

Doc. No.: MTEEEDSE2024-0077
ref.no: EDSD-14052014_rev.3

Field Failure Information

for Distributors, Dealers and Original Equipment Manufacturers

April 1, 2024

Purpose

- To avoid misunderstanding and miscommunication
- To be able to fully support the customer
- To reduce down time as much as possible
- To judge warranty claims, if any, quickly and correct

How to obtain

- By sending the MTEE Service Department a “Failure Report” as complete as possible (Including all relevant reports, pictures, records, sample analysis reports, etc.)

Communication

- For all communication involving a specific engine please mention in the subject the engine main type and serial number (*e.g. S16R, 12345*)
- For all communication related to a by MTEE assigned reference number (*SPN number*) please mention in the subject the MTEE reference number preferable followed by engine main type and serial number (*e.g. SPN12345: S16R-PTA, 12345*)

Equipment description

- Service company
- Customer (end-user)

- Start warranty date
- Commissioning date
- Failure date
- Repair date

- Engine model
- Engine serial number
- Rated output (in KW)
- Rated rotating speed (in RPM)

- Engine running hours when failure occurred
- Application (Propulsion, generator, shovel, tractor, etc.)

Detailed failure description

Situation

- What happened?
- What was found?
- Was it recurrence? Etc.

Cause

- What are the investigation results?
- What is the probable cause of the failure?

Operating area

- Country, area, desert, mountains, etc.

Operating conditions when failure occurred

- Temperatures and pressures of cooling water, oil, exhaust, ambient., etc.)

Maintenance records

- Preformed maintenance records
- Conditions of fuel, oil, LLC, etc.

Detailed failure description

Unique points

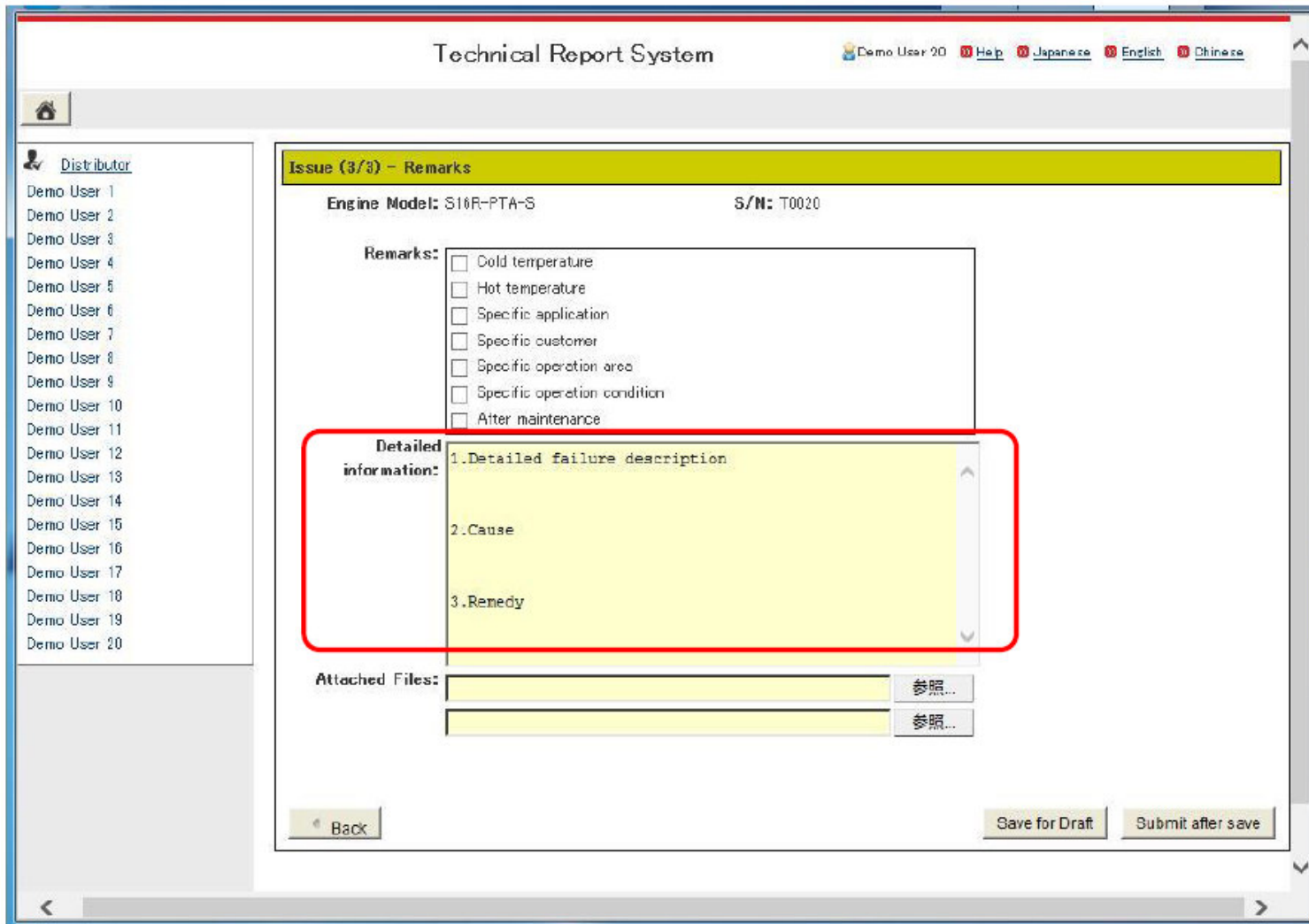
- Were there any unique points?
- Did the failure happened only in the morning, only in cold conditions, etc.

