

VOLVO CONSTRUCTION EQUIPMENT MATRIS REPORT

Machine model A25E	SerialNo 13334	Operating Hours 20975.2	Reading Date 13/01/2022
Company name Plant & Industrial Equipment	Dealer Plant and Industrial Equipment Limited	Report Issuer	
Contact name Aaron Golborne	Technician Aaron Golborne	Primary Application Quarries	
Site	Workorder	Ground Condition	

MATRIS Reading, Summary / Recommendation

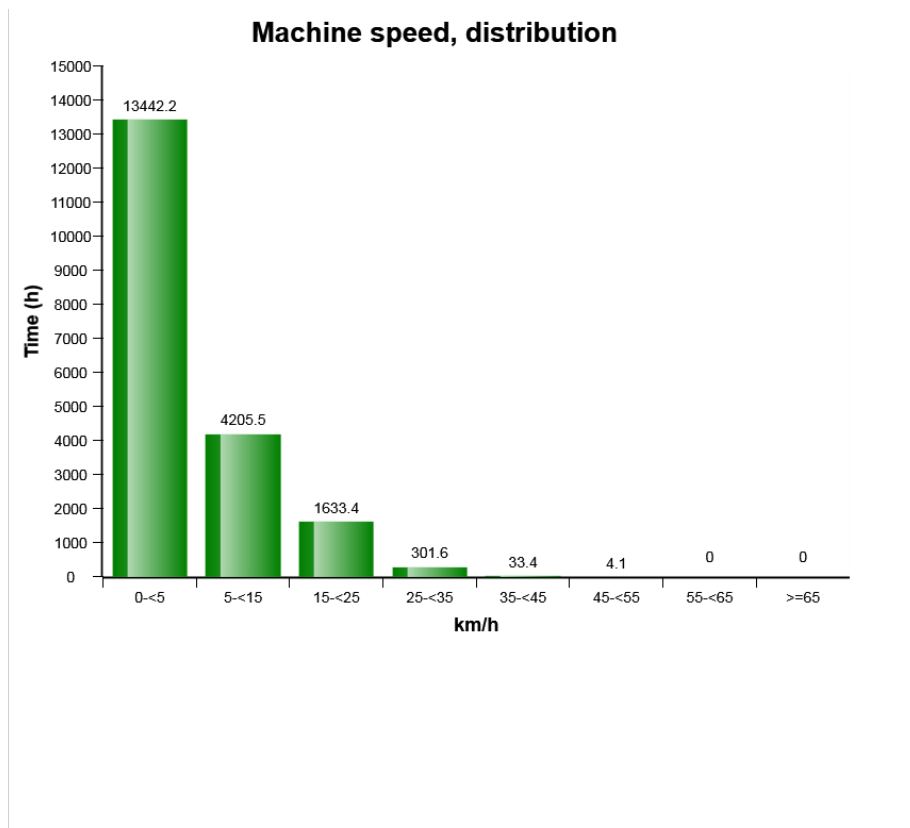


Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Main equipment	Type	Equipment
	Tyre size/class	Sold without tyres
	Body extensions	Not mounted
	Tail-gate	Not mounted
	Extra spillguard	Not mounted
	Wear plates	Not mounted
	Pattern	None



