



HOT MIX PLANT (HMP-20-30)

Operation, Service, and Maintenance Manual

AKONA ENGINEERING (PVT) LTD.

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IMPORTANT NOTE

THE DATA'S INDICATED IN THIS OPERATING INSTRUCTION MAY DIFFER FROM PLANT TO PLANT IN AN ACCORDANCE WITH CONSTANT IMPROVEMENT, AND WE RESERVE ALL RIGHT TO CHANGE OR MODIFY ANY PARTS AT ANY TIME WITHOUT ANY PRIOR NOTIFICATION

ATTENTION

THE NON-APPLICATION OF THE USE AND MAINTENANCE RULES MENTIONED WITH THE PRESENT MANUAL WILL ENTAIL THE AUTOMATIC LOSS OF ALL WARRANTY INSURANCE COVERINGS.

For Service or any other query, Call our Toll-free number: 1800-121-257-257

Visit us at: <http://www.akonaindia.com/>

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FOREWORD

Dear Customer,

We are happy to provide you HOT MIX PLANT, Model HMP-20-30 with Two DG Set OEM model with latest technology.

HOT MIX PLANT 20-30 TPH with silent type DG set and control system, has been developed for wide range of application as per your requirement.

All necessary safety precautions and regulations have been adhered to in the design material and manufacturing of HMP 20-30 TPH series.

This manual provides technical specifications, operation guidelines, routine maintenance, and service maintenance procedure. The performance of HOT MIX PLANT largely depends on its proper maintenance. Hence please maintain your machine properly as per the guidelines and schedules given in this manual. We recommend that only trained manpower should perform the operation and maintenance task of the Hydraulic control System or complete machine.

Continuous improvements in the product design are incorporate from time to time which may not be included in this manual.

If you have any query or service call, fully equipped and well-trained team from Akona Customer care is always available to provide best services.

In case of any difficulty Please contact

Akona Engineering Pvt. Ltd.,

Customer Support

Hycon House, A-455, Hindon Vihar,

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Ghaziabad-201001(U.P.)

Help Desk – **(Tollfree No.-1800-121-457-457)**

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NOTE: - All the information in this manual is based on latest product information available.

A.E.P.L. reserves the right to make changes at any point of time without any notice & incurring any obligations thereof.

STANDARD WARRANTY FOR HOTMIX PLANT AKONA MAKE HMP 20-30 TPH MODEL

This warranty applies to HMP - 20-30 TPH, WITH TWO DG SET AND PLC operated.

WARRANTY CARD

In the event of any defective part being discovered within a period of one year from the date of delivery/commissioning (as per S.O.) then said defective part/s will have to be returned to dealer/workshop on freight basis. We shall inspect such part/s thoroughly. On satisfaction, if the defect is found due to faulty material or poor workmanship, the same will be repaired or replaced with a new one free of cost but freight charges will be borne by the customer. The defective part/s, which has been replaced or repaired, will be sole property of the A.E.P.L.

The benefit of warranty is given to the owner and cannot be transferred if the machine resold or send out.

Warranty is not applicable for: -

1. Starter, Capacitor, Hydraulic element, electronic component, Belt, Pulleys, Chains, Gear, Couplings, Plumbing's accessories, tyres, tubes, & Bearings etc. However, the company will passion to the customer the benefit of any guarantee/warrantee of the electronic motors, pumps and engines given by the manufacturers and will on behalf of the customer take up with such manufacturers any complains which they may have regarding the workmanship.
2. Defect due to wear and tear, accident, improper adjustment, misuse, or lack of maintenance.
3. Spare manufactured by the party/customer and then fitted to concrete mixer supplied by the Akona Engineering Pvt. Ltd.

Limitations and Exclusions:

1. To fair wear and tear or to damage due to negligence or improper handling or incorrect application or improper handling or incorrect applications or incorrect installation by the purchaser, or his employees or agents or in the case of repairs or alterations carried out by the purchaser without or knowledge and written approval.
2. Any damage due to use of lubrication oil, fuel quality and grade not recommended by us.
3. Any damage resulting from improper shutdown.
4. Any failure to meet its obligations here under which are due to circumstances beyond its reasonable control including but not limited to industrial disputes, fire, severe weather conditions, government decisions, material shortage, power or machinery breakdown or failure or war.
5. We will not be responsible for loss or damage to goods beyond the delivery point as stated in our tender and we will repair or replace free of charge goods damaged in transit up to the point of delivery (consignee location) as specified above.
6. Strike, Lockout, Fire, Theft, Accident during transit from consignee location to user end and anything by the act of God constituting the force Majeure.

OUR QUALITY POLICY

We would like to introduce ourselves as a leading construction equipment manufacturer since 1991, in northern India.

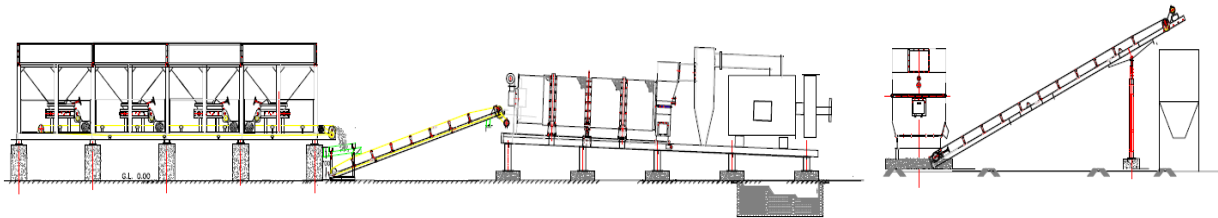
The company is devoted and engaged in manufacturing of all types, capacities of building construction as well as road construction equipment such as, batching and mixing plant, hot mix plant, wmm plant.

Our qualified & well-trained engineers capable to manufacture the equipment, plant as per customer specification, requirements.

“To Offer the Products and services to the satisfaction of the Customer and strive Continuously Upgrade Quality in all Respect Through the Joint Efforts of all Employee”

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OPERATION AND MAINTENNANCE MANUAL ***MODEL: HMP 20-30*** ***CAPACITY: 20-30 TPH***



AKONA ENGINEERING PVT LTD.

AN ISO 9001:2008 CERTIFIED COMPANY

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INTRODUCTION OF PLANT HOT MIX PLANT HMP 20-30 DRUM MIX (CONTINUOUS TYPE)

The drum type hot mix plant is adopted for laying bituminous mix. In the drum Mix Plant, aggregates, heating, drying, and bitumen mixing are done in same drum. It has been widely adopted due to its following features:

- Portability
- Higher efficiency
- Economy in basic cost
- Lower fuel consumption
- Reduction in manpower
- Less maintenance
- Trouble free operation
- Ability to produce large quantity of mix at relatively low temperature
- Environmentally friendly.

HMP 20-30 plant is parallel flow type. In parallel flow type drum mix plant, aggregates, and hot gases flow in same direction inside the same drum.

The hot mix drum type plant has following component as:

1. Cold aggregate bin feeder
2. Gathering conveyor
3. Auxiliary Gate conveyor
4. Aggregate over size rejection Vibrating Screen
5. Slinger conveyor (Charging conveyor)
6. Automatic weighing system
7. Dryer cum mixing Drum with burner
8. Exhaust Control System
9. Bitumen Unit
10. Pollution Control Unit (Primary dust collector)
11. Load out Conveyor (Hot mix conveyor)
12. Surge Silo
13. Control Cabin
14. Control Panel
15. LDO tank
16. Mineral Filler Unit

APPLICATION (PURPOSE) OF HOT MIX PLANT

The purpose of hot mix plant is:

- To blend different size of aggregate in specification portion.
- To dry aggregate (reduce moisture content to below .5%) and heat them to the specified temperature.
- To heat the bitumen uniformly at specified temperature.
- To feed controlled quantity of bitumen and filler in the specified proportion.
- To mix the aggregate with bitumen and filler thoroughly and uniformly to produce homogenous mix at the specified temperature.

CAPACITY OF HOT MIX PLANT

The capacity of hot mix plant is given in ton per hour and is specified in the following manner for two different values of the moisture content in the aggregates:

1. Output of plant at 6 percent moisture content in aggregate.
2. Output of plant at 2 percent moisture content in aggregate.

The hot mix plant 20-30 TPH capacity shall produce an output of 20 TPH at 6 percent moisture content present in aggregates and 30 TPH at 2 percent moisture content present in aggregate, other factors such as dust content and altitude may affect the performance.

SALIENT FEATURES OF HMP 20-30

- Modern hot mix technology.
- Produce high quality mix.
- High production rate.
- Easy to operate.
- Highly accurate aggregate & Additive feeder.
- Modular Design for Containerized transport.
- Fully Automatic Computerized Control Panel Board.
- Electronic Weighing system with load cell.
- A heavy-duty oil bath spur gear box to operate mixer shaft.
- Easy to erect and dismantle due to bolted type design.

TECHNICAL DESCRIPTION & COMPONENT FUNCTION OF HMP 20-30

1. **COLD AGGREGATE FOUR BIN FEEDER**

The cold aggregate bin feeder contains 4 nos. bins with separator between them & manufactured by 5 mm thick M.S plate having 5 m³ Capacity each Bin. The bin walls and bin gates are so designed as to prevent arching and ensure smooth flow of aggregate. Bin Gates have a graded scale to control the amount of gate opening. The first bin containing fines is provided with a bin vibrator to avoid sticking of fines with the bin wall. Motors are provided below each bin to control the speed of conveyor belt, to vary aggregates proportion. One gathering conveyor is provided to collect aggregates of different size from the conveyor fitted under each bin. Properly designed and calibrated bin gate are provided for smooth flow of aggregates.

2. **GATHERING CONVEYOR**

Gathering conveyor discharge aggregate into the slinger conveyor after receiving the material from auxiliary conveyor under each bin. The essential components of gathering conveyor are the continuous belting, idlers, driving unit, and pulley and take up unit to maintain the tension in the belt and supporting structure.

3. **SINGLE DECK VIBRATORY SCREEN FOR REJECTION OVER SIZE MATERIAL**

A robust heavy-duty frame single deck vibratory screen is placed at the end cold aggregate feeder in the slinger conveyor. Its job is to remove oversize aggregate before being fed to the slinger conveyor. It is fitted with a vibrator.

4. **SLINGER CONVEYOR**

Slinger conveyor is a high-speed inclined conveyor, its job is to transfer the aggregate received from the vibrating screen after removing the oversized aggregate into the Drum Mixer.

5. DRYER AND MIXER UNIT

It is revolving cylindrical drum dia-1250mm and 4850 mm length thick ness-12mm. The drum is in inclined position. It includes a burner and blower fan which provides primary air for combustion of fuel and an exhaust fan to create a draft through the dryer. The drum is fitted with longitudinal trough or channels called flights mounted with bolts and nuts. The flights lift the aggregates and drop it in veils through the burner flame and hot gases. The dwell time will depend on the slope of drum. The balance between

fuel and air supply should be maintained for complete combustion and efficient dryer operation. Imbalance between draft air and blower air velocities can cause a back pressure within the drum, which should be maintained.

Normally, dryer is designed to heat and dry the aggregates at 4 to 6 % moisture content for maximum efficiency. If moisture content present in aggregates increases the feeding of aggregates into dryer drum reduced, resulting in drop in hourly production capacity of plant. The temperature of aggregates controls the temperature of mix. The layer of bitumen put on each particle of aggregates during mixing achieves the aggregates temperature instantaneously. The aggregates heated at high temperature can harden the bitumen during mixing while under heated aggregates cannot get a proper coating of bitumen. Therefore, aggregates should be heated uniformly at appropriate temperature to achieve homogenous mix.

It is a rotary shell made of heat resistance steel 12 mm thick, supported on rings and rollers. Its main function is:

- I. To remove moisture from aggregates by heating it at appropriate temperature.
- II. To blend aggregates and bitumen in desired proportion to achieve homogenous mix with in 140° to 160°

Design Aspects: -

- a. Dryer cum mixing unit drum is divided into two zones:
 Combustion Zone: - The Heating and drying of aggregates take place in this Zone.
 Mixing Zone: -The mixing of aggregates, the filler and bitumen takes place this Zone.

6. DUST COLLECTION SYSTEM:

A. Primary multi-cyclone dry dust collector: We provide dust collector drying and mixing with multi-cyclone dust collector of adequate capacity and exhaust capacity of fan to extract hot gases. Dust collector is designed that a proper balance achieved between air flow necessary for optimum drying performance and that which will permit proper dust control. An exhaust fan we provide with chimney and with a damper. It has efficiency of 90%. Its function is to collect undesirable amount of dust coming from the exhaust. It is cyclonic in shape, in which dust is collected and removed/ added to dry aggregates, if required. It consists of cyclonic separator and works on the principle of centrifugal separation. It is fitted at the rear of dryer drum. The flue gases leaving the dryer drum pass through these separators. Single cylinder cyclone basically consists of a large diameter cylindrical shell having a conical base. Dust laden gas enters this shell tangentially, which gives it spinning motion and makes it to travel up to bottom of cylinder. After reaching the bottom, it spirals up and is sucked out (vacuum created by exhaust fan) through coaxial cylinder fitted at the top. The large size dust particles are thrown out towards the wall cylinder due to spinning motion of gas. These particles slide down and are collected in a hopper. These are removed through auger screw and send to mixing zone if desired. Multiples units of cone having longer length of cyclones, smoothness of inner wall are the main factors responsible for higher efficiency of cyclone. These can remove 60 to 90 % of dust from the dryer.

B. Wet Dust Collector (Pollution Control Unit): - We provide wet dust collector with Venturi type designed to achieve a most efficient control on air pollution to emission from exhaust chimney. The pollution control unit is based on the principle of wetting and trapping of dust particles entered in the exhaust gases thereby converting these to droplets which is drain out from the system in the form of slurry. The exhaust fan ensures effective control on air flow through the dryer and dust collector system. In that dust laden exhaust gas is draw from drum mixture and led into the ventilation by exhaust fan entering the separator and removed after mixing with water to pond by centrifugal action and skimmer blade.

Venturi scrubber type, dust lades gases are made to pass through a venture section which is constantly wetted though stream of water at high pressure. The flue gases pass through this venture section and atomize the liquid resulting in deposition of dust particles with fine water droplets. In the complete process, clean air goes out and dust particles in the form of slurry are removed from the bottom of the cylinder. It has a high efficiency of 99%.

7. OIL BURNER UNIT FOR DRYER DRUM:

We provide oil bitumen burner unit. It can heat the aggregate to a temperature of above 160°C without unburnt fuel or carbon residue on the aggregate and reducing the moisture contents of 0.5% by weight and capable of giving an output of 20 TPH at 6% moisture and 30 TPH at 2% moisture.

8. BITUMEN TANK WITH HOT OIL HEATING AND CIRCULATION UNIT, BITUMEN PUMP AND COMPRESSOR: (BITUMEN UNIT)

Bitumen Tank: - It is insulated, of adequate capacity (10000 Liters.) Provided along with plant. Total 10 Ton capacity bitumen tanks are adequate to run 20-30 ton per hour capacity plant. It consists of a tank fitted with burner in fire tube. The fuel used in burner is light diesel oil/ furnace oil. Dial indicator type thermometer is provided outside the tank to indicate bitumen temperature. The burner should have thermostatic firing control for automatic control of bitumen temperature within the specified range.

Hot oil tank & Hot Oil System: - Hot oil tank of adequate capacity and it is fabricated with 5mm MS plate, insulated by 5mm glass wool, a burner, blower, and hot oil pump provide with it. It consists of hot oil tank, hot oil pump and bitumen line jacketing. It is used to maintain uniform temperature of bitumen and avoids its clogging in bitumen line. The system may be used either as duct heating or indirect heating as describe here:

-

Direct Heating: - A insulated tank containing hot oil with independent burner in flue tube is mounted on the chassis of bitumen tank. Air and fuel from existing bitumen heating system are used for heating hot oil. Hot oil in the range of 150 °C -180°C is circulated through bitumen pump and bitumen line jacketing with an independent pump.

Indirect Heating: - Hot oil tank is installed at the top of bitumen tank, from where hot oil passes by gravity into the pipeline passing through the bitumen tank. Hot oil gets heated by bitumen tank temperature and circulated in bitumen pump and bitumen line jacketing via independent pump.

Bitumen Pump: - It is positive displacement pump driven by induction motor to induct bitumen in mixing zone of drum. The system ensures bitumen delivery in desired proportion to dry weight of aggregates. In case modified bitumen is being used in plant, adequate no of agitators in bitumen tank, made for its proper circulation, mixing, and maintaining uniform temperature. It may be ensured that guideline for use of modified bitumen is strictly followed to maintain the quality of mix.

9. SURGE STORAGE SILO: -It is a storage silo; finished asphalt mix is carried by conveyor from mixer drum to well insulated storage silo equipped with a hydraulically operated discharge gate to await transportation to the paving location. Door opening and closing of hopper hinged at one side and a hydraulic system consists telescopic cylinder, axial piston pump, control valve, hydraulic tank, oil hose pipe is provided with it. The hydraulic system is operated by the induction motor of adequate capacity coupled with a reduction gearbox. Scraper plates are providing at the discharge end of conveyor to scrap out the mix concrete from hot conveyor.

10. MINERAL FILLER SYSTEM: - This unit is meant for adding fine filler in the mix Mineral filler system is feed the mineral filler from the hopper. A hopper having capacity of 1 cum, is fabricated by steel plates with loading doors. A pneumatic system uses for transportation of filler from filler bin to weigh hopper is conducted either pneumatically or mechanically. In pneumatic system, mineral filler is sent under air stream and handled as a fluid. It is more accurate control system which eliminates the changes of plugging. The filler conveying system include a rotary valve with .75 kw motor, adapter chute and with fines piping back to drum mixer and blower skid with compressor operated by an electric motor of adequate capacity.

11. BITUMEN METERING SYSTEM: -
 In this include skid mounted positive displacement bitumen, jacketed gear pump with a variable speed motor drive. The motor drive is synchronized with the aggregate feed to automatically achieve a specific RPM of the motor for desired percentage of bitumen final mix. Digital ED display to be provided in the control cabin to indicate the bitumen flow rate in Liters per minute.

12. CONTROL PANEL AND CONTROL CABIN: -
 A control panel with control cabin provided For Automatic proportioning and cycling control work together through preset interlocking devices. Automatic dryer control regulates the temperature of aggregate discharged from dryer automatically within a preset range.
 The control panel consists of an air-conditioned cabin to avoid the effect of heat, dust, and vibration: which can cause of MALFUNCTION in the system. The cabin wall floor mounting type fabricated from steel having front and back hinged door. The control cabin we provide the vermin proof and have more space for clear working area behind the panel connection and testing.
 A fully automatic electronic type, computerized control panel board which offer centralized operation of whole plant unit, and an AC and insulated dust proof control cabin with glass wool provided for around vision to watch the operation of the plant placed near the panel.

The control panel operated for the following functions: -

- a) Operation and control of all AC drive with load meters in the plant and hydraulic discharge hopper timer and operation.
- b) Automatic speed control of each bin feeder conveyor to maintain exact pre-set proportion of each grade of four bin as per required design mix.
- c) Automatic time relay type of synchronization of flow of aggregate by AC variable speed drive of each bin feeder conveyor with flow of bitumen to exactly control the quantity required as per design mix.
- d) Control for pre-setting the moisture content of the aggregate displayed digitally.
- e) Digital indication and automatic control of bitumen temperature mix material temperature and digital indication of exhaust temperature flow of aggregate of each bin, grade and totalizer, flow of bitumen, totalizer of mix material output, aggregate and bitumen consumption, individually and its control.
- f) Automatic control of all burner units for dryer burner and bitumen tank burners separately with automatic flame and nozzle control in dryer burner.
- g) All the above functions will operate by a competent keyboard sensed by computerized control system with memory functions, design on microprocessor card system. Panel also offer additional functions like fault detection at any point in plant operation and emergency tripping of unit.

TECHNICAL SPECIFICATIONS OF HMP 20-30**FOUR BIN FEEDERS:**

The aggregate bin feeder consists of 4 bins of 10 MT capacity each. The hopper has been properly designed with slopes, allowing a constant discharge without bridge forming. The first bin meant for the small size aggregate or dust is fitted with vibratory motor to ensure the free flow.

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Nos. of bins	4 bins	
2	Capacity of each bin	5 m ³	
3	Each bin drive motor	2 HP	
4	Each bin gear box ratio	C-20	
5	Each bin belt conveyor	450 mm	
6	Sand Vibrator	200/3	
7	Gathering conv. motor	5 HP	
8	Gathering conveyor gear box	D-20	
9	Gathering belt conveyor	600mm,19500mmX10mm	4 PLY
10	Weighing system	Load cell based	

VIBRATING SCREEN: Vibrating screen is assembled at the end of cold aggregate feeder in the slinger conveyor.

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Vibrating Screen motor	200/3 self vibrator	
2	Dimensions	1000x840mm	
3	Screening area	.84 M ²	

SLINGER CONVEYOR: A separate detachable slinger conveyor is provided to transfer the aggregates received from gathering belt and to feed it into the dryer combustion zone.

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Length	7500mm	
2	Conveyor belt	600mmx15500mmx10mm	
3	Gear box ratio	D-13	
4	Structure	Heavy -duty sturdy and robust frame for anti-vibration	
5	Motor	5 HP	

DRYER DRUM: -production t/h @ ∇ t 120 °C temperature, specific heat of aggregate .21 kcl/kg/°C, specific weight of aggregate 1.6 ton/cum, net heat value of fuel 9850 kcl/kg. Atmospheric pressure 760 mmHg.

2% Moisture ----- 30 TPH

6% Moisture -----20 TPH

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Drum diameter	1250 mm	
2	Drum length	4850mm	
4	Steel	IS :2062	
5	Internal Balding	8mm -J type flight + comb flight MS IS: 2062	
6	Chassis	I-Sec-250x125 mm structural steel	
7	Dryer Motor	15 HP	
8	Dryer Gear Box	R.R-15:1	
10	Trunnion Roller	4 Nos.- dia-270 x 120mm	
11	Supporting ring	Dia-1400x120x2 Nos.	
12	Bearing	Self-aligning dust proof	
13	Primary dust collector	21 cone multi deck	
14	Exhaust Motor	15 HP	

DRUM BURNER: - Drum Burner is the heart of the entire system hence its efficiency, ease of serviceability etc. are most important factor. The temperature is controlled through thermostatic control device to operate the plant in desired temperature range. For additional safety dryer burner fuel pump Motor & Blower Motor can be interlocked with dryer drum Motor, hence burner cannot fire when dryer drum is not rotating. It has two stage high & Low, Capacity to reduce the moisture up to .5% and achieve 180 Deg Celsius for aggregate.

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Starter type	Electrical	
2	Capacity (LPH)	180 to 225	
3	Fuel	LDO/Diesel	
4	Blower HP	5 HP	
6	Fuel Pump HP	3 HP	
7	Relief valve	2	
8	Solenoid Valve	2	
9	Air control	Automatic /Manual	
10	Fuel Filter	1	
11	Controls	2/3 stage high and low.	
12	Power supply	440V AC	

BITUMEN TANK: - Fully insulated double walled tank is equipped with separate high-pressure burner for heating the bitumen. The positive displacement jacketed bitumen pump coupled with reduction gear box and variable speed motor is provided with hot oil circulating system

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Capacity	10,000 Liters	
2	Bitumen pump	Positive Displacement jacketed	
3	Hot oil circulating	Built in Tank itself	
4	Tank Shape	Cylinder-type, vertical position	
5	Insulation	50mm glass wool and covered with GI sheet	
6	Burner	Automatic diesel fired	
7	Thermal duct, manhole, hook	Yes	
8	Thermometer	Yes	

MINERAL FILLER UNIT -The filler is provided to add filler from a separate hopper in the mix. The unit is fabricated from 5mm thick sheet plates and mounted on robust steel structure. The system is powered by a variable speed motor coupled with aggregates and bitumen. The piping is provided up to coating zone in the thermo drum.

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Capacity	1 m3	
2	Blower Motor	2 HP	
3	Filler discharge type	Rotary Valve	
4	Rotary valve motor	0.75 kw	
5	Gear Box (Rotary valve)	R.R-30:1	

LOAD OUT CONVEYOR: - Mixed hot material taken out from mixer drum is carried by inclined hot conveyor belt & discharge into the truck through automatic hydraulically operated surge silo. The storage silo consists of one hydraulically operated cylinder, for opening and closing silo door. A separate motor with gear box is provided to run the conveyor belt.

Sl. No	PARTICULARS	DESCRIPTION	REMARKS
1	Length	12 meters	
2	Motor	7.5 HP	
3	Conveyor belt	24500x10x600mm	4 PLY
4	Gear Box	D-13	

TOTAL POWER CONSUMPTION IN HMP 20-30 TPH

S.no	Item	Rating	Quantity	Total	UNIT
1	Bin Motor	2 HP EACH	4	8	HP
2	Bin Gathering Motor	5 HP	1	5	HP
3	Bin Vibrator	200/3 (0.75 KW*)	1	1	HP
4	Slinger Conveyor Motor	5 HP	1	5	HP
5	Slinger Conveyor Vibrating Screen Motor	100/3 (0.75 KW*)	1	1	HP
6	Dryer Motor	15 HP	1	15	HP
7	Dryer Burner Motor	5 HP	1	5	HP
8	Dryer Pump Motor	3 HP	1	3	HP
9	Loadout Conveyor Motor	7.5 HP	1	7.5	HP
10	Bitumen Pump Motor	5 HP	1	5	HP
11	Bitumen tank burner motor	1 HP	1	1	HP
12	Mineral Filler blower motor	2 HP	1	2	HP
13	Mineral Filler rotary valve	1 HP	1	1	HP
14	Hydraulic power pack motor	3 HP	1	3	HP
15	Exhaust Motor	15 HP	1	15	HP
TOTAL:				77.5	HP

Note: -Design & Drive may vary as per modifications recommended by Designer/ Customer.

OPERATION OF HOT MIX PLANT HMP 20-30

PRINCIPLES FOR OPERATION

Following principles govern the operation of modern hot mix plant:

1. The operation should be carefully planned, so that the final product is of a highly quality.
2. The operation should be run by a competent manager, who with his supporting staff, are all fully conversant with the plant, its operation and maintenance.
3. The aim should be continuity in operation, avoid break-down and intermittent working.
4. The adequate stock of ingredients must be ensured.

The guidelines point given below should also be taken care of before starting, shutting down and running the plant.

- a) The sample of aggregates, bitumen and mix material should be taken at regular intervals of time and tested.
- b) The stockpiles of aggregates should be checked frequently.
- c) The operation of cold feeders (Setting of cold feeders) should be checked twice daily and more frequently, if variation appears in the mix, calibrate, if required.
- d) The operation of the dryer should be checked regularly.
- e) The hot screens, hot bins and dust collector should be checked daily for uninterrupted flow of aggregates.
- f) The weigh hopper and bitumen bucket should be checked daily. The accuracy of all scales should be checked at least once a week.
- g) The operation of mixer unit should be checked regularly.
- h) In drum mix plant, the bitumen pump should be checked for its accuracy and got calibrated, if required.
- i) Carry out visual inspection of mix, collect mix samples, do extraction test on mix and bitumen penetration daily or as required, to ensure compliance with specification.
- j) The record is pertaining to quantity of aggregate, bitumen, mix being laid, and their temperature be maintained.

PRECAUTIONS DURING OPERATION AND MAINTENANCE OF HOT MIX PLANT HMP 20-30

The following precaution should be observed during various sequence of operation of the plant to achieve better performance and optimum utilization:

1. Cold Aggregate Bin Feeder:

- Segregation of aggregate as well as intermixing should be prevented, while loading aggregates into bins.
- Bins should contain the aggregates of correct size and kept loaded fully, to allow even flow through the feed gate in a particular set position. The approximate tonnage per hours for gate opening is provided in the form of calibration chart for each gate.
- Arching of fine aggregate is prevented by placing a vibrator in the bin containing fines.
- Moisture in aggregates should be avoided.
- To avoid any damage of conveyor belt, by getting the aggregate stuck between gate and belt, the discharge gate opening of bins be kept 1.5 times the maximum feed size of aggregates. If required, grizzly may be kept over the bins to prevent large pieces of stone coming into the bins, which may clog the gate.
- After completing the work for the day, bins should be left with minimum material especially during rainy season. It will ensure less strain on belts and drives while starting bin feeder next day and their longer life.
- The material build up should be checked periodically to prevent rollers from turning and remove the same.

2. Dryer cum mixing unit:

- Before starting the dryer ensures the feed box bottom door is opened dust removed and cleaned.
- Before starting the plant, the nozzle and burner should be cleaned with kerosene oil.
- Don't allow the aggregate to flow through the dryer drum when the hot conveyor not working.
- Before starting the dryer drum, the aggregates should not be inside it. Since a very high torque is required to start the dryer drum filled with aggregates.

- If furnace oil is used in burner, it should be pre-heated to bring down its viscosity, before passing it through burner. The Furnace oil to be preheated between 100 centigrade -110 centigrade.
- Before starting, ensure the combustion chamber of dryer drum and bitumen boiler are completely dry. Refractory lining of combustion chamber should be dried with low wood fire and not by oil firing.
- Don't permit open fire around fuel oil tanks.
- Always stand and hold torch at desired length, to prevent getting burnt in case burner puffs back.
- While lighting burner, never allow excessive fuel to be sprayed into combustion chamber of drum.
- Don't keep the burner lighted for a long time preferably more than five minutes, without aggregates inside the dryer drum, as the dryer drum may bulge. Operate the burner on low flame when it is not loaded fully.
- Shape of flame is regulated by means of air swirling action. Maximum swirl will produce a short wide flame and minimum swirl a long cigar shaped flame.
- If fuel pump delivery is irregular or negligible, prime the pump and see the pump does not suck air through joints on suction side.
- Observe the exhaust smoke during operation. If it is found black, it means incomplete combustion of fuel and feeding of excess fuel. Necessary action may be taken accordingly.
- Ensure no holes are formed in the cyclone unit, which may add to excess dusty conditions at site.
- The flow of material in dryer drum should be uniform; it should not be overloaded by passing more quantity of aggregates from four bin feeder to dryer drum. It should be checked by measuring hot aggregates temperature, to be maintained at about 180 centigrade and moisture content to not exceed 0.5 percent.
- The heat loss of aggregates from dryer to mixer and hot mix from mixer to laying site should be checked at regular intervals of time.
- At the end of the day, put off the dryer drum burner by stopping fuel oil supply and then the motor.

3. Burner:

- The burner fitted on dryer unit should be adjusted properly to maintain uniform and desired aggregates temperature. Shorter and longer flame length will heat the aggregates and dryer ends properly.

4. Screening Unit:

- The screen must be of adequate area, having correct size of openings and arranged in sequence.
- The screen must be set at proper slope for smooth flow of aggregates.
- The screen should not have holes. The clogging of screen will not allow the aggregates to pass through. Therefore, the screen must be inspected and cleaned frequently.

5. Bitumen Unit:

- Ensure before filling the bitumen tank, it does not contain water. Even a small amount of water will cause hot bitumen to foam up several times its normal volume, resulting in its overflow.
- Fill up the bitumen tank to its 80 % capacity only since the volume of bitumen increase while raising the temperature. The overflow of bitumen can be a fire hazard.
- The bitumen boiler should be located nearest to the plant to ensure safety, reduce the strain on the bitumen pump and prevent the clogging of bitumen line. The lead pipes should be insulated against risk to the work man and maintain the bitumen temperature. It should always be at inclined position to enable the hot bitumen to run down to the bitumen boiler when not in use. The boiler should also be erected with slight downward inclination towards the hottest firing end. Cold bitumen under the flue tubes will then drain down the inclination towards the firing end and can be drained without choking.
- The top lids of the bitumen tank should be kept closed, since the water, dust are the deterrents to good and clean bitumen. Clean the external sides of barrels, before charging to prevent foreign matter going into the boiler. The dust and fine particles settle down around the flue tubes, which results in poor heat transfer, local heating of flue tubes and cracks are produced in welding resulting in leakage, which can be fire hazardous.

- In case excess fuel has been fed into flue tubes, shut off the fuel supply and allow air to blow off the fuel and again start the procedure for lighting the burner. It is always safe to start the blower first before turning of the fuel.
- Bitumen must be maintained at specified temperature. Overheating may cause cracking and it may be difficult for the pump.
- Whenever there is a change in type of bitumen to be used, the bitumen tank should be drained and cleaned thoroughly with solvent before further use.
- Certain solvent like diesel oil to be used for cleaning are highly inflammable and must be thoroughly drained before bitumen is circulated. If the traces of such solvent reach the mixer and meet the heated aggregates, causing a fire hazard.
- Bitumen tank burner may be lighted, only when the level of bitumen inside the tank is higher than the heating tubes.
- Circulate the hot oil for about fifteen minutes to melt the bitumen sticking to the walls of the bitumen line.
- While inducting hot oil into a cold line, open the valve very slowly, to allow piping and jackets heat up gradually, Rapid induction of hot oil into cold lines will result in expansion of lines and may damage the connecting points in line.
- The hot oil level should be checked regularly in the hot oil tank. If the level falls, check for any leakage in hot oil or jacketed bitumen pipelines.
- Ensure that dust does not enter the meter relay box and dial head.

6. Bitumen pump:

- It is rotary gear type of pump in which while working, suction develops on the kettle side and pressure on the delivery side of the pump.
- The gear pump should be thoroughly drained at the end of each operating period.
- The failure to clean the pump results in solidifying the bitumen around the rotor and may break the gear teeth or driving shaft when the power is applied. The only means of relieving the clogged rotor is by heating the pump, which is troublesome.
- Never pump in dry state.

- When “weeping” becomes apparent at the bottom pump gland, tighten the gland nuts carefully, one flat at a time. If “weeping” is allowed to persist, it soon becomes a leak and gland packing is to be replaced.
- It should be made a practice to disengage the pump drive at the end of operation. Otherwise, if the plant is started next day, before the bitumen is sufficiently heated for circulation, the pump drive, if still engaged will place excessive strain on the driving shaft and might cause the shaft or rotors to break. The pump rotor should also be reversed for about four to five minutes, as soon as the plant is stopped, to empty the bitumen pipelines. Always observe that the pump rotors are free by applying the V-belt drives gradually. Slipping of the belt over the pump driving pulley indicates that the rotors are clogged and need heating to relieve them. Never apply the drive quickly, as it may cause damage to the pump rotors or shaft.
- If the rate of flow of pump falls during operation, the cause may be slipping of clutch. In case it is not so, it would mean that pump rotors have worn out and need renewal.
- When a new pump or pump with new rotor is fitted, the pump at times may fail to lift the bitumen. To overcome this, uncouple the pipe from delivery side and pour a small quantity of heated bitumen approximately ten liters and at same time reverse the pump rotor by means of hand wheel. Reconnect the pipe and start up. This difficulty would not occur once the pump has been operating satisfactory.
- Bitumen to be used in the mix should be heated to ensure its fluidity before the pump is started. The bitumen must be allowed to circulate for at least Fifteen minutes before the mixing commences, to keep the meter, spray bar warm and relieve the solidified deposits throughout the circuit. A test cock in return line, closed to the kettle is provided to ensure that bitumen has completely circulated.

SAFETY INSTRUCTIONS

- ✓ Check all the electrical connections for tightness. Do not operate if electrical connections are loose.
- ✓ Check drives assembly. Do not operate machine if assembly is not proper.
- ✓ Check all the lubricating point. Do not operate the machine if the lubricating points are dry or has low oil.
- ✓ Check the entire nut and bolts for tightness regularly. Do not operate the machine if the nuts and bolts are loose.
- ✓ Operate the machine only by trained operator. Do not operate the machine if operator is not properly trained
- ✓ All the V-belts and pulley having guard covers.
- ✓ All the conveyor belts are partially covered to avoid accidents.
- ✓ Optional Emergency stop switches can be provided to stop the working of the entire plant at convenient location like cold aggregate feeder, dryer drum, main control panel and burner control panel at an extra cost.
- ✓ All the motors are equipped with safety devices like overload
- ✓ Keep the equipment in good running condition.
- ✓ Never operate unsafe equipment.
- ✓ Be familiar with all controls, gauges, instruments.
- ✓ Look around before starting the plant and equipment.
- ✓ Never leave the equipment unattended with its engine running.
- ✓ Keep operator's cabin clean and free from oil and grease.
- ✓ Never carry out servicing, adjustment, and repairs when the equipment is running.
- ✓ Never permit unauthorized persons to handle the plant.
- ✓ The operator must have max unrestricted view of the operating area.
- ✓ Avoid loose connections in electrical system.
- ✓ Don't leave the control when the equipment is working.

- ✓ Avoid leakage and overheating of bitumen.
- ✓ Take precautions against backfire from burner.
- ✓ Store fuel and lubricants away from plant.
- ✓ Keep away from hot bitumen.
- ✓ Be careful while attending to lighted burner.
- ✓ Inspect all cables of plant periodically.
- ✓ No open fire should be allowed around bitumen or fuel storage tanks.

DAILY OPERATION INSTRUCTIONS

- ❖ Oiling & greasing to all Bearing, Chains, keep oil can filled up in the Machine for ready use.
- ❖ Check the oil level in all Gear Boxes. If found below level, top it up with proper grade (S.A.E-140).
- ❖ To check all the fasteners by the Tool Before the operation/ starting of the plant.
- ❖ Clean the dust sludge & other foreign material from gears, Roller of Conveyor Belt, and the Rotary Parts.
- ❖ Adjust Slinger Belt through 2 tension screw provided at the lower end to keep it in proper tension and inline. Also check the positioning of belt guard cover.
- ❖ Adjust Gathering Belt through 2 tension screw provided at the rear end to keep it in proper tension and inline. Always clean the load cell and its frame before starting the plant.
- ❖ Check Hydraulic Power Packs Oil level in Tank and filter of Hydraulic Tank. Clean it regularly. Change the Hydraulic oil in regular interval of time.
- ❖ Check the Roller of all the Conveyers before the operation start.
- ❖ Before starting / operating the plant the Rotary parts are to be checked manually for their freeness. Jamming indicates a blockage of same they should be removed and start otherwise the diode will burnt out and motor will play foul/ will not work properly.
- ❖ Before stopping the plant after the day schedule work. The following point religiously should be followed: - To run the dryer with at least 5 to 6 minutes with dry material so that the water or other adhesive lump may wash out and should not be locked the rotary parts.
- ❖ Slugs and waste material are to be properly cleaned.
- ❖ Use vacuum cleaner daily to keep Panel Cabin dust free for smoother and trouble- free operation.
- ❖ Always check proper tension of Bin Belt and inline ness of bin belt. Also check for the proper opening and closing of the feeder gate

WARNING

- ❖ The DG set used must be equipped with automatic voltage and frequency regulator.
- ❖ Do not switch on the Panel Power before setting and stabilizing the DG set out put (440V +10%, 50 Hz + 3%). In case of any failure in input power source, switch off the panel immediately.
- ❖ Use vacuum cleaner daily to keep panel cabin dust free for smoother and trouble- free operation.
- ❖ Before starting the panel make sure that AC is working and cooling properly. All the phases from the input power sources are present and are at proper level. See the proper earthing as per IS 3043.
- ❖ Check Oil level in Gear Boxes. Hydraulic oil tanks, Thermo fluid tank and all the lubrication points such as chains, Bearing etc.
- ❖ Oiling and greasing daily is absolutely must for smooth and trouble- free operation of the part.

NOTE: -

- *While doing general maintenance, cleaning belt, main nozzles etc., make sure that the panel power is cut switch off.*

**PLANT OPERATION INSTRUCTIONS WHILE STARTING, OPERATING AND SHUTTING
DOWN PLANT**

CHECK THE FOLOWING BEFORE YOU START THE PLANT: -

- Check the supply voltage between two phases. It should be at 440+10%
- Switch on the A.C. and let the cable cool properly.
- Each bin should be filled with aggregates as per required quantity.
- Keep sufficient water in earthing system.
- Check the positioning of all conveyor belts. It should be in line with motor and gear Box with V-Belt.
- Clean the panel keyboard by a clear and soft piece of clothes with any standard make cleaning liquid.
- Carry out the daily maintenance schedule as per instructions.
- Check all oil tank and gear box all should be proper grade of oil and fuels.
- Check the tension of V –belt, flat and chains.
- Check all grease point before starting the plant.
- Check all guards and covers fitted in the plant complying the safety norms.
- Heat the bitumen pipeline through hot oil system for uninterrupted supply bitumen.
- Check the conveyor belts for any damage of wear.
- Check the conveyor rollers for free turning.
- Check too much fuel is not sprayed into the combustion chamber of dryer.
- Check there is no water in the bitumen tank before pouring the bitumen in the tank.

SEQUENCE OF OPERATION FOR STARTING AND SHUTTING DOWN THE PLANT

The starting and shutting down the plant should be done in chronological order for its smooth running. The sequence for starting various components of plant is as under:

- Exhaust Fan
- Dust Cleaning system
- Filler feeding system
- Vibrating screen
- Dryer
- Slinger conveyor
- Gathering conveyor
- Cold aggregate feeder
- Burner

The Shutting down the plant, the first component to be stopped is the input of aggregate system. The material trapped inside the drum should be then flushed out from the system in the sequence shown below:

- Cold Bin feeder
- Gathering Conveyor
- Slinger conveyor
- Burner
- Vibrating screen
- Dryer cum mixer
- Cleaning system and filler system
- Exhaust fan.

THE FOLLOWING POINTS SHOULD ALSO BE CONSIDERED, WHILE SHUTTING DOWN PLANT:

- As soon as the last portion of aggregates leaves the dryer, the burner should be shut off, the cock provided close to the burner, which cuts off the fuel supply. Now shut off the dryer motor. When the final aggregate has been mixed and discharged, both ends of paddle shafts should be cleaned with light diesel that they are free to rotate at the time of starting the plant next day.
- The plant should not be stopped in case the material is in transit. The plant may be stopped if dryer, elevator, screens, bins, mixer are empty.
- Now, put off the bitumen tank burner by stopping the fuel supply. Stop the bitumen pump and reverse its drive immediately, either by hand wheel or reversing the motor rotation. Move the lever on pressure regulator to draining position. Fix the discharge of weigh/ spray system hopper in open position. The bitumen system must be drained thoroughly to ensure its easy operation the next day. All bitumen piping should have slope downwards to the kettles to assist drainage, and a tap fitted in the delivery line just after the pump, which may be left open over night to prevent the thoroughly drained off, before re-circulating the bitumen.
- The fuel Tank should be filled.
- Defects, if any or unusual sound should be reported to the concerned engineer and got rectified.
- Check and rectify any leakage, especially in bitumen and hot oil system.
- Inspect the blower of exhaust fan for balancing and play of bearings.
- Weld the cracks in the sheets, if found.
- Clean the plant, especially dust/ aggregates collected underneath the belt/ chain conveyor and lubricate all points.
- Keep the motors and exhaust pipes covered to avoid rain or dew entering inside.
- Switch off the dryer burner.
- Close the LDO Valve.
- Run the bitumen pump in the reverse direction at least 10 minutes then close the bitumen valve and run the pump in flow direction by using LDO/Diesel 3 to 4 liters approx. for 5 minutes and let the LDO/Diesel go out through the 3-way valve.

- Let the plant run alone without four bin and Gathering conveyor for 10 minutes to cool down the entire equipment.
- Clean properly the hot load out conveyor.
- Disconnect the main power supply to panel Board and lock the cabin.

IF THE PLANT IS LEFT IN OPEN FOR MORE THAN SIX WEEKS, CERTAIN PRECAUTIONS SHOULD BE OBSERVED.

- Isolate the mains supply to electrically driven plant to prevent unauthorized starting.
- Warp all V- belts pulleys with a strong, self-adhesive paper and lubricate exposed chain drives.
- Grease all adjusting screw, Dryer swiveling support rollers, and motor slide rail adjusting screw Jack to prevent rusting.
- Protect the dryer burner nozzle.
- Close the window of control cabin and keep the door closed.
- Cover the top of exhaust fan to prevent ingress of water.
- Cover the inlet of the burner air blower.
- If the doors are fitted in the dryer feed end box, pin it in the closed position.

Erection and Transport

A normal civil work foundation is required for making plant stationary and so that it could bear the affecting load and sustain the occurred vibration. Material like aggregate, sand, bitumen should be of sufficient quantity; lack of material can cause reducing efficiency of the plant. Special attention should be taken where the ground soil is soft. In case of soft soil, concrete should be used to make the soil hard otherwise ground will sink and it can cause misalignment. Water pipe and power cables must be used with proper safety / shielding to avoid any damage that may occur during operation. Make certain that no loose objects are placed on the mixer before starting double check make certain that no unauthorized people are close to mixing drum. Make certain that all fuses are intact and free of dirt. It is important that the fuses fit the plug-in use. Check the phases properly before start. If phases are charged, then system can move in opposite direction. Hence change the phase accordingly.

Erection site

Check to ensure accuracy and dependable operation of the proposed equipment and methods prior to the start of concreting operations and after making any changes in the location or arrangement of the plant. Plant calibration and proper erection of the plant is the responsibility of Site Engineer

Check the general layout of the plant before the equipment is erected to ensure efficient operation and adequate space for stockpiling and handling materials in compliance with specified requirements. Whenever possible, avoid the arrangement and erection of plant in congested locations which are not conducive to proper handling of materials. Small stockpiles result in segregation and non-uniformity of materials and very poor control of the mix. Once the plant is erected in such a location, it is difficult to improve conditions. Experience has demonstrated that the most uniform mix is produced when the plant is favoured by adequate space for the maintenance of large stockpiles of materials.

When draining aggregates at the plant site, provide provisions for disposal of drainage water and for clear cut separation of drained from un-drained materials. Keep materials of different sources/classes or gradations separated.

Erect the weighing bins and hoppers on firm foundations to avoid settlement, which might affect the accuracy of the equipment.

TRANSPORTATION OF MACHINE.

A registered vehicle must be used when plant is transported on the public road and the speed limit must not exceed 40km/hr.

- Dryer mixer must be empty during transport.
- Load cells must be free from any load during transportation.
- Make sure that nothing sticks out before transporting the dryer mixer; make certain that all loose objects are securely fastened.
- Always drive slowly on uneven ground and pay attention when turning.
- Only use cranes/elevator and loading equipments that have sufficient carrying capacity.
- Determine a competent person to guide the lifting operation.
- Lift machine and parts properly with lifting equipment accessories.
- Use slinging point for loading equipments
- Use suitable transport vehicle having sufficient loading capacity.
- Do not unload the complete machinery all at once, please unload one by one.
- Use red signal / red flag, at rear side of trailer, while transporting during night.

Personnel requirements

Personnel moving the machine require no special training. Nevertheless, we recommend that this operation be handled by someone who regularly uses lifting equipment in full respect of the safety standards currently in force. If this requirement cannot be implemented, contact **AKONA's** Service Department.

Instructions for lifting and moving the machine

The machine can be hoisted using a bridge crane, a mobile crane, a forklift, or any other suitable means with a capacity of at least twice the weight of the machine. Anyone operating the hoisting equipment must stay a suitable distance away from the part being lifted. He must also make sure that people and property are not exposed to any possible risk if the machine should fall. Movements must be slow and constant to avoid breaking the cables, chains, etc. The machine comes with specifically designed gripping points that are indicated with hooks or slots given in the structure/frame of the machine/plant.

Important:

Ensure that the load is correctly balanced. In case of accidental collision, immediately verify the extent of any damage and contact the manufacturer if necessary

MAINTENANCE SCHEDULE OF HMP 20-30

DAILY MAINTENANCE SCHEDULE: -

- 1) Check the gear box oil level at least one hour after the shut down the plant, when the oil will settle down and indicate the correct level. If necessary, top them up.
- 2) Top up all drip feed lubricators.
- 3) Tighten all bolts after completing day's operation, especially mixer arms, tips, liners, dryer lifter, blade, roller path.
- 4) Check the bearings and ensure that overheating does not occur.
- 5) Turn on all chain drive drip feed lubricators.
- 6) Turn the key on the filter, in the burner fuel supply pipeline periodically during the day, to remove water and sediments.
- 7) Open the tap of moisture separators of air receive twice daily.
- 8) Check the gland of bitumen pump. Tighten if weeping is evident.
- 9) Be alert for undue noises, which may be due to loose bolts.
- 10) Recheck the angle of dryer drum frame to ensure that no local shrinkage has occurred

WEEKLY MAINTENANCE SCHEDULE: -

- 1) Clean the filters on suctions side of the burner fuel and bitumen pump.
- 2) If filters are fitted on the blower, remove the element, wash it in paraffin soak lightly in fresh oil and refit.
- 3) Check all V-belts and chain drivers and do necessary adjustments accordingly.
- 4) Inspect feeder and conveyor belts for wear and tear and broken fasteners.
- 5) Check all belt scrapers on feed unit and in surge silo. Ensure they are in good condition and effective. If necessary, replace them.
- 6) Check the conveyor belts in case of holes or cuts repair them immediately by lacing or vulcanizing.
- 7) Clean the cyclone of dust collection.
- 8) Periodic inspection of flue tube is essential to prevent a fire accident resulting out of punctured tube.

MONTHLY MAINTENANCE SCHEDULE: -

- 1) Clean the burner nozzles as per instructions.
- 2) Check all electrical wiring and cables for loss of insulation or corrosion and replace, if required.
- 3) Check the screen meshes and repair/ replace, if required.
- 4) Check the load cell and replace, if required.

QUARTERLY MAINTENANCE SCHEDULE: -

- 1) Drain the oil of gear boxes, flush them and refill to correct level with recommended gear oil.
- 2) Inspect the dryer chain ring for worn out or broken pins. Remove the affected segments of the ring/ pins and replace them.
- 3) Check the oil level in exhaust fan bearing and top up, if required.
- 4) Inspect the liner plates in dryer feed ring, discharge chute replaces if required.
- 5) Check the burner combustion chamber refractory for carbonization, clean it and repair, if required.
- 6) Clean electric contact and relays in control panel.
- 7) Do the calibration of load cell and weigh bucket.

MAINTENANCE OF ELECTRICAL MOTORS: -

- 1) Isolate the mains supply to prevent unauthorized starting
- 2) Cover all the exposed motor starter panels and controls, with tarpaulin or plastic sheet to prevent their damage during rains.
- 3) Always place the proper size of fuse, while replacing it. Never put a substitute of different size.
- 4) Do earthing of entire electric supply line properly.
- 5) Keep the motors and contacts always clean, by blowing away the dust.
- 6) Test checks no volt's coils and overload protection devices for their proper function.
- 7) All the wiring should be placed under insulated cabling and properly covered trench

GENERAL MAINTANENCE

DRYER AND MIXING UNIT: - Check running of mixing unit whether it is in line or not. If it is running in centerline, adjust it center by adjusting the guide roller and main rollers.

GATHERING CONVEYOR: - Adjust it through 2 tension screw provided at rear end to make it in proper tension and inline. Always clean the load cell and its frame before starting the plant.

SLINGER CONVEYOR BELT: - Adjust it through 2 tension screw provided at the lower end to make it in proper tension and inline. Also check the positioning of belt guard cover.

LOAD OUT CONVEYOR: - whenever you stop the plant for 2 to 3 hrs. Clean the load out conveyor properly.

BIN BELT: - Always check proper tension and in-liners of bin belt. And check for the proper opening and closing of the feeder gate.

HYDRAULIC POWER PACK: - Check oil leveling Tank and filter of hydraulic tank. Clean it regularly. Change the hydraulic oil at regular interval of time.

FUEL TANK: - Always check for level and at bottom tank. If dust is collected there, clean it before filling it.

BITUMEN TANK: - Do not fire the burner when gas tubes are open in the air. If the plant required stopping for 15 to 20 minutes run the bitumen pump by LDO and run for 5 to 10 minutes.

FILLER UNIT: - Always pay attention to storage. Fill it whenever it is required and always check for jamming in screw conveyor.

BITUMEN PIPELINE: - After the completion of work, make all the pipes empty by reverse running bitumen pump for 5-10 minutes and clean the pipeline by LDO or diesel.

BITUMEN BURNER: - Keep oil pressure up to 110 PSI to 120 PSI. If oil not spraying out check the nozzle and clean it. Check filter and pump for air blockage. Clean the filter and remove air bubbles from pump by losing the suction line.

- i. If igniter does not start check and clean electrode by benzene oil and keep electrode gap as mentioned in dryer burner. Check transformer and input supply.
- ii. If burner stops after few second of starting, check photocell, clean it and check and input supply.

THERMO FLUID SYSTEM: - Always check for the cleanness of the pipeline.

DRYER BURNER: - Always maintain proper cleaning of spray nozzles, burner, diffuser plate, and electrode, photocell, and suction lines. Maintain the distance of 4 locking and its cleaning. Always check for the distance between proximity switch and damper rod

Detailed Maintenance and Repair

MIXER DRUM

Cleanout

We recommend cleaning of drum mixers by rinsing with water or running a mix of water and rock to clean light build up. Done weekly, this usually takes about 10 minutes. In mixers with blades, remove excessive build up with chipping hammers or needle scalars.

Maintenance

Plant operators should perform regular inspections of drum liners and mixing blades. Inspection may be done on daily basis or after a fixed amount of output. (Checked once a month).

Check for worn or cracked blades on daily basis. Operator should ensure appropriate greasing for mixer ring and pinion together. Regularly greasing the gears and pulleys of your drum mixer will prevent damage caused by friction. This will extend the lifespan of the mixer and keep it performing at an optimum level.

Loose particles can wreck destruction on the motor, causing damage that is costly to repair. By keeping your motor clean, you can ensure that it performs optimally, while also preventing the need for expensive repairs.

BEARINGS

The way a bearing is maintained and handled has a huge impact on its performance. Proper maintenance and handling lead to longer bearing life, minimized downtime, and greater productivity, which ultimately leads to cost savings and lower cost of ownership for your business.



Checklist & Maintenance

Here is a simple 8-point checklist for ensuring your bearing is always handled in the correct way and thus, optimizing performance.



Handle Bearings with Care

Bearings are precision components. As such, they should be handled and stored in a proper manner to avoid the entry of contaminants. Bearings should be stored horizontally in a clean and dry environment with their packaging intact. Care should be taken to avoid exposing bearings to airborne contaminants, as just a tiny speck of dirt in a raceway can cause premature bearing failure. Do not hammer, pound, or apply direct force on a bearing or its outer ring. This can cause the rolling elements to be damaged and misaligned. Bearings should also not be installed if they have been dropped or mishandled, as little cracks and scratches can result in poor performance, and subsequently, premature bearing failure.

1. Inspect the Bearing Housing and Shaft

Before mounting a bearing, inspect the housing and shaft for physical condition or damage. Use a soft cloth to wipe the surfaces clean, and ensure any nicks and burrs are removed.

2. Apply the Correct Mounting Method

When mounting bearings, the correct method to use depends on the type of bearing and type of fit. Bearings with cylindrical bores are normally mounted through press fit method (mounting by pressing the bearing on the shafts) or shrink fit (heating the bearing to expand its diameter). Bearings with tapered bores can be mounted directly on tapered or cylindrical shafts with the help of tapered sleeves. Take note that pressure should only be applied with a press fit. Applying pressure without a press fit to the ring will damage the raceways.

3. Prevent Direct Heating or Overheating

The maximum permitted temperature of bearings depends on the heat treatment of the material. Temperatures above the heat limit can permanently deform or soften the bearing steel, thus reducing load carrying capacity and leading to eventual failure. Never heat a bearing using an open flame. Bearings should ideally be heated with induction heaters.

4. Use Proper Tools

Always use the appropriate equipment whenever handling bearings or during the mounting and dismounting process. Some of the specialized tools available for mounting and dismounting are bearing pullers, bearing fitting tool kits, oil injector kits, hydraulic nuts, or induction heaters. These tools are customized to ensure a smooth mounting and dismounting process and minimize risk of bearing damage. Avoid using general purpose tools for handling bearings. These are not specialized for bearings and may cause unwanted damage and incur unnecessary repair costs.

5. Prevent Corrosion

If bearings are exposed to the presence of water over time, rust and corrosion may occur. This will cause premature bearing fatigue and over time, affect your machine performance and productivity, increasing operating costs. When handling bearings, make sure you wear gloves, as perspiration on your hands, water, or other contaminants can cause corrosion. You may also use a water-resistant grease as your lubricant, which will then act as a protective barrier in damp environments. For extremely corrosive environments, you might want to consider using bearings with different materials, such as ceramic bearings.

6. Proper Lubrication is Essential

Proper lubrication is extremely important if you want your bearings to have a prolonged life. Lubricants can be either oil or grease, and the right lubricant depends on a series of factors such as environmental conditions, temperature, speed, and load. Follow your bearing manufacturer's recommendations for the most suitable grade and type of lubricant. Failure to use the right lubricant can result in machine failure or voiding of warranty. Do check lubrication levels frequently and be sure to change lubricants at least yearly.

7. Observe And Check for Danger Signs

The final step is to make sure you observe and be alert to any signs of abnormal or poor bearing performance. Examples include excessive noise, increased temperature, or abnormal vibration. If your bearings display any of these signs, they should be monitored more closely, and if needed, remove before any further damage occurs to your equipment or machinery. Vibration analysis can help you to track and detect any bearing danger signs early. Vibration analysis is part of condition monitoring, which can include technologies such as thermographs, vibration analysis and oil analysis, tools which can help compare current bearing states with historical data and thus provide an accurate assessment of the remaining life of the bearing. Tools like vibration pens can also provide a quick, compact, and easy option to check the Condition of your rotating equipment. This can provide you with an early warning about potential machine problems before a costly breakdown or failure.

VIBRATOR

Vibrator Mounting

With any vibrator installation, proper mounting is the key. A rigid mount ensures that vibration is transferred efficiently and prevents undue stress on the structure. A weak mount can result in damage to the structure and can allow the vibrator to detach from the structure if left unchecked.



These costly issues can be avoided by performing periodic mounting inspections, and using proper mounting procedures which are as follows

- Inspect and tighten mounting bolts.
- Inspect all welds – repair cracks and broken welds immediately. Remember that with Vibrators, it's best to use stitch welds rather than continuous welds.
- Use safety cables whenever possible to prevent a cracked weld from turning into a serious Safety issue should the vibrator become detached.

Maintenance Precautions

Electric Vibrators can be extremely low maintenance when properly installed. A few periodic checks can keep them in tip-top shape.

- It is extremely important with electric vibrators to make sure that your mount is in good condition. An insufficient mount can cause electric vibrators to draw too many amps, and if proper overload protection is not in place, the vibrator can burn up.
- Inspect all electrical connections and replace any damaged connectors.
- Inspect all wiring, and repair or replace any exposed wires.
- Listen to the vibrator while running. If you hear anything out of the ordinary, such as loud knocking, or grinding, turn the vibrator off, following all lock out/tag out procedures, and perform a visual inspection of the vibrator and mount.

LOAD CELL

Load cells are used to weight the consumable material like sand, cement, fly ash, water, Ad-mix, concrete. There are two types of load cells, provided for weighing: -

Single point platform load cell & S – Beam load cell.



Important points to remember

- Never earthen the load cell.
- Never use welding operation while load cell wires are connected.
- The connection to the load cells should be tight and right.
- Check the load cells on regular basis that there is any crack in the particular
- The weighing system should be free from any platform it should not be rested anywhere for accurate weighing.
- Load cell wire should not be grounded.



Maintenance

*Routine maintenance of the **S-type load cell & single point platform load cell** should include cleaning the electrical connectors, housings, and mounting surfaces with solutions and techniques that will not harm the physical material of construction. Make sure liquids are not allowed to migrate into devices that are not hermetically sealed. Such devices should only be wiped with a damp cloth, and never be submerged or have liquids poured on them. Never use a pressure washer on the load cells.*

Trouble shooting

Proper performance of a load cell requires careful attention to both electrical and mechanical aspects of the measurement system. A basic understanding of the electrical and mechanical installation requirements is recommended.

1. Mechanical Trouble Shooting

A mechanical checklist includes:

- Check for proper installation of fixturing.
- Check integrity of the fixturing.

2. Electrical Trouble Shooting

An electrical checklist should start with:

- Check cables for proper wiring and make sure connections are secure and proper.
- Inspect for loose or dirty electrical connections.
- Check for improper shield grounds.
- Check for proper grounding of the structure that the load cell is mounted on.
- Check the signal conditioning electronics for proper setup.
- Check the insulation resistance of shielded conductors for short circuits.
- Check isolation resistance, load cell flexure to conductors.
- Check load cell bridge resistances.
- Check bridge balance.

GEAR BOX

Maintenance and replacement work must be done by expert maintenance technicians trained in the observance of applicable laws on health and safety at work and the special ambient problems attendant on the installation.

Before doing any work on the unit, the operator must first switch off power to the gear unit and ensure that it is out of service, as well as taking all necessary precautions against it being accidentally switched on again or its parts moving without warning (due to suspended loads or similar external factors).

Furthermore, all additional environmental safety precautions must be taken (e.g., elimination of residual gas or dust, etc.).



- *Before doing any maintenance work, activate all safety equipment and, if necessary, inform persons working in the vicinity. Mark off the area around the unit and prevent access to any equipment which, if activated, might be the cause of unexpected health and safety hazards.*
- *Replace worn components with original spare parts only.*
- *Use the lubricants (oil and grease) recommended by the Manufacturer.*
- *When working on the gear unit always replaces gaskets and seals with new original ones.*
- *If a bearing requires replacement, it is good practice to also replace the other bearing supporting the same shaft.*
- *We recommend replacing the lubricating oil after all maintenance work.*

The above instructions are aimed at ensuring efficient and safe operation of the gear unit.

The Manufacturer declines all liability for injury and damage to components due to the use of non-original spare parts and non-routine work which modifies the safety requirements without the express prior authorization of the Manufacturer.

Routine Maintenance

Frequency	Component	Type of work	Operation
1000 h	External seals and gaskets	Check oil level Check for leaks by eye	Maintain or replace components as required
3000 h	For gear units with torque arm: polymer bushings	Check for cracks/ageing	Replace if no longer fully effective
5000 h	Gear unit seals and gaskets	Inspect Carefully of Wear And Aging of external seals.	Replace if aged/worn

Trouble shooting

PROBLEM	CAUSE	SOLUTION
<i>Bearing temperature too high</i>	<i>Oil level too low</i>	<i>Top up oil level</i>
	<i>Oil too old</i>	<i>Replace oil</i>
	<i>Defective bearings</i>	<i>Contact authorized workshop</i>
<i>Operating temperature too high</i>	<i>Oil level too high</i>	<i>Check oil level</i>
	<i>Oil too old</i>	<i>Replace oil</i>
	<i>Impurities in oil</i>	<i>Replace oil</i>
<i>Abnormal running noise</i>	<i>Gears damaged</i>	<i>Contact authorized workshop</i>
	<i>Bearing axial backlash too high</i>	<i>Contact authorized workshop</i>
	<i>Bearings defective or worn</i>	<i>Contact authorized workshop</i>
	<i>Service load too high</i>	<i>Correct service load to nominal values given in Sales Catalogue</i>
	<i>Impurities in oil</i>	<i>Replace oil</i>
<i>Abnormal noise at gear unit Mounting</i>	<i>Mounting bolts loose</i>	<i>Tighten down to specified torque</i>
	<i>Mounting bolts worn</i>	<i>Replace bolts</i>
<i>Oil leaks</i>	<i>Oil level too high</i>	<i>Check oil level</i>
	<i>Casing/coupling seals inadequate</i>	<i>Contact authorized workshop</i>
	<i>Gaskets worn</i>	<i>Contact authorized workshop</i>
<i>Gear unit does not run or runs with difficulty</i>	<i>Oil viscosity too high</i>	<i>Replace oil (see table of recommended lubricants)</i>
	<i>Oil level too high</i>	<i>Check oil level</i>
	<i>Service load too high</i>	<i>Redesign drive for actual service load</i>
<i>Output shaft does not turn with motor running</i>	<i>Gears damaged</i>	<i>Contact authorized workshop</i>

CALIBRATION PROCEDURE OF CONTROL PANEL**(A) AGGREGATE CALIBRATION:**

- 1 Change Speed sensing mode from Set to Actual
- 2 Set the feeder gates position

This position depended on the size of aggregates. Adjust opening of the gate approx. As per guidelines given by the plant manufacturer or chart given below.

MATERIAL %	Size of aggregate	Approx. Opening gate in %
13%	Stone dust	30 – 40%
12%	06mm	40 – 50%
45%	10mm	50 – 60%
30%	20mm	60 – 70%

- 3 start Load out, Slinger, Gathering conveyer and Drum. Wait for 5 min.
- 4 Take an empty tipper of know weight and let it be under the Load out.
- 5 Run the plant for test time, say 10min.
- 6 After test time of 10min. stop the feeder and let the plant run for 10 more min. for all the material to empty out of the drum and load out conveyer.
- 7 Weight the tipper with dry material loaded.
- 8 Aggregate display Show to 5TPH /hour
- 9 10min in 2ton output, 60min in?
- 10 $60 \times 2 / 10 = 12\text{ton}$
- 11 Aggregate display in show to 12ton/hour.
- 12 Aggregate display in show to 12ton /hour please change span.
New span = (Actual TPH X old span. /Old TPH
- 13 $12 \times 1.00 / 5 = 2.\text{span}$
- 14 in Change the SPAN
- 15 And restart the plant 10min. show to Agg. TPH 12.2
- 16 10min after loaded truck weight Show on weights bridge 2.1ton
- 17 Aggregate DISPLAY Show 2.1ton
- 18 Another time check calibration. Ok
- 19 Restart another time calibration to 2 FEEDERS reprocess.
- 20 One by one cheek calibration 4 BIN Feeders.

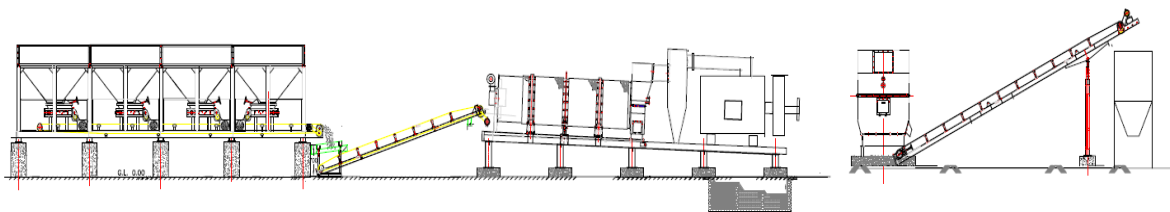
(B) BITUMAN CALIBRATION:

- 1 set plant load to 50% and Bitumen pot to 3%
- 2 Make some arrangement to collect the discharge of bitumen pump in a drum or other vessel.
Note weight of empty drum/vessel
- 3 Run the bitumen pump for 30 seconds.
- 4 Weight the drum with the help of weigh scale and find out weight of bitumen.
- 5 The weight should be approximately 1.625Kg for HMP 35 Plant, 7.5 Kg for HMP 20-30 Plant, 11.25Kg for HMP 60 PLANT.
- 6 If weight is less, then increase the speed of pump with the help of Amplifier card pot if weigh is more. Then decrease the speed of pump with the help of electronic card Pot
- 7 Repeat the above process again and try to get reading closet to the above weights.

NOTE: - CALIBRATION IN (+/-) 3% VARIATION.



***WORKSHOP MANUAL FOR BOTH ENGINE/
GENERATOR AND PLANT
OF
AKONA MAKE
HOT MIX PLANT
MODEL: HMP 20-30
CAPACITY: 20-30 TPH***



AKONA ENGINEERING PVT LTD.

