

**Scope of work**

1. Carrying out maintenance of Perkins and Volvo Penta make Diesel Engines of DG sets **(13 Nos.)** General health Checks including 'A' Checks (10 times) and 'B' Checks (02 times) as prescribed in the Perkins and Volvo Penta maintenance manual including supply of all consumables like air filters, fuel filters etc., required for the maintenance but excluding Engine oil & for a period of **two years**.
2. The preventive maintenance of **each DG sets' Diesel engines are** to be carried out **once in two months**. The **total no. of preventive maintenance** to be carried out on **each Diesel Engines of DG sets is twelve (12) in two years**.
3. The scope of work also includes carrying out pre-checks and providing **standby support** (to ensure trouble free operation of DG Engines) during Launch critical activities. Qualified service person shall be deputed for a duration of 12 hours. One job means service engineer deputed for 12 hour. This is on call and on need basis.
4. The capacities and locations of the Diesel Engines of DG sets are indicated in **Annexure-II**
5. The details of maintenance to be carried out are enclosed as **Annexure III**. This is only indicative and any other maintenance towards upkeep of the diesel engines is to be carried out. The essence of this AMC is to keep the systems in working condition.
6. The list of consumables to be supplied in this contract and price breakup format for services and consumables is enclosed as Annexure IV.
7. Rectification / Replacement of sub-assemblies are not included in the scope of the maintenance works as mentioned in S.No 1 above. The list of probable repairs / replacement as mentioned in **Annexure V** is to be carried out as and when required at additional cost as indicated in annexure V. However, the total amount in this regard is restricted to **5 lakhs only**.
8. **In case of any break down during the period of contract, the party shall attend and rectify the complaint within 24 hours of call without any additional cost**. In case of any delay towards attending the breakdown, penalty of Rs 3000/- per each day of delay will be levied.

**Terms and conditions**

1. Authorized sales & services agency of OEM - Perkins engines are **only eligible** to quote. **Authorized certificate from OEM** shall be submitted along with the quote failing which the offers will be rejected.

2. Only qualified service persons shall be deputed for the works. The person deputed shall be Diploma Engineer with experience not less than 5 years in servicing of Perkins engines.
3. The Diesel engines are spread over entire SDSC-SHAR. Party shall have its own mode of transportation towards carrying out maintenance works at each site as specified in the AMC schedule.
4. All consumables specified in annexure IV shall be supplied to our central stores within **60 days** from the date of PO.
5. Engine oil for carrying out service will be supplied by Department.
6. Unloading of consumable at our central stores is in the scope of party only. However material handling shall be provided by department subjected to availability.
7. Consumables, Spares supplied by the party and the Engine oil and coolant supplied by the Department will be available at Central stores
8. Shifting of engine oil and consumables required for each service visit from our central stores to each service location is in the scope of the party only. However, vehicle for shifting will be provided by department subject to availability.
9. Accommodation can be arranged by department at SDSC-SHAR subject to availability on payment basis. Food and other expenses shall be borne by the party and the cost quoted shall be inclusive of transportation, boarding and lodging.
10. The party shall ensure thorough cleaning of the engine and surroundings before and after the work.
11. All necessary tools, instruments, cotton waste etc., that are required for the works shall be in the scope of party.
12. Spares shall be supplied through our Central stores as and when required.
13. Removed items like filters, oils etc., shall be handed over to Central stores.
14. Duly filled service reports in duplicate shall be submitted after each work.
15. During the process of work if any damage occurs due to poor work man ship, the rectification / replacement shall be done by the party free of cost.
16. Party is only responsible for the safety of their service personnel. The persons deployed shall follow all safety measures and safety precautions.

17. Department guidelines with respect to safety and security shall be followed scrupulously.
18. The Payment will be made on **pro-rata basis** once in 02 months duly certified by AIC ED, CMG and approved by Head, ED, CMG.
19. The price breakup format as in **Annexure – IV** for sub assembly repair / rectifications and at **Annexure V** for consumables shall be duly filled and submitted along with the quote.
20. The party shall sign each and every page of tender document as a token of acceptance. In case of any deviation / disagreement, the same shall be brought out explicitly.
21. **Lowest offer will be arrived based on the total cost** of all items ie., Service visits, Supply of spares, Standby support and total cost for repair / replacement of sub-assemblies.
22. No change of dealership by OEM after release of Purchase Order is acceptable and the party shall complete the AMC once the PO is released to them.