Remedy

- Was it repaired?
- Was the problem solved by parts replacement?

Necessary information in Technical Report

1 Detailed information



Technical Report System

Demo User 20 Help Japanese English Chinese

Issue (3/3) - Remarks

Engine Model: S16R-PTA-S S/N: T0020

Remarks:

- ☐ Cold temperature
- ☐ Hot temperature
- ☐ Specific application
- ☐ Specific customer
- ☐ Specific operation area
- ☐ Specific operation condition
- ☐ After maintenance

Detailed information:

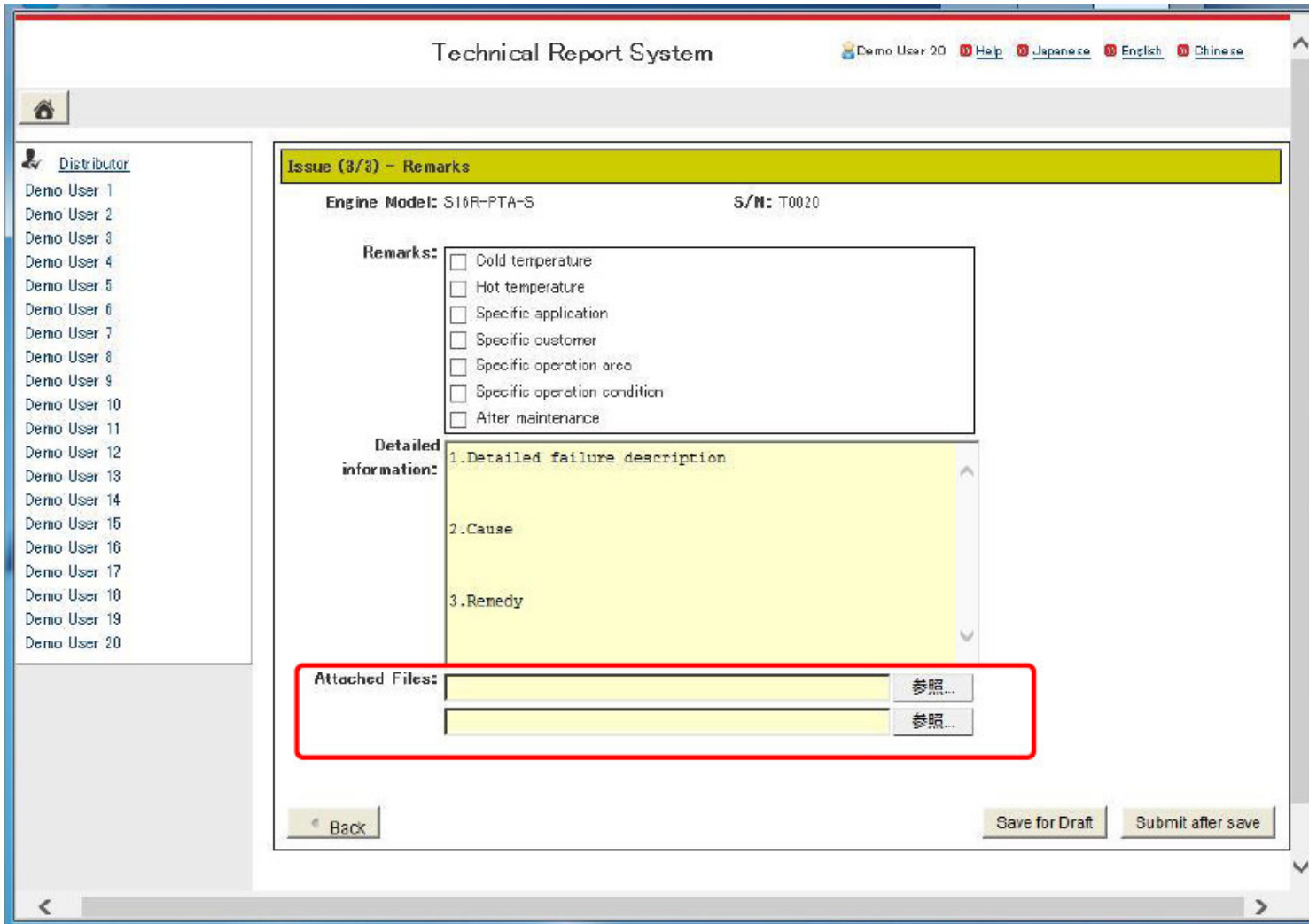
1. Detailed failure description
2. Cause
3. Remedy