AN ISO 9001:2008 CERTIFIED COMPANY

MFG. UNIT: -PLOT NO.: -200 RAIPUR INDUSTRIAL AREA, ROORKEE, HARIDWAR (U.K)

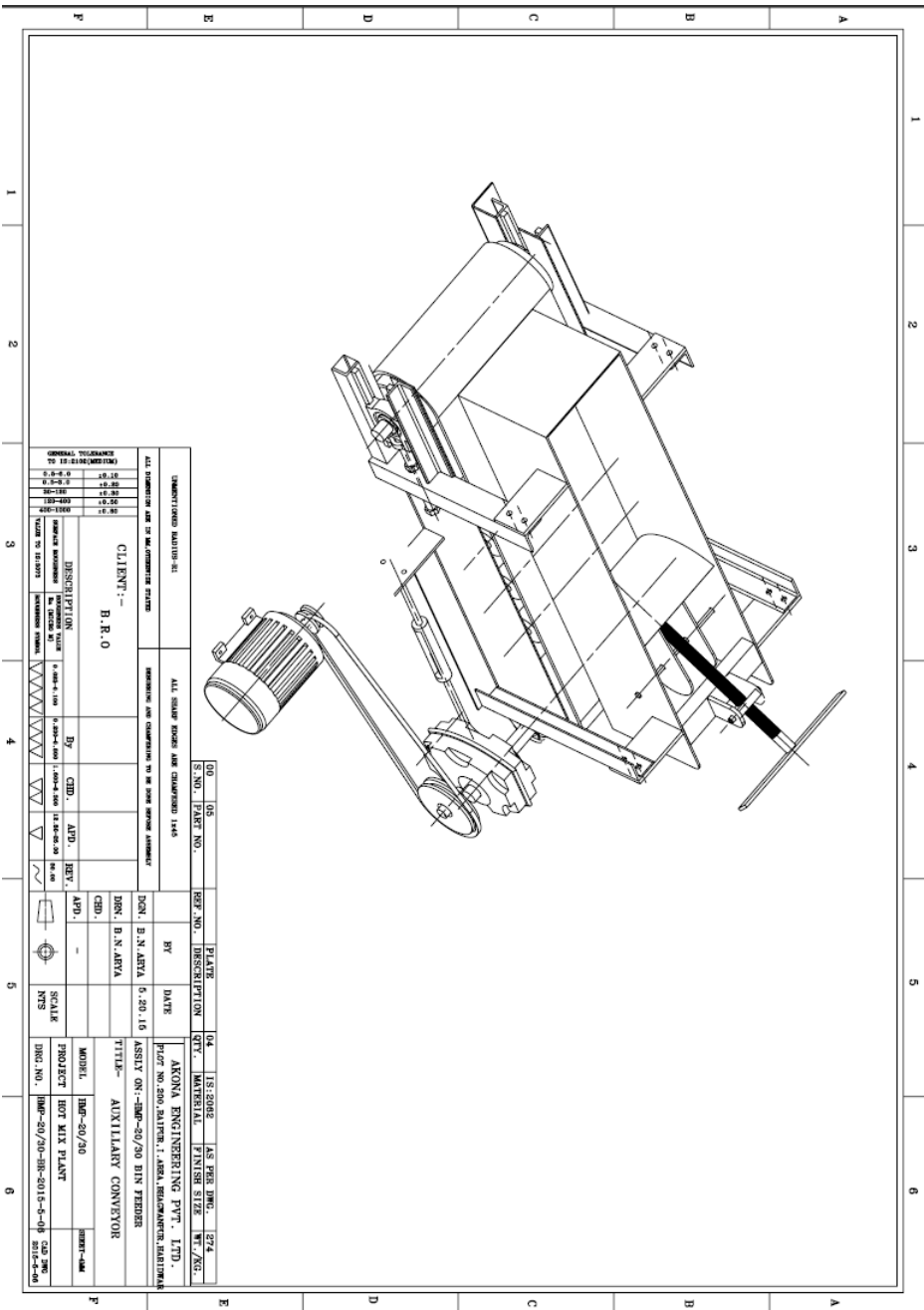
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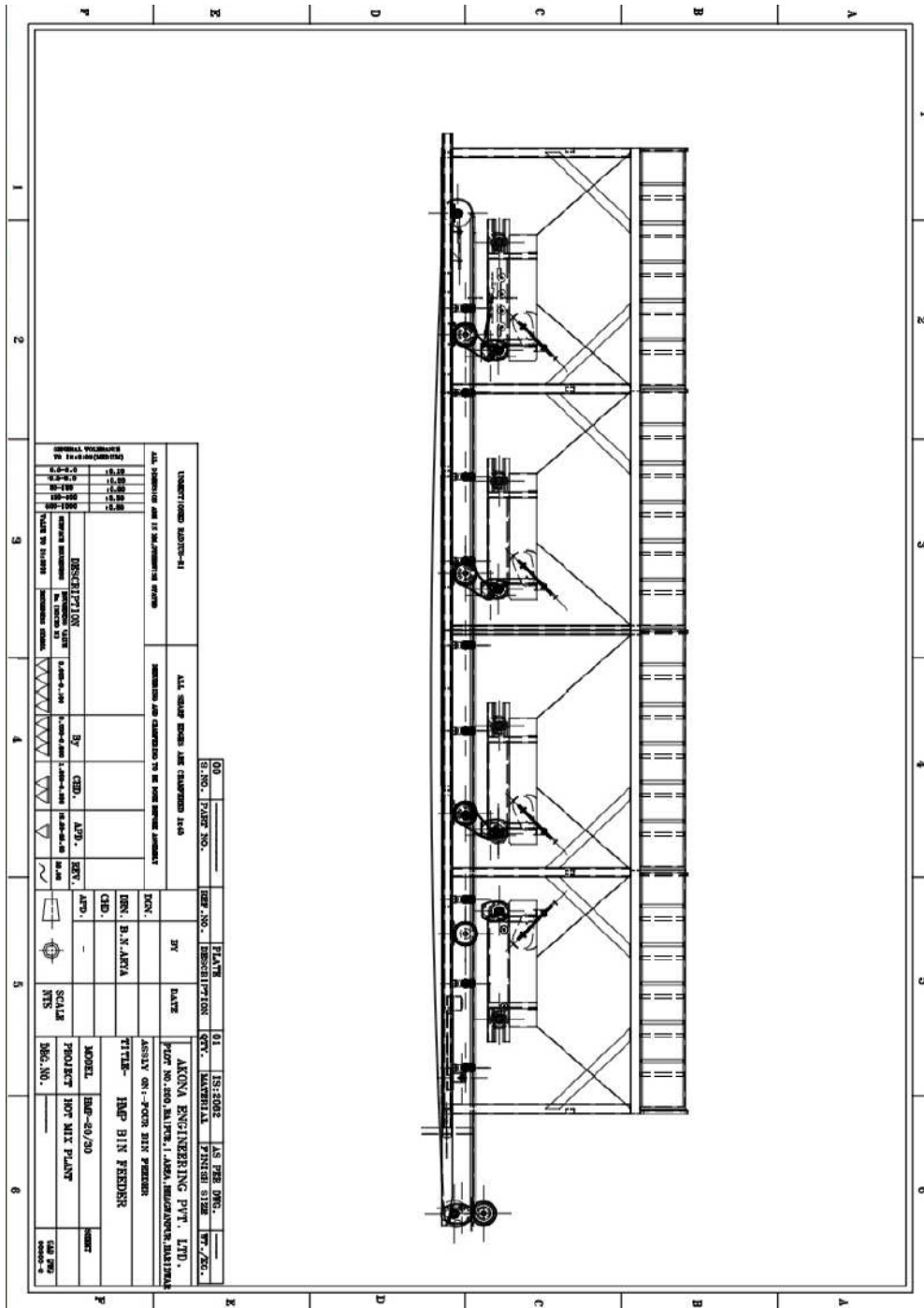
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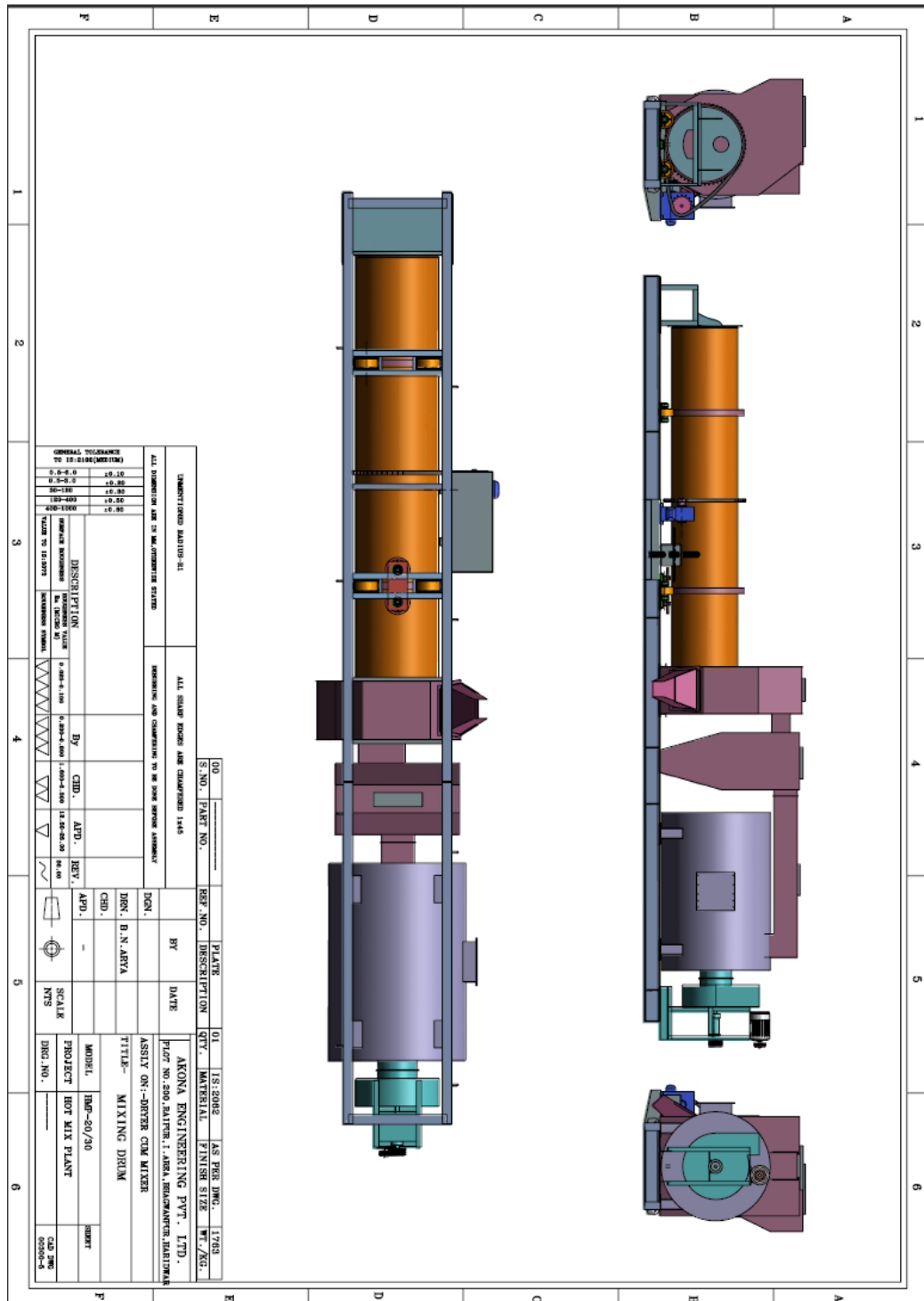
BIN CONVEYOR



FOUR BIN FEEDER



[48]



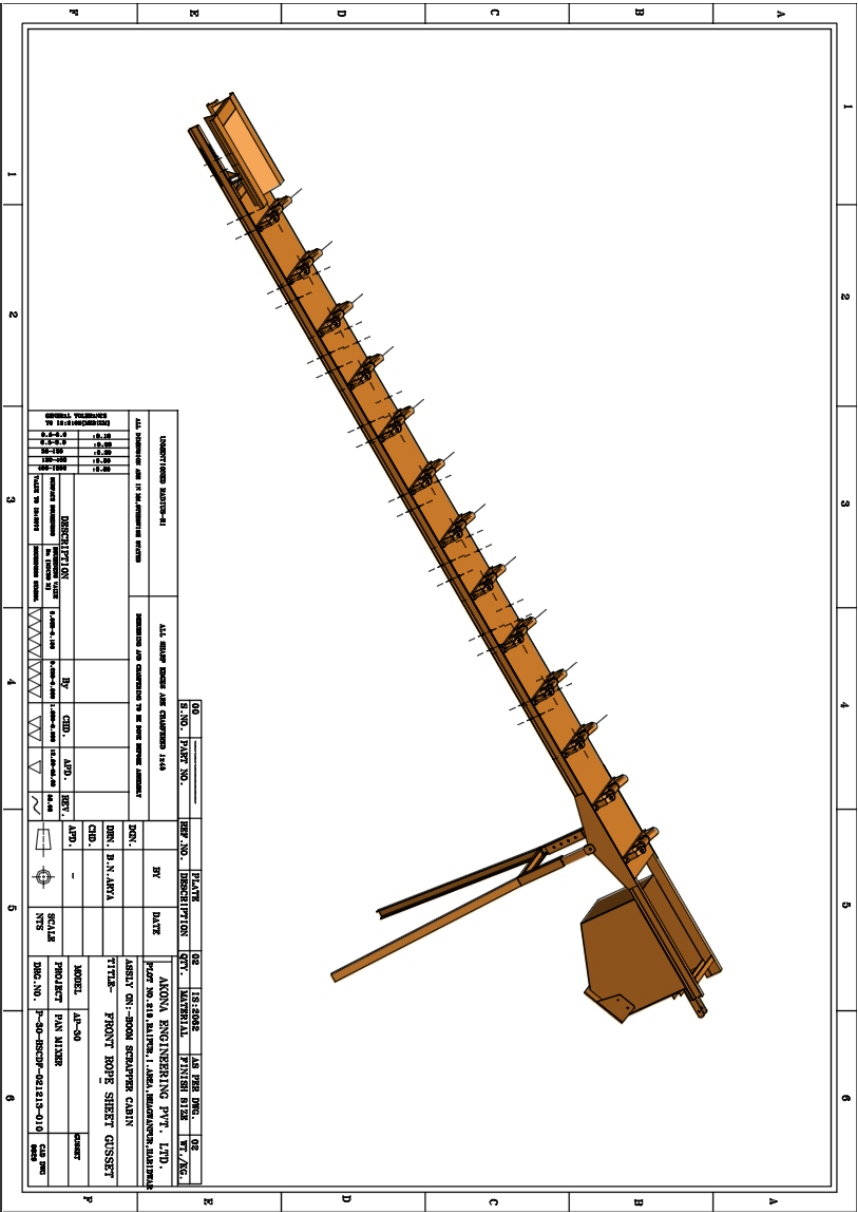
The image displays three views of a mechanical linkage mechanism:

- Top Left:** A side elevation view showing a rectangular frame at the top connected to a horizontal base. Two vertical rods pass through the frame and base, with a central pivot point between them.
- Top Right:** A plan view of the mechanism. It shows a curved, oval-shaped link with two pivot points marked with crosses. A dashed line indicates the path of a connecting rod that links this curved link to a horizontal bar on the right.
- Bottom:** A 3D perspective rendering of the mechanism. It features a brown, curved link connected to a wooden frame and a horizontal bar via a series of joints and rods, illustrating the assembly's form and function.

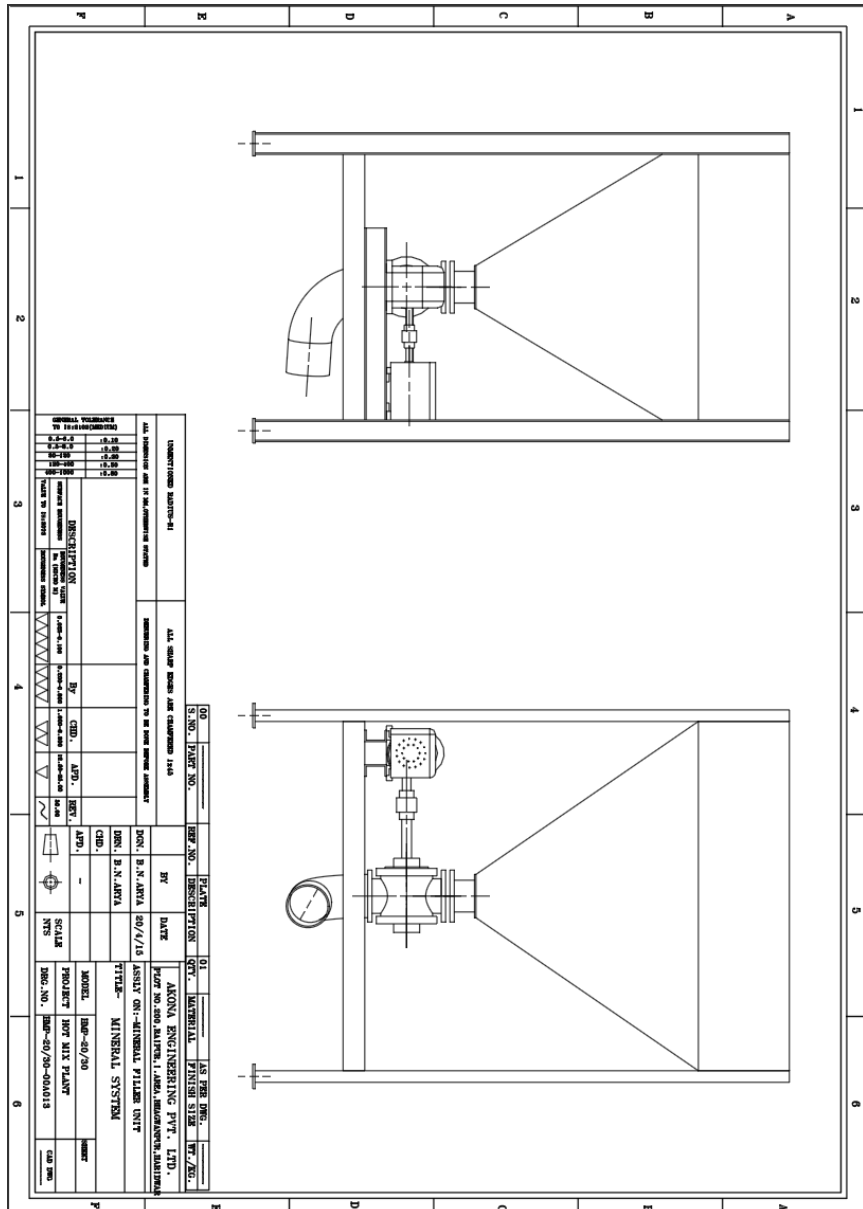
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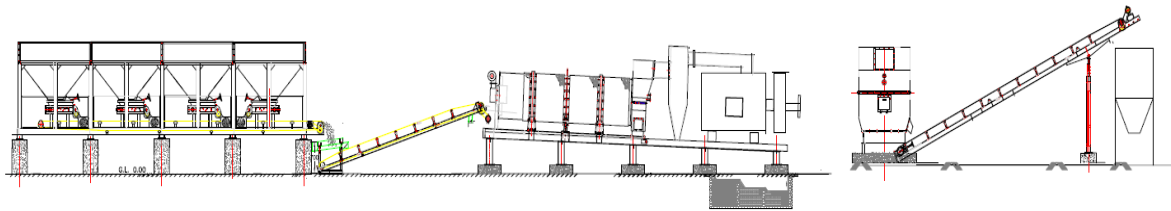
LOAD OUT CONVEYOR



MINERAL FILLER UNIT



*ILLUSTRATED PARTS CATALOUGE FOR BOTH
ENGINE/ GENERATOR AND PLANT
MODEL: HMP-30
CAPACITY: 20-30 TPH*



AKONA ENGINEERING PVT LTD.

AN ISO 9001:2008 CERTIFIED COMPANY

MFG. UNIT: -PLOT NO.: -200 RAIPUR INDURSTRIAL AREA, ROORKEE, HARIDWAR (U.K)

HEAD OFFICE: - HYCON-HOUSE, A-455, HINDON VIHAR, DELHI MEERUT RAOD, GHAZIABAD-201001 (U.P)

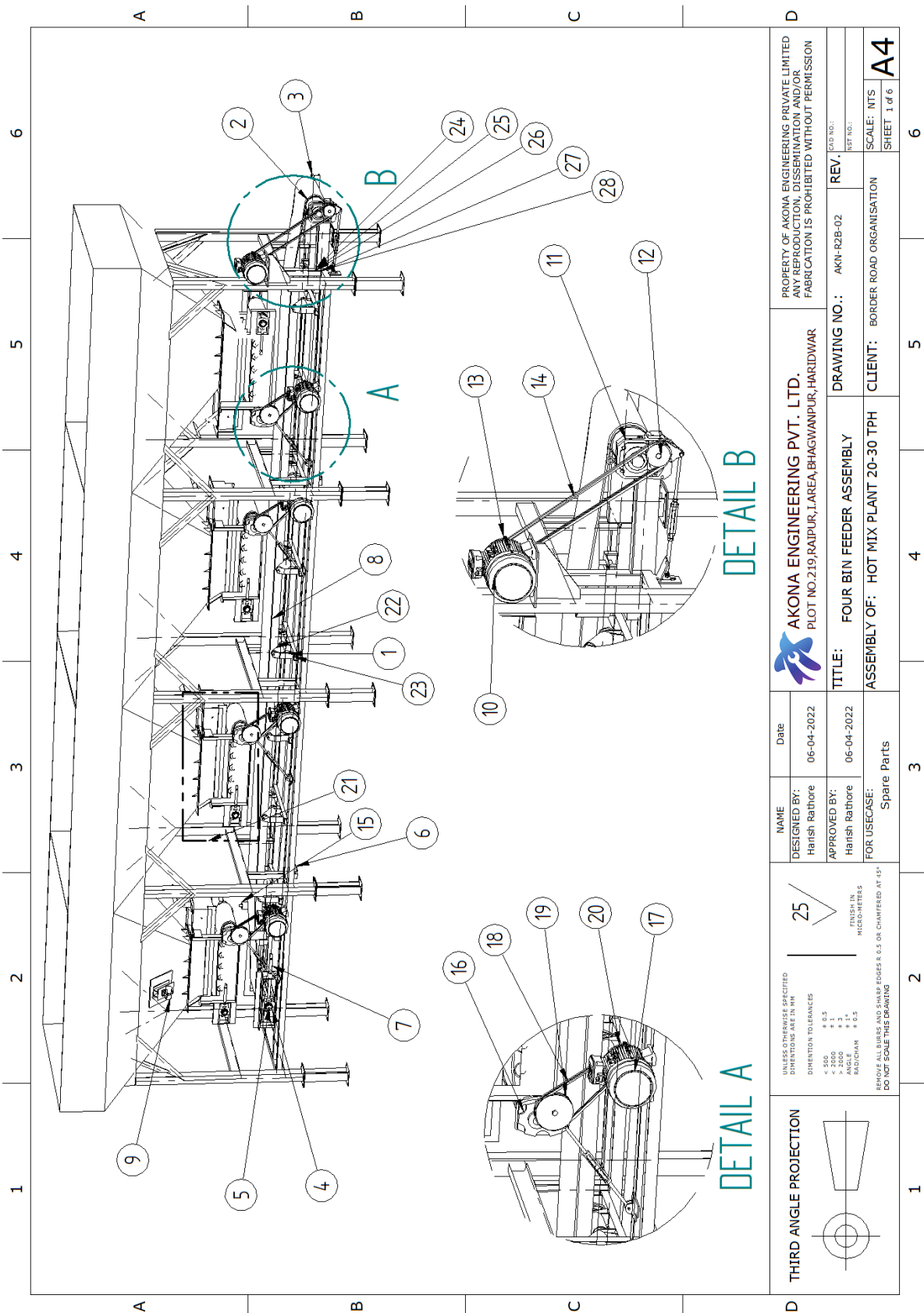
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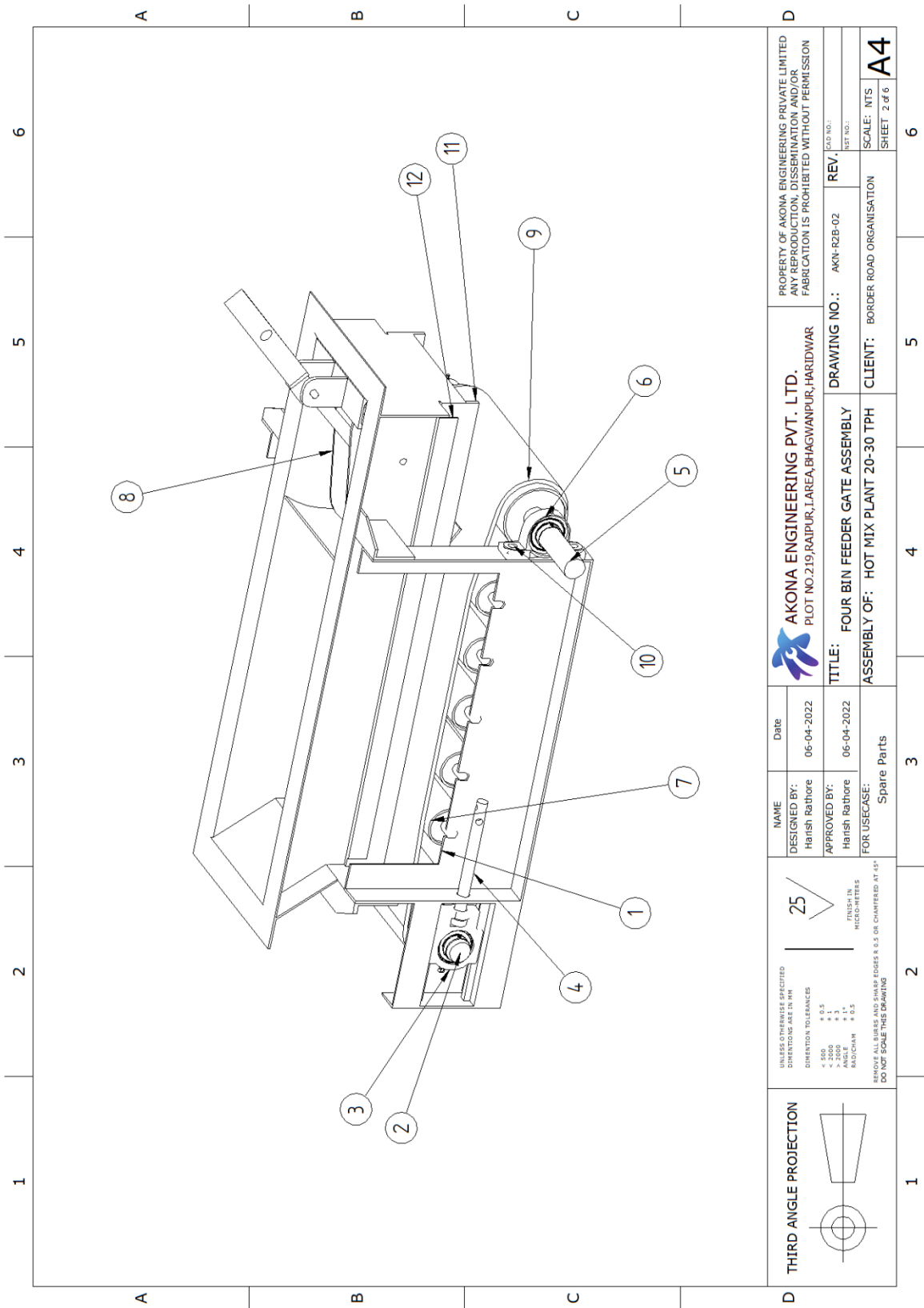
INDEX

S. No.	SUB-ASSEMBLY.	ASSEMBLY IDENTITY	SUB-ASSEMBLY NO.	REMARKS
1	FOUR BIN FEEDER	HMP- FBF	AKN-R2B/01	
2	FOUR BIN FEEDER GATE ASSEMBLY	HMP- BC	AKN-R2B/02	
3	SLINGER CONVEYOR WITH VIBRATING SCREEN	HMP- SC	AKN-R2B/03	
4	LOAD OUT CONVEYOR	HMP- LOC	AKN-R2B/04	
5	DRYER CUM MIXER DRUM ASSEMBLY	HMP- DMD	AKN-R2B/05	
6	DRYER BURNER	HMP- DB	AKN-R2B/06	
7	POWER PACK	HMP- PP	AKN-R2B/07	
8	MINERAL FILLER UNIT	HMP- MFU	AKN-R2B/08	
9	BITUMEN TANK	HMP- BT	AKN-R2B/09	
10	CONTROL CABIN	HMP- CC	AKN-R2B/10	
11	SURGE SILO	HMP- SS	AKN-R2B/11	
12	SPARES PARTS	NOT MENTION IN DWG.	AKN-R2B/12	
13	125 KVA GEN SET EICHER	BOUGHT OUT ITEM (Spares parts manual supplied with plant manual)		
14	30 KVA GEN SET EICHER	BOUGHT OUT ITEM (Spares parts manual supplied with plant manual)		



S. no	ILL. No.	Spare Part ID	Item	QTY.
1	1	AKN-R2B-02/01-01	Fourbin Feeder Roller Stand	8
2	2	AKN-R2B-02/01-02	Fourbin Feeder Main Drive Roller Head	1
3	3	AKN-R2B-02/01-03	Fourbin Feeder Main Drive Roller Head Bearing	2
4	4	AKN-R2B-02/01-04	Fourbin Feeder Tail Roller Bearing UCT211	2
5	5	AKN-R2B-02/01-05	Fourbin Feeder Tail Roller	1
6	6	AKN-R2B-02/01-06	Fourbin Feeder Support Roller	2
7	7	AKN-R2B-02/01-07	Fourbin Feeder Tail Adjusting Screw	2
8	8	AKN-R2B-02/01-08	Fourbin Feeder Main Belt	1
9	9	AKN-R2B-02/01-09	Fourbin Feeder Bin Vibrator	1
10	10	AKN-R2B-02/01-10	Fourbin Feeder Main Drive Motor	1
11	11	AKN-R2B-02/01-11	Fourbin Feeder Main Drive Gearbox	1
12	12	AKN-R2B-02/01-12	Fourbin Feeder Main Drive Gearbox Pulley	1
13	13	AKN-R2B-02/01-13	Fourbin Feeder Main Drive Motor Pulley	1
14	14	AKN-R2B-02/01-14	Fourbin Feeder Main Drive Vbelt	2
15	15	AKN-R2B-02/01-15	Fourbin Feeder Guide Roller	2
16	16	AKN-R2B-02/01-16	Fourbin Feeder Gate Gearbox	4
17	17	AKN-R2B-02/01-17	Fourbin Feeder Gate Motor	4
18	18	AKN-R2B-02/01-18	Fourbin Feeder Gate Motor Pulley	4
19	19	AKN-R2B-02/01-19	Fourbin Feeder Gate Vbelt	8
20	20	AKN-R2B-02/01-20	Fourbin Feeder Gate Gearbox Pulley	4
21	21	AKN-R2B-02/01-21	Fourbin Feeder Gate Box	4
22	22	AKN-R2B-02/01-22	Fourbin Feeder Gathering Conveyor Carrying Roller	24
23	23	AKN-R2B-02/01-23	Fourbin Feeder Gathering Conveyor Carrying Roller stand nut bolt	Kit
24	24	AKN-R2B-02/01-24	Fourbin Feeder Gathering Conveyor Weighing Loadcell	1
25	25	AKN-R2B-02/01-25	Fourbin Feeder Gathering Conveyor Weighing Loadcell Nut bolt	Kit
26	26	AKN-R2B-02/01-26	Fourbin Feeder Gathering Conveyor Weighing Loadcell Bearing	2
27	27	AKN-R2B-02/01-27	Fourbin Feeder Gathering Conveyor Weighing Loadcell Stand	1
28	28	AKN-R2B-02/01-28	Fourbin Feeder Gathering Conveyor Weighing Loadcell Stand Roller	3

2	FOUR BIN FEEDER GATE	HMP- BC	AKN-R2B/02
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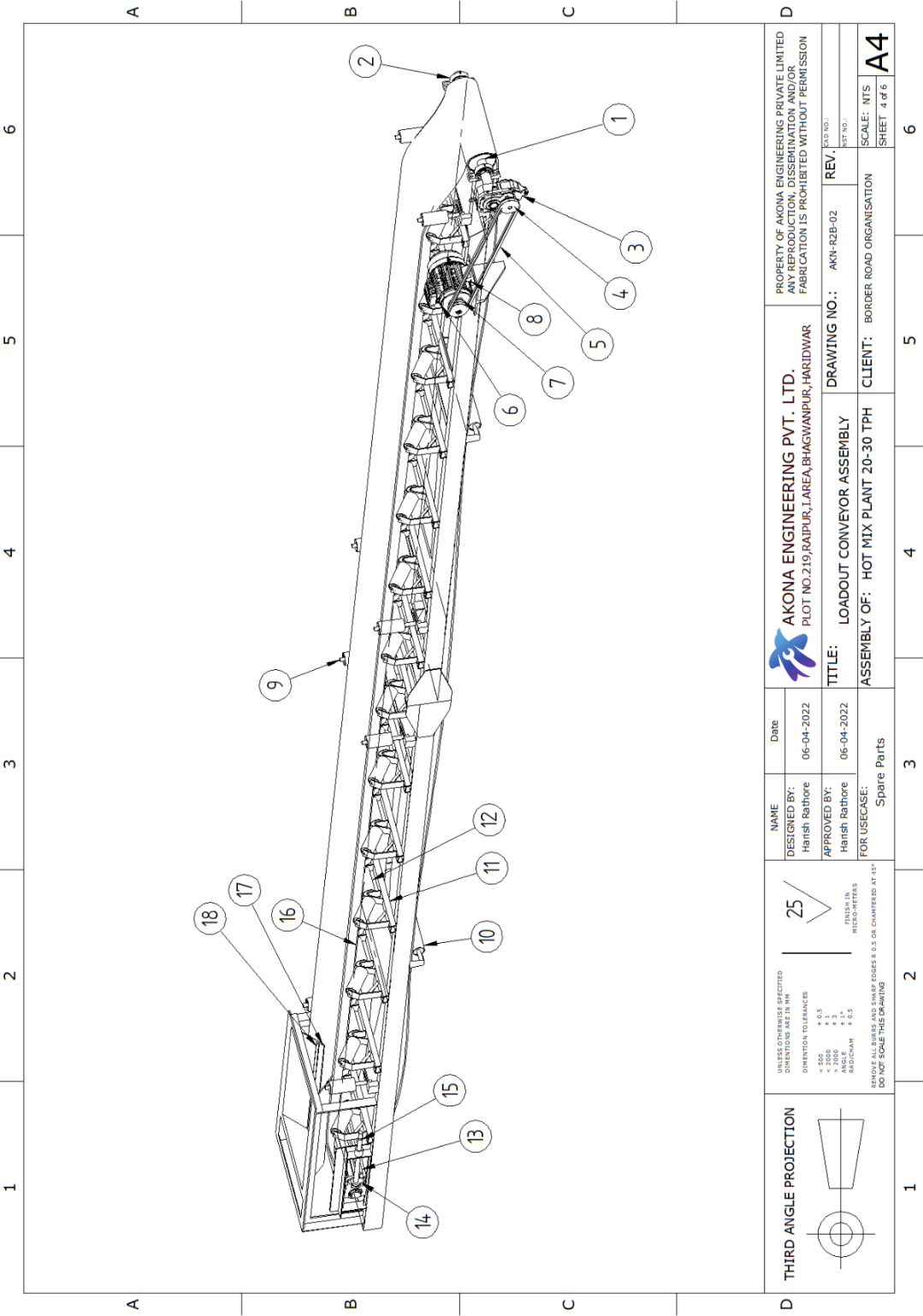


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1	1	AKN-R2B-02/02-1	Fourbin Gate Tie Plate	2
2	2	AKN-R2B-02/02-2	Fourbin Gate Tail Roller	1
3	3	AKN-R2B-02/02-3	Fourbin Gate Tail Roller Bearing	2
4	4	AKN-R2B-02/02-4	Fourbin Gate Adjusting Screw	2
5	5	AKN-R2B-02/02-5	Fourbin Gate Main Head Roller	1
6	6	AKN-R2B-02/02-6	Fourbin Gate Main Head Roller Bearing	2
7	7	AKN-R2B-02/02-7	Fourbin Gate Carrying Roller	5
8	8	AKN-R2B-02/02-8	Fourbin Gate Stopper	1 set
9	9	AKN-R2B-02/02-9	Fourbin Gate Conveyor belt	1
10	10	AKN-R2B-02/02-10	Fourbin Gate Main Head Roller Bearing Nut bolt	kit
11	11	AKN-R2B-02/02-11	Fourbin Gate Rubber strip	2
12	12	AKN-R2B-02/02-12	Fourbin Gate Rubber Strip Holding plate	2



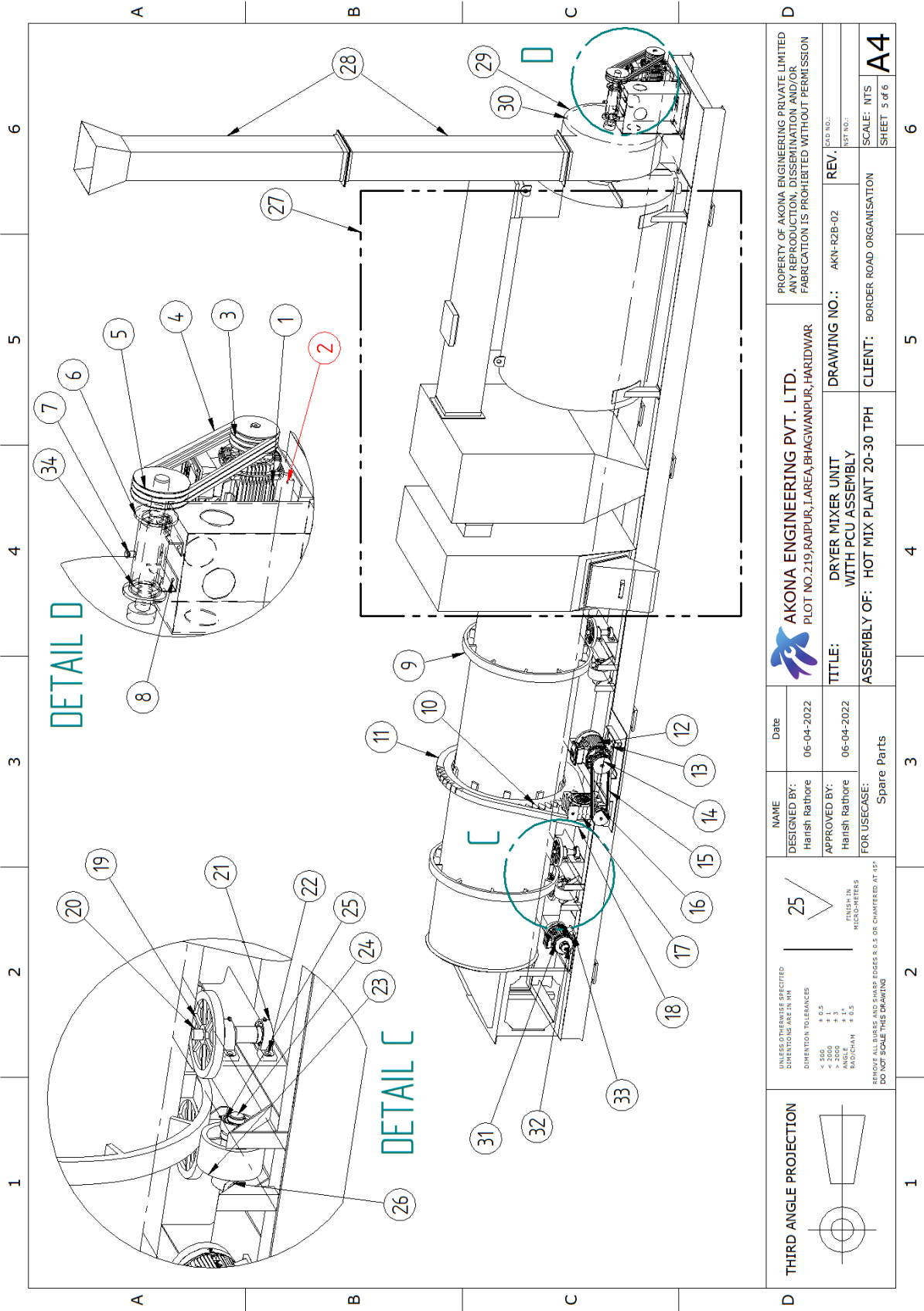
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2	2	AKN-R2B-02/03-2	Slinger Conveyor Main Head Roller Bearing	2
3	3	AKN-R2B-02/03-3	Slinger Conveyor Main Head Roller Bearing Nut bolt	Kit
4	4	AKN-R2B-02/03-4	Slinger Conveyor Main Head Roller Gearbox	1
5	5	AKN-R2B-02/03-5	Slinger Conveyor Main Head Roller Gearbox Pulley	1
6	6	AKN-R2B-02/03-6	Slinger Conveyor Roller Stand	8
7	7	AKN-R2B-02/03-7	Slinger Conveyor Carrying Roller	24
8	8	AKN-R2B-02/03-8	Slinger Conveyor Guide Roller	2
9	9	AKN-R2B-02/03-9	Slinger Conveyor Supporting Roller	1
10	10	AKN-R2B-02/03-10	Slinger Conveyor Main Belt	1
11	11	AKN-R2B-02/03-11	Slinger Conveyor Tail Roller	1
12	12	AKN-R2B-02/03-12	Slinger Conveyor Tail Roller Bearing	2
13	13	AKN-R2B-02/03-13	Slinger Conveyor Tail Roller Bearing Nut bolt	Kit
14	14	AKN-R2B-02/03-14	Slinger Conveyor Screen Vibrator	1
15	15	AKN-R2B-02/03-15	Slinger Conveyor Screen Mesh	1
16	16	AKN-R2B-02/03-16	Slinger Conveyor Screen Vibrator Nut bolt	Kit
17	17	AKN-R2B-02/03-17	Slinger Conveyor Screen Rubber Strip	2
18	18	AKN-R2B-02/03-18	Slinger Conveyor Screen Rubber Strip holding plate	2
19	19	AKN-R2B-02/03-19	Slinger Conveyor Roller Stand Nut Bolt	Kit
20	20	AKN-R2B-02/03-20	Slinger Conveyor Screen Stand Nut bolt	Kit
21	-	AKN-R2B-02/03-21	Slinger Conveyor Main Head Roller Motor Gearbox Vbelt	2

4	LOADOUT CONVEYOR	HMP- LOC	AKN-R2B/04	
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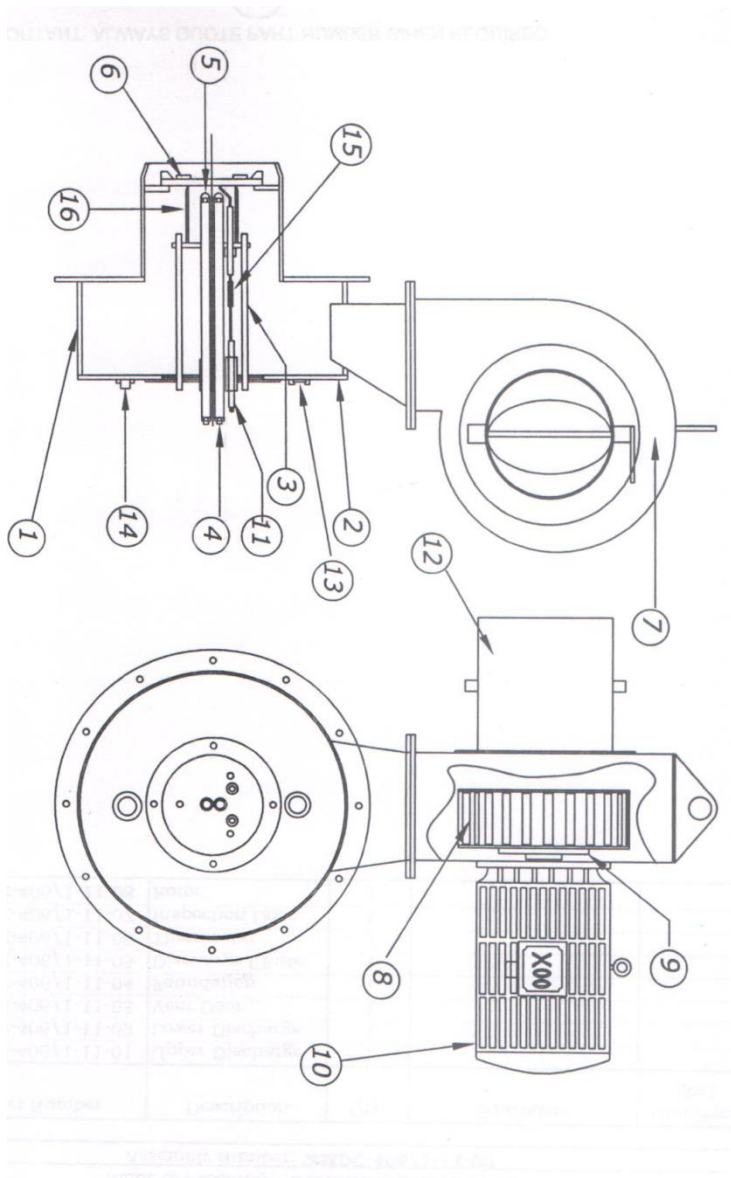
S. no	ILL. No.	Spare Part ID	Item	QTY.
1	1	AKN-R2B-02/04-1	Loadout Conveyor Main Head Roller	1
2	2	AKN-R2B-02/04-2	Loadout Conveyor Main Head Roller Bearing	2
3	3	AKN-R2B-02/04-3	Loadout Conveyor Main Head Roller Gearbox	1
4	4	AKN-R2B-02/04-4	Loadout Conveyor Main Head Roller Gearbox Pulley	1
5	5	AKN-R2B-02/04-5	Loadout Conveyor Main Head Roller Motor	1
6	6	AKN-R2B-02/04-6	Loadout Conveyor Main Head Roller Motor Pulley	1
7	7	AKN-R2B-02/04-7	Loadout Conveyor Main Head Roller Vbelt	2
8	8	AKN-R2B-02/04-8	Loadout Conveyor Main Head Roller Motor Nut bolt	Kit
9	9	AKN-R2B-02/04-9	Loadout Conveyor Guide Roller	4
10	10	AKN-R2B-02/04-10	Loadout Conveyor Supporting Roller	2
11	11	AKN-R2B-02/04-11	Loadout Conveyor Roller Stand	14
12	12	AKN-R2B-02/04-12	Loadout Conveyor Carrying roller	42
13	13	AKN-R2B-02/04-13	Loadout Conveyor Tail Roller	1
14	14	AKN-R2B-02/04-14	Loadout Conveyor Tail Roller Bearing	2
15	15	AKN-R2B-02/04-15	Loadout Conveyor Tail Roller Screw	2
16	16	AKN-R2B-02/04-16	Loadout Conveyor Main Belt	1
17	17	AKN-R2B-02/04-17	Loadout Conveyor Rubber Strip	2
18	18	AKN-R2B-02/04-18	Loadout Conveyor Rubber Strip Holding Plate	2

5	DRYER ASSEMBLY	HMP- DMD	AKN-R2B/05	
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S. no	ILL. No.	Spare Part ID	Item	QTY
1	1	AKN-R2B-02/05-1	Exhaust Fan Motor	1
2	2	AKN-R2B-02/05-2	Exhaust Fan Motor Nut bolt	Kit
3	3	AKN-R2B-02/05-3	Exhaust Fan Motor Pulley	1
4	4	AKN-R2B-02/05-4	Exhaust Fan Vbelt	3
5	5	AKN-R2B-02/05-5	Exhaust Fan Pedestal Pulley	1
6	6	AKN-R2B-02/05-6	Exhaust Fan Pedestal	1
7	7	AKN-R2B-02/05-7	Exhaust Fan Pedestal Grease Nipple	1
8	8	AKN-R2B-02/05-8	Exhaust Fan Pedestal Nut bolt	Kit
9	9	AKN-R2B-02/05-9	Dryer Ring	2
10	10	AKN-R2B-02/05-10	Dryer Sprocket Ring	1
11	11	AKN-R2B-02/05-11	Dryer Chain	1 set
12	12	AKN-R2B-02/05-12	Dryer Motor	1
13	13	AKN-R2B-02/05-13	Dryer Motor Nut bolt	Kit
14	14	AKN-R2B-02/05-14	Dryer Motor Pulley	1
15	15	AKN-R2B-02/05-15	Dryer Gearbox Motor Vbelt	3
16	16	AKN-R2B-02/05-16	Dryer Gearbox Pulley	1
17	17	AKN-R2B-02/05-17	Dryer Gearbox	1
18	18	AKN-R2B-02/05-18	Dryer Gearbox Chain Sprocket	1
19	19	AKN-R2B-02/05-19	Dryer Supporting roller	3
20	20	AKN-R2B-02/05-20	Dryer Supporting roller Shaft	3
21	21	AKN-R2B-02/05-21	Dryer Supporting roller Bearing	6
22	22	AKN-R2B-02/05-22	Dryer Supporting roller Bearing Nut Bolt	Kit
23	23	AKN-R2B-02/05-23	Dryer Roller	4
24	24	AKN-R2B-02/05-24	Dryer Roller Shaft	4
25	25	AKN-R2B-02/05-25	Dryer Roller Bearing	8
26	26	AKN-R2B-02/05-26	Dryer Roller Bearing Nut bolt	Kit
27	27	AKN-R2B-02/05-27	Dryer Pollution Control Unit	1
28	28	AKN-R2B-02/05-28	Dryer Exhaust Fan Chimney Assembly	1 set
29	29	AKN-R2B-02/05-29	Dryer Exhaust Fan Housing	1 set
30	30	AKN-R2B-02/05-30	Dryer Exhaust Fan	1
31	31	AKN-R2B-02/05-31	Dryer Slinger Motor	1
32	32	AKN-R2B-02/05-32	Dryer Slinger Motor Pulley	1
33	33	AKN-R2B-02/05-33	Dryer Slinger Motor Nut bolt	Kit
34	34	AKN-R2B-02/05-34	Exhaust Fan Pedestal Bearing	2
35	-	AKN-R2B-02/05-35	Dryer Pollution Control Unit Pump Installed at water storage tank	1

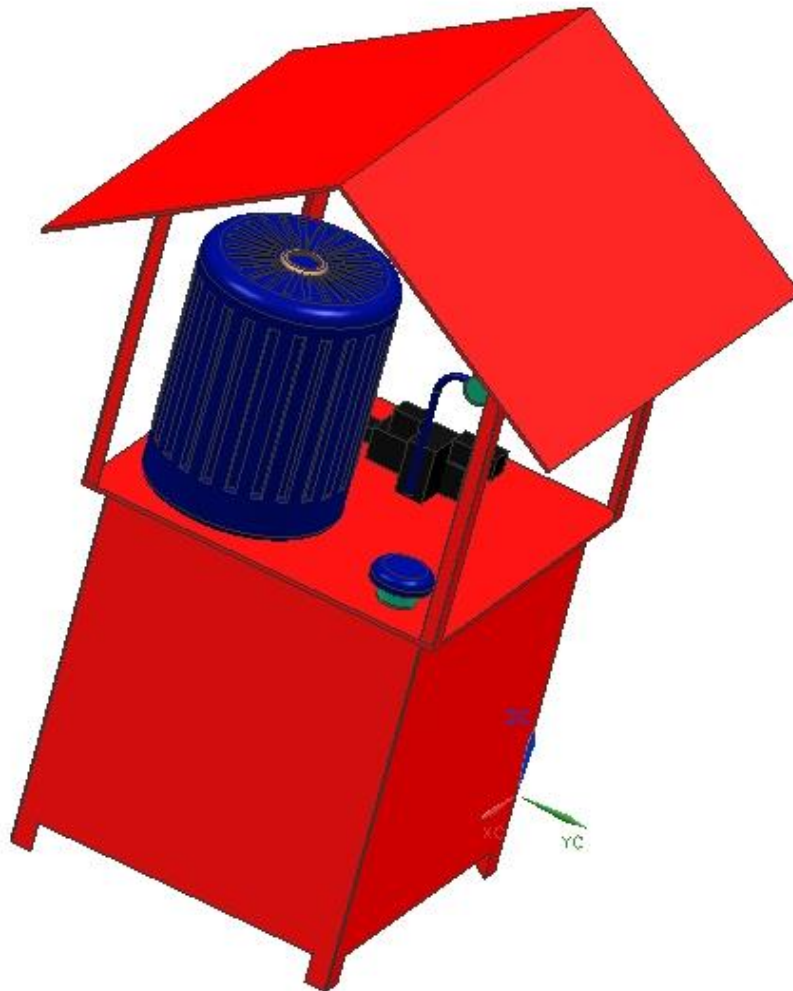
6	DRYER BURNER	HMP- DB	AKN-R2B/06	
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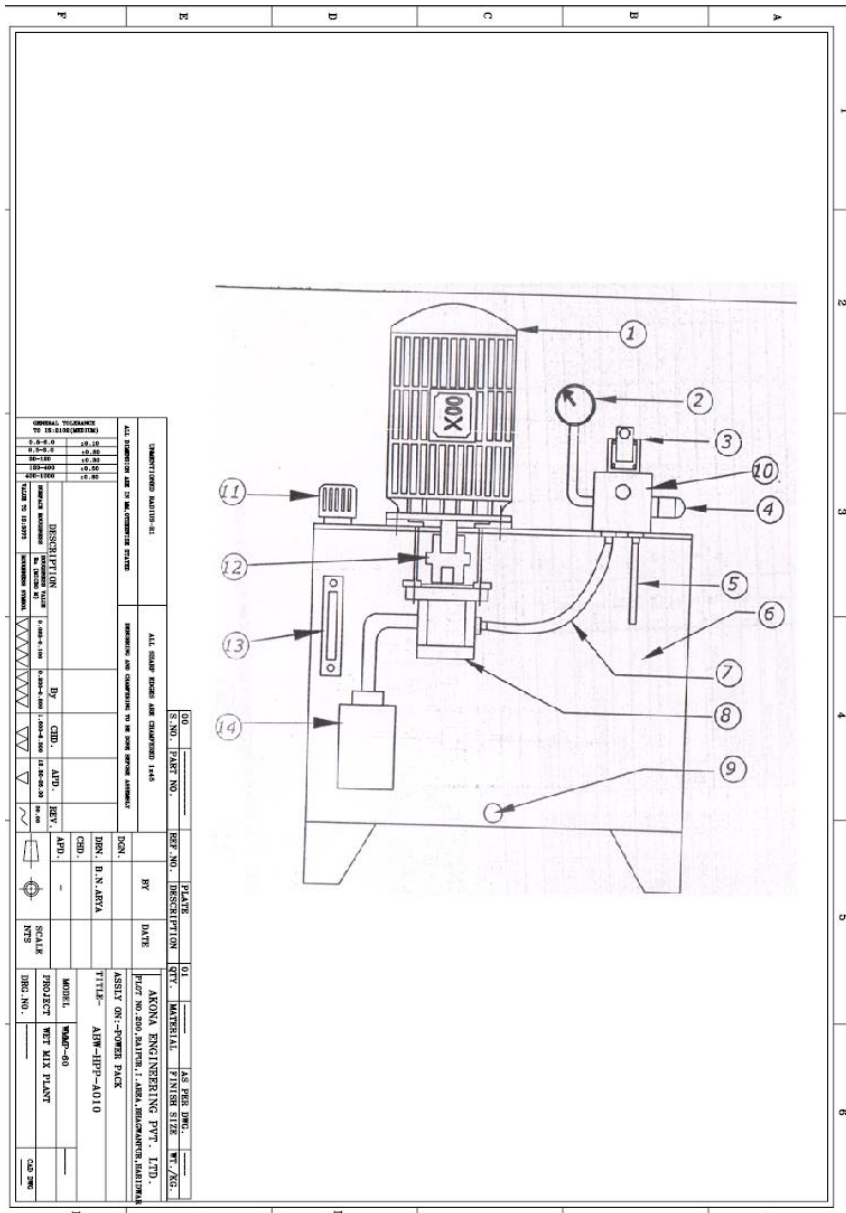


AKONA ENGINEERING PVT. LTD.

S. No.	PART NO.	PART NAME	QTY.	DESCRIPTION	PRICE
1	AKN-R2B-02/06-1	BRUNER SHEET	1		
2	AKN-R2B-02/06-2	BURNER PLATE	1		
3	AKN-R2B-02/06-3	DIFFUSER PLATE ROD	2		
4	AKN-R2B-02/06-4	NOZZLE ROD	2		
5	AKN-R2B-02/06-5	NOZZLE	2		
6	AKN-R2B-02/06-6	DIFFUSER PLATE	1		
7	AKN-R2B-02/06-7	BLOWER HOUSING	1		
8	AKN-R2B-02/06-8	IMPELLER	1		
9	AKN-R2B-02/06-9	HUB	1		
10	AKN-R2B-02/06-10	A.C MOTOR	1	5 H.P	
11	AKN-R2B-02/06-11	ELECTRODE	2		
12	AKN-R2B-02/06-12	AIR DAMPER	1		
13	AKN-R2B-02/06-13	EYE CLASS	1		
14	AKN-R2B-02/06-14	PHOTOCELL	1		
15	AKN-R2B-02/06-15	ELECTREODE JOINT	2		
16	AKN-R2B-02/06-16	QURELL	1		

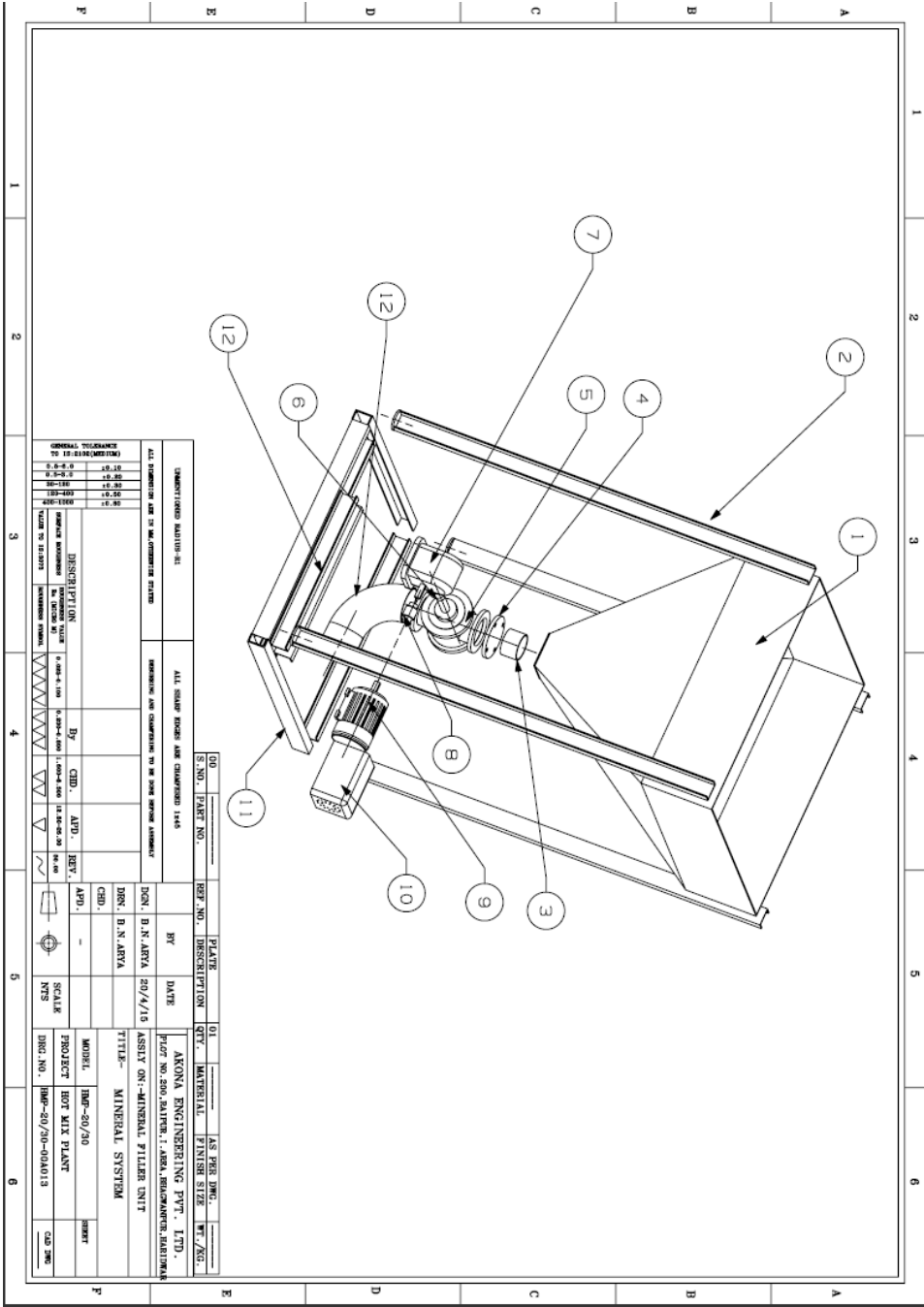
7	POWER PACK	HMP- PP	AKN-R2B/07	
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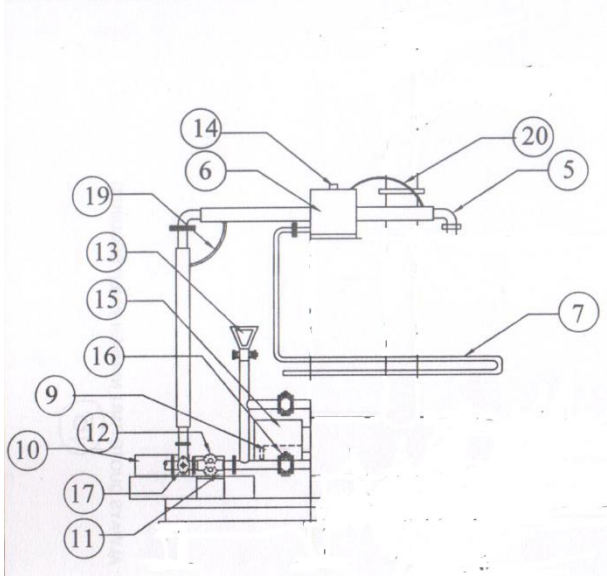
S. No.	PART NO.	PART NAME	QTY.	DESCRIPTION	PRICE
1	AKN-R2B-02/07-1	Motor	1	3 H.P	
2	AKN-R2B-02/07-2	Pressure meter	1		
3	AKN-R2B-02/07-3	Valve	1		
4	AKN-R2B-02/07-4	Pressure relief valve	1		
5	AKN-R2B-02/07-5	Return line	1		
6	AKN-R2B-02/07-6	Hyd. Oil tank	1		
7	AKN-R2B-02/07-7	Hose pipe	1		
8	AKN-R2B-02/07-8	Pump	1		
9	AKN-R2B-02/07-9	Drain	1		
10	AKN-R2B-02/07-10	Manifold	1		
11	AKN-R2B-02/07-11	Breather	1		
12	AKN-R2B-02/07-12	Couple	1		
13	AKN-R2B-02/07-13	Level gauge	1		
14	AKN-R2B-02/07-14	filter	1		

8	MINERAL FILLER UNIT	HMP- MFU	AKN-R2B/08	
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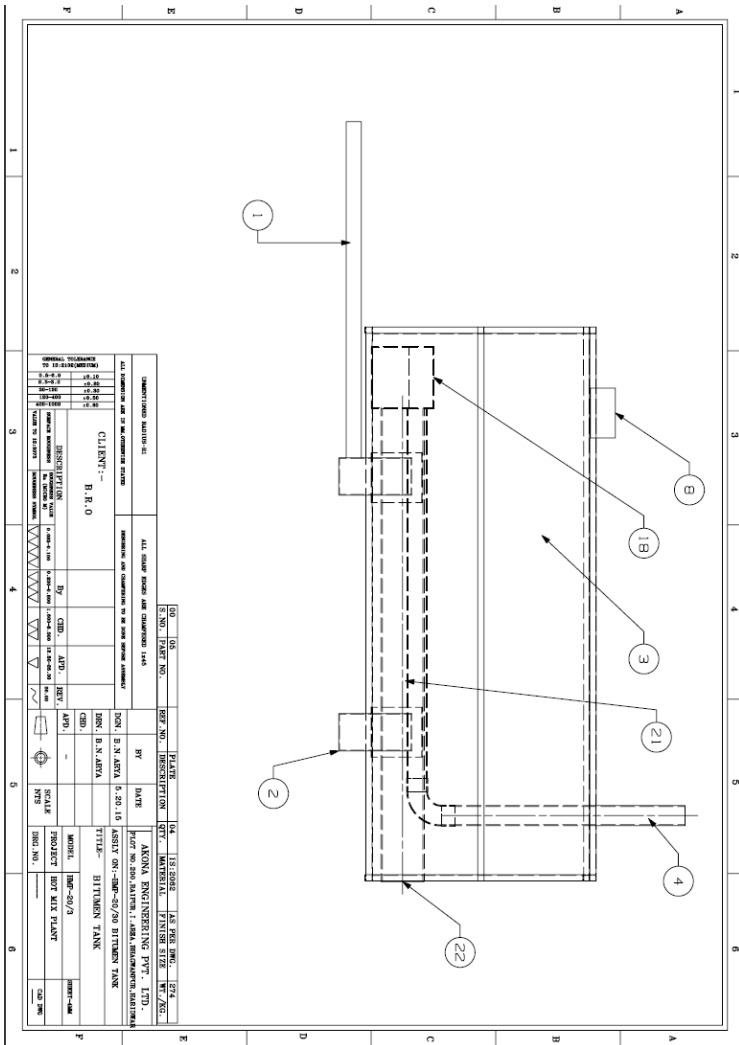


S. No.	PART NO.	PART NAME	QTY.	DESCRIPTION
1	AKN-R2B-02/08-1	HOPPER	1	1 CUM,5MM THICK
2	AKN-R2B-02/08-2	HOPPER LEG	4	
3	AKN-R2B-02/08-3	PIPE	1	
4	AKN-R2B-02/08-4	PUMP FLANGE	2	
5	AKN-R2B-02/08-5	FILLER PUMP	1	
6	AKN-R2B-02/08-6	SHAFT	1	
7	AKN-R2B-02/08-7	GEAR BOX	1	30:1
8	AKN-R2B-02/08-8	MOTOR	1	1 HP
9	AKN-R2B-02/08-9	MOTOR COVER	1	
10	AKN-R2B-02/08-10	BRACING CHANEL	4	
11	AKN-R2B-02/08-11	MOTOR & GEAR BOX STAND	1	75X40C-SEC.
12	AKN-R2B-02/08-12	FAN	1	
13	AKN-R2B-02/08-13	FAN MOTOR	1	
14	AKN-R2B-02/08-14	FAN PULLEY	1	
15	AKN-R2B-02/08-15	FAN MOTOR PULLEY	1	
16	AKN-R2B-02/08-16	FAN VBELT	1	

9	BITUMEN TANK	HMP- BT	AKN-R2B/09	
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BITUMENT LINE FITTING ASSEMBLY

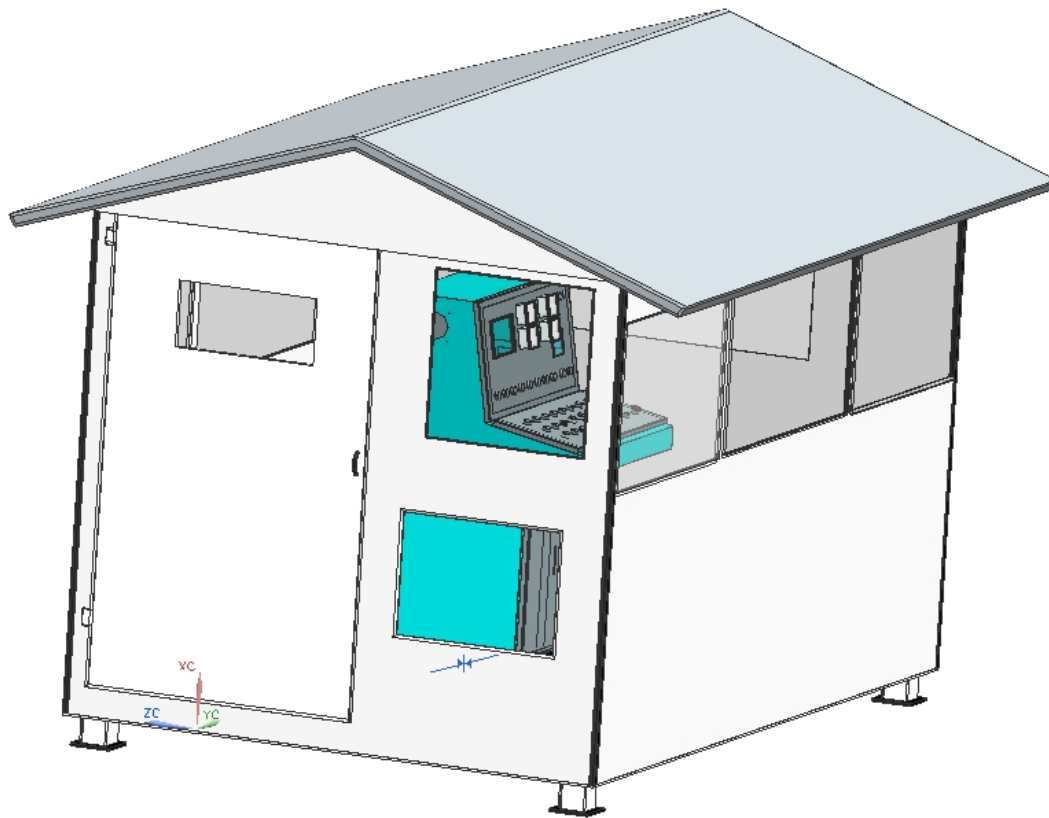


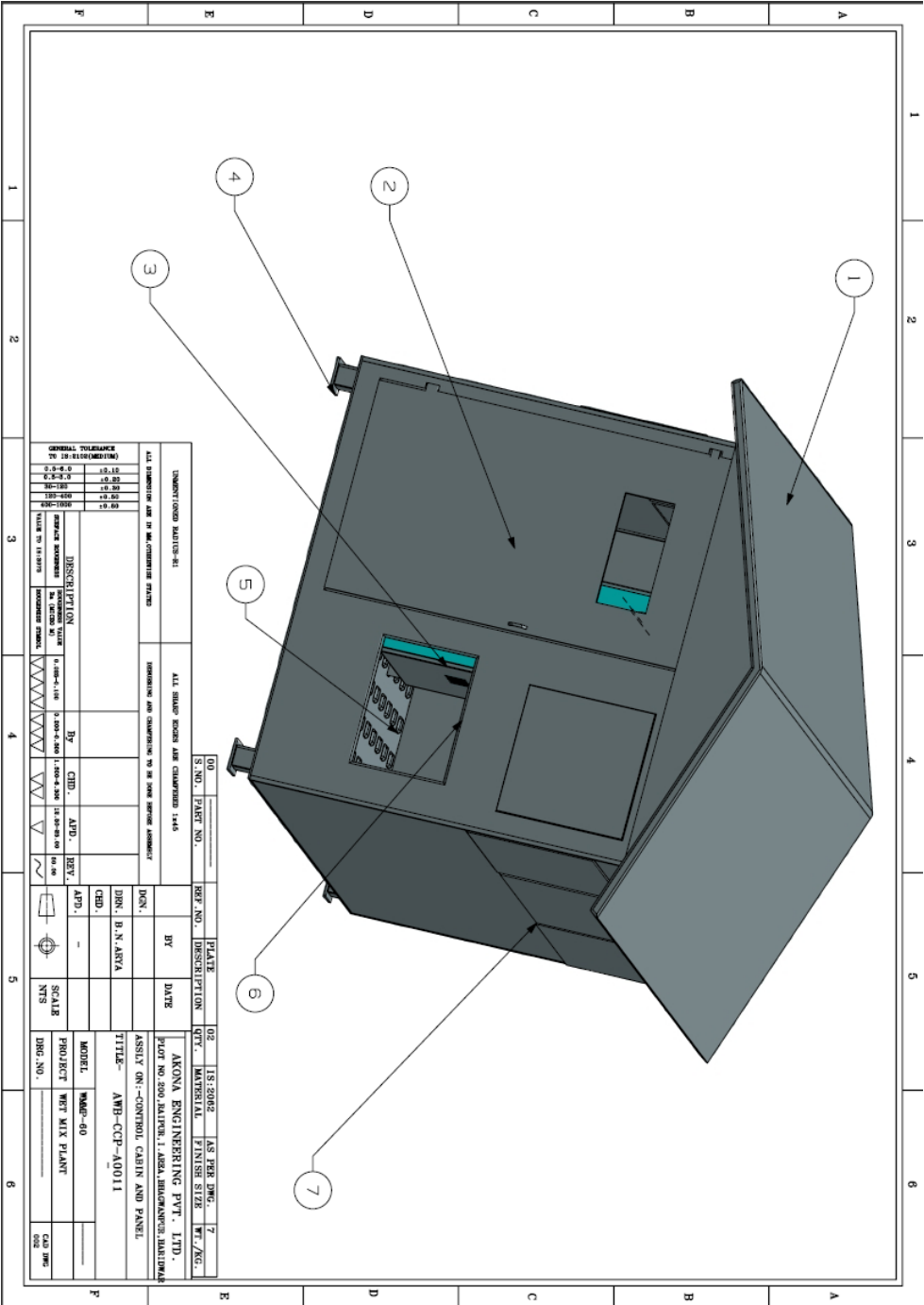
AKONA ENGINEERING PVT. LTD.

BITUMEN TANK ASSEMBLY

S. No.	PART NO.	PART NAME	QTY.	DESCRIPTION	PRICE
1	AKN-R2B-02/09-1	FRAME FITTING	1	ISMC-100X50X	
2	AKN-R2B-02/09-2	SHADLE	2	1600X300MM	
3	AKN-R2B-02/09-3	BITUMEN TANK	1	10 TON	
4	AKN-R2B-02/09-4	CHIMNEY	2		
5	AKN-R2B-02/09-5	BITUMEN RETUREN LINE	1	50MM	
6	AKN-R2B-02/09-6	HOT OIL TANK	1	20 LTRS.	
7	AKN-R2B-02/09-7	HOT OIL LINE	1	50MM	
8	AKN-R2B-02/09-8	MOTOR HOT OIL PUMP	1	1 H.P	
9	AKN-R2B-02/09-9	HOT OIL PUMP	1		
10	AKN-R2B-02/09-10	MOTOR BITUMEN PUMP	1	3 H.P	
11	AKN-R2B-02/09-11	REDUCTION GEAR	1	10:1	
12	AKN-R2B-02/09-12	BITUMEN PUMP	1	10KG/CM ²	
13	AKN-R2B-02/09-13	CUP	1		
14	AKN-R2B-02/09-14	HOT COIL ELCTRODE	1		
15	AKN-R2B-02/09-15	BURNER	1		
16	AKN-R2B-02/09-16	TWO WAY VALVE	2	2"	
17	AKN-R2B-02/09-17	THREE WAY VALVE	1	2"	
18	AKN-R2B-02/09-18	HEATING ROOM	1		
19	AKN-R2B-02/09-19	HOT OIL PIPE	1		
20	AKN-R2B-02/09-20	HOT OIL PIPE	1		
21	AKN-R2B-02/09-21	HEATING COIL	1		
22	AKN-R2B-02/09-22	GATE VALVE	2	THREAD TYPE	NOT SHOW IN DWG
23	AKN-R2B-02/09-23	THERMOMETER	1		NOT SHOW IN DWG

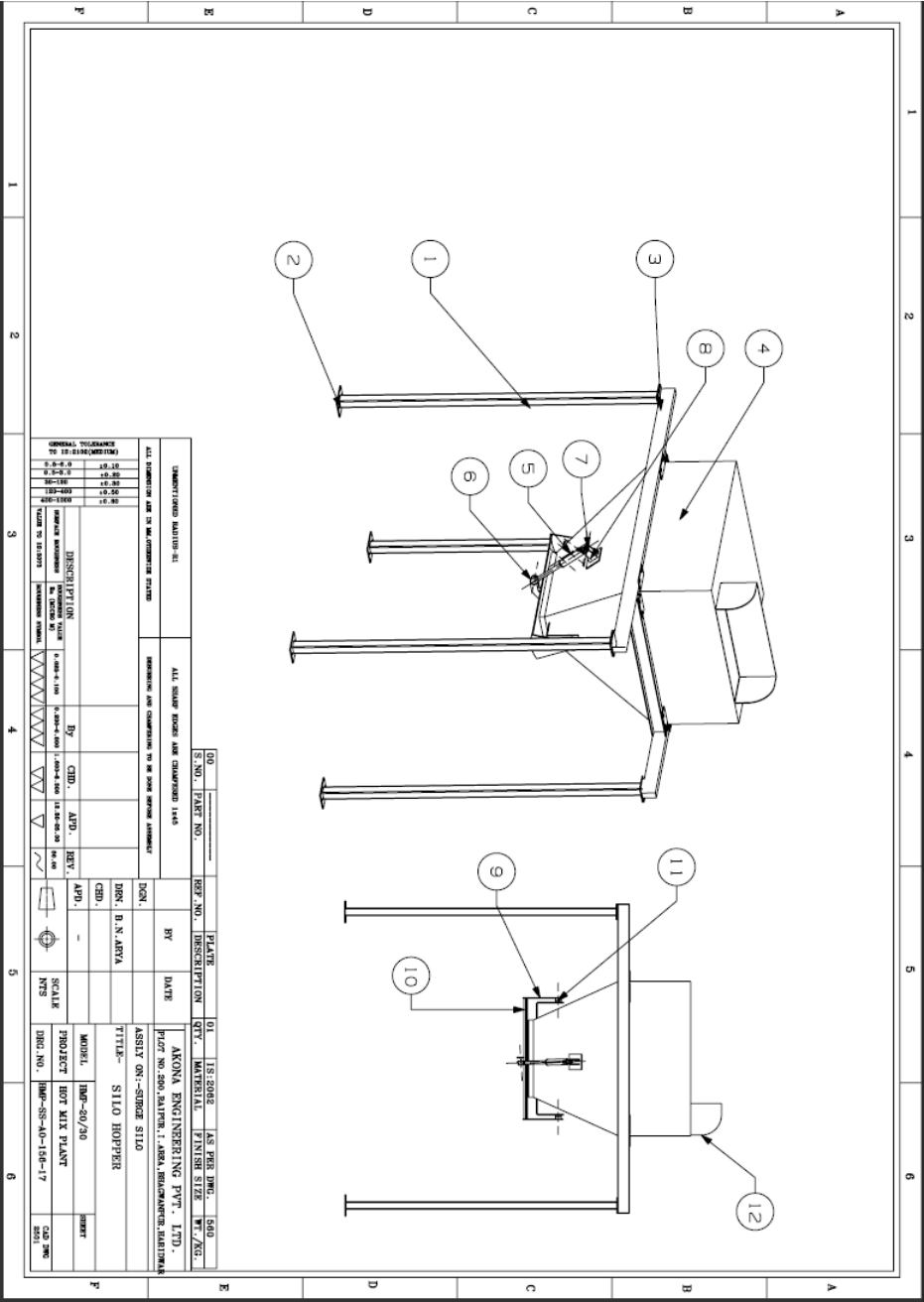
10	CONTROL CABIN	HMP-CC	AKN-R2B/10	
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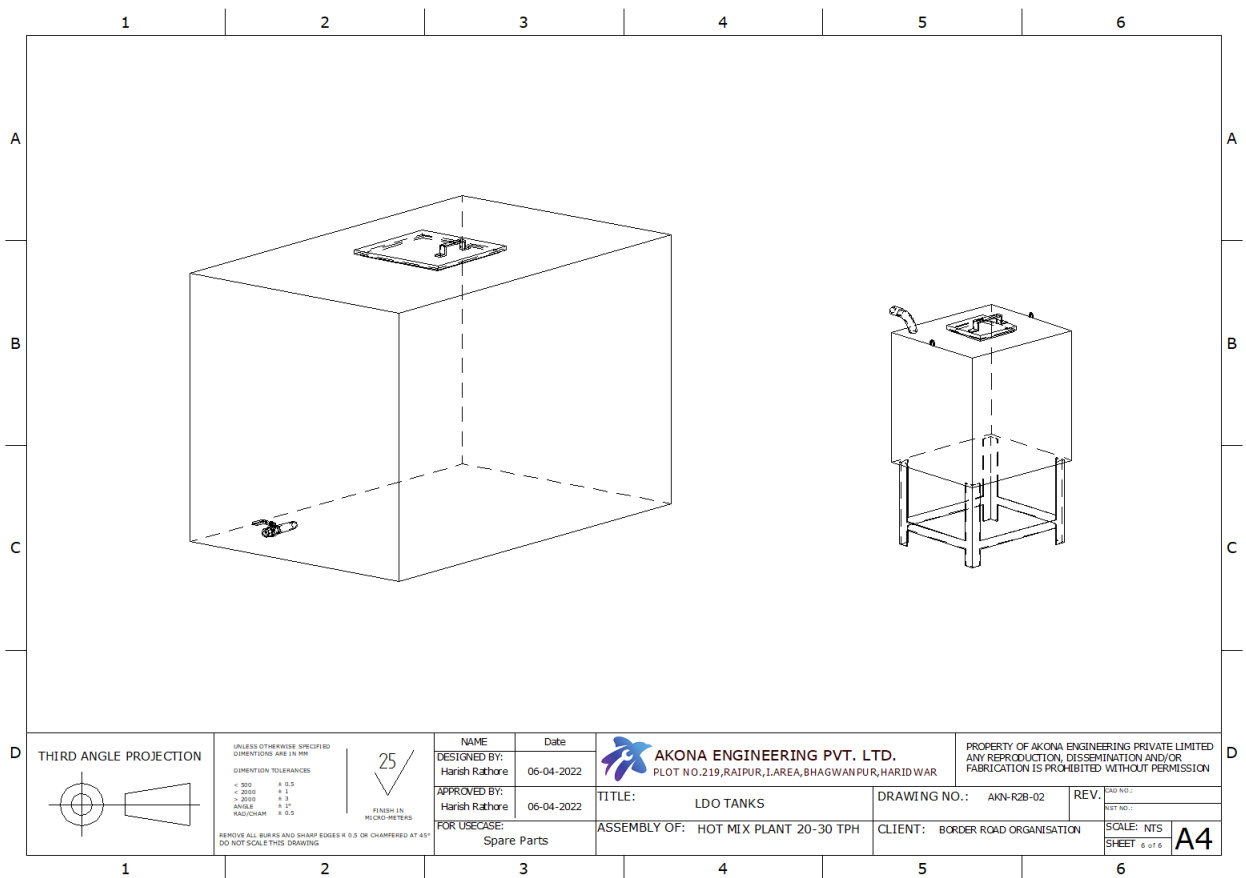
S. No.	PART NO.	PART NAME	QTY.	DESCRIPTION	PRICE
1	<i>AKN-R2B-02/10-1</i>	CABIN	1		
2	<i>AKN-R2B-02/10-2</i>	DOOR	1		
3	<i>AKN-R2B-02/10-3</i>	CONTROL PANEL	1		
4	<i>AKN-R2B-02/10-4</i>	CABIN LEG	1		
5	<i>AKN-R2B-02/10-5</i>	CABIN MAT	1		
6	<i>AKN-R2B-02/10-6</i>	WINDOW FOR A.C	1		
7	<i>AKN-R2B-02/10-7</i>	WINDOW	1		

11	SURGE SILO	HMP- SS	AKN-R2B/11	
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S. No.	PART NO.	PART NAME	QTY.	DESCRIPTION	PRICE
1	AKN-R2B-02/11-1	STAND LEG	4		
2	AKN-R2B-02/11-2	FOUNDATION PLATE	4		
3	AKN-R2B-02/11-3	SILO MOUNTING CHANEL	4		
4	AKN-R2B-02/11-4	SILO	1		
5	AKN-R2B-02/11-5	HYD. CYLINDER	1		
6	AKN-R2B-02/11-6	HYD CYLINDER PIN-1	1		
7	AKN-R2B-02/11-7	HYD CYLINDER PIN-2	1		
8	AKN-R2B-02/11-8	CYLINDER MOUNTING PLATE & BRACKET	2		
9	AKN-R2B-02/11-9	GATE SIDE PLATE	2		
10	AKN-R2B-02/11-10	GATE CURVE PLATE	1		
11	AKN-R2B-02/11-11	GATE BEARING	2	FL-208	

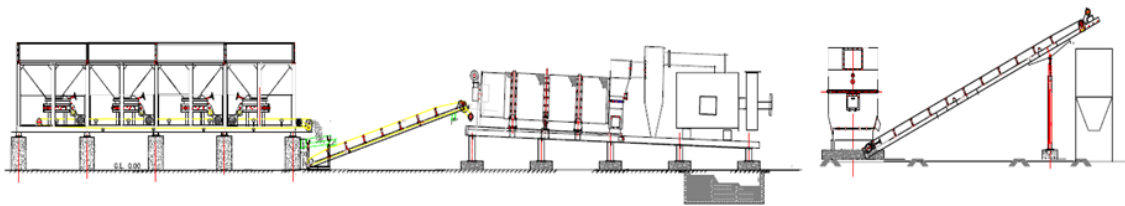
12	SPARES PARTS	NOT MENTION IN DWG.	AKN-R2B/12	
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S. No.	PART NO.	PART NAME	QTY.
1	AKN-R2B-02/12-1	BITUMEN FUEL TANK	1
2	AKN-R2B-02/12-2	LDO TANK	1
3	AKN-R2B-02/12-3	LDO PUMP	1 SET
4	AKN-R2B-02/12-4	ELECTRODE	1
5	AKN-R2B-02/12-5	BITUMEN BLOWER CUM BURNER	1
6	AKN-R2B-02/12-6	DRYER BURNER	1
7	AKN-R2B-02/12-7	CONTOL PANEL	1

4

ILLUSTRATED LIST OF SPECIAL MAINTENANCE TOOLS MODEL: HMP 20-30 CAPACITY: 20-30 TPH



AKONA ENGINEERING PVT LTD.

