. | Microstructure | 3.2.5 (d) | 35 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

Note: If Sr. No. 2 Material test is not done then the marks of the same shall be added equally to Hardness & Microstructure Test.

(6) EYE BOLT / SUPPORT FOR RELEASE LEVER:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.6 (a) | 5 | T |
| 2. | Material | 3.2.6 (b) | 30 | T |
| 3. | Hardness | 3.2.6 (c) | 20 | P |
| 4. | Microstructure | 3.2.6 (d) | 40 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(6) ADJUSTING NUT (ROUND) :

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.7(a) | 10 | T |
| 2. | Material | 3.2.7(b) | 30 | T |
| 3. | Hardness | 3.2.7(c) | 30 | P |
| 4. | Microstructure | 3.2.7(d) | 25 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(8) LOCKING NUT:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.8 (a) | 5 | T |
| 2. | Material | 3.2.8 (b) | 30 | T |
| 3. | Hardness | 3.2.8 (c) | 20 | P |
| 4. | Microstructure | 3.2.8 (d) | 40 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(9) CLUTCH PRESSURE SPRING:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.9 (a) | 5 | T |
| 2. | Material | 3.2.9 (b) | 30 | T |
| 3. | Hardness | 3.2.9 (c) | 20 | P |
| 4. | Microstructure | 3.2.9 (d) | 40 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(10) PRESSURE PLATE:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.10 (a) | 10 | T |
| 2. | Material | 3.2.10 (b) | 20 | T |
| 3. | Hardness | 3.2.10 (c) | 15 | P |
| 4. | Tensile Strength | 3.2.10 (d) | 30 | T |
| 5. | Microstructure | 3.2.10 (e) | 20 | T |
| 6. | Marking | 4.2 | -- | T |
| 7. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(11) CLUTCH WITHDRAWAL PLATE:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.11(a) | 10 | T |
| 2. | Material | 3.2.11(b) | 30 | T |
| 3. | Hardness | 3.2.11(c) | 30 | P |
| 4. | Microstructure | 3.2.11(d) | 25 | T |
| 4.a | Case depth | 3.2.11(d) | -- | T |
| 5. | Marking | 4.2 | 5 | T |
| 6. | Rust Preventive Coating | 4.1 | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(12) WASHER PLATE FOR COVER BOLT:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.12 (a) | 10 | T |
| 2. | Material | 3.2.12 (b) | 30 | T |
| 3. | Hardness | 3.2.12 (c) | 30 | P |
| 4. | Microstructure | 3.2.12 (d) | 25 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |

(13) COVER BOLT:

| Sr. No. | Test Parameter | Clause No. | Marks Allotted | P/T |
|---------|-------------------------|------------|----------------|-----|
| 1. | Surface Condition | 3.2.13 (a) | 10 | T |
| 2. | Material | 3.2.13 (b) | 30 | T |
| 3. | Hardness | 3.2.13 (c) | 30 | P |
| 4. | Microstructure | 3.2.13 (d) | 25 | T |
| 5. | Marking | 4.2 | -- | T |
| 6. | Rust Preventive Coating | 4.1 | 5 | T |
| | | | ----- | |
| | | Total | 100 | |
| | | | ----- | |