Attached Files:

Back Save for Draft Submit after save

Necessary information in Technical Report

1 Attach files



Technical Report System

Demo User 20 | [Help](#) | [Japanese](#) | [English](#) | [Chinese](#)

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3. Remedy

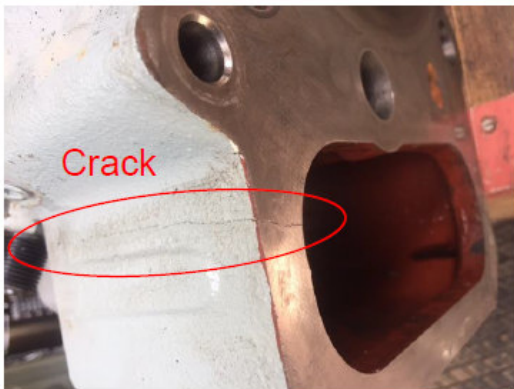
Attached Files:

Necessary information in Technical Report

1 Attach files

(1) Photo(s) of failure condition as evidence of the failure

Example: Photo of failure condition – Cylinder head cracked



To check the failure condition of the parts,

- ✓ *What the part was damaged?*
- ✓ *How was the part damaged?*

Necessary information in Technical Report

1 Attach files

(2) Maintenance record(s)

Example: Maintenance record

CUSTOMER: _____
ADDRESS: _____

DIESEL GENERATOR INFORMATION

Rating Definition: ☒ MGS ☐ NOT MGS made by _____
☒ Continous ☐ Prime ☐ Stand-by ☐ Others _____

Serial No.: _____ Total Operating Hours: _____
 Average Output (KW): _____ Total Operating Hours: _____
 Input Power (kW): _____ Delivery Date: _____
 Frequency (Hz): _____ Commissioning Date: _____
 Generator Manufacturer: _____ Lubricant Brand, SAE, API: CALTEX DELO SAE40
 Generator Serial No.: _____ Coolant Brand: _____