AN ISO 9001:2008 CERTIFIED COMPANY

MFG. UNIT: -PLOT NO.: -200 RAIPUR INDUSTRIAL AREA, ROORKEE, HARIDWAR (U.K)

HEAD OFFICE: - HYCON-HOUSE, A-455, HINDON VIHAR, DELHI MEERUT RAOD, GHAZIABAD-201001 (U.P)

MAIL: - info@akonaindia.com

WEBSITE: -www.akonaindia.com

Toll free No-1800-121-457-457

LIST OF SPECIAL MAINTENANCE TOOLS

S. No.	Description	Qty.
1	Spanner Set	01
2	Allen Key Set	01
3	Continuity Electric Tester	01
4	Hand Grease Gun	01
5	Oil Crane Lubricating	01
6	CSD 8"	01
7	Plier	01

RECOMMENDED LUBRICATION

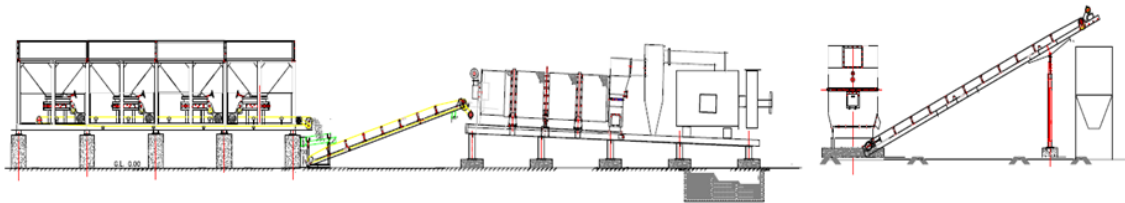
1. Hydraulic Oil: -No.-68
2. Gear Box Oil: -No.-320 &220
3. Engine Oil 20W40
4. Grease: shell

5

LUBRICATION CHART OF COMPLETE PLANT

MODEL: HMP 20-30

CAPACITY: 20-30 TPH



AKONA ENGINEERING PVT LTD.

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MFG. UNIT: -PLOT NO.: -200 RAIPUR INDUSTRIAL AREA, ROORKEE, HARIDWAR (U.K)

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MAIL: - info@akonaindia.com

WEBSITE: -www.akonaindia.com

TOLL FREE NO-1800-121-457-457

AKONA MAKE: HOT MIX PLANT 20-30 TPH
LUBRICATION CHART

S. NO.	PARTICULAR	DAILY	WEEKLY	MONTHLY (200HRS.)	1000 HRS.
1	Gear Oil (Check)	<i>Visually</i>			
2	Gear Oil (filling)			✓	
3	Gear oil (Change)				✓
4	Engine Check	<i>Visually</i>			
5	Engine Oil filling			✓	
6	Engine Oil (Change)			✓	✓
7	Greasing (Pug Mill Unit)	✓			
8	Greasing Bearing		✓		
9	Hydraulic Oil (check)		✓		
10	Hydraulic Oil (filling)			✓	
11	Hydraulic Oil (Change)				✓

Please use only recommended oil and lubricants as mentioned

RECOMMENDED LUBRICATION

1. Hydraulic Oil: -No.-68
2. Gear Box Oil: -No.-320 & 220
3. Engine Oil 20W40
4. Grease: shell

AKONA MAKE: HOT MIX PLANT 20-30 TPH

PERIODIC MAINTENANCE CHART

S. NO.	MAINTENANCE POINT	DAILY	50 HRS.	200 HRS.	500 HRS.	1000 HRS.
1	Fasteners checking	✓				
2	Electrical connection for all motors		✓			
3	Earthing			✓		
4	Discharge chute	✓				
5	Load cell calibration check	✓				
6	Belt alignment		✓			
7	V-belt replacement				✓	
8	Vibrating spring change				✓	
9	Mixing blade					✓
10	Auxiliary Belt setting		✓			
11	Water Pump cleaning			✓		
12	DG Set engine service				✓	
13	Engine filter cleaning		✓			
14	Silo gate motion check		✓			
15	Pulleys replacement					✓
16	Electrical supply check 3-phase 415 V x 50 Hz	✓				
17	Belt Roller check		✓			
18	Bearing greasing		✓			

RECOMMENDED LUBRICATION

1. Hydraulic Oil: -No.-68
2. Gear Box Oil: -No.-320 & 220
3. Engine Oil 20W40
4. Grease: shell

AKONA MAKE: HOT MIX PLANT 20-30 TPH
INSTRUCTIONS SHEET

1. Check visually complete plant before starting for any unwanted external object.
2. Check Electric supply 3 phase x415 V x50 Hz properly.
3. Check all electrical connections periodically.
4. The DG Set should idle run for 2 minutes before starting production and stop after 3 minutes of idle running.
5. Check fuel before starting DG Set.
6. Check dryer flights fasteners periodically.
7. Always clean the discharge chute before stopping the plant.
8. Apply ample of grease at all greasing points before start.
9. Check calibration of mixing system periodically. Do not operate the plant if calibration is not proper.
10. Do not insert bar/ rod/ hand during the operation of plant.
11. Check gear oil visually in all gear boxes.
12. Replace both belts together.
13. Do not allow outside persons inside the control room.
14. Operate the plant by trained operator only. Do not operate the plant if operator is not there.
15. Keep plant on level surface. Do not operate plant in overload conditions.

FOREWORD

Dear Customer,

Congratulations! We welcome you to the family of Ashok Leyland.

This **User Guide** has been prepared to acquaint you with the operation and maintenance of **Genset Engines**. Care has been taken to include as much useful information as possible. Operators are requested to get familiarised with this guide, before operating the engine.

Every reasonable effort has been made to ensure that this manual is accurate. Neither Ashok Leyland nor any of AL Dealer shall in any circumstances be held liable for any inaccuracy or the consequences thereof.

In accordance with Ashok Leyland Limited (the Company's) policy of continuous product improvements, the company reserves the right to change the procedures, material, specifications, dimensions or design referred to in this manual, at any time and without prior notice.

Operators are strongly advised to get the service and repairs done at the workshops of Ashok Leyland authorised Dealers/Service Centers and use only Leyparts. This would ensure smooth implementation of warranty supports extended.

We welcome your suggestions and feed back on the contents of this manual. Should you require any clarifications concerning the contents of this manual, please write to:



ASHOK LEYLAND
POWER SOLUTIONS BUSINESS

NO.1, Sardar Patel Road, Guindy, Chennai - 600 032.



ASHOK LEYLAND





ASHOK LEYLAND

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Chapter 1- Model Coverage

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- Engine System
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 - 2) Cooling System
 - 3) Air Intake System
 - 4) Turbocharger
- Catridge Tye Filter

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Chapter 6 - Maintenance Schedule

- Recommended Lubricants
- Filling Capacities
- Oil change intervals

Chapter 7 - Warranty Policy

Chapter 8 - Free Service Coupons

Chapter 9 - Dealer Network



ASHOK LEYLAND





ASHOK LEYLAND

1. Model Coverage



ASHOK LEYLAND

1

MODEL COVERAGE : H2 SERIES - GENSET ENGINE (CPCB - II)			
MODEL	AL2CDG1	AL2CTIDG2	AL2CTIDG1
Rating (KVA)	15	25	30
Type	Diesel, 4 stroke, 2 cylinder in-line, overhead valve, water cooled		
Aspiration	Natural	Turbocharged & Inter cooled	Turbocharged & Inter cooled
Engine rated (kW)	15.6	25.2	28.4
Engine rpm	1500	1500	1500
Bore & Stroke (mm)	104 x 113	104 x 113	104 x 113
Displacement (litres)	1.92	1.92	1.92
Compression ratio	17.5 ± 0.5:1	16.5 ± 0.5:1	16.5 ± 0.5:1
Engine oil capacity - Total (litres)	6	6	6
Cooling system capacity (litres)	10	12	13
Electrical system	12V	12V	12V
Direction of rotation	Anti-clockwise from rear	Anti-clockwise from rear	Anti-clockwise from rear
Firing order	1-2	1-2	1-2
Battery capacity (AH)	90		
Governing method	Mechanical	Electronic	Electronic

1.2 MODEL COVERAGE



ASHOK LEYLAND

1

MODEL COVERAGE : H4 SERIES - GENSSET ENGINE (CPCB - II)			
MODEL	AL4CTDG1/1	AL4CTIDG2/1	AL4CTIDG3/1
Rating (KVA)	40	62.5	82.5
Type	Diesel, 4 stroke, 4 cylinder in-line, overhead valve, water cooled		
Aspiration	Turbocharged	Turbocharged, After cooled.	Turbocharged, After cooled.
Engine rated (HP)	52.8	79.09	104.56
Engine rpm	1500		
Bore & Stroke (mm)	104 x 113		
Displacement (litres)	3.84		
Compression ratio	17.5 ± 0.5:1	16.5 ± 0.5:1	
Engine oil capacity - Total (litres)	9.5		12.5
Cooling system capacity (litres)	17.5		
Electrical system	12V		
Direction of rotation	Anti-clockwise from rear		
Firing order	1-3-4-2		
Battery capacity (AH)	90		

MODEL COVERAGE 1.3



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1

MODEL COVERAGE: AL6DT I SERIES - GENSET ENGINE (CPCB - II)		
MODEL	AL6DTIDG1/1	AL6DTIDG2/1
Rating (KVA)	100	125
Type	Diesel, 4 stroke, 6 cylinder in-line, overhead valve, water cooled	
Aspiration	Turbocharged, After cooled	
Engine rated (HP)	126	155.5
Engine rpm	1500	
Bore & S stroke (mm)	104 x 113	
Displacement (litres)	5.759	
Compression ratio	16.5 ± 0.5:1	
Engine oil capacity - Total (litres)	18	18
Cooling system capacity (litres)	19	22
Electrical system	12V	
Direction of rotation	Anti-clockwise from rear	
Firing order	1-4-2-6-3-5	
Battery capacity (AH)	90	

1.4 MODEL COVERAGE



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MODEL COVERAGE: AL6DTI SERIES - GENSSET ENGINE (CPCB - II)		
MODEL	AL6DTIDG3/1	AL6DTIDG4/1
Rating (KVA)	140	160
Type	Diesel, 4 stroke, 6 cylinder in-line, overhead valve, water cooled	
Aspiration	Turbocharged, After cooled	
Engine rated (KW)	174	197
Engine rpm	1500	
Bore & S stroke (mm)	104 x 113	
Displacement (litres)	5.759	
Compression ratio	16.5 ± 0.5:1	
Engine oil capacity - Total (litres)	18	18
Cooling system capacity (litres)	22	22
Electrical system	12V	
Direction of rotation	Anti-clockwise from rear	
Firing order	1-4-2-6-3-5	
Battery capacity (AH)	105	

1

MODEL COVERAGE 1.5



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1

MODEL COVERAGE: N - SERIES - GENSET ENGINE (CPCB-II)	
MODEL	AL8NTIG3/AL8NTIDG6
Rating (KVA)	250
Type	Diesel, 4 stroke, 6 cylinder in-line, overhead valve, water cooled
Aspiration	Turbocharged, After cooled
Engine rated (KW)	223
Engine rpm	1500
Bore & S troke (mm)	112 x 135
Displacement (litres)	7.9
Compression ratio	17.5:1
Engine oil capacity - Total (litres)	28
Cooling system capacity (litres)	45
Electrical system	24V
Direction of rotation	Anti-clockwise from rear
Firing order	1-4-2-6-3-5
Battery capacity (AH)	150

1.6 MODEL COVERAGE



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2. Preservation and Pre-recommissioning Procedure



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PRESERVATION AND PRE-COMMISSIONING PROCEDURE

2

STORAGE OF ENGINES AT NORMAL AMBIENT TEMPERATURE

Whenever engines are in storage, proper care should be taken as detailed below:

If stored for a short period: (below 6 months)

(a) The engine should be thoroughly washed, to remove any deposits of mud which may be salt-laden.

(b) The engine should be stored in a covered area, on plain hard surface.

(c) Disconnect battery terminals.

(d) Once a week the engine should be started and run for a few minutes with coolant and lub oil system filled as per recommended lub oil & engine coolant.

If stored for longer periods: (more than 6 months)

a) The batteries should be removed and prepared for storage in a dry place. Top up with distilled water and charge fully before storage. Check and charge at regular intervals during storage.

b) Remove the injectors and spray 20 cc of engine inhibiting oil (Shell Ensio oil SAE 10, Castrol storage oil 30, Servo preserve 30) through injector hole. Crank the engine for about 30 seconds. Then fit back the injectors.

c) Spray liberally anti-corrosive oil over rocker levers, push rods, FIP plunger springs and tappets.

d) Drain the lubricating system and replenish the same with engine inhibiting oils.

e) It is advisable to drain the cooling system. A board is to be hung on the engine indicating that cooling system has been drained out to avoid accidental starting of the engine.

f) It is advisable to drain the fuel tank as well as the fuel filters to avoid formation of gum deposits and the possibility of difficult starting later.

g) Completely seal with masking tape the engine intake, exhaust tail pipe, breather pipe, fuel feed pump inlet and the vent hole of the fuel tank.

PRE-COMMISSIONING HINTS

De-preservation procedure

1. De-preserve the engine as per procedure given below:

1.1 Clean all external parts thoroughly. Direct the jet of air to remove all dust.

1.2 Uncover all openings and appropriate connections should be made.

■ Remove the tapes from fuel inlet to the feed pump of the fuel injection pump.

■ Remove the tape from the outlet of the breather pipe.

1.3 Remove fuel filters and fit new ones. Please refer to Service Manual for procedure.

1.4 Remove injectors and check for correct opening pressure and refit as follows:

■ Loosen high pressure pipe connections at pump and injector end and remove. Also remove the injector leak off pipe.

■ Extract the injector. Plug the inlet and leak off opening with protection caps. Wipe off dirt and loosen carbon from injector with a cloth.

■ Connect the injector to the nozzle tester. Operate the hand lever of the tester for about 10-12 strokes. The nozzle should spray in a well atomized form.

■ For checking the opening pressure depress the hand lever until the nozzle ejects the test oil and the pressure



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gauge reading suddenly drops. Note down the reading at this stage. If the reading differs from the prescribed value adjust by changing the total thickness of the shims.

- While refitting the injector, check and clean the nozzle bore in the engine. Replace the injector sealing washer. Tighten the nozzle clamp to the recommended torque of 4.20 to 4.80 kgm. Flush the high pressure pipes thoroughly and connect to injector. Connect the leak off pipes to the injector.
- Drain engine inhibiting oil from oil sump and fill with recommended lub oil.
- Fill the coolant system with recommended engine coolant.
- Flush the diesel tank and remove vent hole mask. Fill the diesel tank with fuel.

Now the engine is ready for installation.

2. If the engine is stored beyond one year, re-preservation and repacking must be carried out

1. If the period of preservation exceeds one year then re-preservation must be carried out during the 12th month.

The date of re-preservation must be entered in a label attached to the engine. Cancel the label showing the first preservation. This must be repeated every 12 months, if the period of storage exceeds a period of one year.

- 2.1 The engine must be prepared for re-preservation.
- 2.2 Clean all external parts, thoroughly. Direct the jet of air to remove all dust.
- 2.3 Uncover all openings and appropriate connections should be made.
 - Remove the tapes from fuel inlet to the feed pump of the fuel injector pump and outlet of the breather.
- 2.4 Remove fuel filters and fit new ones. Please refer to Service Manual for the procedure.
- 2.5 Remove injectors and check for correct opening pressure and refit.
 - Loosen high pressure pipe connections at pump and injector end, and remove. Also remove the injector leak off pipe.
 - Using special tool, extract the injector. Plug the inlet and leak off opening with protection caps. Wipe off dirt and loosen carbon from injector with a cloth.

■ Connect the injector to the nozzle tester. Connect the pressure gauge to the nozzle tester to the injectors. Operate the hand lever of the tester for about 10- 12 strokes. The Nozzle should spray in a well atomised form.

■ For checking the opening pressure depress the hand lever until the nozzle ejects the test oil and pressure gauge reading suddenly drops. Note down the reading at this stage. If the reading differs from the prescribed value adjust by changing the total thickness of the shims.

■ While refitting the injector, check and clean the bore in the engine. Replace the injector sealing washer . Tighten the nozzle clamp to the recommended torque of 4.20-4.80 kgm. Flush the high pressure pipes thoroughly and connect to injector. Connect the leak off pipes to the injector.

3. Run the engine for 15 minutes with the following rust preventive agents:

- a) Fill water jacket with water containing 1% shell bocut cutting compound or any water soluble cutting compound.
- b) Connect fuel feed pump to a mixture of diesel and 10% flushing oil such as lubrex or equivalent.



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c) Fill engine sump with Servo Preserve SAE - 40 or equivalent.

d) After 15 minutes disconnect the fuel line and allow the engine to run so that the fuel in the filter and pump are exhausted.

3.1 Stop engine and remove

a) Air cleaner and cylinder head cover

b) Injectors

c) Fuel pump inspection cover

Crank engine with starter motor.

During cranking spray 10 cc of rust preventive oil (Servo Preserve SAE - 40) into each injector hole in the cylinder head and 20 cc through the inlet manifold.

Stop cranking after spraying oil into the cylinders and manifold.

Spray oil (Servo Preserve (SAE 40) on

a) Rocker assembly

b) Fuel pump plunger springs and tappets

3.2 Replace all components and seal all openings:

a) Air cleaner

b) Coolant - inlet and outlet

c) Fuel inlet

d) Breather

3.3 Drain

a) Coolant from water jacket

b) Oil from FIP.

c) Attach a label showing '**NO OIL & COOLANT**' and date of preservation.

4. Repacking

Cover the engine with polythene sheet and place inside the packing case. Close the case and keep in an area free of moisture.

5. To start the engine after a long storage

a) After a long storage the engine must be checked and gaskets and seals (removed and fitted back during represervation) must be replaced.

b) Flush the cooling system completely. Refill the cooling system with recommended coolant.

c) Remove masking tapes from the engine intake, the exhaust manifold and the vent hole of the fuel tank.

d) Drain the oil from the engine sump. Fill the sump with the recommended engine oil to the required level and replace lub oil filter.

e) Replace the fuel filter elements.

f) Flush out fuel tank and fill the diesel.

g) Check the injectors thoroughly for correct spray characteristics and pressure setting.

h) Check the complete electrical charging circuit. Clean starter solenoid point and battery terminals. Also check starter motor and alternator bushes for proper contact with the commutator.

i) Replace air system and cooling system hoses.

j) Start the engine and observe for engine noise.

k) Monitor engine coolant temp, Oil pressure.

l) Check for oil, coolant & air leak and for any abnormal noise.

m) If everything is alright, put the engine on load and observe engine parameters and performance.

2.4 PRESERVATION AND PRE-RECOMMISSIONING PROCEDURE



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3. Operating procedure

The following subjects are discussed in this section

- Before starting the engine
- Frost precautions
- Do's and don'ts



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BEFORE STARTING THE ENGINE

- (a) The radiator is full of coolant.
- (b) There is sufficient fuel in the tank.
- (c) Engine oil level is correct (dipstick).

3

TOPPING UP THE ENGINE SUMP

The engine oil level should be maintained near to H 'mark' in dipstick.

While checking the oil level, shut down the engine. Wait for few minutes. Withdraw the dipstick from its holder, clean and refit. Withdraw again and note the level. Top up as required with the clean recommended grade of engine oil.

FROST PRECAUTIONS

If anti-freeze solution is not in use and the engine has to be left in the open with temperatures close to freezing point, the cooling system must be completely drained by opening the two drain points which are situated as follows:

1. Drain Plug fitted at the rear right hand side of the cylinder block.
2. Drain tap fitted on the radiator.

Drain tap/plug should be tested at frequent intervals by inserting a length of wire to ensure that they are clear. This should be done as soon as they are opened, so that an obstruction freed by the wire may be flushed out by the water,

After draining, place a notice on the engine to the effect that the cooling system is empty and the drain taps are open.



Engine with anti-freeze mixture in their cooling systems, need not drain the cooling system.

ENGINE ANTI-CORROSION OIL

Useful for engines stored for long periods.

- (1) Shell Ensio oil, SAE. 10.

PRECAUTIONS-SUB-ZERO TEMPERATURE

OPERATION

Cold start aid is not fitted in the engine. It can be made available as optional fitment. The following instruction has to be followed if the engine is subjected to operate in sub-zero temperatures.



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DO'S AND DONT'S

Do's

1. Upto 0°C the engine does not require any special starting aids.
2. Below 0°C and upto -15°C cold start aid "Thermostart" has to be fitted depending on ambient temperature.

0°C to -7°C Excess fuel

-7°C to -15°C Thermostart to be fitted in the intake manifold.
3. Battery should be kept in fully charged condition (Rating to suit the temperature).
4. Select the oil grade from recommended lubrication chart to suit the ambient temperature.
5. Use the correct grade of fuel as recommended for the prevailing ambient temperature.
6. Injectors must be maintained in good condition.
7. Engine timing should be as recommended. Never adjust by advancing or retarding the injection timing.

- Periodically check and ensure that the radiator cowl is intact, and replace a defective thermostat or a missing header tank filler cap immediately as otherwise the efficiency of cooling system would be affected and this will damage the engine.
- Check radiator stay bracket mounting bolts for tightness. Check the silent block bush in stay rod and replace if found defective.
- To obtain a trouble free and enhanced engine life, maintain the air cleaner as per recommended maintenance procedure.
- After starting the engine, check for proper functioning of all instrument gauges.
- For coolant topping up, use only pre-mixed coolant (GULF LEYPOWER COOL 40)
- Do not dilute with plain or demineralised water for top up.

- Fill up diesel tank at the end of each working day to reduce water condensation in the tanks.
- Always use clean diesel. Before filling the diesel to tank filter diesel with fine cloth.
- Keep the suction pipe atleast 1" from the bottom so that water can settle down and can be drained periodically.
- Never use kerosene / fuel additives. This will cause permanent wear of FIP components and injectors and ultimately result in major expenditure of engine over haul.
- Use only LEYPARTS for engine maintenance and repair.
- Use always recommended lub oil and Coolant as per AL recommendation.
- Use always genuine fuel filters, oil filters, lub oil and replace them as recommended.
- Disconnect alternator / battery electrical connection while carrying out welding work.
- Maintain electrolyte level in the battery using distilled water.
- Drain water separator as & when required.

3

OPERATING PROCEDURE 3.3



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Don'ts

3

- Do not operate starter for more than 10 seconds at a time and wait for 30 to 60 seconds before trying again.
- Do not add cold water to a hot engine as this can lead to crack in crankcase and other associated parts.
- Fuel pump setting should not be tampered with.
- Do not run the engine with leakages of air, fuel, oil and water.
- Do not switch off ignition key switch when the engine is in running condition, this will cause white smoke and sever damage to engine.
- Do not start the engine with oil level below L mark on the dipstick.
- Do not start the engine with less coolant in the radiator.

3.4 OPERATING PROCEDURE



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4. Maintenance instructions

Your engine has been designed to ensure ease of access to mechanical components.

This will enable you to carry out a number of simple maintenance tasks.

Therefore, keep to instructions provided on the following pages and you will be able to perform the basic maintenance work yourself.

USED ENGINE OILS

WARNING: Prolonged and repeated contact may cause serious skin disorders, including dermatitis and cancer.

- Avoid excessive contact, wash thoroughly after contact.
- Keep out of reach of children.



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FUEL SYSTEM

Fuel additives should not be used.

Use good quality diesel.

Keep fuel clean and prevent water from entering the fuel system.

4

When filling the fuel tank in the rain or snow care should be taken not to allow water in the fuel tank. Do not forget to close the fuel tank cap securely.

FUEL TANK

Remove the fuel tank. Thoroughly clean the inside surface and strainer once in every 6 months.

FEED PUMP

Plunger type - mounted on Fuel Injection Pump. Plunger is operated by the integral cam as a part of FIP Cam Shaft.

Maintenance

Filter inserts must be replaced at regular intervals.

Filter Element Filter Changed Period

Every 600 hours of operations.

Renew Fuel Filter Element

- Unscrew centre bolt and withdraw the bowl and filter insert. Install new sealing ring and ensure it correctly located.
- Clean the bowl free of sediments. Replace a genuine filter insert and refit the bowl. Bleed the fuel system.



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Fuel Filter cum Water separator - (Fleet guard)



Fuel filtering system consists of a strainer (Fitted before feed pump) and fuel filter cum water separator (Fitted on pressure side before FIP).

For easy identification, fuel inlet and outlet ports are embossed clearly on the filterhead.

Further, as a fool proof, the fuel inlet port is provided with M14 size and fuel outlet port is provided with M12 size threads.

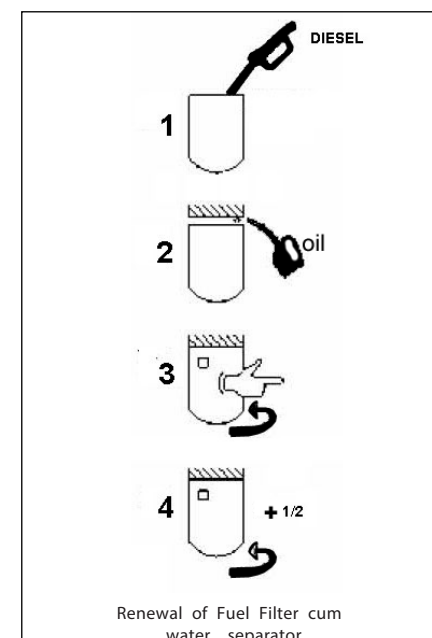
Maintenance

Under normal operating conditions, fuel filter cum water separator to be replaced at every 600 hours of operation and mud strainer to be replaced at every 1500 hours of operation.

Renewal procedure for Fuel Filter cum Water separator.

- Remove old spinon fuelfilter using appropriate filter wrench and discard.
- Clean filter head base and ensure that all the unwanted material is completely removed.
- Check the filter mounting head for tightness.
- Apply a thin coat of clean engine oil to the rubber ring surface of the new filter. Press the rubber ring firmly into the retaining groove in the filter. Do Not Use Grease.
- Carefully read the installation instructions printed on the ppheriferal of the filter, before fitment.
- Pre-fill the new filter with clean fuel.
- Mark a reference point on the filter and filter head to identify the point. Ensure that the rubber sealing ring first makes contact with the sealing surface of the head.

- Screw on the filter fully in and rotate 1 / 2 turn further.
- Start the engine and ensure no fuel leakage around the sealing rubber ring and filter assembly.



4



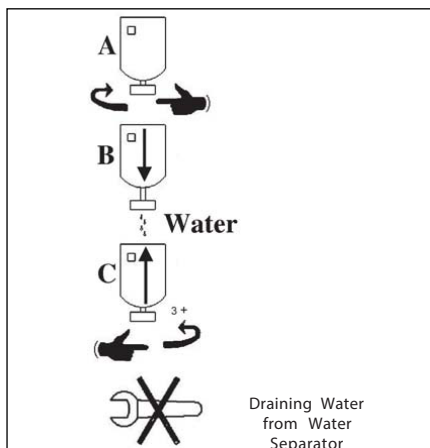
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Procedure for draining water

Drain water from the unit as per the instructions provided on the component.

- Rotate the drain cock anti-clockwise (as shown in the instructions printed on the outside of the filter)
- Drain the water till the fuel starts to flow.
- Rotate the drain cock clockwise the number of turns as indicated by the installation instructions printed on the side of the filter canister.

4



- Start the engine and check for fuel leakage around the sealing gasket and filter assembly.
- Never use a spanner for rotating the drain cock.



Drain water daily. Drain cock should be hand tightened fully. Never use any spanner.

Fuel additives should not be used.

Use good quality diesel. Use always low sulphur diesel fuel (BS III Fuel) as specified in annexure - IVF of CMF rules.115(14).

Keep fuel clean and prevent water from entering the fuel system.

When filling the fuel tank in the rain or snow care should be taken not to allow water in the fuel tank. Do not forget to close the fuel tank cap securely.

Since nozzle tip is very sensitive, do not use emery sheet or any hard material to clean the tip of nozzles.

Bleeding Procedure for Fuel System

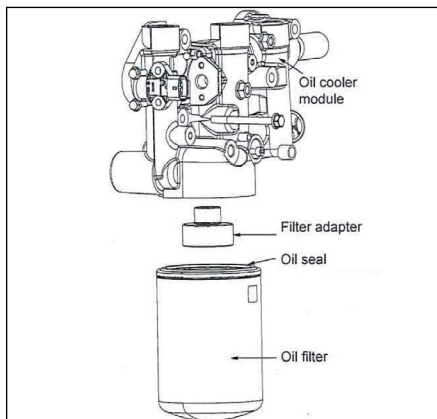
1. Ensure that diesel is available in the tank. Arrest leakage if there is any. And ensure there is no blockage in the filter/ pipe lines.
2. The suction strainer in fuel tank is clean.
3. Diesel filters and their seals are in good condition.
4. The filter in the banjo bolt on feed pump suction pipe is clean
5. Pump the plunger on lift pump and ensure that air free diesel flow occurs at the filter bleeding screw.
6. Crank the engine few times by loosening the high pressure injector pipes at the injector end and retighten after clear delivery takes place.
7. Start the engine
8. Even after priming if diesel does not appear at the outlet, remove the feed pump assembly. Check and rectify the defects.



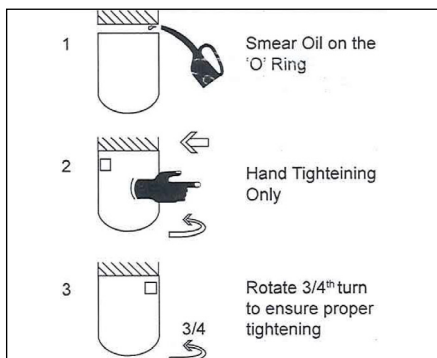
Use always genuine fuel filter supplied by Ashok Leyland.



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Renewal procedure for spin on oil filter



Remove the old filter using a filter wrench. Clean filter base (adaptor) and ensure that the all old washers are removed.

Check the filter mounting adaptor for tightness. Apply thread seal.

Apply thin coat of clean engine oil to the washer sealing surface of the new filter. Do not use grease.

Carefully read the installation instructions printed on the outside of the filter to determine the number of turns the filter must to be rotated past washer contact for proper installation and washer compression.

Pre-fill the new filter with clean engine oil.

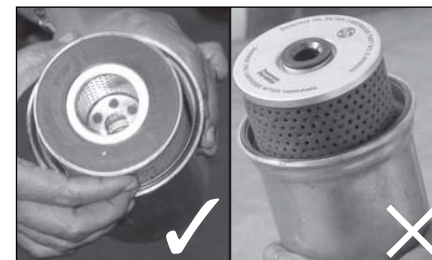
Spin on the new filter until the washer makes contact with the sealing surface on the filter head.

Mark a reference point on the filter and head to identify the point that the sealing washer first makes contact with the sealing surface of the head.

Rotate the filter by 3/4th number of turns past washer contact.

Start the engine and check for oil leakage around the sealing washer and filter assembly.

CATRIDGE TYE FILTER



Using suitable spanner loosen centre bolt of filter bowl and withdraw the bowl assembly. Discard the used filter element and sealing 'O' rings at centre bolt and bowl fitting face. Fit a new oil filter element after placing the spring and the plate washer in position. Fit filter bowl with filter element to the filter head by centre bolt. Ensure that oil filter is not fitted in the inverted position.

Open oil filler cap. Refill the engine with the correct quantity of the specified grade of engine oil. Check the oil level on the dipstick and run the engine for a short time. Allow 5 - 10 minutes for the oil to settle down. This is essential when the oil filter has been changed and engine oil top.



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2. COOLING SYSTEM

The proper selection and use of coolant are very important to prevent corrosion of the cooling system and clogging of the radiator. Replace coolant as per the maintenance schedule.

RECOMMENDED COOLANT

Use GULF LEYPOWER COOL 40.

4 (pre mixed Coolant). No addition of water is required.

For coolant change interval, refer Maintenance Schedule. The coolants are available in convenient pack sizes of 1, 3, 20, 50 lts & also as 210 lt barrel.

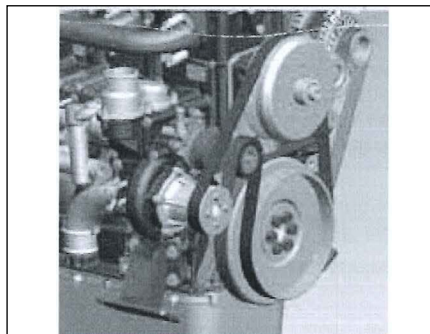


For topping up use only GULF LEYPOWER COOL 40 directly. Do not dilute with plain or demineralised water for top up.

Water Pump

NEPTUNE engines are fitted with "Volute Pump (Double Thermostat Impeller type)

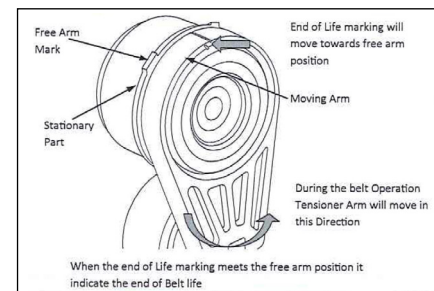
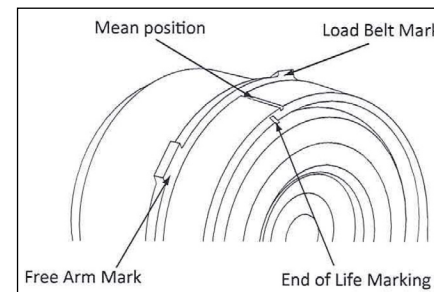
Removal and Refitment of Fan Belt



- Loosen the adapter connecting the fan with the fan shaft.
- Push the fan towards radiator.
- Move the auto belt tensioner arm in clock wise direction using a 'T' handle.
- Slip out the belt connecting the Damper, Alternator and water pump.
- Remove the belt through the gap between the fan shaft and fan.
- Follow the procedure in the reverse order to install a new belt.
- Check proper seating of fan belt on the pulleys.

End of life Marking (Auto Tensioner)

Auto tensioner in the belt system maintains the fan belt tension automatically and no maintenance / check required. When the belt stretches beyond the limit, a mark on the auto tensioner indicates the end of life of belt. Belt has to be replaced as per procedure indicated.





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Charge air cooler and Radiator core cleaning and fin repair

When dust, debris, etc. are stuck up on the radiator or charge air cooler core, the passage of cooling air is impaired. Hence such matter should be removed completely by washing with water. Deformed fins also can impair cooling and these should be repaired.

Replace cooling system rubber hoses. Check hoses for cracks, swelling or deterioration and replace if necessary.

Changing Coolant in Radiator

1. Do not loosen the drain plugs while the engine is still hot. If you do so, hot water can come out resulting in personal injury.
2. Stop the engine. Loosen the radiator drain plug to drain the coolant. Drainage will improve if you remove the cap from radiator.
3. Drain the complete system and tighten the radiator drain plug.
4. Slowly feed coolant into the radiator through the filler until the radiator is full. When supplying coolant from a pail, pour it slowly to prevent air from mixing with the coolant.

5. When the level of the coolant reaches the filler neck, squeeze the upper radiator hose two or three times. This will cause air inside the hose to be expelled, and the level of the coolant will fall.
6. Properly close the radiator cap.
7. To ensure that the air in the engine and the piping is properly expelled, run the engine for 5 minutes on no load.
8. Stop the engine and after the engine has cooled down sufficiently, check the coolant in the radiator. Add coolant to make up for any drop in the coolant level.

Radiator stay Rod & Cowl arrangement

Do not run the engine without radiator cowl. Ensure that the radiator cowl mounting and fan blade clearance are in proper order.

Check radiator stay bracket mounting bolts for tightness. Also check the silent block bush in stay rod and replace if found defective.

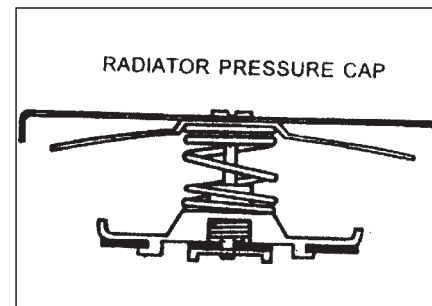
Check radiator mounting bracket bolts for tightness and the condition of the rubber pads and replace if found defective.



Improper radiator mounting can result in radiator hose failures as well as core cracks at dip soldered joints of top and bottom tanks.

Radiator Cap

The presence of the radiator cap prevents loss of coolant, entry of foreign particles and raises boiling point of coolant. The absence can lead to engine overheating and reduction in engine life.



Water Pump (H Series)

"H" Series engines are fitted with "integral shaft and bearing" type water pumps with prepacked grease. No further greasing required.



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Adjustment of the driving belt tension of water pump (Poly V belt arrangement)



4

Installation Procedure

1. Loosen the necessary fasteners, slacken the pulleys & remove the old belt.
2. Check pulley grooves for wear / damage and replace the pulley if required.
3. Clean the pulley grooves for debris and ensure not to apply oil or grease on the pulley grooves at the time of fitment.
4. Check alignment of the pulleys.



Misalignment of pulleys will produce noise and shorten the belt life.

5. Mount the belt over pulleys and ensure that the belt ribs are seated in the respective pulley grooves.
6. Tension the belt and tighten all the fasteners.
7. Run the engine for 3 to 5 minutes with the applied tension to allow the belt to seat in the respective pulley grooves properly. Reset tension.
8. Apply initial belt tension of 700N by adjusting the alternator position.
9. To ensure the applied tension, measure it in the middle of span between waterpump pulley and alternator using electronic type tension gauge.

Belt Tension Measurement Procedure

- Hold the sensing head steadily across the belt span within 5 -10 mm distance above the top surface of the belt.

- Tap the belt gently near the mid span using a rod or with similar tool to cause the belt span to vibrate.
- Check the required tension display on the LCD panel on the tension meter.
- If a reading is not obtained check that the sensing head and ensure that it is positioned properly.
- Repeat the same procedure to recheck.

DO's:

- Check belt tension at regular intervals and adjust as needed.
- Check for any abnormal wear and damage in pulleys / Belt.
- Check for pulley alignment.
- Make belts free of fluffs and dirt.

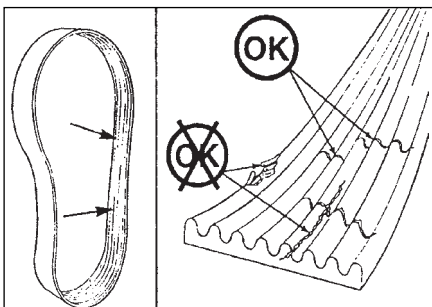


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DONT'S:

- Don't over tension the belt.
- Don't apply oil/grease or paint on pulley grooves.
- Don't fix the belt improperly aligned.
- Don't use worn out belts.
- Don't pry the belt using sharp tools.

Visually inspect the belt:



Replace the belt if it is frayed or pieces of material missing or longitudinal cracks intersect with transverse cracks.

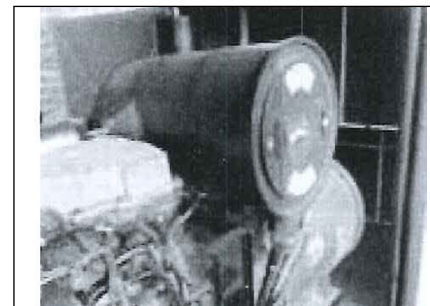
REMOVAL AND REFITMENT OF FAN BELT (COGGED BELT)

- Dismount the radiator side stay and loosen radiator bottom mounting to sway out a little to clear the cowl covering the fan.
- Loosen alternator link bracket and loosen the fan belt fully. Inspect the pulleys for damage and wear.
- Replace the new fan belt and redo the above in reverse.
- For marine application - PTO to be loosened to insert water pump belt.

ADJUSTMENT OF THE DRIVING BELT TENSION OF WATER PUMP

Loosen the alternator link bracket and swing the alternator away from engine to increase the fan belt tension. 1" to 1½" deflection on longest side of fan belt is the limit.

3. AIR INTAKE SYSTEM



4

Maintenance of Air cleaner plays a major role in engine performance and life. Poor air cleaner maintenance will result in complaints like excess liner wear, high engine oil consumption, excess blow by and engine not taking load.

Maintenance and Servicing of Dry type Air cleaner

Following maintenance recommendations need to be strictly followed.



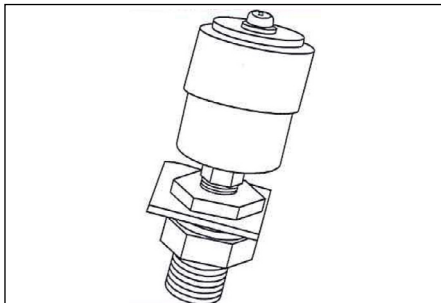
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- Remove dust deposit weekly by squeezing the dust evacuator valve.
- Replace dust evacuator valve immediately if it is torn, cracked, remains open or missing.
- Never operate the engine, if the restriction indicator is either broken or missing.

4



Do not clean the air filter primary & secondary elements.

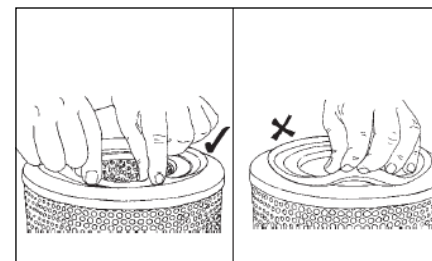
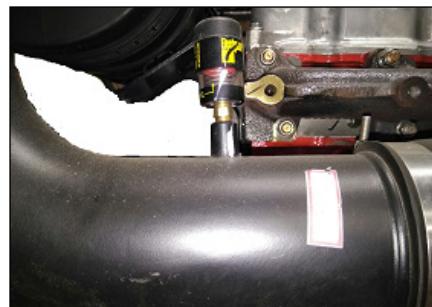


- Replace primary filter element as soon as vacuum indicator shows red band.
- Replace the secondary filter element at the time of every third replacement of the primary filter element.



For opening or closing of the air cleaner, instructions given on the sticker (pasted on air cleaner) need to be followed.

Vacuum Indicator



Replace the Secondary / Safety air cleaner element after 3rd replacement of Primary air cleaner element or after 2 years of duration whichever is earlier.



Air Cleaner element should not be cleaned.



Engine should not be run without air filter element, which can lead to early failure of engine.



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4. TURBOCHARGER

INITIAL RUNNING

Keep the engine at idling rpm for minimum 2 minutes before applying / before shutting off, to obtain maximum life from the turbocharger. Do not run the engine at full load with oil pressure less than 1.5 kg/cm².

Check all air ducts and gaskets for leak. Repair any leaks before proceeding. Inlet of air compressor must be free from dust and contamination.

MAINTENANCE

1. Turbocharger and boost pressure control valve do not require any maintenance.
2. Adhere strictly to the periodic engine oil change as recommended in the maintenance schedule.
3. Maintenance work has to be carried out regularly on the oil filter and air filter system, as recommended in maintenance schedule.
4. Checks to be made on the oil, air and exhaust piping, as well as, on all other connections and seals, to ensure that they are tight and no damage has occurred.

5. When carrying out maintenance work on the engine, the piping leading from or to the turbocharger must be removed, and the pipe openings on the turbocharger to be closed.
6. Prior to fixing turbocharger to the engine, fill the central housing with clean engine oil and ensure that, all pipes are thoroughly cleaned before connecting to the turbocharger.

Disassembly, servicing or overhauling of turbochargers should be carried out only through Ashok Leyland authorised dealers.

DO'S

- Use of specified grade of engine oil and oil filter and periodic change as recommended in maintenance schedule.
- Regular maintenance of air filter element according to maintenance schedule.
- Check for oil pressure at engine idling condition minimum oil pressure should be 1.5 kg/cm².
- Idle the engine for 2 minutes after starting the engine.
- Idle the engine for 2 minutes before switching off the engine.

- Regularly checks the oil feed and return pipes for leaks, air intake system pipes and hoses for leakage, blockage and exhaust piping connections for leakages, blockage.
- Check the fuel injection system for its proper functioning.
- Close all the turbocharger openings with protective plugs when it is not in use.
- Contact Ashok Leyland dealer / authorised centres for turbocharger complaints / service.

DON'TS

- Don't run the engine with low oil pressure.
- Don't put the engine under full load immediately after starting.
- Don't switch off the engine underfull load.
- Don't run the engine with leaky, restricted oil feed and drain pipes.



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ENGINE SYSTEMS

1. LUBRICATION SYSTEM

Use of recommended lubricants and following appropriate draining procedures at correct intervals as per the maintenance schedule is very important for the maintenance of the engine.

4

For severe and adverse operating conditions, the regular maintenance intervals should be shortened suitably.

Engine Oil

For engine Lubricants and brands of Lubricants, Refer Recommended Lubricants Chart.



Engine oil additives should not be used.

Oil Pump

Type : Forced feed pressure lubrication

Oil Pump : Gear pump

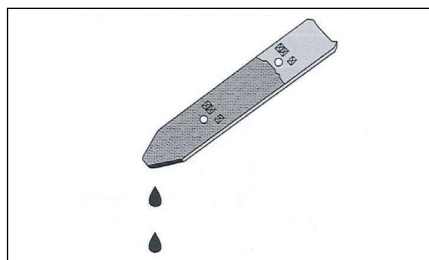
Min. Allowable oil pressure at idling : 2 kg/cm² (80°C)

Max. oil pressure at full load : 4.5-4.8 kg/cm² (Hot Engine)

Oil Filter : Full Flow - element type and bypass element type.

Oil level

Before checking the oil level, ensure that the engine is in off condition. Also allow 10 minutes for warm oil to settle down in the sump. Withdraw the dipstick from the tube located on the LH side of engine. With a clear lint free rag wipe the dipstick scale and re insert fully.



Withdraw the dipstick and note the level on the scale and top up as necessary with new oil to recommended specification.

Oil and filter change

To drain the oil:-

Ensure that the engine is in off condition, and the engine is warm. Draining of oil should be done within 10 minutes, from shutdown. After positioning a suitable drain tray under the sump remove the drain plug and drain the oil.



When completely drained install the drain plug with new washers and tighten securely.

Spin on type filter element





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- Don't run the engine with blocked, punctured, aged, deformed hose / pipe connections from the air cleaner to the turbocharger, turbocharger to charge air cooler and charge air cooler to the inlet manifold.
- Don't run the engine with leaky connections, blocked and deformed connections to the turbocharger turbine inlet and from turbine outlet.
- Don't tamper the fuel injection system
- Don't dismantle the turbocharger, contact Ashok Leyland dealer / authorised service centre.



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5. Electronic Diesel Control for Neptune Engines



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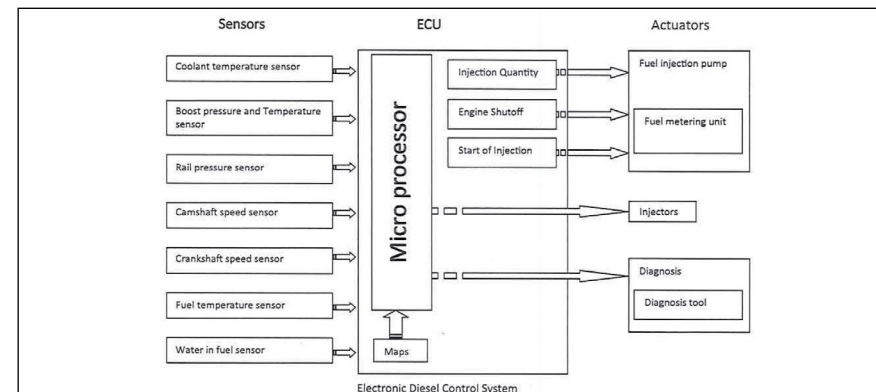
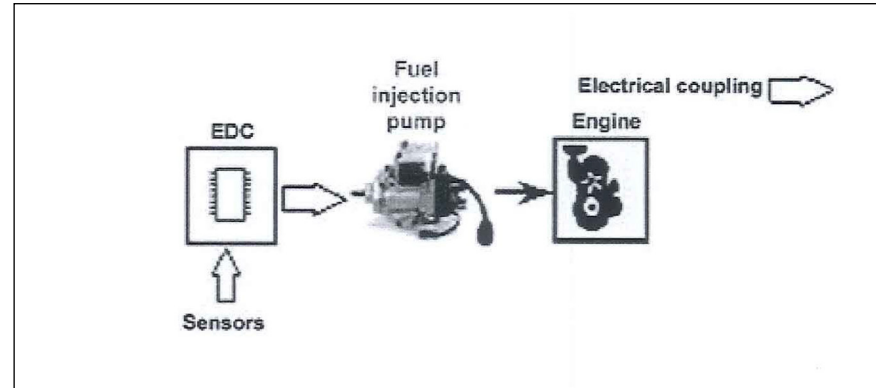
ELECTRONIC DIESEL CONTROL EDC17 (CRS NEPTUNE Engine)

Modern engine development is driven by legislative emission requirements and growing engine electronic architecture in the market. Following are the legislation and market driven needs.

5

1. High fuel injection pressure.
2. Fuel injection independent of pressure generation and engine speed.
3. Multiple injections (Main, Pilot & Post Injection)
4. Flexible in fuel quantity, injection timing and fuel injection pressure independent of engine speed.
5. Environmental (Ambient, Coolant temperature etc.,) / Altitude dependent fuel quantity adjustment.

The EDC (Electronic diesel control) system is capable of meeting the demands outlined above.



5.2 ELECTRONIC DIESEL CONTROL FOR NEPTUNE ENGINES



The injected fuel quantity is based on

1. The engine response desired by the load demand communicated through the help of ECU.
2. The engine operating conditions.
3. The engine operating coolant temperature.
4. Boost pressure.
5. Engine speed.

EDC system is also capable of data exchange with other electronic systems such as Automatic transmission through CAN (Control Area Network).

Major components of EDC system

Electronic Diesel Control system comprises of the following.

- Electronic Control Unit (ECU).
- Common rail CRS (CP3.3) pump Fuel injection pump.
- Solenoid type Injector for all cylinders.
- Coolant temperature sensor.

- Boost pressure & temperature sensor.
- Camshaft speed sensor.
- Crank shaft speed sensor
- Rail pressure sensor.
- Water in fuel sensor.
- Oil pressure and temperature sensor.
- DC-DC converter (power source) and Wiring harness.
- In EDC system, the injected fuel quantity is based on the following.
- The engine response desired by the load demand, communicated through the ECU.
- The engine operating temperature.
- Boost pressure and temperature.
- Engine speed Atmospheric pressure Proper functionality of EDC components.

EDC system is subdivided into

1. Sensors

Detect the engine operating conditions and the load demand. They convert physical variables into electrical signals.

2. Electronic Control Unit (ECU)

Processes the information received from the sensors. It controls the actuators through electrical output signals. It also provides interfaces with other systems like diagnostic tool.

3. Actuators

Convert the electrical signal from the ECU into physical variable.

CONTROLS

Open and Closed Loop Electronic Control.

Open Loop control

The actuators are operated by the ECU output signals which the ECU has calculated using the input variables, stipulated data, characteristics maps, and algorithms. The final results are not checked.



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Close Loop Control

The actual value at the output is continually monitored against the desired value and as soon as a deviation is detected this is corrected by a change in the actuator control. The advantage of close loop control lies in the fact that disturbances from outside are detected and taken into account. In our system close loop control is used for rail pressure governing through activating metering unit.

Fuel - Injection Control

5 In order that the engine can run with optimum combustion under all operating conditions, the ECU calculates exactly the right injected fuel quantity at right time in different conditions. Here the values of various parameters are considered.

Starting Torque Requirement

The injected fuel quantity is calculated as a function of coolant temperature and cranking speed. This will generate from the moment the starting switch turned and until minimum engine speed is realised.

Engine Maximum Speed Control

This control ensures that the engine shall not to be rotated at excessive speeds. To avoid damage to the engine, the engine manufacturer stipulates a permissible maximum rotational speed that may only be exceeded for a very brief period. In our case Engine rated speed is 1500 rpm and Fuel Cut off speed is 1530 rpm. Maximum engine speed can be controlled through ECU.

Start Of Injection Control

Start of injection has a critical effect on 6 power output, fuel consumption, noise, and emissions. The desired value for start of injection depends on engine speed and injected fuel quantity. With the use of injector energisation, it is achieved.

Sensors, Actuators and ECU

Electronic Control Unit (ECU)

The ECU is the brain of the system that process the requirements through sensors and the fuel mappings already calibrated in the ECU and decides on the fuel delivery through injectors. It operates on 12V DC.

Common rail CRS CP3.3 pump Fuel injection pump.

This pump is mechanically driven and electronically controlled by ECU. Output signals from ECU triggers the governor there by controls the fuel quantity of fuel injected and the start of injection.

Engine Coolant Temperature Sensor

It is a thermistor, mounted on coolant return line from cylinder block. It measures the engine coolant outlet temperature.

Engine Speed Crank Sensor

The Crank shaft speed sensor is mounted on the cylinder block. The sensor works on Magnetic induction principle. The tooth space on the crankshaft trigger wheel causes a change in magnetic flux thereby generating output pulses, the frequency of which determines the speed.

**Engine Speed Cam Sensor**

The Cam shaft sensor is mounted on the cylinder head. The sensor works on Magnetic induction principle. The tooth space on the camshaft trigger wheel causes a change in magnetic flux thereby generating output pulses, the frequency of which determines the position.

Back up for Crank Sensor

The crankshaft position signal combined with camshaft position signal indicates the cylinder that is on compression and the ECU can determine from its programming the engine firing order.

If either crank or cam sensor will malfunction the cam or crank sensor will aid to start the engine.

Engine Boost Pressure & Temperature Sensor

Engine Boost Pressure sensor is mounted on the intake manifold to measure the absolute intake manifold pressure & temperature.

Common Rail System

Accumulator of high pressure fuel around 1800 bar in the system.

The rail volume dampens the pressure oscillates generated during pumping and after needle closing.

Function as a fuel distribution point to different pointers.

Advantages

Separation of pressure generation and injection allowing flexibility in controlling both the injection rates and timing. Fuel pressure doesn't depend on the engine speed and load conditions.

High injection pressures and good spray preparations are possible at even at low engines speeds and loads. Capability to deliver stable, small post injections can be used for decreased NOx emissions and noise.

Option for post injections may be used together with such emission control technologies as particulate filters, lean NOx, catalysts, or NOx adsorbents. Fuel pumps operates with low drive torque.

Rail pressure sensor

The rail pressure sensor sensing the pressure maintain common rail and sends the signal to

ECU to and ECU sends the signal to metering unit to regulate volume of fuel in common rail. Stainless steel sensing element with metal thin film strain gauges.

Digital circuit concept with analogue output signal.

Metering Unit

Metering unit function is controlled by a electro magnet principle of having solenoid, present inside. As the declaration came from the ECU via Rail pressure sensor, the ECU sends the signal to regulate the fuel flow. The Rail pressure sensor and Metering unit are inter related to maintain the fuel pressure in Common rail.

Injectors

Injectors functions are controlled by a electro magnet principle of having solenoid situated at top side. When the solenoid coil is energized, it lifts the plunger and allows the high pressure fuel from high pressure connector to injector inlet and the fuel fills inside the stem of injector and finally it delivers to the combustion chamber.



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Water in Fuel Sensor

Water in fuel sensor located at the Bottom of Prefilter. When the water in fuel got settled at bowl, the sensing lead senses the presence of water. Please refer the water draining procedure follows below.

EDC failure reaction functions

Various reaction in engine behaviour indicates the possible malfunctioning or failure in the EDC Sensors and actuators or in the wiring harness.

The table shown indicates the details of sensor failure and its effect on the engine.

5

Do's and Don'ts

- Electrical tapping not allowed: Tapping should not be taken as this can severely affect the performance of the ECU and Sensors (additional current drawn by the new load will drain the battery faster / damage the DC/DC Converter).
- Diagnostic connector should not be left hanging loose and should be handled with care. The protective cap is to be removed only at the time of connecting diagnostic tester.

- Reverse polarity protection : Care needs to be taken while removing and connecting the battery connection during Genset assembly.
- Check the battery condition regularly and keep the battery in a healthy condition.
- Ensure proper connectivity of ECU/ Sensor connectors with wiring Harness and maintain harness clamps.
- No intermittent connector in the EDC wiring system should be practiced (this is not relevant from the service point of view as the harness would have already been made and put on the engine and there will be no question of intermittent connector).
- Keep the ignition switch 'OFF' while removing & Fitment of the battery connections in the engine.
- Correct Tightening torques should be used for mounting the ECU.
- Do not relocate the ECU from the given location.
- ECU must be connected or disconnected to the wiring harness only when the ignition switch is in OFF position.
- No undue pressure to be applied on the ECU during service.
- Do not let dirt or dust get inside the actuator / sensors or EDC components. Cover them properly.
- When disconnecting the connectors, try to pull them out in a straight line, disengaging the lock by holding the housing.
- Do not try to disconnect connectors by gripping the wires or twisting them, as this could bend the contacts.



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6. Maintenance Schedule

SCOPE AND PROCEDURES OF REGULAR MAINTENANCE

The operations described here as “Regular Maintenance” involve such service operations as inspection, lubrication, adjustment, and replacement which should be carried out at specified intervals. The importance of these regular service operations need not be emphasised further for they have a close bearing on the performance and service life of your engine.

The periods under which the various items are listed are intended to apply to engine engaged on normal operating conditions. More frequent attention will be necessary to engine working under adverse conditions. The regular maintenance periods, therefore, should be altered to suit the local conditions.



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CHECK LIST	Frequency			REMARKS
	Daily	First 50 hours only	Every 250 hours	
1. Check level and top up				
a) Oil in engine	✓	✓		
b) Coolant in radiator	✓	✓		
c) Electrolite in battery		✓		
2. Check tightness of				
a) Battery terminals & apply petroleum jelly		✓	✓	
b) Fan belt and tighten if necessary		✓	✓	
c) Hose connections in cooling systems		✓	✓	
d) Hose clamp of charge air cooler / turbocharger		✓	✓	
e) Fuel piping connections		✓	✓	
f) Exhaust piping connections		✓	✓	
g) Engine mountings		✓	✓	

6.2 MAINTENANCE SCHEDULE



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CHECK LIST	Daily	First 50 hours only	Every 250 hours	REMARKS
h) Engine to drive unit coupling		✓	✓	
i) Electrical connections at instrument panel		✓	✓	
j) Radiator mtg, stay & gap between fan and cowl		✓	✓	
k) Injection pump mounting		✓	✓	
l) Cylinder head nuts				First 250 Hours and thereafter every 2500 Hours
3. Run the engine, check and record				
a) Oil pressure	✓	✓		
b) Battery charging	✓	✓		
c) Idling RPM	✓	✓	✓	
d) Maximum RPM	✓	✓	✓	
e) Maximum operating temperature	✓	✓	✓	
4. Check leakage from				
a) Fuel piping & injector high pressure lines		✓	✓	
b) Exhaust manifold, flange & connections				



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CHECK LIST	Daily	First 50 hours only	Every 250 hours	REMARKS
c) Engine oil filter and other areas		✓	✓	
d) Coolant hoses		✓	✓	
e) Gear box and PTO (for marine application)		✓	✓	
5. Check proper engagement (for marine application)				
a) Gear box	✓	✓		
b) Power Take Off	✓	✓		
6. Check proper routing to avoid any kink formation				
a) RPM cable		✓	✓	
b) Capillary tube to temperature gauge		✓	✓	
7. Check condition of				
a) Zinc anode (for marine oil cooler application)			✓	
b) Alignment of engine to driven unit		✓	✓	
c) Check water pump. Recondition if necessary				Every 1250 Hours
8. Lubricate				
a) Throttle linkages		✓	✓	
b) Clutch engaging sleeve (for marine application)		✓	✓	

6.4 MAINTENANCE SCHEDULE



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CHECK LIST	Daily	First 50 hours only	Every 250 hours	REMARKS
g) Fuel hoses				Every 2000 Hours or one year whichever is earlier/Based on condition.
h) Air filter element - dry type air cleaner				Whenever vacuum indicator shows red band (or) 1000 hrs whichever is earlier
11. Check & reset				
a) Injection pump timing		✓		
b) Adjust valve clearacne				During every oil change
c) Injector opening pressure				Every 3500 hours.
d) Recalibrate Fuel Injection Pump				Every 3500 hours/ Based on condition.
12. Check charge air cooler				
a) For any blockage of fins and clean the cooler if necessary			✓	
b) Hoses for any damage			✓	

6



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RECOMMENDED LUB OIL, OIL DRAIN & FILTERS CHANGE INTERVAL

Application	Engine Model	Recommended Lub Oil	Oil drain & Filters Change interval
Genset	H2 Series - 15 - 25 - 30 KVA	Gulf LEYPOWER XLL Diesel engine Oil	600 hours or 12 months whichever is earlier
Genset	H4 series - 40 - 82.5 KVA	Gulf LEYPOWER XLL Diesel engine Oil	600 hours or 12 months whichever is earlier
Genset	H6 series - 100 - 160 KVA	Gulf LEYPOWER XLL Diesel engine Oil	600 hours or 12 months whichever is earlier
Genset	N6	Gulf LEYPOWER XLL Diesel engine Oil	250 hours or 6 months whichever is earlier



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GENSET ENGINES

Type of Service	N6	
	Gulf LEYPOWER Diesel Engine Oil	
	Hours	Duration
1st Free Service	0 -50 hours	0 - 30 days
2nd Free Service	225 - 250 Hours	Max within 180 days
3rd Free Service	475 - 500 Hours	Max within 180 days from previous oil change

Important Note:

Ashokleyland reserves the right to change the above schedule, Procedure at any time and without any prior notice.

Kindly check with authriosed AL Dealer / Company Executives for any Clarifications.

6



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GENSET ENGINES

	H2 / 15 - 30, H4 / 40 - 82.5KVA & H6 / 100 - 160KVA	
	Gulf LEYPOWER XLL Diesel Engine Oil	
Type of Service	Hours	Duration
1st Free Service (Installation Check)	0-50 Hours	0-30 days
Intermediate Service	325 - 350 Hours	6 months from Date of commissioning
2nd Free Service	575 - 600 Hours	Max within 12 months
3rd Free Service	1175 - 1200 Hours	12 months from previous oil change and Max within 24 months

Important Note:

6

Ashok Leyland reserves the right to change the above schedule , procedures at any time and without any prior notice.

Kindly check with authorised AL Dealer/ Company Executives for any clarifications.

6.8 MAINTENANCE SCHEDULE



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7. Warranty Policy



ASHOK LEYLAND

GENSET ENGINES

Engine No. :.....ASHOK LEYLAND LIMITED

Mode :.....WARRANTY

Date of AL INVOICE:.....FOR GENSET APPLICATION ENGINES ONLY

Ashok Leyland Limited (hereinafter “Ashok Leyland”) declares that the Ashok Leyland “Leypower” brand gensets sold in India through its authorized sales channel will be free from any defect in material and workmanship under normal use and preventive maintenance service for a period listed below from the date of sale to the original retail purchaser.

Warranty Period: Warranty is for 24 months from the date of AL Invoice from the Factory or 5000 hours of Operation, whichever occurs first.

This warranty policy covers all Genset Engines Manufactured by Ashok Leyland sold and in use in India only which have been sold on or after December 1, 2018. The Published Warranty of Ashok Leyland is subject to change by Ashok Leyland at any time without notice.

Our obligation under this warranty being limited to replacing or repairing by our authorized Service Dealers, at the sole discretion of Ashok Leyland, any part or parts, which our examination shall disclose to our satisfaction, to have been thus defective in material or workmanship within the specified warranty period. For Parts / Engine supplied by way of replacement or repair either under this warranty or voluntarily at special rates or free of charge, only the unexpired portion of the period of warranty is applicable to the Engine concerned.

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THERE ARE NO WARRANTIES EXPRESS OR IMPLIED, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING OUR ENGINE EXCEPT THE WARRANTY AGAINST DEFECT IN WORKMANSHIP AND MATERIAL SPECIFIED HEREIN. WE NEITHER ASSUME NOR AUTHORIZE ANY PERSON TO ASSUME ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ENGINE. ASHOK LEYLAND SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY EXPENSES THAT MAY BE INCURRED TOWARDS REMOVAL / RELOCATION / INSTALLATION OF ENGINE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HERE-OF. ASHOK LEYLAND SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES.

7.2 WARRANTY POLICY



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This Warranty does not apply to (Limitation and exclusions):

1. Engine that shall have been subjected to over speeding, over loading, misuse negligence or accident.
2. Damage resulting from improper shutdown.
3. Engine that shall have been repaired or altered outside of our factory or by anyone who is not authorized by us in such a way that, in our sole judgment its performance and reliability are adversely affected.
4. Engine or any part, component or accessory of the Engine improperly applied or installed.
5. Failure in any way resulting from use of parts, components or accessories not manufactured or approved by Ashok Leyland.
6. Normal Maintenance services including, but not limited to engine tune up and the repair or replacement of filters, Engine Oil, and other normal maintenance spares.
7. Any damage due to idle storage of Engine beyond period of 6 months without treatment for long storage.
8. Any damage due to use of lubricant, fuel or coolant not recommended / approved by Ashok Leyland.
9. To meet CPCB norms, use diesel specification as per IS1460 & Sulphur content of the Diesel shall not be more than 500 PPM.
10. Ashok Leyland shall not be responsible for failure of product due to improper ventilation, deficiency in design of accessories other than Ashok Leyland / scope, judged solely at the discretion of Ashok Leyland.
11. Engine which has not undergone the mandatory free & paid service of engine through authorized dealers of Ashok Leyland within the warranty period.
12. Failure / damage to Engine due to wrong electrical wiring connections and substandard electrical fittings and materials.
13. All rubber hoses / components & gaskets.
14. Any Failure due to natural Calamities such as but not limited to Flood, Earth quake, Riot, War, Fire, landslides, Cyclone & Lightning etc.



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Any improper installation or application, or any substitution of parts, component or accessories not manufactured or approved by us shall void all warranties, express or implied. The warranty does not include for normal wear and tear. Ashok Leyland is not liable for loss of time to the user while the Engine or other equipment is out of commission, nor for any labour or other expense, liquidated or unliquidated damages or loss occasioned, or claimed to the occasioned by such defective parts, component or accessories.

Engine Inspection

Three Free Services for Engines are provided by Ashok Leyland as per warranty clause and terms mentioned above and will be carried out by Ashok Leyland's authorized dealers / service providers only. The owner of Engine would be well advised to avail all Free service to ensure trouble-free performance of the Engine.

Free service inspection is provided to review maintenance procedures and make necessary adjustments, if required and clarify queries, if any, which the owner may have with regard to the operation of Engine.

It is the responsibility of the owner to get these free services done as per schedule given below.

Type of Service	H2- 15 - 30 Kva / H4 - 40 - 82.5Kva / H6 - 100 - 160Kva	
	Gulf LEYPOWER XLL Diesel Engine Oil	
	Hours	Duration
1st Free Service (Installation Check)	0-50 Hours	0-30 days
2nd Free Service	575 - 600 Hours	Max within 12 months
3rd Free Service	1175 - 1200 Hours	12 months from previous oil change and Max within 24 months

7.4 WARRANTY POLICY



ASHOK LEYLAND

CHECK LIST	Daily	First 50 hours only	Every 250 hours	REMARKS
9. Clean				
a) Fuel feed pump strainer		✓	✓	
b) Fuel filter bowl, drain till clear fuel appears and then bleed the system		✓		
c) Strainer in fuel tank			✓	
d) Engine breather				Every 1500 Hours
10. Replace/Fill				
a) Replace engine oil and oil filter at scheduled hours				
b) Change gear box oil			✓	
c) Fuel filter and seal ring			✓	
d) Coolant				Every 5000 Hours or 24 months
e) Cooling system hoses and rubber pads for radiator mounting and stay rods				Every 2000 Hours or one year whichever is earlier based on condition.



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	N6 - Neptune 250Kva	
	Gulf LEYPOWER XLL Diesel Engine Oil	
Type of Service	Hours	Duration
1st Free Service (Installation Check)	0-50 Hours	0-30 days
2nd Free Service	225 – 250 Hours	Max Within 6 Months
3rd Free Service	475 – 500 Hours	6 Months from the Previous Oil Change and Max within 24 Months

All spares including consumables required during free service are to be arranged by the owner duly procured from authorized AL Dealer.

The review of maintenance procedures and necessary adjustments, if any, are essential to ensure long life and efficiency of the Engine. In the event free service inspection are not availed by the owner, Ashok Leyland will not extend warranty to the Engine.

Conditions Precedent to Warranty:

Ashok Leyland recommends the owner to familiarize himself / herself with the operator manual and warranty document. The warranty is explicitly subjected to certain conditions precedent, being met by purchaser / owner to the satisfaction of Ashok Leyland, without which the warranty claims, if any, would result in inordinate delays for settlement and sometimes even rejection. These are summarized here for the benefit of the owner of Engine.

The warranty is subject to fulfilment inter alia of the following obligations by the purchaser / owner of the Engine.

- i) Installation of Engine / DG Set should be as per Ashok Leyland guidelines and to be carried out by Ashok Leyland authorized personnel only. The sole responsibility of installation lies with the owner / purchaser.

7.6 WARRANTY POLICY



ASHOK LEYLAND

- ii) Normal use and preventive maintenance are carried out as recommended in the Operator's Manual supplied along with the Engine.
- iii) In case any defects are noticed, it would be a worthwhile effort on the owner's part to satisfy him in the first instance that the defect could be reasonably deemed to be of workmanship or material and that the Engine was never subjected to conditions in respect of which the warranty has been expressly negated.
- iv) Any part claimed to be defective should be returned to Ashok Leyland factory / Authorized Agency with the two -way transportation charges pre paid, if such part is replaced by Ashok Leyland under warranty, the part returned by the owner shall automatically become property of Ashok Leyland.
- v) Any attempt to tamper with, or interchange any parts between Engines and or other Engine shall void the warranty. Most of the precision parts such as the nozzles, fuel pumps are specially calibrated to suit Rating / Model requirements and Ashok Leyland has a record of each Engines and parts utilized thereon duly coded.
- vi) Repair / replacement shall be carried out as reasonably practicable, subject to the availability of necessary parts / assembly, materials and labour.

The owner has the responsibility to get the engines serviced periodically through Ashok Leyland's Authorized Dealer / Service Provider vide Paid service mode, after completion of Free Services provided by Ashok Leyland. As a reward for doing periodic maintenance as specified in the Operator's Manual, the owner may avail one Loyalty oil change service each through Ashok Leyland Authorized Dealer / Service Provider, only on completion of third oil change service and fifth oil change service respectively, but within the warranty period.

General Warranty Practices:

Ashok Leyland makes NO warranties express or implied relating to the sale of genuine replacement parts.

The benefits of this warranty is provided to the first user of the Engine only and cannot be transferred

Ashok Leyland gives no guarantee as to performance, unless by separate agreement in writing.



ASHOK LEYLAND

Any claim or obligation in connection with the first sale of Engine shall be subject to the jurisdiction of Courts in Chennai only.

