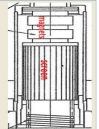
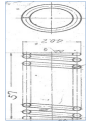



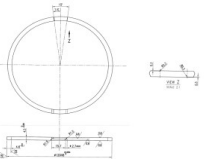
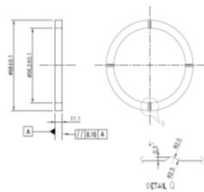





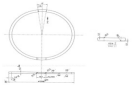
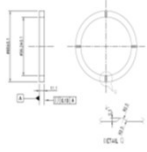



ANNEXURE-4

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
335	EARTH MOVERS	452FD91003	MAGNET ASSY M1	15	Nos	Magnet assembly used in motor grader final drive assembly, it helps in preventing the entry of debris and metal particles in bearings and seals and enhancing the life of assembly. Rated flow: 63 L/min, Filtration size: 149 micron, max flow rate: 75 L/min, max oil temp: 120°C, Min Oil temp: -50°C		Magnet assembly used in motor grader final drive assembly, it helps in preventing the entry of debris and metal particles in bearings and seals and enhancing the life of assembly
336	EARTH MOVERS	452FD11015	SPRING M1	15	Nos	Spring is assisting the Magnet Strainer seat properly in the assembly. Coil Dia: 3.2mm, total no of winding: 5, Effective no of windings: 3 winding direction: clock wise, free height: 57mm, load: 13.8Kg, height: 37mm		Spring is assisting the Magnet Strainer seat properly in the assembly
337	EARTH MOVERS	116BR91568	LINING	300	Nos	Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.		Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.
338	EARTH MOVERS	125BR92085	LINING	330	Nos	Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.		Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.
339	EARTH MOVERS	125BR92093	LINING	500	Nos	Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.		Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.
340	EARTH MOVERS	130CS92769	SEAL RING	200	Nos	Seal Ring is made for Engine - Main fuel shaft and fixed gear shaft of 420 hp engine between rotating ring system.		Seal Ring is made of Polytetrafluoroethylen (PTFE) and its used in bevel gear shaft of 420 hp Engine . Main function of the seal ring is provided sealing of steering oil between rotating shaft and fixed collar there by ensuring the proper functioning of steering system.
341	EARTH MOVERS	130CT21199	SPACER	25000	Nos	This Spacer is an iron type sintered thrust rings applicable to Sealed type Track link (SALT type). This thrust rings should have an oil bearing quality . This part should be carburised and hardened and tempered to achieve the mechanical properties. 1. DESCRIPTION : SPACER 2. CHEMICAL COMPOSITION: (Weight %) C= 0.5-0.8, Cu= 1.0 - 2.0, Ni= 1.0 to 3.0, Mo= 0.2 to 1.0, Fe= Remaining. 3. Mechanical properties: Density: 6.7 to 7.2 g/cm <sup>3</sup> , Hardness: 36 to 45 HRC, Tensile strength: 70 to 85 kg/mm <sup>2</sup> , Transverse breaking: min 100 kg/mm <sup>2</sup> , Impact strength: min 0.6 kg m/cm <sup>2</sup> , Squeezing test strength: min 105 kg/mm <sup>2</sup> , Percentage of oil contain: min 5 In volume, Compressive strength : min 120 kg/mm <sup>2</sup> , Warpage : max 0.2 mm, Surface roughness: max 10.		This Spacer is an iron type sintered thrust rings applicable to Sealed type Track link (SALT type). This thrust rings should have an oil bearing quality . This part should be carburised and hardened and tempered to achieve the mechanical properties.
342	EARTH MOVERS	130BR93299	LINING	400	Nos	Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.		Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.











**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
343	EARTH MOVERS	451TM13757	WASHER	400	Nos	Thrust Washers used in carrier to with stand axial thrust and there by protecting the transmission assembly Thickness : 2 +/- 0.5mm, Material: PBP-1H., OD: 60mm,		Thrust Washers used in carrier to with stand axial thrust and there by protecting the transmission assembly
344	EARTH MOVERS	182EG80053	SPEED SENSOR	25	Nos	The speed sensor works on Magnetic pickup principle and generates frequency signal depending on engine flywheel teeth. 1. Principle : Magnetic pickup 2. Output voltage : 1.0 V p-p Min 3. Resistance : 600 Ω 4. Operating temperature : -50°C to +120°C 5. Vibration : 15G (5Hz - 200Hz) 6. Mounting details : M22X1.5 7. Shock : 100G (20ms Max)		The speed sensor works on Magnetic pickup principle and generates frequency signal depending on engine flywheel teeth.
345	EARTH MOVERS	113BR91484	LINING BRAKE	1000	Nos	Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints. Material :BL-IV Thickness in mm : 9 Outer radius of lining surface : 194		Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.
346	EARTH MOVERS	113BR91492	LINING BRAKE	1200	Nos	Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints. Material :BL-IV Thickness in mm : 9 Outer radius of lining surface : 194		Brake linings are often also called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.
347	EARTH MOVERS	113FD91526	SEAL RING	250	Nos	Specification:Molibdenum sulphide D3 material, Tensile Strength: 140~260kg/Cm2, Specific Gravity: 4.12±0.06		Used in Dozers for Steering assembly function.
348	EARTH MOVERS	113HC02045	RIPPER HYD CYLINDER	3	Nos	Normal load When extended 33.2 tons at 165 kg/cm2 When retracted 23.9 tons at 165 kg/cm2 Test load When extended 48.9 tons at 248 kg/cm2 When retracted 38.9 tons at 248 kg/cm2 Cylinder size in mm (Bore O.D x thickness) = 180 x 10 Piston rod dia in mm = 75 ; Open cylinder length in mm =1080; Closed cylinder length in mm =730; Stroke in mm = 350;		Specification:-A Hydraulic cylinder is a mechanical actuator that is used to give a unidirectional force through a unidirectional stroke. The hydraulic cylinders get their power from the pressurized hydraulic fluid, which is typically oil. The cylinder consists of a barrel in which a piston connected to a piston rod moves back and forth.
349	EARTH MOVERS	118EG02041	DISPLAY KIT	25	Nos	1. Display size: 3.8" 2. Display Type: QVGA (320 X 240 Pixels) 3. Input pins: 4no. - Resistive analog, 3no. - 0-5V, 4-20mA analog or digital, 1no. - frequency. 4. Outputs : 2no. - 500mA. 5. Communications supported : CAN2.0B, J1939, Proprietary messaging and RS485 serial. 6. Operating temperature: -40°C to +85°C 7. Sealing : IP67 8. Vibration : 7.86g (5-2000Hz) 9. Shock : 50g in 3 axis		Display is CAN based 3.8 inch monochrome LCD display used for real time monitoring of equipment critical parameters. It is also provides Audio-Visual alarm to the operator in case of any abnormality in the parameters.

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**






Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
350	EARTH MOVERS	125CT11091	SPACER	25	Nos	OD of the spacer= 59 mm ; ID of the spacer = 49.3 mm ;		Spacers are used in track link assemblies, these will serve as a guide for seal assy. These spacers are provided in between the bushing and track link.
351	EARTH MOVERS	130CC91023	HANDLE-LOCK	25	Nos	Material:Handle: Glass reinforced nylon: Brass threaded inserts		Push button handles are designed for Operator cabin doors of off-highway equipment's Dozers, Excavators and Loaders application.
352	EARTH MOVERS	130CC91031	LATCH LH (With Bell Crank Handle)	350	Nos	Material:Internal latch components: heat treated, smooth edge stamped steel Case halves: high strength steel Springs: non-corrosive stainless steel. Finish:Zinc plated, clear chromate steel components.		A latch is a type of door or window fastener.a spring-loaded door lock that can be opened by a key from outside Designed For Off-highway applications Door thicknesses of 47.6mm or greater Door weights of 23-91 kg Door seal pressures of 23-68 kg Applications where push button handle actuation is desired.
353	EARTH MOVERS	130CC91048	LATCH RH (With Bell Crank Handle)	250	Nos	Material:Internal latch components: heat treated, smooth edge stamped steel Case halves: high strength steel Springs: non-corrosive stainless steel. Finish:Zinc plated, clear chromate steel components.		Description: A latch is a type of door or window fastener.a spring-loaded door lock that can be opened by a key from outside Designed For Off-highway applications Door thicknesses of 47.6mm or greater Door weights of 23-91 kg Door seal pressures of 23-68 kg Applications where push button handle actuation is desired.
354	EARTH MOVERS	130CC91056	STRIKER BOLT	600	Nos	MATERIAL:Typical materials include AISI 4140 and AISI10B21 steel (or equivalent), heat treated FINISH:Zinc plated with clear chromate		Description: The striker is primarily responsible for precise and flush door closure and also for keeping the door securely closed. Subsequently, the striker, as the decisive counterpart for the latch, is a central element with enormous importance for flawless function of the entire closure system.
355	EARTH MOVERS	155FD02005	FLOAT SEAL ASSY[KIT]	150	Nos	Specification:- O-Ring material : Nitrile rubber O-Ring shore hardness : 60±15 Seal Ring material : FC9Cr6Mo		The floating seal is used to seal protect components in Final drive assembly from mud and soil.
356	EARTH MOVERS	156EG02197	DISPLAY KIT	25	Nos	1. Display size: 3.8" 2. Display Type: QVGA (320 X 240 Pixels) 3. Input pins: 4no. - Resistive analog, 3no. - 0-5V, 4-20mA analog or digital, 1no. - frequency. 4. Outputs : 2no. - 500mA. 5. Communications supported : CAN2.0B, J1939, Proprietary messaging and RS485 serial. 6. Operating temperature: -40°C to +85°C 7. Sealing : IP67 8. Vibration : 7.86g (5-2000Hz) 9. Shock : 50g in 3 axis		Display is CAN based 3.8 inch monochrome LCD display used for real time monitoring of equipment critical parameters. It is also provides Audio-Visual alarm to the operator in case of any abnormality in the parameters.
357	EARTH MOVERS	182EG02203	ISOLATION SWITCH	150	Nos	1. No. Of poles : 02. 2. Operating Voltage: 6-36V DC. 3. Current rating ; 2000A Intermittent 30sec ON- 3mins OFF and 300A continuous. 4. Mounting ; Through hole for 3/4" Dia mounting stem. 5. Operating temperature : -40°C to +85°C		Isolation switch is used in battery main power circuit lines (Either in positive or in negative line) to isolate battery supply when equipment is not in use or to carryout welding work.
358	EARTH MOVERS	376AX02003	REAR AXLE ASSEMBLY	25	Nos	1) Total reduction -20.521 2)Max.load on axle -19000 kg		Drive Axle is one of the main aggregate in a drivell system. Its main function is to transmit torque and take the load.

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**








Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
359	EARTH MOVERS	376AX02011	FRONT AXLE ASSEMBLY	25	Nos	1) Total reduction -20.521 2)Max.load on axle -19000 kg		Drive Axle is one of the main aggregate in a driveline system. Its main function is to transmit torque and take the load.
360	EARTH MOVERS	376TC02005	TORQUE CONVERTER	25	Nos	Stall ratio : 3.21		Torque converter is a single stage and single phase torque converter
361	EARTH MOVERS	376TM03004	TRANSMISSION PUMP ASSY.	25	Nos	1)Displacement - 32cc 2) operating pressure -30 bar		The transmission pump is used to pump the transmission oil required for engagement of clutch in transmission, working of torqueconverter and lubrication of transmission and torque converter
362	EARTH MOVERS	452TM71743	SEAL RING	30	Nos	Specification:- Material - PTFE-G2 Pressure : 40 bar Temperature : 120 deg max.		The Seal Ring is used to arrest oil leakage during piston actuation in Transmission assembly
363	EARTH MOVERS	757EG11026	SMART ALARM, BACKUP	250	Nos	1. Operating voltage : 12-32V DC 2. Current rating : < 1A 3. Output level : 87 - 112 db automatically 4. Operating temperature : -40°C to +85°C 5. Duty cycle : 1 Pulse per sec (50% ON - 50% OFF) 6. Frequency : 1250Hz 7. Protection : Surge and spike protected.		Smart alarm is used as safety device to give audio warning when equipment reverse gear is engaged. The alarm automatically changes its sound intensity depending on surrounding noise level.
364	EARTH MOVERS	817EG02245	HOT SWITCH	10	Nos	1. Operating Voltage: 6-36V DC 2. Switching type : SPDT snap action. 3. Terminals : Common , NO and NC 4. Temperature set value : 104°C/220°F 5. Current rating : 1A (Max) 6. Mounting : M16X1.5		HOT switch is a direct mount switch that closes when hydraulic oil reaches desired preset value. This is used to provide warning to the operator when hydraulic oil reaches high temperature.
365	EARTH MOVERS	862AC91007	COMPRESSOR	2	Nos	8 Cu.inch capacity, poly V groove pully,24V direct mount rotary compressor		Compressor is used when Air conditioned cabin is used. Cold low pressure refrigerent is changed to hot high pressure refrigerent.
366	EARTH MOVERS	862AC91015	COMPRESSOR FITTINGS	2	Nos	Includes compressor installation accessories such as service valves etc.		
367	EARTH MOVERS	BSP0136136	RECOILSPRING	150	Nos	<b>Specifications : Part no. BSP01 36136 SI.</b> <b>No. Parameter</b> 1. Coil dia in mm 36 2. Mean coil dia in mm 136 3. Free length in mm 693.5 4. No of coils 13.5 5. No of active coils 11.5 6. Spring rate in kg/mm 54.40 7. Test load in kg 11250 8. Squareness (max) In deg at both ends 1 9. Flatness (max) in mm at both ends 0.5		The heavy duty Recoil springs for Dozer (Heavy Duty) and Excavators application. These recoil springs absorb energy when the equipment encounters a sudden load in its travel. These are used in the under carriages of earthmoving equipment and serve to prevent damage to the track, Sprocket or other Rollers.
368	EARTH MOVERS	113FD91089	BUSHING	125	Nos	Bush is a bimetal material & used in Dozer Final drive assy between stationary and rotating parts. Material:outer: Cold rolled steel, Inner: LBC-3(Lead bronze Casting ), ID:Ø298, OD:Ø303, WIDTH;60mm		
369	EARTH MOVERS	130FD92441	BUSHING	80	Nos	Bush is a bimetal material & used in Dozer Final drive assy between stationary and rotating parts. Material:outer: Cold rolled steel, Inner: B5BLBC-3, ID:Ø150, OD:Ø160, WIDTH;14mm		






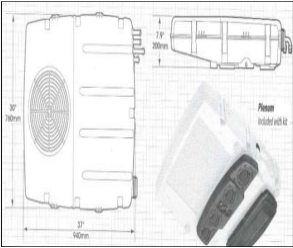


**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
370	EARTH MOVERS	452FD91871	SEAL RING	20	Nos	Seal is used in Differential lock area in Motor grader. Material: RIK439Cast iron for piston Ring), ID:Ø262, OD:Ø270, WIDTH;4mm,Hardness:85~100HB		
371	EARTH MOVERS	155FD71107	SPACER	80	Nos	Spacer used in Excavator Swing machinery Assembly to with stand axial thrust.. Material: 93NP(Polymaid), ID:Ø112, OD:Ø142, WIDTH;5mm.		
372	EARTH MOVERS	451TM12193	SPRING	65	Nos	Bellivelli Spring used as a return spring in Motor Grader transmission. Material: Spring Steel, ID:Ø121, OD:Ø209, WIDTH;2.5mm.		
373	EARTH MOVERS	451TM12209	SPRING	70	Nos	Bellivelli Spring used as a return spring in Motor Grader transmission. Material: Spring Steel, ID:Ø121, OD:Ø198, WIDTH;2.0mm.		
374	EARTH MOVERS	451TM12217	SPRING	400	Nos	Wavy Spring used as a return spring in Motor Grader transmission. Material: Spring Steel, ID:Ø282, Thickness;3.0mm.		
375	EARTH MOVERS	451TM12209	SPRING	70	Nos	Bellivelli Spring used as a return spring in Motor Grader transmission. Material: Spring Steel, ID:Ø121, OD:Ø198, WIDTH;2.0mm.		
376	EARTH MOVERS	113FD91997	BUSHING	130	Nos	Bush is a bimetal material & used in Dozer Final drive assy between stationary and rotating parts. Material:outer: Cold rolled steel, Inner: LBC-3(Lead bronze Casting ), ID:Ø105, OD:Ø115, WIDTH;78mm		
377	EARTH MOVERS	125CS21068	RING SEAL	500	Nos	Ring Seal used in Dozer Steeign clutch assy. material: PBC-2A(Phosphor bronze) ID:134.2,OD:145, Thickness:4.5mm		
378	EARTH MOVERS	985TM11147	SNAP RING	115	Nos	Double Coil Snap ring, Material: Spring Steel, OD:Ø219.7, WIDTH;10mm		



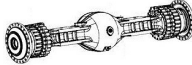
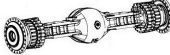
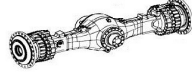


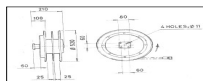
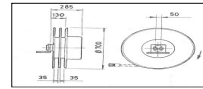
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
379	EARTH MOVERS	175FDB0039	FLOATING SEAL ASSY	30	Nos	Float Seal Assembly comprises of Seal Ring and O-ring and used between stationary and rotating part		
380	EARTH MOVERS	175S061273	SEAL	1	Nos	Seal used in Swing circle / Slew ring to avoid leakage of Grease and entry of dust in to the assembly. Material: Neoprene rubber, Shore Hardness: 75 Hs		
381	EARTH MOVERS	175S061257	SEAL	1	Nos	Seal used in Swing circle / Slew ring to avoid leakage of Grease and entry of dust in to the assembly. Material: Neoprene rubber, Shore Hardness: 75 Hs		
382	EARTH MOVERS	125FD02054	FLOATING SEAL ASSY.	5	Nos	Float Seal Assembly comprises of Seal Ring and O-ring and used between stationary and rotating part		
383	EARTH MOVERS	113TC71258	SEAL RING	2	Nos	Seal ring used in Dozer Torque converter assembly. Material: PTFE, I.D: Ø130, width: 4.9, thickness: 4mm		
384	EARTH MOVERS	452TMS2798	COUPLING	20	Nos	Used for connecting Transmission output to Final drive assembly in Motor Grader. Spline details: 85x21x3.75, Material: Plain Carbon steel, Mechanics: 9C		
385	EARTH MOVERS	175FD02016	FLOATING SEAL ASSY.	5	Nos	Float Seal Assembly comprises of Seal Ring and O-ring and used between stationary and rotating part		









**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
386	EARTH MOVERS	116CS9313	DISC	75	Nos	Disc used for Dozer Steering clutch assembly. Material: Sintered alloy friction material, No of teeth: 128, Pressure angle: 14.5 deg, PCD: Dia384		
387	EARTH MOVERS	113FD31407	SEAL RING ASSY	2	Nos	Seal Ring used between rotating and stationary part and is a part of Float Seal Assembly used in Final drive assy to arrest oil leakage. Material: FC9C/Mo ID: Ø298. OD:Ø328, WIDTH:20 mm		
388	EARTH MOVERS	116CS91028	DISC	30	Nos	Disc used for Dozer Steering clutch assembly. Material: Sintered alloy friction material, No of teeth: 128, Pressure angle: 14.5 deg, PCD: Dia384		
389	EARTH MOVERS	116AC02019	AC INSTALLATION KIT	25	Nos	Total Air conditioning kit with both Heating and Cooling modes. Kit consists roof mounted integrated evaporator and condenser, Engine driven compressor along with crimped hoses.		CAPACITIES: Cooling 25000 BTU, Heating: 45000 BTU.
390	EARTH MOVERS	116AC02027	COMPRESSOR UNIT	25	Nos	Total Air conditioning kit with both Heating and Cooling modes. Kit consists roof mounted integrated evaporator and condenser, Engine driven compressor along with crimped hoses.		Heater /Air conditioner Kit to p/no. 116ACB0017 consisting sl.no.1 to 3 is to be supplied
391	EARTH MOVERS	116AC02002	HEATER AC UNIT	25	Nos	Total Air conditioning kit with both Heating and Cooling modes. Kit consists roof mounted integrated evaporator and condenser, Engine driven compressor along with crimped hoses.		
392	EARTH MOVERS	116BR21072	LINING	60	Nos	Brake linings are often called brake pads, and are a critical component of a braking systems. These are the materials which comes in contact with the outer drum of the steering clutch/rotor in order to slow them down. Brake lining is attached to metal backing such as a brake shoe, usually with heat resistant rivets or joints.		Material :BL-W1, Thickness in mm : 9.5, Outer radius of lining surface in mm : 227, Material of the lining shall correspond to Miyoshi Asbestors co ltd. Products special woven asbesto used in oil. Requirements: 1. The lining shall withstand the following operating conditions Max surface pressure= 20 kg/Sqcm, Mean surface pressure= 10 kg/ sqcm , Max peripheral speed= 22.2 m/sec, Mean peripheral speed = 13.4 m/sec, Min Bending strength = 4.5 kg/Sqmm
393	EARTH MOVERS	116CTB0075	TRACK SHOE PROFILE	1800(Mtrs)	Nos	This is single grouser type track shoe mainly used for general soil applications excluding rocky grounds. This track shoe provides the large traction force because of its shape and allows the machine to travel on general ground conditions.		Material: The material and dimensions should corresponds to BEML Std "B1201". Length of the track shoe in mm = 560.







**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
394	EARTH MOVERS	113CTB0056	TRACK SHOE PROFILE	3000(Mtrs)	Nos	This is single grouser type track shoe mainly used for general soil applications excluding rocky grounds. This track shoe provides the large traction force because of its shape and allows the machine to travel on general ground conditions.		Material: The material and dimensions should corresponds to BEML Std "B1201". Length of the track shoe in mm = 510.
395	EARTH MOVERS	113TF93047	BUSHING	125	Nos	Bushing is a combination of metallic plate and Teflon-impregnated Bronze lining. This is mainly used in Tack frame assembly of Bull dozers.		Material: 1. Back Plate : Gr. "O" IS:513 and 2. Lining: BSB PTFE ( Teflon-impregnated Bronge)
396	EARTH MOVERS	761AX02252	FRONT AXLE ASSY	3	Nos	Drive Axle is one of the main aggregate in a drivel system. Its main function is to transmit torque and take the load. Drive axle requirement is for Wheel loader and Wheel dozer application		Mounting type: Rigid Flange to Flange : 2600 mm Input flange : 9C Service brake : 2xMultiple disc brake.  Total axle ration: 27 Rotation direction: CW
397	EARTH MOVERS	355AX02116	FRONT AXLE ASSY	15	Nos	Drive Axle is one of the main aggregate in a drivel system. Its main function is to transmit torque and take the load. Drive axle requirement is for Wheel dozer and Tyre handler application		Munting type: Rigid Flange to Flange : 2083 mm Rim bolt circle : 425 mm Input flange : 7C disc brake.  Total axle ration: 23.334 Wheel tread : 2044 mm Rotation direction: CW Service brake : 2xMultiple disc brake.
398	EARTH MOVERS	355AX02124	REAR AXLE ASSY	15	Nos	Drive Axle is one of the main aggregate in a drivel system. Its main function is to transmit torque and take the load. Drive axle requirement is for Wheel dozer and Tyre handler application		Mounting type: Center Trunion Flange to Flange : 2083 mm Rim bolt circle : 425 mm Input flange : 7C disc brake ( both ends)  Total axle ration: 23.334 Wheel tread : 2044 mm Rotation direction: CCW Service brake : Wet Multiple
399	EARTH MOVERS	761AX02269	REAR AXLE ASSY	3	Nos	Drive Axle is one of the main aggregate in a drivel system. Its main function is to transmit torque and take the load. Drive axle requirement is for Wheel loader and Wheel dozer application		Mounting type: Center Trunion Flange to Flange : 2600 mm Input flange : 9C disc brake ( both ends)  Total axle ration: 27 Rotation direction: CCW Service brake : Wet Multiple
400	EARTH MOVERS	355TM91092	TRANSMISSION ASSY	15	Nos	The transmission is composed of a hydraulic torque converter and a rear mounted multi-speed powershift transmission with integrated transfer case. The torque converter is a wear free starting device which is infinitely variable adapting itself to the required situation. Drive axle requirement is for Wheel dozer and Tyre handler application		Type: Power shift Speeds : 4 Forward 3 Reverse Center distance between output an input shaft : 540 mm
401	EARTH MOVERS	456HS03017	HOSE REEL 3/4 INCH	1	Nos	Hose reels are fitted on the Crane to transfer hydraulic oil to the hook hydraulic motor.		Type: Spring operated 2-port Hose reel (without hose) Maximum flow : 85 Ltrs/min Max. Pressure : 300 bar Port size : 3/4" BSP
402	EARTH MOVERS	456HS03025	HOSE REEL 1 INCH	1	Nos	Hose reels are fitted on the Crane to transfer hydraulic oil to the hook hydraulic motor.		Type: Spring operated 2-port Hose reel (without hose) Maximum flow : 135 Ltrs/min Max. Pressure : 300 bar Port size : 1" BSP

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
403	EARTH MOVERS	799H502934	SWING DRIVE	8	Nos	Motor displacement : 44.1 cc/rev, Gear Box ratio 1: 18.01, hydraulic motor speed 1587 rpm max., gear box out put speed 87 rpm max., gearbox out put torque 2359 Nm max. Pinion data m8,z10,PA20deg,x0.5,d80, da101.4, b67		Hydraulic motor driven gear box for the swing operation of the 7.5 ton hydraulic excavator. Its is having in built hydraulically released parking brake.
404	EARTH MOVERS	799H502926	TRAVEL DRIVE	12	Nos	Motor displacement : 44.1 cc/rev and 23.5 cc/rev, Gear Box ratio 1: 53.0, Max pressure 250 bar, max flow 72 lpm, hydraulic motor speed 2840/1568 rpm max., gear box out put speed 55.5/29.8 rpm max., gearbox out put torque 4432/8307 Nm max.		Hydraulic motor driven gear box for the travel operation of the 7.5 ton hydraulic excavator. Its is having in built hydraulically released parking brake and two speed.
405	EARTH MOVERS	183PH90012	BUTTERFLY VALVE	4	Nos	Port size is 4" or 101.6 mm		Butterfly valves are mounted on the suction line before the pump inlet. As an additional safety feature the valves can be locked in off / on position and an electrical interlock is provided with in built limit switch for hydraulic aggregates safety
406	EARTH MOVERS	183PH90029	COMPENSATOR	4	Nos	four bolt mounting with port size of 4". Push pull +/- 10mm, Offset +/- 10mm and Angular +/- 10 degree.		Compensators are made up of nitrile rubber and are designed to absorb vibrations as well as axial, radial angular misalignment.
407	EARTH MOVERS	790S002019	SLEWING RING	12	Nos	OD 800 mm, thickness 55, Single ball bearing, Internal gear m8, Pressure angle 20 deg, no of teeth 76, PCD 608.		Slewing ring or swing circle is big size bearing used on hydraulic excavator for 360 deg free swing function.
408	EARTH MOVERS	183PO90015	PTO ASSY.	2	Nos	Power rating 900KW, input speed 1500, out put speed 2000 rpm, Input by shaft dia 80 with keyway.		Power Take OFF is a Gear Box to transfer power from Electric motor to 3 hydraulic pumps
409	EARTH MOVERS	790TF02029	IDLER ASSY	4	Nos	Roller dia 380 mm, Maximum length 744 mm, Minimum length 664 mm.		Used in the installation of track parts in the hydraulic excavator
410	EARTH MOVERS	790TF31684	SPROCKET RIM	10	Nos	No of teeth 21, width of teeth 46mm, OD of sprocket 495mm dia, ID 380mm dia, Flange thickness 12mm, No holes on the flange (Picture shows the holes its only representation).		Used in the installation of track parts in the hydraulic excavator, part of the final drive.