Item	System	Put check mark (V) (N) Normal (A) Abnormal	RE	A	Remarks
1	APPROXIMATE	CHECK LEAKAGE OF FUEL, OIL, AND COOLANT	/		no leaking
2		INSPECT VIBRATION LEVELS FOR SUCTION LINE AND COLOR CHANGE	/		OK
3		INSPECT FOUNDATION BOLTS INCLUDING AND CEMENTS	/		OK
4		INSPECTION OF BELT AND BELT TIGHTNESS	/		check and re-tight
5	LUBE OIL	CHECK LUBE OIL LEVEL	/		OK
6		WASH LEVEL IS ROBBEN	/		OK
7	FUEL	CHECK INJECTION (check for contamination of fuel or coolant)	/		OK
8		CHECK LEVEL AND CAPACITY OF FUEL TANK (DO YOU RE-FILL FUEL AT FULL LEVEL AND DRAIN WATER PERIODICALLY?)	/		OK
9		CHECK INJECTION PUMP (including rubber seals and fittings)	/		OK
10	COOLING	INSPECT FUEL PUMP & FUEL CONTROL LINES	/		OK
11		INSPECT FAN BELT AND COOLANT LEVEL	/		OK
12		INSPECT ADJUSTMENT OF FAN BELT	/		N/A
13	BATTERY	INSPECT WATER PUMP FOR LEAKAGE	/		no leaking
14		CHECK BATTERY (electrolyte level, terminal, and voltage)	/		OK
15		CHECK BATTERY CABLE (diameter, contact)	/		OK
16	INTERIOR	CHECK ALTERNATOR BELT	/		OK
17		CHECK AIR CLEANER	/		OK
18	GENERATOR	CHECK EXHAUST PIPE AND DUCT FOR LEAK OR LOOSENESS	/		OK
19		CHECK EXHAUST PIPE AND DUCT FOR LEAK OR LOOSENESS	/		OK
20	OPERATION	WATER DO YOU SUPPLY WATER?	/		N/A
21		CHECK EXHAUST GAS (color, etc.)	/		OK
22		TEST RUN	/		OK
23	OTHERS	OPERATION DATA (Temp, Pressure)	/		OK

Recommendations:
 After preventive maintenance genset ready for operation.

CHECK BY: _____

To check the maintenance was properly done,

- ✓ *When the each maintenance item was done?*
- ✓ *What kind of maintenance work was done?*
- ✓ *What is the result of maintenance?*

Necessary information in Technical Report

1 Attach files

(3) Lubricating oil and Fuel analysis result(s)

Example: Lubricating oil analysis result

The TEST REPORT No. 571/10 of 20.05.17.

DATA OF THE SAMPLE		Remarks
Laboratory number	571/10 of 20.05.17	
Name of the Customer		
Contact person		
Date of collection of test	Sample is collected by the Customer	
Date of analysis		
Identification of the component		
Place of collection		
Volume of sample		
Total Running time, hrs. (1)	12.50	None
Operating time of oil, hrs.	25.9	
Running added from the last oil consumption/ Lubrication consumption between 2 sampling time	34	
Oil brand	CELTIC 500	
Engine type	2.0L 1700	
Average load (2) / (3)	11.50	
Average oil temperature	32	
Sampling date	24.02.2017	