This is to certify that..... Engine Model.

Bearing Engine Noand Registered

as the property of.....

is covered by the provision of warranty as defined above.

For & on behalf of Power Solutions Business Group of

ASHOK LEYLAND LIMITED

Guindy

Chennai - 600 032.





ASHOK LEYLAND

8. Free Service Coupons



ASHOK LEYLAND



1st FREE SERVICE

FREE SERVICE RECORD

Name and Address of the Dealer:

Name and Address of the Owner:

DG Rating: Model: Engine No.:

DOS: Segment: DG. No.:

Date Of Service Done: Hours Run:



ASHOK LEYLAND

No. 1, Sardar Patel Road, Guindy,
Chennai - 600 032. Tamilnadu. India

S. No.

**GENSET ENGINE
FIRST FREE SERVICE**

Customer Name:

Address:

Name and Address of the Dealer:.....

Engine Model:..... Engine No.:.....Date of Sale:.....

Job Card No.:Date:

Date of Commissioning: Hour Meter Reading:

Signature of Dealer:

This is to certify that Commissioning has been satisfactory and understood the warranty terms.

Signature of the Customer:

Signature of Ashok Leyland Service Engineer:

Customer Signature with date:

Date of commissioning:

Dealer Signature with date:

Hour meter reading:

DG Rating:

Alternator Make :

Engine S.No:

Alternator S.No:

Check Following (Please attach separate sheet for any remarks / discrepancy other than below)

1. Check lube oil of Engine.
2. Check Radiator coolant level.
3. Recommended Coolant used yes / No.
4. All hoses condition & Tightness of clamps.
5. Arrest leakages if any.
6. Mounting tightness - Engine / Radiator /
Air cleaner / Silencer bracket.
7. Fan belt for correct tension.
8. Drain water separator if necessary.
9. Radiator cap condition.
10. Starter Motor / Alternator condition.
11. Working of Gauges on control panel.
12. Wiring harness connection tightness.
13. Battery Conditon V Specific Gravity.
14. Radiator gap between cowl and fan tip position.

Engine Parameter

Oil Pressure at idling..... Kg/Cm²

Oil Pressure at full load / full RPM Kg/Cm²

Water Temperature at full Load -°C

ALL FILTERS / LUBRICANTS MUST BE TO AL SPECIFICATIONS
AND CUSTOMER TO BEAR COSTS OF CONSUMABLES.

All services to be carried out by the authorised AL Dealer only.

Load Parameter

Output Voltage..... Voltas AC

Frequency..... HZ

Load Current Amps

IInd FREE SERVICE

FREE SERVICE RECORD

Name and Address of the Dealer:

Name and Address of the Owner:

DG Rating: Model: Engine No.:

DOS: Segment: DG. No.:

Date Of Service Done: Hours Run:



ASHOK LEYLAND

No. 1, Sardar Patel Road, Guindy,
Chennai - 600 032. Tamilnadu. India

S. No.

**GENSET ENGINE
SECOND FREE SERVICE**

Customer Name:

Address:

Name and Address of the Dealer:.....

Engine Model:..... Engine No.:.....Date of Sale:.....

Job Card No.:Date:

Date of Commissioning: Hour Meter Reading:

Signature of Dealer:

This is to certify that Commissioning has been satisfactory and understood the warranty terms.

Signature of the Customer:

Signature of Ashok Leyland Service Engineer:

Customer Signature with date:

Date of commissioning:

Dealer Signature with date:

Hour meter reading:

DG Rating:

Alternator Make :

Engine S.No:

Alternator S.No:

Check Following (Please attach separate sheet for any remarks / discrepancy other than below)

1. Check lube oil of Engine.
2. Change Lube Oil Filter & Fuel Filter.
3. Check Radiator Coolant level.
4. Recommended Coolant used yes / No.
5. All hoses condition & Tightness of clamps.
6. Arrest leakages if any.
7. Mounting tightness - Engine / Radiator /
Air cleaner / Silencer bracket.
8. Change air cleaner element if red band indicates.
9. Fan belt for correct tension.
10. Drain water separator if necessary.
11. Radiator cap condition.
12. Working of Gauges on control panel.
13. Wiring harness connection tightness.
14. Battery Conditon V Specific Gravity.
15. Check tappet clearance and adjust if necessary.

Engine Parameter

Oil Pressure at idling..... Kg/Cm²

Oil Pressure at full load / full RPM Kg/Cm²

Water Temperature at full Load -°C

ALL FILTERS / LUBRICANTS MUST BE TO AL SPECIFICATIONS
AND CUSTOMER TO BEAR COSTS OF CONSUMABLES.

All services to be carried out by the authorised AL Dealer only.

Load Parameter

Output Voltage..... Voltas AC

Frequency..... HZ

Load Current Amps

IIIrd FREE SERVICE

FREE SERVICE RECORD

Name and Address of the Dealer:

Name and Address of the Owner:

DG Rating: Model: Engine No.:

DOS: Segment: DG. No.:

Date Of Service Done: Hours Run:



ASHOK LEYLAND

No. 1, Sardar Patel Road, Guindy,
Chennai - 600 032. Tamilnadu. India

S. No.

**GENSET ENGINE
THIRD FREE SERVICE**

Customer Name:

Address:

Name and Address of the Dealer:.....

Engine Model:..... Engine No.:.....Date of Sale:.....

Job Card No.:Date:

Date of Commissioning: Hour Meter Reading:

Signature of Dealer:

This is to certify that Commissioning has been satisfactory and understood the warranty terms.

Signature of the Customer:

Signature of Ashok Leyland Service Engineer:

Customer Signature with date:

Date of commissioning:

Dealer Signature with date:

Hour meter reading:

DG Rating:

Alternator Make :

Engine S.No:

Alternator S.No:

Check Following (Please attach separate sheet for any remarks / discrepancy other than below)

- | | |
|--|--|
| 1. Check lube oil of Engine. | 10. Radiator cap condition. |
| 2. Change Lube Oil Filter & Fuel Filter. | 11. Working of Gauges on control panel. |
| 3. Level of Coolant in Radiator. | 12. Wiring harness connection tightness. |
| 4. Recommended Coolant used yes / No. | 13. Lubricate water pump. |
| 5. All hoses condition & Tightness of clamps. | 14. Battery Conditon V Specific Gravity. |
| 6. Arrest leakages if any. | 15. Check tappet clearance and adjust if necessary. |
| 7. Mounting tightness - Engine / Radiator /
Air cleaner / Silencer bracket. | |
| 8. Change air cleaner element if red band indicates. | |
| 9. Fan belt for correct tension. | |

Engine Parameter

Oil Pressure at idling..... Kg/Cm²

Oil Pressure at full load / full RPM Kg/Cm²

Water Temperature at full Load -°C

ALL FILTERS / LUBRICANTS MUST BE TO AL SPECIFICATIONS
AND CUSTOMER TO BEAR COSTS OF CONSUMABLES.

All services to be carried out by the authorised AL Dealer only.

Load Parameter

Output Voltage..... Voltas AC

Frequency..... HZ

Load Current Amps



ASHOK LEYLAND

9. Dealer network

- Ashok Leyland office addresses
- Industrial Engine Dealers



ASHOK LEYLAND

REGISTERED, CORPORATE AND MARKETING OFFICES
No.1, Sardar Patel Road, Guindy, Chennai - 600 032.
Ph : 044-2220 6000, Fax : 044-2220 6001

REGIONAL OFFICES / AREA OFFICES

Ahmedabad	M/s. Ashok Leyland Ltd., 403, 4th Floor, Tower A, Mondeal Heights, Safar II, SG Highway, Ahmedabad - 380 054.
Bangalore	M/s. Ashok Leyland Ltd., Suraj Manor, No: 100/1-1, Second floor, Bull Temple Road, Basavanagudi, Bangalore - 560 019.
Bhubaneswar	M/s. Ashok Leyland Ltd., Anuj Building, 1st Floor, Plot No. 29, Satya Nagar, Bhubaneswar - 751 007.
Bikaner	M/s. Ashok Leyland Ltd., 3rd floor, Plot No.8, Panchsasti circle, Sadul ganj, Bikaner - 334 001.
Chandigarh	M/s. Ashok Leyland Ltd., S.C.O 812, 2nd Floor, Chandigarh Kalka Road, Manimajra, Chandigarh - 160 101.
Chennai	M/s. Ashok Leyland Ltd., Registered Office, No. 1, Sardar Patel Road, Guindy, Chennai - 600 032.
Cochin	M/s. Ashok Leyland Ltd., No. 23/500 E, Kallaupurakal Centre, Edapally - Pookattupadi Road, Unichira Thykkavu, Changampuzha Nagar Post, Cochin - 682 033.
Gurugram	M/s. Ashok Leyland Ltd., Unit No-703-704 7th Floor, Signature Tower - A South City I, Sector 30, Gurugram, Haryana - 122 001.
Guwahati	M/s. Ashok Leyland Ltd., Ashirwad Bhavan, House No:34, 2nd Floor, Dr. RP Road, Dispur Last Gate, Guwahati - 781 006.
Hosur	M/s. Ashok Leyland Ltd., No. 175, Hosur SIPCOT Industrial Complex, Rajaji Nagar, Hosur - 635 126.
Hubli	M/s. Ashok Leyland Ltd., Office. 2nd Floor, Preeti Aashiyana, Sirur Park, Hubli - 580 021.
Indore	M/s. Ashok Leyland Ltd., 601, NRK Business Park, Near Mangal City Mall, Vijay Nagar, AB Road, Indore - 452 010.
Jaipur	Ashok Leyland Ltd., Regional Office (RO) Jaipur, Office No. 505, 5th Floor, Jaipur Centre, B2 Bypass, Tonk Road, Jaipur - 302 018.
Jodhpur	M/s. Ashok Leyland Ltd., 2nd floor, Monohar building, Cyber Park, Near Saras dairy, Jodhpur - 342 003.
Karnal	M/s. Ashok Leyland Ltd., SCO No. 34, III Floor, SEC-12, City Center, Karnal - 132 001. (Haryana)
Kolkatta	M/s. Ashok Leyland Ltd., 8th Floor Acropolis Mall, 8/4, 1858, Rajdanga Main Road, Kolkata - 700 107
Lucknow	M/s. Ashok Leyland Ltd., 4th Floor, Space No. 401, Shalimar Titanium, Plot No. TC/G-1/1, Vibhuti Khand, Gomti Nagar, Lucknow - 226 010.

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9.2 AREA OFFICES



ASHOK LEYLAND

AREA OFFICES	
Madurai	M/s. Ashok Leyland Ltd., Regional Office, No:145 Claret Plaza, Melakkal Main Road, Arappalayam Village, Kochadai, Madurai - 625 016.
Mumbai	M/s. Ashok Leyland Ltd., 907 & 908 Cybre One, Sector-30 Vashi, Navi Mumbai - 400 703.
Nagpur	Ashok Leyland Ltd., Plot No.317, Second Floor Rabindranath Tagore Marg, Civil Line, Nagpur - 440 001.
Patna	M/s. Ashok Leyland Ltd., 1St Floor Ward No:-5 Legend Plaza, Main Ashiyan Digha Road, Opp- Indusind Bank, Patna - 800 014.
Pune	M/s. Ashok Leyland Ltd., Pride Portal, Ground Floor S.N 103, Bahiratwadi, Off. Senapati Bapat Road, Shivaji Nagar, Pune - 411 016.
Raipur	M/s. Ashok Leyland Ltd., Jeet Tower, Opposite Rajkumar College, G E Road, Raipur (CG) - 492 013.
Rajkot	M/s. Ashok Leyland Ltd., No. 427, Anmol Complex, Opps. Nakshatra – V, Patidar Chowk, Rajkot - 360 005.
Secundrabad	M/s. Ashok Leyland Ltd., 3rd Floor, Dhraupati Chambers, No. 31, Sarojini Devi Road, Secundrabad - 500 003.
Udaipur	Ashok Leyland Ltd., Office No. 505, 5th Floor, Manglam Fun Square, Durga Nursery Road, Udaipur - 313 001.
Uttarakhand	M/s. Ashok Leyland Ltd., Plot No 1, Sector 12, IIE Pantnagar, Uttarakhand - 263 153.
Vijayawada	M/s. Ashokleyland Ltd., 1st Floor, Sreepra Towers, 40-5-5/1A & 1B, M.G Road, Vijayawada - 520 010.

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
ANDAMAN	Pandian Enterprises, P.O.Box no : 88, MB - 72, Supply Line, Aberdeen Bazaar, Port Blair - 744 101.	Entire Andaman & Nicobar Islands	03192 - 233808	Mr. A.Veera Pandian Mr. V.Sonu sonu_pndent@sancharnet.in	Proprietor Sales Manager	9933251712
ANDHRA PRADESH	Coastal Power Solutions, 84/31, Auto nagar, D-Block, Gajuwaka Police Station Road, Kunchamamba Colony, Gajuwaka Visakhapatnam - 530 012.	East Godavari, Vishakapatnam, Vijayanagaram, Srikakulam,	9133334151	Mr. Srinivas coastalpowersolution@gmail.com	Proprietor	9133334150 9133334151
	Sri Gayathri Power Solutions, Block-A, 1st Floor, 59A-21/6-12 RR Gardens, Vivekananda Colony, Auto Nagar, Vijayawada - 520 007.	Krishna, Guntur & West Godawari	7659945199	Mr. Rajagopal Reddy sv.rajagopalreddy@gmail.com services.ashokleyland@gmail.com	Partner	8499017199
	Rayalaseema Power Solutions Plot No.5, Room No., Near Varasiddi Vinayagar Temple, Kadapa - 516 001.	Kadapa, Kurnool, Anantapur & Chittoor	09493629384	Mr. Adapambedu Jayashankar rps.kadapa@gmail.com	Proprietor	09493629384 08464826580
	Rayalaseema Power Solutions, No. 5/520, Above Kalpana Fast Food Centre, AR Top Line, Near ZP Metting Hall, Vellore Road, Chittoor - 516 001.		08464826581 09493629384	Mr. A. Kumar Mr. Adapambedu Jaya Shankar rps.kadapa@gmail.com	Proprietor	08464826581 09493629384
	BMW Power Solutions Plot No. 15, Auto Nagar, Throvagunta, Ongole, Prakasam - 523 262.	Prakasam & Nellore	+91- 9100905245	Mr. Sumanth Jajula care.bmwsevice@gmail.com sumanth.bmwservice@gmail.com	Proprietor	9100905241
ASSAM	S.P.Motors, Chirwapatty Road, Shanti Complex, (opp.Sakshi Motors), Tinsukia - 786 125.	Tinsukia, Dibrugarh, Sivasagar, East Arunachal Pradesh, North Lakhimpur, Guwahati, Bongaigaon, Goalpera, Nalbari, Rokmajhar, Barpeta, Chirang, Kamrup, Dhubri, Nagaon, Tezpur, Mongoldoi, Darrnag, Lakhimpur, West Arunachal Pradesh, Sonitpur, Dhemaji, Tripura & Mizoram	0374-2342589 2350418 (F)	Mr. T.C. Paul Mr. Chiranjeeb Bhattacharjee motorssp@yahoo.com	Proprietor Officer In-charge	9435135247 9954224305
	S.P.Motors, House No.350, Zoo Narangi Road, Guwahati - 781 024.		9435135247	Mr. T.C. Paul Mr. Chiranjeeb Bhattacharjee motorssp@yahoo.com	Proprietor Officer In-charge	9435135247

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9.4 DEALER NETWORK

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
ASSAM	Radiant Engineers R. Dutta Market, A T Road, Dist Karud, Assam Guwahati - 781 001.	All Districts of Meghalaya	0361 - 2513304 0361 - 2733557 (Fax)	Mr Sanjib Chakraborty radiant_al@yahoo.com	Partner	9864034828
	Deepee Complex, Mithapukhuri Road, Jorhat - 785 001.	Jorhat, Golaghat, Karbialong & Dimahasan	-	Mr. Ashit Chandra Paul deepeecomplex@gmail.com	Proprietor	9435052804
	Supreme Earth Movers VIP Road, Rongpur, Silchar - 788 009 Cachar, Assam.	Silchar, Hailakandi, Karimganj Karimganj in Assam & Porampat in Manipur	-	Mr. Sumit Roy supreme.earthmovers@ gmail.com	-	9435172276
BIHAR	Narayan Sales & Services 2nd Floor, Sanjay Market, Opp. Chandan Hero, Kankarbagh Main Road, Patna - 800 020.	Patna, Ara, Buxar, Johanabad, Munger, Bhagalpur, Begusarai, Bhaka, Khagariya, Bihar, Sharif Araria, Katihar, Kishnagang, Madhepura, Purnia, Supoul, Samatipur & Saharsa	0612-3202354	Mr Hare Ram Vats hareramvats@rediffmail.com	Proprietor	9507035902 9507035923 9507035920
	Narayan Sales & Services, Krishna Nagar, Nala Road Begusarai - 851 101.					
	Vishwakarma Power Solutions 1st Floor, Natraj Market, Bibiganj, Near Bagwanpur Chowk, Muzaffarpur - 842 001.	East & West Champaran, Muzzafarpur, Sitamarhi, Darbhanga, Madhubani, Saran, Siwan, Vaishali, Gopalganj & Sheohar	0612-2384646	Mr. Murali Prasad vpspatna@gmail.com	Partner	9771473210 9801778794
	Ishan Enterprises, Head Office: Gitanjali Bhawan, Asha Singh More, Near Vastu Vihar, Gaya-823 001.	Bhabua, Gaya, Nawada Shekhpura, Lakhisarai, Jamui, Sasaram, Rohtas, Aurangabad, Kaimur & Arwal	7257001641 9990580598 7257001646	Mr. Saket Bihari ishanenterprises.ie@gmail. com	Proprietor	7257001641 9990580598 7257001646
	Ishan Enterprises, Branch : Near Bazar Samiti Gate, Takiya Bazar, Sasaram - 821 115.					

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
CHATTISGARH	Elite Engineer Shop No.16 & 17, Thakur Complex, Opp. Toyota Showroom, Ring Road No1, Sarona, Raipur, Chattisgarh - 492 001.	Raipur, Durg, Rajnadaon, Kawardha, Dhamtari, Mahasamund, Kanker, Bastar, Dantewada Balodabazar, Bemetra, Balod, Gariyabanbh, Sukma, Mungeli & Kondagaon	9977537792	Mr.Vishnu Yadav Mr. Kishori Lal Agrawal elite.raipur@gmail.com	Cordinator Proprietor	8889914594 9977537792
	Naresh Mechanical Services No.6A, Nidhi Biz complex, in front of Patidar Bhavan, T.P. Nagar, Korba - 495 679.	Korba, Bilaspur, Jashpur, Surguja, Raigarh Kores & Chamba	07759-645148	Mr. Rinku Pande Mr. Satish Dubey nareshmech.krp@gmail.com	Cordinator Manager	8269143903 9755761291
GOA	V.K.Enterprises, Leoniza Gomes Mansion, Rua De saudade, Pajifond, Margao, Goa - 403 601.	Entire Goa	0832-2863532 2863533	Mr. Camilo Silva Mr. Sandip Pagui upaengg@gmail.com	Workshop Manager Service Manager	9822988409 9823869694
GUJARAT	M.M Industrial Services, Ruda Transport Nagar Main Road Nr.Saat Hanuman Mandir, Rajkot - Ahmedhabad National High Way 8B, Rajkot - 360 002.Gujarat.	Rajkot, Amreli, Bhavnagar,Jamnagar, Junagadh, Porbandar, Somnath, Botad, Morbi & Dev Bhumi Dwarka	0281-3292797 2388784 (Fax)	Mr. Mahesh Vekariya Mr. Sanjay Vekariya mahesh@mmind.in service@mmind.in	Partner Branch manager	9979845010 9979845016
	RajKamal Automobile, A4,A37 Janpath Complex,Near Janpath Hotel, B/S Shreeji Motors, Palavasna, Mehsana - 384 002.	Mehsana, Banaskantha, Sabarkantha, Patan, Ahmedabad, Aravalli, Palanpur, Kheda, Surendranagar, & Gandhi Nagar	-	Mr. Ramesh rajkamalautomobiles mehsana @yahoo.com	Business Partner	9825578373
	Rajkamal Automobile, No.67,68, Gajanan Industrial Estate, Near Steel Connect, Hathijan Circle, SP Ring Road, Ahmedabad - 382 445.					
	Neelkanth Automobiles, Plot No.168, Sector 1-A, Opposite Navneet Gas HP, Near Mehta Enterprises Gandhidam - 370 201.	Kutch	02836-237753	Mr. Vinod Shyamsunder Poddar neelkanthservice1@gmail.com	Proprietor	9825225202

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9.6 DEALER NETWORK

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
GUJARAT	Suyash Enterprises 215, 2nd Floor, Shiv Chambers, Opp.IDBI Bank, NH 8 Vapi Gujarat.	Valasad, Navsari, Dangs, Dadra Nagar Haveli & Daman	0260-6544258	Mr. Dinish. K. Gujarati suyashenterprises.al@gmail.com	Proprietor	9824158765
	RAMP Sales & Service Plot No.40, GIDC, Surat-Olpad Road, Opp.Cynides Chemical Company, Olpad - 394 540.	Bharuch, GODHRA, Narmada, Surat, Tapi, Anand, Panchmahal, Vadodara, Dahod, Chotta, Udaipur & Mahisagar	-	Mr. Rahul Vyas Mr. Sagar Shah rahul@ramptechnomation.com rampservice.ahd@gmail.com	Proprietor	9825035828 9898045144
	RAMP Sales & Service F-84,Sardar Complex, Near Gujarat Gas Circle, Adjan Road, Surat-395 009.					
	RAMP Sales & Service Shop No.4, Shyam Villa Commercial Complex, Opp.ABG Enclave, Dahej By-pass Road, Bharuch.					
	RAMP Sales & Service Refinery Township Road, Koyali Vadodara - 395 009.					
HARYANA	Kamboj Diesel Power Service, New Auto Market Shop No.415, 2nd Floor, Hisar - 125 001.	Jind, Bhiwani, Charkidadri Hisar, Sirsa & Fatehabad	9416045680 9466845680	Mr. Surjeet Singh Kamboj kambojleyland@gmail.com kambojdps@gmail.com	Proprietor	9215145680
	Kamboj Diesel Power Service, SCO-44, New Gupta colony, Chandigarh Road, Tohana, Fatehabad, Haryana - 125 120.			Mr. Jagjeet Singh Kamboj kambojleyland@gmail.com kambojdps@gmail.com		9467494959
	Kamboj Power Generator Service Rajiv Gandhi Marg. Near Raj Palace, Mayapuri Road, Karnal, Haryana - 132 001.	Karnal, Ambala, Kaithal, Yamunanagar & Kurushetra	9416508275	Mr. Teja Kamboj / kambojleylandgenset@gmail.com	Proprietor	9813627595

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
HARYANA	Amrit Power & Compressor Care opp Sec -4 Sohna Road Dharuhera Rewari Haryana - 123 016.	Mahindergarh, Narnoul, Jhajhar & Mewat, Rewari	9812324630	Mr. Amit Pal Pal Singh Sikka amritsikka@yahoo.co.in	Proprietor	9812024630
	Amrit Power & Compressor Care Nangal Kheri GT Road, Panipat - 132 103.	Panipat, Sonapat, Rohtak	9582887500	Mr. Gagan Meet Singh amritpower@gmail.com	Proprietor	8168120932
	Generator Aids E - 142 - 144 sanjay colony Sec 23, Faridabad Haryana - 121 005.	Gurgoan, Faridabad & Palwal	0129 - 2233512	Mr. Sumit Sharme generatoraids@gmail.com	Proprietor	9818810220
JAMMU & KASHMIR	Makroo Motor Company, National Highway, Jeobehara, Awantipora, Pulwama(Dist), Jammu & Kashmir - 192 122.	Srinagar, Budgam, Baramullah, Anathnag, Kargil, Leh, Pulwama	01933 - 247131	Mr. Haji Ghulam Mohd. Makroo mmc.ashokleyland@gmail.com sw.mmc. ashokleyland@gmail.com	Partners	9906406536
	Tawi Engineering Company 13, Vir Sainik Colony, Sector - D Jammu J&K - 180 011.	Kathua, Samba, Rajouri Poonch, Doda, Ramban, Reasi, Kistwar Jammu & Udhampur	0191-2468163	Mr. Bhagat Singh Manhas tawiengineers@gmail.com	Proprietor	9419192785 9906013940
JHARKAND	JK Services Katras Road, Dhanbad, Jharkand - 826 001.	Bokaro, Deoghar, Dhanbad Dumka, Giridih, Godda, Hazaribagh, Koderma, Pakur Sahibganj, East Singhbhum Jamtara	-	Mr.A.S.Chahal, Mr.Sathisan Pillai Mr.Sujit Jha amrinder. chahal@gmail.com jkservices.dhn@gmail.com	Proprietor	8873888888 9234601662 9204055797
	JK Services, Heritage Garden Tower, H.B Road, Deepatoli, Ranchi, Jharkhand - 834 009.	Chatra, Garhwa, Gumla, Khunti Latehar, Lohardaga, Palamu, Ramgarh, ranchi, Simdega, west singh bhum, Seraikella Kharsawan	-	Mr.A.S.Chahal, Mr.Sathisan Pillai Mr.Amit Kumar amrinder.chahal@gmail.com jkservices.rnc@gmail.com	Proprietor	8873888888 9507121212 9523190170
KARNATAKA	Amruta Engineers, No.7, 11th Cross, Andarahalli Main Road, Hegganahalli, Penniya 2nd Stage Bangalore - 560 091.	Bangalore & Bangalore Rural, Chikkaballapur, Kolar, Tumkur & Rama Nagar	080-28363349 28363351	Mr. Ravichandran serviceblr@ amrutaengineers.com	Proprietor	9066021291 9611167612 9448051500
	SLR Genset, Shed No.1/A, Plot No.76F Hootagally Industrial Area, Mysore - 570 018.	Mysore, Mandya, Chamaraaj Nagar, Kodagu, Hassan & Chikmangalur	7349770301	Mr. B.S. Jaganath slrgenset@gmail.com	Proprietor	7349770301

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9.8 DEALER NETWORK

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
KARNATAKA	Omkar Power Services, No.9-2-110 Shashi Mahal, Basaweswara Nilaya Gayatri Dev Temple Road, Car Street Near BEM High School cross Road Mangalore - 575 001.	Dakshina Kannada & Udupi	0824-2420424 4294424	Mr. Thirtha Prasad omkarpowerservicesmng@gmail.com	Proprietor	9538885737 7899669840
	Omkar Power Services, White Dove, Dosfodial Compound, Near Bathel Prayer hall, Korangarapadi Road, Udupi - 576 101.	Dakshina Kannada & Udupi	9538885737	Subramanya Naik omkarpowerservicesmng@gmail.com	Branch Manager	9538885737 7618798868 7899669840
	Sri Sai Engineering, D-109,2ndGate Industrial Estate, Gokul Road, Hubli - 580 020.	Dharwad, Bellary, Gadag, Haveri, Uttara Kannada, Hubli, Davangere, Chitradurga, Shimoga, Bidar, Bagalkot, Gulbarga, Koppal, Raichur, Bijapur & Yadgir	0836-2232620	Mr Shashikant Vesane Mr Riaz riazhubballi@gmail.com ssehblskv@gmail.com	Partners	9449357499 9448288203 9986129061
	Sri Sai Engineering, Maka Layout Plot No. 166, New Jewargi Road, Gulbarga - 585 102.					
KERALA	Cinzac Sales & Services Pvt Ltd, Chittoor Road, Pachalam, Cochin - 682 012.	Alapuzha, Ernakulam, Belgaum, Kotayam & Iduki	0484-2395911 4081000 2395913(F)	Mr. Joseph Zacharias cynthia@cinzac.in zac@cinzac.in;bijy@cinzac.in	Proprietor	9995439511
	Paramount Trade Links No.17/550, (15)KTV Towers 2nd floor, West Fort Road, Palakkad - 678 001.	Trichur, Palakkad, & Malappuram	0491-2505722 0491-2505723	Mr. Anoop Wilson paramount.tradelinks@gmail.com	Partners	08606909151 08609609154
	Siton Power Solutions, No.7/75A, Kundaithode, Kolathara(PO), Near Manoj Packing, Kozhokode - 673 655.	Calicut, Kannur Kasaragode & Wayanad	9791067507	Mr. B. Firoz sitonpower@gmail.com	Proprietor	9791067507
	Delta Engineering Equipment Services, Kanak, TC20/1979, S4 - Sasthri Nagar, Karamana, Trivandrum - 695 002.	Trivandrum, Kollam & Pathanamthitta	0484 - 2377533 0471 - 4066771	Mr. GP Zachariah deltakochi@yahoo.co.in	Partners	9447818933

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
MADHYA PRADESH	Elite engineer, NH-07, Mirzapur Road, Opposite BPCL Pump, Chaka, Katni - 483 501.	Sagar, Narsingpur, Chhindwara, Damoh, Chhatarpur, Tikamgarh, Panna, Jabalpur, Katni, Seoni, Mandla, Balaghat, Dindori, Shahdol, Umaria, Satna, Rewa & Sidhi	07622-266392	Mr.Kishori Lal Agrawal Kl.agrawal07@rediffmail.com elite.katni@yahoo.in	Proprietor	9977537792
	Elite engineer, 1294 Sharda Bhawan, Cherital, Jabalpur (MP)		07622-266392			
	Tushar Enterprises S-46 Sanjay Complex Jayendraganj, Lashkar Gwalior - 474 009.	Gwalior, Morena Sheopur, Datia, Bhind, Shivpuri, Guna & Ashok Nagar	0751-2440956	Mr. Sanjay Gupta tushar.enter@gmail.com	Proprietor	9425109901
	L.K. Engineering Services No.132, S.R. Compound, Dewas Naka, Lasudiya Mori, Indore - 452 001.	Indore, Ujjain, Ratlam, Nagda, Manbsour, Neemuch, Dewas, Shajapur Harda, Dhar, East Nimar, West Nimar, Badwani, (Only Harvestor)	0731-2802063	Mr Lalit Sharma lk_engineering@rediffmail.com	Proprietor	9752099941 9751011191
	Rai Automobile and Machinery No.133, Shiv Nagar, Phase 3, 80 feet Mandi Bridge Road, Near Max Hospital, Bhanpur, Bhopal - 462 037.	Bhopal,Vidhisha, Rajgarh,Sehore,Raisen, Hoshangabad, & Betul	9301493174	Mr Ashok Rai rai.automobile.machinery@gmail.com	Proprietor	9301493174
MAHARASTRA	Goodwill Power Generators Pvt. Ltd Gate No.407/1, Mouje Yelwadi, Chakan Talegaon Road, NearAmrutwel Hotel, Dehu Phata, Khed Taluk, Pune - 412 109.	Pune	020 - 65108911	Mr Vikas Tonde Mr. Anup Gawade Mr. Amir Mulla vikas@goodwillpower.com service@goodwillpower.com amirmulla@goodwillpower.com www.goodwillpower.com	Manager-After Sales Support Service coordinator Director	9158883998 9158883987 9158883982

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9.10 DEALER NETWORK

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
MAHARASTRA	R.K Diesel Services, Bhande Plot Square, Umred Road, Nagpur - 440 024.	Gondia, Bhandara, Nagpur, Wardha, Amravati, Akola, Washim, Hingoli, Nanded, Yavatmal, Gadchiroli & Chandrapur	0712-2740916 0712-2741351	Mr.Siras Mr.Vishwas Doifode Mr.Manohar Doifode rkdieselashokleyland@gmail.com vishwasdoifode@gmail.com manohardoifode@gmail.com	Manager Director Proprietor	9922038704 9823778681 9823172541
	D.B.Automobiles, 1325/36, Shivaji Udyamnagar, Kolhapur - 416 008.	Kolhapur, Ratnagiri, Sangli, Sindhurg, Satara & Solapur	0231-2666275	Mr.Jeevan Bhosale Mr.Rajendra Deshinge db0231service@gmail.com rmd0231@yahoo.co.in	Manager Proprietor	9766619918 9960749494
	Green Power Solutions Plot No 39 -1C Sector 24, Turbhe, Navy, Mumbai - 400 705.	Maharashtra, Gujarat, Delhi, Assam & Andhra Pradesh only for NG Engines	022-27836559 27832879 (F)	Mr. Arun Kamble Mr. Prakash Shriyan works@greenshriyan.com power@greenshriyam.com	Service Coordinator Director	9004698684 9821014453
	Maharashtra Boring Works Goankar Industrial Estate Near Meena Crane Services Panchapakhadi, Thane Maharashtra - 400 602.	Thane	022-25431401 022-25431402	Mr Shaikh Atikur Rehman maharashtraboringworks@gmail.com	Partner	9821668281
	United Engineers Co, Plot No : H5/10, MIDC, Chilkalthana, Aurangabad - 431 210.	Osmanabad, Latur, Beed, Parbhani, Ahamed Nagar, Buldhana, Jalna, Nashik, Aurangabad, Jalgaon, Dhule & Nandurbar	0240-2487998	Mr.Pankaj Mundare Mr. Pradeep Korhale unitedgroup365@gmail.com pradeep.korhale@gmail.com	Manager Service Partner	9011014519 9822504179
	CS Diesel Engineering Pvt.Ltd No.15, QRGH Laxmi Indl.Estate New Link Road, Andheri(W) Mumbai - 400 056.	Mumbai & Raigarh	022-26365305	Mr. R.P. Sharma, Mr. Krishna Mr. Sowmil Shah mgr.ser. engines@csdiesel.com pacmoffice1@csdiesel.com sowmil.c.shah@csdiesel.com	Manager Coordinator Director	9892565727 8268116621 9892556633
NAGALAND	Jamir Engineering Shop No.319, Next to West Police Station, Duncan, Dimapur, Nagaland - 797 112.	Entire Nagaland		Mr. Imsemperong Jamir jamirengineering82@gmail.com	Proprietor	9612509257

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
NEW DELHI	Premnath Auto P Ltd, 42-43, Scindia House, New Delhi - 110 001.	Entire Delhi	011-23755168 23329408	Mr. Vikhram Mehra Mr. Omesh Sharma premnathauto@yahoo.co.in	Director	9871090170 9810773262 9871090181
	Premier Power Equipments, 171/1, Main IGNOU Road, Neb Sarai, New Delhi - 110 068.	Gautham Budha Nagar & Ghaziabad	8448830965	Mr. Vikram Chhabra care@premierpower.in	Proprietor	9810032289
ODISHA	Diamond Engineering 142, Cuttack - Puri Road Bhubaneswar - 751 006 Orissa.	Koraput, Rayagada, Nuapada, Nawarangapur, Malkanagiri, Gajapati, Kalahandi, Bolangir, Boudh, Phulbani, Kandhamal	0674-2572450 2572505	Mr. Aseem Agarwal aseemagr@gmail.com Mr. Banerjee diamonds2@ gmailcom	Partner DGM - Service & Admin	9437019450 9777453006
	Diamond Engineering, C/o. Hotel Vineet, Main Road, Near SBI, Barbil - 758 035.	Keonjhar		Mr. R.C.Jha debarbil1@ gmailcom	Branch Manager	9777453003
	Diamond Engineering, Main Road, Udit Nagar, Rourkela - 769 012.	Sundargarh, Sambalpur, Bargarh		Mr. S. Ghosh diamondrk@ gmail.com	Branch Manager	9777453005
	Diamond Engineering ,Room No 6, 1st Floor, Narayan Niwas, Sarbahal Road, Jharsuguda - 768 201.	Jharsuguda & Sonepur	-	Mr. S. Ghosh diamondrkl@gmail.com	Branch Manager	9777453005
	Kinetic Diesel Engineering 2nd floor, Anand Plaza, Laxmisagar, Chowk, infront of Sunshine Hospital, Bhubaneswar - 751 006.	Ganjam, Jegatsinghpur, Khurda, Cuttack, Puri, Jaipur, Balasore, Bhadrak, Mayurbhanj, Nayagarh, Kendrapara, Dhenkanal, Angul, Bhubaneswar, Deogarh	0674-2572838	Mr. Siddhartha Dhar Mr. Khokan Dhar Kineticdiesel@gmail.com	Partner	9938398899
	Kinetic Diesel Engineering Radha Krishna Eclave, Aska Road, Brhampur - 760 003	Ganjam		Mr. Debduutta Dhar service@ kineticdiesel.com	Partner	9078155155

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9.12 DEALER NETWORK

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
PUNJAB	Yashodha Motors Pvt.Ltd., Adjoining Hira Palace, Patiala Road, Nabha Dist, Patiala - 147 201.	Patiala, Sangrur, Muktasar, Mansa, Fazilka, Fatehgarh, Bathinda, Barnala, Jallandar, Kapurthala, Nawashar, Roop Nagar & Sas Nagar (Only for Harvester)	0175-5001574 5011394 (F)	Mr Gurudeep.S.Batra yashodhapta@yahoo.co.in ymnabha@ymail.com	Managing Director	9872424004
	Yashodha Automotives Adjoining Hira Palace, Patiala Road, Nabha, District, Patiala - 147 201.	Patiala, Sangrur, Muktasar, Barnala, Bathinda, Mansa, Fazilka, Fathegarh Sahib, Roopnagar & Mohali in Punjab Bilaspur, Kinnour, Kullu, Mandi, Shimla, Sirmour & Solan in Himachal Pradesh, Panchkula in Haryana, Chandigarh	9257224004	Mr. Gurdeep Batra ympatiala@gmail.com ymnabha@ymail.com	Proprietor	9872424004
	Yashodha Automotives Plot No.C-149, Phase7, Industrial Area, Mohali - 160 055.					
	Yashodha Automotives Sarasa Nangal Village, Ropar Dist - 140 113.					
	Yashodha Automotives Village Nagali, PO Barog Dist. Solan - 173 212. (HP).					
	Yashodha Automotives Paonta Sahib, Vill.Taruwala, Near Truck Operator Union, The. Paonta Sahib Dist. Sirmaur - 173 025 (HP).					
	Shri krishna Engineers, Behrampur Road, Near Raju STD PCO Gurdaspur - 143 521.	Jalandgar, Kapurthala, Amritsar, Gurdaspur, Hoshiarpur, Pathankot & Trantaran in Punjab and Chamba, Hamirpur, Kangra & Una in Himachal Pradesh	01874-500071	Mr. Surjith Singhsurjitashokleyland@gmail.com	Proprietor	9914686789
	Rahul Pam Private Limited, Near Rohti Bridge, Patiala Road, Nabha, Punjab - 147 201.	Entire Punjab State (Only Harvester Engine)	8054080540	rppl.punjab@gmail.com	Managing Director	9888490000
	Rahul Pam Private Limited, No.3479/6, Shivaji Nagar, Opp.Transport Nagar, Link Road Ludhiana - 141 008.	Ludhiana, Firozpur, Faridkot, Nawansahar & Moha	9815620049	rppl.lhservice@gmail.com	Managing Director	9888460000

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DEALER NETWORK 9.13



ASHOK LEYLAND

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
RAJASTHAN	Gayatri Diesels No. E-59, Azad Nagar, Near Kumba Circle, Bhilwara Rajasthan - 311 001.	Bhilwara, Rajsamand, Chittorgarh & Pratapgarh	01482-244127	Mr. Ashok Kumar Audichya gayatripsb@yahoo.com	Partners	9414115127
	AR Power Solutions Shop No 88, Vishwakarma Auto Mobile Market, Near Desh ki Derti office Kota - 324 005.	Kota, Bundi, Baran, Jhalawar	-	Mr Vijay Agrawal arps044@gmail.com	Proprietor	9352621696
	SPS Tech Services, 34 Kamal Vihar, Near 200 feet Gopalpura bye pass Road Near Bhakrota Puliya, Jaipur - 302 026.	Jaipur, Tonk, SawaiMadhopur, Ajmer, Sikar & Jhunjhunu	8769202000	Mr. Sanjay jain spstechservices@yahoo.co.in	Proprietor	8769202000 9950341237
	Ratan Generator & Industrial Engines No.20, Thakarappa Colony, 2nd Floor, O/S.Surajpole, Udaipur - 313 001.	Udaipur, Banswara, Sirohi, Dungarpur	2942421913	Mr. Arpit Mehta ratangenerators@gmail.com mehtaarpit2@gmail.com	Proprietor	08852003333
	Global Power Sales & Services, B-81, Arihant BhavanAmbeadkar Nagar, Alwar - 301 001.	Alwar, Bharatpur, Karauli, Dausa & Dholpur	7340016967 9314075540	Mr.Neeraj Jain globalpoweralwar@gmail.com	Proprietor	9314075540
	Kartikeya Technocrates 232A, Sector 1, Kuri Housing Board, Jodhpur - 342 005.	Jodhpur, Pali, Jalore, Barmer & Jaisalmer	9929606801	Mr. Puskar Singh ktpl.leyland@gmail.com	Proprietor	9929606801 8003991216
	Kartikeya Technocrats, Shop No.2, Jasdev dham, Utarlai road, Chandan Nagar, Barmer-344 001	Jodhpur, Pali, Barmer, Jaisalmer & Jalore	-	Mr. Puskar Singh ktpl.leyland@gmail.com	Branch Manager	8003991216
	Modern Machinery Stores G.S. Road, Bikaner - 334 001.	Bikaner, Hanumangarh, Sriganga Nagar, Nagaur & Churu	-	Mr. Harish Sharma mmsbikaner@rediffmail.com	Proprietor	9982370108 9680299888

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9.14 DEALER NETWORK

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
TAMIL NADU	S.R. Gen Power 48E/6-1, Bye pass Road, St.Xavier's colony, Melapalayam Post, Thirunelveli - 627 005.	Tirunelveli, Tuticorin, Virudhunagar & Kanyakumari	0462-2351570 2351571	Mr. K. Suresh / Rajamuthuvel srgenpower@gmail.com	Works Manager	8870470126 8870470137 8870470132
	S.R. Gen Power No.449/231, St. Xavier Junction, Kottar, Nagercoil - 629 002.					
	Chakkrapaani Engineering Works, New No134 (Old No.51) Moore street, 1st floor, Chennai - 600 001. (Behind 2nd line Beach).	Chennai, Thiruvallur, Vellore, Thiruvannamalai & Parallel in Kancheepuram	044-25228853 25246542 25227898 (F) CC No. 7338748768	Mr.D Kotteeswaran kotteeswaran@gmail. com Mrs.S.Parameswari parameswari.cew@gmail. com cew.partsdepartment@ gmail.com cew.chho@gmail. com	Co - Owner Manager Admin	9094045683 9884387747 9940014235
	Chakkrapaani Engineering Works, No.95, Plot No.3A, Kathivakkam High Road, Korukupettai, Ch - 21. Near Saibaba Godown.					
	Chakkrapaani Engineering Works, No.6/298, Sathyamoorthy Street, Medavakkam, Chennai - 600 100.		Custome Care Mobile No. 9940084856 9094045685 9791111758	Mrs. R. Meenakshi meenakshi.cew@gmail.com cewchennai@gmail.com Mr.D Kotteeswaran kotteeswaran@gmail.com cewmol.2018@gmail.com	Manager Customer Relation Co - Owner	9940201223 7338748766
	Chakkrapaani Engineering Works No11 B, Nethaji Road, Shenbakkam Village, Vellore - 632 008.					
	Chakkrapaani Engineering Works Door No.18, Paranjothi Amman Nagar, Konnerikuppam Panchayat Arappanan Cherry Kancheepuram - 631 502.		0416-22912900 Customer Care No. 7338748766	Mr. R. Perumal cewvrlr@ gmail.com	Technical Head	9940201232
			Customer Care No. 9940014233 9884387747	Mr. G. Shanker cewkanchi@ gmail.com	Executive Branch Admin	9940014233

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
TAMIL NADU	M.S. Engineers, 5-B, Thiruvalluvar Street, Ramakrishna Nagar, Kavundampalayam, Coimbatore - 641 030.	Coimbatore & Nilgiris	0422-2441843	Mr. G. Srikumar / Mr. Ashok gsrikumar24@gmail.com ashok@msengineers.co alservice@msengineers.co	Proprietor	9381169097 9364169017 9443179920
	Power Stroke Technology, New Ward No.44, Lakshmi Building, Old Ward No.6, No.21, Vinayagar Nagar, K.K. Nagar, Opp. District Court, Madurai - 625 020.	Madurai, Ramanathapuram & Sivagangai	0452-2533635 0452-2536213	Mr. Senthil Kumar powerstrokemdu@gmail.com	Partner	9788851635 9943023631 7373751075
	SRM Spares & Service, NO.112/1, North Street, Suramangalam Main Road, (Back Side of Select Steel), Leihg Bazar, Salem - 636 009.	Salem & Namakkal	0427-2449886	Mr. Ashok / Mr.Ramamoorthy ashok@msengineers.co.in srmspares@gmail.com	Proprietor / Manager	9364169037 9344169027
	Vaibhava Power Solutions No.12/13, 11 Krishnappan East Mothilal Street, Near New Bus Stand, Kumbakonam - 612 001.	Tanjore, Thiruvavur, Nagapattinam & Ariyalur	0435-2403320	Mr. K. Murugan Mrs.Sumathi vpsolutional@gmail.com	Managing Directors	9047909777 8489916418
	Shree Power Enterprises Pvt. Ltd., No.2, GRA Nagar, Ellichathram Road Valuthareddy, Villupuram - 605 602.	Cuddalore, Villupuram Pondichery, Perambalur & Parallel operation in Kanchipuram	-	Mr N. Muthukumar Mr. S. Rajkumar Mr. R.C. Bhaskar shreepowervlrm2016@gmail.com	Partners	7550222911 7550222926 7550222955
	Sime Programme Old No.112, New No.113, Highways Colony, Subramaniyapuram, Trichy - 620 020.	Trichy, Karur Dindugal, Theni & Pudukottai	0431 - 2332060	Mr R. Shanmuga Sundaram Mr. R. Ravi Kumar simeprogramme@gmail.com	Partners	9865571160 9952679487
	Sime Programme Maya Complex, No.1, Karur Palani Bye-Pass, East Meenakshi Nayakanpatti, Dindugal - 624 001.			Mr R. Shanmuga sundaram Mr. R Ravi Kumar simeprogramme@gmail.com	Partners	99865571160 9952679487

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
TAMIL NADU	Maruthi Diesel - No.4/198,JeI Maruthi Nivas, Bharathi Nagar, Palladam Road, Vidayalayam, Tiruppur - 641 604.	Tirupur & Erode	0421-2213344 0424-4559344	Mr Senthil Kumar Mr. Murugan / Mr.Thirumoorthy maruthidieseltirupur@gmail. com maruthidieselerode@ gmail.com maruthidiesel@ gmail.com	Proprietor Manager	9443377887 9585544636 9487432887
	Maruthi Diesel No.98, 52/3, Nehru Street, Near Bus Stand, Erode - 638001.					
	SRM Spares & Services, No.86/24, Royal Tower, Sankari Main Road, Seetharampalayam (PO), Tiruchengode - 637 209.	Salem & Namakkal	0427-2449886	Mr. Ashok srmspares@gmail.com	Branch Manager	9381169097
	Shree Power Enterprises, 3/69-A, Kamaraja nagar, Semmencheri, Kanchipuram Dist. - 600 119.	Cuddalore, Villupuram, Pondichery, Perambalur, and parallel operation in Kancheepuram	9841048446	Mr. N.Muthukumar muthufdss2009@gmail.com	Branch Manager	9841048446 9841046780 7550222911 9841025715
	NIBE Power Solution SF9, No.73/2, 1st Floor, Periyar Nagar, (opp. to Salom Sweets, Hosur Ring Road, Hosur - 635 109.	Dharmapuri & Krishnagiri	04344-225631	Mr Antony Raj antony. nibe@gmail.com antony@ nibepowersolution.com	Proprietor	9842048209 7397755631 7397755634
	NIBE Power Solution Keesampallam(Vill), Pannandur, (PO), Pochampalli(TK) Krishnagiri - 635 123.					
TELANGANA	Gen Services, Plot No.21&22, Phase - 4, IDA Jeedi Metla, Hyderabad Pin - 500 018.	Hyderabad, Ranga Reddy, Medak, Mahaboobnagar, Karim Nagar, Adilabad, Nizamabad	040-67334455 9502256789	Mr. SV Chary service@ genserviceal.com admin@ genserviceal@.com	Proprietor	9502506543 9502246543

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
TELANGANA	Venkateswara Power Systems D.No.10-2-233-238, 1st Floor, Sri Rama Bhavanamu, Road No.5, West Maredupally, Secunderabad - 500 026.	Hyderabad, Ranga Reddy, Medak, Mahaboobnagar, Karim Nagar, Adilabad, Nizamabad	040-6557472 9100918730	Mr. M. Kumara Swamy & Mr. Adimalleswarara Rao vps.alservice@gmail.com venkateswarapower2015 @gmail.com	Partner	9100918729 9100918719
	Gen Services, Shop No.6, Survey No.108/4, Block4, Karunagiri Shopping Complex, Karunagiri Nagar Khammam - 507 003.	Khammam, Nalgonda & Warangal	08742298543 9502256789	service@genserviceal.com suresh@genserviceal.com admin@genserviceal.com	Proprietor	9502506543 9502246543
UTTAR PRADESH	Premier Power Equipments 13 V N Marg (Nr Luxmi Hotel), Allahabad, Pin - 211 003.	Allahabad, Pratapgarh, Chitrakoot, Kaushambi	0532 -2400046	Mr Amit Dawar info@ premierpower.in	Proprietor Works Manager	9919190797 9335035396
	Oshonic Motors & Traders 658, S block, vinoba nagar, Juhi Depot, Kanpur - 208 014 (U.P).	Kanpur, Fatehpur, Banda, Unnao, Kannauj, Farrukhabad Lucknow, Raebareilly, Barabanki, Sitapur, Sultanpur & Hardoi	9919775566	Mr. Amitabh Verma Mr. Anshuman Verma oshonicmotors@gmail. com jaswant.vishvakarma@ gmail.com	Proprietor	9918185839 9919775566
	Sam Power Solution, Infront of Jay Durga, Dharam Kanta, Bijouli Industrial Area, Lalitpur Road, Jhansi - 284 135.	Lalitpur, Jhansi, Jalaun, Mahoba & Hamirpur	7800243326	Mr. Amitabh Verma service. samplerjhs@gmail.com jaswant.vishvakarma@gmail. com	Proprietor	9918185839
	Meerut Automobiles No.8A, Aman Vihar, Mavana Road, Rajpura, Meerut - 250 001.	Meerut, Muzzafar Nagar, Saharanpur, Bijnore, Bullandsahar, Shamli & Hapur	0121-2623236	Mr. Rajeev Maan meerutautomobile@gmail. com	Proprietor	9690014001 9690444488
	AP Diesels H No.431/432, DLW Road, Near Kabirmath, Shivdaspur, Lahartara Varanasi - 221 002.	Varanasi, Bhadohi, Jaunpur, Mirzapur, Chandauli, Gazipur, Azamgarh, Balia & Mau	-	Mr. Akhilesh Pal apdiesels2013@gmail.com	Proprietor	8400998316

**ASHOK LEYLAND**

STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
UTTAR PRADESH	Ruhelkhand Diesels, 83-A, Silver State, Pilibhit Bypass Road, Bareilly - 243 006.	Bareilly, Rampur, Pilibhit, Shahjahanpur, Moradabad, JP Nagar & Lakhimpur Kheri Badun	-	Mr OP Singh Partner Mr Shivam Singh ruhelkhanddiesels@gmail.com	Partners	09412202377
				Mr.K.C. Dubey	Service Manager	08475025025
	Shri Balaji Enterprises Machhali Mandi Zchak, Gaurapatti, Niyawan Faizabad - 224 001.	Bahraich, Ambedkarnagar, Balarampur, Faizabad, Gonda, Srawasti	-	Mr. K.N. Tripathi shri. balajiknt@gmail.com	Proprietor	9889801223
	Shri Balaji Enterprises Dharmala Bazaar, Near Subhash bajaj Work shop, Gorakupur - 273 001.	Basti, Gorakhpur, Kushinnagar, Maharajganj, Santkabirnagar, Siddharthnagar & Deoria	-	Mr. Gajendra Pradhan shribalajigkp1@gmail.com	Manager	7705001505
	MK Enterprises Plot No.113, Sec.-2, Transport Nagar, Agra - 282 002.	Agra, Mathura, Firozabad, Aligarh, Hatras, Etah, Etawah, Manipuri & Auraiya	9758019506	Mr. Yogender Singh Mr.Kanahiya Kumar enterprisesmk. singh954@gmail.com mkenterpriseshelpdesk76@gmail.com	Proprietor	9758019501 9758019508
	MK Enterprises Nilgiri Hostel, Lodhi Vihar, Sasni gate, Aligarh.					
UTTARKAND	Puri Automobiles, Garow Parow, Bareilly Road, Haldwani - 263 139.	Almora, Udhamasingnagar, Nainital, Pithoragarh, Bageshwar, Champawat	-	Mr. Mahit Puri puriautomobiles@yahoo.com	Proprietor	09837039614
				Mr. Sanjay Joshi	Service Manager	09719742456

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STATE	DEALER ADDRESS	TERRITORY	TELEPHONE / FAX	CONTACT PERSON / E-Mail	DESIGNATION	CELL NO
UTTARKAND	Power Diesel Plot No.188, Near RTO Check Post, Mohabewala, Dehradun - 248 002.	Dehradun, Haridwar, Rudraprayag, Chamole, Tehri, Uttarkashi & Pauri Garwal	0135 - 2642903	Mr. Karan Tomar Mr. D.S. Chouhan powerdieselddn@gmail.com	Proprietor	8958999925
				Mr.D.S. Chouhan	Service Manager	8958999920
WEST BENGAL	Amaze Power BNCCI House 23 R.N. Mukherjee Road, 3rd Floor, Kolkata - 700 001.	Entire West Bengal and Sikkim	-	Mr. Partha Sarathy Nandy parthasarathi.nandy@amazepower.in	Partnership	9748764085 9073996330
	Amaze Power Nawababhat by-pass more, Nawababhat Burdwan - 713 104.	Entire West Bengal and Sikkim	-	Mr. Partha Sarathy Nandy parthasarathi.nandy@amazepower.in	Partnership	9748764085
	Amaze Power Pratap Market, 2nd Mile, Sevoke Road, Siliguri - 734 001.					
	Amaze Power Rabindra Sarani, Opp. Biani Petrol Pump, Maldah - 732 101.					
	Amaze Power 414/424, Kishore Nagar,Contai Dist.Purba Midnapur East - 721 401.					
	Amaze Power Near Bandhan Bank, Sandipur More, Rampurhat, Birbhum - 731 224.					
	Amaze Power Belvedere Mill Premises, Godown No V2, PWD Road South Sankrail, Howrah - 711 313.					

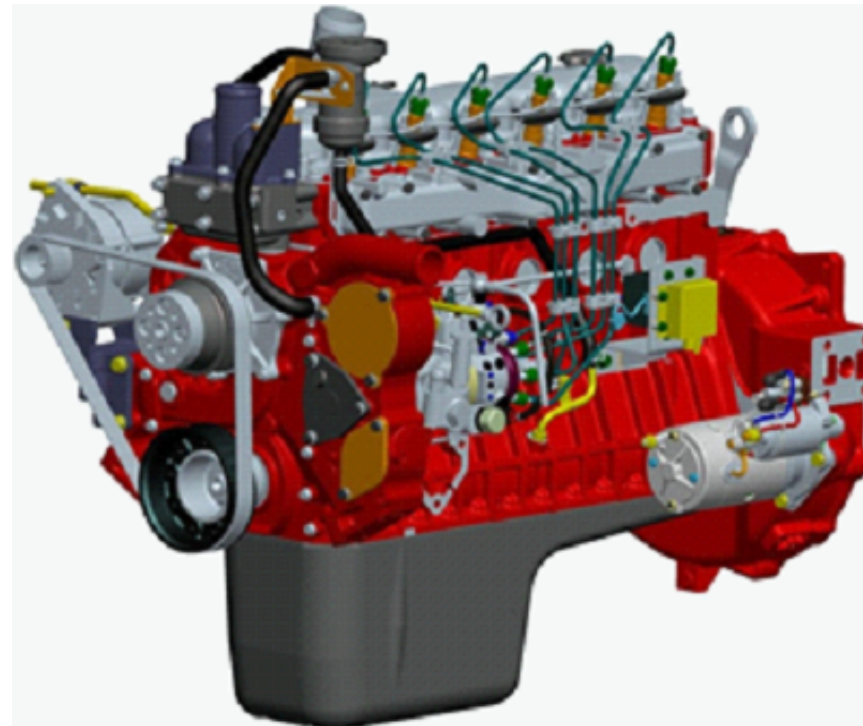
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9.20 DEALER NETWORK



ASHOK LEYLAND

Aapki Jeet. Hamari Jeet.



AL6DTIDG2/1

Parts Catalogue - July'2014



HINDUJA GROUP

FOREWORD

This Spare Parts Catalogue is applicable to **AL6DTIDG2/1 - 125KVA (CPCB-II) - Genset Engine**.

The following information regarding mode of supply is given in the Catalogue:

- A) When the components are supplied in the form of a sub-assembly or a set, or kit, specific mention is made.
- B) All standard fasteners are not serviced.

While ordering the parts, due note of the above information should be taken.

Since the process of development is continuous with design changes, part numbers are likely to change. The information given in this publication is current at the time of release. The possibility exists that the information may need to be updated as a result of modification adopted by the manufacturer at any time for reason of a technical or commercial nature. Relevant changes would be updated through our Service Circulars / Bulletins, if found necessary.

While all the care has been taken to illustrate the components as they look, due to constraints of standardizing the illustrations, variation will be there.

Though every care has been taken in preparing the Parts Catalogue, no liability is under taken for any error which may arise.

We welcome your suggestions and feedback for better service. Should you need any further information pl write to:

Ashok Leyland Limited,
Power Solutions Business,
No. 1, Sardar Patel Road,
Guindy, Chennai – 600 032

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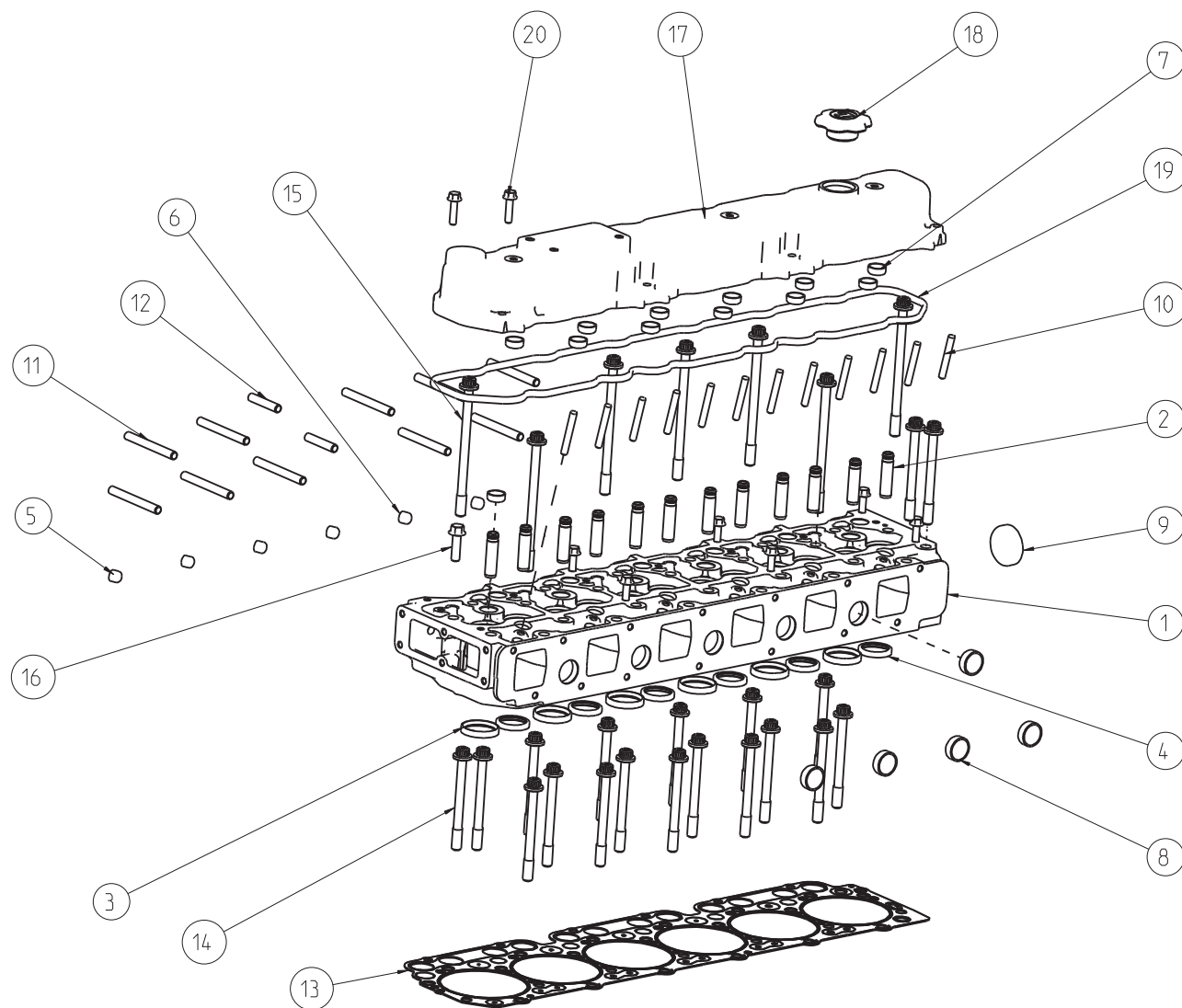
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ASSY OF ENGINE CYLINDER HEAD - HAECH23

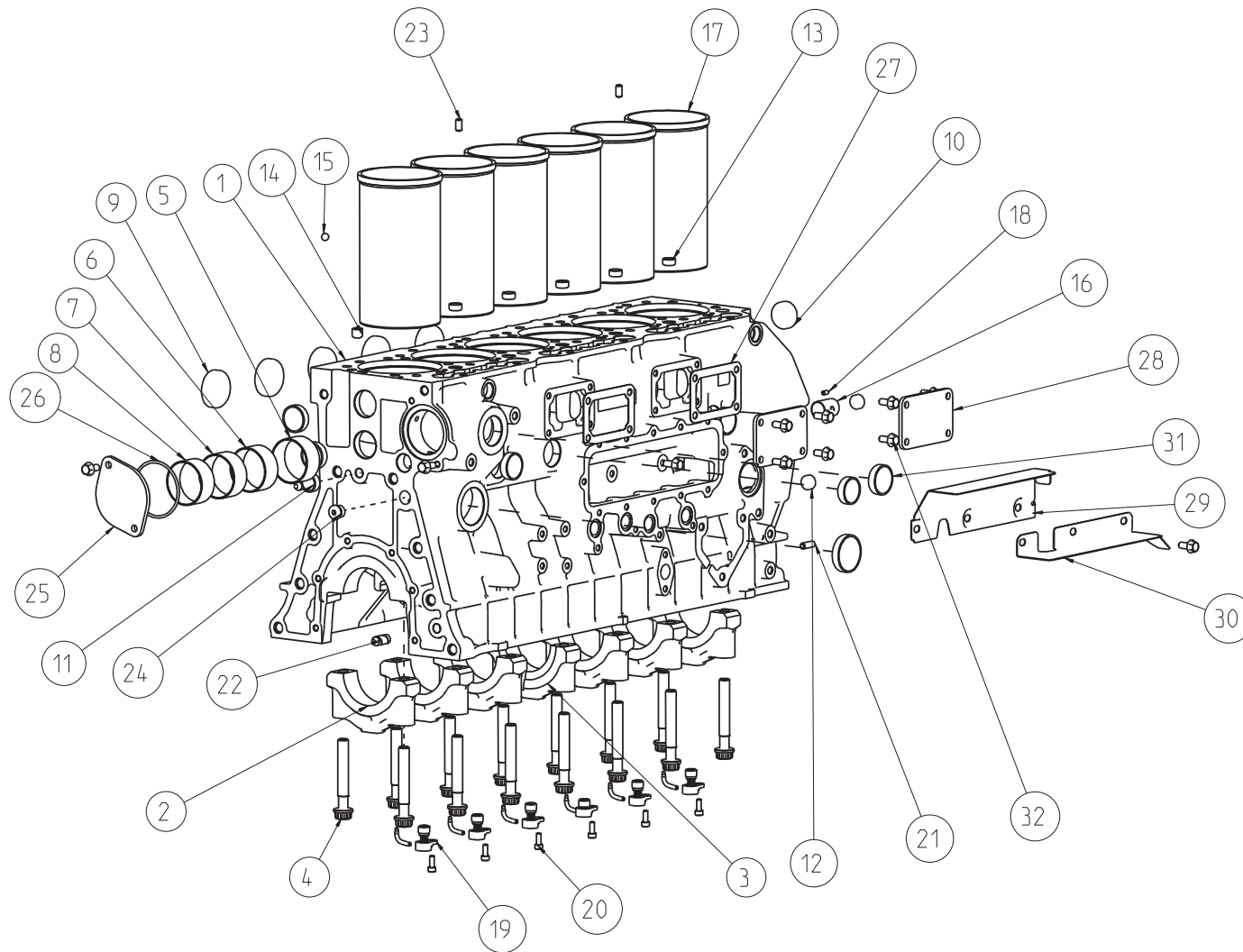




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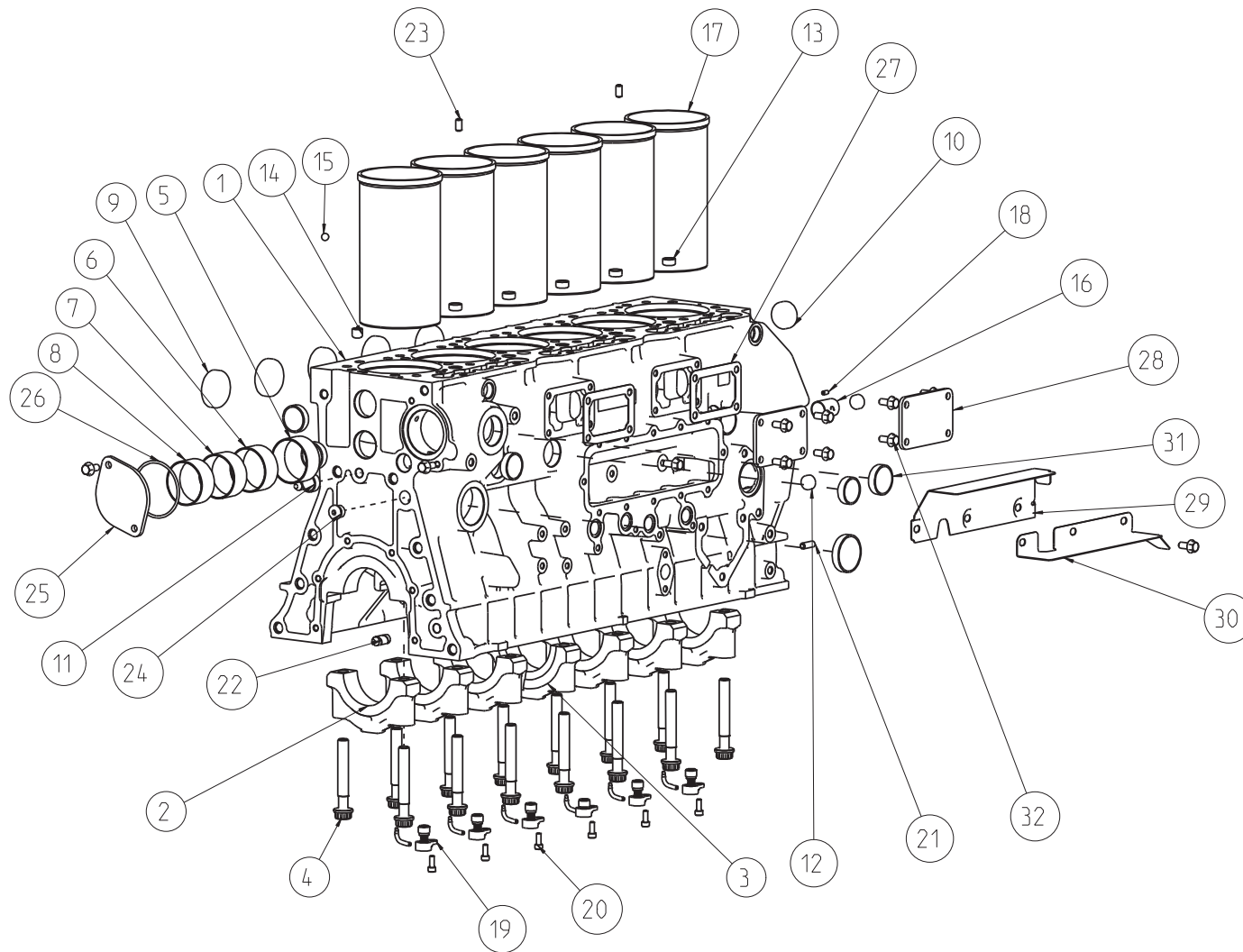
ASSY OF ENGINE CYLINDER HEAD - HAECH23					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1		B3C03901	S/A OF ENGINE CYLINDER HEAD (WITH STUDS)	1	
2		B3C03902	S/A OF ENGINE CYLINDER HEAD (WITHOUT STUDS) - CONSISTS OF ITEM MARKED WITH \$	1	
3	1	F0X02322 \$	CYLINDER HEAD	1	NSS
4	2	F0531522 \$	BUSHING, VALVE GUIDE INTAKE	12	
5		P0946451	COMPOSITE VALVE SEAT KIT (CONSISTS OF INTAKE & EXHAUST VALVE SEAT)	1	
6	3	X0900216 \$	SEAT,VALVE INTAKE	6	
7	4	X0900116 \$	SEAT,VALVE-EXHAUST	6	
8	5	F4832510 \$	BALL STEEL	6	
9	6	F3144915 \$	PLUG EXPANSION	6	
10	7	F3145815 \$	PLUG EXPANSION	12	
11	8	F3145315 \$	PLUG EXPANSION 30DIA	6	
12	9	F3145415 \$	PLUG EXPANSION	1	
13	10	X3714315	STUD M8X1.25	12	
14	11	X3504211	STUD,EMF	10	
15	12	X3504311	SPECIAL STUD FOR EXHAUST MANIFOLD (COPPER PLATED).	2	
16	13	X1711400	CYLINDER HEAD GASKET, MULTI-LAYERED STEEL FROM MARUSAN	1	
17	14	X3510415	BOLT, CYLINDER HEAD	19	
18	15	X3510815	BOLT, CYLINDER HEAD	7	
19	16	L9011035	FLANGED SCREW - M10X1.5X35L	6	
20		B8254307	S/A COVER, CYLINDER HEAD (CONSISTS OF ITEM MARKED WIT #)	1	
21	17	X1101142 #	COVER, ROCKER	1	
22	18	F1100160 #	OIL FILLER CAP	1	
23	19	F1760900	GASKET C/HEAD COVER	1	
24	20	L9010832	FLANGED SCREW M8 X 1.25 X 32	8	

ASSY OF CYLINDER BLOCK - HAECB14/1



ASSEMBLY OF ENGINE CYLINDER BLOCK - HAECB14/1					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B3B02501	S/A OF CYLINDER BLOCK (CONSISTS OF ITEMS MARKED WITH #)	1	
2		B8773902 #	S/A OF CYLINDER BLOCK - EURO3 (CONSISTS OF ITEMS MARKED WITH \$)	1	
3	1	X1812722 \$	CYLINDER BLOCK FOR B PLAFTFORM H-SERIES ENGINES	1	
4	2	X1102722	MAIN BEARING CAP	6	
5	3	X1102822 \$	AIN BEARING CAP-CENTRE	1	
6	4	X3511115 \$	BOLT, MAIN BEARING CAP	14	
7	5-8	P0915451 \$	CAM BUSH KIT	1	
8	9	F3145415 \$	PLUG EXPANSION	6	
9	10	F3145615 \$	PLUG EXPANSION	7	
10	11	F3145015 \$	PLUG EXPANSION	1	
11	12	X3113915 \$	EXPANSION PLUG,CYLBLOCK PRSIDE	2	
12	13	F3145715 \$	PLUG EXPANSION	5	
13	16	X0502230 \$	BUSH, OILPUMP DRIVE SHAFT (IN CR' CASE)	1	
14	17	F9K00122 \$	CYL. LINER, EURO 3, INTERFERENCE FIT (W)	AR	
15	17	F9K00222 \$	CYL. LINER, EURO 3, INTERFERENCE FIT (X)	AR	
16	17	F9K00322 \$	CYL. LINER, EURO 3, INTERFERENCE FIT (Y)	AR	
17	17	F9K00422 \$	CYL. LINER, EURO 3, INTERFERENCE FIT (Z)	AR	
18	18	F0954615 \$	PIN STRAIGHT (5X10)	1	
19	19	B8758803 #	COOLING, JET BODY	6	
20	20	FE702710 #	SCREW - HEX SOCKET CAP - M6 X 1CP X 21MM LONG X GR 12.9	6	
21	24	X3108815	PLUG	2	
22	25	F7647314	SEAL, PLATE	1	
23	26	F2702150	O RING CAM AND SEAL	1	
24	27	X1715500	GASKET - PLATE,CAMSHAFT	2	
25	28	F7647014	PLATE CAMSHAFT	2	