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
411	EARTH MOVERS	184AC90035	ROOF TOP CONDENSOR	1	Nos	capacity : 38,800 BTU/hr, Dual fan, low profile for cabs with minimal roof space, two fan of size 11 inch diameter producing 970 CFM, current draw 15 amps@13.6 VDC		ROOF TOP CONDENSOR is a part of air conditioning system used on hydraulic excavators cabins.
412	EARTH MOVERS	157CTB0014	TRACK SHOE PROFILE	1000(Mts)	Nos	Triple grouser type Material: The material and dimensions should corresponds to BEML Std "B1201"; Hot rolled low alloy steel for track shoes Length of the track shoe is 610mm±3		This is triple grouser type track shoe mainly used for general soil applications excluding rocky grounds. This track shoe provides the large traction force because of its shape and allows the machine to travel on general ground conditions.
413	EARTH MOVERS		SPACER	2	Nos	Material: PBP-1H, ID: 135, OD:160 and Thickness:5mm Chemical composition and Mechanical properties as per JIS:H3110		Spacer is used in Swing Machinery Assembly to with stand impact loads
414	EARTH MOVERS	2052571152	SEAL	5	Nos	Material: Neoprene rubber Shore Hardness: 72 ±5 Hs Tensile Strength:100kg/cm2		Seal used in Swing circle / Slew ring to avoid leakage of Grease and entry of dust in to the assembly.
415	EARTH MOVERS	1755O21631	SPACER	25	Nos	Material:Gr_PCuSn6, IS1385, ID: 57, OD:84 and Thickness:5mm		Spacer is used in Swing Machinery Assembly to with stand impact loads
416	EARTH MOVERS	601TW02003	HYDRAULIC WINCH (BOOM)	7	Nos	1. Bare drum first layer line pull (kg) : 19960 2. Rope diameter (mm) : 26 3. No. of speed ratio in both directions : 02(Two) Max. Speed (m/min) : 36.3 Min speed (m/min) : 17.0 4. Controlled free fall : Not required 5. Drum diameter(mm) : 305 6. Hydraulic system pressure of the equipment(kg/sq.cm) : 140 7. Hydraulic system flow of the equipment : (litres/min) : 400 8. Cable capacity on the drum(m) : 95 9. As a safety device, the winch should have an automatic braking system i.e., As soon as pressure in the hydraulic system drops below certain limit, the brake should engage automatically. 10. Application : 100 Ton pipe layer		Two speed hoist hydraulic Winch. The winch is compact with totally sealed gearing and automatic disc brake. The motor is externally mounted.

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**


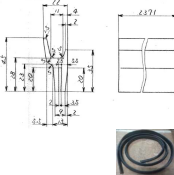

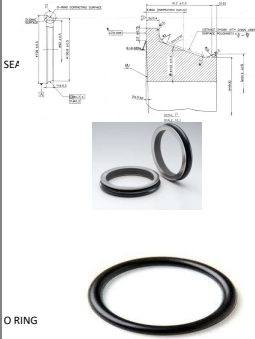
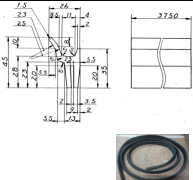
Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
417	EARTH MOVERS	601TW02011	HYDRAULIC WINCH (HOOK)	7	Nos	1. Bare drum first layer line pull (kg) : 19960 2. Rope diameter (mm) : 26 3. No. of speed ratio in both directions : 02(Two) Max. Speed (m/min) : 36.3 Min speed (m/min) : 17.0 4. Controlled free fall : Provided 5. Drum diameter(mm) : 305 6. Hydraulic system pressure of the equipment(kg/sq.cm) : 140 7. Hydraulic system flow of the equipment : (litres/min) : 400 8. Cable capacity on the drum(m) : 95 9. As a safety device, the winch should have an automatic braking system i.e., As soon as pressure in the hydraulic system drops below certain limit, the brake should engage automatically. 10. Application : 100 Ton pipe layer		Two speed hoist hydraulic Winch with controlled free fall. The winch is compact with totally sealed gearing and automatic disc brake. The motor is externally mounted.
418	EARTH MOVERS	CSR0101004	SEAL RING	25	Nos	SEAL Ring, Material : Special cast iron piston ring, OD=100mm, Thickness T=4mm Anticorrosion:PM PV Value, kg/cm2s :2.5 Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30		SEAL Ring for torque flow transmission
419	EARTH MOVERS	CSR0102005	SEAL RING	40	Nos	SEAL Ring, Material : Special cast iron piston ring, OD=200mm, Thickness T=5mm Anticorrosion: PM Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10, T30		SEAL Ring for torque flow transmission
420	EARTH MOVERS	CSR0102455	SEAL RING	65	Nos	SEAL Ring, Material: Special cast iron piston ring, OD=245mm, Thickness T=5mm Anticorrosion:PM Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: T30,H10,		SEAL Ring for torque flow transmission
421	EARTH MOVERS	CSR012205	SEAL RING	75	Nos	SEAL Ring, Material:Phosphorous branze casting or equivalent of PBC-2A for piston ring. OD=220mm, Thickness T=5mm Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30		SEAL Ring for torque flow transmission
422	EARTH MOVERS	CSR0120452	SEAL RING	125	Nos	SEAL Ring, Material:HSBSc3 for piston ring, OD=D45mm, Thickness T=1.90 mm Material:HSBSc3 Max pressure, kg/cm2 : 20 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30		SEAL Ring for torque flow transmission
423	EARTH MOVERS	CSR0120603	SEAL RING	110	Nos	SEAL Ring, Material:HSBSc3 for piston ring, OD=D60mm, Thickness T=2.5 mm PV Value, kg/cm2s :120 Max pressure, kg/cm2 : 20 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30		SEAL Ring for torque flow transmission, special cast iron piston ring
424	EARTH MOVERS	CSR0100954	SEAL RING	20	Nos	SEAL Ring, Material: special cast iron piston ring, OD=D95mm, Thickness T=3.8 mm Anticorrosion:PM Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30		SEAL Ring for torque flow transmission, special cast iron piston ring

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
425	EARTH MOVERS	CSR0101104	SEAL RING	25	Nos	SEAL Ring, Material:special cast iron piston ring, OD=110mm, Thickness T=4.3 mm Anticorrosion:PM PV Value, kg/cm2s :2.5 Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30		SEAL Ring for torque flow transmission
426	EARTH MOVERS	CSR012005	SEAL RING	40	Nos	SEAL Ring, Material:special cast iron piston ring, OD=200mm, Thickness T=5 mm kg/cm2s : 50 Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30	PV Value, 	SEAL Ring for torque flow transmission
427	EARTH MOVERS	CSR0111004	SEAL RING	25	Nos	SEAL Ring, Material:special cast iron piston ring, OD=100mm, Thickness T=4 mm kg/cm2s : 50 Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30	PV Value, 	SEAL Ring for torque flow transmission
428	EARTH MOVERS	125FD02038	FLOATING SEAL KIT	300	Nos	Cotact division for technical clarifications		Float Seal Assembly comprises of Seal Ring and O-ring and used between stationary and rotating part
429	EARTH MOVERS	CFL0910050	SNAP RING	65	Nos	OD=53.6 mm, width 4mm, Thickness T=2.3 mm Material : SWRH5 Rust preventive treatment: C6001-10 Heat treatment: Quench & Tempered Hardness: 42 - 50 HRC.	Snap ring, 	Snap ring for hole is also called as retainer ring used to lock the components in the bore or hole of the block assys.
430	EARTH MOVERS	CSB0203525	BUSHING	80	Nos	BUSHING (BIMETAL) Back Metal: C1006-03 & Inside TEFLON Impregnated Bronze. Dimensions: OD is 39+0.075 to 0.115; Length L is 25-0.3 & thickness 2.0 - 0.04mm		Bushing for torque flow transmission
431	EARTH MOVERS	CSB0101235	BUSHING	25	Nos	BUSHING (BIMETAL) Back Metal: C1006-03 & Inside TEFLON Impregnated Bronze. Dimensions: OD is 125+0.120 to 0.185; Length L is 35-0.3 & thickness 2.5 - 0.10 to -0.03mm		Bushing for excavaotr idler assembly
432	EARTH MOVERS	CSB0104530	BUSHING	70	Nos	BUSHING (BIMETAL) Back Metal: C1006-03& Inside TEFLON Impregnated Bronze. Dimensions: OD is 50+0.075 to 0.115; Length L is 30-0.3 & thickness 2.5 - 0.05mm		Bushing for torque flow transmission









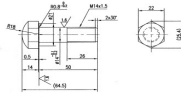



**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
433	EARTH MOVERS	CVW0140004	VALVE	25	Nos	HYDRAULIC AGGREGATES Body Material: C3604 BE Plug Material: C3604 BE Material: PBW2-H Tube Material: C2600T-0		Valve used for draining Coolant from Radiator
434	EARTH MOVERS	160TF62015	SEAL (Drum ring seal)	10	Nos	Working temperature range: (-30°C ~ +80°C) Material shall be: F406-1		The seal is used for preventing grease leakage between under carriage swing circle bearing and revolving frame during 360° swing on the level and slope angle not more than 35°.
435	EARTH MOVERS	171C002161	LEVER	45	Nos	Performance: 1) Output lever stroke and the amount of play(Rattling) : Stroke = ±40 mm(Range from 0 to 40 is adjustable by means of the adjust bolt). 2.Input lever operating effort(at the input lever tip) : Low idle position 5.0±0.5 kg + (Load on the Output side x 70/280) Position other than low-idle position: 1.5 ± 0.5 kg +(Load on the output side X 70/280) 3. Clutch capacity(In the output lever pin hole) : Normal loading (Rated) 20 kg min Momentary loading (Peak) 30 kg min 4.Vibration resistance: 7 G min 5. Applicable temp. range : -30 ° ~ + 80 °C 6. Input lever limit operating effort : No abnormalities at the input lever, clutch etc. 7. Input lever mounting angle : Variable every 10° by changing the serration meshing		This lever is used for acceleration and deceleration of engine
436	EARTH MOVERS	155TFB0042	FLOATING SEAL ASSY	10	Nos	MATERIAL SHALL SATISFY FOLLOWING PHYSICAL PROPERTIES:  Ambient temp test 1. Hardness IRHD : 70±5 (Test method ASTM D676) 2. Tensile strength kg/sq.cm(min) : 100 (Test method ASTM D1414) 3. Elongation % (min) : 150 (Test method ASTM D1414)  Air heat aging test 1. Change of hardness JIS HS (max) : ±15 (Test method ASTM D573/D865) 2. Change of T.S % (Max) : -10 (Test method ASTM D573/D865) 3. Change of Elongation % (max) : -60 (Test method ASTM D573/D865) Compression permanent strain %(max) : 30 (Test method ASTM D395)  OIL PROOF TEST (Test oil JIS no. 1) 1.change of hardness Jis HS : 0 ~ +10 (Test method ASTM D471) 2.change OF T.S % MAX : - 15 (Test method ASTM D471) 3.change of ELONG % MAX : - 40 (Test method ASTM D471) 4.CHANGE OF VOLUME % : -10 ~0 (Test method ASTM D471)  OIL PROOF TEST (Test oil JIS no. 3) 1.change of hardness Jis HS : - 20 ~ 0 (Test method ASTM D471) 2.change OF T.S % MAX : - 45 (Test method ASTM D471) 3.change of ELONG % MAX : - 45 (Test method ASTM D471) 4.CHANGE OF VOLUME % : 0 ~ +45 (Test method ASTM D471)		This float seal assembly is used in track roller
437	EARTH MOVERS	175TF92217	SEAL	10	Nos	Working temperature range: (-40°C ~ +80°C) and Material shall be: F406-1		The seal is used for preventing grease leakage between under carriage swing circle bearing and revolving frame during 360° swing on the level and slope angle not more than 35°.












**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
438	EARTH MOVERS	171PH92077	SWING DRAIN FILTER	1	Nos	<p>SPECIFICATIONS :</p> <p>1)Rated flow : 120 l/min.</p> <p>2)Pressure loss : 0.5 Kg/cm<sup>2</sup> max.(EO10-CD oil,with 120 l/min. flow at 80°c)</p> <p>3)Pressure difference strength : 7 Kg/cm<sup>2</sup> max.</p> <p>4)Filter rating : 10 µ.</p> <p>5)Filter area : 5000 cm<sup>2</sup> max.</p> <p>6)Test pressure : 16 Kg/cm<sup>2</sup> max.</p> <p>7)Vibration test conditons : 10 times max. with same test sample for X and Y axis. oil at 80° c pressure 10 Kg/cm<sup>2</sup>, acceleration 9g ; frequency 50 Hz.</p> <p>8)Working temperature range : -30° to 120°c</p> <p>9)Effectiveness of the filter : after throwing -In 50g. pressure loss shall be 1.5 Kg/cm<sup>2</sup> or less and efficiency 90 % over (filtering degree 0.03 vol % or less)</p>		The Filter is used for between Swing Motor to Hydraulic Tank
439	EARTH MOVERS	155EC02074	TANK	1	Nos	<p>Material for tank: Poly propylene.</p> <p>Specification:</p> <p>1. Water capacity (total capacity): 3.4 lts ±.1 lts</p> <p>2. Empty tank weight: 355g.</p> <p>3. Level switch operating position: the level switch is turned off when remaining q'ty gets to 0.43 lts ±0.1 lts (the switch is "on" in the normal condition).</p> <p>4. Current flowing in the level switch shall be limited to 0.5a max. (including rush current).</p> <p>5. Pressure check: no leakage shall be detected with air pressure of 0.5kg/cm (with cap removed).</p> <p>6. Heat resistance: no cracks or leakage shall be detected after left to stand for 200h at 100°c.</p> <p>7. Falling ball test: when dropping a 200g steel ball from a height of 500mm. Naturally on the tank, it should not have cracks or leakage. (in -30°c atmosphere).</p> <p>8. The following tolerances apply to dimensions for which no tolerances are specified.</p> <p>A) max. 50mm- tolerance ±1</p> <p>b) over 50 to 200mm max- tolerance ±2</p> <p>c) 200 min.-tolerance ±3</p> <p>d) angle- 3°</p> <p>09. Vibration resistance: no faults are detected after applying a 3g vibration 10 times min. Vertically.</p> <p>10. Level switch durability: no faults are detected after operating 5000 cycles with on for 1 sec. And off for 1 sec.</p> <p>11. There shall be no interference inside between level switch float and pipes.</p>		This tank is used for deration
440	EARTH MOVERS	175TFB0012	FLOATING SEAL ASSY.	140	Nos	<p>Specification:</p> <p>O-Ring material : Nitrile rubber</p> <p>O-Ring hardness : 60±5HS, Tensile strength: 100 Kg/cm<sup>2</sup></p> <p>O-Ring Elongation : 30 %.</p> <p>Seal Ring material : FC9Cr6Mo</p>		The floating seal is used to seal protect components in idler assembly from mud and soil.
441	EARTH MOVERS	155TF92709	BUSHING	225	Nos	<p>1).No black skin, pin holes &amp; cracks allowed on sliding parts.</p> <p>2).Sinter O3 &amp; O4 no separations allowed.</p> <p>3).Tensile breaking load on friction welded parts shall be 7 ton or more.</p> <p>4). Completely remove burrs after oil grooving.</p> <p>5).KES General tolerance may not apply to the cylindrical of the inside diametrical part of the bushing after press fitting.</p>		This part is used idler shaft assembly area
442	EARTH MOVERS	175PH02831	RELIEF VALVE ASSY.	1	Nos	<p>Performance :</p> <p>Set pressure(cracking pressure) : 340 ±<sup>0</sup> Kg/cm<sup>2</sup> at 5 l/min.</p> <p>Total flow pressure : 380 Kg/cm<sup>2</sup> max. At 60 l/min.</p> <p>Recelt pressure : 310 Kg/cm<sup>2</sup> min. At 5 l/min.</p>		This Relief vlave assy. is used for boom & arm line
443	EARTH MOVERS	817ACB0055	AC(SPLIT TYPE)	1	Nos	<p><b>SPECIFICATIONS:</b></p> <p><b>COMPRESSOR:</b></p> <p>VOLTAGE : DC 24V</p> <p>CLUTCH : 125 mm</p> <p><b>CONDENSER :</b></p> <p>HEAVY DUTY REMOTE MOUNT</p> <p>CAPACITY 44,500 BTU/hr</p> <p>WEIGHT : 33.6 Kg</p> <p>CONDENSOR COIL : COPPER TUBING, ALUMINIUM FINS AND PLATED STEEL HEADERS.</p> <p><b>HEATER/AC UNIT :</b></p> <p>COOLING CAPACITY 26,000 BTU/hr ( 7.6 Kw)</p> <p>HEATING CAPACITY 17,800 BTU/hr (5.2 Kw)</p> <p>AIR FLOW 540 cu.m/hr ( 320 cfm)</p>		Proprietary item and complete drawing details not available ; Based on the technical scope , general specifications , performance requirements and overall size of the aggregates , these are to be developed by interested Vendors.













**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
444	EARTH MOVERS	985TC91002	DISC	500	Nos	Core Plate- C1101 OR C45 , Toshiba1020 Heat Treatment: Induction hardening at Tooth Portion Dimension: OD-400mm, ID-309 mm Thickness of Plate- 3.8mm, Thickness of Facing material- 0.8mmx2, Disc thickness-5.4 mm a) Material: Friction Facing b) c)		Disc with Internal Gear Toothing for clutch operations in Planetary Transmission
445	EARTH MOVERS	376TM91263	Oil Seal	7	Nos	FB 60x85x12		Oil Seal
446	EARTH MOVERS	376BR11126	Pressure Reducing Valve	2	Nos	Working pressure : 35 bar Max. Flow : 30 lpm		The pressure reducing valve is used to allow the required pressure in the line, by bypassing the excess pressure
447	EARTH MOVERS	376AX91267	Oil Seal	20	Nos	FB 150x180x15-D		Oil Seal
448	EARTH MOVERS	376AX91623	Brake	12	Nos	Working pressure : 100 bar		The brake systems is of air over hydraulic type. The brakes are pressed against the disc which is mounted on axle with the help of pressurised brake fluid.
449	EARTH MOVERS	376AX91631	Brake Lining	350	Nos	Consists of Friction pad and Backup plate		Brake Lining
450	EARTH MOVERS	762TF11527	BOLT	100	Nos	M14x1.5, 50L, 12.4 grade bolt for mounting track chain pads of BL10C / BL11C equipment.	 <small>                     NOTES:                      1. DIMENSIONS AT THREAD PORTION SHALL BE 34-40 HRC. HARDNESS SHALL BE                      2. INDUCTION HARDENING AT THREADING TO BE DONE ON HEAD PORTION TO 25-30 HRC                      3. INDUCTION HARDENING AT THREADING TO BE DONE ON HEAD PORTION TO 25-30 HRC                      4. DIMENSIONS AT HEAD PORTION SHALL BE 12-14 HRC                      5. DIMENSIONS AT HEAD PORTION SHALL BE 12-14 HRC                      6. DIMENSIONS AT HEAD PORTION SHALL BE 12-14 HRC                      7. DIMENSIONS AT HEAD PORTION SHALL BE 12-14 HRC                      8. DIMENSIONS AT HEAD PORTION SHALL BE 12-14 HRC                      9. DIMENSIONS AT HEAD PORTION SHALL BE 12-14 HRC                      10. DIMENSIONS AT HEAD PORTION SHALL BE 12-14 HRC                 </small>	BOLT
451	EARTH MOVERS	376BR02005	Air booster pump	60	Nos	Pressure of air : 8 bar conversion ratio : 1:18		The Air booster pump is used increase pressure of brake fluid to required level with aid of compressed air
452	EARTH MOVERS	376AX91372	O-Ring 320*3.1	8	Nos	320x3.1		O-Ring
453	EARTH MOVERS	376AX91275	Bearing	2	Nos	SIZE CODE :32024		Bearing

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
454	EARTH MOVERS	376BR11118	Air Brake Valve	5	Nos	Pressure of air : 8 bar working temp. : -30 deg C to 80 deg C		The Air brake valve is a directional valve used to direct the compressed air to air booster
455	EARTH MOVERS	376TM91214	Oil Seal	1	Nos	FB65x90x12		Oil Seal
456	EARTH MOVERS	376AX91226	Oil Seal	2	Nos	FB65x90x10F		Oil seal
457	EARTH MOVERS	862AX02044	Front Axle	2	Nos	1) Total reduction -24.08 2)Max.load on axle -20000 kg		Drive Axle is one of the main aggregate in drive system. Its main function is to transmit torque and to take the load.
458	EARTH MOVERS	862AX02052	Rear Axle	2	Nos	1) Total reduction -24.08 2)Max.load on axle -20000 kg		Drive Axle is one of the main aggregate in drive system. Its main function is to transmit torque and to take the load.
459	EARTH MOVERS	862TM02008	Transmission	2	Nos	4F / 3R direct mount, automatic powershift transmission with integral torque converter		Composed of a hydrodynamic torque converter and a rear-mounted multi-speed powershift transmission with integrated transfer case. It can be shifted manually or fully-automatically by means of the Electronic unit. An engine-dependent, coaxial power take-off is planned to drive hydraulic pump.
460	EARTH MOVERS	652TF03003	TRACK CHAIN ASSY.(TRIPLE GROUSER)	1	Nos	Triple Grouser track chain assy. With 34 links, 3 Master pin arrangement. Used for underground mining application.		Track Chain assy. With triple grouser pads. Width - 330mm, Overall length - 5289.55mm
461	EARTH MOVERS	2012Z14277	CHAIN,DRAG	1	Nos	Drag chain consisting of two end links and 25 connecting links Length shall be 9.4m.please refer drawing for requirement		a)Drag chains are manufactured in high strength cast steel b)Tensile strength requirement is 896MPa c)Yield strength requirement is 758MPa
462	EARTH MOVERS	2012Z13899	CHAIN,HOIST	25	Nos	Hoist chain consisting of two end(stud) links and 9 connecting links. Length shall be 2.8m.please refer drawing for requirement		a)Hoist chains are manufactured in high strength cast steel b)Tensile strength requirement is 896MPa c)Yield strength requirement is 758MPa d)End links are fitted with high manganese bush
463	EARTH MOVERS	1977F12941	PROPEL BRAKE WITHOUT HUB	1	Nos	a) Brake Slip Torque (New) = 5016 Nm. b) Brake Slip Torque (Worn) = 4474 Nm. c)Air Pressure for full release = 03 Bar d) Maximum speed = 2500 RPM. e) Maximum Air pressure = 08 Bar		a) Spring set Air released disc brakes mounted on the non drive end of electrical motor shaft b) In the event of power failure or loss of air pressure,brakes will automatically set to stop the machinery motion. c) The brakes cannot be released for operation until the Air pressure reaches the operating pressure.
464	EARTH MOVERS	CSR0111205	SEAL RING	500	Nos	SEAL Ring. Material:Phosphorous bronze casting or equivalent of PBC-2A for piston ring. OD=120mm, Thickness T=4.6mm Max pressure, kg/cm2 : 15 Max peripheral speed, m/s : 20 Max oil temperature, -C: 120 Oil used: H10 & T30		SEAL Ring for torque flow transmission





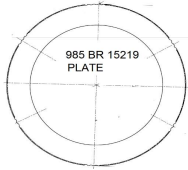
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
465	EARTH MOVERS	156HR91527	Chisel point	50	Nos			
466	EARTH MOVERS	156HR90977	O ring	13	Nos			
467	EARTH MOVERS	156HR90944	Set step seal	13	Nos			
468	EARTH MOVERS	156HR90985	Back up ring	42	Nos			
469	EARTH MOVERS	156HR91284	Chisel pin	20	Nos			
470	EARTH MOVERS	156HR90969	Gas seal	12	Nos	Refer drawing Rock breaker kit to part no: 156HRB0108 WEIGHT : 1600 ~ 1700kg BODY TYPE : BOX/OPEN IMPACT RATE : 350 ~ 700 bpm OPERATING PRESSURE : 150 ~ 180 bar OIL FLOW : 130 ~ 150 lpm RELIEF PRESSURE : 190 ~ 210 bar TOOL DIAMETER (Chisel & Moll) : 130mm (min) / Suitable for 22ton class rock breaker HOSE DIAMETER : 25mm (min) / Suitable for 22ton class rock breaker CARRIER WEIGHT : 22ton		OPERATING
471	EARTH MOVERS	156HR90911	U-packing	12	Nos	MODE OF OPERATION : Hydraulic with gas assisted KIT : Piping kit, Hose kit, Adaptor kit, and Fasteners kit		Parts of Rock breaker assembly of 22 ton class excavator.
472	EARTH MOVERS	156HR90903	buffer seal	12	Nos	Note: sl. 01 ~ 13 are the parts / internal components of rock breaker assembly and it is proprietary in nature. So design, specification, drawing details are not available.		Rock breaker, used in a mining and construction equipment for the demolition of structure and breaking rocks into smaller sizes. It is an attachment to the excavator and works on the principle of hydraulics. The rock breaker hammer applies high pressure from its small canister which has pressurized hydraulic oil stored in it. They are much more powerful than other hand-held hammers and its force is varied based on the force of piston strokes and its size. The rock breaker hammer is operated by using the excavator main pump hydraulic oil from the optional spool on the control valve
473	EARTH MOVERS	156HR91292	Stop pin	30	Nos			
474	EARTH MOVERS	156HR91316	FRONT HEAD PIN	20	Nos			
475	EARTH MOVERS	156HR92142	STOP PIN	2	Nos			
476	EARTH MOVERS	156HR92134	MOUNTING PIN	2	Nos			