Name of an indicator	Test method	Values protocol No. 571/10	Values protocol No. 571/2	Values protocol No. 571/3	Values protocol No. 571/4	Values protocol No. 571/5	Actual protocol	Scoring	Remarks
1. Wear indicators									
Iron Fe	mg/kg	0	1	2	2	2	1	1	0.5
Chromium Cr	mg/kg	0	0	0	0	0	0	0	0
Lead Pb	mg/kg	0	0	0	0	0	0	0	0
Copper Cu	mg/kg	0	7	37	37	37	37	37	37
Aluminum Al	mg/kg	0	0	1	1	1	1	1	1
Nickel Ni	mg/kg	0	0	0	0	0	0	0	0
Vanadium V	mg/kg	0	0	0	0	0	0	0	0
2. Elements of additives									
Molybdenum Mo	mg/kg	0	0	0	0	0	0	0	0
Manganese Mn	mg/kg	0	0	0	0	0	0	0	0
Boron B	mg/kg	90	91	96	99	99	99	99	99
Calcium Ca	mg/kg	10	10	11	12	12	12	12	12
Magnesium Mg	mg/kg	1151	1149	1229	1265	1264	1255	1255	1255
Barium Ba	mg/kg	0	0	0	0	0	0	0	0
Phosphorus P	mg/kg	237	234	234	238	239	235	235	235
Zinc Zn	mg/kg	288	298	295	304	302	302	302	302
3. Contaminants									
Sulfur S	mg/kg	4	31	0	5	19	3	3	3
Sodium Na	mg/kg	0	0	0	0	0	0	0	0
Potassium K	mg/kg	0	0	0	0	0	0	0	0
4. Mass fraction of mechanical impurities									
Mass fraction of N	g/100g	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
Concentrations of S, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z	g/100g	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
Direct %	%	0.0	4.1	0.0	0.0	4.0	0.0	0.0	0.0
Distillation, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z	%	0.0	1.3	11.4	13.0	14.0	0.0	0.0	0.0
Distillation, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z	%	7.2	7.5	9.0	9.5	10.5	8.0	8.0	8.0
5. Physical and chemical properties of oil									
Flash point at 15 °C	°C	188.78	189.96	188.88	188.98	188.97	188.94	188.94	188.94
Kinematic viscosity at 100 °C, mm ² /s	mm ² /s	12.44	13.10	13.49	13.78	13.82	13.58	13.58	13.58
Kinematic viscosity at 40 °C, mm ² /s	mm ² /s	123.31	126.13	128.09	130.08	132.08	128.3	128.3	128.3
Viscosity index		164	162	163	164	165	164	164	164
Acid number, mg KOH/g	mg KOH/g	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Alkaline number, mg KOH/g	mg KOH/g	5.40	5.45	5.51	5.57	5.62	5.51	5.51	5.51
Flash temperature in an open crucible, °C	°C	264	266	250	254	257	247	247	247

Interpretation of actual laboratory data. Physical and chemical properties of oil are within norm.

To check if there is any abnormal values,

- ✓ When the lubrication oil was corrected? (Ope. hours)
- ✓ Where the oil/fuel was corrected? (From oil filter, oil pan, and etc..)
- ✓ What is the test method of analysis?

Necessary information in Technical Report

1 Attach files

(4) Operational performance data (commissioning, start-up)

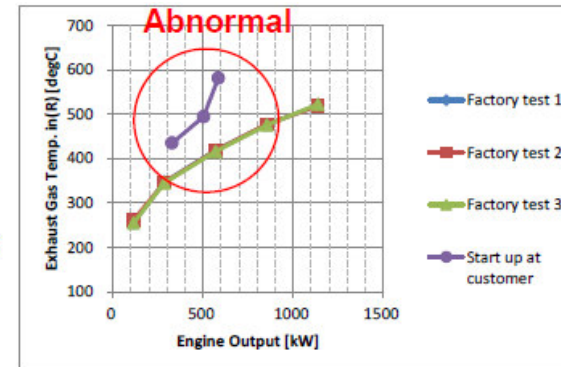
Example: Operational performance data

Customer Name:	3/3/16				Customer Location:	6300 1000		Part Number (also 15-450)
Engine S/N:					Serial Number/Type:			
Form/Reference code:	6-10-1				Model Name:			
1 Output - HP	0%	50%	75%	100%	Run minimum 10 minutes at each 10% load	LPM's		
2 Engine speed	1413	1364	1456	1458	See rpm notes	°C	°F	
3 Charging air press	0	0	0	0	bar			
4 Air restriction:	0	0	0	0	mmH2O	<384.7	<15.5	
5 Ambient temperature (outside of engine room)	16.6	16.6	16.6	16.6	°C			
6 Exh. Gas back pressure	0	0.5	0.5	0	mmH2O	<88.58	<3.7	
7 Intake air temperature (in engine room)	10	10	10	10	°C	<45	<115	
8 Crank case pressure	0	0	0	0	mmH2O			
9 L/D press. Engine @ low idle	0	0	0	0	bar	2-3 @ low idle	34.3-43.7psi	
10 L/D press. Engine @ High idle	8.5	8.5	8.5	9.0	bar	5% @ rated speed	75-80 psi see note	
11 Ch. Air Temp. after air cooler	81.2	106	108	112	°C			
12 Ch. Temp. after turbo - left bank	123	134	136	142	°C	<450	<842	
13 Exh. Temp. after turbo - right bank	123	134	136	142	°C	<450	<842	
14 L/D temp. @ oil pan	115	128	129	133	°C	<115	<230	
15 I/W temp. before water pump	154	158	158	157	°C			
16 I/W temp. after engine @ (thermo case)	154	158	158	157	°C	<85	<205	
17 Intercooler Water Temp. (in)	7.2	6.7	7.2	8.2	°C	See note below		
18 Intercooler Water Temp. (out)	7.7	7.3	8.3	9.8	°C	See note below		