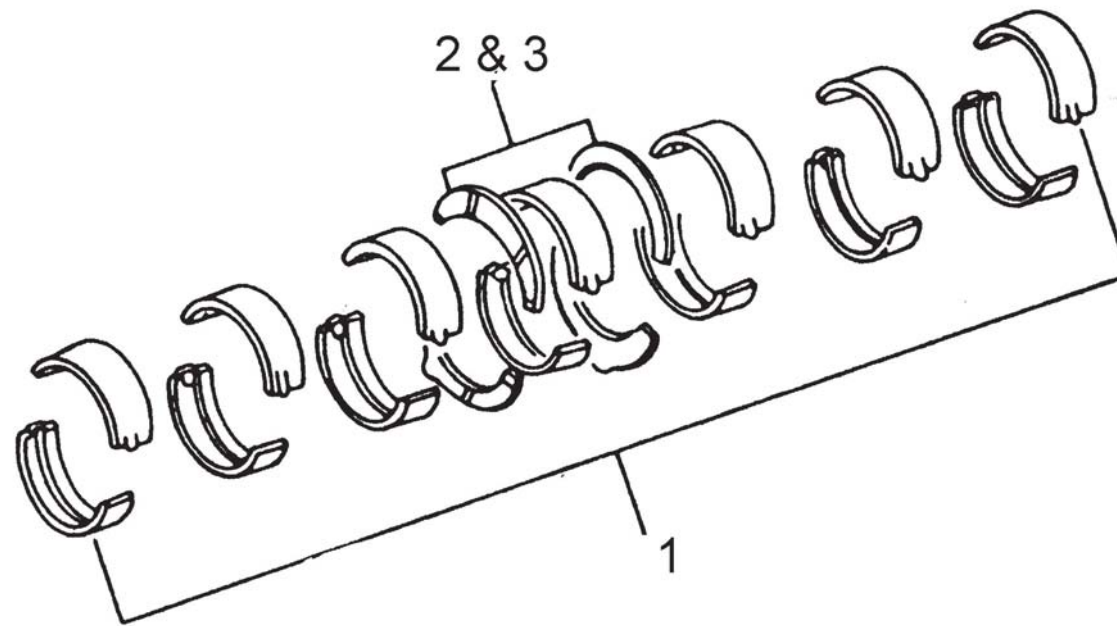
ASSY OF CYLINDER BLOCK - HAECB14/1





ASSEMBLY OF ENGINE CYLINDER BLOCK - HAECB14/1					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
26	29	X1112314	BUFFER PLATE - UPPER	1	
27	30	X1112214	BUFFER PLATE - LOWER	1	
28	31	F3146615 \$	EXPANSION PLUG	1	
29	32	L9010818	FLANGED SCREW - HEX - M8 X 1.25 CP X 18MM LONG X GR 8.8	13	
30		L9010812	FLANGED SCREW - HEX - M8 X 1.25 CP X 12MM LONG X GR 8.8	3	
31		L2011230	STANDARD SCREW - HEX - M12 X 1.75 CP X 30MM LONG X GR 8.8	1	
32		F1Z01314	LIFTING EYE	1	
33		L4111200	STANDARD WASHER - MM - SINGLE COIL - 12MM ID	1	
34		X0805910	CLIP, OIL SEPARATOR HOSE	1	

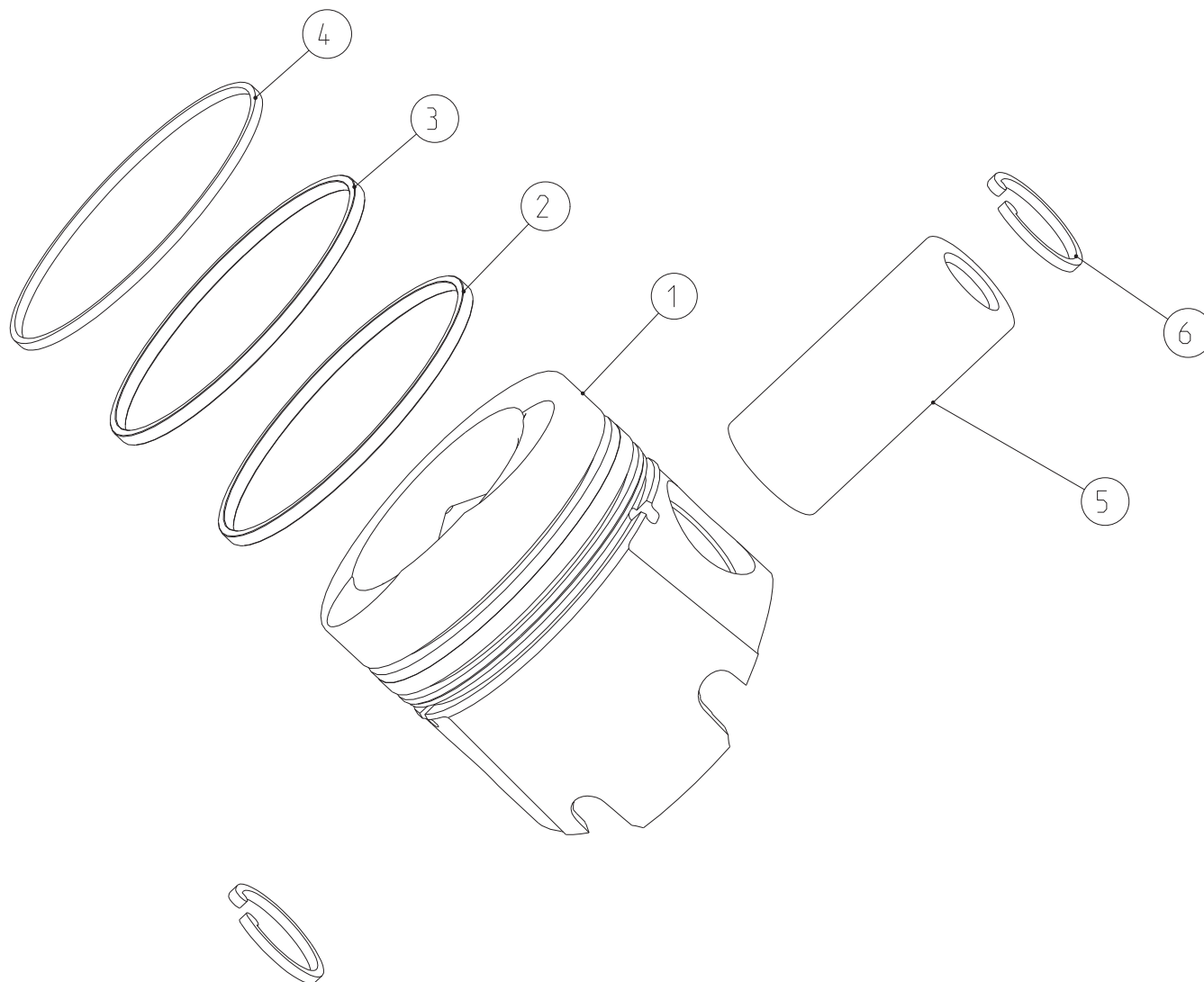
MAIN BEARING - HAEMB2



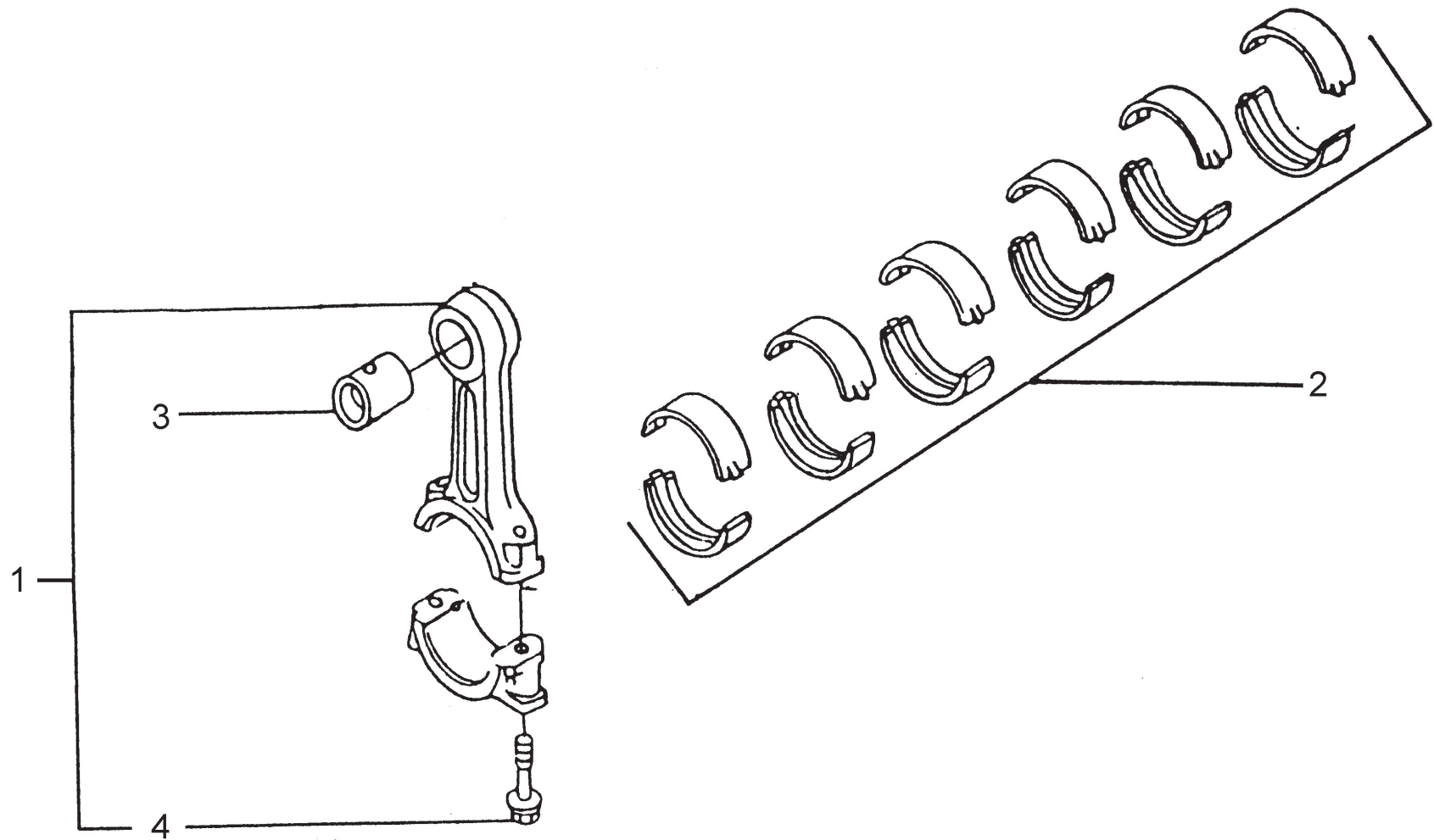


MAIN BEARING - HAEMB2					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	P0978651	MAIN BEARING SET	1	
2	2	P0990951	THRUST WASHER STD - IMPROVED	1	
3	3	P0994551	THRUST WASHER I O/S	AR	

PISTON AND RINGS - ALEPR8



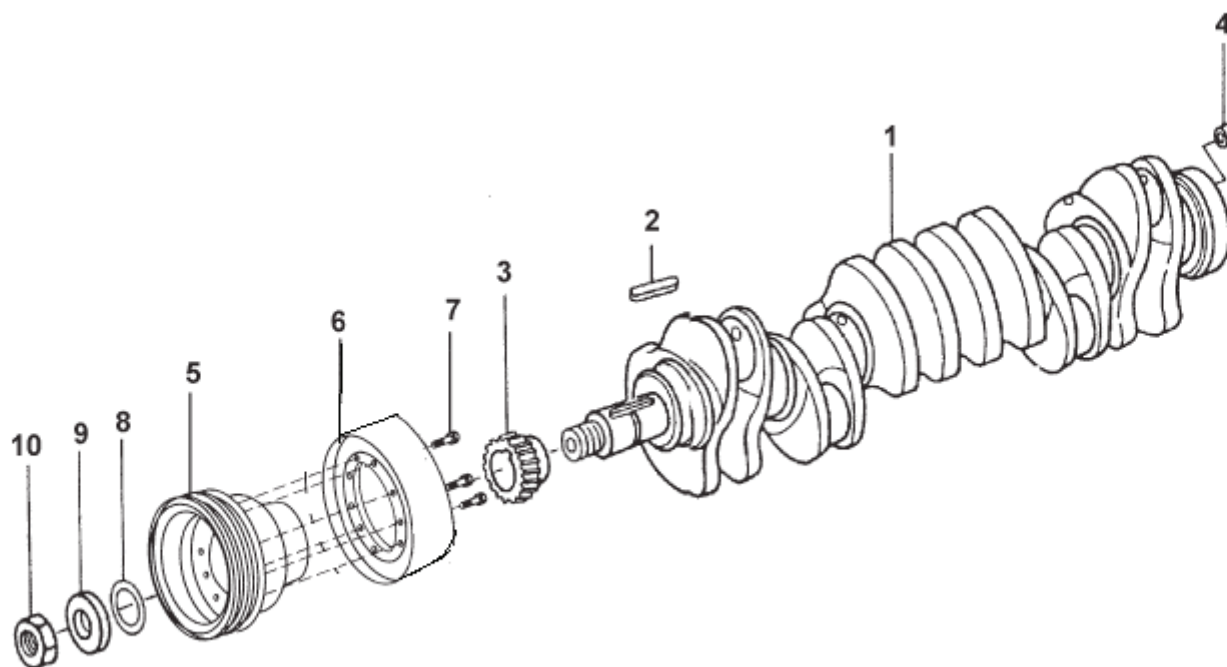
CONNECTING ROD - HAECN2





CONNECTING ROD - HAECN2					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	B8755901	S/A OF CONNECTING ROD	6	
2	2	P0978251	CONN ROD BEARING SET	1	
3	3	X0501030	BUSHING CON ROD	6	
4	4	X3511715	BOLT CON-ROD	12	

CRANKSHAFT - HAECS19



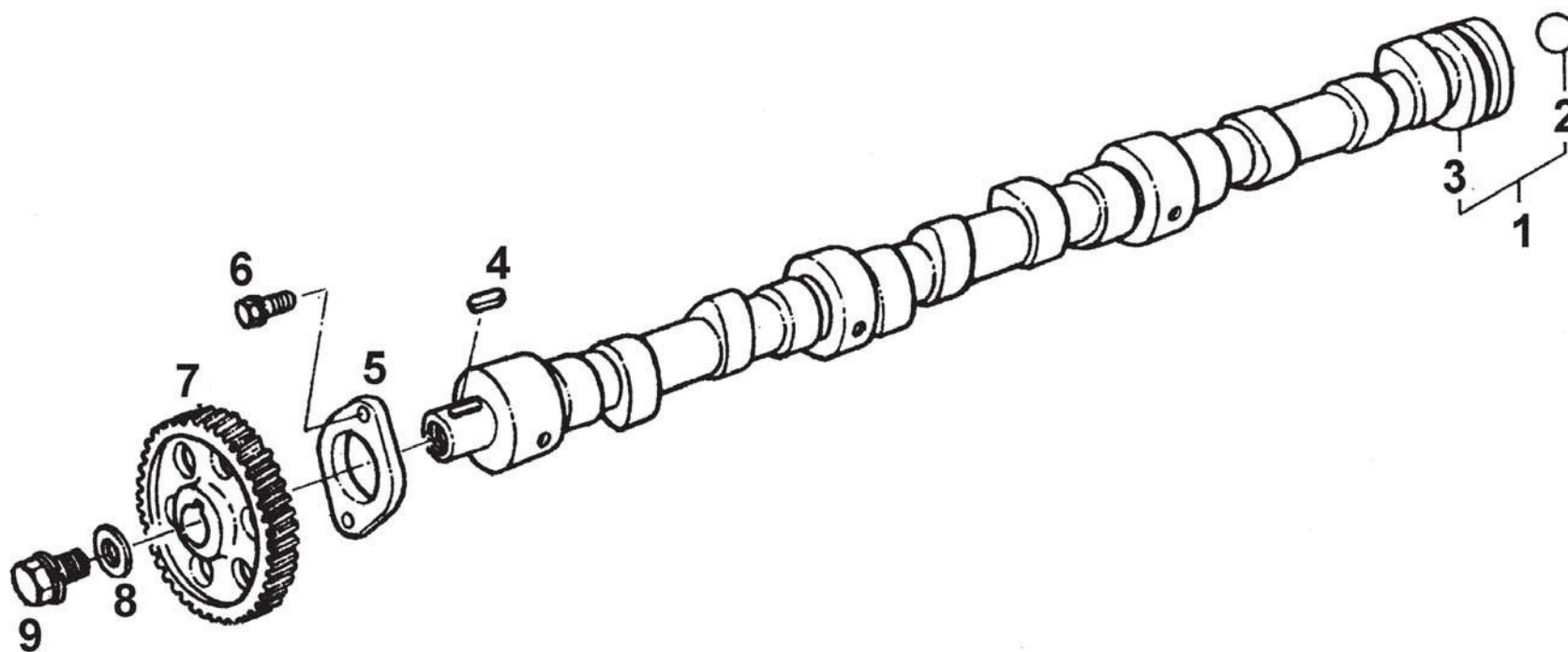


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CRANKSHAFT - HAECs19

SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	X3307711	CRANKSHAFT	1	
2	2	F0954915	KEY FOR CRANKSHAFT GEAR	1	
3	3	X1607511	GEAR CRANKSHAFT	1	
4	4	F3438615	COLLAR	1	
5	5	X1505222	PULLEY DAMPER	1	
6	6	FC105314	SPACER	1	
7	7	LJ6FF6H	SCREW M10X1.5MM T T LONG	9	
8	8	F2702650	"O" RING	1	
9	9	F1200210	SPACER	1	
10	10	F3568715	NUT	1	

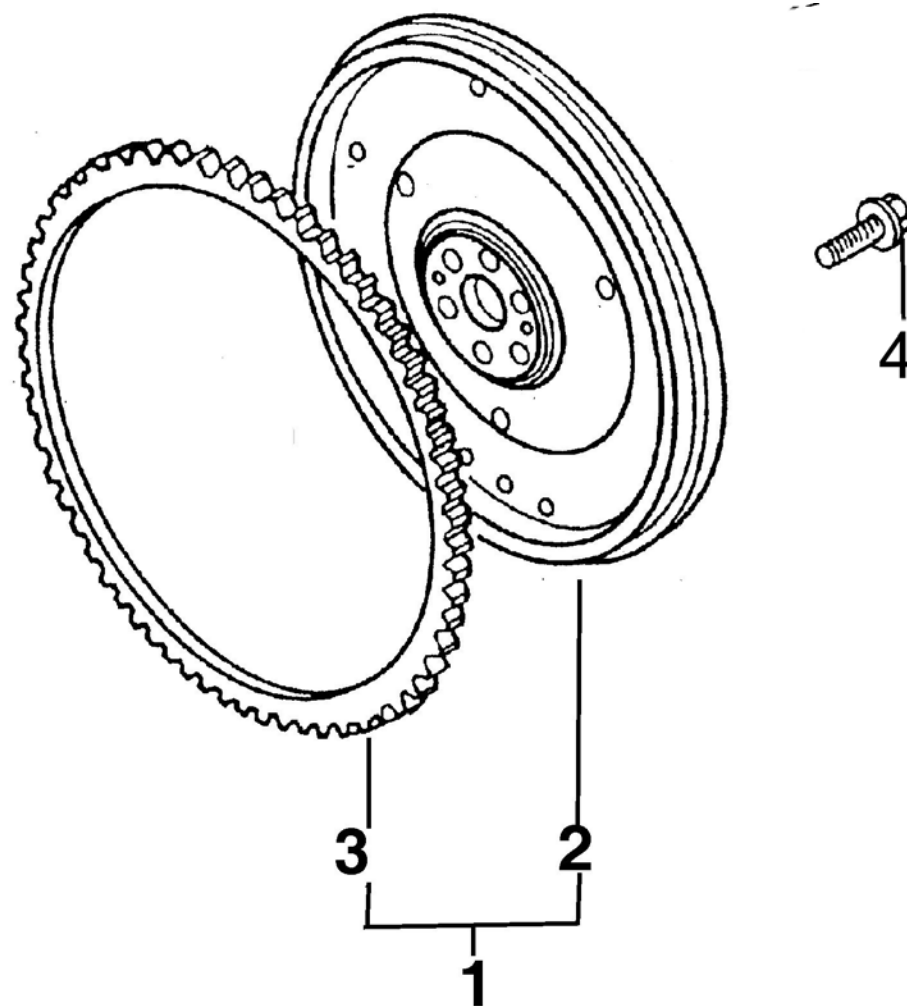
CAMSHAFT - ALECM7





CAMSHAFT - ALECM7					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	B2S00502	SUB ASSEMBLY OF CAMSHAFT AND BALL STEEL	1	
2	2	F4832710	BALL STEEL	1	
3	3	F4K00311	ENGINE CAM SHAFT FOR H6 IEGR ENGINE	1	
4	4	F0955115	KEY FOR CAMSHAFT	1	
5	5	F7661614	PLATE CAMSHAFT	1	
6	6	L9010822	FLANGED SCREW - M8X1.25X22L	2	
7	7	F1655711	GEAR,CAMSHAFT	1	
8	8	F4945310	WASHER 44 OD X 15 ID X 6 T	1	
9	9	F3501800	M14 X 1.5 X 40 BOLT	1	
10		F4922800	WASHER SPRING M14.2	1	

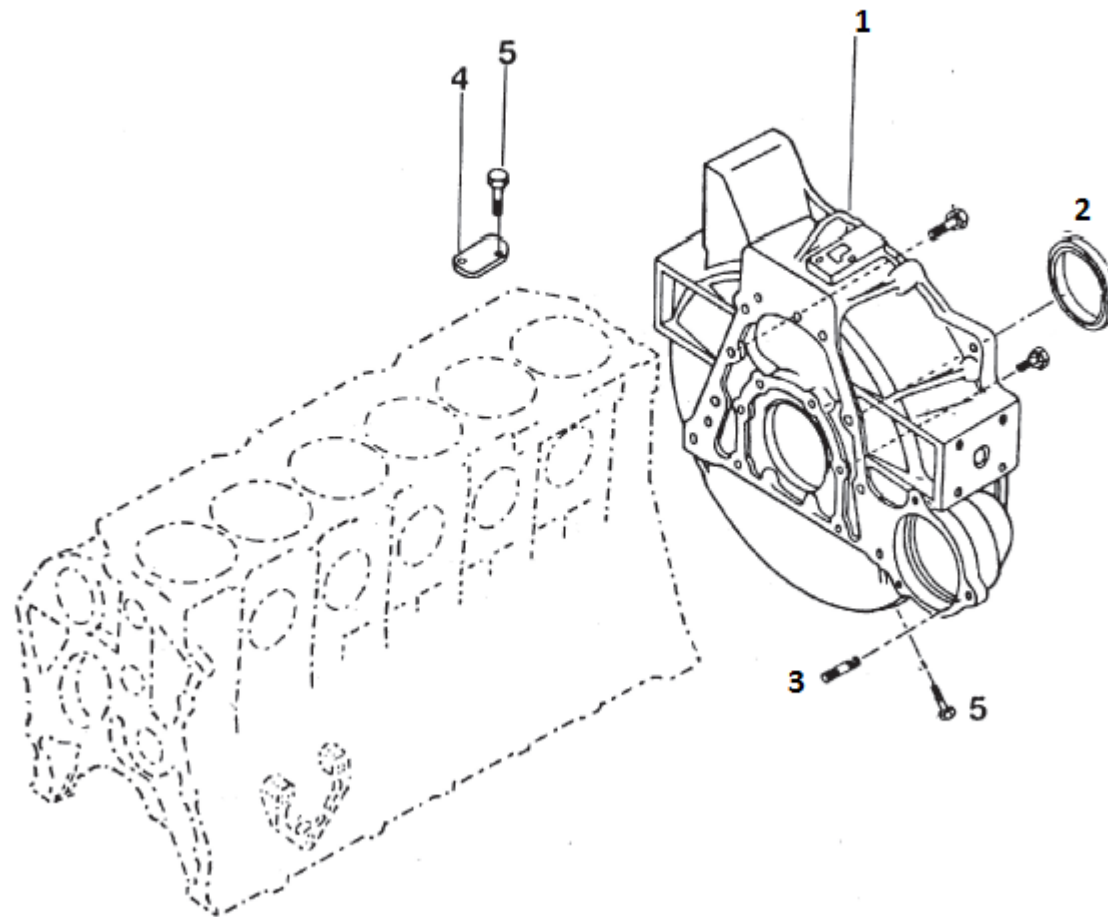
ENGINE FLYWHEEL - HAEFW15/4





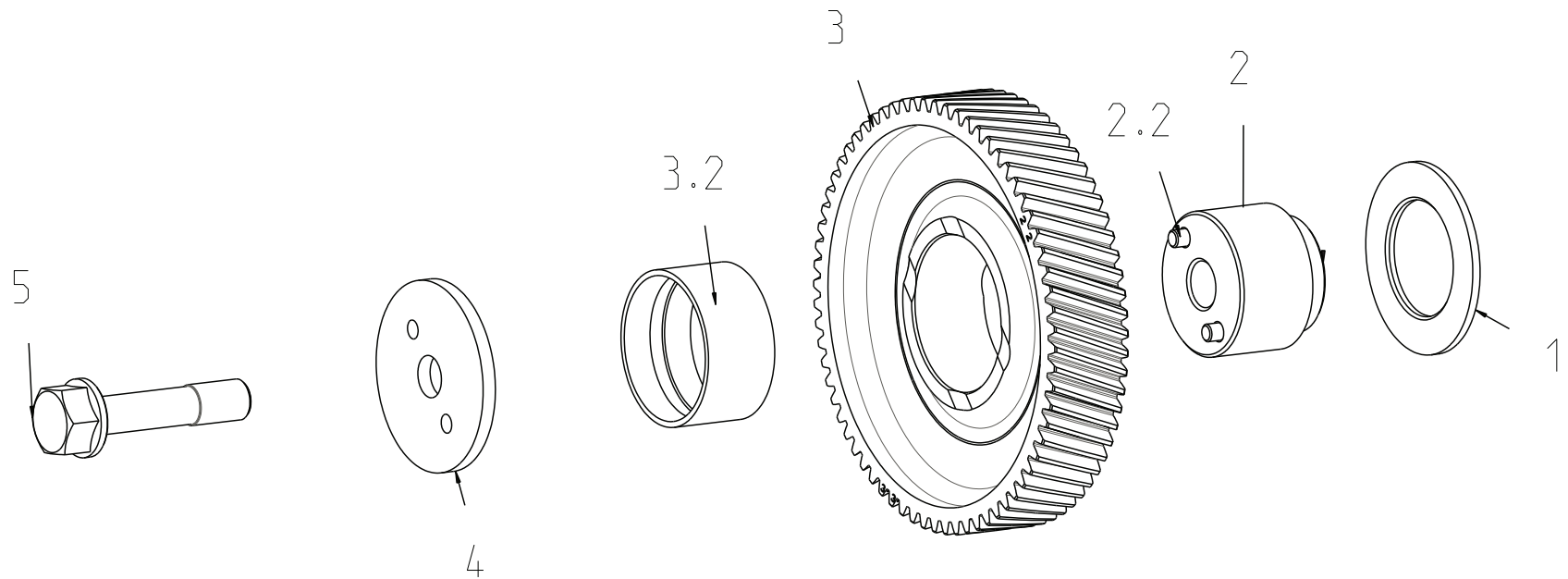
ENGINE FLYWHEEL - HAEFW15/4					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION		REMARKS
1	1	B3F07902	S/A OF FLYWHEEL	1	
2	2	F1625022	FLYWHEEL	1	
3	3	F0741822	STARTER RING	1	
4	4	X3511015	FLYWHEEL BOLT	6	

ASSY OF ENGINE FLYWHEEL HOUSING - ALEFH24



ENGINE FLYWHEEL HOUSING ASSY - ALEFH24					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X1815822	FLYWHEEL HOUSING	1	
2	2	X2705100	H-SERIES C/S REAR END PTFE OILSEAL	1	
3	3	F3769515	STUD - COVER TIMER ,STARTER MOTOR MOUNTING M10	3	
4	4	X1102513	F/H, DUST COVER	1	
5	5	L9010812	"STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 12MM LONG X GR 8.8	2	
6		F4922600	SPRING WASHER	10	
7		F3584615	SPECIAL NUT - HEX - M10 X 1.25CP X 8MM LONG X GR	3	
8		F4945410	SPECIAL WASHER - MM - PLAIN - 10.5MM ID X 22MM OD X 2MM T	3	
9		F4945510	"SPECIAL WASHER - MM - SINGLE COIL - 10.2MM ID X 18.4MM OD X 5MM T"	3	
10		F5J00113	F/H, DUST COVER	1	
11		L2010812	STANDARD SCREW - HEX - M8 X 1.25 CP X 12MM LONG X GR 8.8	4	
12		L2010835	STANDARD SCREW - HEX - M8 X 1.25 CP X 35MM LONG X GR 8.8	6	
13		L4010800	STANDARD WASHER - MM - PLAIN - 8MM ID	6	
14		L2010818	STANDARD SCREW - HEX - M8 X 1.25 CP X 18MM LONG X GR 8.8	2	
15		H4110800	SC WASHER 8 DIA	2	
16		L1011409	STANDARD BOLT - HEX - M14 X 2CP X 45MM LONG X GR 8.8	8	
17		L4011400	STANDARD WASHER - MM - PLAIN - 14MM ID	8	
18		L4111400	STANDARD WASHER - MM - SINGLE COIL - 14MM ID	8	

ASSY OF ENGINE TIMING GEARS - HAETG1



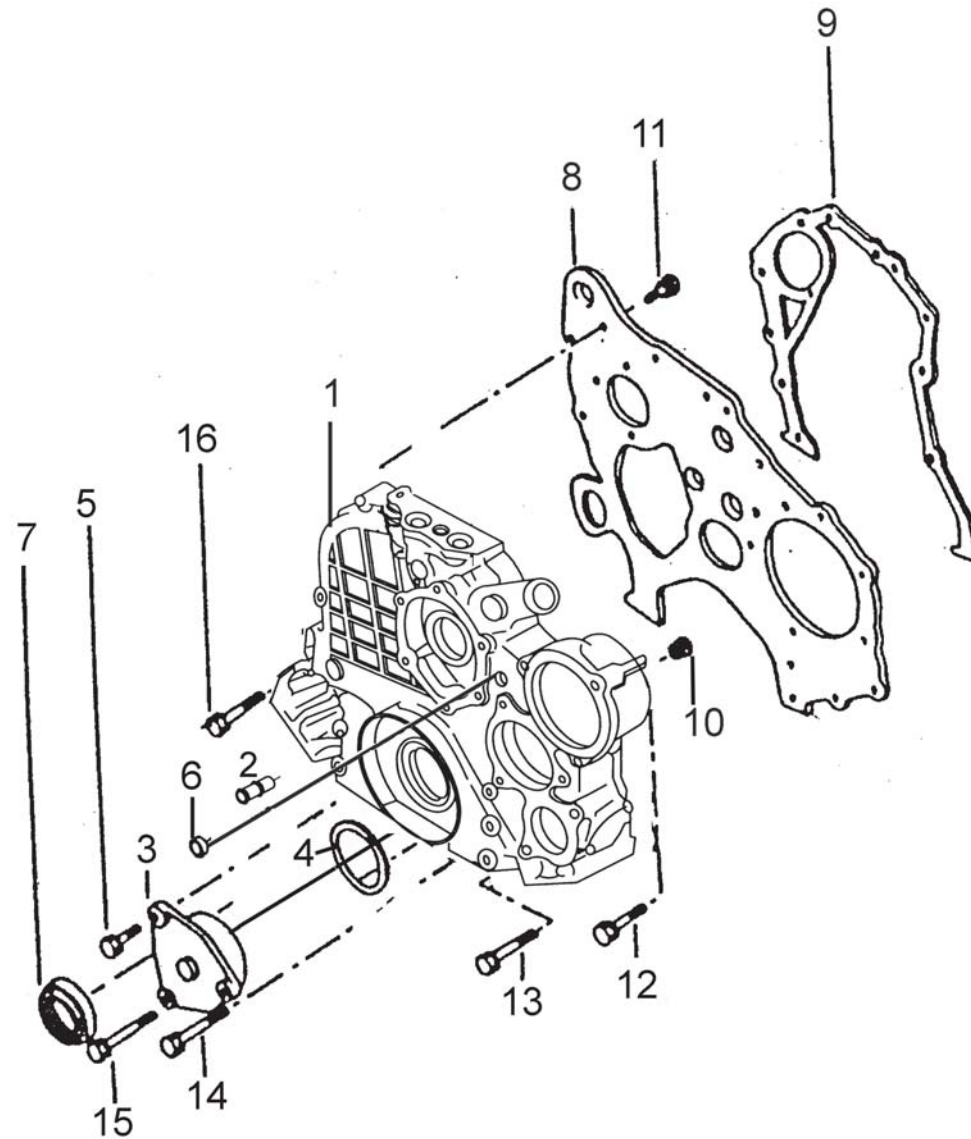


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ASSY OF ENGINE TIMING GEARS - HAETG1

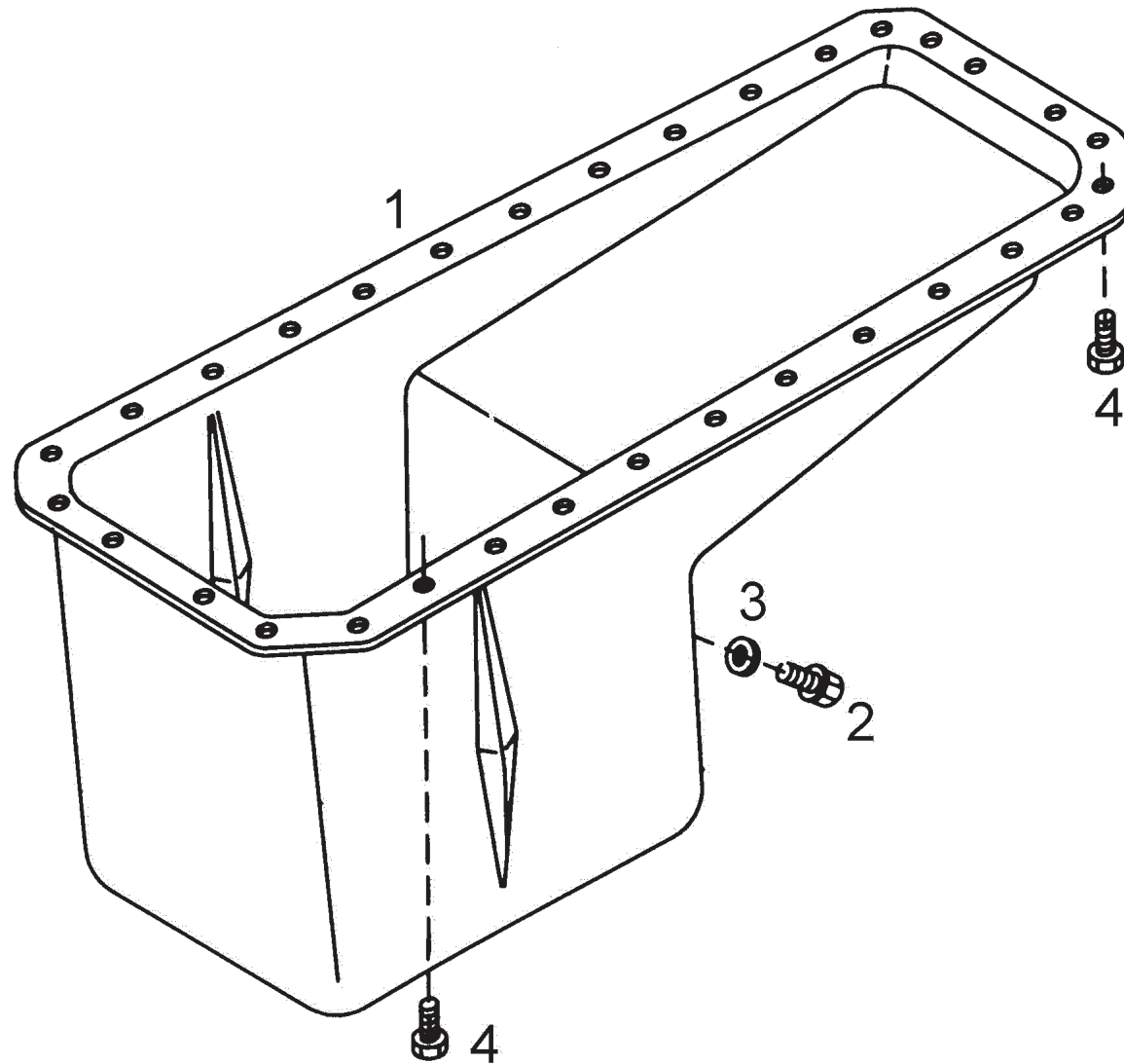
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	F7661714	PLATE, IDLE GEAR THRUST	1	
2	2	F3347211	IDLER GEAR SHAFT	1	
3	2.2	F0955015	PIN STRAIGHT (6X10)	2	
4	2.2.2	B7014502	S/A SHAFT.IDLER GEAR	1	
5	3	X1602811	GEAR,IDLER	1	
6	3.2	F0536530	BUSHING	1	
7	3.3.2	B8254801	S/A OF GEAR, IDLER	1	
8	4	F7661814	PLATE IDLE, GEAR THRUST	1	
9	5	F3585715	BOLT IDLE GEAR	1	

TIMING GEAR CASE - HAETC12



ASSEMBLY OF TIMING GEAR CASE COVER - HAETC12					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B4M03001	SUB ASSY OF TG CASE WITH WELCH PLUG (CONSITS OF ITEMS MARKED WITH \$)	1	
2	1	FK400822 \$	TIMING GEAR CASE	1	
3	2	F1985515	PIPE VENT	1	
4	3	X1102622	FRONT COVER	1	NSS
5	4	F2749200	O RING 81.2 X 3.3	1	
6	5	L9010822	"FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8"	3	
7		L9510821	"FLANGED BOLT - HEX - M8 X 1.25 CP X 105MM LONG X GR 8.8"	2	
8	6	F3144915 \$	PLUG EXPANSION	1	
9	7	X2706700	OIL SEAL, FRONT (PTFE)	1	
10	8	X7202113	TIMING BACK PLATE	1	
11	9	X1708200	GASKET TIMING BACKPLATE	1	
12		F7909414	SEAL PLATE	1	
13	11	L9010818	"FLANGED SCREW - HEX - M8 X 1.25 CP X 18MM LONG X GR 8.8"	4	
14	12	L9010818	"FLANGED SCREW - HEX - M8 X 1.25 CP X 18MM LONG X GR 8.8"	3	
15	13	L9510813	"FLANGED BOLT - HEX - M8 X 1.25 CP X 65MM LONG X GR 8.8"	4	
16	14	L9510817	"FLANGED BOLT - HEX - M8 X 1.25 CP X 85MM LONG X GR 8.8"	1	
17	16	L9510819	"FLANGED BOLT - HEX - M8 X 1.25 CP X 95MM LONG X GR 8.8"	2	
18		F3502400	BOLT	1	
19		F3147115	PLUG VALVE SPRING	1	
20		F7647414	SEAL PLATE	1	
21		L9510815	"FLANGED BOLT - HEX - M8 X 1.25 CP X 75MM LONG X GR 8.8"	1	
22		F1721600	JOINT-POWERSTEERINGPUMP DUMMY PLATE	1	
23		F7Y03300	GASKET - COMPRESSOR DUMMY PLATE GASKET	1	

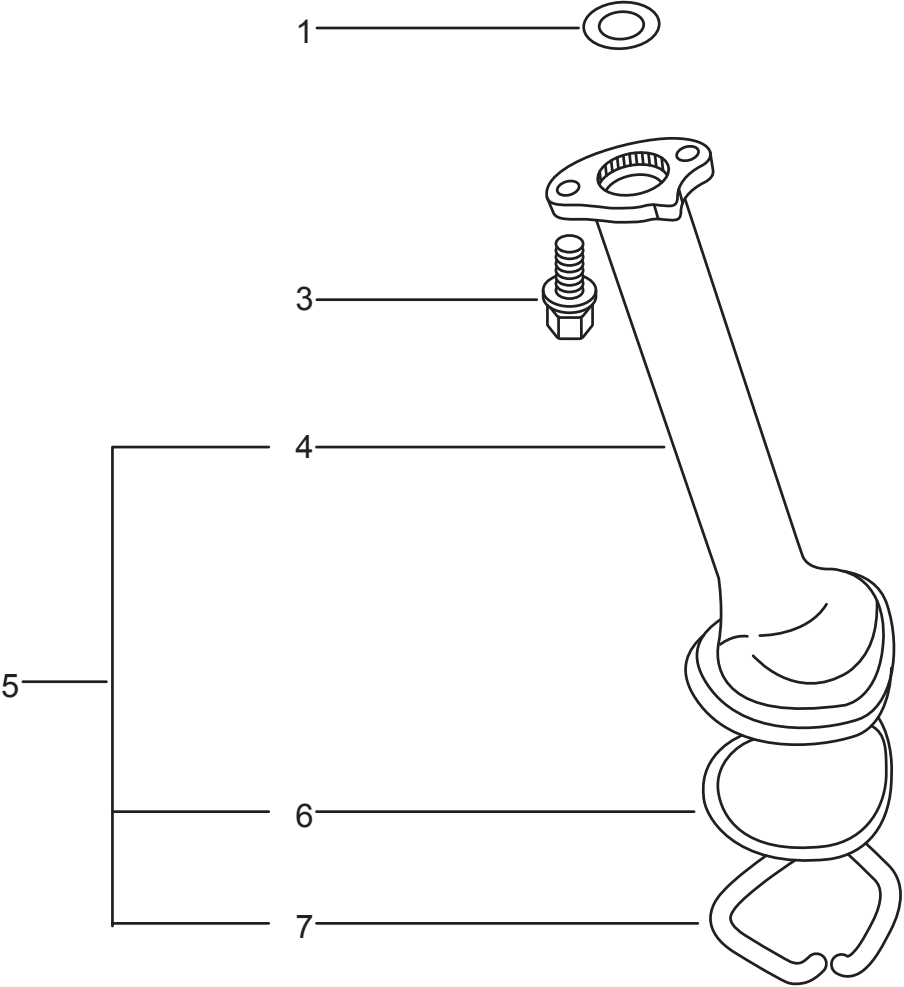
ASSY OF ENGINE OIL SUMP - HAESU2





ASSY OF ENGINE OIL SUMP - HAESU2					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	B8755701	OIL SUMP	1	
2	2	FC200315	PLUG, OIL DRAIN	1	
3	3	X2701450	O RING 21.89 X 2.62"	1	
4	4	L9010812	FLANGED SCREW - M8X1.25X12L	34	

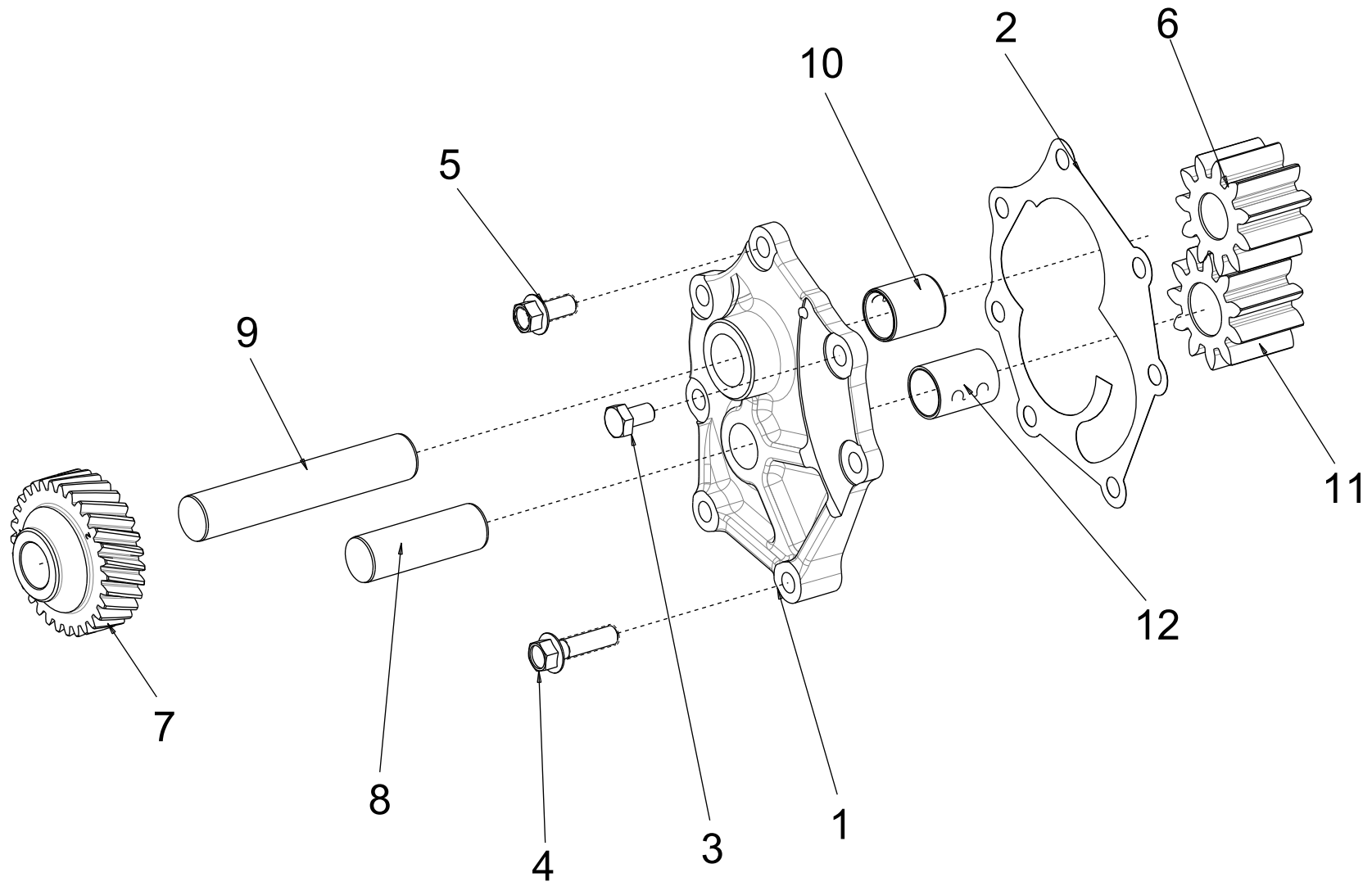
ENGINE OIL STRAINER - HAEOS6





ASSY OF OIL STRAINER - HAEOS6					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X2704950	O Ring 25.7 x 3.5	1	
2		L4010800	WASHER - MM - Plain - 8mm ID	2	
3	3	H2110835	SCREW- HEX SCOKET - M8 X 1.25 CP X 35mm LONG X GR 8.8	2	
4	4	FPP00142 \$	OIL STRAINER PIPE ,DEEP WELL SUMP	1	
5	5	B9708001	S/A of OIL STRAINER (Consists of items marked with \$) PIPE	1	
6	6	F4000310 \$	SCREEN OIL STRAINER	1	
7	7	F0743510 \$	SNAP RING	1	

ENGINE OIL PUMP - HAEOP4



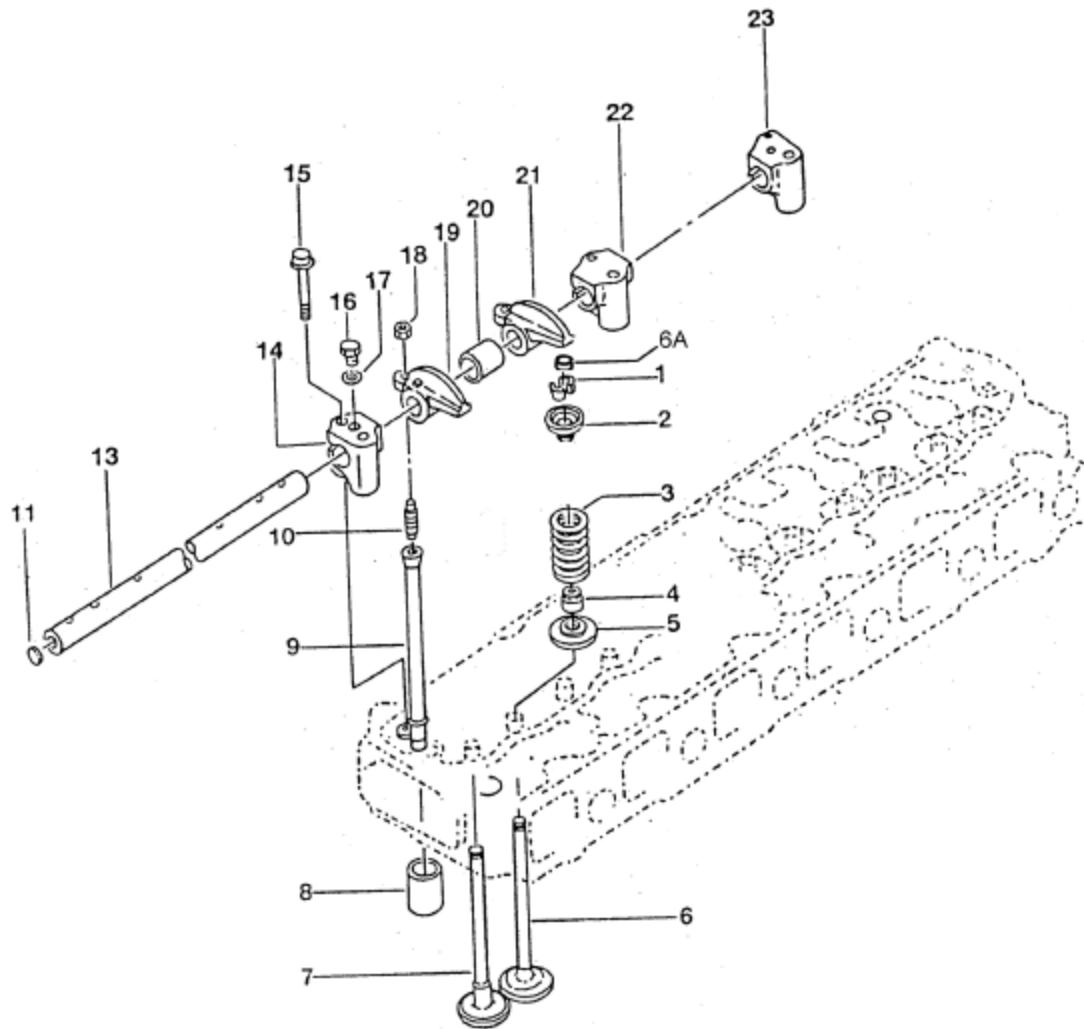


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ENGINE OIL PUMP - HAEOP4

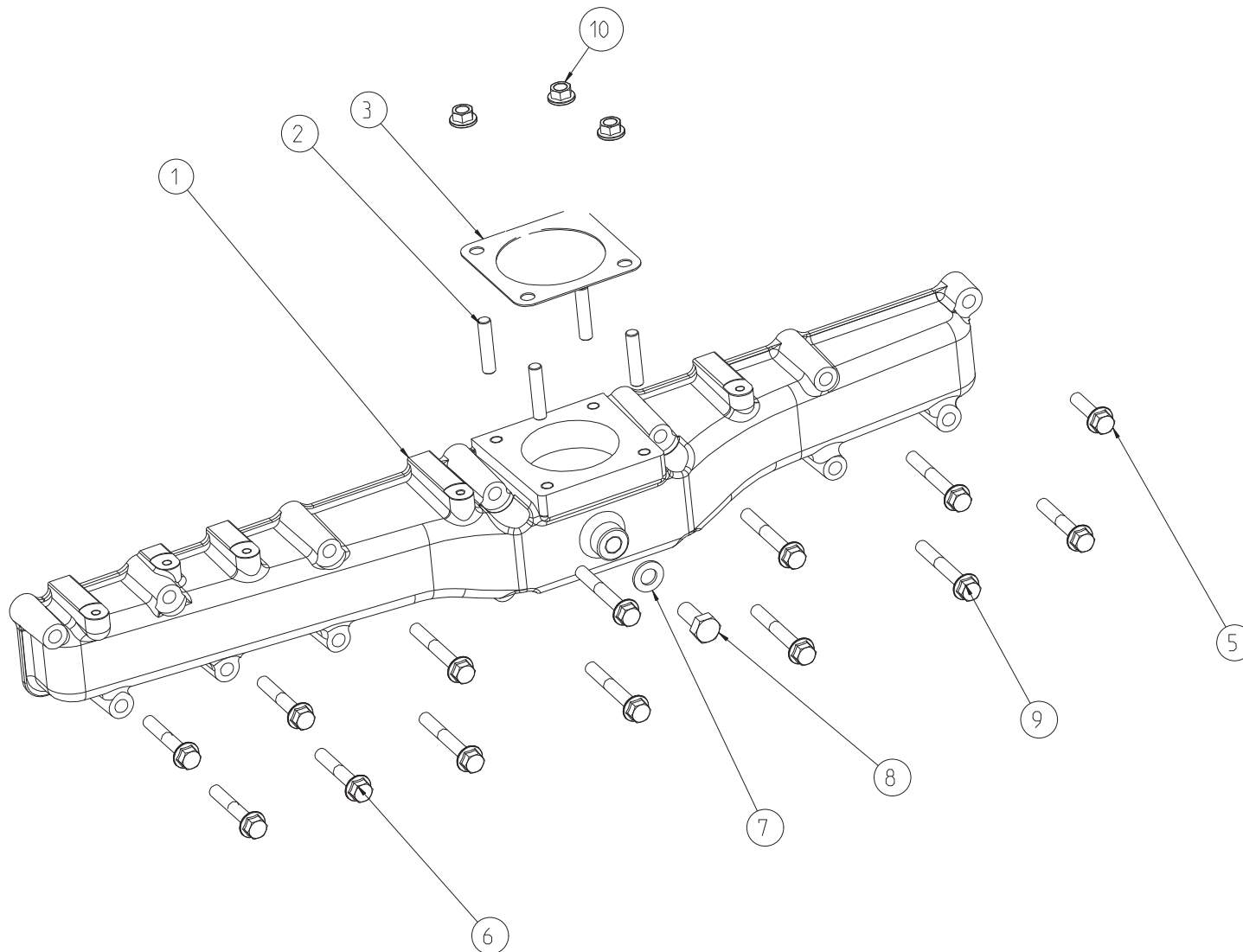
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	X1102222 %	COVER - OIL PUMP	1	
2	2	X1708100	GASKET OIL PUMP COVER	1	
3	3	F3502400	BOLT	2	
4	4	L9010832	FLANGED SCREW M8 X 1.25 X 32	2	
5	5	L9010818	FLANGED SCREW - M8X1.25X18L	3	
6	6-12	B8762201	S/A OF OIL PUMP COMPRISES OF ITEMS MARKED #	1	
7	1,6-10	B8762202 #	S/A OF COVER, OIL PUMP COMPRISES OF ITEMS MARKED %	1	
8	6	X1600326 %	GEAR OIL PUMP DRIVE	1	
9	7	X1603311 %	GEAR OIL PUMP DRIVE SHAFT	1	
10	8	X3313115 %	SHAFT OIL PUMP DRIVEN	1	
11	9	X3313015 %	SHAFT OIL PUMP DRIVE	1	
12	10	X0501130 %	BUSH OIL PUMP DRIVE SHAFT	1	
13	11,12	B8762203 #	S/A OF GEAR OIL PUMP COMP OF ITEMS MARKED &	1	
14	11	X1600426 &	GEAR OIL PUMP DRIVEN	1	
15	12	X0501230 &	BUSH OIL PUMP GEAR	1	

ROCKER ASSY AND VALVES - ALEVL5



ASSY OF ENGINE INTAKE VALVE SYSTEM - ALEVL5					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B8255101	S/A OF ARM, VALVE ROCKER (consists of items marked with \$)	1	
2	1	F3438515	LOCK VALVE SPG RET	24	
3	2	X0900911	SEAT,VALVESPRING-UPPER	12	
4	3	X3607410	SPRING, VALVE (ALTERNATE P/No - X3607310)	1	
5	4	FE802800	VALVE STEM SEAL, SKF	12	
6	5	X0901011	SEAT-VALVE SPRING LOWER	12	
7	6	F4231911	EX VALVE 6DT IND	6	
8	7	FL600111	INTAKE VALVE FOR INTERNAL EGR ENGINE	6	
9	6A	X1100615	VALVE CAP	12	
10	8	F4330722	LIFTER VALVE	12	
11	9	B7015004	S/A VALVE PUSH ROD	12	
12	10	X3507615 \$	SCREW,VALVE ADJUSTING	12	
13	13	B7015003 \$	S/A OF ROC SHAFT	1	
14	14	F7104522 \$	ROCKER BRACKET	1	
15	15	L9510812	"Standard Flanged Bolt - Hex - M8 X 1.25 CP X 60mm LONG X GR 8.8"	7	
16	16	F3576711 \$	Special Screw - Hex - M5 X 0.8CP X 8mm LONG X GR	2	
17	17	F4945910 \$	"Special Washer - IN - Single coil - 5.1mm ID X 9.2mm OD X 2.6mm T"	2	
18	18	F3586215 \$	Special Nut - Hex - M8 X 1FP X 6mm LONG X GR	12	
19	19	F3210322 \$	ROCKER ARM.INLET	6	
20	20	F3438415 \$	COLLAR	6	
21	21	F3210422 \$	ROCKER ARM.EXH.	6	
22	22	F7104622 \$	ROCKER BRACKET	5	
23	23	F7104722 \$	ROCKER BRACKET	1	

ASSEMBLY OF ENGINE INTAKE MANIFOLD - ALEIM18



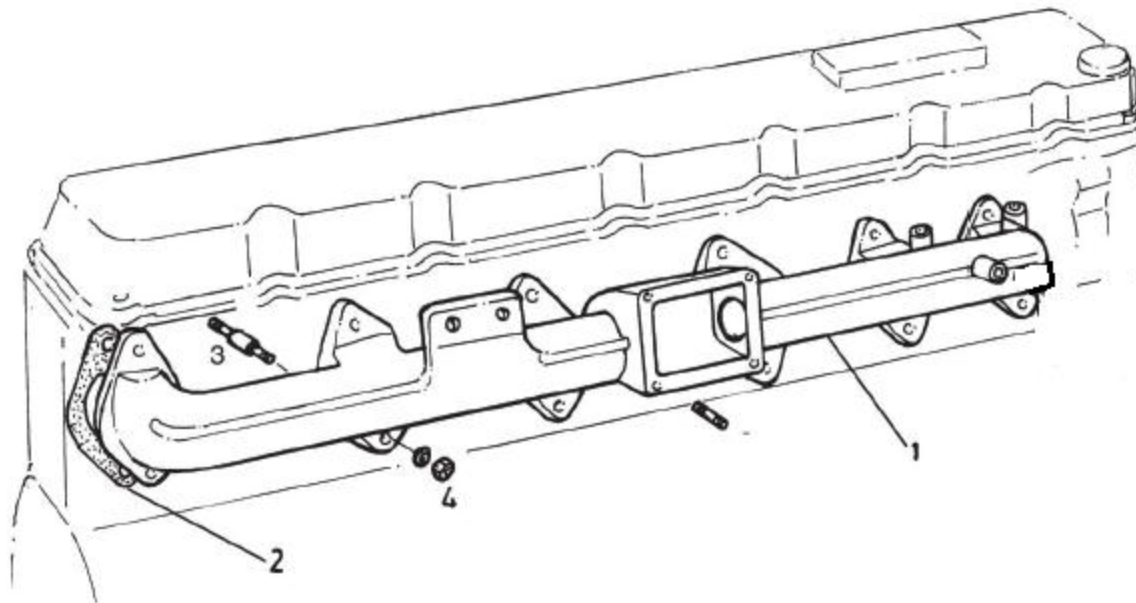


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ASSEMBLY OF ENGINE INTAKE MANIFOLD - ALEIM18

SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	X1803442	INTAKE MANIFOLD 6DTI E-1	1	
2	2	X3715115	STUD FOR A.I.PIPE MTG (REFER IVECO STD ALI HW 041)		
			(IVECO PT.NO.1672 9324W)	4	
3	3	X1706500	GASKET, AIR INTAKE PIPE	1	
4		FS405468	PLASTIC CAP	1	
5	5	L9010832	FLANGED SCREW M8 X 1.25 X 32	1	
6	6	L9510810	FLANGED BOLT - M8X1.25X50L	5	
7	7	L4011200	WASHER 12 DIA PLATED	1	
8	8	L2021215	SCREW M12 X 15 X 1.5 FP	1	
9	9	L9510812	FLANGED BOLT -M8X1.25X60L	8	
10	10	L9110818	FLANGED NUT - M8X1.25	4	
11		X1711600	GASKET FOR INTAKE MANIFOLD	1	

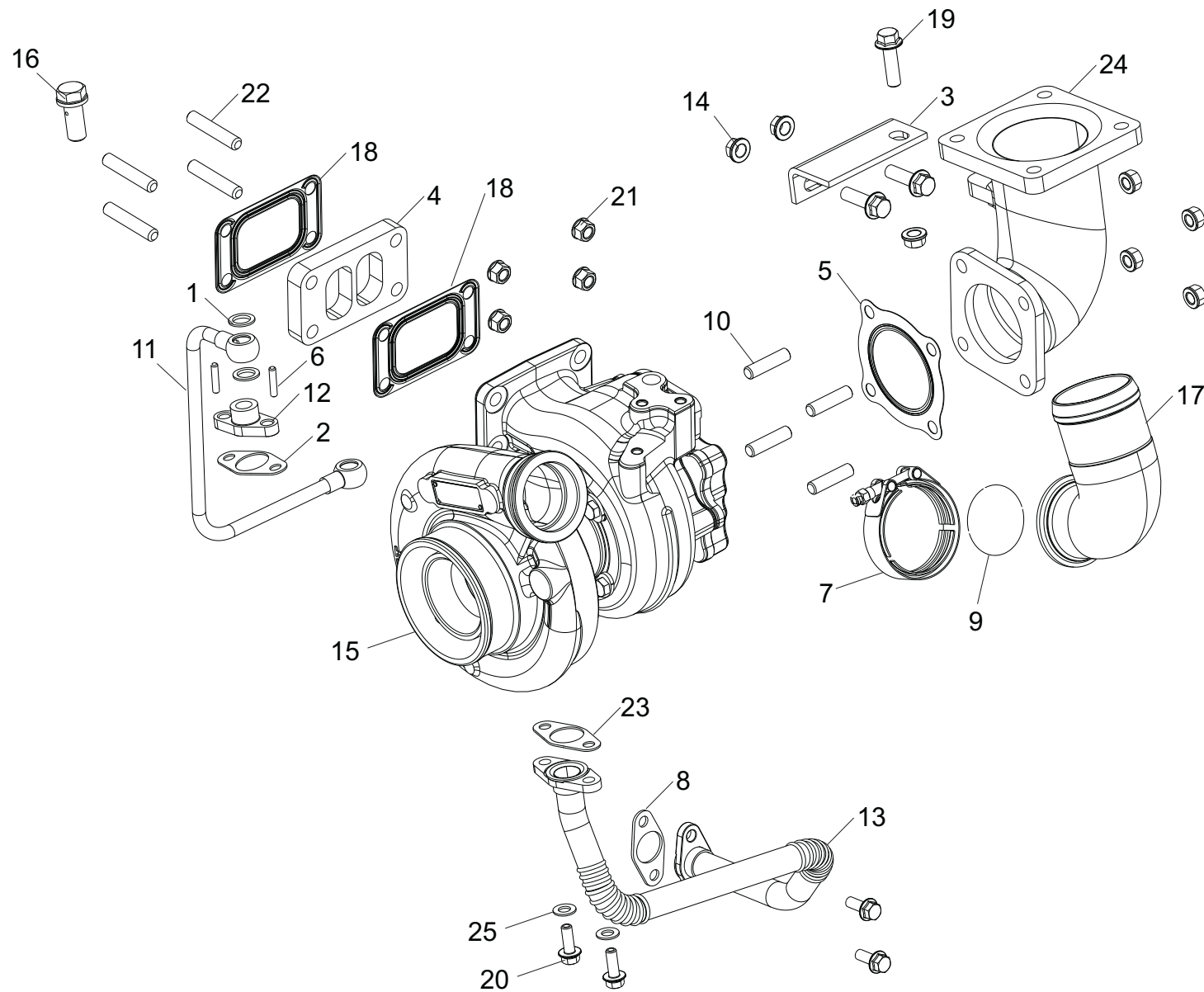
EXHAUST MANIFOLD - HAEEM2/7





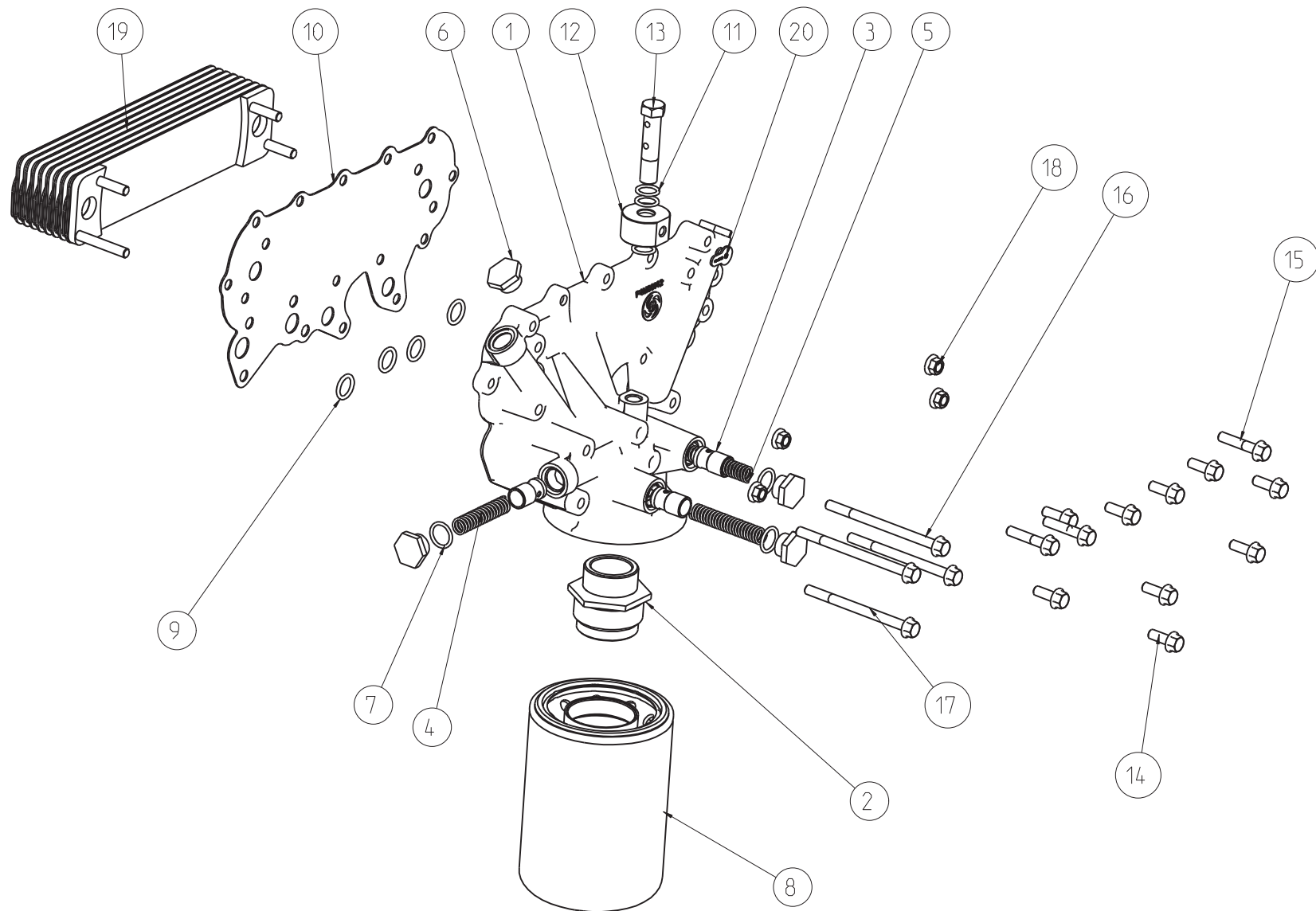
EXHAUST MANIFOLD - HAEEM2/7					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	X1816922	EXHAUST MANIFOLD	1	
2	2	X1700111	SPECIAL GASKET FOR EXHAUST MANIFOLD-CYLINDER HEAD	6	
3	3	F3786215	STUD	4	
4	4	F7F00115	HEX NUT FLANGED M10X1.25	12	
5		F1200410	SPACER	1	
6		X1203515	SPACER, LONGER STUD	10	

ASSEMBLY OF ENGINE TURBOCHARGER - HAESC51



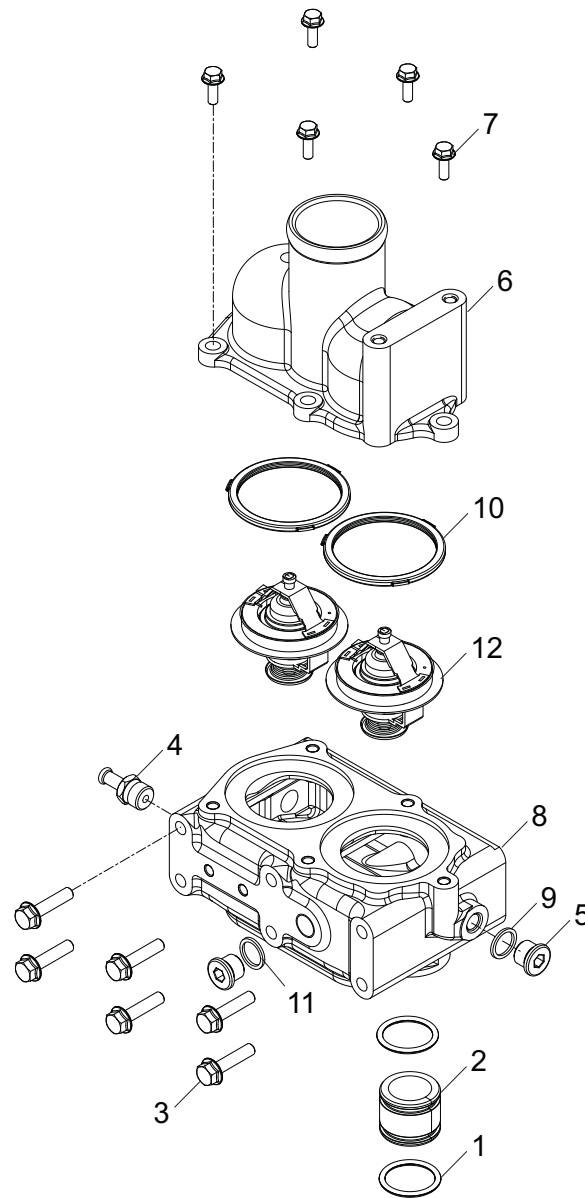
ASSEMBLY OF ENGINE TURBOCHARGER - HAESC51					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F4930430	SPECIAL WASHER - MM - PLAIN - 14MM ID X 18.9MM OD X 1.5MM T	2	
2	2	F1762300	GASKET,OIL INLET	1	
3	3	F1Z00514	BRACKET-EXHAUST ELBOW STAY	1	
4	4	F5Z00222	T/C DISTANCE PIECE	1	
5	5	F9B00100	GASKET-TURBO OUTLET TO EXH. ELBOW	1	
6	6	L9010818	FLANGED SCREW - HEX - M8 X 1.25 CP X 18MM LONG X GR 8.8	2	
7	7	X0806710	CLIP,TC COMPRESSOR OUTLET PIPE	1	
8	8	X1710800	GASKET OIL OUTLET	1	
9	9	X2706150	O RING 53.64 X 2.62	1	
10	10	F3769515	STUD - COVER TIMER ,STARTER MOTOR MOUNTING M10	4	
11	11	B4K01301	S/A OF TURBO OIL INLET PIPE	1	
12	12	F0163815	OIL INLET ADAPTOR	1	
13	13	B4K01302	S/A OF TURBO OIL DRAIN PIPE	1	
14	14	L9111018	FLANGED NUT - HEX - M10 X 1.5 CP X 10MM LONG X GR 8	2	
15	15	X3M00100	TURBOCHARGER	1	
16	16	X3101115	BANJO BOLT	1	
17	17	X1907542	TC COMPRESSOR OUTLET ELBOW PIPE-COMPRESSOR TO CAC INLET	1	
18	18	X1702500	GASKET, T/C TO EXHAUST MANIFOLD	2	
19	19	L9011035	FLANGED SCREW - HEX - M10 X 1.5 CP X 35MM LONG X GR 8.8	3	
20	20	H2110820	SCREW - HEX SOCKET CAP - M8 X 1.25 CP X 20MM LONG X GR 8.8	2	
21	21	F7F00115	SPECIAL FLANGED NUT - HEX - M10 X 1.25 FP X 9.6MM LONG X GR	12	
22	22	X3504311	SPECIAL STUD FOR EXHAUST MANIFOLD (COPPER PLATED).	4	
23	23	F1762400	TURBO DP GASKET	1	
24	24	F1300622	EXHAUST ELBOW	1	
25	25	F4945210	SPECIAL WASHER - MM - SINGLE COIL - 8.2MM ID X 15.4MM OD X 4MM T	2	

ASSY. OF OIL COOLER WITH SPIN-ON FILTER - ALEOC14



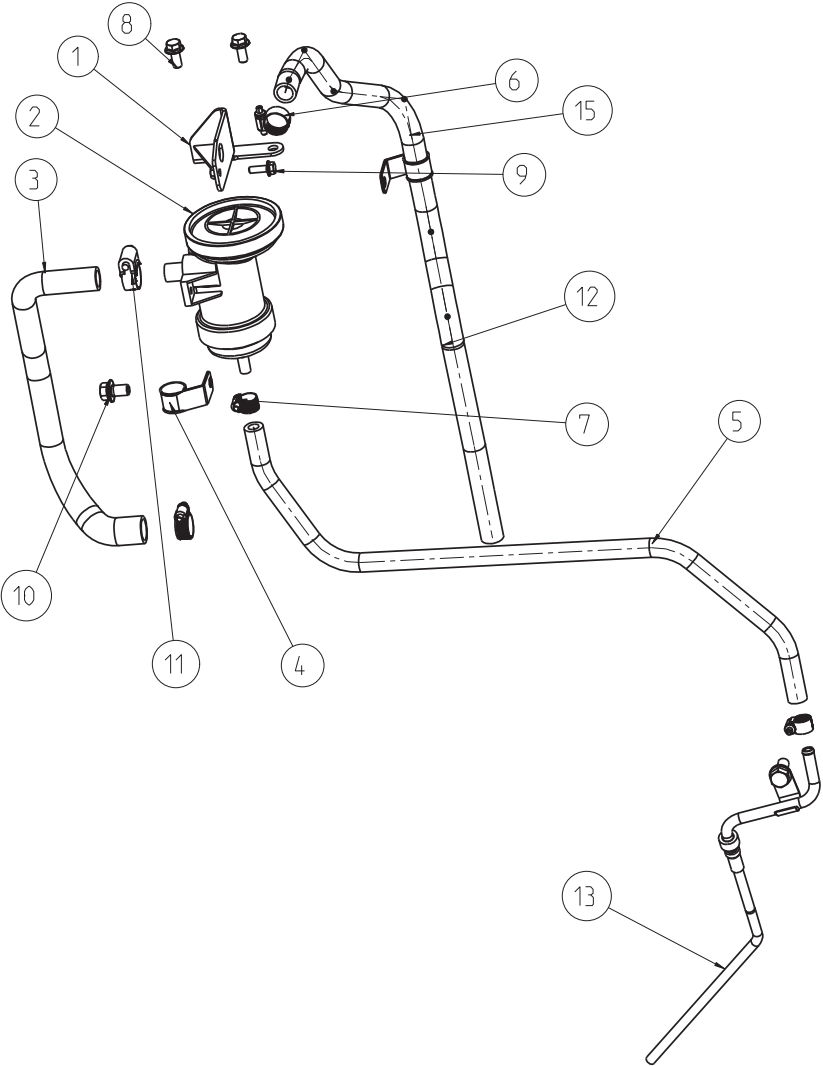
ASSY OF COOLER WITH FILTER AND SENDER UNIT - ALEOC14					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B3Z01801	S/A OF OIL COOLER CASE (consists of itemes marked with \$)	1	
2		B7015405 \$	S/A OF CASE OIL COOLER WITH ADAPTOR (CONSITS OF ITEMS MARKED WITH #)	1	
3	1	F4M00142 #	CASE OIL COOLER	1	
4	2	F0B01015 #	ADAPTOR, OIL FILTER	1	
5	3	F4231711 \$	VALVE FILTER SAFETY	3	
6	4	F3639410 \$	SPRING OIL VALVE	2	
7	5	F3639510 \$	SPRING OIL VALVE	1	
8	6	F3147115 \$	PLUG VALVE SPRING	5	
9	7	F2749700 \$	O RING 17.6 X 2.6	5	
10	8	F7A01500	OIL FILTER - FLEETGUARD PART NO - LF16238	1	
11	9	F2702550	O RING 19 X 3	4	
12	10	X1707700	OIL COOLER GASKET	1	
13	11	F4935530	SPECIAL WASHER - MM - PLAIN - 14.5MM ID X 20MM OD X 2MM T	3	
14	12	F1986715	CONNECTOR PIPE	1	
15	13	F3587011	DOUBLE BANJO BOLT-H-SERIES	1	
16	14	L9010822	FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8	9	
17	15	L9510808	FLANGED BOLT - HEX - M8 X 1.25 CP X 40MM LONG X GR 8.8	3	
18	16	L9510823	FLANGED BOLT - HEX - M8 X 1.25 CP X 115MM LONG X GR 8.8	2	
19	17	L9510821	FLANGED BOLT - HEX - M8 X 1.25 CP X 105MM LONG X GR 8.8	2	
20	18	L9120818	STANDARD FLANGED NUT - HEX - M8 X 1 FP X 8MM LONG X GR 8	4	
21	19	X7821000	S/A OF ELEMENT , OIL COOLER	1	
22		X7809300	PRESSURE SENDER	1	