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
477	EARTH MOVERS	156HR91632	Hex bolt M16X2 Length 140mm	6	Nos			
478	HYDRAULIC & POWERLINE	CFN4412222	Nyloc Nut M22 x 2.5p	92	Nos	<p>Nylock Nuts are used in the Hydraulic Cylinder Assemblies to Lock the Piston in the Piston Rod and to Hold in Position. Nylock Nut shall not get loosened during continuous operation of extension and retraction of Cylinder.</p> <p>Material:                      a) Nut Material- SAE1045/C45;Hardness:24~28 Rc (Q&amp;T);                      b) Gasket: Nylon 6 / Nylon 66 ;                      c) Nyloc nuts should retain their locking ability up to 250 °F (121°C), Chemical and physical properties of Nylon material are enclosed for reference.</p>		
479	HYDRAULIC & POWERLINE	CFN4412426	Nyloc Nut M24 x 3p	78	Nos			
480	HYDRAULIC & POWERLINE	CFN4413033	Nyloc Nut M30 x 3p	34	Nos			
481	HYDRAULIC & POWERLINE	CFN4413638	Nyloc Nut M36 x 3p	208	Nos			
482	HYDRAULIC & POWERLINE	CFN4413941	Nyloc Nut M39 x 3p	174	Nos			
483	HYDRAULIC & POWERLINE	CFN4414547	Nyloc Nut M45 x 3p	174	Nos			
484	HYDRAULIC & POWERLINE	CFN4415252	Nyloc Nut M52 x 3p	334	Nos			
485	HYDRAULIC & POWERLINE	CFN4416870	Nyloc Nut M68 x 4p	436	Nos			
486	HYDRAULIC & POWERLINE	955HC99066	Nyloc Nut 1.3/8"-12UN-3B	274	Nos			
487	HYDRAULIC & POWERLINE	9355U91411	Nyloc Nut 1.1/2"-12UN-3B	116	Nos			
488	HYDRAULIC & POWERLINE	CSB0205030	BUSHING	228	Nos	<p>Bushings are used in hydraulic cylinder rod or Suspension piston rod application. Bushing provide outstanding dry bearing properties of Polytetrafluoroethylene (PTFE) and combines them with strength, stability and good wear resistance, excellent heat conductivity and low thermal expansion.</p> <p>Bushings consists of three bonded layers: The Bushes are loaded with PTFE based sliding layer, sintered tin bronze layer and Cold Rolled Carbon steel backing strip support. The PTFE impregnated sliding layer provides low co-efficient of friction, the bronze layer guarantees the coupling of self lubricating mixture and good loss of heat produced during operation.</p> <p>Material:                      Back Metal : JIS SPCD (Cold Rolled Carbon steel Strip/sheet Backing) (JIS G3141) The back metal shall be subjected to a flash tin-plating                      Tensile Strength : 270 N/mm2 Min.(27.5 Kg/mm2 Min.)                      Elongation % : 40 Min.                      Bushing : Teflon Impregnated Bronze.                      Coating Thickness : 0.3 max</p>		
489	HYDRAULIC & POWERLINE	CSB0206530	BUSHING	140	Nos			
490	HYDRAULIC & POWERLINE	CSB0207515	BUSHING	160	Nos			
491	HYDRAULIC & POWERLINE	CSB0207530	BUSHING	160	Nos			
492	HYDRAULIC & POWERLINE	CSB0201020	BUSHING	126	Nos			
493	HYDRAULIC & POWERLINE	CSB0201040	BUSHING	276	Nos			
494	HYDRAULIC & POWERLINE	CSB0208040	BUSHING	126	Nos			
495	HYDRAULIC & POWERLINE	CSB0201235	BUSHING	5	Nos			
496	HYDRAULIC & POWERLINE	CSB0206515	BUSHING	140	Nos			
497	HYDRAULIC & POWERLINE	CSB0201140	BUSHING	124	Nos			
498	HYDRAULIC & POWERLINE	CSB0209020	BUSHING	296	Nos			
499	HYDRAULIC & POWERLINE	CSB0209035	BUSHING	296	Nos			
500	HYDRAULIC & POWERLINE	787AX62947	O-RING	58	Nos	<p>i. Material : HNBR-1A                      ii. SHORE (HARDNESS) : 70±5 ;                      iii. Operating Temperature : - 40 to +150 deg C                      iv. Dimension                      ID : Ø273±3 ; (Inner Dia.)                      Ø3.6±0.1 ; (Wire Dia.)</p> <p>C/s :</p>		
501	HYDRAULIC & POWERLINE	985BR02526	FLOATING SEAL ASSY(BIG)	25	Nos	<p>Floating Seal are special form of Mechanical seals, which is characterized by use of an oring as the secondary sealing element. The Seal surface is formed by a cone which is in contact with the Oring which is compressed axially and radially.</p> <p>Material:                      I. Seal Ring Material : Duronit V                      a) Seal Ring ID : 508 mm                      b) Seal Ring OD : 548 mm                      c) Width : 30mm                      ii. Oring Material : HNBR 60 (Colour - Black)                      a) Oring Diameter : 18 mm                      b) Oring ID : Dia 510 mm                      c) HARDNESS (SHORE A) : 60±5                      d) TENSILE STRENGTH (Mpa) : 14 min.                      e) ELONGATION AT BREAK(%) : 350 min.                      f) OPERATING TEMP. (Max.) : 150°C</p> <p>Duronit is very common in the cast iron seal market. This ledeburitic cast iron with fine graphite inclusions is known for its excellent wear resistance in connection with good tribological qualities</p>		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**




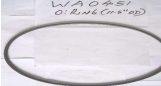
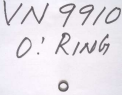

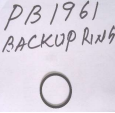

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
502	HYDRAULIC & POWERLINE	985BR02534	FLOATING SEAL ASSY(BIG)	208	Nos	<p>Floating Seal are special form of Mechanical seals, which is characterized by use of an oring as the secondary sealing element. The Seal surface is formed by a cone which is in contact with the Oring which is compressed axially and radially.</p> <p><b>Material:</b></p> <p>i. Seal Ring Material : Duronit V                      a) Seal Ring ID : 382                      b) Seal Ring OD : 405                      c) Width : 20mm</p> <p>ii. Oring Material : HNBR 60 (Colour - Black)                      a) Oring Diameter : 12 mm                      b) Oring ID : Dia 377 mm                      c) HARDNESS (SHORE A) : 60±5                      d) TENSILE STRENGTH (Mpa) : 14 min.                      e) ELONGATION AT BREAK(%) : 350 min.                      f) OPERATING TEMP. (Max.) : 150°C</p> <p>Duronit is very common in the cast iron seal market. This ledeburitic cast iron with fine graphite inclusions is known for its excellent wear resistance in connection with good tribological qualities</p>		
503	HYDRAULIC & POWERLINE	778AX03128	FLOATING SEAL ASSY	116	Nos	<p>Floating Seal are special form of Mechanical seals, which is characterized by use of an oring as the secondary sealing element. The Seal surface is formed by a cone which is in contact with the Oring which is compressed axially and radially.</p> <p><b>Material:</b></p> <p>i. Seal Ring Material : Duronit V                      a) Seal Ring ID : 262                      b) Seal Ring OD : 288                      c) Width : 20mm</p> <p>ii. Oring Material : HNBR 60 (Colour - Black)                      a) Oring Diameter : 12 mm                      b) Oring ID : Dia 266 mm                      c) HARDNESS (SHORE A) : 60±5                      d) TENSILE STRENGTH (Mpa) : 14 min.                      e) ELONGATION AT BREAK(%) : 350 min.                      f) OPERATING TEMP. (Max.) : 150°C</p> <p>Duronit is very common in the cast iron seal market. This ledeburitic cast iron with fine graphite inclusions is known for its excellent wear resistance in connection with good tribological qualities</p>		
504	HYDRAULIC & POWERLINE	985BR95248	DISC	990	Nos	<p>Disc with Internal Gear Toothing for Brake Application in Rear Axle Assembly</p> <p><b>Material:</b></p> <p>i. Plate : C55 Mn 75 (B1105)                      ii. Hardness of Plate : 22 HRc                      iii. Surface Treatment of Plate Sand Blast before Adhesion                      iv. Facing Material : DAIKIN R/M Co. Ltd                      v. Size :                      a) Outer diameter : 660mm                      b) Inner diameter : 515mm                      c) Thickness : 5.1mm</p>		a) Outer
505	HYDRAULIC & POWERLINE	778AX92156	DISC	1392	Nos	<p>Disc with Internal Gear Toothing for Brake Application in Rear Axle Assembly</p> <p><b>Material:</b></p> <p>i. Plate : SAE 4140                      ii. Hardness of Plate : 22 HRc                      Facing Material : D-0526-4 ; DAIKIN R/M Co. Ltd                      iv. Size :                      a) Outer diameter : 480mm                      b) Inner diameter : 330mm                      c) Thickness : 5.1mm</p>		iii.
506	HYDRAULIC & POWERLINE	985BR15219	PLATE	924	Nos	<p>Plate with External Gear Toothing for Brake Application in Rear Axle Assembly</p> <p><b>Material:</b></p> <p>i. Plate : C55 Mn 75 (B1105) ; IS:1570                      ii. Hardness of Plate : 22 ~ 28 HRc                      iii. Size :                      a) Outer diameter : 681mm                      b) Inner diameter : 510mm                      c) Thickness : 2.4mm</p>		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

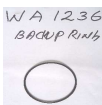





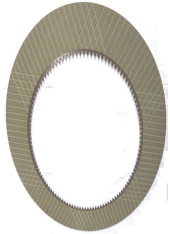


Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
507	HYDRAULIC & POWERLINE	985BR95223	DAMPER	232	Nos	Damper Assembly (Plate & Seat) with External Gear Toothing for Brake Application in Rear Axle Assembly Material: i. Core Plate : C55 Mn 75 (B1105) ; IS:1570 ii. Hardness of Plate : Min 22 Hrc iii. Seat : Mica Cork CL-28 iv. Size : a) Outer diameter : 681mm b) Inner diameter : 510mm c) Thickness : 6.9mm		
508	HYDRAULIC & POWERLINE	778AX92059	DAMPER	232	Nos	Damper Assembly (Plate & Seat) with External Gear Toothing for Brake Application in Rear Axle Assembly Material: i. Core Plate : C55 / SAE 1050; IS:1570 ii. Hardness of Plate : Min 22 Hrc iii. Surface Treatment of Plate Sand Blast before Adhesion iv. Seat : Mica Cork CL-28 v. Size : a) Outer diameter : 495mm b) Inner diameter : 346mm c) Thickness : 6.9mm		
509	HYDRAULIC & POWERLINE	CSR0110653	SEAL RING	274	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-65mm, Width-2.7mm, Thickness-3mm		Seal Ring for Planetary Transmission used to prevent oil leaking around the shaft.
510	HYDRAULIC & POWERLINE	CSR0111004	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-100mm, Width-4mm, Thickness-3mm		
511	HYDRAULIC & POWERLINE	CSR0111205	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-120mm, Width-4.6mm, Thickness-4mm		
512	HYDRAULIC & POWERLINE	CSR0111805	SEAL RING	300	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-180mm, Width-5mm, Thickness-4mm		
513	HYDRAULIC & POWERLINE	CSR0112455	SEAL RING	92	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-245mm, Width-5mm, Thickness-4mm		
514	HYDRAULIC & POWERLINE	CSR0112605	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-260mm, Width-5mm, Thickness-4mm		
515	HYDRAULIC & POWERLINE	CSR0120352	SEAL RING	92	Nos	a) Material: HSBSC3 b)Dimension: OD-35mm, Width-1.7mm, Thickness-2.5mm		
516	HYDRAULIC & POWERLINE	CSR0120753	SEAL RING	1	Nos	a) Material: HSBSC3 b)Dimension: OD-35mm, Width-1.7mm, Thickness-2.5mm		
517	HYDRAULIC & POWERLINE	CSR0120854	SEAL RING	92	Nos	a) Material: HSBSC3 b)Dimension: OD-75mm, Width-3.1mm, Thickness-3mm		
518	HYDRAULIC & POWERLINE	CSR0121606	SEAL RING	92	Nos	a) Material: HSBSC3 b)Dimension: OD-160mm, Width-5.8mm, Thickness-4.5mm		
519	HYDRAULIC & POWERLINE	CSR0131205	SEAL RING	2	Nos	a) Material: TFE-2 b)Dimension: OD-120mm, Width-4.6mm, Thickness-3.95mm		
520	HYDRAULIC & POWERLINE	CSR0131907	SEAL RING	2	Nos	a) Material: TFE-2 b)Dimension: OD-190mm, Width-6.5mm, Thickness-5.95mm		
521	HYDRAULIC & POWERLINE	113TM21648	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-120mm, Width-3.5mm, Thickness-3mm		
522	HYDRAULIC & POWERLINE	113TM21818	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-155mm, Width-3.5mm, Thickness-3mm		
523	HYDRAULIC & POWERLINE	113TM21883	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b)Dimension: OD-155mm, Width-3.5mm, Thickness-3mm		
524	HYDRAULIC & POWERLINE	985TM91419	THRUST WASHER	736	Nos	Thrust washer for Supporting Planet gears in Transmission a) Material: SP21 Manufactured by M/s Dupon b)Dimension: OD-66.5mm, ID-38.3mm, Thickness-2mm		Thrust washers made of DuPont Vespel® SP-21 polyimide are durable, maintenance-free components used in planetary transmission assemblies. Dupont SP21: is a 15% (by weight) graphite filled polymer & standard material for Thrust Washers because it offers the best combination of mechanical strength and wear resistance, low friction for lubricated or non-lubricated applications. It also has long term thermal stability.
525	HYDRAULIC & POWERLINE	985TM92091	THRUST WASHER	736	Nos	Thrust washer for Supporting Planet gears in Transmission a) Material: SP21 Manufactured by M/s Dupon b)Dimension: OD-90mm, ID-57.2mm, Thickness-3mm		
526	HYDRAULIC & POWERLINE	985TM92642	THRUST WASHER	736	Nos	Thrust washer for Supporting Planet gears in Transmission a) Material: SP21 Manufactured by M/s Dupon b)Dimension: OD-63mm, ID-35.15mm, Thickness-2mm		
527	HYDRAULIC & POWERLINE	825EG02027	DISPLAY KIT- EQUIPMENT	10	Nos	1. Display size: 7" 2. Display Type: color transmissive TFT LCD, WVGA, 800 x 480 pixels 3. Input pins: 3 nos. - 0-5V DC/4 -20mA/resistive analog, 1no. - frequency(2Hz to 10KHz), 5 nos- digital high 4. Outputs : 1no. - digital low, 1 no- PWM 5. Communications supported : CAN2.0B,CAN 2.0A, CANopen, Proprietary messaging, RS485 serial and USB 6. operating voltage: 8 to 32V DC, reverse polarity protected 7. Operating temperature: -40°C to +85°C 8. Sealing : IP67 9. RAM: 128Mbytes SRAM 10. Flash memory: 2GB 11. Vibration : 7.86g (5-2000Hz) 12. Shock : 50g in 3 axis 13. Video I/P: 1 no- NTSC/PAL 14. Keyboard: tactile buttons		Software configuration for each variant must be developed by vendor in conjunction with R&D-KGF and display should be supplied along with required configuration loaded into it
528	HYDRAULIC & POWERLINE	820EG02141		10	Nos			
529	HYDRAULIC & POWERLINE	821EG02018		10	Nos			



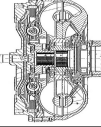
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks		
530	HYDRAULIC & POWERLINE	821EG81294	DISPLAY-TRANSMISSION	10	Nos	1. Display size: 4.3" 2. Display Type: color transmissive TFT LCD,WVGA, 800 x 480 pixels 3. Input pins: 3 nos. - 0-5V DC/4 -20mA/resistive analog, 1no. - frequency(2Hz to 10KHz), 5 nos-digital high 4. Outputs : 1no. - digital low, 1 no- PWM 5. Communications supported : CAN2.0B, CAN 2.0A, CANopen, Proprietary messaging, RS485 serial and USB 6. operating voltage: 8 to 32V DC, reverse polarity protected 7. Operating temperature: -40°C to +85°C 8. Sealing : IP67 9. RAM: 128Mbytes SRAM 10. Flash memory: 2GB 11. Vibration : 7.86g (5-2000Hz) 12. Shock : 50g in 3 axis 13. Video I/P: 1 no- NTSC/PAL 14. Keyboard- tactile buttons		Software configuration for each variant must be developed by vendor in conjunction with R&D-KGF and display should be supplied along with required configuration loaded into it		
531	HYDRAULIC & POWERLINE	953EG03786		10	Nos					
532	HYDRAULIC & POWERLINE	955EG03588		10	Nos					
533	HYDRAULIC & POWERLINE	TF4098	O-RING (2.750 x 3.000 x 0.125)	116	Nos	i. Material : SAE 120R CLASS-1 ii. SHORE (HARDNESS) : 70 DUROMETER iii. Operating Temperature : - 40 to +150 deg C These O-rings shall comply with the following specifications: SAE J14 (1976) and SAE J120a (1976) Material : Synthetic Rubber 70 Durometer.				
534	HYDRAULIC & POWERLINE	TD8594	O-RING (3.250 x 3.500 x 0.125)	274	Nos					
535	HYDRAULIC & POWERLINE	VH7521	O-RING (4.500 x 5.000 x 0.250)	14	Nos					
536	HYDRAULIC & POWERLINE	WA4748	O-RING (5.625 x 6.000 x 0.875)	411	Nos					
537	HYDRAULIC & POWERLINE	TG1045	O-RING (7.000 x 7.250 x 0.125)	116	Nos					
538	HYDRAULIC & POWERLINE	TL4377	O-RING (7.250 x 7.500 x 0.125)	274	Nos					
539	HYDRAULIC & POWERLINE	WA0267	O-RING (8.250 x 8.500 x 0.125)	580	Nos				i. Material : SAE SB915 CLASS-1 ii. SHORE (HARDNESS) : 90 DUROMETER iii. Operating Temperature : - 40 to +150 deg C These O-rings shall comply with the following specifications: SAE J14 (1976) and SAE J120a (1976) Material : Synthetic Rubber 90 Durometer.	
540	HYDRAULIC & POWERLINE	WA0451	O-RING (11.000 x 11.500 x 0.250)	16	Nos					
541	HYDRAULIC & POWERLINE	WA0277	O-RING (11.500 x 11.750 x 0.125)	14	Nos					
542	HYDRAULIC & POWERLINE	VN9910	O-RING, HYDRAULIC FOR SAE STRAIGHT THREAD BOSS FITTINGS	58	Nos	Material : Synthetic Rubber, Compound SB915. SAE-J515. Thead Size : 0.375 x 24 SAE No : 3-1. Inside Dia : 0.301 ± 0.005 Width : 0.064 ± 0.003 These O-rings shall comply with latest version of SAE specification J515. Material : Synthetic Rubber Compound SB915.				
543	HYDRAULIC & POWERLINE	PB1956	RING, BACK-UP – 262	116	Nos	Material : DISOGRIN 9250 URETHANE (PART NO. 073-262). Premium polyurethane, TODI base. Inside Dia : 6.935 ± 0.035 Radial Width : 0.118 ± 0.004 Thickness : 0.040 ± 0.003 Max Working Pressure : 6000 PSI ( 421 Kg/cm <sup>2</sup> ) Max Working Temp : 300°F (148.8 °C) Max Speed : 4 ft/s (1.21 m/s) Hardness : 92 Durometer. Specific Gravity : 1.17				
544	HYDRAULIC & POWERLINE	PB1961	RING, BACK-UP – 262	232	Nos	Material : DISOGRIN 9250 URETHANE (PART NO. 073-262). Premium polyurethane, TODI base. Inside Dia : 1.480 ± 0.007 Radial Width : 0.118 ± 0.004 Thickness : 0.040 ± 0.003 Max Working Pressure : 6000 PSI ( 421 Kg/cm <sup>2</sup> ) Max Working Temp : 300°F (148.8 °C) Max Speed : 4 ft/s (1.21 m/s) Hardness : 92 Durometer. Specific Gravity : 1.17				
545	HYDRAULIC & POWERLINE	TM6638	RING, BACK-UP – 262	116	Nos	Material : DISOGRIN 9250 URETHANE (PART NO. 073-262). Premium polyurethane, TODI base. Inside Dia : 2.735 ± 0.014 Radial Width : 0.118 ± 0.004 Thickness : 0.040 ± 0.003 Max Working Pressure : 6000 PSI ( 421 Kg/cm <sup>2</sup> ) Max Working Temp : 300°F (148.8 °C) Max Speed : 4 ft/s (1.21 m/s) Hardness : 92 Durometer. Specific Gravity : 1.17				

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
546	HYDRAULIC & POWERLINE	WA1236	BACK UP RING	274	Nos	I.D. : 3.256 ± 0.015 0.004 Axial Thickness : 0.050 Radial Section : 0.118 ± Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
547	HYDRAULIC & POWERLINE	WA1263	BACK UP RING	274	Nos	I.D. : 7.268 ± 0.023 0.004 Axial Thickness : 0.050 Radial Section : 0.118 ± Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
548	HYDRAULIC & POWERLINE	WA1267	BACK UP RING	464	Nos	I.D. : 8.268 ± 0.030 0.004 Axial Thickness : 0.050 Radial Section : 0.118 ± Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
549	HYDRAULIC & POWERLINE	WA1277	BACK UP RING	14	Nos	I.D. : 11.518 ± 0.030 0.004 Axial Thickness : 0.050 Radial Section : 0.118 ± Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
550	HYDRAULIC & POWERLINE	WA1279	BACK UP RING	56	Nos	I.D. : 13.018 ± 0.030 0.004 Axial Thickness : 0.050 Radial Section : 0.118 ± Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
551	HYDRAULIC & POWERLINE	WA1425	BACK UP RING	14	Nos	I.D. : 4.551 ± 0.015 0.006 Axial Thickness : 0.117 Radial Section : 0.236 ± Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
552	HYDRAULIC & POWERLINE	WA1451	BACK UP RING	16	Nos	I.D. : 11.024 ± 0.030 0.006 Axial Thickness : 0.050 Radial Section : 0.236 ± Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
553	HYDRAULIC & POWERLINE	WA4749	BACK UP RING	411	Nos	I.D. : 5.528 ± 0.015/-0.023 0.183 ± 0.005 Axial Thickness : 0.076 Radial Section : Material : Nitrile Based Synthetic Rubber or Glass filled TFE (25% Glass) Hardness (Rubber) : 90 Durometer. Working Temperature Range : -40°F to +250°F (-40°C to +121°C)		
554	HYDRAULIC & POWERLINE	135TM91712	DISC	46	Nos	Disc with Internal Gear Toothing for clutch operations in Planetary Transmission a) Material: Core Plate- SAE1045H OR JIS.S45C , Friction Facing-Toshiba1020 b) Heat Treatment: Induction hardening at Tooth Portion c) Dimension: OD-530mm, ID-415.5 mm Thickness of Plate- 3.8mm, Thickness of Facing material-0.8mmx2, Disc thickness-5.4 mm		
555	HYDRAULIC & POWERLINE	135TM91834	DISC	12	Nos	Disc with Internal Gear Toothing for clutch operations in Planetary Transmission a) Material: Core Plate- SAE1045H OR JIS.S45C , Friction Facing-Toshiba1020 b) Heat Treatment: Induction hardening at Tooth Portion c) Dimension: OD-425mm, ID-331.5 mm Thickness of Plate- 3.8mm, Thickness of Facing material-0.8mmx2, Disc thickness-5.4 mm		
556	HYDRAULIC & POWERLINE	985TM12346	RING	46	Nos	a)Material: SWRH 67-SWRH82 b) Hardness: 42-48 HRC c) OD- 343mm, WIDTH-10mm, No. of Turns-2		Ring used for locking Ring Gear and Carrier in planetary transmission
557	HYDRAULIC & POWERLINE	125TM23431	SEAL RING.	440	Nos	a) Material: HS8s3 b)Dimension: OD-120mm, Width-3.5mm, Thickness-3mm		
558	HYDRAULIC & POWERLINE	125TM23715	SEAL RING	616	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113 ) b)Dimension: OD-250mm, Width-6.5mm, Thickness-4mm		
559	HYDRAULIC & POWERLINE	135TC91061	SEAL RING	2	Nos	a) Material: NPR Cast Iron- Manufactured by Nippon Piston Ring or rquivalent b)Dimension: OD-260mm, Width-6mm, Thickness-5mm		
560	HYDRAULIC & POWERLINE	130TM22417	SEAL RING	130	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113 ) b)Dimension: OD-185mm, Width-5mm, Thickness-4mm		
561	HYDRAULIC & POWERLINE	985TM21086	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113 ) b)Dimension: OD-185mm, Width-5.8mm, Thickness-4.5mm		
562	HYDRAULIC & POWERLINE	985TM21101	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113 ) b)Dimension: OD-310mm, Width-4mm, Thickness-4mm		
563	HYDRAULIC & POWERLINE	985TM22309	SEAL RING	46	Nos	a) Material: HS8sC3 b)Dimension: OD-270mm, Width-4mm, Thickness-4mm		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
564	HYDRAULIC & POWERLINE	985TM22682	SEAL RING	46	Nos	a) Material: Phosphor Bronze Casting or PBC2A (JIS H 5113) b) Dimension: OD-175mm, Width-6.3mm, Thickness-4mm		Material properties: Specific gravity-2.21, Tensile strength-230kg/cm <sup>2</sup> , Elongation-270%, Hardness -63 Durometer
565	HYDRAULIC & POWERLINE	953TM96015	SEAL RING	230	Nos	a) Material: HS86C3 b) Dimension: OD-135mm, Width-5.1mm, Thickness-4mm		
566	HYDRAULIC & POWERLINE	135TM71049	SEAL RING	2	Nos	a) Material: NOK MAKE RAREFLON 40WF or Nippon Pillar make PILAFLEN PTFEG2 OR Equivalent b) O.D-463.6mm, I.D-455mm, Thickness-3.8mm		
567	HYDRAULIC & POWERLINE	135TM72086	SEAL RING	2	Nos	a) Material: NOK MAKE RAREFLON 40WF or Nippon Pillar make PILAFLEN PTFEG2 OR Equivalent b) O.D-448.6mm, I.D-440mm, Thickness-3.8mm		
568	HYDRAULIC & POWERLINE	135TM72094	SEAL RING	2	Nos	a) Material: NOK MAKE RAREFLON 40WF or Nippon Pillar make PILAFLEN PTFEG2 OR Equivalent b) O.D-508.6mm, I.D-500mm, Thickness-3.8mm		
569	HYDRAULIC & POWERLINE	135TM72183	SEAL RING	2	Nos	a) Material: NOK MAKE RAREFLON 40WF or Nippon Pillar make PILAFLEN PTFEG2 OR Equivalent b) O.D-259.5mm, I.D-253mm, Thickness-2.8mm		
570	HYDRAULIC & POWERLINE	135TM72004	SEAL RING	8	Nos	a) Material: NOK MAKE RAREFLON 40WF or Nippon Pillar make PILAFLEN PTFEG2 OR Equivalent b) O.D-513.6mm, I.D-505mm, Thickness-3.8mm		
571	HYDRAULIC & POWERLINE	135TM72012	SEAL RING	2	Nos	a) Material: NOK MAKE RAREFLON 40WF or Nippon Pillar make PILAFLEN PTFEG2 OR Equivalent b) O.D-438.6mm, I.D-430mm, Thickness-3.8mm		
572	HYDRAULIC & POWERLINE	985TC71093	SEAL RING	43	Nos	a) Make: NIHON PILLAR LOGYO KK MAKE #4370 or Equivalent b) Material to be of N.P.KK MAKE ds (ptfe W, Filler) or Equiv expansion force 142kg/cm <sup>2</sup> , Elongation 123%, thermal expansion co-efficient in 11.9x10 <sup>-5</sup> c) O.D-185mm, width -6.5mm, Thickness-4.5mm		
573	HYDRAULIC & POWERLINE	125TM93465	SPRING	440	Nos	Wave Spring for Clutch retraction in Planetary Transmission IS4454 Part-1 of 1981 Treatment :Q&T- 38~45 HRC Width: 3, Thickness-1.65mm		a) Material: Gr1 b) Heat c) I.D: 401,
574	HYDRAULIC & POWERLINE	130TM93122	SPRING	14388	Nos	a) Material: Gr.3 IS4454 Part-1 Treatment :Q&T- 40~46 HRC 20.7mm, Width:4mm, Thickness-3mm		b) Heat c) I.D:
575	HYDRAULIC & POWERLINE	125TM93457	SPRING WASHER	10452	Nos	a) Material: Gr.2 IS4454 Part-1 b) Heat Treatment :Q&T- 40~46 HRC c) I.D: 17mm, Width:5mm, Thickness-2mm		
576	HYDRAULIC & POWERLINE	113TM11741	SPRING	49	Nos	a) Material: Carbon Tool Steel (JIS G 4401-1956), class 5 Heat treatment: 42~48HRC c) O.D: 225mm, I.D: 120mm, Thickness: 3mm		
577	HYDRAULIC & POWERLINE	955TC02259	T/C ELEMENT ASSY	5	Nos	Torque converter element assembly consists of Stator, Pump and Turbine. Torque converter is a fluid coupling device that also acts as a torque multiplier during initial acceleration. a) T/c Type- Single stage, 3 Element, 2 Phase b) Stall Ratio-2.07:1 c) Effective in all forward ranges		
578	HYDRAULIC & POWERLINE	CGR0301125	WEAR RING	274	Nos	O.D. : 110 Thickness : 3.0 +0/-0.08 Length : 25 -0.05/-0.25 Material : PTR-FLE (Phenol Resin with cloth) Gravity : 1.20 (Min) Bending Strngth : 10~18 Kg/mm <sup>2</sup> Compression Strength : 11~20 Kg/mm <sup>2</sup> Water Absorption Rate: 2.4 % Max.		Specific
579	HYDRAULIC & POWERLINE	CGR0401315	WEAR RING	20	Nos	O.D. : 130 Thickness : 3.5 +0/-0.08 Length : 15 -0.05/-0.25 Material : PTR-FLE (Phenol Resin with cloth) Gravity : 1.20 (Min) Bending Strngth : 10~18 Kg/mm <sup>2</sup> Compression Strength : 11~20 Kg/mm <sup>2</sup> Water Absorption Rate: 2.4 % Max.		Specific
								The function of an hydraulic Wear Ring (or Guide ring) is to guide the piston and