**LIST OF PERKINS & VOLVO PENTA DIESEL ENGINES OF DG SETS**

<b>S.I.No</b>	<b>ENGINE SI.No</b>	<b>MODEL</b>	<b>Capacity (KVA)</b>	<b>LOCATIONS</b>
1	U2055W	4012-46TA-G	1250	O POINT-2
2	DGLM8005S 11421C	4012-46TAG0A	1250	O POINT-3
3	DGLM8005S 11423C	4012-46TAG0A	1250	O POINT-4
4	DGLM8005S 11254C	4012-46TAG0A	1250	SVAB - 1
5	DGLM8005S 10965C	4012-46TAG0A	1250	SVAB - 2
6	U20618X	400623TA-G2	750	MOTR-1
7	U20619X	400623TA-G2	750	MOTR-2
8	2016067858	TAD1641GE	500	FLP-1
9	DGBF0324S17372G	4006D-E23TAG2	750	PIF-2
10	DGLM0106S17166G	4012 - 46 TAG0A	1250	LPSS-1
11	DGLM0106S17220G	4012 - 46 TAG0A	1250	LPSS-2
12	DGLM0109S12279E	4012 - 46 TAG0A	1250	MRS-5
13	DGLM0109S13494E	4012 - 46 TAG0A	1250	MRS-6

**DETAILS OF WORKS TO BE CARRIED OUT DURING PREVENTIVE MAINTENANCE**

**THIS IS ONLY INDICATIVE. ANY OTHER WORKS TOWARDS KEEPING THE SYSTEMS IN GOOD HEALTH ARE ALSO TO BE**

**I) Air intake system:**

- 1) Air Cleaner (Pre Element) Dry type cleaning & checking / replacement
- 2) Air Cleaner (Safety Element) Dry type cleaning & checking / replacement
- 3) Air cleaner housing cap checking / replacement
- 4) Restriction / Vacuum indicator operation cleaning & checking / replacement
- 5) Hose & Hose clamp checking / replacement

**II) Lubrication system:**

- 1) Lub oil level checking / top up / replacement
- 2) Oil leakage checking / rectification
- 3) Lub oil filter checking / replacement

**III) Cooling system:**

- 1) Coolant level checking / top up / replacement
- 2) Coolant pH testing checking / rectification
- 3) Coolant Leakages checking / replacement
- 4) Fan belt tension checking /adjusting / replacement
- 5) Radiator Pressure Cap (Rubber gasket and Spring) checking / replacement
- 6) Radiator fin checking / cleaning with blower
- 7) Radiator hose & hose clamps checking / tightening / replacement
- 8) DG ventilation checking / recommendation

**IV) Fuel system:**

- 1) Fuel level checking
- 2) Fuel filter checking / replacement
- 3) Fuel water separator checking / draining the water / replacement
- 4) Fuel leakage checking / rectification of leakage
- 5) Fuel pipe checking / replacement
- 6) Fuel tank & breather checking / cleaning

7) Feed pump strainer checking / cleaning

**VI) Engine Exhaust system:**

1) Turbocharger & Turbocharger hose checking / replacement

2) Turbocharger oil supply & return pipe checking / tightening / replacement

**VI) Engine Electrical system:**

1) Battery specific gravity checking

2) Battery Voltage checking / replacement

3) Battery Electrolyte level checking / top up with distilled water

4) Battery terminal connections checking / tightening / replacement

5) Battery vent hole checking / Cleaning

6) Battery voltage during crank checking / replacement

7) Self starter & Charging alternator checking / Servicing

8) Emergency stop switch checking / replacement

9) Battery terminals checking / cleaning

10) Wiring harness connections checking / tightening / replacement

11) Controller unit checking / tightening / replacement

**VII) General check points:**

1) Cleaning of liner & cylinder head fins in case of air cooled engine

2) Thorough inspection of engine lubricating, water circulating & air intake systems.

3) Cleaning the engine with a dry clean cloth

4) Checking the total electrical circuit of the engine.

5) Checking and tightening of all external fasteners

6) Checking and adjusting of inlet / exhaust valve Clearances

7) Checking of all engine parameters and ensuring trouble free performance

8) Removing old fuel filters, lub oil filters and air filters and fixing new one.