ASSY OF ENGINE THERMOSTAT - ALETH16



ASSY OF ENGINE THERMOSTAT - ALETH16					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F2734300	O RING 1.226 X 0.139	2	
2	2	X1900522	CONNECTOR PIPE, THERMOSTAT HOUSING	1	
3	3	L9510826	FLANGED BOLT - HEX - M8 X 1.25 CP X 130MM LONG X GR 8.8	6	
4		B4L05401	SUB ASSY OF ENGINE THERMOSTAT (consists of items marked with \$)	1	
5	4	X0148515 \$	ADAPTOR	1	
6	5	F3144715 \$	PLUG	1	
7	6	F5J01542 \$	THERMOSTAT COVER, VERTICAL OUTLET	1	
8	7	L9010822 \$	FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8	5	
9	8	X1818022 \$	THERMOSTAT HOUSING, FOR WATER COOLED COMPRESSOR	1	
10	9	F4933140 \$	SPECIAL WASHER - MM - PLAIN - 16.5MM ID X 22MM OD X 1.5MM T	1	
11	10	F1761400 \$	GASKET THERMOSTAT	2	
12	11	F4922100 \$	SPECIAL WASHER - MM - PLAIN - 12.2MM ID X 18MM OD X 1MM T	1	
13	12	X7494500 \$	THERMOSTAT	1	
14	13	F3140115 \$	PLUG M16	1	

BREATHER SYSTEM ASSEMBLY - HAENCB7

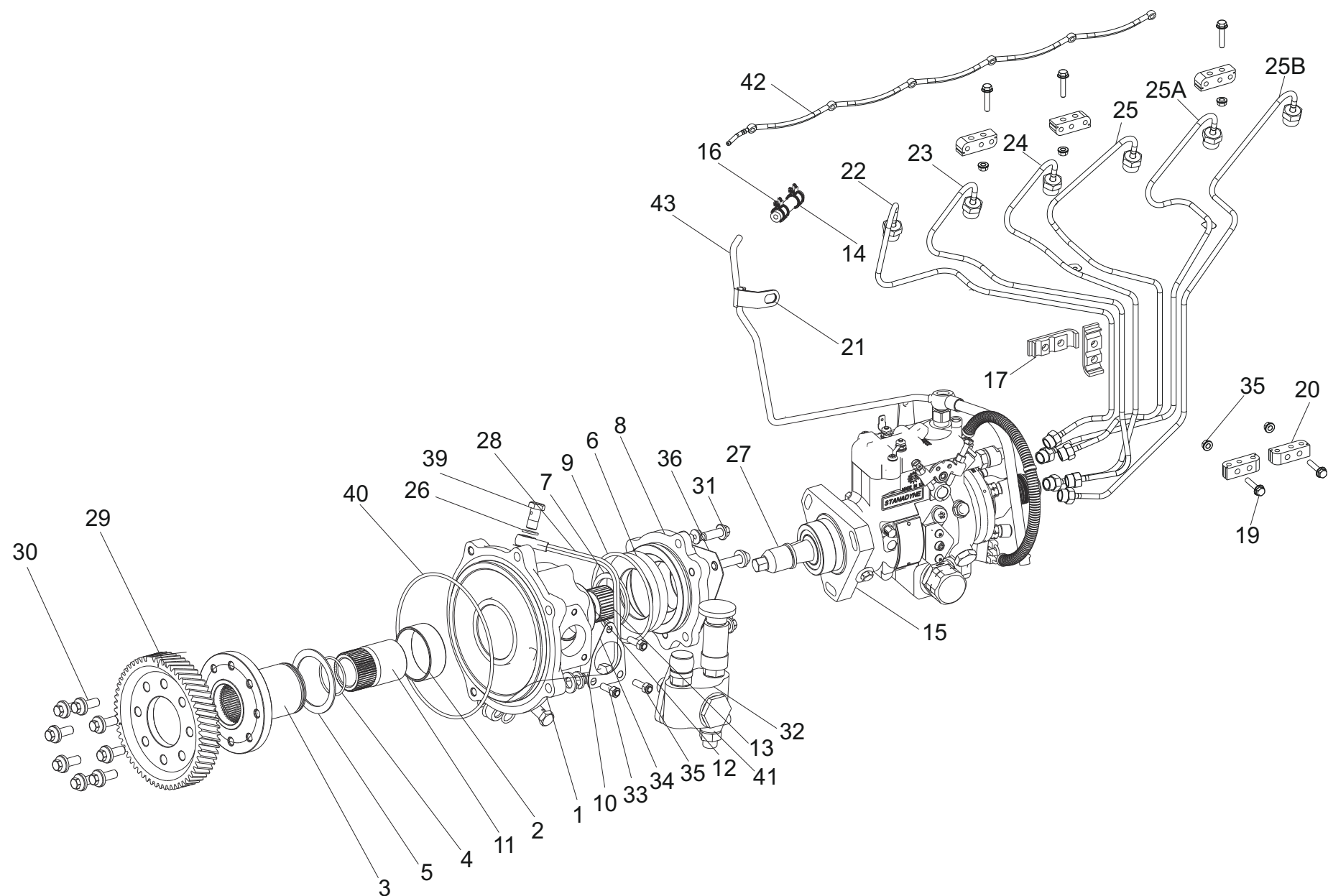




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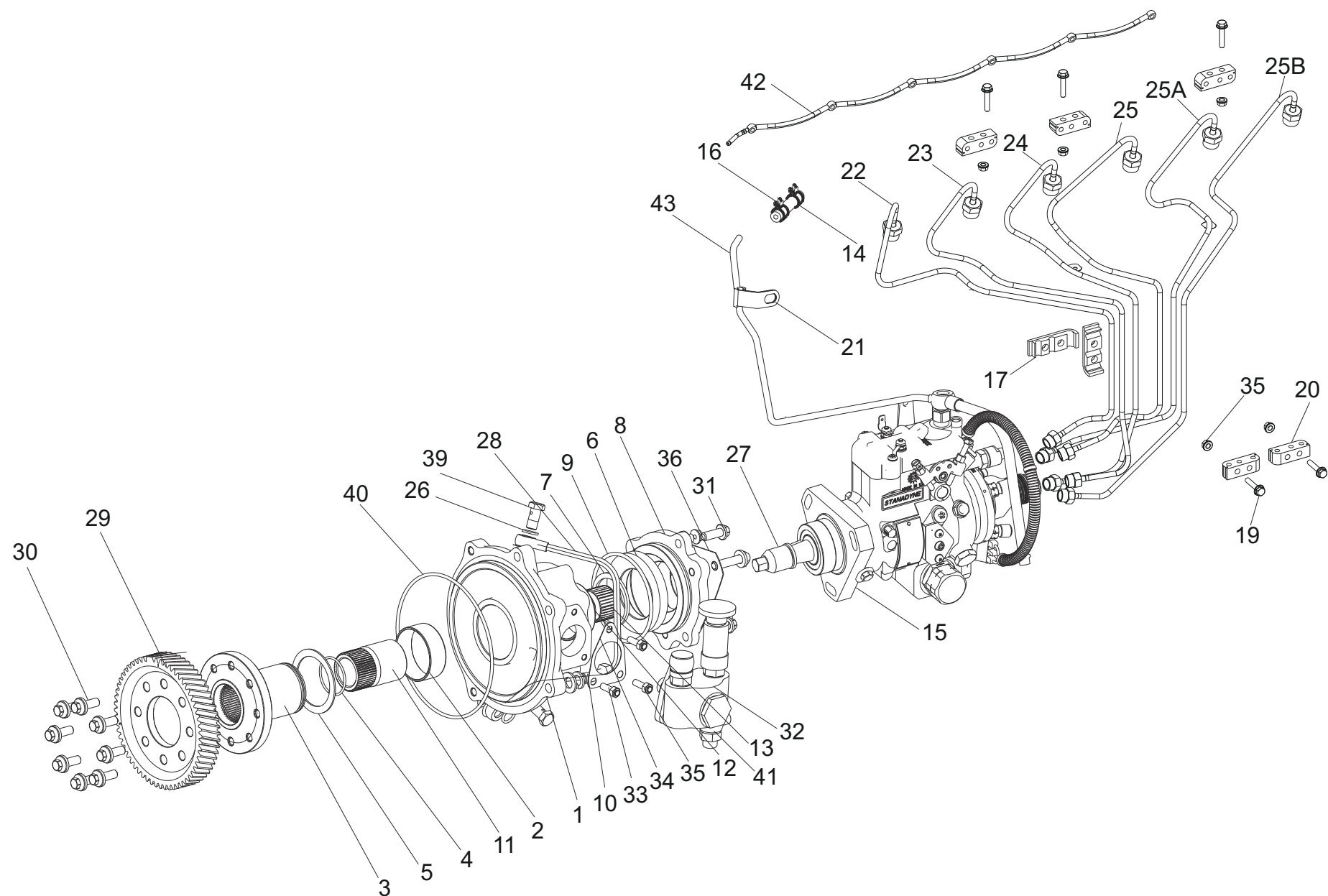
BREATHER SYSTEM ASSEMBLY - HAENCB7					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	F1Z01514	OIL SEPARATOR MOUNTING BRACKET	1	
2	2	X7492800	OIL SEPARATOR	1	
3	3	F8P22058	HOSE, VENT	1	
4	4	X0805910	CLIP, OIL SEPARATOR HOSE	2	
5	5	X1936750	HOSE,OIL DRAIN	1	
6	6	X0806110	CLAMP, BREATHER HOSE AT OIL SEPRATOR END	2	
7	7	X0806210	CLAMP, FOR OIL SEPRATOR DRAIN HOSE	2	
8	8	L9010818	FLANGED SCREW - M8X1.25X18L	2	
9	9	L9010618	FLANGED SCREW M6X1X18	1	
10	10	L9010812	FLA SCREW M10X1.5X16 8.8 GR	1	
11	11	F8200310	STAINLESS STEEL JUBILEE CLIP	1	
12	12	X1936550	HOSE, OIL SEPRATOR OUTLET	1	
13	13	B4N00201	S/A OF OIL DRAIN PIPE - FROM OIL SEPARATOR.	1	

ASSEMBLY OF ENGINE FUEL INJECTION EQUIPMENT - HAFIE46



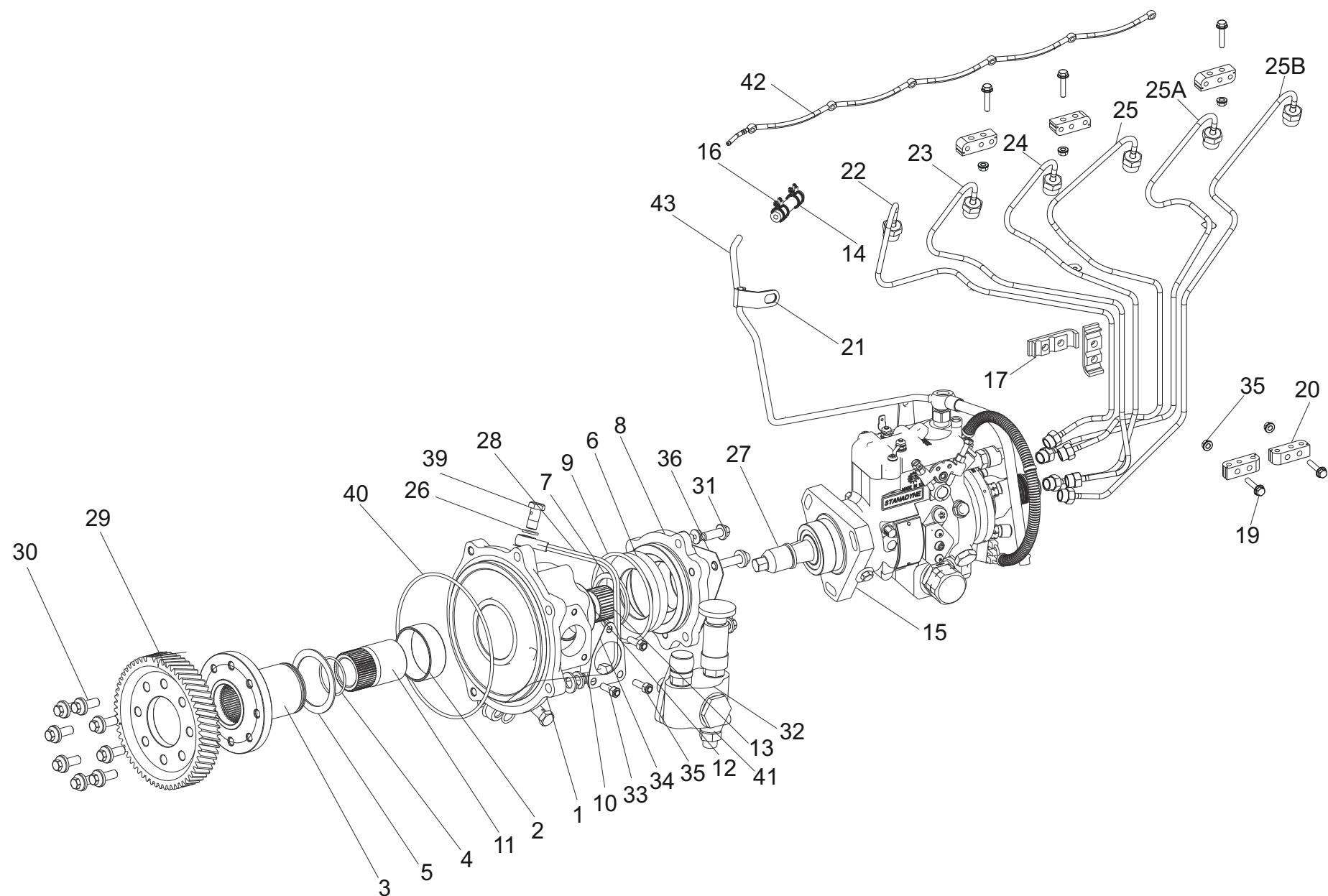
ASSEMBLY OF ENGINE FUEL INJECTION EQUIPMENT - HALFIE46					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B5H04108	S/A OF FIP DRIVE (consists of items marked with #)	1	
2		B8742503 #	S/A OF HOUSING, INJ.PUMPDRIVE (consists of items marked with %)	1	
3	1	X1102322 %	COVER, INJ. PUMP DRIVE	1	
4	2	X0501330 %	BUSH	2	
5	3	X3307811 #	SHAFT, INJECTION PUMP DRIVE	1	
6	4	X0705510 #	CIRCLIP	1	
7	5	X7600410 #	SPECIAL WASHER - MM - THRUST - 50.1MM ID X 64MM OD X 1.5MM T	1	
8	6	X4300211 #	ECCENTRIC DISC, FEEDPUMP DRIVE	1	
9	7	X0705410 #	SPECIAL CIRCLIP - EXTERNAL - 50 X 2.97	1	
10	8	F8R00922 #	HOUSING - FIP DRIVE END	1	
11	9	F2749200 #	O RING 81.2 X 3.3	1	
12	10	X3503111 #	SPECIAL BOLT - HAMMER DRIVE - M8 X 1.25 CP X 0MM LONG X GR 10.9	3	
13	11	X3223015 #	COUPLING, INJ. PUMP DRIVE	1	
14		B5H08701	S/A OF FUEL INJECTION PUMP (consists of items marked with \$)	1	
15	12	X0705310 #	CIRCLIP	1	
16	13	X1600515 \$	SPLINED BUSH, FIP	1	
17	14	F1939660	HOSE FUEL	1	
18	15	FHL00800 \$	FUEL INJECTION PUMP	1	
19	16	F0838610	CLIP	2	
20	17	B7015812	S/A OF CLIP	5	
21		L9010630	FLANGED SCREW - HEX - M6 X 1 CP X 30MM LONG X GR 8.8	5	
22	19	L9010622	FLANGED SCREW - HEX - M6 X 1 CP X 22MM LONG X GR 8.8	3	
23	20	B7015811	S/A OF CLIP WO6D	5	
24	21	B8249509	S/A OF CLIP	1	
25		B5H08302	HIGH PRESSURE PIPE ASSEMBLY (consists of items marked with #)	1	

ASSEMBLY OF ENGINE FUEL INJECTION EQUIPMENT - HAFIE46



ASSEMBLY OF ENGINE FUEL INJECTION EQUIPMENT - HAFIE46					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
26	22	B5H08303 #	S/A OF INJECTOR PIPE NO.1	1	
27	23	B5H08304 #	S/A OF INJECTOR PIPE NO.2	1	
28	24	B5H08305 #	S/A OF INJECTOR PIPE NO.3	1	
29	25	B5H08306 #	S/A OF INJECTOR PIPE NO.4	1	
30	25A	B5H08307 #	S/A OF INJECTOR PIPE NO.5		
31	25B	B5H08308 #	S/A OF INJECTOR PIPE NO.6		
32	26	X7435600	SPECIAL WASHER - MM - PLAIN - 10MM ID X 17MM OD X 1MM T	6	
33	27	X4902830 \$	SPECIAL WASHER - MM - PLAIN - 31MM ID X 40MM OD X 1.5MM T	2	
34	28	B8742504	S/A OF PIPE, OIL	1	
35	29	X1603411	GEAR,FUEL INJECTION PUMP DRIVE	1	
36	30	L9010820	FLANGED SCREW - HEX - M8 X 1.25 CP X 20MM LONG X GR 8.8	8	
37	31	L9010832	FLANGED SCREW - HEX - M8 X 1.25 CP X 32MM LONG X GR 8.8	3	
38	32	X7462300	FEED PUMP (ENGINE DRIVEN)	1	
39	33	X3712515 %	STUD	3	
40	34	X1706600	GASKET, FEEDPUMP	1	
41	35	L9110618	STANDARD FLANGED NUT - HEX - M6 X 1 CP X 6MM LONG X GR 8	5	
42	36	X1706700	GASKET, FOR FIP	1	
43	37	X3714015	STUD - M8X1.25 - 43 MM LONG	3	
44	38	X4904510	SPECIAL WASHER - MM - PLAIN - 8.3MM ID X 20MM OD X 3MM T	3	
45	39	F7102710	EYE	2	
46	40	F2702450	O RING 142.5 X 3	1	
47	41	X3965600	STRAINER ASSY.	1	
48	42	B8764909	S/A OF INJECTOR LEAK OFF PIPE	1	
49	43	B7049507	FUEL OVERFLOW PIPE TO BE USED IN 100 AND 125 KVA	1	
50		L9010822	FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8	1	

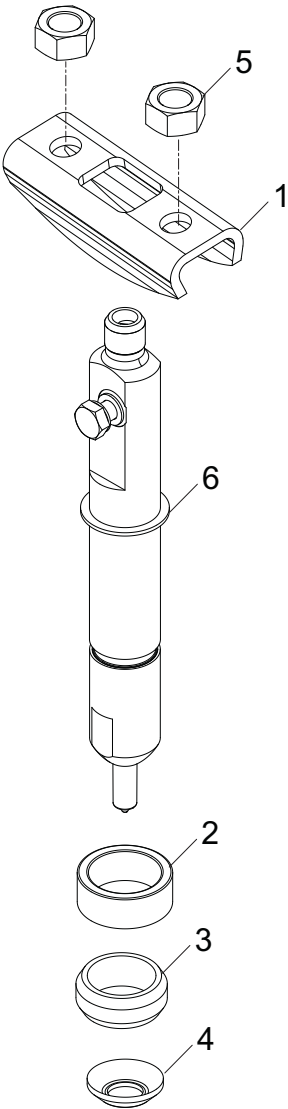
ASSEMBLY OF ENGINE FUEL INJECTION EQUIPMENT - HAFIE46





ASSEMBLY OF ENGINE FUEL INJECTION EQUIPMENT - HAFIE46

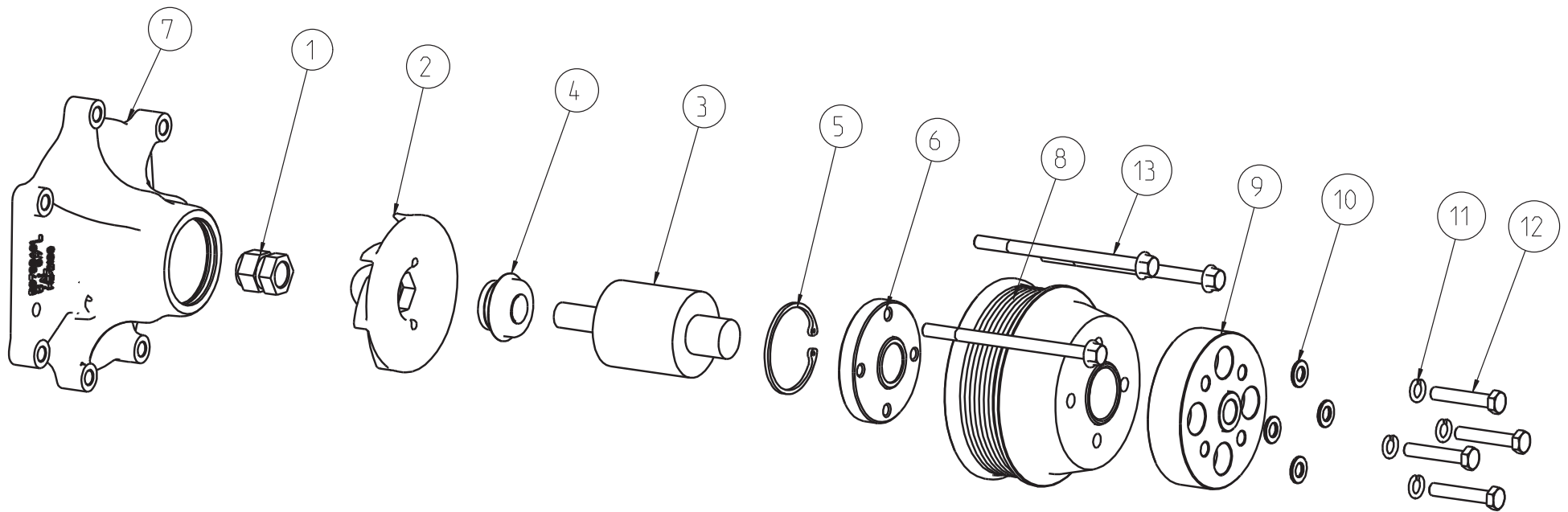
ASSEMBLY OF FUEL INJECTORS - ALENH13





ASSEMBLY OF FUEL INJECTORS - ALENH13					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F0131614	ADAPTOR NOZZLE HOLDER	6	
2	2	FG500815	SPACER	6	
3	3	FE503358	RUBBER SLEEVE	6	
4	4	X1707800	GASKET NOZZLE HOLDER	6	
5	5	L9110818	STANDARD FLANGED NUT - HEX - M8 X 1.25 CP X 8MM LONG X GR 8	12	
6	6	FKS01400	INJECTOR ASSEMBLY	6	

ASSY OF WATER PUMP WITH POLY-V PULLEY - HAEWP21

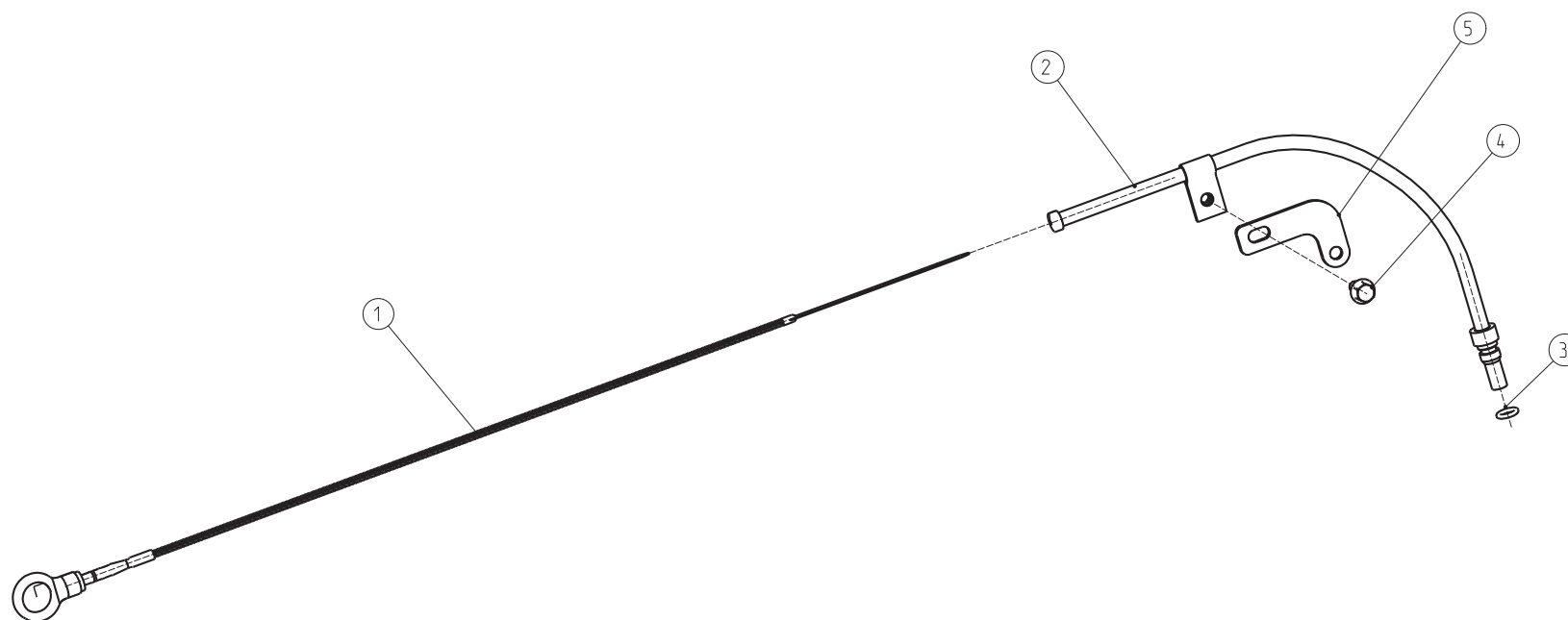




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ASSY OF WATER PUMP WITH POLY-V PULLEY - HAEWP21					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1		B8763401	SUB ASSEMBLY OF COOLANT PUMP	1	
2	1	X1225715	BOSS WATERPUMP IMPELLER	1	
3	2	X1500260	100 DIA PLASTIC IMPELLER	1	
4	3	B8760403	WATERPUMP SPINDLE BEARING	1	
5	4	B9708904	WATER PUMP SEAL ASSEMBLY	1	
6	5	X0705610	CIRCLIP COOLANT PUMP	1	
7	6	X1226115	HUB COOLANT PUMP	1	
8	7	X1813822	CASING - COOLANT PUMP	1	
9	8	FC803122	WATER PUMP PULLEY POLY V	1	
10	9	F1202742	FAN ADAPTOR	1	
11	10	L4010800	WASHER 8 DIA PLATED	4	
12	11	L4110800	SC WASHER 8 DIA PLATED	4	
13	12	L1010809	HEX BOLT M8X1.25X45 8.8 GR	4	
14	13	L9510825	FLANGED BOLT - M8X1.25X125	3	

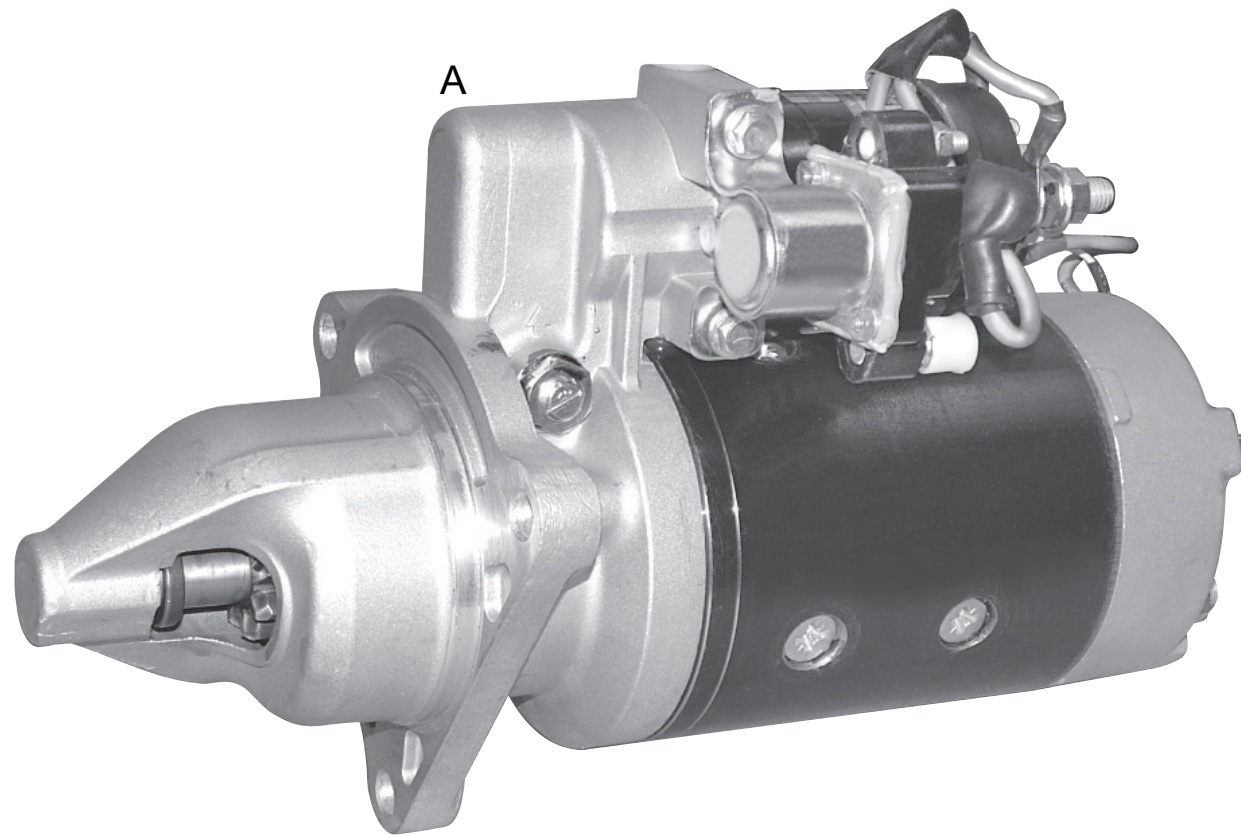
OIL LEVEL GUAGE ASSEMBLY - HAOLG17





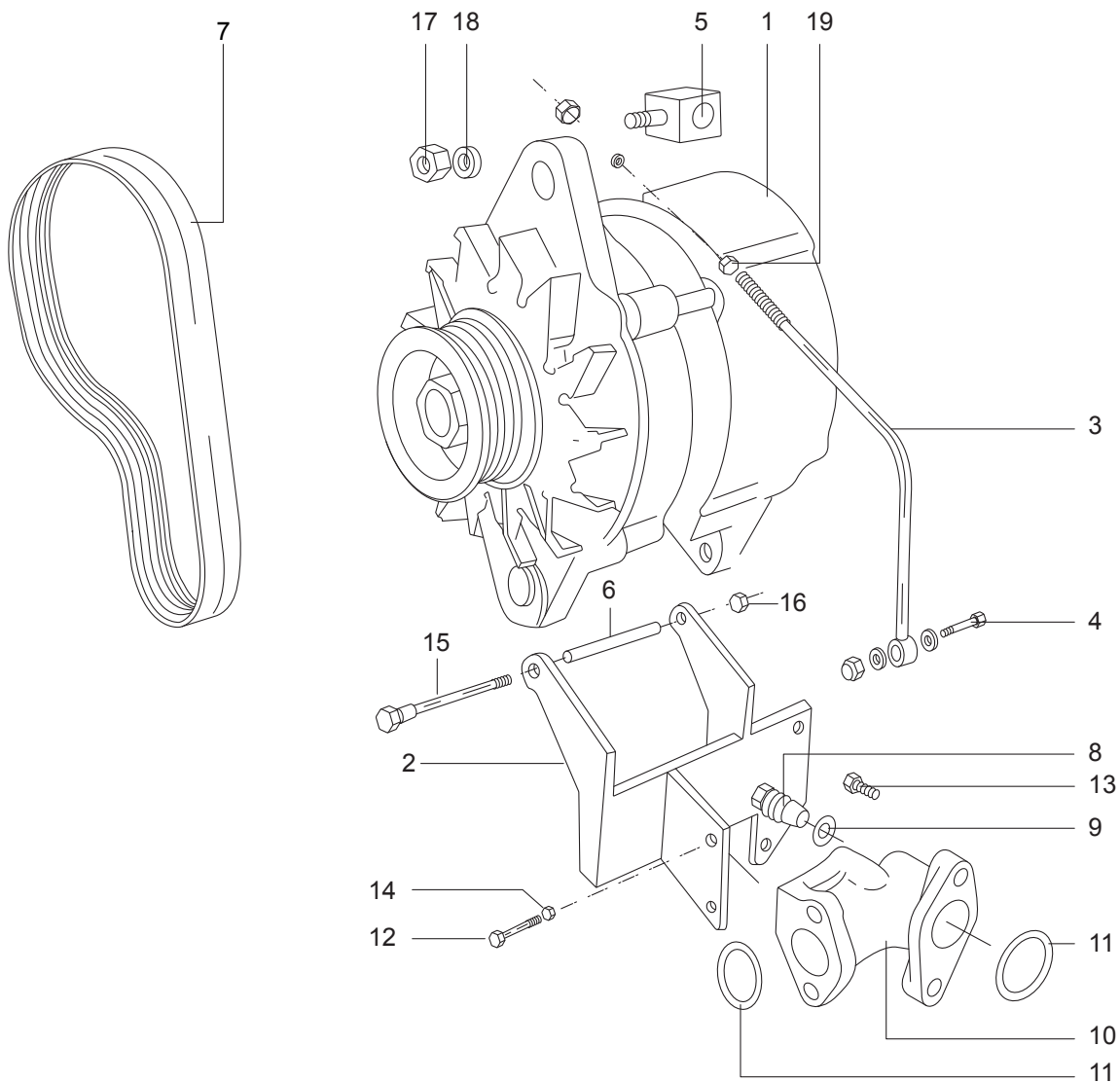
OIL LEVEL GUAGE ASSEMBLY - HAOLG17					
SL. NO.	ILL. NO.	PART NO.	DESCRIPTION	QTY	REMARKS
1	1	B6E01201	S/A OF DIPSTICK	1	
2	2	B8731307	S/A OF DIPSTICK GUIDE	1	
3	3	F2702050	O RING HOLDER SEAL	1	
4	4	L9010818	FLANGED SCREW - M8X1.25X18L	1	
5	5	X8010110	BRACKET, DIPSTICK GUIDE	1	

STARTER MOTOR ASSEMBLY -ALSM15/4



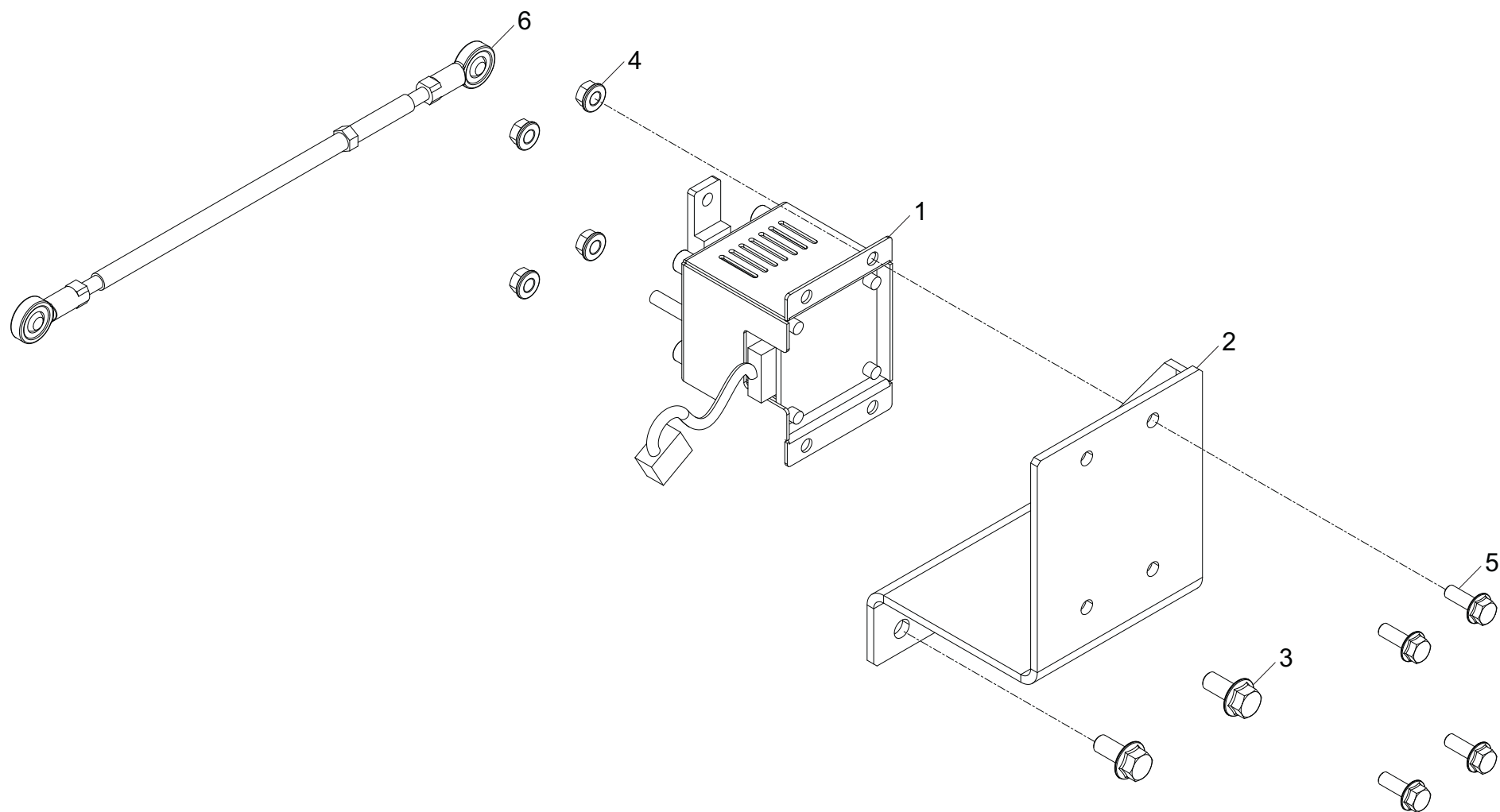
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ALTERNATOR - HADD8/5



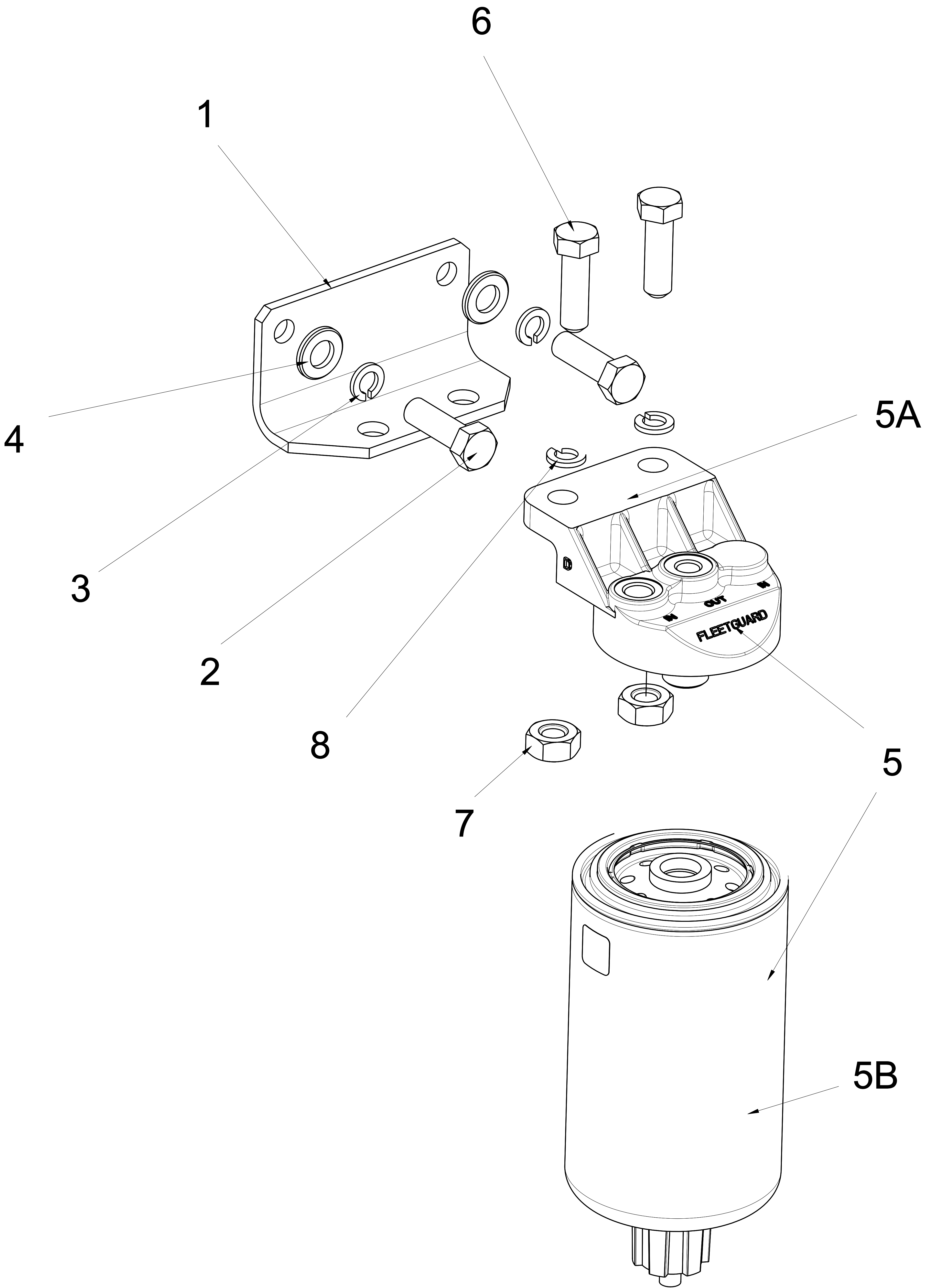
ASSY OF 12V 65A ALTERNATOR FOR 125KVA GENSET - HADD8/5					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X7490100	12 V 65 AMPS ALTERNATOR FROM LTVS (POLY V)	1	
2	1	X7485900	12 V 65 AMPS POLY V PULLEY ALTERNATOR FROM BOSCH (ALTERNATE PART)	1	
3	2	X7102622	ALTERNATOR BRACKET	1	
4	3	X3503511	SPECIAL BOLT - L-BEND LINK - M12 X 1.75 CP X 235MM LONG X GR	1	
5	4	F3583015	SPECIAL SCREW	1	
6	5	F0130711	ADAPTOR	1	
7		L9110818	STANDARD FLANGED NUT - HEX - M8 X 1.25 CP X 8MM LONG X GR 8	1	
8	6	F0535915	BUSH	1	
9	7	X0301650	BELT, 8PK 1250 (FENNER)	1	
10	7	X0301750	BELT, 8PK 1250 (ROULUNDS) - ALTERNATE PART	1	
11		B9269603	S/A OF COOLANT ELBOW,WITHOUT WATER FILTER (CONSISTS OF ILL NO 8,9 &10)	1	
12	8	X4202111	VALVE (COOLANT ELBOW)	1	
13	9	F2701850	O RING 13.8 X 2.4	1	
14	10	FB500722	PIPE, COOLANT PUMP OUTLET	1	
15	11	X2703550	O RING 50.7 X 3.5	2	
16	12	L9011027	FLANGED SCREW - HEX - M10 X 1.5 CP X 27MM LONG X GR 8.8	3	
17	13	L9511021	FLANGED BOLT - HEX - M10 X 1.5 CP X 105MM LONG X GR 8.8	2	
18	14	L4111000	STANDARD WASHER - MM - SINGLE COIL - 10MM ID	1	
19		X4904510	SPECIAL WASHER - MM - PLAIN - 8.3MM ID X 20MM OD X 3MM T	1	
20	19	L3011218	STANDARD NUT - HEX - M12 X 1.75 CP X 10.8MM LONG X GR 8	2	
21		F3572711	SPECIAL BOLT - HEX - M12 X 1.75 CP X 130MM LONG X GR	1	
22		X3714015	STUD - M8X1.25 - 43 MM LONG	2	
23		F4922700	WASHER - MM - SINGLE COIL - 10.8MM ID X 18.1MM OD X 2.6MM T	1	
24		L9510813	FLANGED BOLT - HEX - M8 X 1.25 CP X 65MM LONG X GR 8.8	1	
25		L9121018	FLANGED NUT - HEX - M10 X 1.25 FP X 10MM LONG X GR 8	1	

ASSEMBLY OF ENGINE PUMP CONTROL UNIT - ALEPC13



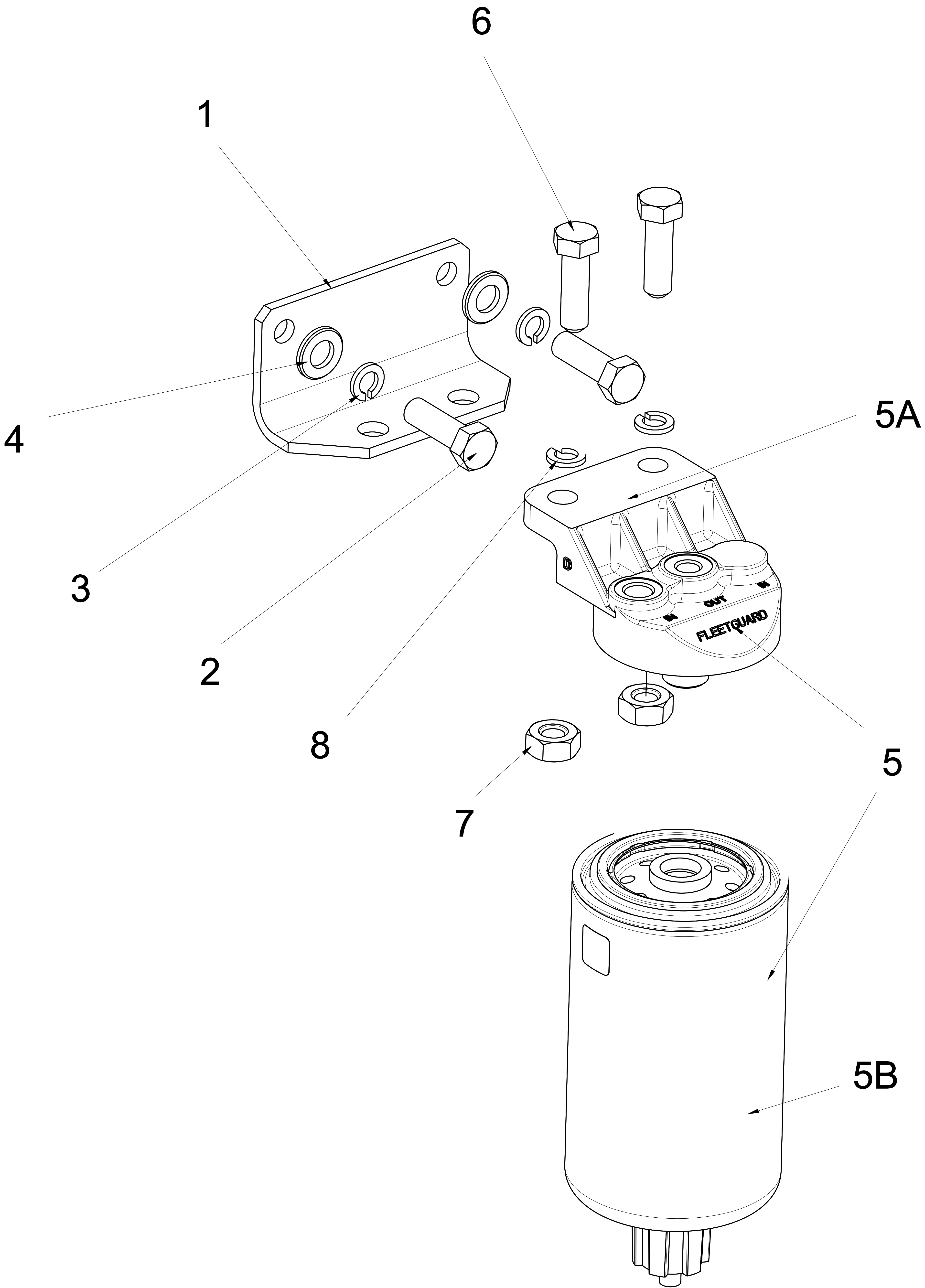
ASSEMBLY OF ENGINE PUMP CONTROL UNIT - ALEPC13					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F0A02300	ACTUATOR (SEDEMAC MAKE)	1	
2	2	F5W00514	ACTUATOR BRACKET	1	
3	3	L9011020	FLANGED SCREW - HEX - M8 X 1.25 CP X 20MM LONG X GR 8.8	2	
4	4	L9110618	FLANGED NUT - HEX - M6 X 1 CP X 6MM LONG X GR 8	4	
5	5	L9010620	FLANGED SCREW - HEX - M6 X 1 CP X 20MM LONG X GR 8.	4	
6	6	B4E00601	ACTUATOR LINKAGE	1	
				1	

FUEL INTAKE SYSTEM (10007518)



FUEL INTAKE SYSTEM (10007518)					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F2F00514	FUEL FILTER MOUNTING BRACKET	1	
2	2	L2011030	SET SCREW M10 X 1.5 X 30 CP PLATED	2	
3	3	L4111000	SC WASHER 10 DIA PLATED	2	
4	4	L4011000	PL WASHER 10 MM	2	
5	5	B4464901	HOSE ASSY - FEED PUMP TO FUELFILTER CUM W/S (Both Side M14 Banjo)	1	
6	5A	F8835200	FUEL FILTER HEAD ASSY	1	
7	5B	F8835100	FUEL FILTER ELEMENT	1	
8	6	L1050814	Hex Bolt M14x1.75x50 8.8 GR	2	
9	7	L3050811	NUT M14 X PC 8 X 1.75 CP PLATED	2	
10	8	L4100800	SC WASHER 14 DIA PLATED	2	
11		F8824500	FUEL STRAINER	1	
12		10004911	HOSE - Fuel Filter to FIP (Both Side M12 Banjo)	1	
13		F3131415	BANJO CONNECTION - M14	2	
14		F4930430	WASHER 17.9 OD X 14.2 ID X 1.5 t	4	
15		F3590715	BANJO BOLT -M12	2	
16		F4922100	WASHER 18 OD X 12.2 ID X 1 t	4	
17		F8474714	STRAINER BRACKET	1	
18		F0804814	C-CLAMP	1	
19		L2010615	SCREW M6 X 15 X 1 CP PLATED	2	
20		L3010618	NUT M6 X PC 8 X 1 CP PLATED	2	
21		L4110600	SC WASHER 6 DIA PLATED	2	
22		B4461903	HOSE ASSY - STRAINER TO FEED PUMP	1	
23		B3J00503	HOSE - FUEL TANK TO FUEL STRAINER	2	
24		F8200110	JUPITOR HOSE CLAMP	3	
25		L2011020	SETSCREW M10X1.5X20	1	

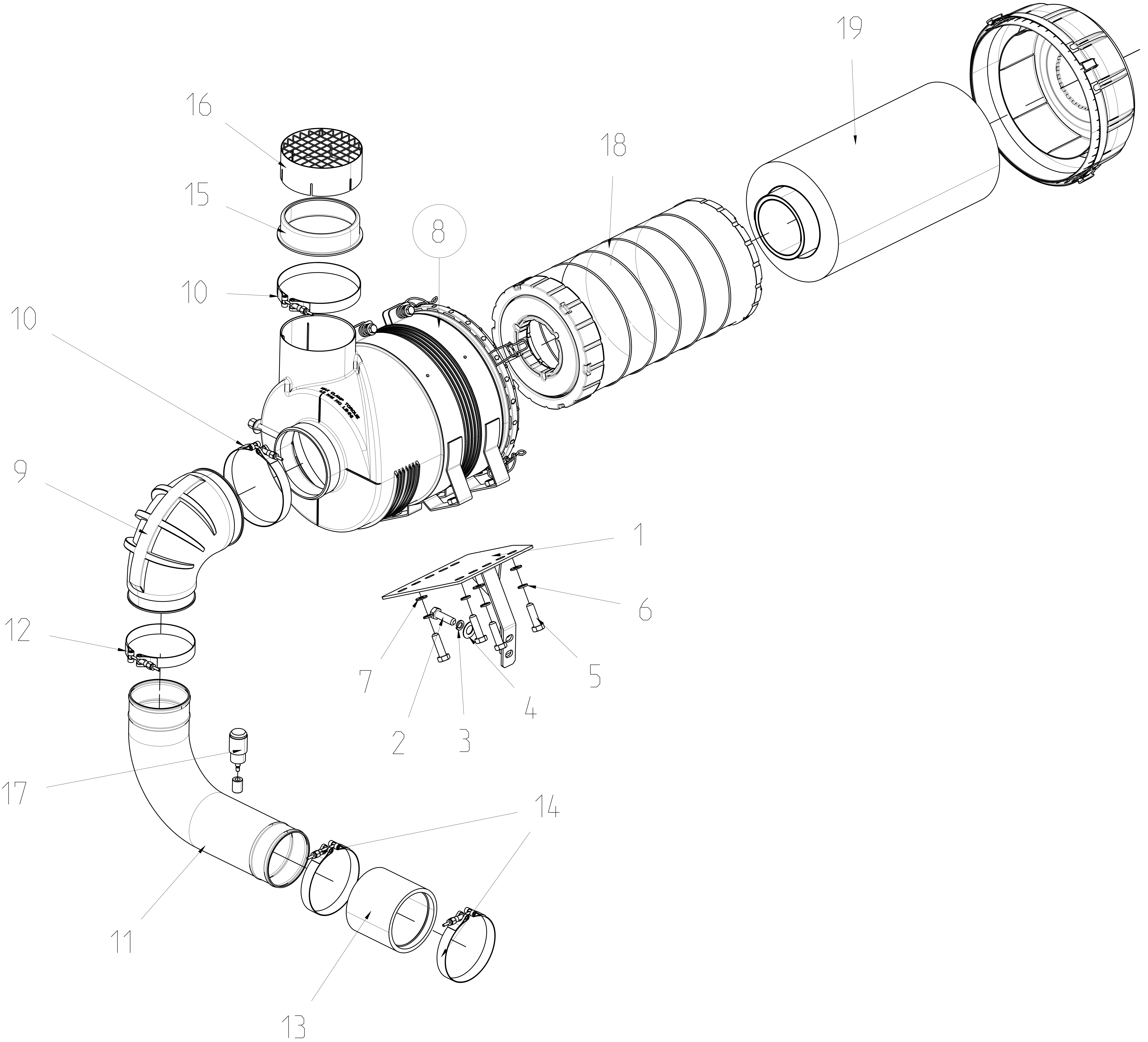
FUEL INTAKE SYSTEM (10007518)





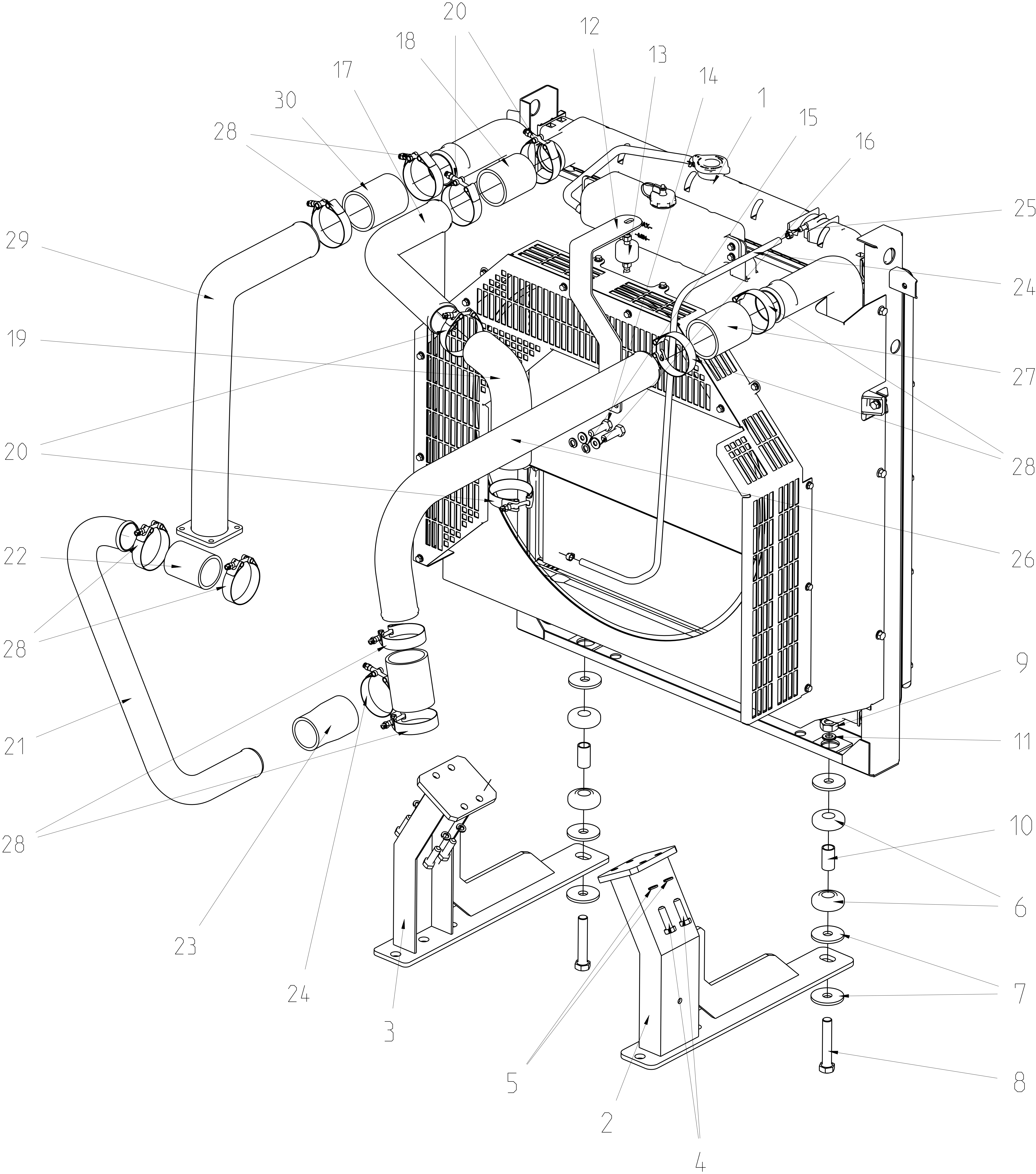
FUEL INTAKE SYSTEM (10007518)					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
26		L4111000	SC WASHER 10 DIA PLATED	1	

AIR INTAKE SYSTEM - 10005574



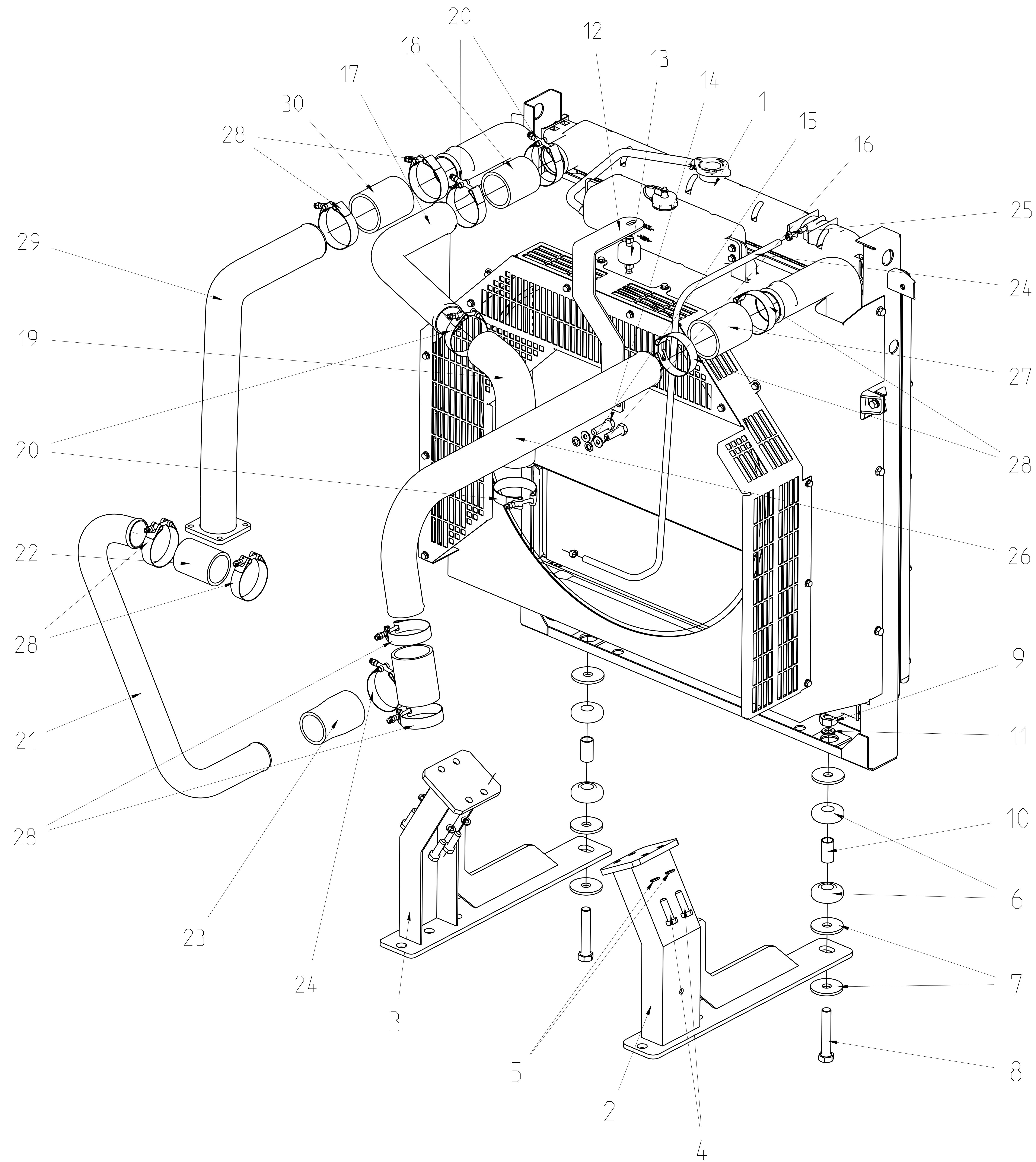
AIR INTAKE SYSTEM - 10005574					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	10005020	BRACKET AIR CLEANER MOUNTING	1	
2	2	L2011235	SET SCREW M12 X 1.75 X 35 CP PLATED	1	
3	3	L4111200	SC WASHER 12 DIA PLATED	1	
4	4	L4011200	WASHER 12 DIA PLATED	1	
5	5	L2021025	SETSCREW M10 X 1.25 X 25	4	
6	6	L4111000	S C WASHER M10	4	
7	7	L4011000	PLAIN WASHER 10MM	4	
8	8	10005597	AIR CLEANER ASSEMBLY	1	
9	9	F1997650	HOSE REDUCER ELBOW	1	
10	10	F3900310	HOSE CLAMP T-BOLT	2	
11	11	10005021	PIPE ASSY, POWDER COATED	1	
12	12	F3900210	HOSE CLAMP T-BOLT	1	
13	13	X1924650	HOSE	1	
14	14	F8205310	HOSE CLAMP T-BOLT	2	
15	15	10005599	SLEEVE, RUBBER	1	
16	16	10005604	PIPE ASSY, POWDER COATED	1	
17	17	F8372400	RESTRICTION INDICATOR	1	
18	18	10005607	AIR FILTER, PRIMARY	1	
19	19	10005606	AIR FILTER, SAFETY	1	

RADIATOR ASSEMBLY - 10007527



RADIATOR ASSEMBLY - 10007527					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	10007527	125 KVA CPCB II (AL6DTIG2) Banco RAD ASSLY	1	
2	2	F2A04514	BRACKET - ENGINE & RADIATOR MTG. FRONT RH	1	
3	3	F2A04614	BRACKET - ENGINE & RADIATOR MTG. FRONT LH	1	
4	4	L2011230	SCREW M12 X 30 X 1.75 CP PLATED	8	
5	5	L4111200	SC WASHER 12 DIA PLATED	8	
6	6	F0501850	RUBBER BUSH	4	
7	7	F4931410	WASHER 2.25 OD X 41/64 ID X 0.187 t	6	
8	8	L1021618	BOLT M16 X 1.75 X 90 FP PLATED	2	
9	9	L3021618	NUT M16 X 1.75 X PC 8 FP PLATED	2	
10	10	F1235415	DISTANCE PIECE	2	
11	11	L4111600	SC WASHER 16 DIA PLATED	2	
12	12	10005022	RADIATOR TOP SUPPORT	1	
13	13	F2602158	RADIATOR BUFFER WITH NUTS	1	
14	14	L2010825	M8 X 1.25 X 25 BOLT	2	
15	15	L4110800	SC WASHER M8	2	
16	16	L4010800	PLAIN WASHER 8MM	2	
17	17	10005019	PIPE WATER OUTLET (Engine Out to Rad IN)	1	
18	18	10005119	ST HOSE BET WAT OUT PIPE & RAD IN 125KVA	1	
19	19	10005116	WATER OUTLET BEND HOSE - 90 DEG	1	
20	20	X3900510	JUPITER HOSE CLAMP (50-70MM)	4	
21	21	10005024	PIPE WATER INLET (Rad Out to Engine IN)	1	
22	22	10005118	TG CASE STRAIGHT HOSE 125KVA	1	
23	23	10005430	HOSE REDUCER 125KVA	1	
24		X3900510	JUPITER HOSE CLAMP (50-70MM)	4	
25	24	F1990450	STRAIGHT VENT HOSE - FOR RADIATOR PIPING	1	

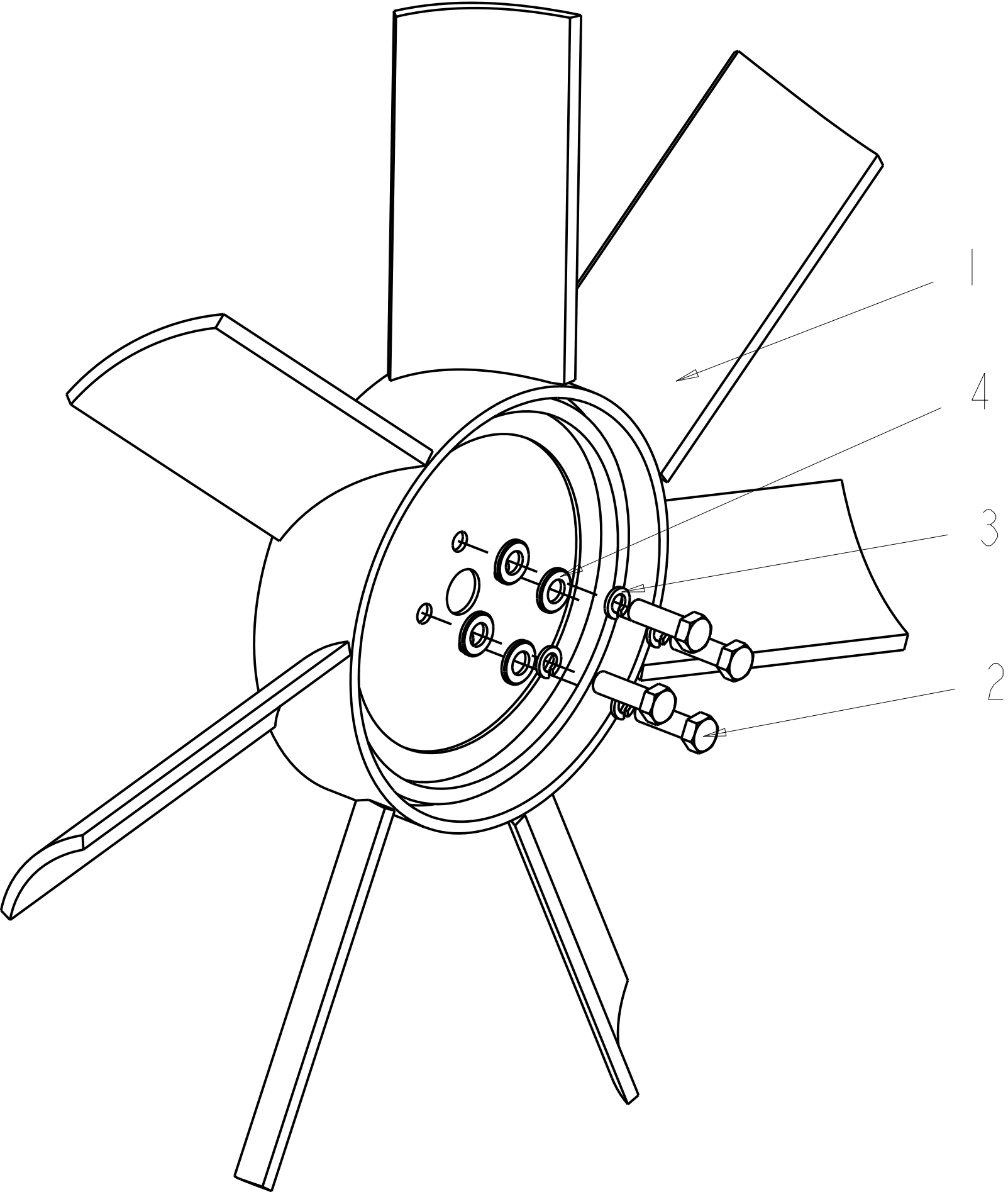
RADIATOR ASSEMBLY - 10007527





RADIATOR ASSEMBLY - 10007527					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
26	25	F8200110	JUPITOR HOSE CLAMP	2	
27	26	10005349	ENGINE 6DTI CAC INLET PIPE TU to CAC	1	
28	27	10005120	STRAIGHT HOSE CAC 125KVA	2	
29	28	10001024	SS HOSE CLIP for 70mm Hose	4	
30	29	10003441	PIPE - CAC OUTLET (From CAC to Intake Manifold)	1	
31	30	10005120	STRAIGHT HOSE CAC 125KVA	1	
32		10001024	SS HOSE CLIP for 70mm Hose	2	

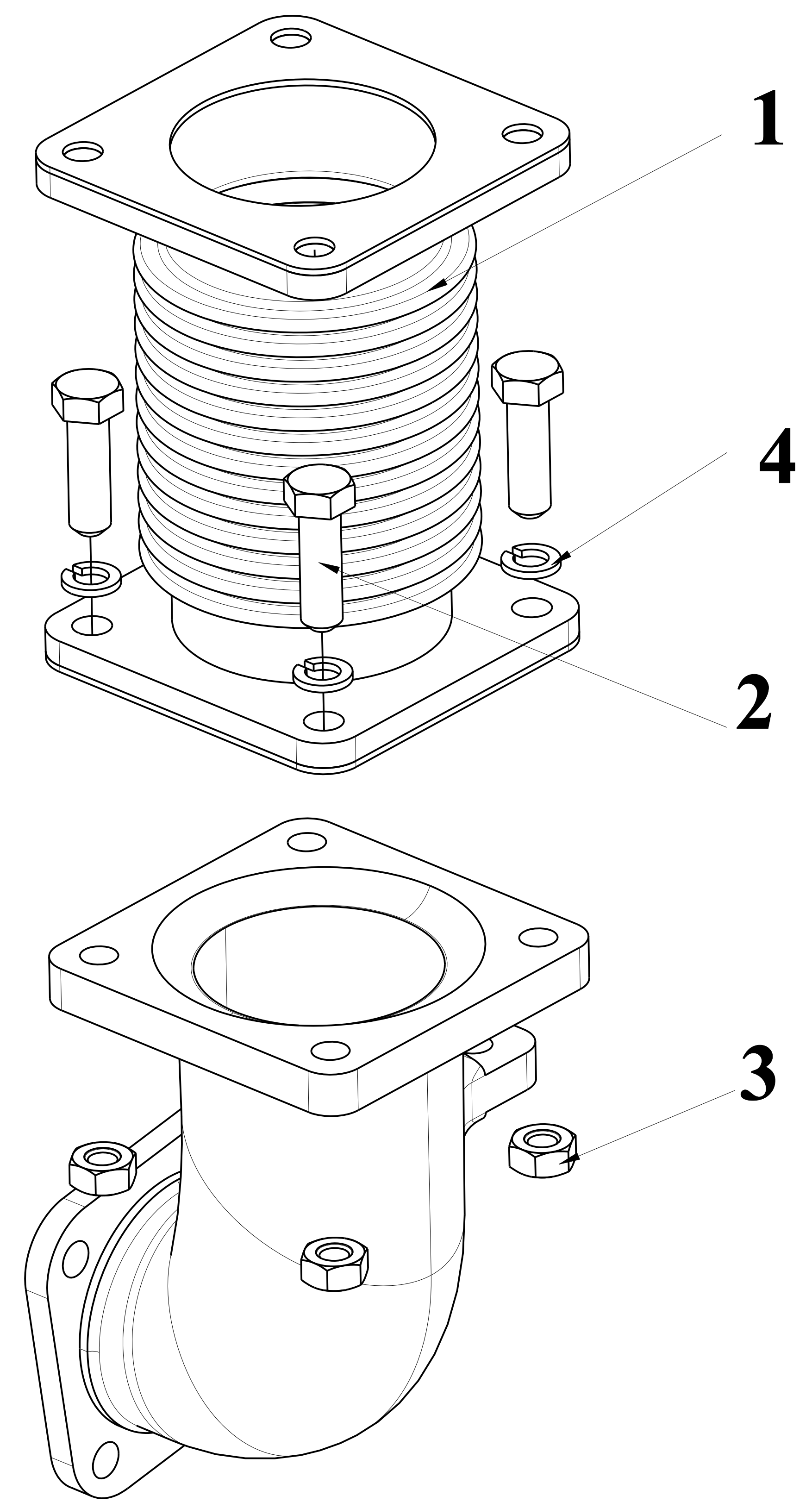
FAN ASSEMBLY - F6W00160





FAN ASSEMBLY - F6W00160					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F6W00160	26 INCH PLASTIC FAN	1	
2	2	L2021025	SETSCREW M10X1.25X25	4	
3	3	L4111000	SC WASHER 10 DIA PLATED	4	
4	4	L4011000	PLAIN WASHER 10MM	4	

EXPANSION BELLOW ASSEMBLY - 10003673





EXPANSION BELLOW ASSEMBLY - 10003673

UPFIT COMPONENT SET - MISCELLANEOUS



UPFIT COMPONENT SET - MISCELLANEOUS					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		10007496	ENGINE WIRING HARNESS	1	
2		10007720	GC -1201 (Sedemac Genset Control Unit)	1	
3		X3900510	JUPITER HOSE CLAMP (50-70MM)	4	
4		10001024	SS HOSE CLIP for 70mm Hose	2	
5		F8P04550	EXTENDED BREATHER HOSE	1	
6		FB506400	CONNECTOR PIPE	1	
7		10004430	OIL DRAIN KIT	1	
8		10007350	TEMPERATURE SENSOR CUM SWITCH	1	



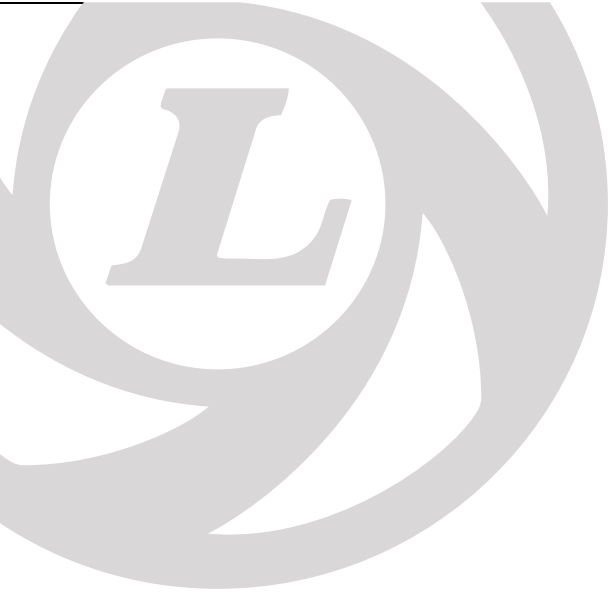
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AL2CTIDG1/1

Parts Catalogue - April 2018



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FOREWORD

This Spare Parts Catalogue is applicable to **AL2CTIDG1/1**

The following information regarding mode of supply is given in the Catalogue:

- A) When the components are supplied in the form of a sub-assembly or a set, or kit, specific mention is made.
- B) All standard fasteners are not serviced.