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
580	HYDRAULIC & POWERLINE	CGR0301330	WEAR RING	78	Nos	O.D. : 130 Thickness : 3.5 +/-0.08 Length : 30 -0.1/-0.3 Material : PTR-FLE (Phenol Resin with cloth) Gravity : 1.20 (Min) Bending Strngth : 10~18 Kg/mm <sup>2</sup> Compression Strength : 11~20 Kg/mm <sup>2</sup> Water Absorption Rate: 2.4 % Max.		piston rod of an hydraulic cylinder, absorbing transverse forces. At the same time, the Wear Ring prevents metal-to-metal contact, optimizing the performance of the sealing system. <b>Fabric-reinforced Polyester Resin</b> - This strip material is for heavy-duty applications where there are high radial forces. The use of woven fabric-reinforced polyester resin produces a dimensionally accurate rectangular strip which can be cut to any length.
581	HYDRAULIC & POWERLINE	CGR0401620	WEAR RING	272	Nos	O.D. : 160 Thickness : 3.5 +/-0.08 Length : 20 -0.05/-0.25 Material : PTR-FLE (Phenol Resin with cloth) Gravity : 1.20 (Min) Bending Strngth : 10~18 Kg/mm <sup>2</sup> Compression Strength : 11~20 Kg/mm <sup>2</sup> Water Absorption Rate: 2.4 % Max.		Low coefficient of friction and high compressive strength makes it an ideal bearing material and it is used in temperatures ranging from -40 degrees to 130 degrees.
582	HYDRAULIC & POWERLINE	CGR0302555	WEAR RING	130	Nos	O.D. : 250 Thickness : 4.0 +/-0.08 Length : 55 -0.15/-0.35 Material : PTR-FLE (Phenol Resin with cloth) Gravity : 1.20 (Min) Bending Strngth : 10~18 Kg/mm <sup>2</sup> Compression Strength : 11~20 Kg/mm <sup>2</sup> Water Absorption Rate: 2.4 % Max.		
583	HYDRAULIC & POWERLINE	PB6437	ROD SEAL	274	Nos	Size : 5.000 x 5.625 x 0.580 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016 Shore hardness: 80A Durometer.		
584	HYDRAULIC & POWERLINE	PB6547	ROD SEAL	14	Nos	Size : 3.750 x 4.375 x 0.580 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016 Shore hardness: 80A Durometer.		
585	HYDRAULIC & POWERLINE	PB6553	ROD SEAL	96	Nos	Size : 8.500 x 9.125 x 0.580 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016		
586	HYDRAULIC & POWERLINE	PB6559	ROD SEAL	30	Nos	Size : 10.500 x 11.125 x 0.580 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016 Shore hardness: 80A Durometer.		
587	HYDRAULIC & POWERLINE	PB7323	ROD SEAL	274	Nos	Size : 6.500 x 7.125 x 0.580 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016 Shore hardness: 80A Durometer.		
588	HYDRAULIC & POWERLINE	VZ3178	ROD SEAL	274	Nos	Size : 2.000 x 2.500 x 0.417 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 90±5 Durometer. Tenzile Strength: 6000 PSI Min. Working Pressure: 3500 PSI Temp Range : -40° to +225°F Test Pressure : 5000 PSI No Leakage Allowed M/s.DISOGRIN Material : Urethane No. 9250		













**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
589	HYDRAULIC & POWERLINE	V24432	ROD SEAL	274	Nos	Size : 2.500 x3.000 x 0.417 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 90±5 Durometer. Tensile Strength: 6000 PSI Min. Working Pressure: 3500 PSI Temp Range : -40° to +225°F Test Pressure : 5000 PSI No Leakage Allowed M/s.DISOGRIN Material : Urethane No. 9250		
590	HYDRAULIC & POWERLINE	9535U91159	ROD SEAL	66	Nos	Size : 273.05 x298.45 x 20.95 Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016 Shore hardness: 80A Durometer.		
591	HYDRAULIC & POWERLINE	9595U91253	ROD SEAL	132	Nos	Size : 210x235x21 Material: Base Material: Polyurethane Elastomer (Iron Rubbber ) Back up Ring Material : Rareflon (PTFE Resin) Pressure Range : 0-70 Mpa Temperature Range : -35°C-100°C Speed Range : 0.3 ~ 1 m/s.		
592	HYDRAULIC & POWERLINE	9915U91168	ROD SEAL	30	Nos	Size : 12"x13" x 0.8" Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016 Shore hardness: 80A Durometer.		
593	HYDRAULIC & POWERLINE	992HC91105	ROD SEAL	16	Nos	Size : 5.5"x6.0" x 0.577" Material: Base Material: Lubrithane U-1003 E Black. Shore hardness: 95 Durometer. Lip Material : Carboxylated Nitrile C 7016 Shore hardness: 80A Durometer.		
594	HYDRAULIC & POWERLINE	9925U91214	ROD SEAL	16	Nos	Size : 10.5"x11.5" x 0.75" -Operating Pressure: up to 6,000 psi -Dual Lip Design -Integrated backup ring for security (high pressure) -Intermittent Pressure to 125% (7,500 psi) Material : Wear Resistant polyurethane Operating Temp Range : -40° to +250°F		
595	HYDRAULIC & POWERLINE	PB6808	ROD SEAL	116	Nos	Size : 3.75"x4.25" x 0.558" -Operating Pressure: up to 3500 psi -Operating Temp Range : -40° to +225°F -Test Pressure : 5000 psi (No Leakage Allowed) Material : Polyurethane Elastomer		
596	HYDRAULIC & POWERLINE	PB6809	ROD SEAL	116	Nos	Size : 5.25"x5.75" x 0.558" -Operating Pressure: up to 3500 psi -Operating Temp Range : -40° to +225°F -Test Pressure : 5000 psi (No Leakage Allowed) Material : Polyurethane Elastomer		
597	HYDRAULIC & POWERLINE	PB6810	ROD SEAL	116	Nos	Size : 6.75"x7.25" x 0.558" -Operating Pressure: up to 3500 psi -Operating Temp Range : -40° to +225°F -Test Pressure : 5000 psi (No Leakage Allowed) Material : Polyurethane Elastomer		
598	HYDRAULIC & POWERLINE	9915U91151	WIPER SEAL (12.000" x 13.255" x 0.501")	30	Nos	Spring Loaded U-Cup wiper Seal for Heavy duty Application of Reciprocating Hydraulic Cylinder and Suspension Application i) a) Seal Material b) Spring Material : Stainless Steel c) Lubrethane Rubber U-1004 E 55D Red. ii) SHORE D (HARDNESS) : 55 iii) Operating Temperature : -40 to +110 deg C iv) Operating Velocity : Upto 1 m/sec(3.2 ft/s). v) Operating Pressure Range : 0-400 bar (5 800 psi).		
599	HYDRAULIC & POWERLINE	992HC91113	WIPER SEAL (5.500" x 6.125" x 0.413")	16	Nos			
600	HYDRAULIC & POWERLINE	PB6560	WIPER SEAL (10.500" x 11.125" x 0.413")	30	Nos			
601	HYDRAULIC & POWERLINE	PB6554	WIPER SEAL (8.500" x 9.125" x 0.413")	96	Nos			
602	HYDRAULIC & POWERLINE	PB6548	WIPER SEAL (5.000" x 5.625" x 0.413")	14	Nos			
603	HYDRAULIC & POWERLINE	PB6438	WIPER SEAL (3.750" x 4.375" x 0.413")	274	Nos			
604	HYDRAULIC & POWERLINE	PB7320	WIPER SEAL (6.500" x 7.125" x 0.413")	274	Nos			













**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
605	HYDRAULIC & POWERLINE	9535U91167	WIPER SEAL	132	Nos	Size : 10.750" x 11.750" x 0.550" Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Operating Pressure Range : 0-400 bar (5 800 psi). Temperature Range : -30°C to +100°C Ring Material :NBR-A8501 Max Speed : 1 m/s.(3.2 ft/s).		
606	HYDRAULIC & POWERLINE	9925U91222	WIPER SEAL	16	Nos	Size : 10.500" x 11.250" x 0.688"(Groove) Base Material: NBR, PTFE SEAL LIP, BRONZE. BACK Up Ring Material: POM poly-acetal Shore hardness: 80 Durometer. Operating Pressure Range : 7500 psi. Material: Temperature Range : -40°F to +250°F		
607	HYDRAULIC & POWERLINE	1956392190	WIPER SEAL (d x D x t x h)(80 x 94 x 8 x 11)	10	Nos	Snap-in Wiper Seals for Reciprocal Movement for Heavy duty Application with Pressure Plate or Circlip Retaining.		
608	HYDRAULIC & POWERLINE	1446392170	WIPER SEAL (d x D x t x h)(65 x 79 x 8 x 11)	148	Nos	i) a) Seal Material : Iron Rubber (U801) or Polyurethane Shore 90A, b) Retaining Ring Material : Steel ii) Operating Temperature : - 25 to +110 deg C Velocity : Upto 1 m/Sec iii) Operating		
609	HYDRAULIC & POWERLINE	VA3214	WIPER SEAL (3.750" x 4.115" x 0.122")	116	Nos	Material : DISOGRIN 9250 URETHANE . polyurethane, TODI base. Max Working Pressure : 6000 PSI ( 421 Kg/cm <sup>2</sup> ) 300°F (148.8 °C) Max Speed : 4 ft/s (1.21 m/s) Shore Hardness : 92 Durometer. Premium Max Working Temp :		
610	HYDRAULIC & POWERLINE	VA3215	WIPER SEAL (5.250" x 5.678" x 0.138")	116	Nos	Material : DISOGRIN 9250 URETHANE . polyurethane, TODI base. Max Working Pressure : 6000 PSI ( 421 Kg/cm <sup>2</sup> ) 300°F (148.8 °C) Max Speed : 4 ft/s (1.21 m/s) Shore Hardness : 92 Durometer. Specific Gravity : 1.17		
611	HYDRAULIC & POWERLINE	VA3216	WIPER SEAL (6.150" x 7.240" x 0.154")	116	Nos	Material : DISOGRIN 9250 URETHANE . polyurethane, TODI base. Max Working Pressure : 6000 PSI ( 421 Kg/cm <sup>2</sup> ) 300°F (148.8 °C) Max Speed : 4 ft/s (1.21 m/s) Shore Hardness : 92 Durometer. Specific Gravity : 1.17		
612	HYDRAULIC & POWERLINE	VZ3177	WIPER SEAL (2.000" x 2.500" x 0.250")	274	Nos	Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Operating Pressure Range : 6000 psi. Max Speed : 1 m/s.(3.2 ft/s).		
613	HYDRAULIC & POWERLINE	VZ4044	WIPER SEAL (2.500" x 3.000" x 0.330")	14	Nos	Material: Base Material: Lubrithane U-1003 E Red. Shore hardness: 95 Durometer. Operating Pressure Range : 6000 psi. Max Speed : 1 m/s.(3.2 ft/s). Temperature Range : -40°F to +225°F		
614	HYDRAULIC & POWERLINE	9535U91207	Buffer Seal (10.750" x 11.560" x 0.320")	132	Nos	Buffer seal with nitrile rubber O-ring energizer, PTFE/Nylon slide ring		
615	HYDRAULIC & POWERLINE	PB6436	Buffer Ring (3.719" x 4.375" x 0.247")	274	Nos	Buffer seal with nitrile rubber O-ring energizer, PTFE/Nylon slide ring		
616	HYDRAULIC & POWERLINE	PB6546	Buffer Ring (5.000" x 5.625" x 0.247")	14	Nos	i) a) Seal (Energiser) Material : Nitrile Rubber, b) Slide Ring Material : Oil filled Nylon (P-2505) ii) SHORE A (HARDNESS) : 70		
617	HYDRAULIC & POWERLINE	PB6558	Buffer Ring (10.500" x 11.125 x 0.247)	30	Nos	iii) Operating Temperature : - 25 to +110 deg C iv) Operating Pressure : Upto 500 Bar. v) Operating Velocity : Upto 2 m/sec		
618	HYDRAULIC & POWERLINE	PB7321	Buffer Seal (6.500" x 7.125" x 0.247")	274	Nos	Buffer seal with nitrile rubber O-ring energizer, PTFE/Nylon slide ring		
619	HYDRAULIC & POWERLINE	9925U91206	Buffer Ring (10.500" x 11.330" x 0.571")	16	Nos	Material: Base Material: NBR, PTFE SEAL LIP, BRONZE. BACK Up Ring Material: POM poly-acetal Shore hardness: 80 Durometer. Operating Pressure Range : 7500 psi. Temperature Range : -40°F to +250°F		
620	HYDRAULIC & POWERLINE	992HC91098	Buffer Ring (5.500" x 6.125" x 0.247")	16	Nos	Buffer seal with polyurethane sealing ring, integrated polyacetal or polyamide antiextrusion ring;		
621	HYDRAULIC & POWERLINE	9915U91176	Buffer Ring (12.000" x 12.750" x 0.320")	30	Nos	i) a) Seal Material : Lubrithane Rubber, b) Slide Ring/Anti-extrusion Ring Material : Polyamide or Polyacetal ii) SHORE A (HARDNESS) : 93. iii) Operating Temperature : - 25 to +110 deg C iv) Operating Pressure : Upto 600 Bar. v) Operating Velocity : Upto 1 m/sec		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**





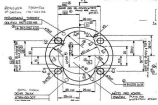
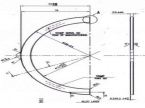
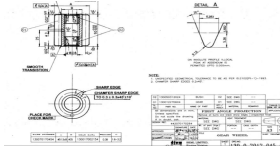
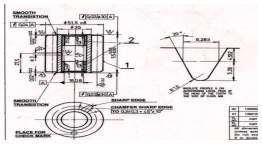
Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
622	ENGINE	6150711620	BUSHING	130	Nos	Bushing (Tacho Drive) for Heavy Duty Diesel Engines (125 bore dia) Material: JIS SBK1218 OD= 17 mm ID= 7.9 mm		
623	ENGINE	6211312130	PISTON	550	Nos	Piston for Heavy Duty Diesel Engines (140 bore dia) Material: Spheroidal Graphite (ES1130) Hardness:248~321 HB Tensile Strength = 75 kg/mm <sup>2</sup> min. Yield Strength = 45 kg/mm <sup>2</sup> min. Elongation = 4%min.		
624	ENGINE	6631214371	BUSHING	140	Nos	Bushing used on heavy duty diesel engines (105 bore dia) Material : 1) BACKING JIS SPCE-S BEARING ALLOY LBC6 Thickness : 3.5 mm Dia : 107 mm ; 2)		
625	ENGINE	6136218050	THRUST BEARING	36	Nos	Thrust bearing used on heavy duty diesel engines (105 bore dia) Material: Back Metal - SPCC (KES 06.164.17) ; Bearing Alloy - KLBC6B Inner Dia - 95 mm ; Outer Dia - 116 mm ; Thickness(T) - 2.5 mm		
626	ENGINE	6150218050	THRUST BEARING	204	Nos	Thrust bearing used on heavy duty diesel engines (125 bore dia) Material: Back Metal - SPCC (KES 06.164.17) ; Bearing Alloy - KLBC6B Inner Dia - 122 mm ; Outer Dia - 139 mm ; Thickness(T) - 4 mm		
627	ENGINE	6162238050	THRUST BEARING	254	Nos	Thrust bearing used on heavy duty diesel engines (170 bore dia) Material: Back Metal - SAE 1017 (KES 06.164.17) ; Bearing Alloy - KLBC6B Inner Dia - 153 mm ; Outer Dia - 175 mm ; Thickness(T) - 4 mm		
628	ENGINE	6210218050	THRUST BEARING	92	Nos	Thrust bearing used on heavy duty diesel engines (140 bore dia) Material: Back Metal - SAE 1010 (KES 06.164.17) ; Bearing Alloy - KLBC6B Inner Dia - 132.7 mm ; Outer Dia -150.5 mm ; Thickness(T) - 4 mm		
629	ENGINE	6212312170	PISTON	67	Nos	Piston for Heavy Duty Diesel Engines (140 bore dia) Material: Spheroidal Graphite (ES1130) Hardness:248~321 HB Tensile Strength = 75 kg/mm <sup>2</sup> min. Yield Strength = 45 kg/mm <sup>2</sup> min. Elongation = 4%min.		
630	ENGINE	DK1566052320	FLEX PLATE ASSY.	259	Nos	MATERIAL-M09C01,OD-94mm,ID-44mm , 4 Nos HOLE (OD-18,ID-8)		
631	ENGINE	DK1566054320	FLEX PLATE ASSY.	47	Nos	ID = 44mm, OD = 93.8mm, Thickness=0.5mm X 6 plates, Holes : PCD-72mm X 8.3mm holes -4 No's. Material : Spring steel,		
632	ENGINE	DK1566055320	FLEX PLATE ASSY.	566	Nos	ID = 52 mm, OD = 110 mm, Thickness =0.5mm X 4 plates, Holes : PCD-85 mm X 10.2 mm holes -4 No's. Material : Spring steel,		
633	ENGINE	0924600110	FLEX PLATE ASSY.	6	Nos	Heavy Duty Diesel Engines (140 Dia) outer Diameter :ø128mm Inner Diameter ø65mm material : IS:2507(1992) GRADE S(75C6)		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

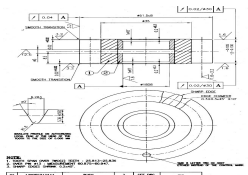
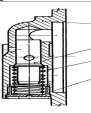




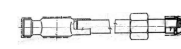
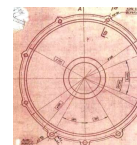

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
634	ENGINE	6162234231	SEAL,REAR	77	Nos	USED IN FLYWHEEL HOUSING FOR HEAVY DUTY DIESEL ENGINES(170 BORE DIA) FOR SHAFT -DIMENSION TOLRENCE : Ø170±0.010,MATERIAL FINISH: SECM 3H 1-25 HRC-45-50 FOR HOUSING- DIMENSION TOLRENCE :Ø230H7±0.046 MATERIAL FINISH: FC125 ,SEALING MEDIA TYPE :CD/SE 10 W-30		
635	ENGINE	6136424410	SPRING,VALVE	1553	Nos	USED IN CYLINDER HEAD FOR HEAVY DUTY DIESEL ENGINES(105 BORE DIA) MATRIAL -SWOSC-V, BAR DIAMETER - Ø43, MEAN COIL DIAMETER - Ø292 , FREE HEIGHT -63.6mm		
636	ENGINE	6162434420	SPRING,VALVE,INNER	7904	Nos	USED IN CYLINDER HEAD FOR HEAVY DUTY DIESEL ENGINES(170 BORE DIA) MATRIAL -SWOSC-V, BAR DIAMETER - Ø40 , MEAN COIL DIAMETER - Ø30.6±0.3 , FREE HEIGHT -59.3mm		
637	ENGINE	6162434440	SPRING,VALVE OUTER	7828	Nos	USED IN CYLINDER HEAD FOR HEAVY DUTY DIESEL ENGINES(170 BORE DIA) MATRIAL -SWOSC-V, BAR DIAMETER - Ø55±0.03, MEAN COIL DIAMETER - Ø42.1 , FREE HEIGHT -65.6mm		
638	ENGINE	6162133720	NOZZLE,FUEL INJECTION	58	Nos	USED IN Fuel Injector FOR HEAVY DUTY DIESEL ENGINES(170 BORE DIA) NO OF HOLES- 8 HOLE DIA-Ø0.34 TEST METHOD - KES 06.167.61 ,SACK VOLUME- 3.66MM³ ,SEAT PASS AREA RATIO -1.39		
639	ENGINE	7861914210	SENSOR OIL LEVEL	14	Nos	oil level sensor for heavy duty diesel engine; Switch-float type; principle- lead switch; voltage drop of switch- 0.05 v max at 0.3A rated current; insulation resistance-1MΩ min at DC 200 v ; applicable liquid- water and oil		
640	ENGINE	5122180666	PR SWITCH	334	Nos	pressure sensor for heavy duty diesel engine . current capacity : 3 AMPS max 24 Volts DC ; Actuating pressure- ON at 1.3 kg/cm² ; OFF at 0.7 kg/cm² ; Applicable fluid-oil .		
641	ENGINE	6127713231	BUSHING,TACHO DRIVE	216	Nos	Bushing Tach drive for heavy duty diesel engine (170 bore dia); mareaial- JIS SBK 1218 ; Mass- 0.55 kg ; external dia- Ø21 ; internal dia-Ø7.8.		
642	ENGINE	6212616121	CORE	8	Nos	After cooler core for heavy duty diesel engine (140 bore dia) ; Mass-18.1 kg ; Fin material-JIS C1221R ; Plate material-JIS C1020P ; Core type - Fin pitch 3/2P ; total radiation area air side- 5.73 m² ; Fin (calculated on one surface)- 5.73m² ( 5 fins),Plate calculated on one surface-0.85 m² (10 fins),Water passage sectional area -15.2cm² , Water capcity-1.3 Lit.		
643	ENGINE	6162133701	NOZZLE ASSY	154	Nos	Heavy Duty Diesel Engines (170 bore dia) Nozzle Characteristics: Opening pressure on delivery 270-278 kgf/cm2 nomial 265kgf/cm2 pressure spring constant 27kgf/mm Spray Cone Angle 160° Nozzle Hole Diameter 0.34mmx8		
644	ENGINE	6212113101	INJECTOR ASSY	9	Nos	Heavy Duty Diesel Engines (140 bore dia) for this Application current part no.4127182169 by m/s bosch( DWG NO.E083379700) Nozzle Opening Pressure:250 Bar (Minimum)		
645	ENGINE	6162636112	CORE ASSY.	33	Nos	Heavy Duty Diesel Engines (170 bore dia) Core Type: side layer Fin pitch : 3 mm Pitch , Water capacity : 0.7 Liter Total Radiation Area 3.28m² weight : 11kg Operating pressure 2.7kg/cm² Fin material :C1221R		



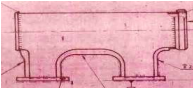
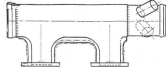
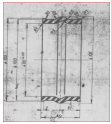
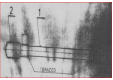
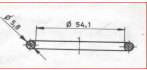

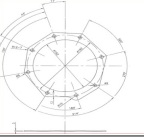
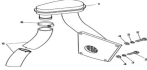

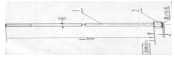
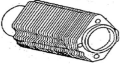
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
646	ENGINE	5128100623	TURBOCHARGER (S1120)	98	Nos	Heavy Duty Diesel Engines (170 bore dia) Exhaust Gas Inlet Diameter: Ø138.9±0.7 Exhaust Gas Outlet Diameter: Ø101.5 Air Inlet Diameter: Ø140.7±0.1 Air Outlet Diameter: Ø95		
647	ENGINE	5127185551	FUEL CUT-OFF VALVE ASSY	630	Nos	STOP VALVE WITH DEUTCH MALE CONNECTOR-DT042P RUN-STOP VALVE G4-24V		
648	ENGINE	5129901579	HNZ EG KIT ( BD155/BD355 )	65	Nos	Heavy Duty Diesel Engines (170 SERIES BD155/355) this EG kit is Consist of following component: 1.Electronic Governor (5129901457) 2.DCU ( 5129901538) 3.Adapter KIT (5129901465) 4.speed sensor (5129901473) 5.Potentiometer (5129901546) 6.Temp Sensor (oil/coolant) (5129901498) 7.Boost Pressure Sensor(5129901513) 8.Foot pedal (5129901521) 9.Panoptes mobile DGP-4.3" (5129901554) 10.engine harness (5128281124) 11.Vehicle harness (5128281149) 12.Oil pressure Sensor (5129901481)		
649	ENGINE	5229900458	HNZ EG KIT (BE1000)	18	Nos	Heavy Duty Diesel Engines (170 Series BE1000) this EG kit is Consist of following component: 1.Electronic Governor (5129901457) 2.DCU ( 5129901538) 3.Adapter KIT (5129901465) 4.speed sensor (5129901473) 5.Potentiometer (5129901546) 6.Temp Sensor (oil/coolant) (5129901498) 7.Boost Pressure Sensor(5129901513) 8.Foot pedal (5129901521) 9.Panoptes mobile DGP-4.3" (5129901554) 10.engine harness (5128281124) 11.Vehicle harness (5128281157) 12.Oil pressure Sensor (5129901481)		
650	ENGINE	130010660094	PUMP BODY I	25	Nos	Pump Body used on TATRA Engine Type :- Air Cooled Material: FG200 , IS:6331 Allowable Tensile Strength:170 Mpa Hardness : 170~220 HB		
651	ENGINE	323141371000	UPPER THRUST BEARING-6037-06/00 (111 141 371 000)	25	Nos	Pump Body used on TATRA Engine Type :- Air Cooled Material of Steel Back : SAE 1010 Alloy Layer: SAE48 SINTERED ON TO STEEL BACK SPEC: OD=154 mm ID=131 mm Thickness=3 mm		
652	ENGINE	2070170454	PUMP GEAR WHEEL	25	Nos	Pump Gear Wheel used on TATRA Engine (130070170454) Type :- Air Cooled Consists of Gear (130012270604)-MATERIAL-42Cr <sub>4</sub> Mo <sub>2</sub> IS:5517 ,OD=51.5c8 mm, ID=22H7mm Bush (130050312024) MATERIAL-Sn-7.0°9.0 , P-0.02~0.3 , Pb-0.05 , Cu=Balance UTS=540MPa , Hardness=160~190 BHN , Elongation=8% OD=22r7 ID=18D8		
653	ENGINE	2070170444	PUMP GEAR WHEEL	25	Nos	Pump Gear Wheel used on TATRA Engine (130070170444) Type :- Air Cooled MATERIAL-42Cr <sub>4</sub> Mo <sub>2</sub> IS:5517-(LATEST YEAR) UTS=800~950 MPa Consists of Bush (130050312024) and Gear W/O Teeth (130012270594)		