Ambient air temp	°C	15	30	35	40
°F	57	86	95	104	
Coolant temp	°C	80	97	102	107
@ before air cooler	°F	176	207	216	225



Data input by MHIET

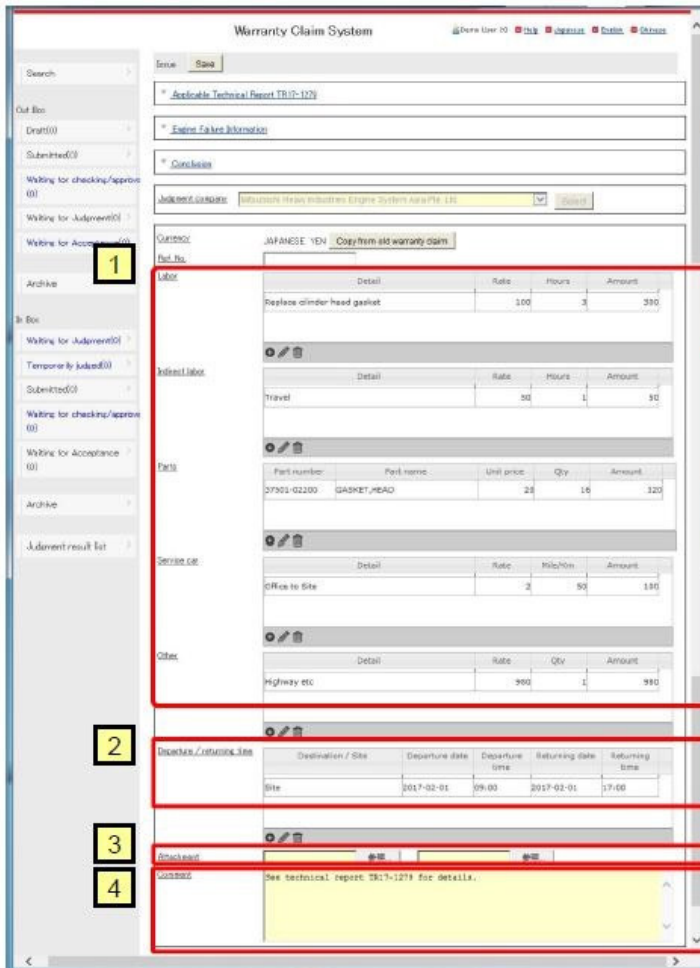


To compare it with operation data at factory test,

- ✓ Engine speed
- ✓ Output
- ✓ Charged air pressure
- ✓ Exhaust gas temperature ...etc