While ordering the parts, due note of the above information should be taken.

Since the process of development is continuous with design changes, part numbers are likely to change. The information given in this publication is current at the time of release. The possibility exists that the information may need to be updated as a result of modification adopted by the manufacturer at any time for reason of a technical or commercial nature. Relevant changes would be updated through our Service Circulars / Bulletins, if found necessary.

While all the care has been taken to illustrate the components as they look, due to constraints of standardizing the illustrations, variation will be there.

Though every care has been taken in preparing the Parts Catalogue, no liability is under taken for any error which may arise.

We welcome your suggestions and feedback for better service. Should you need any further information pl write to:

Ashok Leyland Limited,
Power Solutions Business,
No. 1, Sardar Patel Road,
Guindy, Chennai – 600 032

AL2CTIDG1/1:V:A:0418



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5	HAEPR46_#1	PISTONS & RINGS	12
6	HAECN11_#1	CONNECTING ROD	14
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8	HAECM13_#1	CAMSHAFT	18
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12	HAETG6_A	TIMING GEAR CASE	26
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25	ALEWP274_#3	COOLANT PUMP	54



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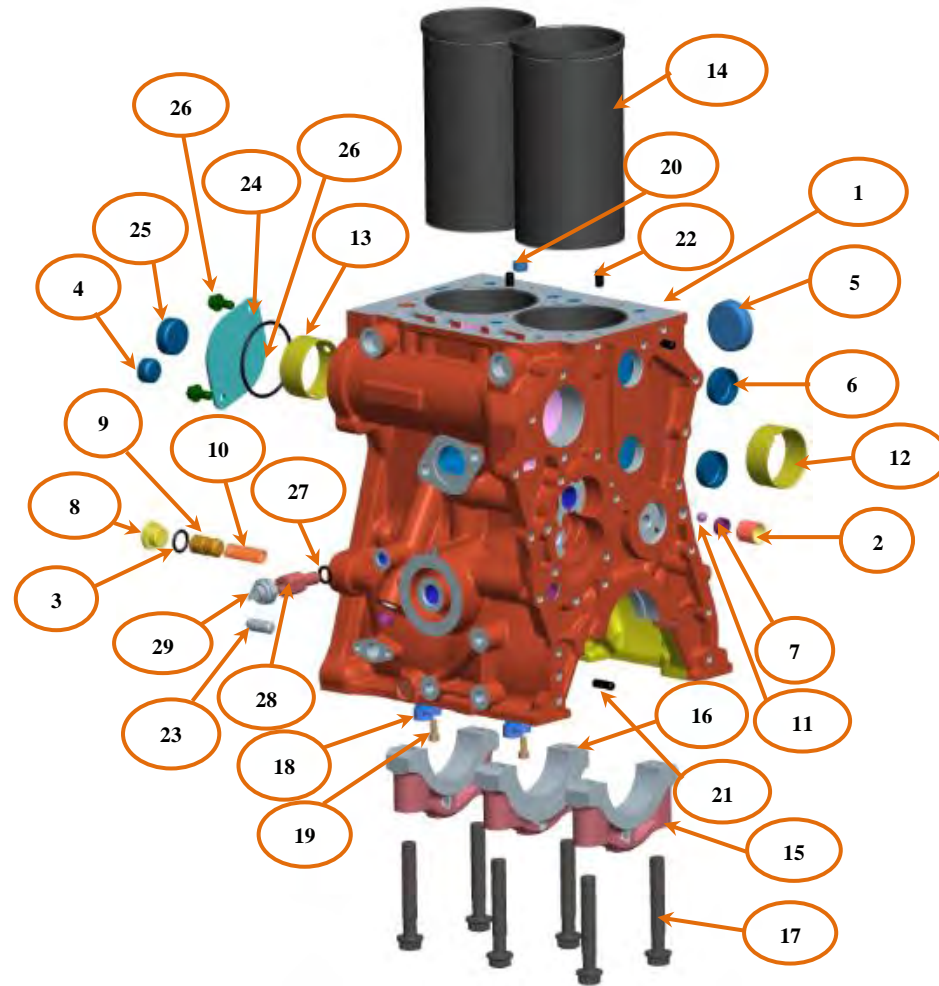
INDEX - AL2CTIDG1/1 (V:A)			
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ENGINE ASSEMBLY - AL2CTIDG1/1_A



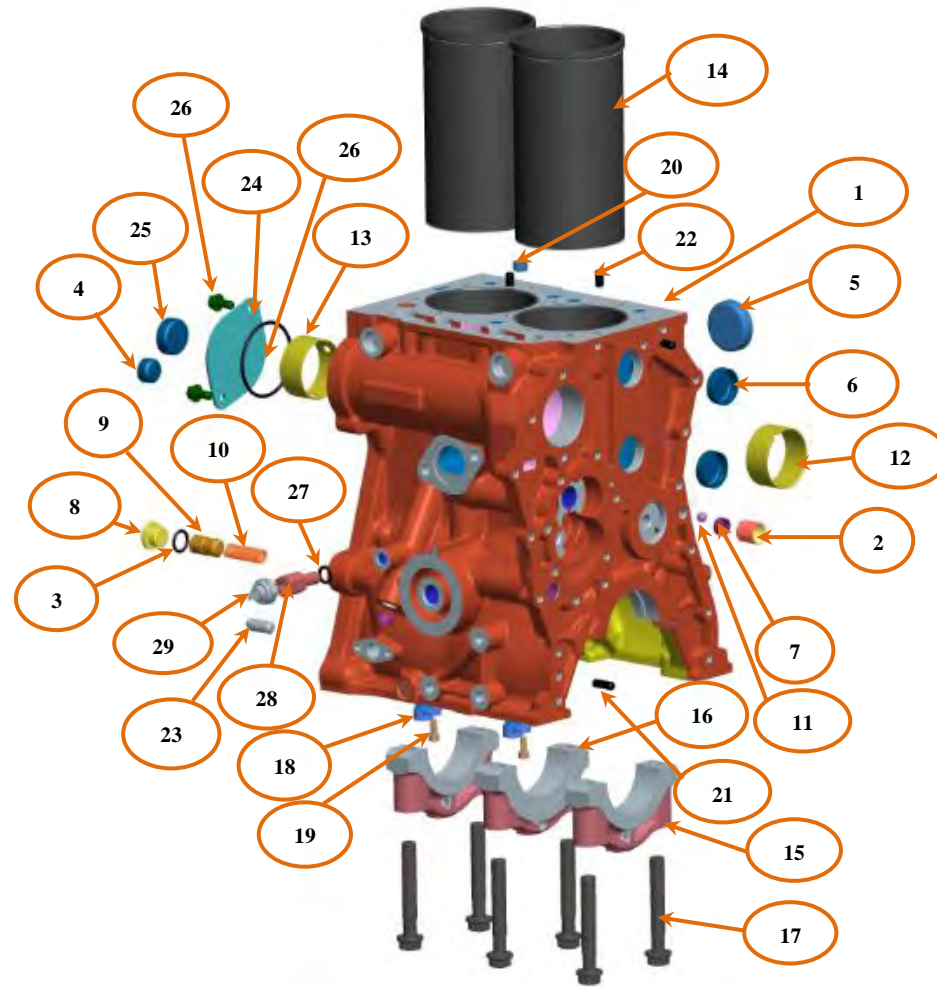
ENGINE ASSEMBLY - AL2CTIDG1/1_A					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		10009857	ENGINE WITH UPFIT KIT AND RADIATOR AND AIR INTAKE SYSTEM	1	
2		A9N02300	ENGINE WITHOUT UPFIT KIT AND RADIATOR AND AIR INTAKE SYSTEM	1	

ASSEMBLY OF ENGINE BLOCK – HAECB21_#2



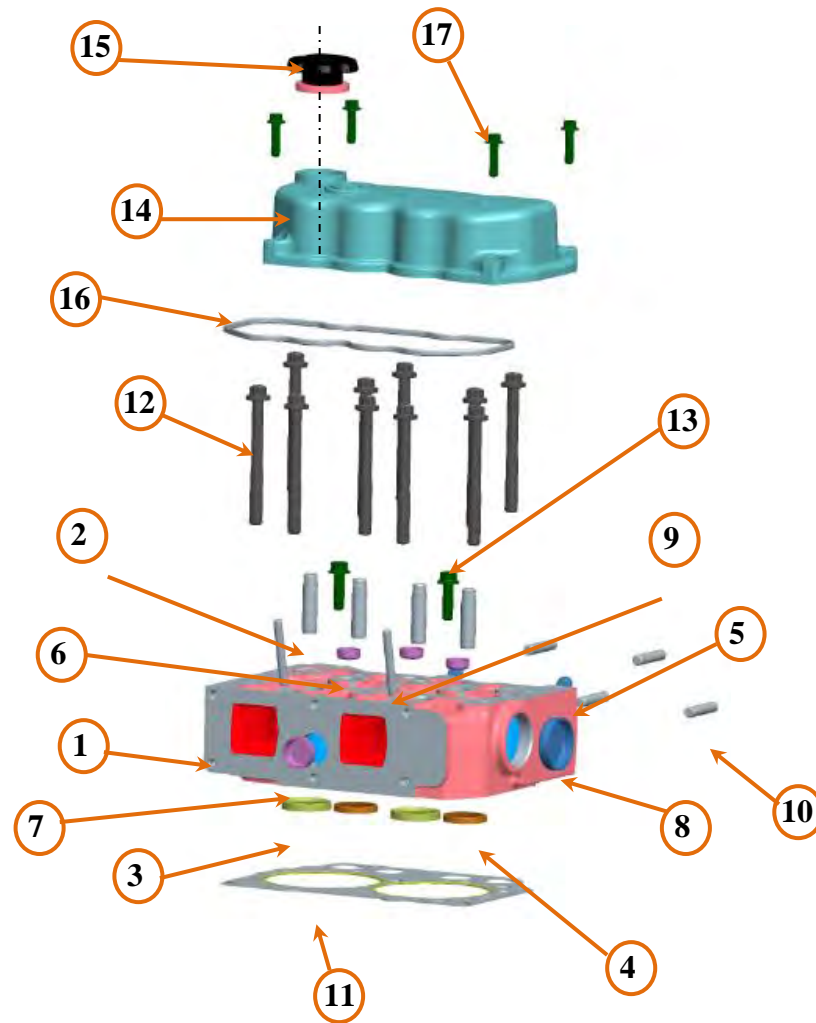
S/A OF CYLINDER BLOCK, H2 CYLINDER - HAECB21_#2					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B3B05401	S/A OF CYLINDER BLOCK (consists of items marked with #)	1	
2	1	B3B05403 #	S/A OF CYLINDER BLOCK (consists of items marked with \$)	1	
3		FCA00622 \$	CRANKCASE-H2 ENGINE	1	
4	2	F0536230 \$	BUSHING BODY O/PUMP	1	
5	3	F2749700 \$	O Ring 17.6 x 2.6	1	
6	4	F3145015 \$	PLUG EXPANSION	1	
7	5	F3145415 \$	PLUG EXPANSION	1	
8	6	F0954615 \$	PIN STRAIGHT (5X10)	1	
9	7	F3145715 \$	PLUG EXPANSION	4	
10	8	FS500611 \$	PLUG	1	
11	9	F4231711 \$	VALVE FILTER SAFETY	1	
12	10	F3639410 \$	SPRING OIL VALVE	1	
13	11	F4832610 \$	BALL STEEL	2	
14			CAM BUSH KIT (Consists of illustration no 12 &13)	1	Part No will be upadated later
15	12	F9Y00300 \$	BEARING-CAMSHAFT NO.1 (Alternare Part No - F9Y00500)	1	
16	13	F9Y00400 \$	BEARING-CAMSHAFT N0.3 (Alternate P/No - F9Y00700)	1	
17	14	F9K00122 \$	INTERFERENCE FIT LINER - W	AR	
18	14	F9K00222 \$	INTERFERENCE FIT LINER - X	AR	
19	14	F9K00322 \$	INTERFERENCE FIT LINER - Y	AR	
20	14	F9K00422 \$	INTERFERENCE FIT LINER - Z	AR	
21	15	X1102722 \$	MAIN BEARING CAP	2	
22	16	X1102822 \$	MAIN BEARING CAP-CENTRE	1	
23	17	X3511115 \$	BOLT, MAIN BEARING CAP	6	
24	18	B8758803 #	COOLING, JET BODY	2	
25	19	FE702710 #	Special Screw - Hex Socket Cap - M6 X 1CP X 21mm LONG X GR 12.9	2	

ASSEMBLY OF ENGINE BLOCK – HAECB21_#2



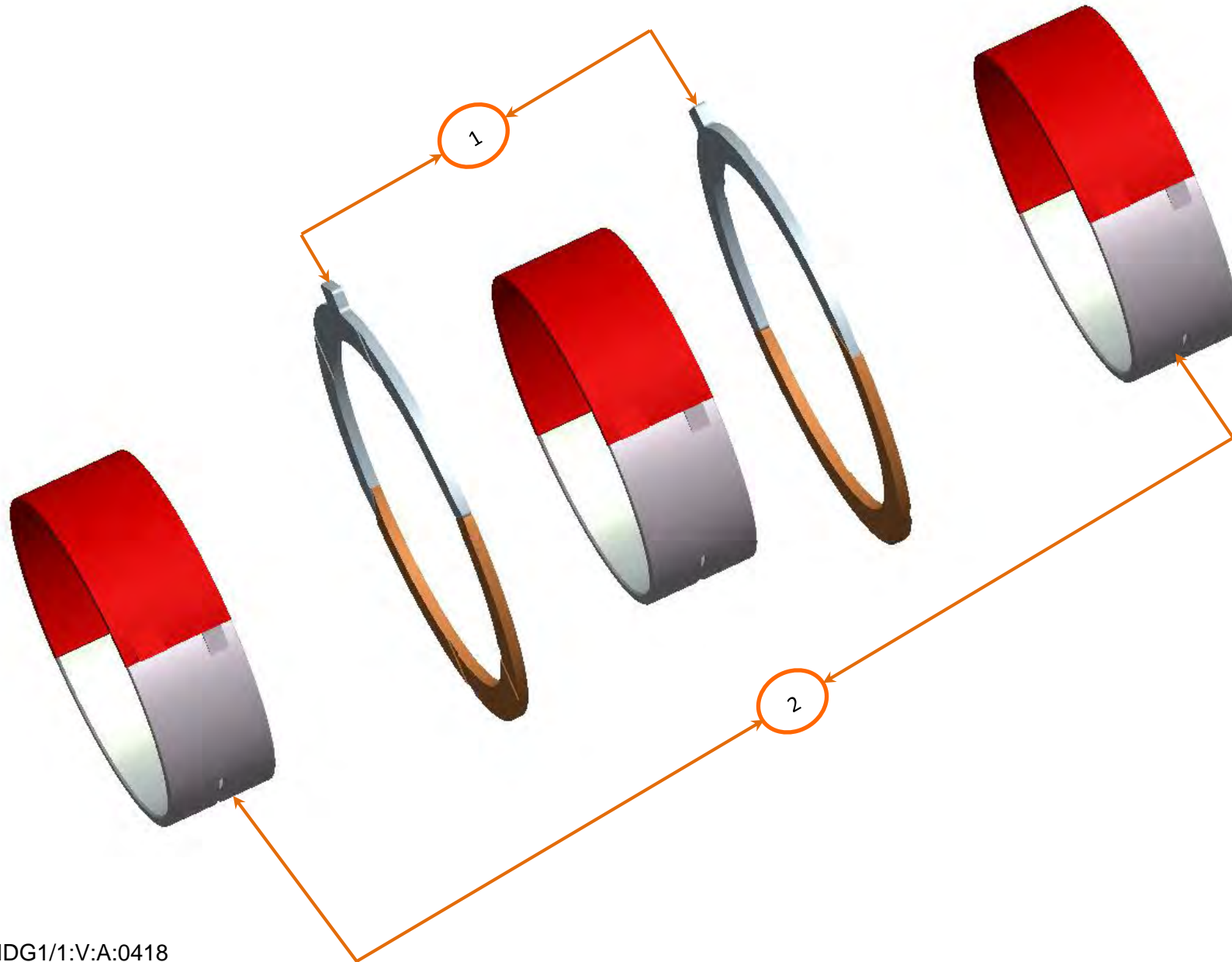
S/A OF CYLINDER BLOCK, H2 CYLINDER - HAECB21_#2					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
26	20	F3145615 \$	PLUG EXPANSION	4	
27	21	F0954415	PIN STRAIGHT	2	
28	22	F0954515	PIN STRAIGHT (8X16)	2	
29	23	F0954715	PIN REAR	2	
30	24	F2702150	O RING CAM AND SEAL	1	
31	25	F7647314	SEAL, PLATE	1	
32	26	L9010818	FLANGED SCREW - Hex - M8 X 1.25 CP X 18mm LONG	2	
33	27	X4901530	SPECIAL WASHER	1	
34	28	FL300315	ADAPTER - PRESSURE SENSOR	1	
35	29	X7809300	LOW LUB OIL PRESSURE SWITCH	1	
36		F1Z01314	LIFTING EYE	1	
37			CAM BUSH KIT	1	

ASSEMBLY OF CYLINDER HEAD – ALECH49_#3



ASSY OF CYLINDER HEAD - ALECH49 - #3					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	B3C08501	S/A OF CYLINDER HEAD (Consists of items marked wit \$)	1	
2		B3C08502 \$	S/A OF CYLINDER HEAD	1	
3	2	F0531522 \$	BUSHING, VALVE GUIDE INTAKE	4	
4		FCN00822 \$	CYLINDER HEAD (H2 DIESEL)	1	
5	3	X0900312 \$	SEAT, VALVE INTAKE (Alternate X0900216)	1	
6	4	F0900312 \$	EXHAUST VALVE SEAT INSERT - H-Series	2	
7	5	F3144915 \$	PLUG EXPANSION	2	
8	6	F3145815 \$	PLUG EXPANSION	3	
9	7	F3145315 \$	PLUG EXPANSION 30DIA	1	
10	8	F3145415 \$	PLUG EXPANSION	1	
11	9	F3777815 \$	INJECTOR MOUNTING STUD	4	
12	10	F3769315 \$	STUD M10X1.5/1.25	4	
13	11	FCT00300	GASKET-CYLINDER HEAD-H2 ENGINE	1	
14	12	FYJ00711	SPECIAL FLANGED BOLT - BI-HEX - 12 X 1.5 CP X 118.0MM LONG X GR 10.9	10	
15	13	L9011035	Standard Flanged Screw - Hex - M10 X 1.5 CP X 35mm LONG X GR 8.8	2	
16	14	FCR00542	COVER-CYLINDER HEAD - PDC	1	
17	15	F1100160	OIL FILLER CAP	1	
18	16	FCS00258	GASKET-CYLINDER HEAD COVER-H2 ENGINE	1	
19	17	L9010835	Standard Flanged Screw - Hex - M8 X 1.25 CP X 35mm LONG X GR 8.8	4	
20		F4832510 \$	BALL STEEL	2	

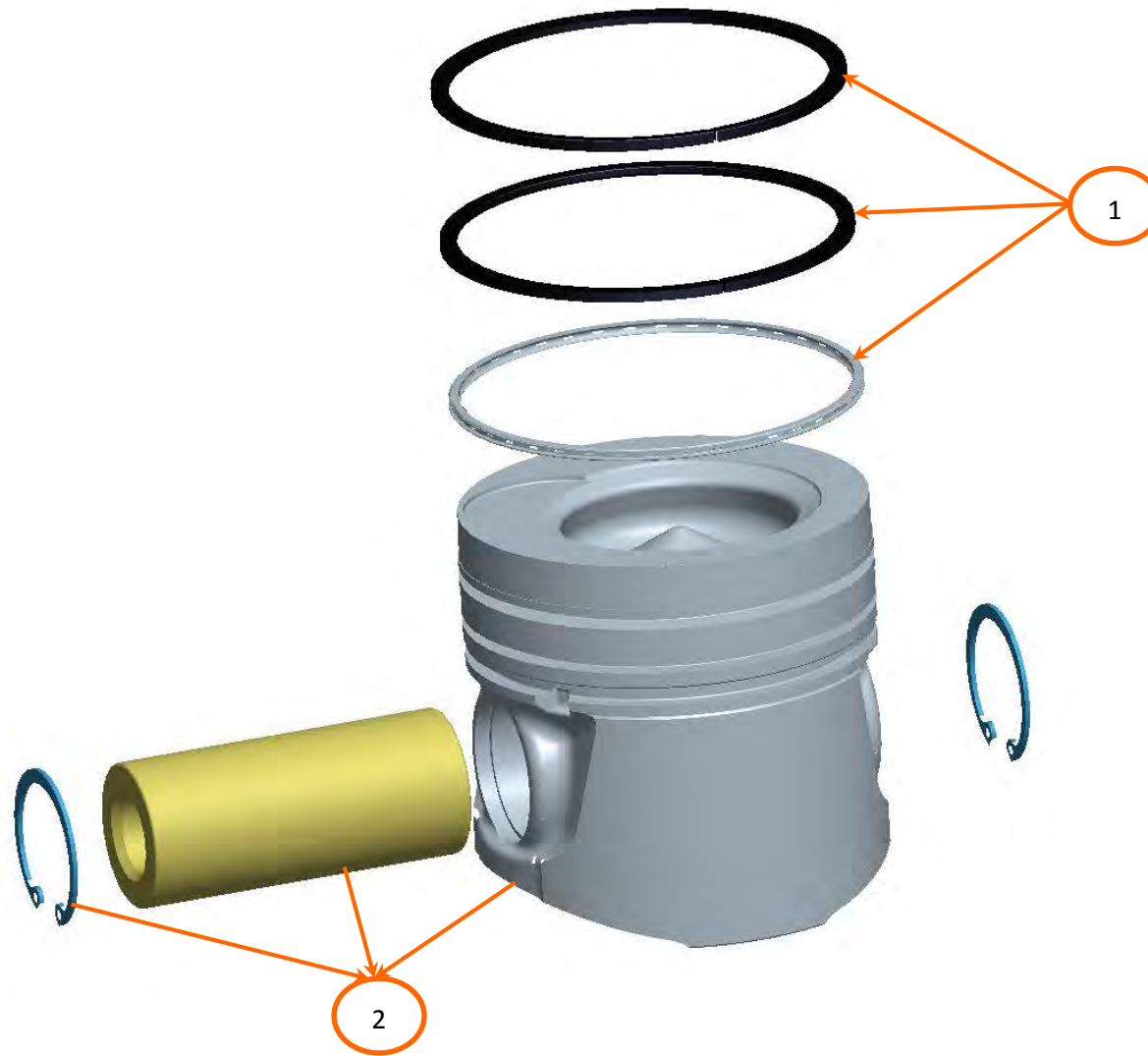
ASSEMBLY OF MAIN BEARING – HAEMB6_#





ASSY OF MAIN BEARING - HAEMB6_#					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1		THRUST WASHER KIT (STD)	1	PART NO WILL ADDED ON RECIPT OF SAME FROM SPD
2	2		MAIN BEARING SET - STD	1	

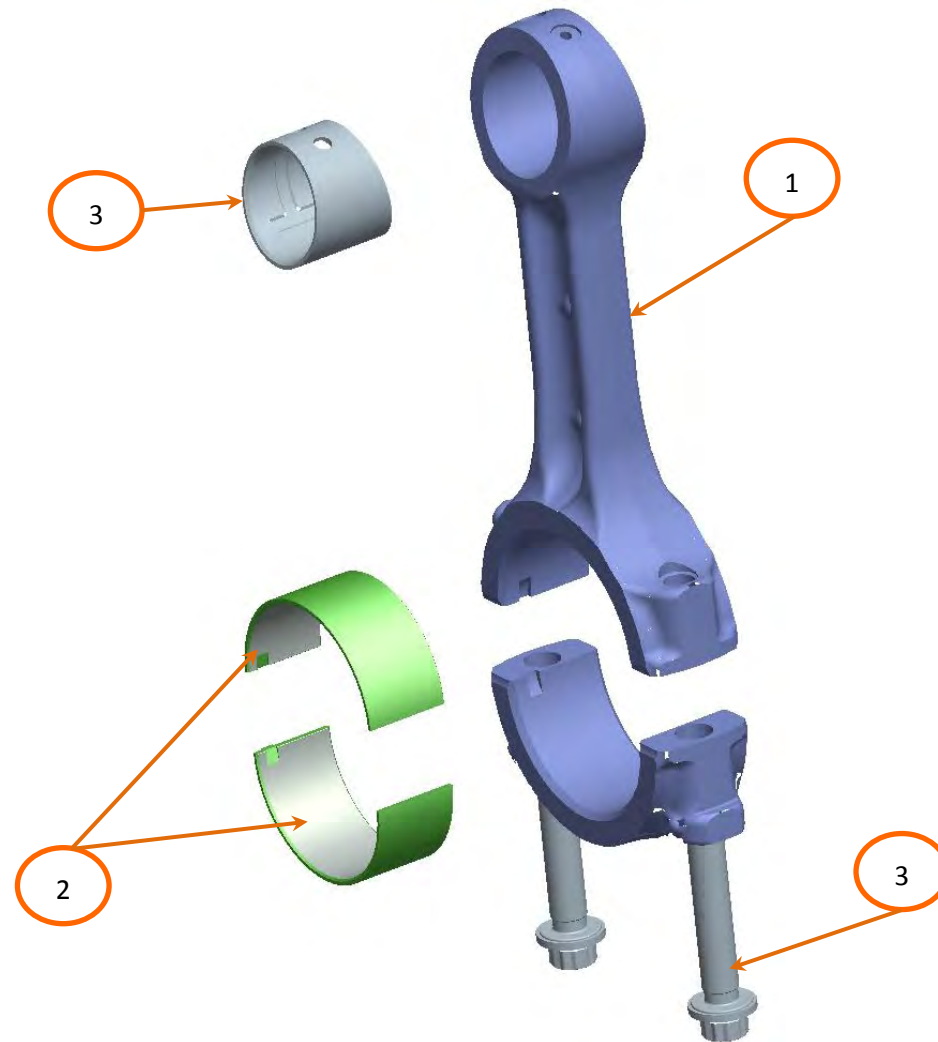
ASSEMBLY OF PISTON AND RINGS – HAEPR46_#1





ASSY OF PISTON AND RINGS - HAEPR46_#1					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1		RIN SET	1	Part No will be added once relesed by SPD
2	2		PISTON SET	1	
3			ENGINE SET (Consists of Piston set & Ring set)	1	

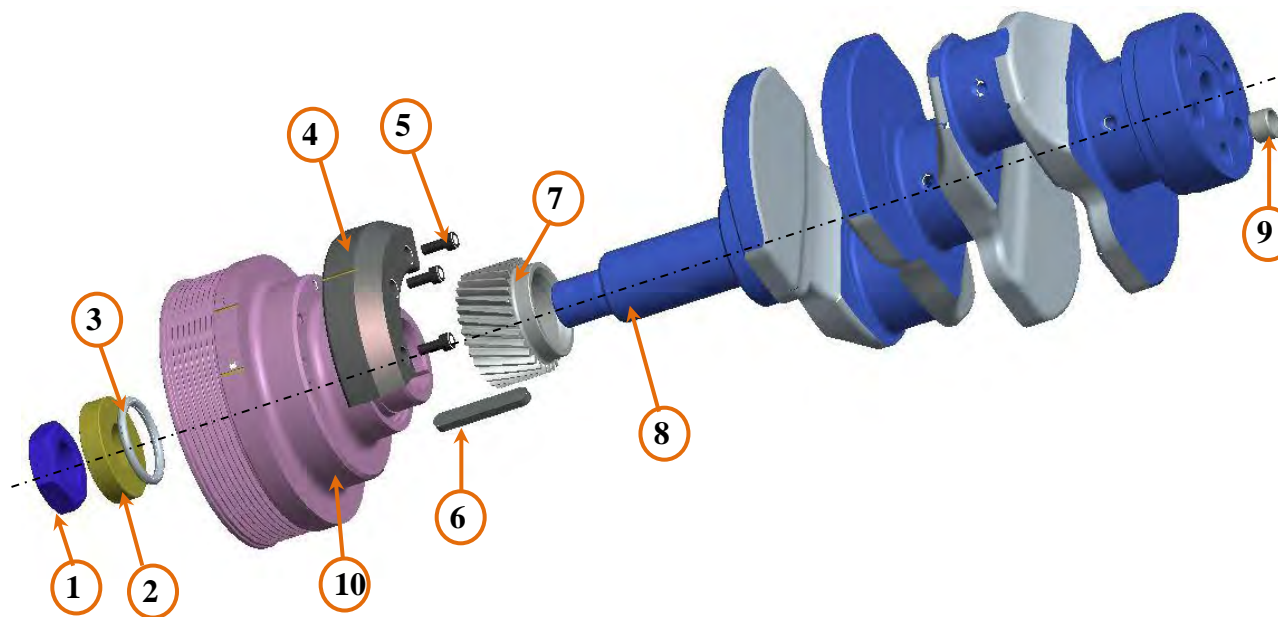
CONNECTING ROD ASSEMBLY – HAECN11_#1





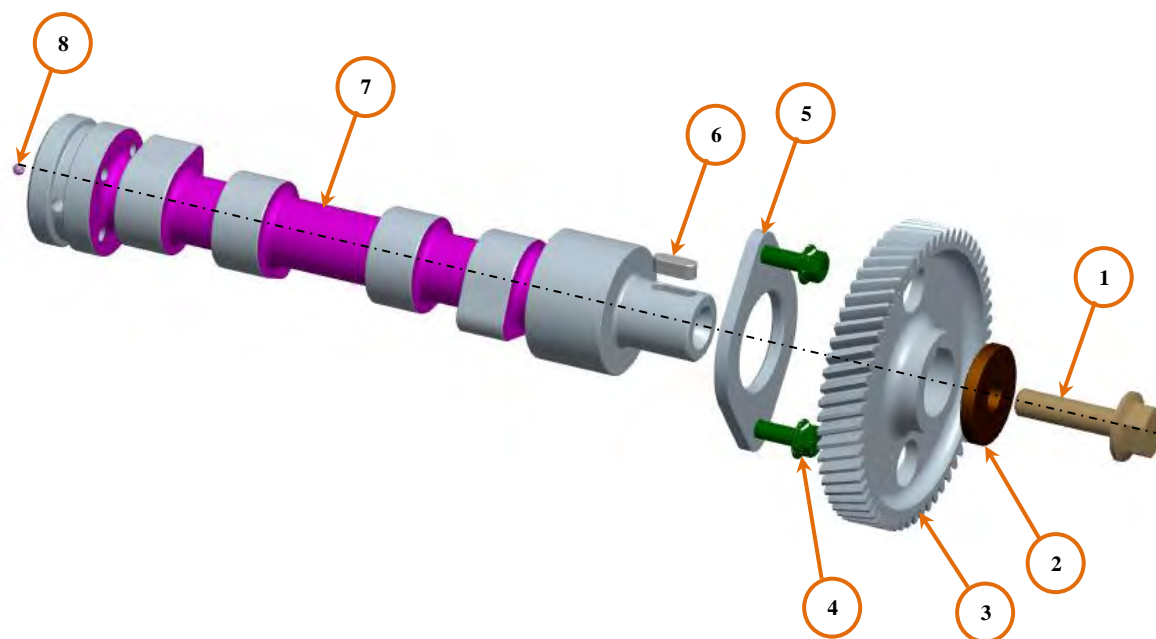
CONNECTINGROD ASSY - HAECN11_#1

ASSEMBLY OF CRANKSHAFT – HAECS29_#2



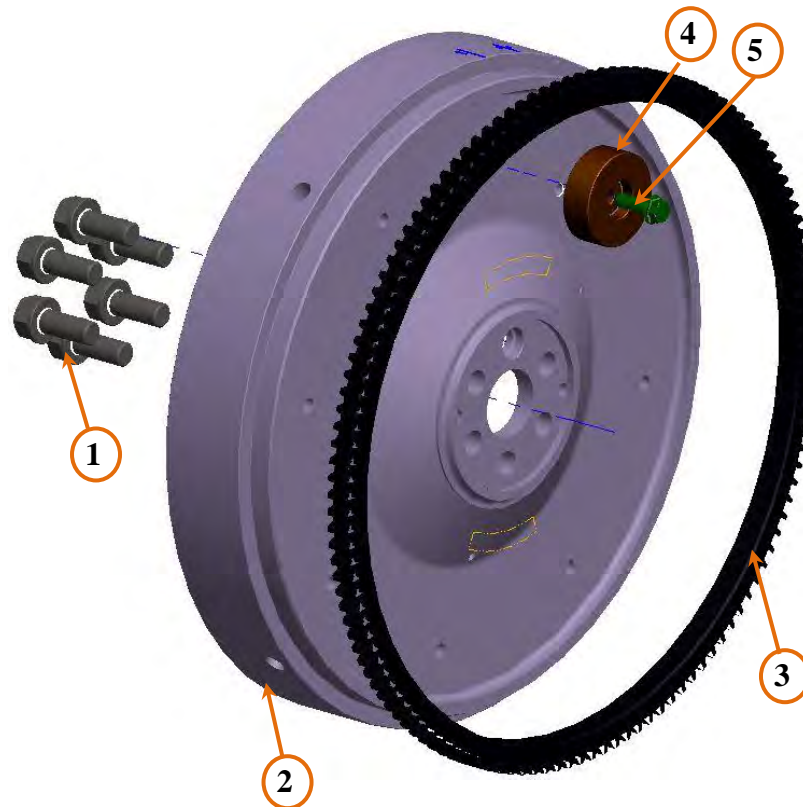
ASSY OF CRANK SHAFT_HAECS29_#2					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F3568715	SPECIAL NUT - HEX - M27 X 1.5FP X 15MM LONG X GR	1	
2	2	F1200210	SPACER	1	
3	3	F2702650	O RING 41.4 X 5.54	1	
4	4	F4D00611	BOSS - ECCENTRIC MASS	1	
5	5	FE702711	SPECIAL SCREW - HEX SOCKET CAP - M6 X 1CP X 15MM LONG X GR 10.9	3	
6		B3A07601	S/A OF CRANK SHAFT (Consists of items marked with 4)	1	
7	6	F0954915 \$	KEY FOR CRANKSHAFT	1	
8	7	X1607511 \$	GEAR,CRANKSHAFT	1	
9	8	FCB00611 \$	CRANKSHAFT, H2	1	
10	9	F3438615 \$	COLLAR	1	
11	10	X7J00122	POLY V PULLEY WITHOUT RUBBER DAMPER AND WITH PROVISION FOR 2V FITMENT	1	

ASSEMBLY OF CAMSHAFT – HAECM13_#1



ENGINE CAMSHAFT ASSEMBLY - HAECM13_#1					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X3511915	SPECIAL FLANGED BOLT - HEX - M14 X 1.5 FP X 40MM LONG X GR 10.9	1	
2	2	F4945310	SPECIAL WASHER - MM - PLAIN - 15MM ID X 44MM OD X 6MM T	1	
3	3	F1655711	GEAR,CAMSHAFT	1	
4	3	F1661211	GEAR, CAMSHAFT (REF:	1	
5	4	L9010822	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8	2	
6	5	F7661614	PLATE CAMSHAFT	1	
7	6	F0955115	KEY FOR CAMSHAFT	1	
8		B2S01402	S/A OF CAM SHAFT (Consists of items markedwith \$)	1	
9	7	F9X00611 \$	CAMSHAFT	1	
10	8	F4832710 \$	BALL STEEL	1	

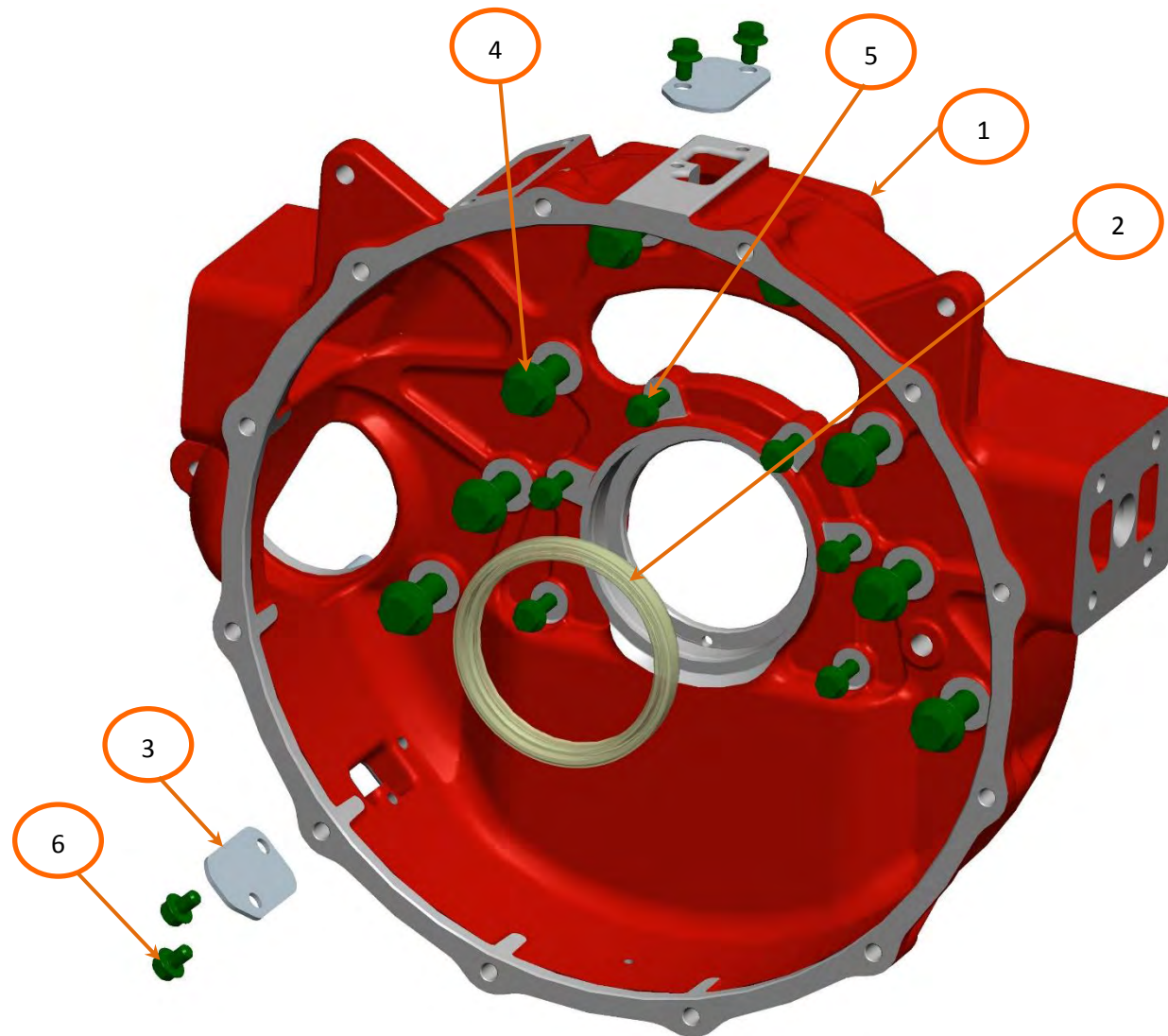
ASSEMBLY OF FLYWHEEL – ALEFW47_#1





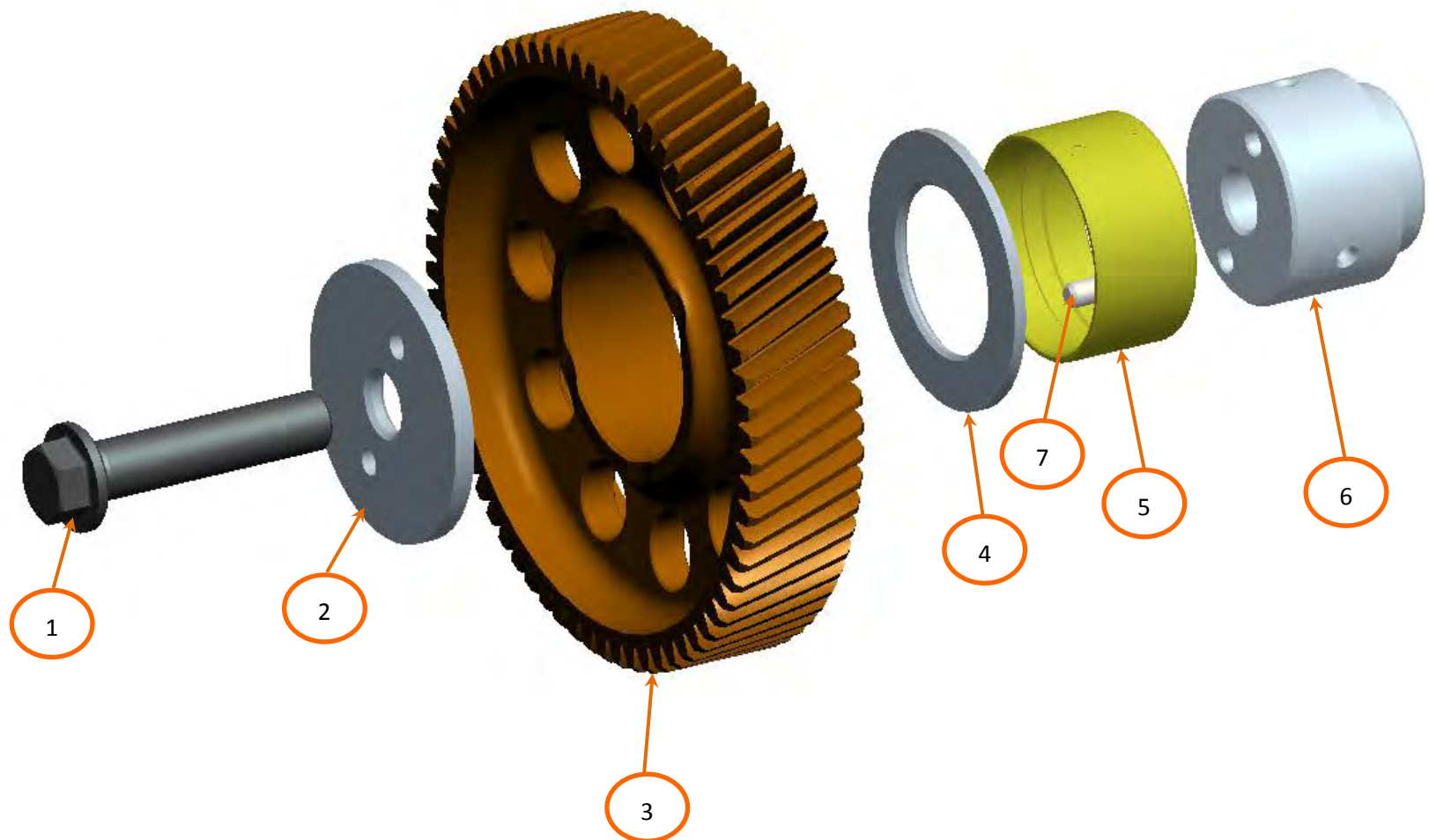
ASSY OF FLYWHEEL - ALEFW47_#1					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X3511015	BOLT, FLYWHEEL	6	
2		B8761001	S/A of SAE 10 FLYWHEEL WITH 12 deg Inj Timing (consists of items marked with \$)	1	
3	2	F1625022 \$	SAE 10 Flywheel	1	
4	3	F0741822 \$	STARTER RING	1	
5	4	F4D00411	BOSS ECCENTRIC MASS FOR FLYWHEEL	1	
6	5	L9011025	Standard Flanged Screw - Hex - M10 X 1.5 CP X 25mm LONG	1	

ASSEMBLY OF ENGINE FLYWHEEL HOUSING – ALEFH26_#



ASSY OF ENGINE FLYWHEEL HOUSING - ALEFH26_#					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X1815822	FLYWHEEL HOUSING	1	
2	2	X2711000	SEAL, OIL REAR	1	
3	2	X2705200	C/S REAR END PTFE OIL SEAL	1	
4	2	F2749000	OIL SEAL(982800109)	1	
5	2	X2705100	H-SERIES C/S REAR END PTFE OILSEAL	1	
6	3	X1102513	F/H, DUST COVER	2	
7	4	L9011440	STANDARD FLANGED SCREW - HEX - M14 X 2 CP X 40MM LONG X GR 8.8	8	
8	5	L9010832	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 32MM LONG X GR 8.8	6	
9	6	L9010812	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 12MM LONG X GR 8.8	4	
10		F3769515	STUD - COVER TIMER ,STARTER MOTOR MOUNTING M10	3	

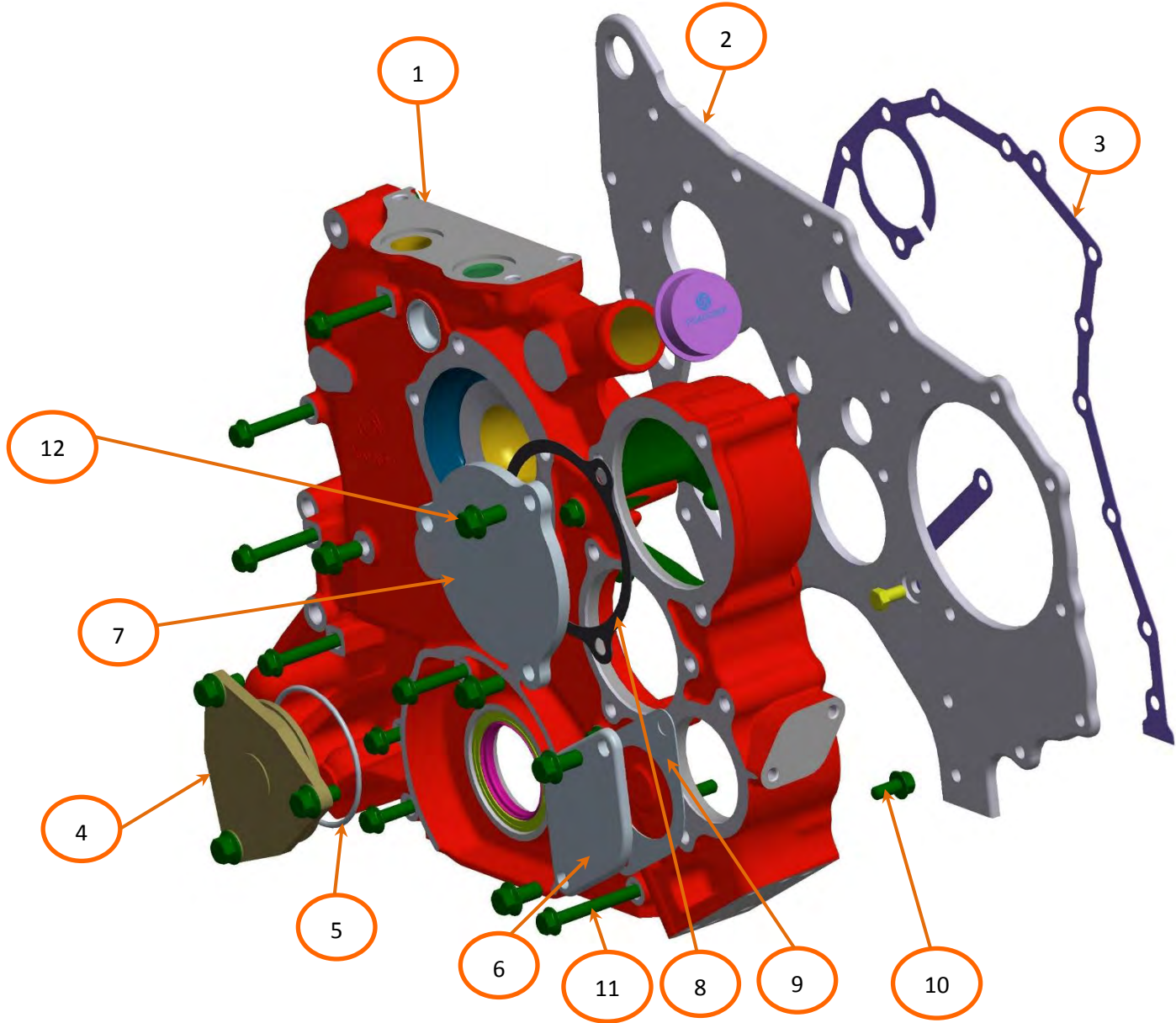
ASSEMBLY OF ENGINE TIMING GEARS – HAETG1/1_A





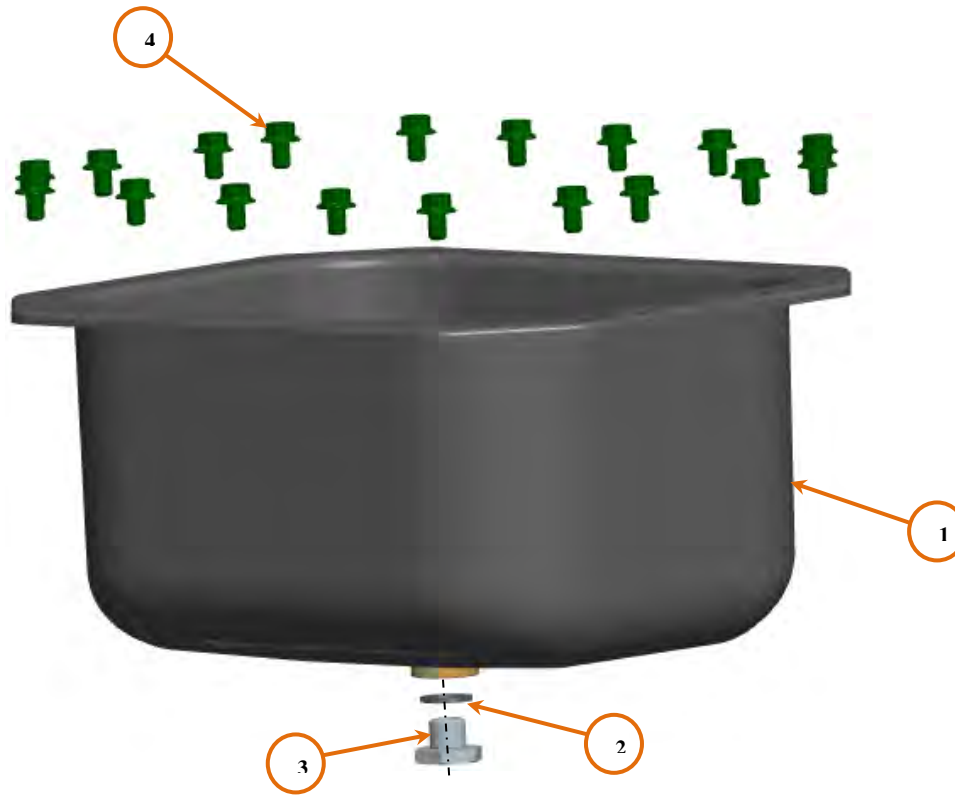
ASSY OF ENGINE TIMING GEARS - HAETG1/1_A					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F3585715	SPECIAL FLANGED BOLT - HEX - M14 X 1.5 FP X 63MM LONG X GR 10.9	1	
2	2	F7661814	PLATE IDLE, GEAR THRUST	1	
3		B8783801	S/A OF GEAR, IDLER (CONSISTS OT ITEMS MARKED WITH \$)	1	
4	3	X1607611 \$	GEAR,IDLER	1	
5	4	F0536530 \$	BUSHING	1	
6	5	F7661714	PLATE IDLE, GEAR THRUST	1	
7		B7014502	S/A SHAFT.IDLER GEAR (CONSISTS OF ITEMS MARKED WITH #)	1	
8	6	F3347211 #	IDLER GEAR SHAFT	1	
9	7	F0955015 #	PIN STRAIGHT (6X10)	2	

ASSEMBLY OF TIMING GEAR CASE – HAETG6_A



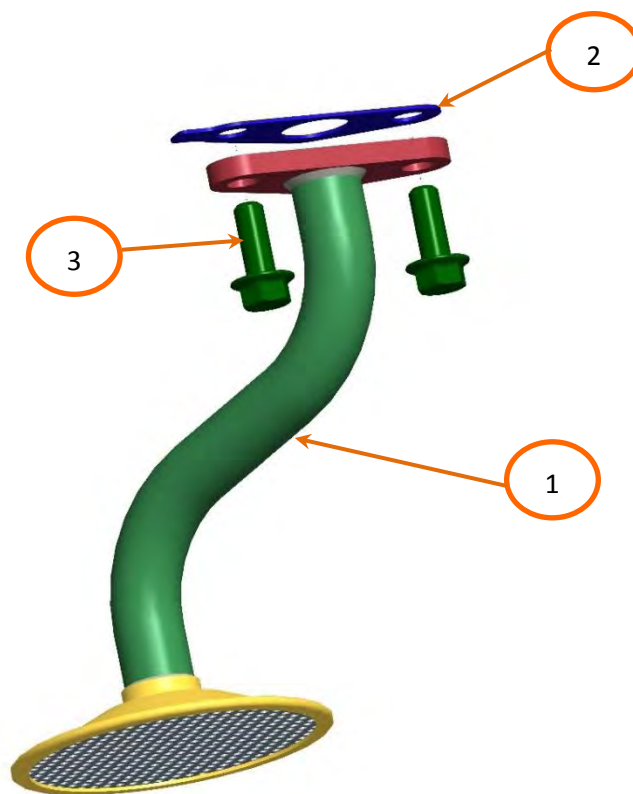
ASSY OF TIMING GEAR CASE - HAETG6_A					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	B8760901	S/A OF TIMING GEAR CASE WITH WELCH PLUGS(FOR PROCUREMENT PURPOSES)	1	
2		X1104022	COVER, TIMING GEAR CASE TO SUIT 230 CC AIR COOLED COMPRESSOR	1	
3		F3145915	PLUG EXPANSION 32DIA	1	
4	2	X7200113	TIMING BACK PLATE	1	
5	3	F1761500	GASKET FRT END PLATE	1	
6	4	X1102622	FRONT COVER	1	
7	5	F2749200	O RING 81.2 X 3.3	1	
8	6	F7647414	SEAL PLATE	1	
9	7	F7909414	SEAL PLATE	1	
10	8	F7Y03300	GASKET - COMPRESSOR DUMMY PLATE GASKET	1	
11	9	F1721600	JOINT-POWERSTEERINGPUMP DUMMY PLATE	1	
12	10	L9010818	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 18MM LONG X GR 8.8	7	
13	11	L9510813	STANDARD FLANGED BOLT - HEX - M8 X 1.25 CP X 65MM LONG X GR 8.8	5	
14	12	L9011020	STANDARD FLANGED SCREW - HEX - M10 X 1.5 CP X 20MM LONG X GR 8.8	8	
15	13	L9510817	STANDARD FLANGED BOLT - HEX - M8 X 1.25 CP X 85MM LONG X GR 8.8	3	
16		L9510815	STANDARD FLANGED BOLT - HEX - M8 X 1.25 CP X 75MM LONG X GR 8.8	1	
17		L9510819	STANDARD FLANGED BOLT - HEX - M8 X 1.25 CP X 95MM LONG X GR 8.8	2	
18		X2706700	OIL SEAL, FRONT (PTFE)	1	
19		X2710900	SEAL, OIL FRONT	1	
20		F3502400	BOLT	1	

ASSEMBLY OF OIL SUMP – HAES15_#1



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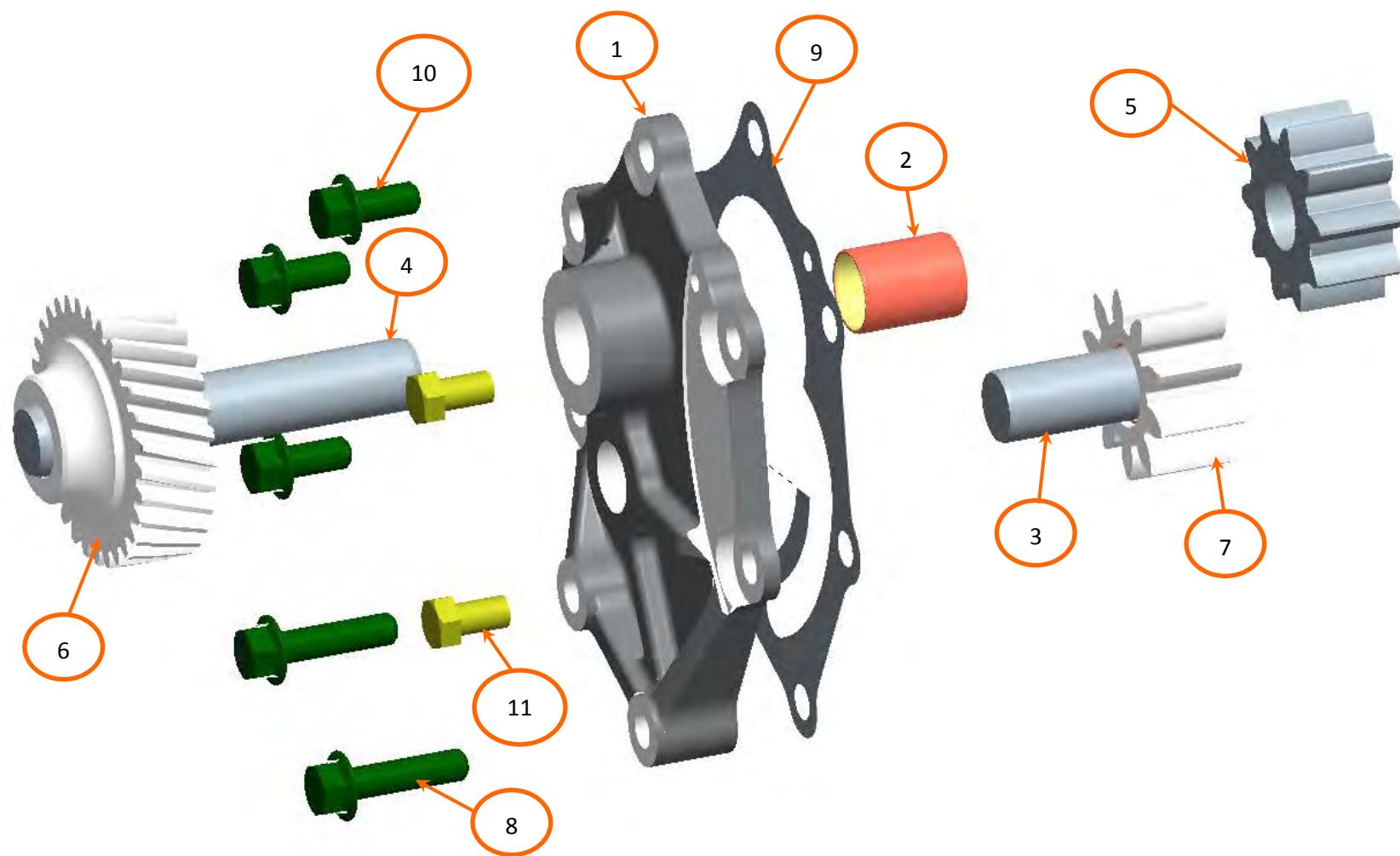
OIL STRAINER ASSEMBLY – HAEOS13_#1





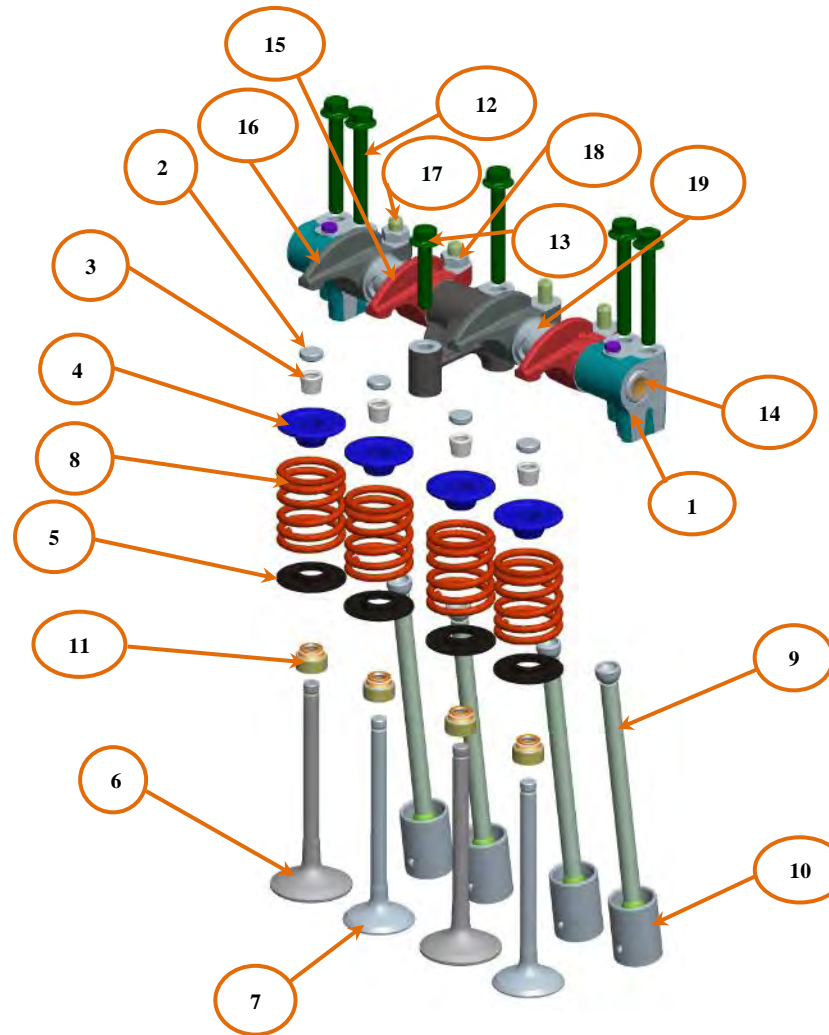
ASSEMBLY OF ENGINE OIL STRAINER - HAEOS13_#1					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	B4C01501	STRAINER ASSY. H2 ENGINE	1	
2	2	L9010822	FLANGED SCREW - Hex - M8 X 1.25 CP X 22mm LONG X GR 8.8	2	
3	3	FJ607500	GASKET OIL STRAINER	1	

ASSEMBLY OF ENGINE LUB OIL PUMP – ALEOP350_B



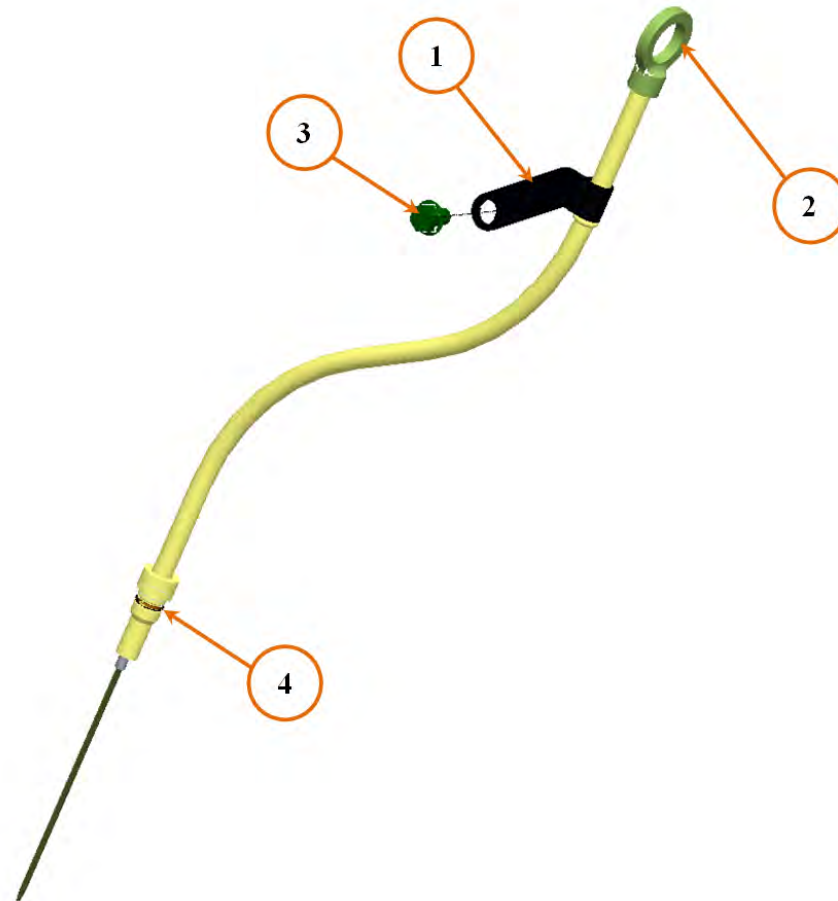
ASSY OF ENGINE OIL PUMP - ALEOP350_B					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B8729901	S/A OIL PUMP-4CTI-E2	1	
2		B8255003	S/A OIL PUMP COVER (Consists of items marked with #)	1	
3	1	X1101122 #	COVER,OIL PUMP	1	
4	2	F0536430 #	BUSHING,BODY OIL PUM	1	
5	3	F3356315	SHAFT OIL PUMP DRIVEN	1	
6	4	F3356215	SHAFT OIL PUMP DRIVE	1	
7		B8729902	S/A OIL PUMP COVER-4CTI-E2	1	
8	5	F1600326	OIL PUMP GEAR	1	
9	6	F1661311	GEAR, OIL PUMP DRIVE	1	
10		B7018703	S/A OF GEAR OIL PUMP (Consists of items marked with \$)	1	
11		F0536230 \$	BUSHING BODY O/PUMP	1	
12	7	F1600426 \$	OIL PUMP GEAR	1	
13	8	L9010832	FLANGED SCREW - Hex - M8 X 1.25 CP X 32mm LONG X GR 8.8	2	
14	9	F1761200	GASKET O P COVER	1	

ASSEMBLY OF ENGINE VALVES – HAEVL16_#2

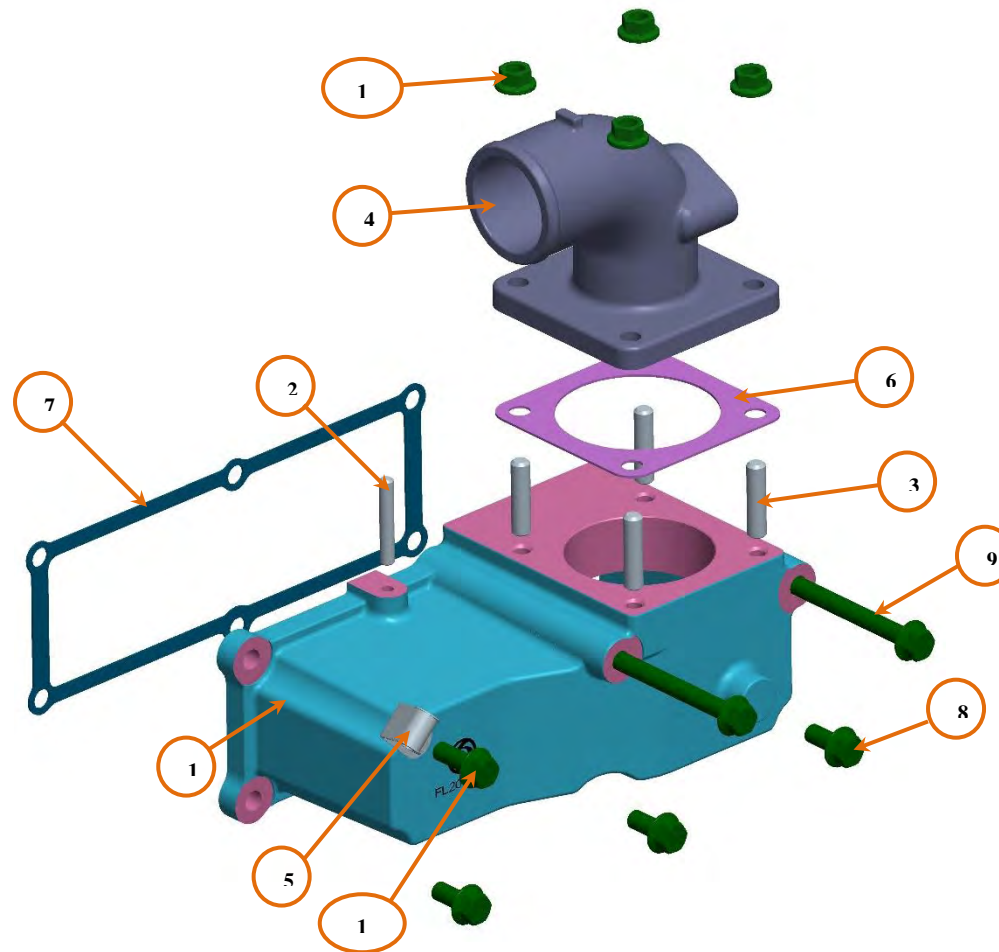


ENGINE VALVE SYSTEM - HAEVL16_#2					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	B4P01701	S/A OF ROCKER ARM ASSY	1	
2	2	X1100615	VALVE CAP	4	
3	3	F3438515	LOCK, VALVE SPRING RETAINER	8	
4	4	X0900911	SEAT, VALVESPRING-UPPER	4	
5	5	X0901011	SEAT-VALVE SPRING LOWER	4	
6	6	X4202011	ENGINE INTAKE VALVE (Altermat P/No - FL600101)	2	
7	7	FFH00101	ENGINE EXHAUST VALVE (Alternate P/No F4231911)	2	
8	8	X4M00210	SPRING-VALVE SPRING, OUTER	4	
9	9	B7015004	S/A VALVE PUSH ROD	4	
10	10	F4330722	LIFTER, VALVE	4	
11	11	FE802800	VALVE STEM SEAL, SKF (Alternate P/No X2706400, X271110)	4	
12	12	L9510812	FLANGED BOLT - Hex - M8 X 1.25 CP X 60mm LONG X GR 8.8	5	
13	13	L9510808	FLANGED BOLT - Hex - M8 X 1.25 CP X 40mm LONG X GR 8.8	1	
14	14	B4P01703	S/A OF ROCKER SHAFT	1	
15	15	F3210422	ROCKER ARM.EXH.	2	
16	16	F3210322	ROCKER ARM.INLET	2	
17	17	X3507615	SCREW, VALVE ADJUSTING	4	
18	18	X3514015	FLANGED NUT - Hex - M8 X 1FP X 6mm LONG X GR	4	
19	19	F3438415	COLLAR	2	
20		FVY00122	ROCKER ARM-BRACKET	1	
21		FVY00322	ROCKER ARM BRACKET	1	
22		FVY00222	ROCKER BRACKET	1	
23		F3576711	SCREW - Hex - M5 X 0.8CP X 8mm LONG X GR	2	
24		F4945910	WASHER- Single coil - 5.1mm ID X 9.2mm OD X 2.6mm T	2	