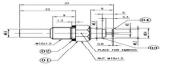


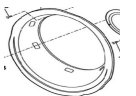
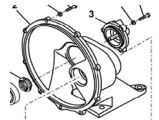
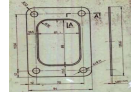

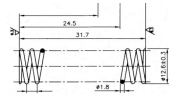




**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
654	ENGINE	2070170434	PUMP GEAR WHEEL	25	Nos	Pump Gear Wheel used on TATRA Engine (130070170444) Type :- Air Cooled P.C.D=38.5 Module=5.5 No of Teeth=7 Pressure angle=20 Helix angle=0 Shift Coeff=0.2735 Root Dia=29.4-0.6 Base Dia =18.089/36.178 Face Width=17 Consists of Bush (130050312414) MATERIAL-CuSn8 -HARD AS PER CSN 42.3018.3. OD=22r7 ID=18D8 Gear W/O Teeth (130012260094)MATERIAL-42Cr4Mo2 IS:5517-(LATEST YEAR) UTS=800-950 MPa		
655	ENGINE	442070480284	PUMP COVER	25	Nos	Pump Body used on TATRA Engine Type :- Air Cooled Parts are: 1. Lubrication Pump Cover (130010730354) 2. Plunger (130053460334) 3. Spring (130050512404) 4. Safety Valve Plug (130051361374)		
656	ENGINE	2012270634	DRIVE GEAR WHEEL	25	Nos	MATERIAL : FORGING TO SPECIFICATION 40C4Mo2 - IS:5517, TEETH TIP OD = $\phi$ 51.5c8, WIDTH = 50 mm, WEIGHT : 0.35 kg		
657	ENGINE	2012270624	PUMP GEAR WHEEL	25	Nos	MATERIAL : FORGING TO SPECIFICATION 40C4Mo2 - IS:5517, TEETH TIP OD = $\phi$ 51.5c8, WIDTH = 55 mm, WEIGHT : 0.38kg		
658	ENGINE	2012270614	PUMP GEAR WHEEL	25	Nos	MATERIAL : FORGING TO SPECIFICATION 42C4Mo2 - IS:5517, TEETH TIP OD = $\phi$ 51.5c8, WIDTH = 17 mm, WEIGHT : 0.15 kg		
659	ENGINE	443612223000	CLUTCH BOOSTER KNORR VG 3284	25	Nos	ASSEMBLY OF 45 SUB-PARTS, COMPRESSED AIR 12.5 BAR, MAX PRESSURES : BRAKE FLUID 120 BAR & WEIGHT : 2.8 kg		
660	ENGINE	442076632424	OIL SUPPLY TUBE	25	Nos	ASSEMBLY OF 4 SUB-PARTS, WEIGHT : 0.204 kg TUBE : OD $\phi$ 8 x 1mm WALL THICKNESS,		
661	ENGINE	130010800034	HOUSING COVER	25	Nos	MATERIAL : CSN 42 4331.01, MFG PROCESS : ALUMINIUM OUTER DIA : $\phi$ 225 CSN 42 1430.13, CSN 42 4331.71 GRAVITY DIE CASTING,		
662	ENGINE	442073420094	CONNECTION	25	Nos	ASSEMBLY OF 5 SUB-PARTS, WEIGHT : 0.3 kg MFG PROCESS : BRAZING,		






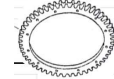

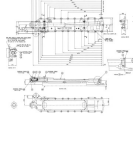

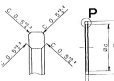
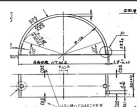
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
663	ENGINE	442070332084	INTAKE MANIFOLD FRONT	25	Nos	ASSEMBLY OF 4 SUB-PARTS, MFG PROCESS : WELDING		
664	ENGINE	442070332054	INTAKE MANIFOLD REAR	25	Nos	ASSEMBLY OF 7 SUB-PARTS, : 2.45 kg, LENGTH : 386 mm, MFG PROCESS : WELDING WEIGHT		
665	ENGINE	442054390034	INTAKE LINE RUBBER HOSE	25	Nos	Material: Rubber Mixture 1456 OD:ø103 mm ID: ø90 mm		
666	ENGINE	442076631144	FUEL SUPPLY TUBE	25	Nos	Assembly: 3 components Weight :0.162 Kg Material :CSN137972.02 1.Tube 2.Connector 3.Pipe Adaptor		
667	ENGINE	442054171764	O RING (SEALING RING)	25	Nos	Material: EEE 6233-2 Weight:0.007 kg ID:ø54.1 mm		
668	ENGINE	442054032844	LOWER COVER GASKET	25	Nos	width:1132 mm height: 344 mm weight :0.05 kg Material:		
669	ENGINE	442054032734	GASKET 3mm	25	Nos	Material: vulcanized rubber PCD:ø192 mm ID:ø162 mm		
670	ENGINE	130076631274	DEARATION SYSTEM	25	Nos	COMPLETE DE AERATION CONTAINING 12 PARTS WEIGHT: 1.96KG		
671	ENGINE	442070211284	SUCTION TUBE (VVNV)	25	Nos	SUCTION TUBE ASSEMBLY CONTAINING 4 PARTS		
672	ENGINE	442079940074	BOLT	25	Nos	CONTAINING TWO PARTS MATERIAL : CSN 41 4331.9, CSN 4 1523.0 NUT:M10 SCREW:M8		
673	ENGINE	442010010254	CYLINDER	25	Nos	MATERIAL : CSN 42 046312 INNER DIA : 124mm OUTER DIA : 149mm LENGTH : 260mm		

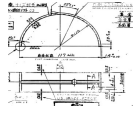
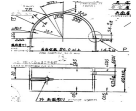
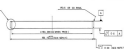
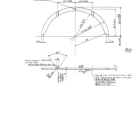
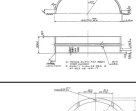
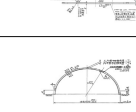
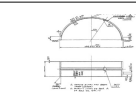
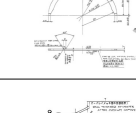
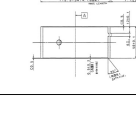

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
674	ENGINE	443429108989	SENSOR(380 060 360 010)	25	Nos	MATERIAL: NYLON 66, FREE CUTTING BRASS, BRASS OUTER DIA : 8.4mm                      LENGTH : 6.3mm  INNER DIA : 124mm WEIGHT: 160g		
675	ENGINE	130010680064	GUIDE WHEEL	25	Nos	WEIGHT; 3.10 Kgs , MATERIAL; CSN-42.4331.01 (ALLUMINIUM CASTING ALLOYS), DIMENSION; BLADE DIA. Ø370.09 mm, IMPELLER INNER DIA. Ø210 mm, IMPELLER OUTER DIA. Ø240.		
676	ENGINE	442070720454	BLADE WHEEL ASSY.	25	Nos	ASSEMBLY 3 COMPONENTS; 1. BLADE WHEEL JACKET 2. BLADE WHEEL HUB C/W BLADES 3. GASKET , TOTAL WEIGHT; 9.4 Kgs MATERIAL; FOR BLADE WHEEL JACKET- CSN-42.4331.01 (ALLUMINIUM CASTING ALLOYS), FOR BLADE WHEEL HUB- SAME MATERIAL AND FOR GASKET- HEAT RESISTANT NEOPRINE RUBBER		
677	ENGINE	442070600124	AIR DUCT	25	Nos	ASSEMBLY 3 COMPONENTS; 1. AIR DUCT 2. HOLDER 3. STAY, WEIGHT; N/A , DIMENSION; DIAMETER Ø430 ±0.5, MATERIAL; IS:513-86, Gr.DD FOR ALL COMPONENTS		
678	ENGINE	130028961804	FAN HOUSING BRACKET	25	Nos	WEIGHT; N/A, DIMENSION; TOTAL DIA. Ø225 , 6 THRU HOLES PITCH CIRCLE DIA. Ø220 mm AND 3 THREADED HOLES PITCH DIA. Ø230, MATERIALS; CSN-42 2420, CSN 1241.00		
679	ENGINE	442054280054	GASKET 2 MM (TURBINE)	25	Nos	ASSEMBLY COMPONENTS: 1. DUCTILE SHEET (MATERIAL; CSN 425 365), 2. INSERT JERIT É' (MATERIAL; CSN 029021), 3. COVERING PLATE (MATERIAL; CSN 42 5365). TOTAL WEIGHT; 0.05 Kgs, DIMENSION; TOTAL LENTGH; 136.6 mm AND BREADTH; 94 mm, THICKNESS; 1.85 ± 0.15		
680	ENGINE	130035210484	REAR SHEET RH	25	Nos	DIMENSION- TOTAL LENGTH; 199 mm, BEND RADIUS; 80 mm, WEIGHT; 0.11 Kgs , MATERIALS; GR3, IS:513		
681	ENGINE	130050512154	SPRING	25	Nos	DIMENSION- SPRING WIRE DIA; Ø1.8 mm, NO. OF ACTIVE TURNS; 9, TOTAL NO. OF TURNS; 11 mm, TOTAL LENGTH; 31.7 mm, WEIGHT; 0.08 Kgs, MATERIAL; Gr-DM, IS:4454 (PT-1)		
682	ENGINE	130050780284	SPACER INSERT	25	Nos	MATERIAL: CSN 41 1109.0, CSN426510 OD: ø9H11 MM                      LENGTH: 7 MM  WEIGHT: 0.018KG		
683	ENGINE	443930131570	VENTILATOR FAN	25	Nos	MATERIAL: CSN 426312 32      WEIGHT: 0.65KG                      DIAMETER: ø190±0.3 MM THICKNESS: 1.6 MM		
684	ENGINE	130050953684	SPACER WASHER	25	Nos	MATERIAL: CSN 41 331.21, CSN 42 6312.22 ID: ø57 MM THICKNESS: 1 MM  WEIGHT: 0.010KG		
685	ENGINE	443936214310	PINION LUBRICATING FELT	25	Nos	MATERIAL: F33, GRADE A WIDTH: 8 MM  THICKNESS: 1 MM		

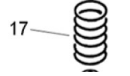
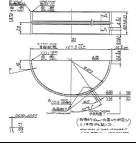
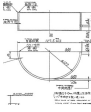
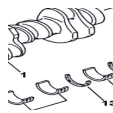

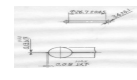
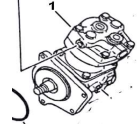

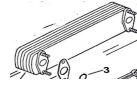
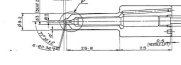
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
686	ENGINE	442071080484	CLUTCH SHAFT	25	Nos	ASSEMBLY: 3 PARTS WEIGHT: 6.5KG WIDTH:159.5+0.1 MM		
687	ENGINE	442070210984	INTAKE PIPE ADOPTER	25	Nos	ASSEMBLY: 2 PARTS WEIGHT: 0.22KG WIDTH:10-1 MM		
688	ENGINE	442053111114	HOSE 22/30-265	25	Nos	MATERIAL: NITRILE RUBBER LENGTH: 265±2 MM COLOUR: BLACK ID: ϕ22 MM		
689	ENGINE	6001816820	ELEMENT ASSY OUTER	10	Nos	Heavy Duty Diesel Engines (105 Dia) Effective Filtration Area:6.8 m <sup>2</sup> (38.1WIDTH x439.1 HEIGHT x208 PLEATS Total length 442.15mm		
690	ENGINE	6002111930	SENSOR OIL FILTER	231	Nos	ALARM ASSY FOR HEAVY DUTY DIESEL ENGINES(170 BORE DIA.) INSULATION RESISTANCE: 1Mohm WORKING DIFFERENTIAL PR.: 1.5(0 TO +0.4 kg/cm2, WITHSTAND PR.: 20kg/cm2		
691	ENGINE	6130321321	GEAR RING	77	Nos	GEAR FOR HEAVY DUTY DIESEL ENGINES(105 BORE DIA.) MATERIAL: C1101 NUMBER OF TEETH: 126, ID: 370+0.1mm, THICKNESS: 16+0.2mm		
692	ENGINE	6136611130	RING,SNAP	60	Nos	RING (SNAP) FOR HEAVY DUTY DIESEL ENGINES(140 BORE DIA.) MATERIAL: JIS SWRH62A, PART IDENTICAL TO KES 04071-00150, RUST PREVENTION TREATMENT: KP-9 COATING OUTER DIA.: 157.5(0 TO + .25) mm, THICKNESS: 4(-0.05 TO 0)mm		
693	ENGINE	6136612104	OIL COLLER ASSY	1602	Nos	OIL COOLER ASSY FOR HEAVY DUTY DIESEL ENGINES(105 BORE DIA.) TYPE: WATER COOLED COOLER ELEMENT: RADIATION AREA-0.253m <sup>2</sup> , CAPACITY-0.22L MAX. PITCH LENGTH: 661mm, MAX PITCH WIDTH: 119mm MATERIAL: COVER BODY-JISADC12, PLUG-SS41B-D, VALVE O.C.-S45C-D, GASKET-GA-1C, PLUG O.C.- SS41B-D, CASE VALVE-ADC10 OR ADC12, PLUG-S43C OR Eq., WASHER- SH/SPH/SPCCT Eq. OR SUPERIOR, WASHER-JIS SWRH62/67/72 Eq. OR SUPERIOR, NUT-S43C Eq. OR SUPERIOR, O RING- SR-1, O RING- ES 2316, O RING- NBR-1A		
694	ENGINE	6136612281	GASKET	7	Nos	GASKET FOR HEAVY DUTY DIESEL ENGINE MATERIAL: GAF-1A ID:36mm, PITCH: 54mm		
695	ENGINE	6150111930	GROMMET,OIL	70	Nos	GROMMET FOR HEAVY DUTY DIESEL ENGINES(125 BORE DIA.) MATERIAL: AS PER ES 2332, ID: 13mm, OD: 18mm, THICKNESS: 2.8+0.1mm		
696	ENGINE	6150288010	BEARING,MAIN,US 0.50 1 PA	1	Nos	Same for both Upper & Lower Bearing Outer Dia : 116 mm, Radial Thickness :3.25 mm, Width : 34 mm Specifications of Trimetal Surface layer : Plating of Tin, Lead & Copper alloy P8 , thickness 0.02 Alloy layer: Material as per KCI 4A of KES 07.472.2, Back metal: Material as per SPCC1		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative Sl No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
697	ENGINE	6150298010	BEARING,MAIN,US 0.25,1 PA	154	Nos	Same for both Upper & Lower Bearing Outer Dia : 116 mm, Radial Thickness : 3.125 mm, Width : 34 mm Specifications of Trimetal Surface layer : Plating of Tin, Lead & Copper alloy P8 , thickness 0.02 Alloy layer: Material as per KJ 4A of KES 07.472.2, Back metal: Material as per SPCC1		
698	ENGINE	6150383040	BEARING,CRANKPIN,US 0.50,	511	Nos	Same for both Upper & Lower Bearing Outer Dia : 86 mm (min), Radial Thickness : 2.75 mm, Width : 40 mm Specifications of Trimetal Surface layer : Plating of Tin, Lead & Copper alloy P8 , thickness 0.02 Alloy layer: Material as per KJ 4A of KES 07.472.2, Back metal: Material as per SPCC1		
699	ENGINE	6162232250	CREVICE SEAL	24	Nos	Inner Dia : 180 mm, Outer Dia : 193.15 mm, Width : 13.2 mm Material : ES2320 or ES2340		
700	ENGINE	6162268050	BEARING,THRUST,US1.00 1 S	84	Nos	Inner Dia : 153 mm, Outer Dia : 175 mm, Width : 4.5 mm Material : Back metal : SAE 1017, Bearing Alloy : KLBC 6 3		
701	ENGINE	6162278010	BEARING,MAIN,ONE PAIR U/50.75MM	868	Nos	Same for both Upper & Lower Bearing Outer Dia : 148.525 mm (min), Radial Thickness : 4.375 mm, Width : 50 mm, Back metal Thickness : 3.75 ~ 4.05 Material : Bearing Alloy : KJ 4B of KES 07.472.2, Overlay : ES 1405, Back metal : SAE 1017		
702	ENGINE	6162278050	BEARING,THRUST,US0.75 1 S	70	Nos	Inner Dia : 153 mm, Outer Dia : 175 mm, Width : 4.375 mm, Back metal Thickness : 3.83 ~ 4.03 Material : Back metal : SAE 1017, Bearing Alloy : KLBC 6 3		
703	ENGINE	6162288010	BEARING,MAIN,ONE PAIR U/S 0.50MM	2	Nos	Same for both Upper & Lower Bearing Outer Dia : 148.525 mm (min), Radial Thickness : 4.25 mm, Width : 50 mm, Back metal Thickness : 3.5 ~ 3.8 Material : Bearing Alloy : KJ 4B of KES 07.472.2, Overlay : ES 1405, Back metal : SAE 1017		
704	ENGINE	6162298010	BEARING,MAIN,ONE PAIR U/S 0.25MM	5	Nos	Same for both Upper & Lower Bearing Outer Dia : 148.525 mm (min), Radial Thickness : 4.125 mm, Width : 50 mm, Back metal Thickness : 3.5 ~ 3.8 Material : Bearing Alloy : KJ 4B of KES 07.472.2, Overlay : ES 1405, Back metal : SAE 1017		
705	ENGINE	6162298050	BEARING,THRUST,US 0.25 1	15	Nos	BEARING STD PART NO-5123180351(6162-29-8210) MATERIAL:BACK METAL SAE1017, BEARING ALLOY KLBC6B THICKNESS:4.125 OD-Ø175, ID- Ø153		
706	ENGINE	6162383041	BEARING,CR PIN 1 PAIR,US 0.50MM	54	Nos	STD PART NO-5123100606 (6162-38-3420) DIA-Ø115.013, WIDTH-58±0.1 RADIAL THICKNESS-3.75 FLASH PLATING-Sn, OVERLAY-P9 ALLOY LAYER-LS17, BACK METAL-ES1424		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative Sl No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
707	ENGINE	6162434410	VALVE SPRING	5	Nos	PART CLOSED, EXISTING PART NO-522110036(6162-43-4440) L-65.6, Ø42.1, WIRE DIA-Ø5.5±0.03, NO OF COILS-6.5		
708	ENGINE	6210218010	MEATL ASSY	3	Nos	STD PART NO-4123180111 (6210-21-8110) FLASH PLATING-ES1405, OVERLAY-ES1405 ALLOY LAYER-KK4B, NICKEL, BACK METAL-SAE1010 WIDTH-40±0.13, DIA-Ø127, RADIAL THICKNESS-3.5		
709	ENGINE	6210268050	THRUST BEARING 1.00	2	Nos	STD PART NO-4123180614 (6210-26-8120) FLASH PLATING-ES1405, OVERLAY-ES1405 ALLOY LAYER-KLB6CB, NICKEL, BACK METAL-SAE1010 DIA-OD-Ø150.5, ID-Ø132.7, RADIAL THICKNESS-4.5		
710	ENGINE	6210278050	BEARING, THRUST, U/S 0.75	17	Nos	STD PART NO-4123180606 (6210-27-8210) FLASH PLATING-ES1405, OVERLAY-ES1405 ALLOY LAYER-KLB6CB, BACK METAL-SAE1010 OD-Ø150.5, ID-Ø132.7 RADIAL THICKNESS-4.375		
711	ENGINE	6210288050	THRUST BEARING 0.5	170	Nos	Thickness : 4.250(-0.07, -0.12), Thickness of the back metal: 3.68±0.10, Thickness of oil groove : 3.63 ± 0.15 Material : Back strip-SAE1010, Bearing alloy - KLB6CB, F250		
712	ENGINE	6210612550	O RING	5	Nos	material- SR-1, ID-26.7±0.45, OD-30.1		
713	ENGINE	6210813122	AIR COMPRESSOR	23	Nos	stroke- 85x60, 340 cc/rev at 2300 rpm		
714	ENGINE	6210815120	SPACER	25	Nos	material- FC 25 or S541P		
715	ENGINE	6211612111	ELEMENT	25	Nos	surface treatment- C6001-10, length- 340±0.3, width- 100		
716	ENGINE	6212113120	NOZZLE	25	Nos	spray angle- 155°, suction volume- 1.5 mm3, lift - 0.5mm, Nozzle hole div- 0.36x6, seat dia- 3, separation- 60°±3°		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

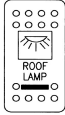


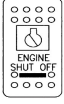
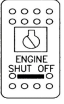
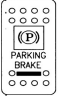
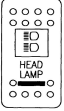
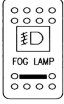
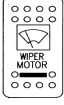
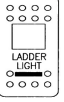
Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
717	ENGINE	6212161440	VALVE GUIDE	25	Nos	Material: <b>Tarcaloyte</b> , Tensile Strength : 25.5 kg/mm <sup>2</sup> Hardness HRB90°-103, ID=9.5+0.1, OD = 16 mm, Length = 72.5m, Hardness : 90°- 103 BHN		
718	ENGINE	6212612111	ELEMENT,OIL COOLER	25	Nos	surface treatment- C6001-10, length- 340±0.3, width- 100		
719	ENGINE	6212652610	THERMOVALVE	25	Nos	max operating temp- 135°C, valve opening temp- 85°C, valve opening inspection- 85±1.5°C, operating fuel- engine oil		
720	TRUCK	452EG87333	PRESSURE SENDER (0-400 PSI)	143	Nos	Pressure Range: 0-400 PSI Pressure Type: Gauge Pressure Medium: Oil Output Type: Current Output Output Range: 4-20mA Operating Voltage: 10-32 Volt Temperature Range: -40 to 125 deg C Pressure Port: 1/8 inch NPT		
721	TRUCK	958EG81829	PRESSURE SENDER (60 BAR)	137	Nos	Pressure Range: 0-60 bar Pressure Type: Gauge Pressure Medium: Oil Output Type: Current Output Output Range: 4-20mA Operating Voltage: 10-32 Volt Temperature Range: -40 to 125 deg C Pressure Port: 1/8 inch NPT		
722	TRUCK	985EG86913	PRESSURE SENSOR (0-150BAR)	188	Nos	Pressure Range: 0-150 bar Pressure Type: Gauge Pressure Medium: Oil Output Type: Current Output Output Range: 4-20mA Operating Voltage: 10-32 Volt Temperature Range: -40 to 125 deg C Pressure Port: M14 X1.5		
723	TRUCK	991EG82105	SENSOR (PRESSURE)	60	Nos	Pressure Range: 0-250 bar Pressure Type: Gauge Pressure Medium: Oil Output Type: Current Output Output Range: 4-20mA Operating Voltage: 10-32 Volt Temperature Range: -40 to 125 deg C Pressure Port: M14 X1.5		
724	TRUCK	953EG88545	FRONT CAMERA	18	Nos	Operating voltage: 12 volt Operating Temperature: -20 to 70 deg. C Power Consumption: 1.44 W Protection : IP69K		
725	TRUCK	955EG82539	CABLE CAMARA	18	Nos	Cable Length: 20 mtr The Cable to be Provided with suitable interconnector The cable should be water and dust proof.		
726	TRUCK	958EG12046	BRACKET (HEAVY DUTY MONITOR MOUNT)	18	Nos	Material: Aluminium Finish: Black Spray The Bracket should capable for heavy duty operation		
727	TRUCK	931EG81247	HOLE PLUG (DUMMY SWITCH)	25	Nos	The hole plug is used as a dummy switch. Material: FRP or ABS Finish: Black		



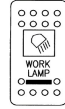
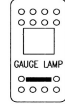




**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
728	TRUCK	931EG81352	MOUNTING PANEL (END UNIT)	68	Nos	The Panel is used to mount single Switch. Material: FRP or ABS Finish: Black		
729	TRUCK	953EG82542	HOLE PLUG	1252	Nos	The hole plug is used as a dummy switch. Material: FRP or ABS Finish: Black		
730	TRUCK	953EG82559	MOUNTING PANEL WITH 3 HOLES	355	Nos	The Panel is used to mount three switches. Material: FRP or ABS Finish: Black		
731	TRUCK	953EG82567	MOUNTING PANEL WITH 6 HOLES	660	Nos	The Panel is used to mount six switches. Material: FRP or ABS Finish: Black		
732	TRUCK	953EG83288	BATTERY CUT OFF SWITCH	259	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A LED Illumination: Amber Color Contact		
733	TRUCK	787EG81173	HAZARD LIGHT ROCKER SWITCH	137	Nos	Switch Type: ON-OFF (Double Pole) Termination/Base: .250 (Tab) Contact Rating: 250VAC, 10A		
734	TRUCK	787EG81181	WIND SHIELD WASHER ROCKER SWITCH	100	Nos	Switch Type: Momentary-ON (Single Pole) Termination/Base: .250 (Tab) Contact Rating: 250VAC, 10A		
735	TRUCK	931EG81109	MOUNTING PANEL (6 HOUSING)	110	Nos	The Panel is used to mount six switches. Material: FRP or ABS Finish: Black		
736	TRUCK	931EG81174	ON-OFF SWITCH (PARKING)	15	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Red -Actuator Color Black-Flush Bracket Contact		
737	TRUCK	953EG82486	DUMP BRAKE SWITCH	38	Nos	Deleted from equipment BOM through ECN. In future this switch is not required.		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
738	TRUCK	953EG83263	ROOF LAMP SWITCH	326	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black -Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
739	TRUCK	953EG83271	WIND SHIELD WASHER SWITCH	399	Nos	Switch Type: (ON)-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black -Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
740	TRUCK	953EG83296	FAN SWITCH	326	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black -Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
741	TRUCK	953EG83303	ENGINE SHUT OFF SWITCH((ON)-OFF)	348	Nos	Switch Type: (ON)-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Red -Actuator Color Black-Flush Bracket LED Illumination: Red Color	Contact 	
742	TRUCK	953EG83311	ENGINE SHUT OFF SWITCH (OFF-ON)	149	Nos	Switch Type: ON-(OFF) Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Red -Actuator Color Black-Flush Bracket LED Illumination: Red Color	Contact 	
743	TRUCK	953EG83328	PARKING BRAKE SWITCH	193	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Grey-Actuator Color Black-Flush Bracket LED Illumination: Red Color	Contact 	
744	TRUCK	953EG83352	HEAD LAMP SWITCH	329	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black-Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
745	TRUCK	953EG83369	FOG LAMP SWITCH	329	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black-Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
746	TRUCK	953EG83385	WIPER MOTOR SWITCH	399	Nos	Switch Type: (ON)-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black-Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
747	TRUCK	953EG83393	LADDER LIGHT SWITCH	455	Nos	Switch Type: ON-ON Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black-Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
748	TRUCK	953EG83417	WORK LAMP SWITCH	123	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black-Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
749	TRUCK	953EG83425	DIFFERENTIAL LOCK SWITCH	70	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black-Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
750	TRUCK	953EG83433	GAUGE LAMP SWITCH	309	Nos	Switch Type: ON-OFF Termination/Base: .250 (Tab) Rating: 24VDC, 15A Color: Black-Actuator Color Black-Flush Bracket LED Illumination: Amber Color	Contact 	
751	TRUCK	958EG82006	SWITCH (POWER WINDOW)	198	Nos	Switch Type: (ON)-OFF-(ON) Termination/Base: .250 (Tab) Contact Rating: 24VDC, 15A Color: Grey-Actuator Color Black-Flush Bracket		
752	TRUCK	985EG81883	CIRCUIT BREAKER - 5A	2957	Nos	Operating Voltage: 18 to 32V Operating Temperature: -40 to 85 deg C	Current Rating: 5 Amp 	
753	TRUCK	985EG81912	CIRCUIT BREAKER,20A.CLB-103-11B2N-R-F/20	1055	Nos	Operating Voltage: 18 to 32V Operating Temperature: -40 to 85 deg C	Current Rating: 20 Amp 	
754	TRUCK	991EG82268	SWITCH MOUNT HOUSING (SINGLE HOUSING)	106	Nos	The Panel is used to mount single Switch. Black	Material: FRP or ABS Finish: 	
755	TRUCK	451EG80096	KIT, DISPLAY AND CONTROLLER(COBO)	50	Nos	This system is an alternate source for Murphy dash board system		
756	TRUCK	787EG80147	KIT, DISPLAY AND CONTROLLER(COBO)	50	Nos	Contact division for technical clarifications		
757	TRUCK	958EG80227	KIT, ROCKER SWITCHES (COBO)	130	Nos	These switches are alternate source for carlingtech switches		
758	TRUCK	787EG81084	LED LAMP RED	591	Nos	Operating Voltage: 10 to 32V Operating Temperature: -40 to 85 deg C Lens : Red Color		