9) Removing old engine oil & coolant and filling new engine oil and coolant.

10) Removing old battery and fixing new battery.

S.No	Engine Model	Location	KVA	Service costs				
				Service charges each visit	Total visits	Total cost	Taxes @	Total of services
				a	b	c = axb	d	e=c+d
1	4012-46TA-G	O Point-1	1250		12		18%	
2	4012-46TAG0A	O Point-3	1250		12		18%	
3	4012-46TAG0A	O Point-4	1250		12		18%	
4	4012-46TAG0A	SVAB-1	1250		12		18%	
5	4012-46TAG0A	SVAB-2	1250		12		18%	
6	400623TA-G2	MOTR-1	750		12		18%	
7	400623TA-G2	MOTR-2	750		12		18%	
8	TAD1641GE	FLP-1	500		12		18%	
9	4006D-E23TAG2P	PIF-1	750		12		18%	
10	4012 - 46 TAG0A	LPSS-1	1250		12		18%	
11	4012 - 46 TAG0A	LPSS II	1250		12		18%	
12	4012 - 46 TAG0A	MRS 5	1250		12		18%	
13	4012 - 46 TAG0A	MRS 6	1250		12		18%	
<b>Total service charges</b>								<b>***</b>
*** indicate this total service charges inclusive of taxes in S.No 1 of price bid.								

Consumables cost									
S.No	Engine Model	Description of Consumables	Part No	Qty	Rate	Sub total	P&F @ ____%	Tax @____%	Total
				a	b	c=a*b	d	e	c+d+e
1	4012-46TA-G / 4012-46TAGOA / 400623TA-G2 / 4006D-E23TAG2P	Oil Filter	SE111B / 4324909 /	198					
2		Fuel Filter	SE429B / 4/ 4759205 / 5172762	40					
3		Pre Filter	2020	38					
4		Air Filter	SEV551H / 4	18					
5		Lub oil bypass filter	5381439	4					
6		Air Filter	5551 / 4	3					
7		Coolant	21820263	400 Lit					
8		Oil Filter	478736 / 21707133	8					
9		Oil bypass Filter	477556 / 21707132	4					
10	TAD1641GE	Fuel Filter	20976003	4					
11		Fuel Filter	20998367	4					
12		Air Filter	21702911	1					
13		Pre Filter Insert	3838852 / 3825027	4					
14		V Belt	3883978	1					
15		Coolant	24383513	50 Lit					
<b>Total Consumables cost</b>									<b>***</b>