ASSEMBLY OF OIL DIPSTICK – ALOLG11_#

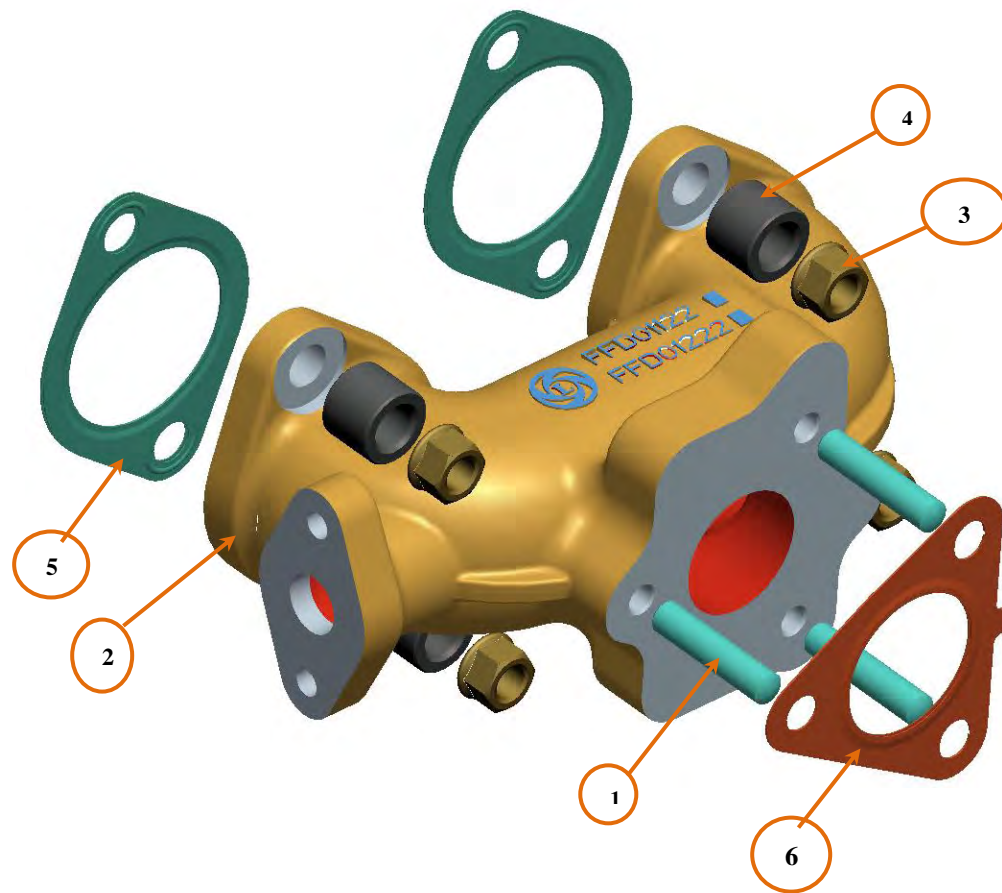


ASSEMBLY OF INTAKE MANIFOLD – HAEIM39_#2



ASSY OF INTAKE MANIFOLD - HAEIM39_#2					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		B3P08601	S/A OF INTAKE MANIFOLD ASSEMBLY (Consists of items marked with \$)	1	
2	1	FL200192 \$	INTAKE MANIFOLD-ENGINE AIR INTAKE ASSEMBLY	1	
3	2	F3769615 \$	STUD M6X1	1	
4	3	X3715115 \$	STUD (M8X1.25) FOR AIR INTAKE PIPE MTG	4	
5	4	FL400322	PIPE-ENGINE AIR INTAKE WITH EGR	1	
6	5	B8249509	S/A OF CLIP	1	
7	6	X1706500	GASKET, AIR INTAKE PIPE	1	
8	7	FL300600	GASKET-ENGINE AIR INTAKE MANIFOLD FOR H2 ENGINE	1	
9	8	L9010818	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 18MM LONG X GR 8.8	3	
10	9	L9510825	STANDARD FLANGED BOLT - HEX - M8 X 1.25 CP X 125MM LONG X GR 8.8	2	
11	10	L9010822	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8	1	
12	11	L9110818	STANDARD FLANGED NUT - HEX - M8 X 1.25 CP X 8MM LONG X GR 8	4	

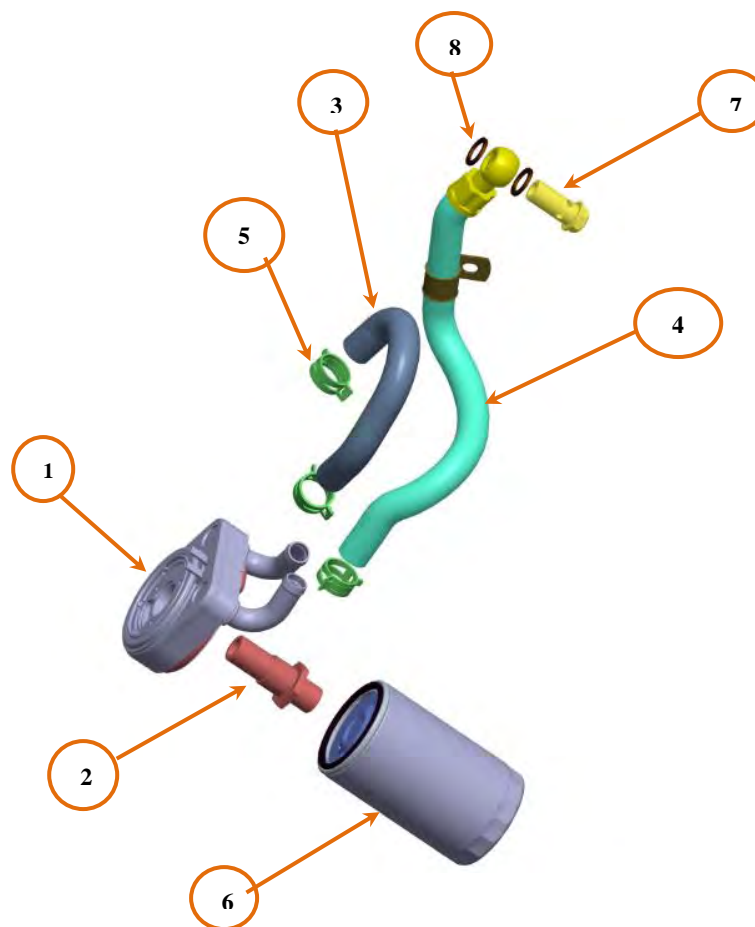
ASSEMBLY OF EXHAUST MANIFOLD – ALEEM20_#1





ENGINE EXHAUST MANIFOLD ASSEMBLY - ALEEM30_#1					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F3782115	STUD-TC MTG ON EMF	3	
2	2	FFD01122	EXHAUST MANIFOLD ASSEMBLY	1	
3	3	F7F00115	FLANGED NUT - HEX - M10 X 1.25 FP X 9.6mm LONG X GR	4	
4	4	FG500310	SPACER for Turbo Mounting	4	
5	5	FFF00213	GASKET	2	
6	6	FJ600510	GASKET TURBOCHARGER INLET	1	

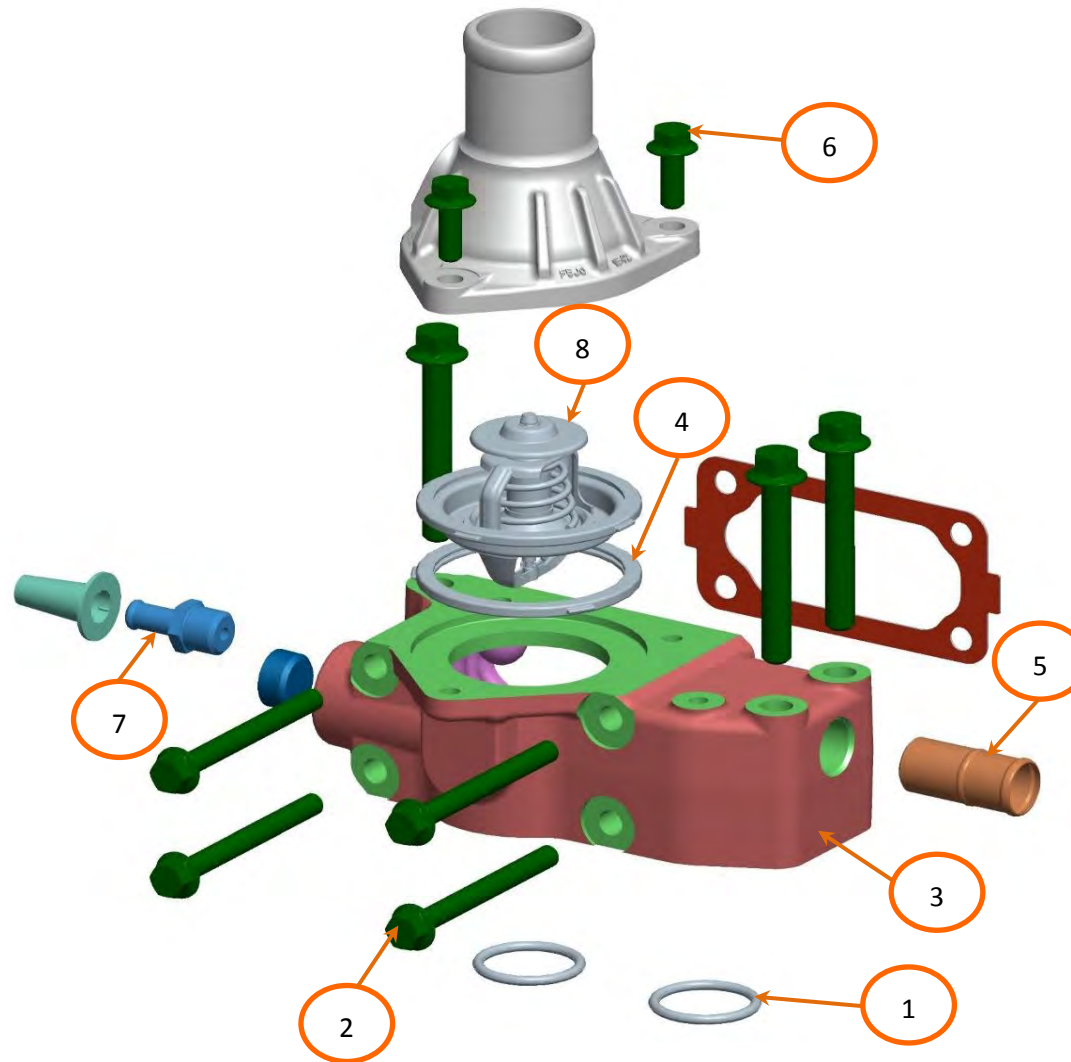
ASSEMBLY OF OIL COOLER AND FILTER – HAEOC19_#2





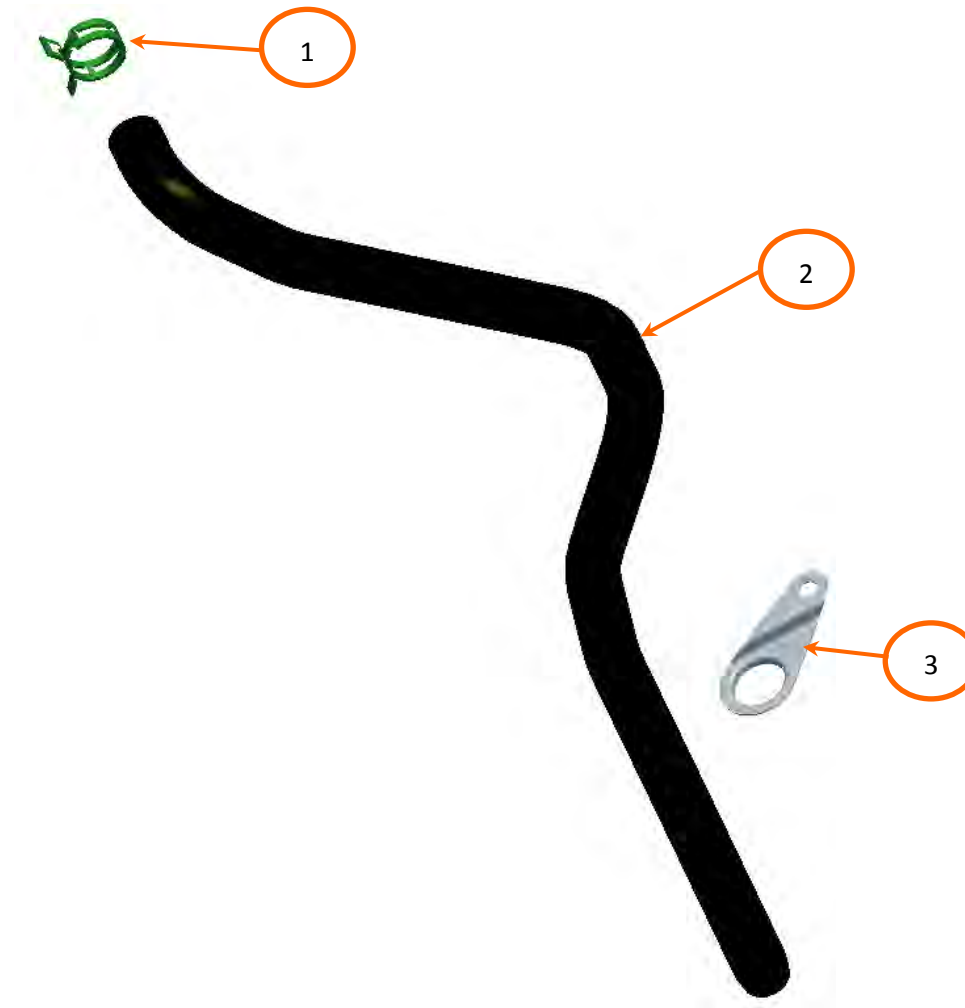
ASSY OF OIL COOLER - HAEOC19_#2					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	FP404000	OIL COOLER	1	
2	2	F0T08611	ADAPTOR -OIL FILTER	1	
3	3	B3Z04501	COOLANT HOSE -INLET	1	
4	4	B3Z04502	COOLANT HOSE OUTLET	1	
5	5	FP000103	CLIP COOLING SYSTEM	3	
6	6	FPA00600	OIL FILTER	1	
7	7	X3105115	BANJO BOLT-04864084W	1	
8	8	X4901240	Special Washer - MM - Plain - 16mm ID X 22mm OD X 1.5mm T	2	

ENGINE THERMOSTAT ASSEMBLY – ALETH18_B



ENGINE THERMOSTAT ASSEMBLY - ALETH18_B					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	F2701550	O RING 31.2 X 3.5	2	
2	2	L9510817	STANDARD FLANGED BOLT - HEX - M8 X 1.25 CP X 85MM LONG X GR 8.8	4	
3	3	F1825022	CASE THERMOSTAT, A-PLATFORM	1	
4	4	F1761400	GASKET THERMOSTAT	1	
5	5	F1985515	PIPE VENT	1	
6	6	L9010822	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8	3	
7	7	X0148515	ADAPTOR	1	
8	8	X1W00500	THERMOSTAT-MAGALTECH- H SERIES DIESEL	1	
9	8	X1W00300	THERMOSTAT-WESTERN THOMSON- H SERIES DIESEL	1	
10		F5J01942	COVER,THERMOSTAT CASE	1	
11		L9511014	STANDARD FLANGED BOLT - HEX - M10 X 1.5 CP X 70MM LONG X GR 8.8	3	
12		FJ600393	GASKET GASKET THERMOSTAT HOUSING GASKET RTUG	1	
13		X3108815	PLUG	1	

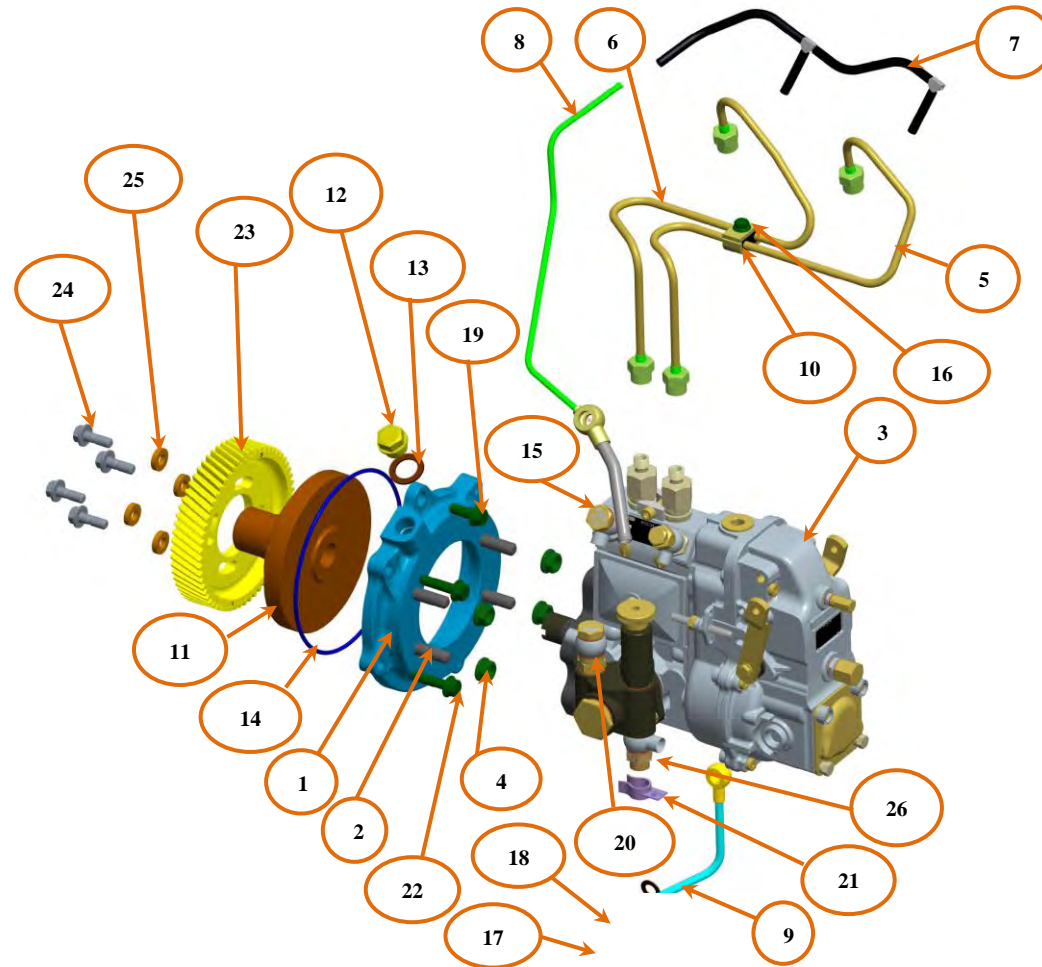
ENGINE BREATHER ASSEMBLY – ALEBH300_C





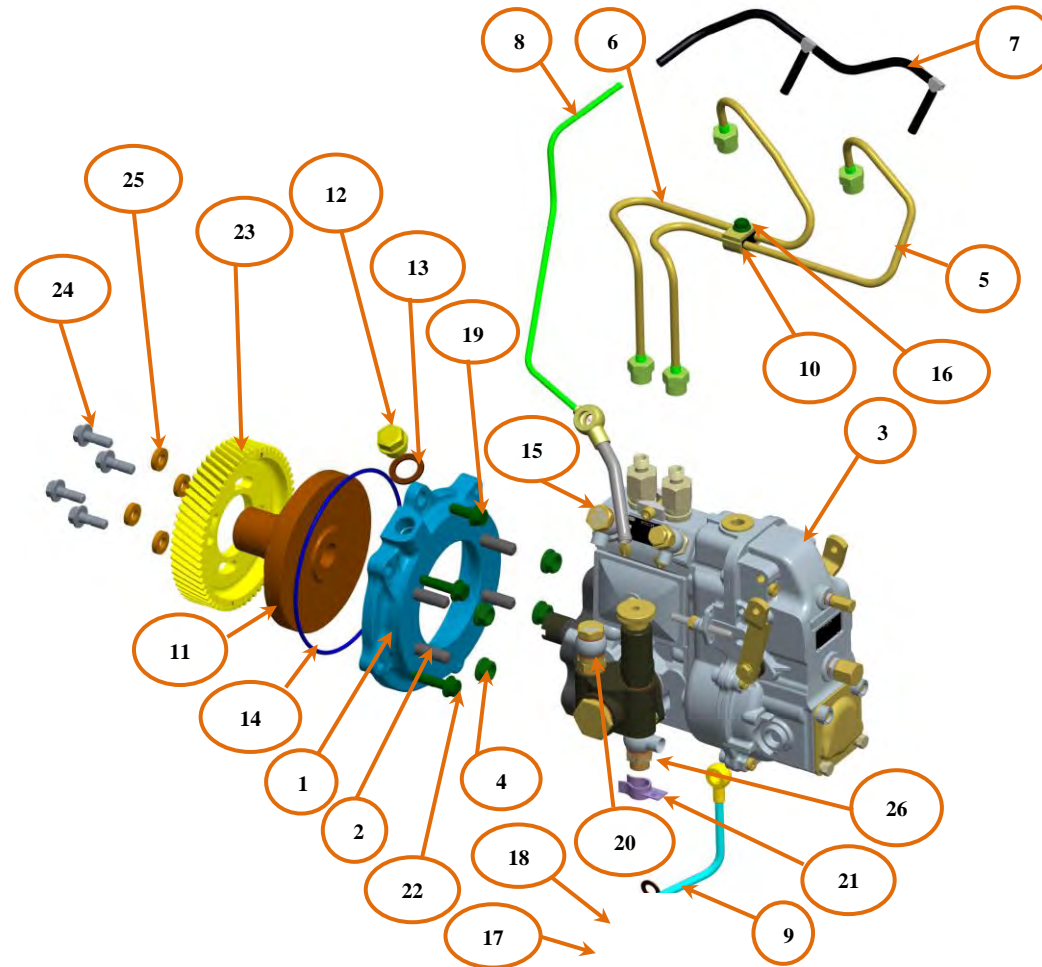
ASSY OF ENGINE BREATHER - ALEBH300_C					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X0807610	CLIP, SPRING BAND (25X12X1)	1	
2	2	B7015701	BREATHER HOSE WITH INNER SPRING	1	
3	3	F0837710	CLAMP - BREATHER - 4D PP	1	
4		X1407414	BRACKET BREATHING SYSTEM Oil Separator H-series	1	

ASSEMBLY OF FUEL INJECTION PUMP AND PIPES – HAFIE49_#3



ASSY OF FUEL INJECTION PUMP - HAFIE49_#3					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	FC400422	COVER TIMER	1	
2	2	X1D00911	STUD MOUNTING	4	
3		B5H09801	S/A OF FUEL INJECTION PUMP	1	
4	3	FHL04000	FUEL INJECTION PUMP	1	
5		FJ606500	GASKET FIP	1	
6	4	L9121018	STANDARD FLANGED NUT - HEX - M10 X 1.25 FP X 10MM LONG X GR 8	4	
7		B5H09802	S/A FUEL IN PIPES	1	
8	5	B5H09803	S/A OF PIPE, INJECTOR - NO.1	1	
9	6	B5H09804	S/A OF PIPE, INJECTOR - NO.2	1	
10	7	B5H09809	S/A OF FUEL RETURN LINE	1	
11	8	B5H09812	LEAK-OFF PIPE	1	
12	9	B5H09807	S/A OIL INLET TO FUEL PUMP	1	
13	10	B7015810	S/A OF CLIP	2	
14	11	FGF00422	FLANGE FOR H2-GENSET ENGINE	1	
15	12	F3148415	PLUG	1	
16	13	F4935030	SPECIAL WASHER - MM - PLAIN - 18MM ID X 27.5MM OD X 1.5MM T	1	
17	14	F2702450	O RING 142.5 X 3	1	
18	15	F3131415	BANJO CONNECTION	2	
19	16	L9110618	STANDARD FLANGED NUT - HEX - M6 X 1 CP X 6MM LONG X GR 8	1	
20	17	F3147415	BANJO BOLT	2	
21	18	X7435600	SPECIAL WASHER - MM - PLAIN - 10MM ID X 17MM OD X 1MM T	4	
22	20	F4930430	SPECIAL WASHER - MM - PLAIN - 14MM ID X 18.9MM OD X 1.5MM T	6	
23	22	L9010832	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 32MM LONG X G	2	
24	23	X1608211	GEAR, INJ. PUMP DRIVE	1	
25	24	X3509410	SPECIAL FLANGED BOLT - HEX - M8 X 1.25 CP X 21.05MM LONG	4	

ASSEMBLY OF FUEL INJECTION PUMP AND PIPES – HAFIE49_#3





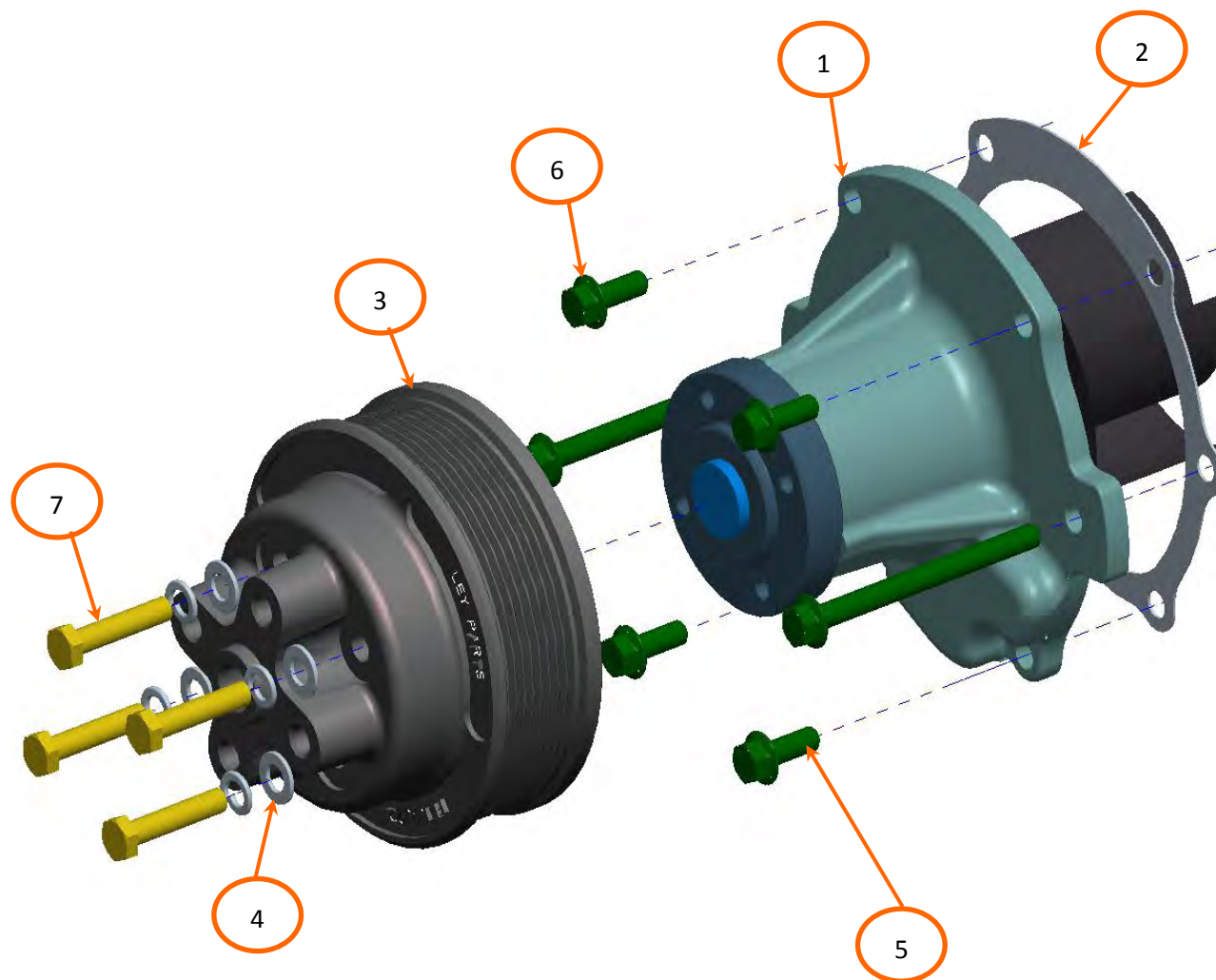
ASSY OF FUEL INJECTION PUMP - HAFIE49_#3					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
26	25	X4904410	SPECIAL WASHER - MM - SPHERICAL - 9MM ID X 18MM OD X 4MM T	4	
27	26	X3965600	STRAINER ASSY.	1	
28		L9010822	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG	1	

ASSEMBLY OF NOZZLE HOLDER – HAENH40_#1



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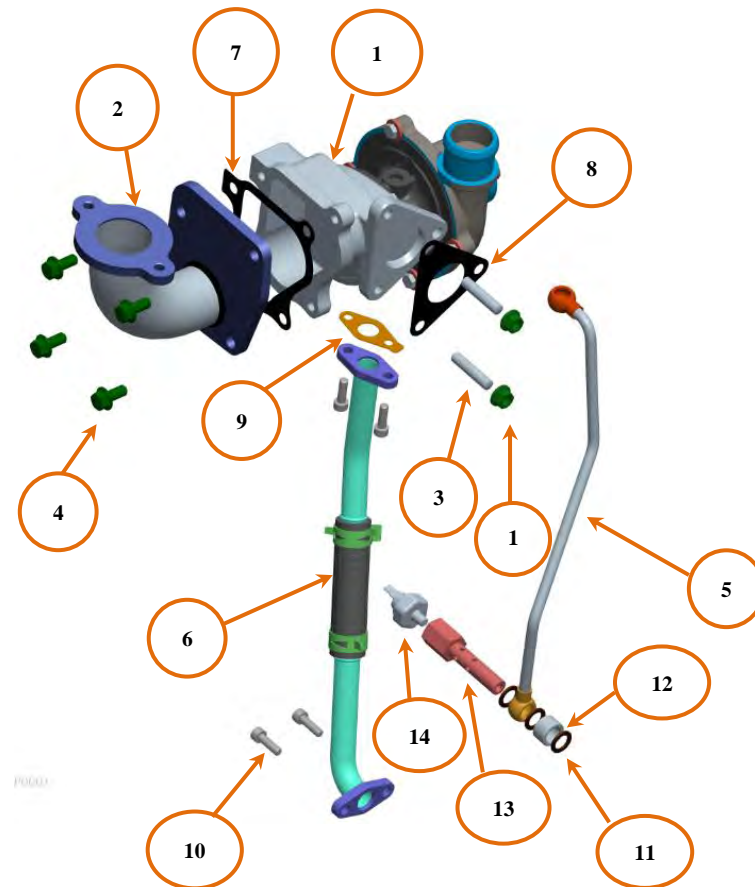
WATER PUMP ASSEMBLY – ALEWP274_#3





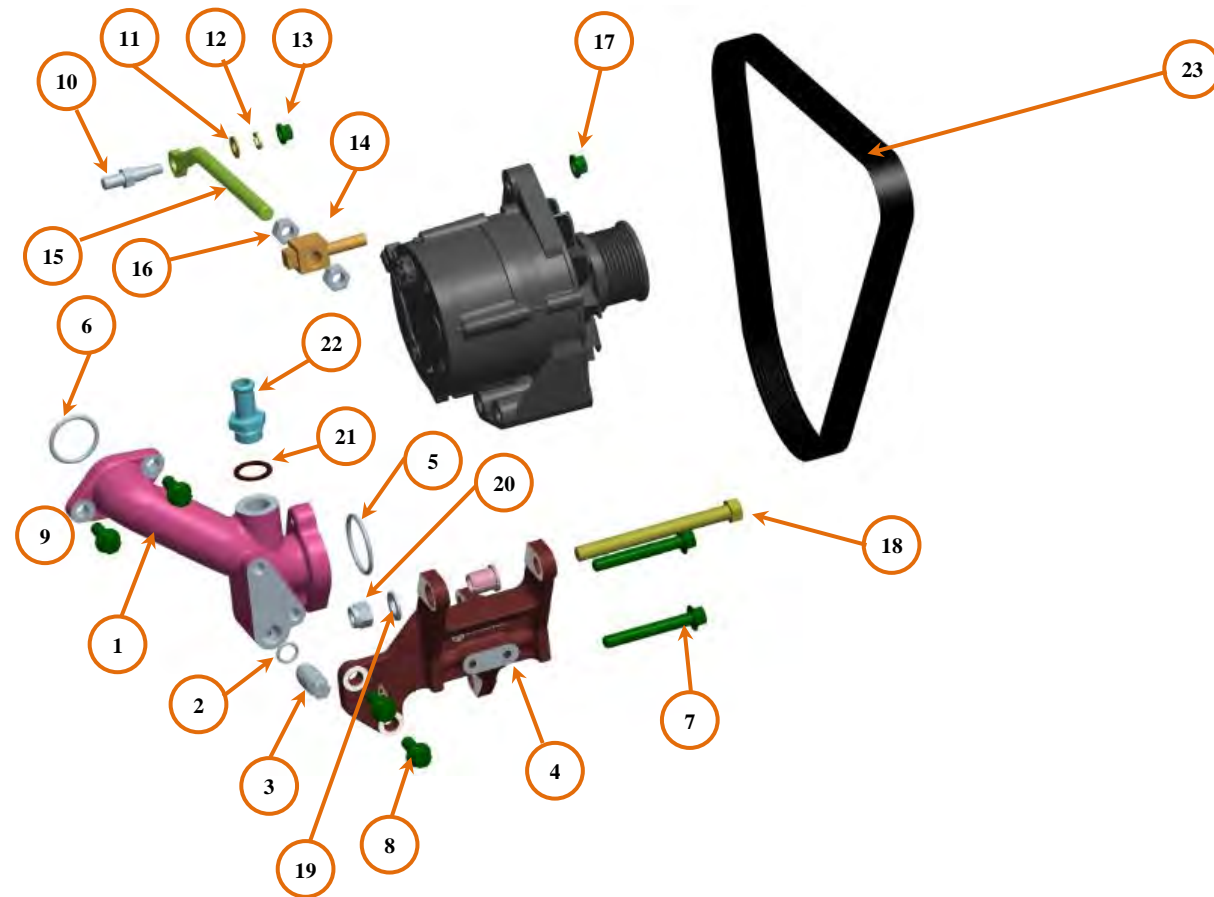
ENGINE WATER PUMP ASSEMBLY - ALEWP274_#3					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	B7016008	WATER PUMP	1	
2	2	FJ600703	GASKET GASKET RTUG	1	
3	3	FBT00222	PULLEY-COOLANT PUMP .	1	
4	4	L4010800	STANDARD WASHER - PLAIN - M8	4	
5	5	L9510819	STANDARD FLANGED BOLT - HEX - M8 X 1.25 CP X 95MM LONG X GR 8.8	2	
6	6	L9010822	STANDARD FLANGED SCREW - HEX - M8 X 1.25 CP X 22MM LONG X GR 8.8	4	
7	7	L1010808	STANDARD BOLT - HEX - M8 X 1.25CP X 40MM LONG X GR 8.8	4	
8		L4110800	STANDARD WASHER - SINGLE COIL - M8	4	

ASSEMBLY OF TURBO CHARGER – HAESC55_A



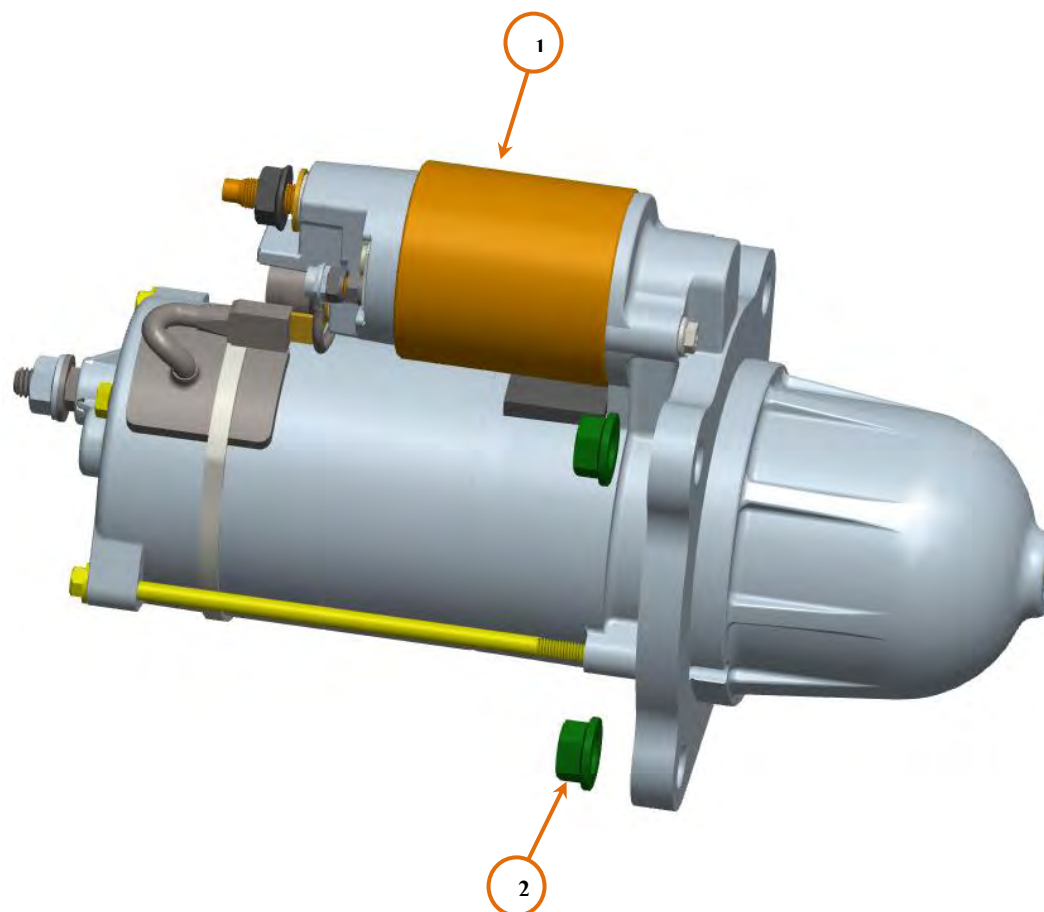
ASSY OF TURBOCHARGER - HAESC55_A					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	X3M02900	TURBOCHARGER, H2 ENGINE	1	
2	2	FF301822	PIPE-ENGINE EXHAUST	1	
3	3	F3782115	STUD-TC MTG ON EMF	4	
4	4	L9010618	STANDARD FLANGED SCREW - HEX - M6 X 1 CP X 18MM LONG X GR 8.8	4	
5	5	B4K14401	S/A OF TC OIL INLET PIPE	1	
6	6	B4K14402	S/A OF TC DRAIN PIPE	1	
7	7	F7Y00310	GASKET- TC OUTLET	1	
8	8	FG500310	SPACER FOR TURBO MOUNTING	1	
9	9	F1772700	GASKET - TC OIL DRAIN FLANGE	2	
10	10,11	X4904810	SPECIAL WASHER - MM - PLAIN - 9MM ID X 17MM OD X 2.3MM T	7	
11	12	F1296815	FERRULE - DISTANCE PIECE	1	
12	13	FL300215	ADAPTOR, PRESSURE SENSOR	1	
13	14	X7809300	PRESSURE SENDER	1	
14	15	X3504011	SPECIAL NUT - HEX - M8 X 1.25CP X 6.8MM LONG X GR	7	
15		X7435600	SPECIAL WASHER - MM - PLAIN - 10MM ID X 17MM OD X 1MM T	2	
16		X4901530	SPECIAL WASHER - MM - PLAIN - 12MM ID X 18MM OD X 1.5MM T	2	

ASSEMBLY OF ALTERNATOR – ALDD154_#3



ASSY OF DYNOMO DRIVE, H2 ENGINE - ALDD154_#3					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	FBR00322	COOLANT PIPE	1	
2	2	F2701850	O RING 13.8 X 2.4	1	
3	3	X4202111	VALVE (COOLANT ELBOW)	1	
4	4	B9716201	SUB ASSY OF ALTERNATOR BRACKET X7103422 WITH BUSH F0535915	1	
5	5	F2701650	O RING 43.7 X 3.5	2	
6	6	FA401358	O RING	1	
7	7	L9511015	STANDARD FLANGED BOLT - HEX - M10 X 1.5 CP X 75MM LONG X GR 8.8	2	
8	8	L9011025	STANDARD FLANGED SCREW - HEX - M10 X 1.5 CP X 25MM LONG X GR 8.8	4	
9	9	F0C00400	ALTERNATOR 12 V 35	1	
10	10	F3583015	SPECIAL SCREW	1	
11	11	F4923000	WASHER,PLAIN REF.S	1	
12	12	F4922600	SPRING WASHER FOR ABOVE	1	
13	13	L9110818	STANDARD FLANGED NUT - HEX - M8 X 1.25 CP X 8MM LONG X GR 8	1	
14	14	F0130711	ADAPTOR	1	
15	15	F3570911	SPECIAL BOLT - L-BEND LINK - M12 X 1.75 CP X 230MM LONG X GR	1	
16	16	L3011218	STANDARD NUT - HEX - M12 X 1.75 CP X 10.8MM LONG X GR 8	2	
17	17	L9111018	STANDARD FLANGED NUT	1	
18	18	F3572711	SPECIAL BOLT - HEX - M12 X 1.75 CP X 130MM LONG X GR	1	
19	19	L4011200	STANDARD WASHER - PLAIN - M12	1	
20	20	L3611218	STANDARD NUT - NYLOC - M12 X 1.75 CP X 14.9MM LONG X GR 8	1	
21	21	F4911800	SPECIAL WASHER - MM - PLAIN - 22.86MM ID X 30.48MM OD X 1.588MM T	1	
22	22	F0130815	NIPPLE	1	
23	23	X0301650	BELT, 8PK 1250 (FENNER)	1	

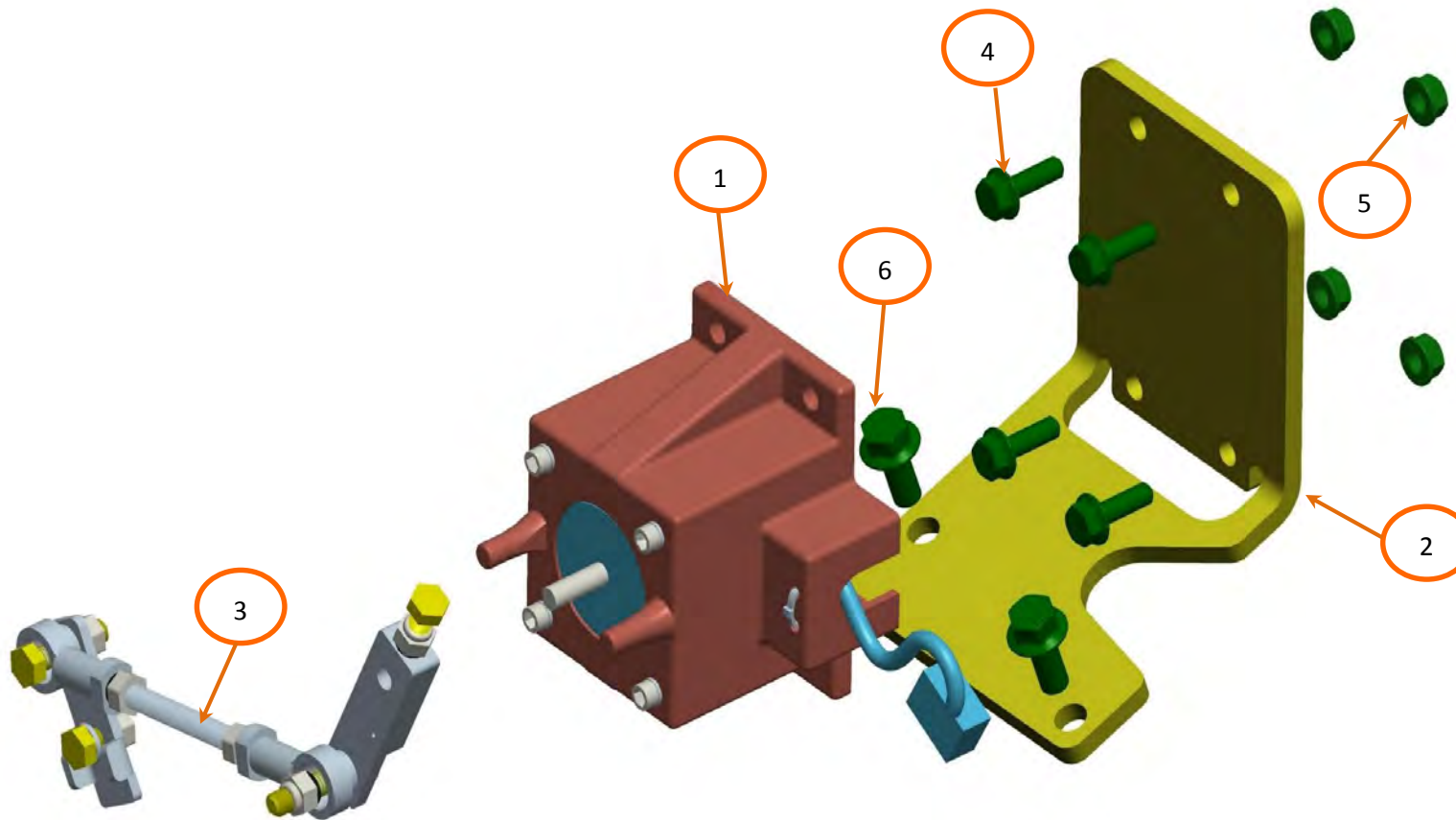
ASSEMBLY OF STARTER MOTOR – ALSM46_#





ASSY OF STARTER MOTOR - ALSM46_#					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	FH000190	12V 2.5kW GEAR REDUCTION STARTER MOTOR with TCO	1	
2	2	L9121018	FLANGED NUT - Hex - M10 X 1.25 FP X 10mm LONG X GR 8	3	

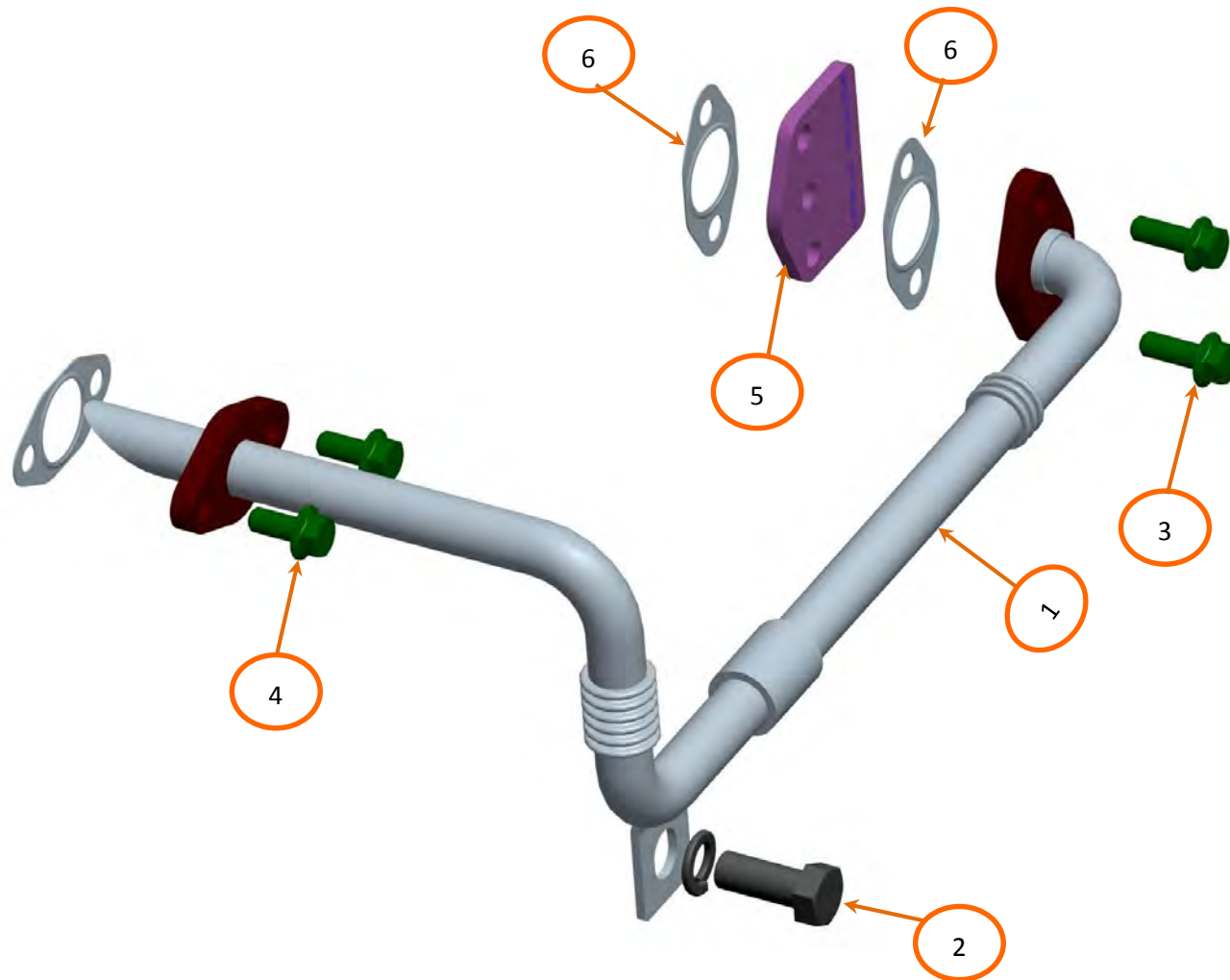
FUEL PUMP CONTROL UNIT WITH SEDEMAC – ALECP17_#





PUMP CONTROL UNIT WITH SEDEMAC CONTROLLER FOR 15KVA ENGINE_ALEPC17_#

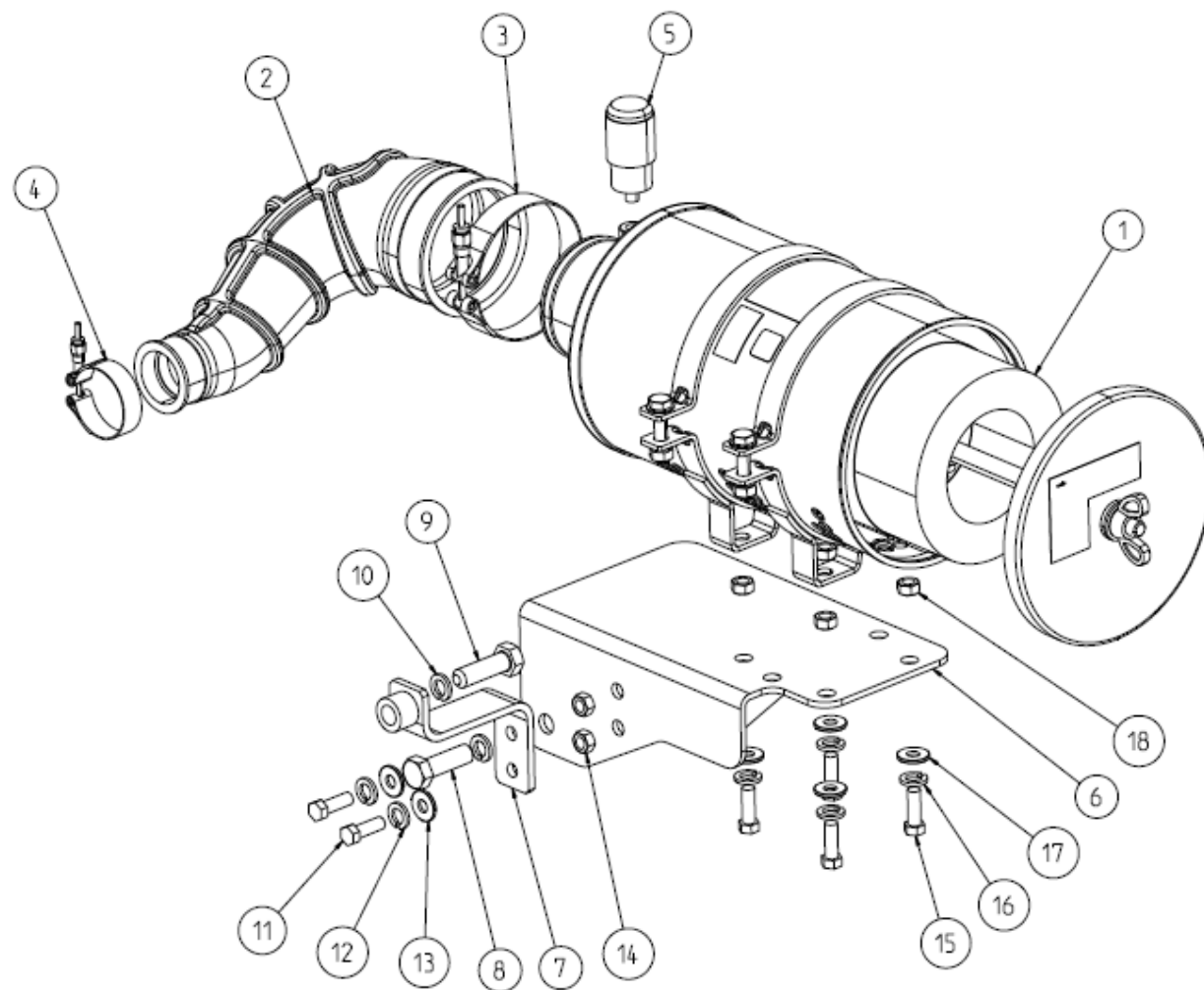
EXTERNAL EGR SYSTEM – HAEGR7_#1





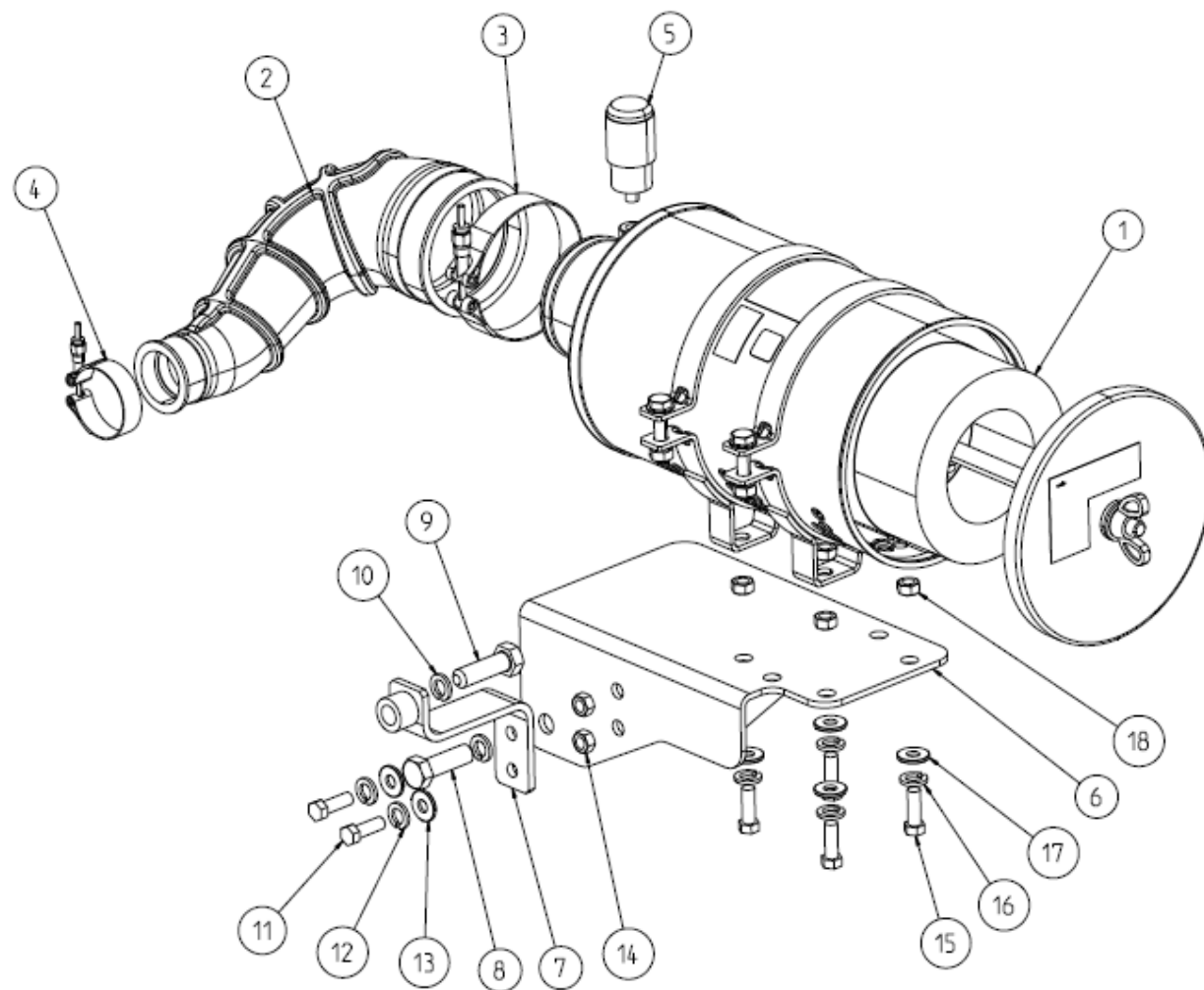
EXTERNAL EGR SYSTEM FOR H2-25 AND 30 KVA ENGINE - HAEGR7_#1

H2-30/25/20kVA AL2CTIDG1/AL2CTIDG2/AL2CTDG1 ENGINE AIS KIT ASSLY



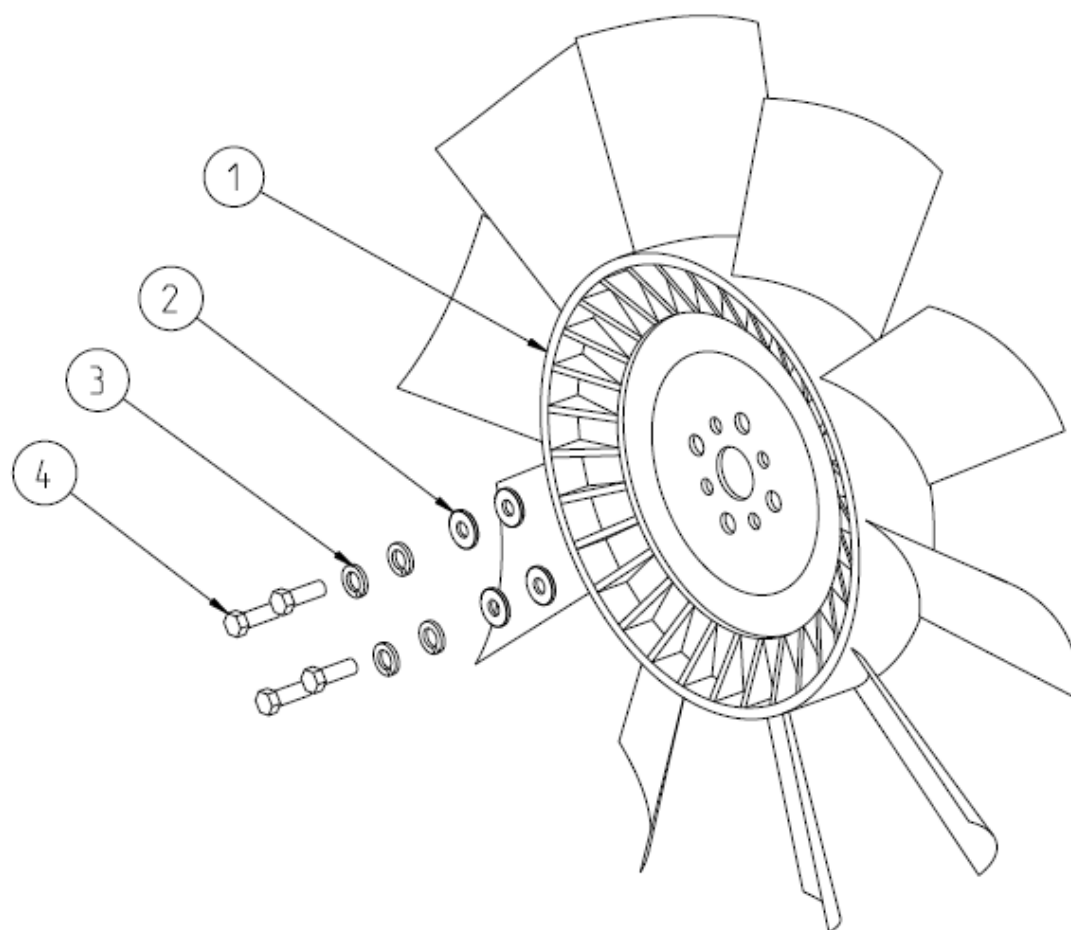
AIR INTAKE SYSTEM ASSEMBLY - 10009092					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		10009092	AIR INTAKE SYSTEM	1	
2		10005529	AIR CLEANER ASSY - H2 - 15KVA	1	
3	1	P7B00017	PRIMARY AIR FILTER ELEMENT	1	
4	2	10009855	Hose Reducer Degree	1	
5	3	X3901010	Hose Clamp, T Bolt	1	
6	4	10009856	Hose Clamp, T Bolt	1	
7	5	F8W00300	Restriction Indicator	1	
8	6	10009535	Bracket Air Cleaner Mounting	1	
9	7	F1E01414	BRACKET - AIR FILTER MOUNTING	1	
10	8	L2011225	SCREW M12 X 25 X 1.75 CP PLATED	1	
11	9	L2011235	SCREW M12 X 35 X 1.75 CP PLATED	1	
12	10	L4111200	SC WASHER 12 DIA PLATED	2	
13	11	L2010825	SCREW M8 X 25 X 1.25 CP PLATED	2	
14	12	L4110800	SC WASHER 8 DIA PLATED	2	
15	13	L4010800	PLAIN WASHER 8MM	2	
16	14	L3010818	NUT M8 X PC 8 X 1.25 CP PLATED	2	
17	15	L2011025	SCREW M10 X 25 X 1.5 CP PLATED	4	
18	16	L4111000	SC WASHER 10 DIA PLATED	4	
19	17	L4011000	PLAIN WASHER 10MM	4	
20	18	L3011018	PLAIN NUT M10X1.5	4	

H2-30/25/20kVA AL2CTIDG1/AL2CTIDG2/AL2CTDG1 ENGINE AIS KIT ASSLY



FUEL FILTER ASSEMBLY - 10009395					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	10009531	FUEL FILTER MOUNTING BRACKET	1	
2	2	L2010825	SCREW - M8 X 25 X 1.25 CP PLATED	2	
3	3	L4110800	SC WASHER 8 DIA PLATED	2	
4	4	L4010800	PLAIN WASHER 8MM	2	
5	5	10009395	FUEL FILTER CUM WATER SEPARATOR ASSY	1	
6	6	10009873	SPIN ON FUEL FILTER	1	
7	7	L2011035	SET SCREW - M10 X 1.5 X 35	2	
8	8	L4111000	SC WASHER 10 DIA PLATED	2	
9	9	L4011000	PLAIN WASHER 10MM	2	
10	10	B3J00501	HOSE FUEL FEED PUMP TO FILTER AND FILTER TO FIP	2	
11	11	F3590715	BANJO BOLT - M12	2	
12	12	04858607W	WASHER 18 OD X 12.2 ID X 1.5 T	4	
13		F8824500	FUEL STRAINER	1	
14		10001378	AL 485 FSKL-HOSE (TANK TO STRAINER) (800mm)	1	
15		10001379	AL 485 FSKL-HOSE Strainer to FEED PUMP	1	
16		B3J00503	HOSE FUEL RETURN	1	
17		F8200110	JUPITER HOSE CLAMP	3	
18		F8474714	STRAINER BRACKET	1	
19		F0804814	C - CLAMP	1	
20		L2010615	SET SCREW - M6 X 1 X 15	2	
21		L3010618	NUT M6 X PC 8 X 1 CP PLATED	2	
22		L4110600	SC WASHER 6 DIA PLATED	2	
23		L4110600	SC WASHER 6 DIA PLATED	2	

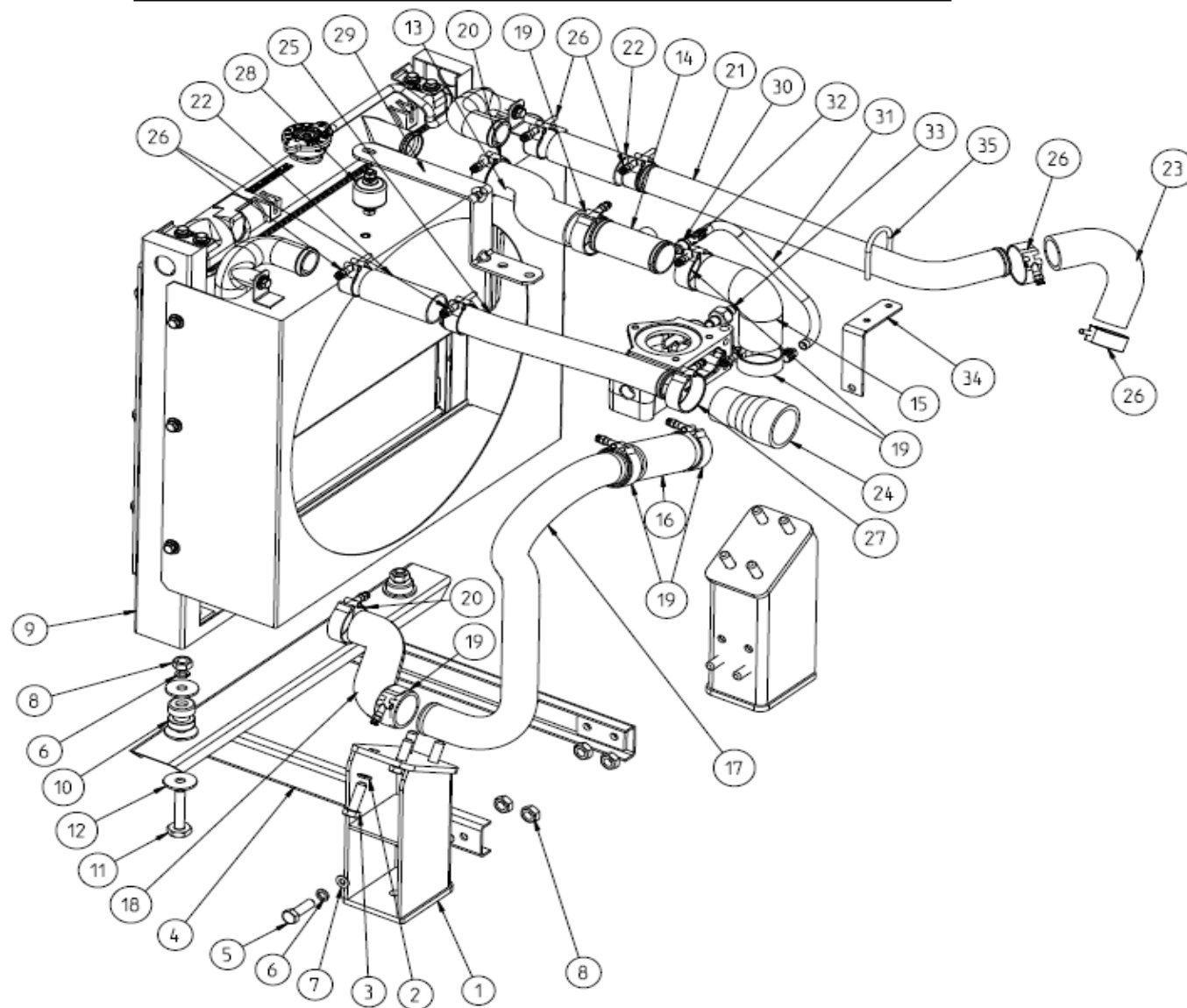
H2-30/25 AL2CTIDG1/AL2CTIDG2 FAN ASSLY





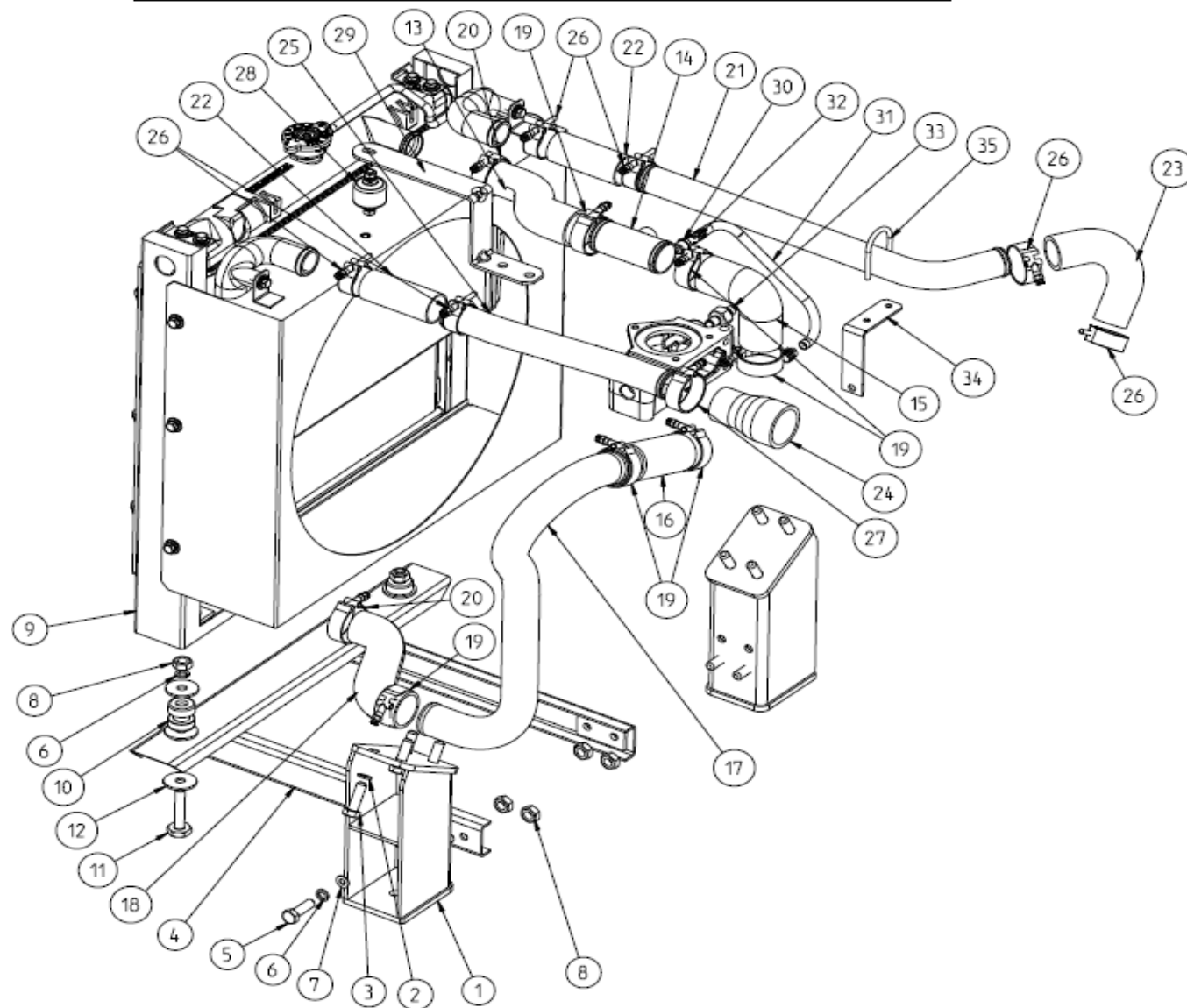
FAN ASSEMBLY_10003405					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	10009714	18.5" 10 BLADED PUSHER PLASTIC FAN	1	
2	2	L4011000	PLAIN WASHER - 10MM	4	
3	3	L4111000	SC WASHER 10 DIA PLATED	4	
4	4	L2021025	SET SCREW M10 X 1.25 X 25	4	

H2-30kVA AL2CTIDG1 RADIATOR AND ACCESSORIES



RADIATOR ASSEMBLY - 10009336					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1	1	10009338	ENGINE MOUNTING BRACKET	2	
2	2	L4111200	SC WASHER 12 DIA PLATED	8	
3	3	L2011230	SCREW M12 X 30 X 1.75 CP PLATED	8	
4	4	10009533	RADIATOR MOUNTING BRACKET	1	
5	5	L2011035	SETSCREW M10X1.5X35	4	
6	6	L4111000	SC WASHER 10 DIA PLATED	6	
7	7	L4011000	PLAIN WASHER 10MM	4	
8	8	L3011018	PLAIN NUT M10X1.5	6	
9	9	10009336	RADIATOR CUM CAC	1	
10	10	10000223	AVM-RADIATOR -CORI RUBBER	2	
11	11	L1011012	BOLT - M10X1.5X60	2	
12	12	10000251	ENGINE RADIATOR AVM WASHER 10M	6	
13	13	F8P06750	HOSE S - BEND WATER OUTLET PIPE TO RAD INLET	1	
14	14	10009340	PIPE EMGOME WATER OUTLET	1	
15	15	F8P10058	L - HOSE RADIATOR PIPING	1	
16	16	F8P13558	STRAIGHT HOSE RADIATOR PIPING	1	
17	17	F8638610	PIPE RADIATOR OUT TO ENGINE INLET	1	
18	18	F8P06650	HOSE S - BEND RADITOR OUT TO PIPE	1	
19	19	F0803400	WORM DRIVE CLIP	6	
20	20	10000713	HOSE CLAMP	2	
21	21	10009343	PIPE CAC IN	1	
22	22	10001487	STRAIGHT SILICON HOSE	2	
23	23	10009344	BEND HOSE - TURBO OUT	1	
24	24	10009534	HOSE REDUCER - CAC	1	
25	25	10009342	PIPE CAC OUT	1	

H2-30kVA AL2CTIDG1 RADIATOR AND ACCESSORIES



RADIATOR ASSEMBLY - 10009336					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
26	26	10000713	HOSE CLAMP	7	
27	27	F0803400	WORM DRIVE CLIP	1	
28	28	F2602158	RADIATOR BUFFER WITH NUTS	1	
29	29	10007760	RADIATOR STAY BRACKET	1	
30	30	X0148515	ADAPTOR VENT	1	
31	31	F1927650	VENT HOSE	1	
32	32	F8200110	JUPITOR HOSE CLAMP	2	
33	33	10007350	TEMPERATURE SENSOR CUM SWITCH	1	
34	34	10010234	L -BRACKET CAC PIPE SUPPORT	1	
35	35	10000182	U-CLAMP	1	
36		L4110800	SC WASHER - 8 DIA PLATED	2	
37		L3010818	NUT - M8 x 1.25 CP PLATED	2	

PSB SUNDRIES ITEMS



PSB SUNDRIES ITEMS					
SL.NO	ILL.NO	PART NO	DESCRIPTION	QTY	REMARK
1		10009491	WIRING HARNESS - 30 KVA	1	
2		10009463	GENSET CONTROLLER - GC 902	3	
3		F8P04550	EXTENDED BREATHER HOSE	1	
4		FB506400	CONNECTOR PIPE	1	
5		F0831310	ZERO CLIP	2	
6		10009722	EXPANSION BELLOW	1	



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