**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
759	TRUCK	787EG81092	LED LAMP YELLOW	1136	Nos	Operating Voltage: 10 to 32V Operating Temperature: -40 to 85 deg C Lens : Amber Color		
760	TRUCK	953EG81287	BATTERY CUTOFF SWITCH	192	Nos	Switch Type: OFF-ON Intermitent Current: 2000Amp Continuous Current: 300 A Terminal: 2 Nos. 1/2"-20 Copper stud Case: Plated Steel		
761	TRUCK	958EG83506	TERMINAL BLOCK (20 POINTS)	227	Nos	Number of Terminal:20 Material: Tin Plated Brass Current withstanding capacity : 150A		
762	TRUCK	953EG87979	SOLID STATE ELECTRONIC FLASHER	264	Nos	Input Voltage: 9-32V Minimum Operating current: .01 Amps Maximum Operating Current: 12 Amp Temperature Range: -20 to 85 deg C		
763	TRUCK	451EG03337	PV450 DISPLAY UNIT	53	Nos	Display Specification: Display: 4.3" Resolution: WVGA, 480 x 272pixels Flash memory: 256MB RAM: 128Mbytes SDRAM USB: 2.0 host Operating Voltage: 6-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 7.86 Grms, 3 Axis Shock: ±50G in 3 Axis Protocols: J1939, NMEA2000[GPS], CAN Open, Free Form CAN Emission: SAE J1113		
764	TRUCK	451EG03345	ME CAN PLUS(MURPHY )	50	Nos	Deleted from equipment BOM through ECN. In future not required.		
765	TRUCK	451EG03353	ME CAN(MURPHY)	53	Nos	Controller Specification: Operating Voltage: 7-35VDC Operating Temperature: -20 to +85 oC Protection: IP67 Vibration: Random Vibration 5 Grms, 3 Axis Shock: ±40G in 3 Axis Protocols: J1939 CAN protocol		
766	TRUCK	451EG82775	PRESSURE SENDER (0-100 PSI)	53	Nos	Pressure Range: 0-100 PSI Output : 240 to 73 ohm Thread Size: 1/8" NPT		
767	TRUCK	451EG83399	Me Can Plus(1905)	51	Nos	Controller Specification: Operating Voltage: 7-35VDC Operating Temperature: -20 to +85 oC Protection: IP67 Vibration: Random Vibration 5 Grms, 3 Axis Shock: ±40G in 3 Axis Protocols: J1939 CAN protocol		







**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative Sl No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
768	TRUCK	452EG02829	2-WIRE TEMP SENDER	401	Nos	Type: 2 Wire sensor Temperature Range: 40 to 150 deg C Output : 1029 to 40 Ohm Thread: 1/2" NPT		
769	TRUCK	953EG82267	TEMPERATURE SENDER UNIT (MURPHY)	261	Nos	Type: 2 Wire sensor Temperature Range: 40 to 150 deg C Output : 1029 to 40 Ohm Thread: M16 X 1.5		
770	TRUCK	T007298522105	USB TO PORT C Cable	9	Nos	Cable is used to Upload the Software to LCD display and to Download the stored fault through Pen Drive		
771	TRUCK	T007298522205	USB TO CAN CONVERTOR CABLE	14	Nos	1. The CAN Convertor Cable provide interface between I/o Module and Laptop. 2. The Cable is used to download the .Hex file and Config file to the I/O Module. 3. The Cable is used to monitor real time data and also used to record the data.		
772	TRUCK	452EG02809	I/O MODULE	17	Nos	Controller Specification: Operating Voltage: 8-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 5 Grms, 3 Axis Shock: 440G in 3 Axis Protocols: J1939 CAN protocol		
773	TRUCK	452EG03246	MURPHY I/O UNIT (ELEC ENGINE&MECH TRAN)	17	Nos	Controller Specification: Operating Voltage: 8-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 5 Grms, 3 Axis Shock: 440G in 3 Axis Protocols: J1939 CAN protocol		
774	TRUCK	452EG03368	PV 780 DISPLAY	17	Nos	Centralized dashboard system which continuously monitor all the parameter of the equipment. The system is based on CAN(Controller Area Network) technology, which is two wire system CAN_high (yellow wire) and CAN low (green wire).If any parameter crosses its specified limit it will alert the operator by visual and audio indication.  Display Specification: Display: 7" Resolution: WVGA, 800 x 480pixels Flash memory: 2GB RAM: 128Mbytes SRAM USB: 2.0 host Operating Voltage: 6-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 7.86 Grms, 3 Axis Shock: 450G in 3 Axis Protocols: J1939, NMEA2000[GPS], CAN Open, Free Form CAN Emission: SAE J1113		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
775	TRUCK	452EG03376	DISPLAY UNIT(MURPHY PV 780)	17	Nos	<p>Centralized dashboard system which continuously monitor all the parameter of the equipment. The system is based on CAN(Controller Area Network) technology, which is two wire system CAN_high (yellow wire) and CAN low (green wire).If any parameter crosses it specified limit it will alert the operator by visual and audio indication.</p> <p>Display Specification:                      Display: 7"                      Resolution: WVGA, 800 x 480pixels                      Flash memory: 2GB                      RAM: 128Mbytes SRAM                      USB: 2.0 host                      Operating Voltage: 6-36VDC                      Operating Temperature: -40 to +85 oC                      Protection: IP67                      Vibration: Random Vibration 7.86 Grms, 3 Axis                      Shock: ±50G in 3 Axis                      Protocols: J1939, NMEA2000[GPS], CAN Open, Free Form CAN                      Emission: SAE J1113</p>		
776	TRUCK	931EG02603	I/O MODULE	5	Nos	<p>Controller Specification:                      Operating Voltage: 8-36VDC                      Operating Temperature: -40 to +85 oC                      Protection: IP67                      Vibration: Random Vibration 5 Grms, 3 Axis                      Shock: ±40G in 3 Axis                      Protocols: J1939 CAN protocol</p>		
777	TRUCK	938EG02315	PV 780 DISPLAY UNIT (QST30C)	10	Nos	<p>Centralized dashboard system which continuously monitor all the parameter of the equipment. The system is based on CAN(Controller Area Network) technology, which is two wire system CAN_high (yellow wire) and CAN low (green wire).If any parameter crosses it specified limit it will alert the operator by visual and audio indication.</p> <p>Display Specification:                      Display: 7"                      Resolution: WVGA, 800 x 480pixels                      Flash memory: 2GB                      RAM: 128Mbytes SRAM                      USB: 2.0 host                      Operating Voltage: 6-36VDC                      Operating Temperature: -40 to +85 oC                      Protection: IP67                      Vibration: Random Vibration 7.86 Grms, 3 Axis                      Shock: ±50G in 3 Axis                      Protocols: J1939, NMEA2000[GPS], CAN Open, Free Form CAN                      Emission: SAE J1113</p>		
778	TRUCK	938EG02331	I/O MODULE (MURPHY)	10	Nos	<p>Controller Specification:                      Operating Voltage: 8-36VDC                      Operating Temperature: -40 to +85 oC                      Protection: IP67                      Vibration: Random Vibration 5 Grms, 3 Axis                      Shock: ±40G in 3 Axis                      Protocols: J1939 CAN protocol</p>		
779	TRUCK	953EG02587	I/O MODULE	31	Nos	<p>Controller Specification:                      Operating Voltage: 8-36VDC                      Operating Temperature: -40 to +85 oC                      Protection: IP67                      Vibration: Random Vibration 5 Grms, 3 Axis                      Shock: ±40G in 3 Axis                      Protocols: J1939 CAN protocol</p>		
780	TRUCK	953EG04369	PV 780 DISPLAY	6	Nos	<p>Centralized dashboard system which continuously monitor all the parameter of the equipment. The system is based on CAN(Controller Area Network) technology, which is two wire system CAN_high (yellow wire) and CAN low (green wire).If any parameter crosses it specified limit it will alert the operator by visual and audio indication.</p> <p>Display Specification:                      Display: 7"                      Resolution: WVGA, 800 x 480pixels                      Flash memory: 2GB                      RAM: 128Mbytes SRAM                      USB: 2.0 host                      Operating Voltage: 6-36VDC                      Operating Temperature: -40 to +85 oC                      Protection: IP67                      Vibration: Random Vibration 7.86 Grms, 3 Axis                      Shock: ±50G in 3 Axis                      Protocols: J1939, NMEA2000[GPS], CAN Open, Free Form CAN                      Emission: SAE J1113</p>		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**








Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
781	TRUCK	958EG02034	I/O MODULE(MURPHY)	97	Nos	Controller Specification: Operating Voltage: 8-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 5 Grms, 3 Axis Shock: ±40G in 3 Axis Protocols: J1939 CAN protocol		
782	TRUCK	958EG02042	I/O MODULE(MECH ENGIN & ELECT TRANS)	40	Nos	Controller Specification: Operating Voltage: 8-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 5 Grms, 3 Axis Shock: ±40G in 3 Axis Protocols: J1939 CAN protocol		
783	TRUCK	958EG02245	PV 780 DISPLAY (QSK19C)	97	Nos	Centralized dashboard system which continuously monitor all the parameter of the equipment. The system is based on CAN(Controller Area Network) technology, which is two wire system CAN_high (yellow wire) and CAN low (green wire).If any parameter crosses it specified limit it will alert the operator by visual and audio indication.  Display Specification: Display: 7" Resolution: WVGA, 800 x 480pixels Flash memory: 2GB RAM: 128Mbytes SRAM USB: 2.0 host Operating Voltage: 6-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 7.86 Grms, 3 Axis Shock: ±50G in 3 Axis Protocols: J1939, NMEA2000[GPS], CAN Open, Free Form CAN Emission: SAE J1113		
784	TRUCK	958EG02253	PV 780 DISPLAY (KTTA19C)	40	Nos	Centralized dashboard system which continuously monitor all the parameter of the equipment. The system is based on CAN(Controller Area Network) technology, which is two wire system CAN_high (yellow wire) and CAN low (green wire).If any parameter crosses it specified limit it will alert the operator by visual and audio indication.  Display Specification: Display: 7" Resolution: WVGA, 800 x 480pixels Flash memory: 2GB RAM: 128Mbytes SRAM USB: 2.0 host Operating Voltage: 6-36VDC Operating Temperature: -40 to +85 oC Protection: IP67 Vibration: Random Vibration 7.86 Grms, 3 Axis Shock: ±50G in 3 Axis Protocols: J1939, NMEA2000[GPS], CAN Open, Free Form CAN Emission: SAE J1113		
785	TRUCK	953EG83482	LED ROOF LAMP	322	Nos	LED roof lamp fitted inside (to roof) the operator cabin provides illumination during night time when ever lamp switch is ON.This lap gives white colour illumination. Specification: Operating voltage: 24VDC Power Consumption: 6W Light Colour: White Case material: Steel		
786	TRUCK	807440000	SWITCH	149	Nos	SPST • Normally Off • On with plunger depressed, spring return to Off Terminals: two screw. Mounting stem: 3/4"-16 UNF-2A thread, 31/64" long with aluminum gasket/washer.		
787	TRUCK	5610661510	SWITCH	192	Nos	This relay is used to supply the battery power to steering motor in case of failure of hydraulic pump. Voltage: 24 V DC Rated Current: 1500 A Operating Temperature: -50 to 60 deg C		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**


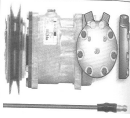
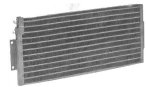





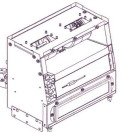
Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
788	TRUCK	955RC0398	POWER WINDOW LH	205	Nos	Power window Motor : 24V DC Motor. Power window motor to be supplied with linkages and cable drive		
789	TRUCK	953EG03404	EMERGENCY STEERING MOTOR ASSY.	161	Nos	Emergency Steering Motor is used to supply the auxiliary power to the steering unit in case of Hydraulic pump failure or Engine failure. This is an supplementary power pack to regular steering system & also to meet the safety norms of DGMS requirement. Specification: Electrical Specification: Description: DC Motor Power Rating: 3.5KW Operating Voltage: 24VDC Operating Temperature: -40 to 110 oC Insulation Type: B Revolution Direction: Clockwise Duty Cycle: 90 Sec for Continuous operation.		
790	TRUCK	992EG03128	HID (FOG LAMP)	16	Nos	Voltage: 24 V DC      Input current: 1.5A      Lens: Yellow , Clear Lens      Bulb: 35W D15 IP Rating: IP68      Operating Temperature: -40 to 85 deg C Color Temperature: 4250K		
791	TRUCK	938EG03036	HEAD LAMP (HID LOW BEAM)	44	Nos	Voltage: 24 V DC      Input current: 1.5A      Lens: Low Beam      Bulb: 35W D15 IP Rating: IP68      Operating Temperature: -40 to 85 deg C Temperature: 4250K      Color		
792	TRUCK	938EG03044	HEAD LAMP (HID HIGH BEAM)	44	Nos	Voltage: 24 V DC      Input current: 1.5A      Lens: High beam      Bulb: 35W D15 IP Rating: IP68      Operating Temperature: -40 to 85 deg C Temperature: 4250K      Color		
793	TRUCK	985EG02997	HEAD LAMP (RECTANGULAR SHAPE)	1042	Nos	Voltage: 24 V DC      Lens: White, Clear lens      Bulb: 70W      IP Rating: IP68      Operating Temperature: -40 to 85 deg C		
794	TRUCK	985EG03522	FOG LAMP (RECTANGULAR SHAPE)	386	Nos	Voltage: 24 V DC      Lens: Yellow, Clear lens      Bulb: 70W      IP Rating: IP68      Operating Temperature: -40 to 85 deg C		
795	TRUCK	985EG03563	HEAD LAMP (WITH HIGH BEAM LENS)	450	Nos	Voltage: 24 V DC      Lens: High Beam Pattern      Bulb: 70W      IP Rating: IP68      Operating Temperature: -40 to 85 deg C		
796	TRUCK	2370615250	SWITCH	554	Nos	This Positive cut off battery relay is used to cut off the battery when key switch is in off condition Voltage: 24 V DC      Operating Current: 100 A Instantaneous Current: 1000A      IP Rating: IP68      Operating Temperature: -40 to 85 deg C		




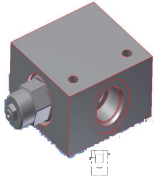
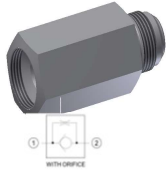
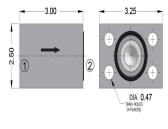
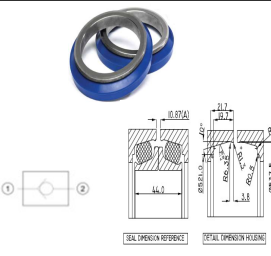
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
797	TRUCK	953EG80074	Collision Avoidance System-kit	17	Nos	<p>The system consist of sensor and display which will detects both moving and stationary objects in a pre-defined coverage area and reports the distance of the closest object via visual range indicators and an audible signal to a vehicle operator. To ensure the safety of operator &amp; equipment as per the compliance of DGMS.</p> <p>Specification: Electrical Specification: Operating Voltage: 9-32VDC Operating Temperature: -40 to 85 oC Vibration: 25G RMS, 3 Axis Shock: 25G 3 Axis</p> <p>Operating Characteristics: Maximum Range: 32 feet (10m) Programmable Ranges: 10 to 32 feet (3m to 10m) Warning Ranges: 5 zones divided into programmed range Minimum Resolution: 1 foot</p> <p>Note : The usage of device on equipment is certified by department of telecommunication government of india</p>		
798	TRUCK	452EG87341	FUEL LEVEL SENSOR	17	Nos	Float Length:13-1/4" ± 1/8" Output: 0- 90 Ohm Temperature:-30 to 60 deg		
799	TRUCK	882300000122	FUEL GAUGE AND DIAL (VZ 0796/VZ 0797)	100	Nos	Deleted from BOM through ECN. Future not required.		
800	TRUCK	953FL02034	TWIN SITE FUEL LEVEL GAUGE ASSY	49	Nos	Float Length: 447±3 mm Float angle: 150 deg Output : Twin Site 0-90 Ohm		
801	TRUCK	958EG82533	TWIN SITE FUEL LEVEL SENSOR(6243500029N)	137	Nos	Float Length: 381 mm Float angle: 150 deg Output : Twin Site 0-90 Ohm		
802	TRUCK	955EG11241	SWITCH	152	Nos	Pressure Port: 9/16"-18 UNF Switch Type: SPST NC Set Point : 1800 PSI Max Operating Pressure: 4500 PSI Operating Temperature: -30 to 120 deg C Media: Oil Protection: IP65		
803	TRUCK	985EG91798	LED WHITE	1117	Nos	Type: BA9S LED Bulb Emitting Color: White Operating Voltage : 24V DC		
804	TRUCK	985AS02698	LOW PRESSURE SWITCH (5629711140)	147	Nos	Pressure Port: PT 1/4" Switch Type: SPST NC Set Point : 75±5 PSI Operating Temperature: -50 to 70 deg C Media: Pneumatic Protection: IP65		

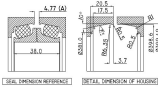



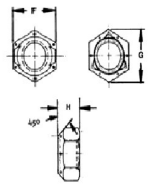
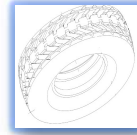
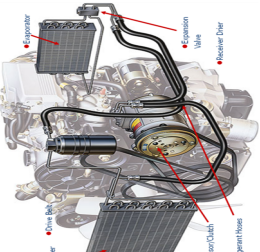
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
805	TRUCK	985AS02705	STOP LIGHT SWITCH (5610661220)	183	Nos	Pressure Port: PT 1/4" Switch Type: SPST NO		
806	TRUCK	931EG02588	SENSOR (TRANS OIL TEMP) (0501 322 534)	12	Nos	Nominal Voltage: 6-24V DC Operating Current : 1< 0.1A Operating Temperature: -30 to 150 deg C Resistance Values: 1152 to 18.7 Ohm		
807	TRUCK	931EG81563	CONNECTOR (TOT SENSOR) (6029 199 003)	44	Nos	Use to connector TOT sensor to the Harness		
808	TRUCK	955AC02151	COMPRESSOR	183	Nos	Voltage: 24V Mount: Ear Clutch: 6 1/4" (158mm) Variable 1 Groove		
809	TRUCK	985AC02216	CONDENSER	7	Nos	Multi Flow: Constructed with 0.0051 inch thick zinc coated cross flow tubes. Fin spacing is 14 fins per inch. Four pass design. Overall width: 36 3/16", Fin width: 33 3/4", Height: 11 1/8", Thickness: 1 1/8"		
810	TRUCK	959AC02088	CONDENSER	36	Nos	Multi Flow: Constructed with 0.0051 inch thick zinc coated cross flow tubes. Fin spacing is 14 fins per inch. Four pass design. Overall width: 25 3/4" Fin width: 24" Height: 10 3/4" Thickness: 1"		
811	TRUCK	959AC02055	2.5" Flush mount ball louvers	86	Nos	Ball louvers with 2 1/2" Hose Adaptor. 100% shut off		
812	TRUCK	959AC02169	2.5" Defrost Hose	86	Nos	2 1/2" Defrost Hose (9 ft)		
813	TRUCK	953AC72286	3" hose	288	Nos	3" Defrost Hose (9 ft)		
814	TRUCK	778AC02148	AC / HEATER UNIT (BACK WALL)	147	Nos	BTU: 28000 BTU/HR AIR Flow: 320 CFM (540 C.M/HR) WEIGHT: 47 lbs/ 21 Kgs MOTORS: Three speed-double shaft motor with 2 blowers CURRENT DRAWN: 8.9 Amps @ 27.2 DC for the blower motor plus 2 amps for compressor clutch CONTROLS: AC switch, fan speed switch, fresh air control switch Refrigerant: R-134a TOTAL QUANTITY OF REFRIGERENT: 1.2 Kgs and 1.5 Kgs		
815	TRUCK	959AC02071	AC / HEATER UNIT (FRONT WALL)	36	Nos	BTU (HEATING): 33400 BTU/HR BTU(COOLING): 24150 BTU/HR AIR Flow: 405 CFM WEIGHT: 25 Kgs MOTORS: Three speed-double shaft motor with 2 blowers MAX CURRENT: 9.9A for the units Refrigerant: R-134a		


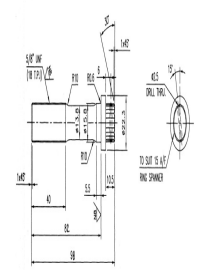
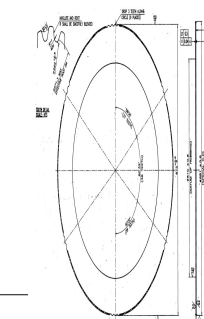
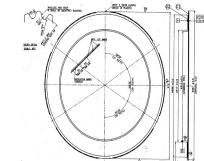
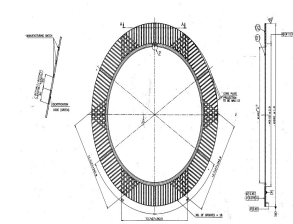
**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative Sl No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
816	TRUCK	955H502961	Hoist Control Valve Assembly	137	Nos	<p>Pilot operated spool type control valve used in hoist circuit. This is located between hoist cylinders and hydraulic pump. This is used to achieve the function of Hoist, Lower, hold and float condition. Valve has inbuilt relief valves.</p> <p><b>Specification:</b>                      Flow through control valve : 356 lpm                      Operating pressure : 2750 psi                      MaxPilot pressure : 150 psi                      Oil : C4 SAE 30                      Operating Temp : -28.9°C ~ 93.3°C                      Main relief valve set at : 2750±50 psi @ 90 gpm                      Leakage rate -Spool- @ all ports 78cc/min                      Load check- @ all ports 492cc/min</p>		
817	TRUCK	PB8049	Overcenter assembly	137	Nos	<p>Over center valve/counter balance valve is used to control the movement of the body during over center condition i.e., when the center of gravity of the dump body and load shifts behind the hoist body pivot pin.</p> <p><b>Specification</b>                      Pressure Setting : 70~280 bar with 0.3 bar check                      Standard setting : 210 bar                      Seal Material : BUNA N                      Capacity : 60 gpm                      Pilot Ratio : 3 : 1</p> <p><b>Ports:</b>                      Port 1 &amp; 2 : 1-5/16"-12 UNF                      Port 3 : 9/16"-18 UNF</p>		
818	TRUCK	PB8341	Check Valve	137	Nos	<p>Check Valve with Orifice in Poppet :                      An In-line style check valve intended for blocking fluid flow                      Flow from (2) to (1) is blocked with a spring bias to assist in Static and low load conditions.                      Flow from (1) to (2) is allowed with a standard crack pressure                      OF 3-5 psi.</p> <p><b>Specification:</b>                      Operating pressure : 3500 psi                      Standard crack pressure : 3-5 psi                      Temperature range : 250° F to -40° F                      Inlet Port : 1.312-12 UN 37° JIC Male thread                      Outlet Port : 1.312-12 UN 37° JIC Female thread</p>		
819	TRUCK	PB8338	Check Valve	137	Nos	<p>An in-line style, poppet type check valve intended for blocking fluid flow.</p> <p>Flow from (2) to (1) is blocked with a spring bias to assist in static and low load conditions.                      Flow from (1) to (2) is allowed with a standard crack pressure Of 3-5 psi</p> <p><b>Specification:</b>                      Operating pressure 3500 psi                      Standard crack pressure 3-5 psi                      Temperature range 250° F to -40° F</p> <p><b>Features</b>  <ul style="list-style-type: none"> <li>• Includes o-ring.</li> <li>• Special crack pressures available upon request.</li> <li>• Hydraulic oils - general.</li> <li>• Bolt pattern for sae standard pressure (code 61).</li> <li>• Low pressure drop.</li> <li>• No internal packings.</li> <li>• Low internal leakage, 5 dpm.</li> <li>• Aluminum body and steel poppet</li> </ul> </p>		
820	TRUCK	PC0894	Seal Assembly	274	Nos	<p>Seals provide protection for internal working components like bearings and gears in abrasive applications and permit the use of oil as a lubricant instead of grease resulting in less friction and longer life. In most applications, the lubricant installed at the factory is permanent with no periodic lubrication or adjustment required.</p> <p><b>Specification:</b>                      Oing Material : FKM - Black                      Hardness : 55~65 Shore A                      Temperature range : -25°C ~ +120°C                      Operating Speed : 4 m/s</p>		