Necessary information in Warranty claim application

Warranty claim application in accordance with the MTEE Warranty Agreement



The screenshot shows the 'Warranty Claim System' interface. On the left is a sidebar with a search bar and a list of status filters: Out Box, Draft(0), Submitted(0), Waiting for checking/Approve(0), Waiting for Judgment(0), Waiting for Acceptance(0), Archive, In Box, Waiting for Judgment(0), Temporarily Judged(0), Submitted(0), Waiting for checking/Approve(0), Waiting for Acceptance(0), Archive, and Judgment result list. The main area contains several sections: 'Error' and 'Save' buttons at the top; 'Applicable Technical Report TR(12-127)' and 'Engine Failure Information' fields; a 'Conclusion' field; a 'Judgment category' dropdown menu set to 'Mitsubishi Heavy Industries Engine System warranty LTD'; a 'Control' section with 'JAPANESE YEN' and 'Copy from old warranty claim'; a 'Labor' table with columns 'Detail', 'Rate', 'Hours', and 'Amount' containing one row 'Replace cylinder head gasket' with values 100, 3, and 300; an 'Indirect Labor' table with columns 'Detail', 'Rate', 'Hours', and 'Amount' containing one row 'Travel' with values 50, 1, and 50; a 'Parts' section with a table containing one row '27301-02200 GASKET HEAD' with unit price 20, quantity 16, and amount 320; a 'Service call' table with columns 'Detail', 'Rate', 'Hrs/Min', and 'Amount' containing one row 'Office to Site' with values 2, 50, and 100; an 'Other' table with columns 'Detail', 'Rate', 'Qty', and 'Amount' containing one row 'Highway etc' with values 990, 1, and 990; a 'Disruption / Outage' table with columns 'Destination / Site', 'Departure date', 'Departure time', 'Returning date', and 'Returning time' containing one row 'Site' with values 2017-02-01, 09:00, 2017-02-01, and 17:00; an 'Attachment' section with a file upload icon; and a 'Comment' field with the text 'See technical report TR(12-127) for details.'.

Detail	Rate	Hours	Amount
Replace cylinder head gasket	100	3	300

Detail	Rate	Hours	Amount
Travel	50	1	50

Part number	Part name	Unit price	Qty	Amount
27301-02200	GASKET HEAD	20	16	320

Detail	Rate	Hrs/Min	Amount
Office to Site	2	50	100

Detail	Rate	Qty	Amount
Highway etc	990	1	990

Destination / Site	Departure date	Departure time	Returning date	Returning time
Site	2017-02-01	09:00	2017-02-01	17:00

***Please input correctly in each column.
For more detail, please see the following page.***

Please input correctly in this column.

Please attach the cost evidences, if needed.

***If you have any comment, please input it
in this column.***

Necessary information in Warranty claim application



< Scoop of warranty coverage >

Item	Warrantable	Non-Warrantable (*1)	Caution / Notes
<u>Labor</u>	<ul style="list-style-type: none"> Actual labour time needed to repair the engine 	<ul style="list-style-type: none"> Time for inspection or investigation 	<ul style="list-style-type: none"> Input the time (hours) and rate
<u>Indirect Labour</u>	<ul style="list-style-type: none"> Travel time to and from the site of the engine to be repaired 	<ul style="list-style-type: none"> Time for making service report or other documents 	<ul style="list-style-type: none"> Input the time (hours) and rate
<u>Service Parts</u>	<ul style="list-style-type: none"> Cost for parts necessary in the repair of the engine 	<ul style="list-style-type: none"> Parts cost unnecessary to be replaced for repairing engine. Parts cost more than EO by SLP(*2) Non-MHIET parts Fuel, Lubrication oil and Coolant 	<ul style="list-style-type: none"> Input part number, part name and quantity (Qty)
<u>Service Car</u>	<ul style="list-style-type: none"> Milage of the service car to and from the site of the engine to be repaired 	<ul style="list-style-type: none"> Cost for rental car 	<ul style="list-style-type: none"> Input distance (Mile/Km) and rate.
<u>Other</u>	<ul style="list-style-type: none"> All other costs required in the repair of the engine such as: <ul style="list-style-type: none"> - Travel and accommodation costs, etc. - Parts return costs (MTEE request) - Replacement of entire engine assembly - Etc. 	<ul style="list-style-type: none"> Cost without evidence attached Transportation cost, tax and custom duty for parts or equipment Consumable cost (e.g. Rags, Liquid gasket, Cleaning spray, etc.) Secondary damage (e.g. Cleaning cost caused due to lubrication oil leakage, Rental cost for equipment, car washing cost, etc.) 	<ul style="list-style-type: none"> Do not input any cost in "Other" without reason Attach cost evidences unconditionally (e.g. Invoice, Receipt, etc.) In case of replacement of entire engine assembly, contact MTEE in advance

(*1) According MTEE Warranty Agreement "UNACCEPTABLE CLAIMS"

(*2) EO by SLP : Emergency Order by Standard List Price

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Mitsubishi Turbocharger and Engine Europe B.V.