\*\*\*Indicate this total cost inclusive of Taxes in S.No 2 of price bid



Sub assembly replacement charges.																		
4012-46TA-G & 4012-46TAG0A ( 1250 KVA )							400623TA-G2 ( 750 KVA ) & 4006D-E23TAG2P						TAD1641GE ( 500 KVA )					
S No	Discription	Part Number	Quantity	Base rate	Tax rate	Total	Discription	Part Number	Quantity	Base rate	Tax rate	Total	Discription	Part Number	Quantity	Base rate	Tax rate	Total
1	Fuel Priming pump	1375541/CH10439	1										V Ribbed Belt	3838617	1			
2	Gasket Priming Pump	278/413	1										Relay	3171420	1			
3	Water pump Assby	T431181/SE145AY	1				Water pump Assby	T431180/SE145BK	1				Charged Air hose	3829133	2			
4	Water Pump Gasket	SEV145A/42	1				Water Pump Gasket	SE145B/42	1				Hose clamp	20435760	8			
5	Starter Motor	M105R3026SE/701-137	1				Starter Motor	6100292-MS7-303P/701/133	1				Starter Motor	2,11,03,722.00	1			
6	Water Temp sensor	281010105	1										Hose clamp	3838792	1			
7	Water Temp Switch	782/176	1										Hose	21888852	1			
8	Oil Pressure Switch Cum Sensor - 24VDC	290020502	1				Oil Pressure Switch Cum Sensor - 24VDC	782/175	1				Hose clamp	994565	2			
9	Magnetic pick up	680/124	1										Control unit ECU	21695319	1			
10	Stop Solenoid	589/91	1										Sealing Strip	20736230	1			
11	Starter Relay	589/83	1				Starter Relay	2848A226/ 589/79	1				Charging Alternator	22117421	1			
12	Fuel actuator	680/86/T433574	1				Fuel actuator	T433575/680/112	1				V Ribbed Belt	20430376	1			
13	Charging Alternator	66021544GB - 702/186	1				Charging Alternator	66021544GB - 702/186	1				Sensor Expansion Tank	8140024	1			
14	Resistor	836/8	1				HOSE	419/702	1				Pressure Sensor/ Pressure/Temp	20524936	1			
15	Alternator Belt	541/398	1				Hose	422/6	1				Fuse	969161	1			
16	Turbo Charger	SE652CJ	1				Hose Clip	525/19m	1				Oil Pressure Sensor	2+K20:L341302639 ( 20898038 )	1			
17	Gasket Turbo charger	282/292	1				Hose Clip	525/57M	1				Fuel Pressure sensor	21302639 ( 20898038 )	1			
18	Gasket Turbo oil supply	278/383/T402615	1				HOSE	T400536	1				Oil Level Sensor	21042447(24424110)	1			
19	Gasket Turbo oil drain	278/384	1				Hose	422/10	1				Crank Case Pressure	20796744 ( 20499340 )	1			
20	Fuel Hose Supply	3/4 Inch, 3 meters	1				CLIP	525/50M	1				Sensor	20513343	1			
21	Fuel Hose Return	3/4 Inch, 3 meters	1				HOSE	422/9	1				Coolant temp Sensor	20513340	1			
22	Coolant Hose	3 inch	1				Hose Clip	525/57M	1				Piston cooling Pressure switch	21202753	1			
23	Coolant Hose	1.5 inch	1				HOSE CLIP	525/53	1				Hose Oil	21521886	1			
24	Air Hose	SEV34Q/12	2				HOSE	T400246	1				Hose Oil	23434306	1			
25	Air Hose	419/677	2				HOSE	419/712	1				Huel Hose	3849938	1			
26	Hose Clip	525/62	2				Hose	T400445	1				Fuel Hose	861057 (3/8)	1			
27	BAND	OE36369	2				Hose Clip	525/63	1				Fue hose	3888407	1			
28	Exhaust Bellows	10 inch	1				Hose Clip	T400444	1				Tachometer sensor	862251	1			
29	Ex Bellow Gasket	Flange Gasket	2										Temp Sensor	862154	1			
30	CAC Air Bellows	Suitable for (Engine Model: 4012-46TAG0A, E sno: DGLM8005S 11423C	1 set										Oil Pressure sensor	866835	1			
31	CAC Pipe Flange Gasket	Flange Gasket	2										AVR SMR based		1			
32	Gasket	282/299	8 nos															
33	seal Rocker cover	SE478F	12 no.s															
34	Gasket Rocker Housing	SE152E/26	12 no.s															
35	Gasket Cam follower	SEV644E/1	6 no.s															
36	Head Gaskets	SE2H	12															
37	Seal O ring	576/237	12															
38	Seal O ring	576/151	12															
39	AVM Pads																	
40	AVR	D510C/AVRD550	1															
41	AVR	SLSAVR450	1				AVR	SLSAVR450	1									
42	Battery Switch	SSPLBS	1				Battery Switch	SSPLBS	1									
43	Controller	GC 315	1				Controller											
44	SDEIFC400-DEIF CONTROLLER	CGC 400	1				SDEIFC400-DEIF CONTROLLER	DIEF CONTROLLER-CGC-413	1									
45	Woodward Easygen Controller	3200XT	1				Woodward Easygen Controller											
46	CONTROL MODULE	4620006	1				CONTROL MODULE	T433575/680/112	1									
47	CONTROL BOX	T403522/T401674	1				CONTROL BOX	T400527	1									
48	Air Pressure Sensor						Air Pressure Sensor	886/199	1									
49	RRA Diode Asseby						RRA Diode Asseby	LS MAKE	1									
	<b>Sub total</b>					<b>A</b>						<b>B</b>						<b>C</b>
	<b>Grand total</b>																<b>A+B+C</b>	<b>***</b>

\*\*\* Indicate total amount inclusive of taxes in S.No 3 of price bid.

1. The above items will be operated based on need ONLY and the price quoted shall be valid till end of AMC

2. This repairing / replacement is purly on need basis during AMC contract.

3. The maximum operating total amount for repairs is restricted to 5 lakhs including taxes.