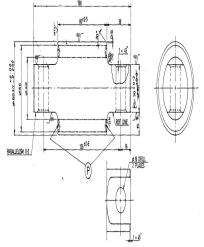




**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

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821	TRUCK	TA8404	Seal Assembly	274	Nos	<table border="1"> <thead> <tr> <th colspan="9">CHEMICAL COMPOSITION (B)</th> </tr> <tr> <th>%</th> <th>C</th> <th>Si</th> <th>Mn</th> <th>Cr</th> <th>Ni</th> <th>Mo</th> <th>V</th> <th>P</th> <th>S</th> </tr> </thead> <tbody> <tr> <td>MIN</td> <td>3.0</td> <td>0.4</td> <td>0.3</td> <td>1.2</td> <td>3.5</td> <td>-</td> <td>0.3</td> <td>-</td> <td>-</td> </tr> <tr> <td>MAX</td> <td>5.6</td> <td>0.7</td> <td>0.9</td> <td>1.7</td> <td>4.3</td> <td>0.4</td> <td>0.6</td> <td>0.3</td> <td>0.1</td> </tr> </tbody> </table>	CHEMICAL COMPOSITION (B)									%	C	Si	Mn	Cr	Ni	Mo	V	P	S	MIN	3.0	0.4	0.3	1.2	3.5	-	0.3	-	-	MAX	5.6	0.7	0.9	1.7	4.3	0.4	0.6	0.3	0.1		
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822	TRUCK	PB3014	Bushing - Extended Race	274	Nos	<p>This Bush is used in mounting of PANHARD ROD to CENTRE CASE of rear axle assembly</p> <p><b>Specification:</b> Refer M/s. RBC Bearings part no.B44-EL</p>																																									
823	TRUCK	PB3060	Split Outer Race	822	Nos	<p>This outer race is used for mounting of BALL STUD to TIE ROD in Tie rod assembly.</p> <p><b>Specification:</b> Refer M/s. RBC Bearings part no.B24-9L-36</p>																																									
824	TRUCK	WA3051/955HS61435	O Ring	192	Nos	<p>This o ring is used in Pressure line of hydraulic system</p> <p><b>Specification:</b> ID 7.6 mm c/s : 1.05mm Synthetic rubber : BUNA-N Compound Temperature : -40°F ~ 250°F Shore A : 90±5 Should conform to SAE J515</p>																																									
825	TRUCK	VL2993	NUT	274	Nos	<p><b>LOCK NUT- GRADE - C, UNC THREAD</b> <b>Proof Stress: 150000 psi</b> <b>Rockwell Hardness: 26-34</b> This prevailing - torque type steel hexagon locknuts shall be in conformance with current IFI 100 B1 Surfact Thickr</p> <table border="1"> <thead> <tr> <th rowspan="2">NOMINAL SIZE</th> <th colspan="2">WIDTH ACROSS FLATS F</th> <th colspan="2">WIDTH ACROSS CORNERS G</th> <th colspan="2">THICKNESS H</th> </tr> <tr> <th>MAX</th> <th>MIN</th> <th>MAX</th> <th>MIN</th> <th>MAX</th> <th>MIN</th> </tr> </thead> <tbody> <tr> <td>.75-10</td> <td>1.127</td> <td>1.088</td> <td>1.299</td> <td>1.240</td> <td>.665</td> <td>.617</td> </tr> </tbody> </table>	NOMINAL SIZE	WIDTH ACROSS FLATS F		WIDTH ACROSS CORNERS G		THICKNESS H		MAX	MIN	MAX	MIN	MAX	MIN	.75-10	1.127	1.088	1.299	1.240	.665	.617																					
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826	TRUCK	766WT12016	TYRE	30	Nos	Radial Tyre 24 R 35 E4 ** Rock Deep Thread with O ring																																									
827	TRUCK		AC KIT WITH HEATER OPTION			<p><b>REQUIREMENTS:</b> 1. CABIN VOLUME : 3478871200 mm3 2. NO OF PERSONS IN THE CABIN : 2 AC Systems are much like a mother, who uses a sponge to soak up milk from a spilled glass. She soaks it up and then wrings the milk out of the sponge and into the sink. Similarly, an AC system soaks up heat in the cab using evaporation and then squeezes the heat into the outside air using condensation.</p> <p>Air conditioners have two basic layouts: the expansion valve system and the accumulator system. AC primarily uses the expansion valve system With five basic components</p> <p>1. Expansion device: A restriction in the liquid line of the system, purposely designed to cause a pressure drop. 2. Evaporator: A device that removes heat from the cab air by exchanging it into boiling refrigerant. 3. Compressor: Provides the mechanical energy to move refrigerant and manipulate pressures. This is the heart of the system. 4. Condenser: Designed to exchange heat from the refrigerant to the outside air. Similar to the evaporator.</p>																																									
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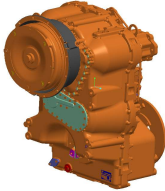
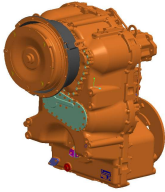

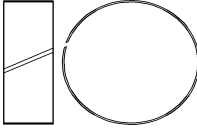
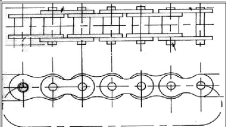
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833	TRUCK					5. Drier Filter Device: A storage container for extra refrigerant that usually contains a drying agent called desiccant and a filter to screen out contaminants.																																																					
834	TRUCK	959PD10833	Cap screw 5/8 UNF 18 TPI	168	Nos	<p>MATERIAL : En19/En24 TO BS:970-1983.                      ASTM GRAIN SIZE NO. 5-8 OR EQUIVALENT AS PER IS:2853-1964.                      INCLUSION RATING SHALL BE LESS THAN SEVERITY LEVEL 3 (THIN AND THICK) OF IS: 4163-1982.</p> <p>MACHINICAL PROPERTIES :</p> <p>a. TENSILE STRENGTH (STRESS) MIN. 105 kg/mm<sup>2</sup>                      b. YIELD POINT 90 kg/mm<sup>2</sup>                      c. PROOF LOAD (STRESS) MIN. 85 kg/mm<sup>2</sup>                      d. IMPACT STRENGTH 7 kg/mm<sup>2</sup></p> <p>HEAT TREATMENT :</p> <p>a. HARDEN &amp; TEMPER TO 32-38 Rc.                      b. THE THREAD AREA MUST BE SUBJECTED TO THE COLD FORMING AFTER THE HEAT TREATMENT.</p>																																																					
835	TRUCK	985BR15219	PLATE	3014	Nos	<table border="1"> <thead> <tr> <th colspan="3">SPUR - GEAR</th> </tr> <tr> <th>GEAR TOOTH PROFILE</th> <th>TOOTH PROFILE</th> <th>STANDARD</th> </tr> </thead> <tbody> <tr> <td>TOOL</td> <td>MODULE</td> <td>FULL DEPTH TOOTH</td> </tr> <tr> <td></td> <td>3</td> <td></td> </tr> <tr> <td></td> <td>PRESSURE ANGLE</td> <td>14.5°</td> </tr> <tr> <td>No. OF TEETH</td> <td></td> <td>226</td> </tr> <tr> <td>STD. PITCH CIRCLE DIAMETER</td> <td></td> <td>678.000</td> </tr> <tr> <td>AMOUNT OF SHIFT</td> <td></td> <td>-</td> </tr> <tr> <td>TOOTH THICKNESS</td> <td>CROSS OVER</td> <td>172.44-0.31(19)</td> </tr> <tr> <td></td> <td>OVER PIN DIMENSION</td> <td>( )</td> </tr> <tr> <td>CROWNING</td> <td></td> <td>-</td> </tr> <tr> <td>ACCURACY</td> <td></td> <td>CLASS "T"</td> </tr> <tr> <td>LENGTH OF ACTION AT TOOTH TOP</td> <td></td> <td>-</td> </tr> <tr> <td>LENGTH OF ACTION AT TOOTH BOTTOM</td> <td></td> <td>-</td> </tr> <tr> <td>BASE CIRCLE DIA</td> <td></td> <td>-</td> </tr> <tr> <td>ROOT DIAMETER</td> <td></td> <td>-</td> </tr> <tr> <td>MATING GEAR PART No.</td> <td></td> <td>985 BR 45043</td> </tr> </tbody> </table>	SPUR - GEAR			GEAR TOOTH PROFILE	TOOTH PROFILE	STANDARD	TOOL	MODULE	FULL DEPTH TOOTH		3			PRESSURE ANGLE	14.5°	No. OF TEETH		226	STD. PITCH CIRCLE DIAMETER		678.000	AMOUNT OF SHIFT		-	TOOTH THICKNESS	CROSS OVER	172.44-0.31(19)		OVER PIN DIMENSION	( )	CROWNING		-	ACCURACY		CLASS "T"	LENGTH OF ACTION AT TOOTH TOP		-	LENGTH OF ACTION AT TOOTH BOTTOM		-	BASE CIRCLE DIA		-	ROOT DIAMETER		-	MATING GEAR PART No.		985 BR 45043		
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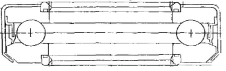
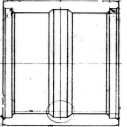

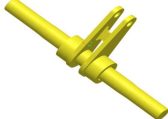




**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

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838	TRUCK	985EC02297	CUSHION	98	Nos	<p><u>SHAPE AND DIMENSIONS ARE IDENTICAL TO 581-61-21520 A</u></p> <p><u>PORTION SHALL BE COATED WITH KES 07-629-4 UREA (URETHANE)</u></p> <p><u>HARDNESS OF RUBBER 90±5 HS (REF)</u></p> <p><u>SPRING CONSTANT — AXIAL DIRECTION (STATIC) 100±15 Kgs/mm</u>  <u>RADIAL DIRECTION (STATIC) 1800±270 Kgs/mm</u></p> <p><u>ALLOWABLE LOAD — AXIAL DIRECTION 250 Kgs/mm</u>  <u>RADIAL DIRECTION 800 Kgs/mm</u></p>		
839	TRUCK	985AS02608	BRAKE CHAMBER ASSY	156	Nos	<p>CHARACTERISTIC</p> <p>2-1 MAX OPERATING AIR PRESSURE 9 kgf/cm<sup>2</sup></p> <p>2-2 AIR CYLINDER DIAMETER φ200</p> <p>2-3 STROKE 100</p> <p>2-4 AIR CYLINDER PRESSURE PROOF 15 kgf/cm<sup>2</sup></p> <p>2-5 MASTER CYLINDER DIAMETER φ50</p> <p>2-6 DELIVERY OIL 480 G/G (AT STROKE 97)</p> <p>2-7 APPLICATION OIL ENGINE OIL # 10W OR # 30</p> <p>2-8 OPERATING TEMPERATURE RANGE -30°C ~ +70°C</p> <p>2-9 MASTER CYLINDER PRESSURE PROOF 15 kgf/cm<sup>2</sup> MIN</p> <p>2-10 AIR TIGHT RESISTANCE FREE FROM LEAKAGE AT THE EVERY PORTION WITH PRESSURISED AIR TO 8 kgf/cm<sup>2</sup></p> <p>2-11 OPERATE FULL STROKE WITH PRESSURISED AIR TO 1 kgf/cm<sup>2</sup>, AND WHEN CHANGE TO EXHAUST, IT TO PUT BACK IN ITS PLACE</p> <p>2-12 NEEDFUL TIMES OF RETURN TO BE WITHIN 5 SECONDS AT PISTON FULL STROKE HOWEVER FULL UP WITH OIL AND OUTLET PORT TO BE CLOSED STATE</p> <p>2-13 FREE FROM ABNORMALITY AT EVERY PORTION AFTER 2×10<sup>5</sup> TIMES OPERATION WITH PRESSURISED AIR TO 8 kgf/cm<sup>2</sup> AND 90% OF FULL STROKE</p> <p>2-14 MASS APPROXIMATELY 18 kgf</p> <p>2-15 SURFACE TREATMENT OR PAINT MF 2-4 S-C (COLOURED) TO THE INSIDE AND OUTSIDE SURFACE OF AIR CYLINDER</p> <p>PAINT BLACK TO OUTSIDE SURFACE OF MASTER CYLINDER</p>		
840	TRUCK	985AS02616	REAR BRAKE CHAMBER	156	Nos	<p>CHARACTERISTIC OF ASSEMBLY</p> <p>2-1 MAX OPERATING AIR PRESSURE 9 kgf/cm<sup>2</sup></p> <p>2-2 DIAMETER OF AIR CYLINDER φ200</p> <p>2-3 STROKE 100</p> <p>2-4 PRESSURE PROOF OF AIR CYLINDER 15 kgf/cm<sup>2</sup></p> <p>2-5 DIAMETER OF MASTER CYLINDER φ40</p> <p>2-6 OIL DELIVERY 120 G/G (STROKE 97)</p> <p>2-7 OPERATING OIL ENGINE OIL # 10W</p> <p>2-8 OPERATING TEMPERATURE RANGE -30°C ~ +70°C</p> <p>2-9 PRESSURE PROOF OF MASTER CYLINDER 15 kgf/cm<sup>2</sup> MIN</p> <p>2-10 AIR TIGHTNESS ANY PORTION TO BE FREE FROM LEAKAGE AT 8 kgf/cm<sup>2</sup> AIR PRESSURE</p> <p>2-11 AFTER OPERATION OF FULL STROKE AND EXHAUSTION AT 1 kgf/cm<sup>2</sup> AIR PRESSURE, IT SHOULD RETURN TO THE FIRST POSITION</p> <p>2-12 RETURNING TIME OF FULL STROKE OF PISTON TO BE MAX 5 SECONDS HOWEVER FILLED WITH OIL AND EXHAUST PORT TO BE SHUTTING</p> <p>2-13 ENBURANCE AFTER 2×10<sup>5</sup> TIMES OPERATION AT 8 kgf/cm<sup>2</sup> AIR PRESSURE AND 90% OF FULL STROKE, ANY PORTION TO BE FREE FROM DEFECTS</p> <p>2-14 WEIGHT APPROXIMATELY 12 kgf</p> <p>2-15 SURFACE TREATMENT AND PAINT COAT INNER AND OUTER SURFACE OF AIR CYLINDER WITH MF 2-4 S-C (COLOURED) AND OUTER SURFACE OF MASTER CYLINDER WITH BLACK</p>		
841	TRUCK	953WT02005	TYRE RADIAL	42	Nos	<p>RADIAL PLY TYRE: 27.00 R 49</p> <p>ROCK DEEP TREAD</p> <p>TRA CODE: E4</p> <p>LOAD CARRYING CAPACITY OF EACH TYRE: 29850 Kg</p>		
842	TRUCK	452AC02467	A/C INSTALLATION KIT	12	Nos	<p>Roof top AC is placed at the top of the cabin.it houses condenser,blower,expansionvalve etc in the single unit.</p> <p>Specification</p> <p>BTU'S Heating – 45,000 BTU/Hr @ 100°F (13.2 kW @ 37.8°C) air temp. rise</p> <p>Cooling – 25,000 BTU/Hr with 36°F (7.3 kW with 2.2°C) refrigerant temp. and 80°F (26.7°C) wet bulb entering air</p> <p>AIR FLOW 355 CFM (580 m<sup>3</sup>/h)</p> <p>WEIGHT 65 lbs.</p> <p>MOTORS Evaporator – One 12 VDC, three speed (24 VDC available)</p> <p>Condenser – One 12 VDC low profile (24 VDC available)</p> <p>CURRENT 38.2 amps @ 13.6 VDC (includes 4 amps for A/C clutch)</p> <p>DRAW 19.1 amps @ 27.2 VDC (includes 2 amps for A/C clutch)</p>		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**







Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
843	TRUCK	451TM02068	TRANSMISSION ASSY.	50	Nos	<p>The Transmission is coupled with engine directly using flex plates. The Transmission is having inbuilt oil pump and filter for circulation and purification of transmission oil.</p> <p>Specification:- Type - Power Shift Electro Hydraulic type Drop - 540mm, Engine Connection - Direct mounting, Flywheel housing type - SAE 3, No. of gears - 6 F/ 3 R. Transmission driven PTO - 2 nos. (SAE C Type &amp; SAE B Type) Operating Pressure - 18 bar (Max.)</p>		
844	TRUCK	931TM02014	TRANSMISSION ASSY.	50	Nos	<p>The Transmission is coupled with engine directly using flex plates. The Transmission is having inbuilt oil pump and filter for circulation and purification of transmission oil.</p> <p>Specification:- Type - Power Shift Electro Hydraulic type Drop - 500mm, Engine Connection - Direct mounting, Flywheel housing type - SAE 3, No. of gears - 6 F/ 3 R. Transmission driven PTO - 1 no. (SAE C Type) Operating Pressure - 18 bar (Max.)</p>		
845	TRUCK	931AXB0024	SEAL KIT & LIP SEALS	10	Nos	Part of Tandem Axle to part no. 931AX02018 (M/s. Oerlikon Graziano, Itlay) Seal Kit used to arrest the external dust entering inside the tandem axle.		
846	TRUCK	931AX12613		10				
847	TRUCK	931AX12727		10				
848	TRUCK	2322251740	BUSHING	273	Nos	<p>Item CHARACTERISTICS</p> <ol style="list-style-type: none"> <li>Specific gravity 1.3 to 1.4</li> <li>Tensile strength 1000kg/cm3 or more</li> <li>Bending strength 1000kg/cm3 or more</li> <li>Compression strength 2000kg/cm3 or more (how ever this shall be applied to vertical laminated direction)</li> <li>Impact strength 18 kg-cm/cm3 or more with 20T notch</li> <li>Hardness 80 or more</li> <li>Compression strength 11 kg/mm2</li> <li>Oil content 1% or more</li> <li>Color tone Black</li> <li>Product wrapping material Use laminated craft paper for wrapping oiled product</li> </ol>		
849	TRUCK	2322352151	CHAIN	280	Nos	<p>Used in BG 605 Equipment in Tandem Axle Material and heat treatment</p> <ol style="list-style-type: none"> <li>Link:- SAE 1050- quench &amp; temper 39-45 hrc</li> <li>Bush:- 15 cr3 gas carburise ,quench &amp; temper</li> <li>roller :- surface hardness 55/60 hrc case depth 0.4-0.7 mm core hardness 30-36 hrc</li> <li>Pin :- En4 quench &amp; temper 48/54 hrc</li> <li>Quantity per equipment :- 4</li> <li>Average break strength 27,500 kg or more</li> <li>Minimum break strength 23,000 kg or more</li> </ol>		

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks	
850	TRUCK	2352711280	BEARING	34	Nos	Used in BG 825 Motor grader king pin thrust bearing. Case:- Carbon Steel Phosphate coating treatment Shaft fit :- Dia 60.58 Seal Ring:- Carbon Steel Inner Ring:- 60-64 HRC,One no 60-64 HRC ,One No Balls:- 20 Standard Static Rated Load :- 14200 kg	Seal:- Carbon Steel Outer Ring:- Steel Ball:-61-66 HRC , No of		
851	TRUCK	2352711581	BUSHING	34	Nos	Used in Leaning system cylinder, in the axle. /S53C Case Depth 1-2 mm	Material:- STKM 17A		
852	TRUCK	2357015920	DISC	100	Nos	Assembled in Circle Reverse gear and acts as slip plate			
853	TRUCK	451SC02071	SHAFT	10	Nos	Used in BG 605 I and BG 605A Motor Grader for scarifier application. Used to lift and drop the scarifier attachment			
854	TRUCK	451SC02096	ARM	10	Nos	Used in BG 605 I and BG 605A Motor Grader for scarifier application. Used to lift and drop the scarifier attachment			
855	TRUCK	451WA41148	SIDE EDGE	106	Nos	t is Part of Working System Assy to part no. 451wa01003 Supplied by 1) M/s. USCO SP.A, Itlay 2) M/s. USG Product (FE) PTE Ltd, Singapore) 3) Crown Parts & Machine Inc, USA. Specification: Curve length is 481.8mm x 156 x 15.9 t			
856	TRUCK	2354411920	Solenid Valve Assy	17	Nos	Nominal Voltage: 20-30V DC Fluid: Air Maximum Operating Press.:9 bar Operating Temperature: -20 to 65 deg C Port: 1/4" PT			
857	TRUCK	2354411930	VALVE	17	Nos	Nominal Voltage: 20-30V DC Fluid: Air Maximum Operating Press.:9 bar Operating Temperature: -20 to 65 deg C Port: 1/4" PT			





**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**




Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
858	TRUCK	4250611150	VALVE	17	Nos	Specification: 1) Rated Voltage :-24 V DC 2)Applicable Voltage Range:- 20-30 V DC 3)Applicable Pressure Range:- 3 kg/cm2- 9kg/cm2 4) Applicable Tempartaure Range:- -30 Deg C to 80 Deg C 5) Holding Temperature Range:-30 Deg C to 80 Deg C		
859	BANGALORE COMPLEX	94282001	AIR SPRING, ASS'Y	576	Nos	AIR SPRING, ASS'Y as per drawing and tech spec		INDEPENDENT ITEM
860	BANGALORE COMPLEX	5558303501	APPLICATOR LH	288	Nos	APPLICATOR ASSY- LH TO DRAWING No. 555-83035,		SI No. 860 to 861 " APPLICATOR ITEMS" to be developed from same source
861	BANGALORE COMPLEX	5558303502	APPLICATOR RH	288	Nos	APPLICATOR ASSY- RH TO DRAWING No. 555-83035		
862	BANGALORE COMPLEX	55583034	ANTI-ROLL BAR ROD	576	Nos	AS per drawing		INDEPENDENT ITEM
863	BANGALORE COMPLEX	R107919000	SR 911 GREY (300 ML TUBE)	8880	Nos	R107919000,SR911 GREY FIRE RETARDANT SILICONE SEALANT		INDEPENDENT ITEM
864	BANGALORE COMPLEX	R601181100	SABATAK 760 XXL	7680	Nos	SABATAK 760 XXL, COLOUR BLACK, 290ml CARTRIDGE		SI No. 864 to 865 " CLEANING AGENTS" to be developed from same source
865	BANGALORE COMPLEX	R601181200	SABACLEAN 48	57.6	Nos	SABACLEAN 48, COLOUR CLEAR, 1000 ml CAN		
866	BANGALORE COMPLEX	94214005	SALOON TO CAB DOOR ASSY	48	SET	Saloon to cab door assembly, complete,conforming to PTS doc. GR/T D/3532.		



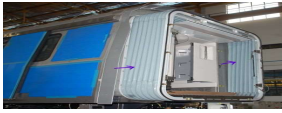



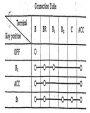


**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
873	BANGALORE COMPLEX	94218011301	CAB SKIRT ASSEMBLY	48	Nos	CAB SKIRT ASSY TO LATEST DRG NO 94218011301	 	<p>SI No. 872 to 888 " INTERIOR PANELS ASSEMBLY ITEMS" to be developed from same source</p>
874	BANGALORE COMPLEX	942ACCSCAB	ACCESSORIES FOR CAB PANELS DM CAR	48	SET	ACCESSORIES FOR CAB PANELS DM		
875	BANGALORE COMPLEX	942ACCSDM	ACCESSORIES FOR PANELS INTERIOR DM CAR	48	SET	ACCESSORIES FOR PANELS INTERIOR & EXTERIOR DM CAR		
876	BANGALORE COMPLEX	942ACCSTM	ACCESSORIES FOR PANELS INTERIOR M CAR	48	SET	ACCESSORIES FOR PANELS INTERIOR & EXTERIOR M CAR		
877	BANGALORE COMPLEX	942ACCST	ACCESSORIES FOR PANELS INTERIOR T CAR	48	SET	ACCESSORIES FOR PANELS INTERIOR & EXTERIOR T CAR		
878	BANGALORE COMPLEX	942CLACCSM	ACCESSORIES FOR CEILING PANELS M CAR	48	SET	ACCESSORIES FOR CEILING PANELS M CAR		
879	BANGALORE COMPLEX	942PANELCABDM	INTERIOR PANELS FOR CAB DM CAR	48	SET	PANELS FOR CAB DM		
880	BANGALORE COMPLEX	942PANELDM	INTERIOR & EXTERIOR PANELS FOR DM CAR	48	SET	INTERIOR & EXTERIOR PANELS FOR DM CAR		
881	BANGALORE COMPLEX	942PANELM	INTERIOR & EXTERIOR PANELS FOR M CAR	48	SET	INTERIOR & EXTERIOR PANELS FOR M CAR		
882	BANGALORE COMPLEX	942PANELT	INTERIOR & EXTERIOR PANELS FOR T CAR	48	SET	INTERIOR & EXTERIOR PANELS FOR T CAR		
883	BANGALORE COMPLEX	94239102	END FAIRING ROOF	240	Nos	END FARING, ROOF TO DWG NO 94239102 LATEST REVISION		
884	BANGALORE COMPLEX	94239103300	END FAIRING SIDE	240	Nos	END FARING, SIDE TO DWG 94239103300		
885	BANGALORE COMPLEX	94239103301	END FAIRING SIDE	240	Nos	END FARING, SIDE TO DWG 94239103301		
886	BANGALORE COMPLEX	94218004	DRIVER DESK & CONSOLE ASSY	48	Nos	DRIVER DESK & CONSOLE ASSY		
887	BANGALORE COMPLEX	94218257	FOOT PLATE-1	96	Nos	FOOT PLATE-1 TO LATEST DRG NO 94218257		
888	BANGALORE COMPLEX	94218258	FOOT PLATE-2	96	Nos	FOOT PLATE-2 TO LATEST DRG NO 94218258		
889	BANGALORE COMPLEX	9422105501	Earthing Contact Assembly (A type)	288	SET	Earthing Contact Assembly (A type, HT, cable specification: 4GKW-AX-J-185 and 4GKW-AX-35) to Drg .No. 94221055 & PTS Doc. GR/TD/3420		








**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
890	BANGALORE COMPLEX	9422105502	Earthing Contact Assembly (B type)	48	SET	Earthing Contact Assembly (B type, HT, cable specification: 4GKW-AX-J-185 and 4GKW-AX-35) to Drg. No. 94221055 & PTS Doc. GR/TD/3420		SI No. 889 to 892 " EARTHING CONTACT ASSEMBLY ITEMS" to be developed from same source.
891	BANGALORE COMPLEX	9422105503	Earthing Contact Assembly (C type)	96	SET	Earthing Contact Assembly (C type, HT, cable specification: 4GKW-AX-J-185 and 4GKW-AX-35) to Drg. No. 94221055 & PTS Doc. GR/TD/3420		
892	BANGALORE COMPLEX	9422105504	Earthing Contact Assembly (D type)	48	SET	Earthing Contact Assembly (D type, HT, cable specification: 4GKW-AX-J-185 and 4GKW-AX-35) to Drg. No. 94221055 & PTS Doc. GR/TD/3420		
893	BANGALORE COMPLEX	94218084	ELECTRICAL WIPER SYSTEM	48	SET	ELECTRICAL WIPER SYSTEM TO DRG NO. 94218084 LATEST REV. & PTS DOC NO. GR/TD/3548		INDEPENDENT ITEM
894	BANGALORE COMPLEX	90921712	CRIMP SPLICE SOLDER SLEEVE	42000	Nos	CRIMP SPLICE SOLDER SLEEVE TO DWG NO 90921712		SI No. 894 to 897 " ELECTRICAL ACCESSORIES ITEMS" to be developed from same source.
895	BANGALORE COMPLEX	90921835	SLEEVE 1.5 Sq.mm	57600	Nos	SLEEVE 1.5 Sq.mm TO THE DRAWING NO.90921835		
896	BANGALORE COMPLEX	90921834	MOUNT BASE-DAMB-30	52800	Nos	MOUNT BASE- TO TH EDRAWING NO 90921834		
897	BANGALORE COMPLEX	90921160	COVER BUSHING (4.8)	28800	Nos	COVER BUSHING 4.8 TO DWG NO 90921160		
898	BANGALORE COMPLEX	R306688020	FLOOR CUSHIONING 4mmTHK x 160mmWIDTH x 5m ROLL	1038.864	Roll	FLOOR CUSHIONING OF SYLOMER L - MIXED CELLULAR POLYURETHANE WITH SELF ADHESIVE RELEASE TAPE ON ONE SIDE TO SIZE 4mm THK X 160mm WIDTH IN 5m ROLL AND CONFORMING TO PTS DOC. NO. GR/TD/3549		SI No. 898 to 901 " FLOOR CUSHIONING ITEMS" to be developed from same source.
899	BANGALORE COMPLEX	R306688021	FLOOR CUSHIONING 10mm THK x 40mm WIDTH x 5m ROLL	4011.072	Roll	FLOOR CUSHIONING OF SYLOMER L - MIXED CELLULAR POLYURETHANE WITH SELF ADHESIVE RELEASE TAPE ON ONE SIDE TO SIZE 10mm THK X 40mm WIDTH IN 5m ROLL AND CONFORMING TO PTS DOC. NO. GR/TD/3549		
900	BANGALORE COMPLEX	R306688022	FLOOR CUSHIONING 10mm THK x 50mm WIDTH x 5m ROLL	226.272	Roll	FLOOR CUSHIONING OF SYLOMER L - MIXED CELLULAR POLYURETHANE WITH SELF ADHESIVE RELEASE TAPE ON ONE SIDE TO SIZE 10mm THK X 50mm WIDTH IN 5m ROLL AND CONFORMING TO PTS DOC. NO. GR/TD/3549		
901	BANGALORE COMPLEX	R306688023	FLOOR CUSHIONING 19mm THK x 50mm WIDTH x 5m ROLL	65.184	Roll	FLOOR CUSHIONING OF SYLOMER L - MIXED CELLULAR POLYURETHANE WITH SELF ADHESIVE RELEASE TAPE ON ONE SIDE TO SIZE 19mm THK X 50mm WIDTH IN 5m ROLL AND CONFORMING TO PTS DOC. NO. GR/TD/3549		
902	BANGALORE COMPLEX	94218087	SUN BLIND ASSY	48	Nos	SUN BLIND ASSY TO LATEST DRG NO. 94218087		INDEPENDENT ITEM






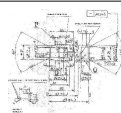






**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks																												
903	BANGALORE COMPLEX	94255002	GANGWAY ASSEMBLY	240	Nos	GANGWAY ASSEMBLY ALONG WITH REQUISITE MOUNTING HARDWARE, COMPLYING TO PT 5 DOC. NO. GR/TD/3536 (1set consists of 1No. Gangway assembly and requisite mounting hardware.)		INDEPENDENT ITEM																												
904	BANGALORE COMPLEX	R136393022	R136393022,2.0 mm THICK STAINLESS STEEL TO SIZE OF WIDTH 1250mm x 2050 mm LENGTH TO GRADE SUS 301L DLT DF OF SPECIFICATION GR TD 1456	2736	Sq Mtrs	R136393022,2.0 mm THICK STAINLESS STEEL TO SIZE OF WIDTH 1250mm x 2050 mm LENGTH TO GRADE SUS 301L DLT DF OF SPECIFICATION GR TD 1456																														
905	BANGALORE COMPLEX	R136393025	R136393025,2.0mm thick stainless steel sheet to size of width 1250 mm x3500 mm length to grade SUS301L DLT (DF) of specification GR TD 1456 Rev.2	8208	Sq Mtrs	R136393025,2.0mm thick stainless steel sheet to size of width 1250 mm x3500 mm length to grade SUS301L DLT (DF) of specification GR TD 1456 Rev.2																														
906	EARTH MOVERS	CH50113070	O RING	90	Nos	O Ring Material: NBR-1B Ref:BEML std.C5003-01 ; ID: 69.6±0.25; Cross section dia: 3.5±0.10		This O ring is used in C-crane Hydraulic system																												
907	EARTH MOVERS	130EG81812	LCD PANEL	5	Nos	1. Display size: 7" 2. Display Type: color transmissive TFT LCD,WVGA, 800 x 480 pixels 3. Input pins: 3 nos. - 0-5V DC/4 -20mA/resistive analog, 1no. - frequency(2Hz to 10KHz), 5 nos digital high 4. Outputs : 1no. - digital low, 1 no- PWM 5. Communications supported : CAN2.0B,CAN 2.0A, CANopen, Proprietary messaging, RS485 serial and USB 6. operating voltage: 8 to 32V DC, reverse polarity protected 7. Operating temperature: -40°C to +85°C 8. Sealing : IP67 9. RAM: 128Mbytes SRAM 10. Flash memory: 2GB 11. Vibration : 7.86g (5-2000Hz) 12. Shock : 50g in 3 axis 13. Video I/P: 1 no- NTSC/PAL 14. Keyboard: tactile buttons		CAN (Control Area Network) based 7" electronic display monitors all the engine, transmission and other equipment critical parameters continuously. Some parameters are directly connected to display and other parameters are connected through CAN converter by using two cables (CAN low and CAN high). Display shows all parameters in analogue / Bargraph/alpha numeric form and it provides audio visual alarm to the operator in case any parameter crosses the specified limit.																												
908	EARTH MOVERS	171EG81687	P.B.SWITCH	65	Nos	1. Rated voltage:24 VDC 2. Rated current : 10Amp 3.Type of contacts: 1NO + 1NC 4. Termination: M3.5 screw terminals 5. Knob color/type: Red Push button (mom-on)/mushroom head. 6. Mounting hole:Ø22.2 mm		Push Button (PB) switch is used to shut-off fuel solenoid valve of the engine.																												
909	EARTH MOVERS	CEK0120000	STARTER SWITCH	1500	Nos	 <table border="1"> <thead> <tr> <th colspan="3">Maximum Allowable Current</th> <th>unit: A</th> </tr> </thead> <tbody> <tr> <td>Rated voltage</td> <td>12V</td> <td>24V</td> <td></td> </tr> <tr> <td>BR Circuit</td> <td>20</td> <td>10</td> <td></td> </tr> <tr> <td>ACC circuit</td> <td>20</td> <td>15</td> <td></td> </tr> <tr> <td>R<sub>1</sub> Circuit</td> <td>40</td> <td>40</td> <td></td> </tr> <tr> <td>R<sub>2</sub> Circuit</td> <td></td> <td></td> <td></td> </tr> <tr> <td>C Circuit</td> <td>Instant 75 Holding 22</td> <td>Instant 75 Holding 22</td> <td></td> </tr> </tbody> </table>	Maximum Allowable Current			unit: A	Rated voltage	12V	24V		BR Circuit	20	10		ACC circuit	20	15		R <sub>1</sub> Circuit	40	40		R <sub>2</sub> Circuit				C Circuit	Instant 75 Holding 22	Instant 75 Holding 22			Starter key is used to power up the electrical system of equipment, by connecting the batteries to the equipment.
Maximum Allowable Current			unit: A																																	
Rated voltage	12V	24V																																		
BR Circuit	20	10																																		
ACC circuit	20	15																																		
R <sub>1</sub> Circuit	40	40																																		
R <sub>2</sub> Circuit																																				
C Circuit	Instant 75 Holding 22	Instant 75 Holding 22																																		
910	EARTH MOVERS	130EG81967	SENDER-CAN	4	Nos	1. Operating Voltage: 7 – 35 VDC 2. Input: 4 no. Resistive or -2 to +35 VDC 3. Output: SAE J1939 protocol and 2 no. 250mA. 4. Protection: IP65 5. Operating temperature: -40°C to +85°C		SenderCAN is used for converting Analogue/digital/pulse signal into CAN signal.																												

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks																
911	EARTH MOVERS	130EG81212	TEMP SENSOR	65	Nos	<p>1. Temp. Range: 40oCto 150oC 2. Type: Resistive.</p> <table border="1"> <thead> <tr> <th colspan="2">Resistance VS Temperature</th> </tr> <tr> <th>Temperature</th> <th>Resistance (Ohm)</th> </tr> </thead> <tbody> <tr> <td>40</td> <td>1097</td> </tr> <tr> <td>60</td> <td>497.8</td> </tr> <tr> <td>80</td> <td>235.25</td> </tr> <tr> <td>100</td> <td>123.75</td> </tr> <tr> <td>120</td> <td>74.0</td> </tr> <tr> <td>140</td> <td>40</td> </tr> </tbody> </table>	Resistance VS Temperature		Temperature	Resistance (Ohm)	40	1097	60	497.8	80	235.25	100	123.75	120	74.0	140	40		It is used for sensing the temperature of Engine oil/coolant and feed signal to temperature gauge.
Resistance VS Temperature																								
Temperature	Resistance (Ohm)																							
40	1097																							
60	497.8																							
80	235.25																							
100	123.75																							
120	74.0																							
140	40																							
912	EARTH MOVERS	125AC92367	REMOTE CONDENSER 24V	5	Nos	<p><u>Specifications:</u> Condenser : Roof top condenser Capacity : around 39,000 btu/hr Weight :less than 14 kg</p>		Proprietary item and complete drawing details not available ; Based on the technical scope , general specifications , performance requirements and overall size of the aggregates , these are to be developed by interested Vendors.																
913	EARTH MOVERS	825EG02019	HAND THROTTLE CONTROL	2	Nos	<p>Potentiometer: 5KΩ Excitation: 5V±0.5V DC output: 0.5V to 4.5V DC Protection: IP67 Turn direction: Clock wise, single turn</p>		Hand Throttle control is used to provide electrical command to Electronic engine ECU for Engine speed control on M&C machines.																
914	EARTH MOVERS	130IP81099	DISPLAY	8	Nos	<p>1. Display size: 4.3" 2. Display Type: color transmissive TFT LCD,WVGA, 800 x 480 pixels 3. Input pins: 3 nos. - 0-5V DC/4 -20mA/resistive analog, 1no. - frequency(2Hz to 10KHz), 5 nos digital high 4. Outputs : 1no. - digital low, 1no- PWM 5. Communications supported : CAN2.0B, CAN 2.0A, CANopen, Proprietary messaging, RS485 serial and USB 6. operating voltage: 8 to 32V DC, reverse polarity protected 7. Operating temperature: -40°C to +85°C 8. Sealing : IP67 9. RAM: 128Mbytes SRAM 10. Flash memory: 2GB 11. Vibration : 7.86g (5-2000Hz) 12. Shock : 50g in 3 axis 13. Video I/P: 1 no- NTSC/PAL 14. Keyboard- tactile buttons</p>		Display is used to represent Engine parameters of equipment																
915	EARTH MOVERS	821EG81294	TRANSMISSION DISPLAY	90	Nos	<p>1. Display size: 4.3" 2. Display Type: color transmissive TFT LCD,WVGA, 800 x 480 pixels 3. Input pins: 3 nos. - 0-5V DC/4 -20mA/resistive analog, 1no. - frequency(2Hz to 10KHz), 5 nos digital high 4. Outputs : 1no. - digital low, 1no- PWM 5. Communications supported : CAN2.0B, CAN 2.0A, CANopen, Proprietary messaging, RS485 serial and USB 6. operating voltage: 8 to 32V DC, reverse polarity protected 7. Operating temperature: -40°C to +85°C 8. Sealing : IP67 9. RAM: 128Mbytes SRAM 10. Flash memory: 2GB 11. Vibration : 7.86g (5-2000Hz) 12. Shock : 50g in 3 axis 13. Video I/P: 1 no- NTSC/PAL 14. Keyboard- tactile buttons</p>		Display is used to represent Transmission parameters of equipment																
916	EARTH MOVERS	474EG02354	RELAY,BATTERY	40	Nos	<p>1.Operating Voltage: 10 to 16V DC 2.Rated current: 120A (Continuous) :800A (30 sec) 3.Excitation current:0.5A (max) 4.insulation resistance:min 100MΩ (500V DC) 5. Operating Temp: -20°C to +80°C 6. Expected mechanical life: 10*7 operations</p>		Battery Relay is heavy duty relay used to isolate battery power supply from the equipment. This relay is "positive cut-off" and isolates the battery positive from the remaining equipment circuit.																
917	EARTH MOVERS	790TF02053	TRACK SHOE ASSY	20	sets	<p>Triple grouser shoe, shoe width 450mm, No of shoes per side 40, Shoe link pitch 140mm.</p>		Used in the installation of track parts in the hydraulic excavator.																
918	EARTH MOVERS	790TF12398	BUSHING MASTER	60	Nos	<p>The design data and drawings are not available as these are internal details of the BE75 Track shoe assembly to Part no. 790TF02053</p>	Part of BE75 Track shoe assembly to Part no. 790TF02053	Component of BE75 Track shoe assembly																

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
919	EARTH MOVERS	790TF52363	LINK R H	150	Nos	The design data and drawings are not available as these are internal details of the BE75 Track shoe assembly to Part no. 790TF02053	Part of BE75 Track shoe assembly to Part no. 790TF02053	Component of BE75 Track shoe assembly
920	EARTH MOVERS	790TF12373	BUSH	150	Nos	The design data and drawings are not available as these are internal details of the BE75 Track shoe assembly to Part no. 790TF02053	Part of BE75 Track shoe assembly to Part no. 790TF02053	Component of BE75 Track shoe assembly
921	EARTH MOVERS	790TF52355	LINK L H	150	Nos	The design data and drawings are not available as these are internal details of the BE75 Track shoe assembly to Part no. 790TF02053	Part of BE75 Track shoe assembly to Part no. 790TF02053	Component of BE75 Track shoe assembly
922	EARTH MOVERS	790TF12381	PIN TRACK	140	Nos	The design data and drawings are not available as these are internal details of the BE75 Track shoe assembly to Part no. 790TF02053	Part of BE75 Track shoe assembly to Part no. 790TF02053	Component of BE75 Track shoe assembly
923	EARTH MOVERS	790TF12405	SPACER	150	Nos	The design data and drawings are not available as these are internal details of the BE75 Track shoe assembly to Part no. 790TF02053	Part of BE75 Track shoe assembly to Part no. 790TF02053	Component of BE75 Track shoe assembly
924	EARTH MOVERS	790TF02045	CARRIER ROLLER ASSY	50	Nos	Roller dia 90mm, Pin Dia 35mm, Flange dia 120mm		Used in the installation of track parts in the hydraulic excavator
925	EARTH MOVERS	790TF02037	TRACK ROLLER ASSY	150	Nos	Roller dia 135mm, roller width 112mm.		Used in the installation of track parts in the hydraulic excavator, part of the final drive.
926	EARTH MOVERS	376AX91989	Brake disc	3	Nos	OD : 450mm, ID= 203mm, t=16mm, Wheel mounting holes:16xdia 18.2 on pod 232		
927	EARTH MOVERS	374EG70074	DELPHI CONNECTOR	20	Nos	1. Operating Voltage: 8 – 32 VDC 2. No of cavities: 2 3. Protection: IP67 4. Operating temperature: -10°C to +100°C 5. Type: Plug		
928	EARTH MOVERS	374EG70066	CONNECTOR	10	Nos	1. Operating Voltage: 8 – 32 VDC 2. No of cavities: 12 3. Protection: IP67 4. Operating temperature: -10°C to +85°C 5. Type: Receptacle		
929	EARTH MOVERS	380CV11269	Valve	15	Nos	Component of the Transmission control valve assy Material : C1101 Input ( Base) material shall be supplied in normalised condition with hardness in the range of 175 – 229 BHN HT: *Cl portion shall be Induction hardened and tempered to 55 HRC; Case depth : 1–2 mm		
930	EARTH MOVERS	376TM91741	Oil Seal	25	Nos	Note: Item SI. no. 04 to 10 are the parts / internal components of transmission to part no. 376TM02008 and proprietary in nature. So design, specification, drawing details are not available.		
931	EARTH MOVERS	376AX91161	Bearing	4	Nos			
932	EARTH MOVERS	376TM92551	Oil pipe (forward)	5	Nos			
933	EARTH MOVERS	376TM92568	Oil Pipe (reverse)	1	Nos			
934	EARTH MOVERS	376TM91693	Driven Disc	100	Nos			
935	EARTH MOVERS	376TM91499	Driving disc	10	Nos			

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**


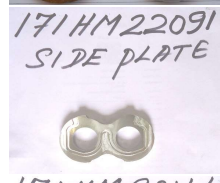
Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
936	EARTH MOVERS	376TM91799	Seal Ring	25	Nos			
937	HYDRAULIC & POWERLINE	992HC91138	SEAL 7.500"	16	Nos			
938	HYDRAULIC & POWERLINE	992HC91154	SEAL 11.500"	16	Nos	i) a) Expander Material : A-8504 Nitrile Rubber Low Temperature NBR-LT, Shore hardness : 70A b) Slide Ring Material : P2501 Polyamide or Polyacetal with PA 6.6 + 30% glass fibres. ii) Operating Temperature : -25 to +110 deg C iii) Operating Pressure : Upto 600 Bar. iv) Operating Velocity : Upto 1 m/sec		
939	HYDRAULIC & POWERLINE	PB8611	SEAL 5.500"	16	Nos			
940	HYDRAULIC & POWERLINE	991HC91189	PISTON SEAL 7.375"	16	Nos			
941	HYDRAULIC & POWERLINE	991HC91197	PISTON SEAL 9.500"	30	Nos	Piston seal with HNBR ring energizer, PTFE/Nylon slide ring i) a) Expander Material : C-7021 HNBR Rubber Shore hardness : 70A b) Slide Ring Material : P2551 Polyamide or Polyacetal with PA 6.6 + 40% glass fibres. ii) Operating Temperature : -25 to +110 deg C iii) Operating Pressure : Upto 600 Bar. iv) Operating Velocity : Upto 1 m/sec		
942	HYDRAULIC & POWERLINE	991HC91204	PISTON SEAL 11.750"	14	Nos			
943	HYDRAULIC & POWERLINE	VN4087	PISTON SEAL ASSEMBLY (Bore Dia. 5.000")	14	Nos	Piston Seal Assembly Consists of One Teflon Seal and Expander Seal. Teflon Seal Requirements : Seals Shall be 25%±5% by weight, Glass filled PTFE Physical and Mechanical Properties: i) Tensile Strength : 2000 PSI Minimum. ii) Shore Hardness D : 65±5 Durometer. iii) Ultimate Elongation : 200% Minimum. iv) Specific Gravity : 2.15-2.23. v) Deformation under Load @ 1200 PSI : 4-8% @ 2000 PSI : 9-11%. Expander Requirements: Material : Nitrile (Buna'N') polymers Physical and Mechanical Properties: i) Tensile Strength : 1500 PSI Minimum. ii) Shore Hardness D : 70±5 Durometer. iii) Ultimate Elongation : 250% Minimum. iv) Temperature Range : -65°F ~ 225°F. v) Modulus @ 100% (Tear resistance) : 500 PSI vi) Heat resistance 70 hrs @ 257°F Change in Hardness point : 0 to +18 Change in Tensile Strength Max. : -25 Change in Ultimate elongation Max. % : -50. vii) Compression Set 22 hrs @ 212°F Max. % : 40 Max. viii) Low Temperature Brittleness Non Brittle after 5 hrs @ -65°F - Pass.		
944	HYDRAULIC & POWERLINE	WA2676	PISTON SEAL ASSEMBLY (Bore Dia. 3.500")	274	Nos			
945	HYDRAULIC & POWERLINE	950HC91355	PISTON SEAL	116	Nos	Piston Seal Assembly Consists of One Seal Ring, Elastomer and Two Back up rings. Seal Ring Material : POM or Polyamide Bronze Filled Material Energiser Material : NBR Material i) Dynamic Pressure Range : 7250 PSI. ii) Shore Hardness D : 70±5 Durometer. iii) Temperature Range : -22°F ~ 212°F. Back up Ring Material : Polyacetal(POM) based material with glass fibers. i) Radial Pressure Range : Max.3625 PSI @ >140°F ii) Shore Hardness D : 70±5 Durometer. iii) Temperature Range : -40°F ~ 230°F.		



**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
946	HYDRAULIC & POWERLINE	PB6552	Buffer Seal (8.500" x 9.125" x 0.247")	96	Nos	Buffer seal with nitrile rubber O-ring energizer, PTFE/Nylon slide ring i) a) Seal (Energiser) Material : Nitrile Rubber, b) Slide Ring Material : Oil filled Nylon (P-2505) ii) SHORE A (HARDNESS) : 70 iii) Operating Temperature : -25 to +110 deg C iv) Operating Pressure : Upto 500 Bar. v) Operating Velocity : Upto 2 m/sec		
947	HYDRAULIC & POWERLINE	175HM61289	SEAL	618	Nos	Seal Ring Material: NBR-1B i) SHORE A (HARDNESS) : 88±5 ii) Operating Temperature : -30 to +100 °C iii) Applicable Pressure : 140 Kg/cm² and above.		
948	HYDRAULIC & POWERLINE	DA2068	BEARING (Bore Ø5.000" x tØ.188"-0.191" x w1.000")	14	Nos	Bearings and Wear Rings accommodate radial loads of forces acting on the cylinder assembly/Suspension Assy and guide the rod in the cylinder head/Gland as well as the piston in the cylinder bore and prevents from scoring damages to sliding surfaces.  Guides are made of polymer materials and, therefore, avoid metal-to-metal contact between moving parts in a working hydraulic cylinder.  Material : Glass Reinforced High Strength Nylon P2501, LW560-87 Tensile Strength : 26,000 P.S.I. (min), Elongation : 3%, Flexure Modulus : 13,00,000 P.S.I. (min), Compression Strength : 24,000 P.S.I. (min), Hardness, Rockwell R : 121 Working Temperature : -40 deg.C to +120 deg.C Working Stroke Speed : 1.0 m/sec, Max.		
949	HYDRAULIC & POWERLINE	PB6545	BEARING (Rod Ø5.000" x tØ.124"-0.127" x w1.000")	14	Nos			
950	HYDRAULIC & POWERLINE	PB6549	BEARING (Bore Ø7.380" x tØ.124"-0.127" x w1.250")	28	Nos			
951	HYDRAULIC & POWERLINE	PB6551	BEARING (Rod Ø8.500" x tØ.124"-0.127" x w1.000")	96	Nos			
952	HYDRAULIC & POWERLINE	PB6555	BEARING (Bore Ø9.500" x tØ.124"-0.127" x w1.250")	30	Nos			
953	HYDRAULIC & POWERLINE	PB6557	BEARING (Rod Ø10.500" x tØ.124"-0.127" x w1.000")	30	Nos			
954	HYDRAULIC & POWERLINE	PB7324	BEARING (Rod Ø6.500" x tØ.124"-0.127" x w1.000")	274	Nos			
955	HYDRAULIC & POWERLINE	PB7325	BEARING (Bore Ø7.500" x tØ.124"-0.127" x w0.750")	340	Nos			
956	HYDRAULIC & POWERLINE	PB7444	BEARING (Bore Ø11.750" x tØ.124"-0.127" x w1.250")	14	Nos			
957	HYDRAULIC & POWERLINE	VA3204	WEAR RING (Bore Ø4.500" x tØ.124"-0.127" x w0.750")	116	Nos			
958	HYDRAULIC & POWERLINE	VA3205	WEAR RING (Bore Ø6.000" x tØ.122"-0.127" x w0.750")	390	Nos			
959	HYDRAULIC & POWERLINE	VA3206	WEAR RING (Bore Ø7.380" x tØ.124"-0.127" x w0.750")	116	Nos			
960	HYDRAULIC & POWERLINE	VA3211	WEAR RING (Rod Ø3.750" x tØ.124"-0.127" x w1.250")	390	Nos			
961	HYDRAULIC & POWERLINE	VA3212	WEAR RING (Bore Ø5.500" x tØ.124"-0.127" x w1.000")	390	Nos			
962	HYDRAULIC & POWERLINE	VA3213	WEAR RING (Rod Ø6.750" x tØ.124"-0.127" x w1.000")	182	Nos			
963	HYDRAULIC & POWERLINE	VZ3691	BEARING (Bore Ø3.500" x tØ.122"-0.127" x w0.750")	274	Nos			
964	HYDRAULIC & POWERLINE	992HC91121	BEARING 5.5" (Rod Ø5.500" x tØ.123"-0.125" x w1.000")	16	Nos			
965	HYDRAULIC & POWERLINE	992HC91146	BEARING 7.5" (Bore Ø7.500" x tØ.123"-0.125" x w1.250")	16	Nos			
966	HYDRAULIC & POWERLINE	992HC91162	BEARING 11.5" (Bore Ø11.500" x tØ.123"-0.125" x w1.250")	16	Nos			
967	HYDRAULIC & POWERLINE	9925U91182	BEARING (Rod Ø266.65 x t2.5 x w76)	16	Nos	Bronze Bearings accommodate radial loads of forces acting on the Suspension Assy and guide the rod in the Gland and prevents from scoring damages to sliding surfaces. Material : ASTM B-147-72 Manganes Bronze Alloy No.863 (or) ASTM 148-71 Aluminium Bronze Alloy No. 955 HT Tensile Strength : 759 Mpa. (Min) Yield Strength : 414 Mpa. (min)		
968	HYDRAULIC & POWERLINE	375HC71014	WEAR RING (Bore Ø120 x t3 x w15)	468	Nos	This Wear Ring Phenolic/fabric composite consists of cotton fabric bound with thermoset phenolic resin. Its structure and the ability of the fabric fibres to absorb a certain amount of oil make phenolic guides almost self-lubricating. Phenolic guides are suitable for medium and heavy duty applications.		
969	HYDRAULIC & POWERLINE	9585U91288	WEAR RING (Bore Ø250 x t6 x w40)	274	Nos	Material : Cotton Cloth fabric (50%) bound with thermoset Phenolic Resin (50%) Bending Strength : 12 Kg/Sq.mm. (min), Specific Gravity : 1.39 ~ 1.43 Co-efficient of Friction : 0.08 ~ 0.12 Compression Strength : 25 Kg/Sq.mm (min) Hardness, Rockwell M : 110 ~ 126 Working Temperature : -40 deg.C to +140 deg.C Working Stroke Speed : 0.5 m/sec, Max.		
970	HYDRAULIC & POWERLINE	5685011172	WEAR RING (Bore Ø250 x t6 x w130)	300	Nos			

**LIST OF ITEMS FOR DEVELOPMENT UNDER MAKE-II PROCEDURE -(PHASE-2)**

Cumulative SI No.	Division	Part no	Description	Approximate Annual requirement	UoM	Brief spec	Photograph	Remarks
971	HYDRAULIC & POWERLINE	985HM21064	SIDE PLATE	530	Nos	<p><b>Application:</b> Also called as Thrust Plates and used in External Gear Pumps (High Pressure Pumps generally working @ 215 Bar) and is installed between Rotating Gear Face inside the Pump Case and fixed Mounting Bracket or Cover.</p> <p><b>Function:</b> Thrust Plates are used to provide Axial and Radial compensation in the Gear Pumps and it will be floating in the gap between the Gear and Cover Faces and maintain lubrication between faces and provides space for sealing to avoid internal leakage from high pressure delivery side to low pressure suction side.</p>		
972	HYDRAULIC & POWERLINE	171HM22091	SIDE PLATE	598	Nos	<p><b>Material for Forging:</b></p> <p>A. MATERIAL : CSM3 B. CHEMISTRY(WT%) : COPPER:58~63 , ZINC: REMAINDER, LEAD:0.3 MAX., ALUMINIUM : 0.5~1.5; MANGANESE :1.0~2.0, SILICON:0.5~1.5, IMPURITIES :1.0 MAX. C. MECHANICAL PROPERTIES : TENSILE STRENGTH : 640 N/mm2 MIN. YIELD POINT : 350 N/mm2 MIN. HARDNESS, BHN (1000/10) : 150 MIN.</p>		
973	HYDRAULIC & POWERLINE	171HM23144	SIDE PLATE	116	Nos	<p><b>Material for Casting:</b></p> <p>A. MATERIAL : HTB3 OF BS:1400 B. CHEMISTRY(WT%) : COPPER:55 MIN , TIN : 0.2 MAX., ZINC: REMAINDER, LEAD:0.2 MAX., NICKEL : 1.00 MAX., IRON : 1.5~3.25 MIN. ALUMINIUM : 3.0~6.0 MIN; MANGANESE :4.0 MAX., SILICON:0.1 MAX, IMPURITIES :0.2 MAX. C. MECHANICAL PROPERTIES : TENSILE STRENGTH : 740 N/mm2 MIN. YIELD POINT : 400 N/mm2 MIN. HARDNESS, BHN (1000/10) : 150 MIN. % ELONGATION : 11 MIN.</p>	