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

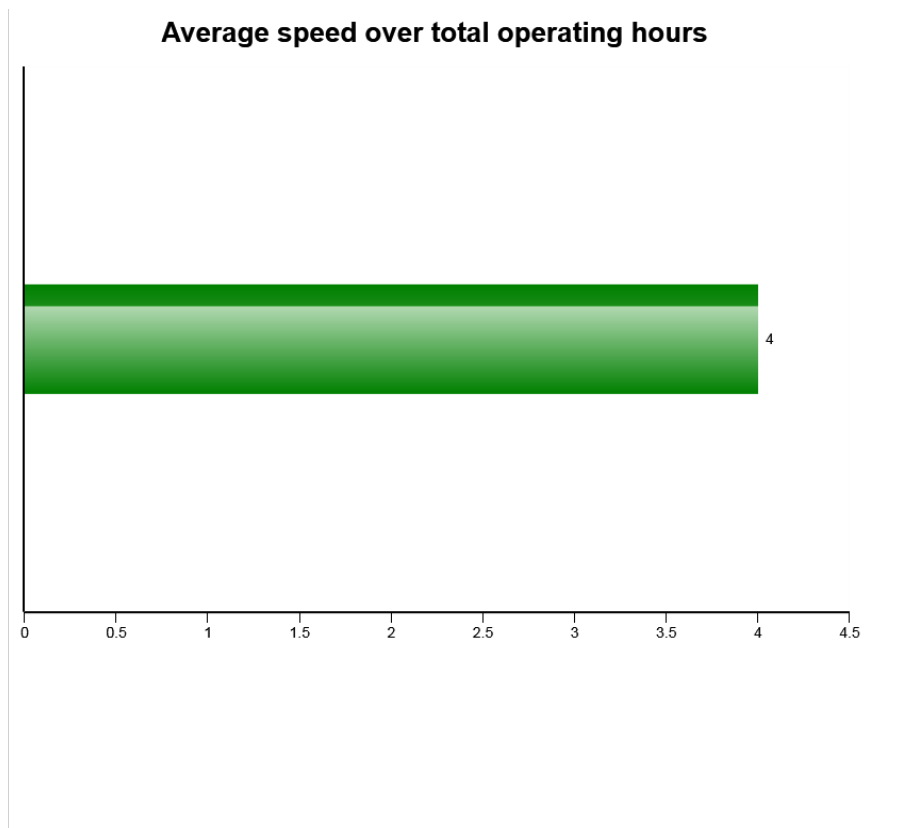


The presentation shows the time in hours in speed-intervals for the vehicle

Note that the interval 0-5 km/h includes machine not in motion. If the machine has been operated above 55 km/h there is a risk of engine over speed.



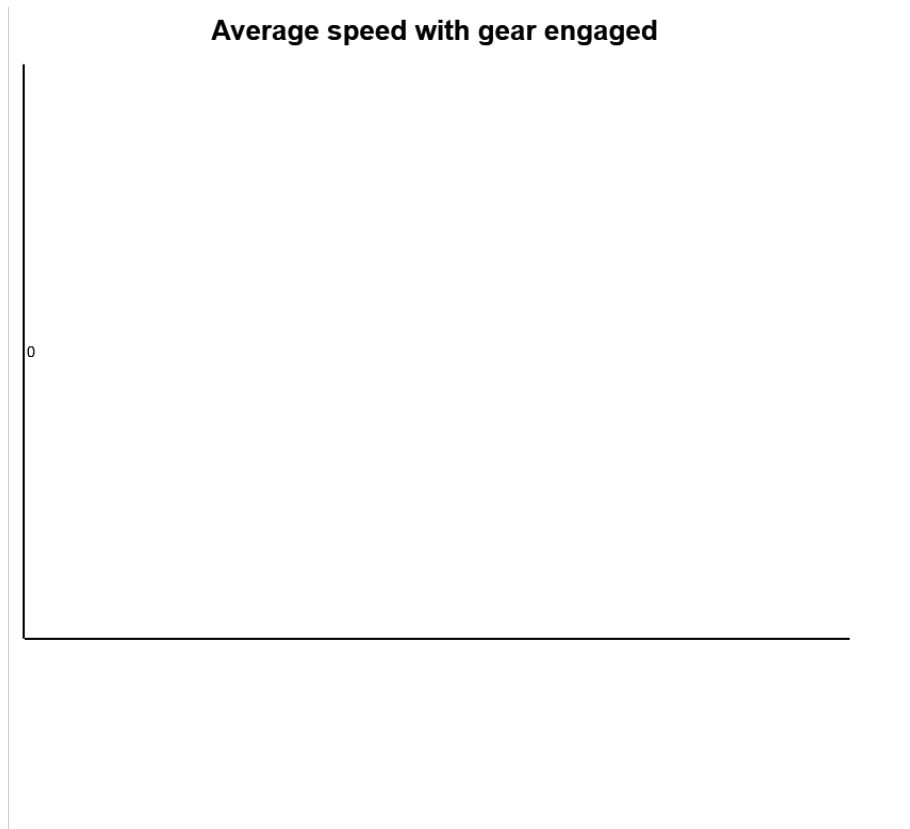
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the machines average speed based on the total operating hours.



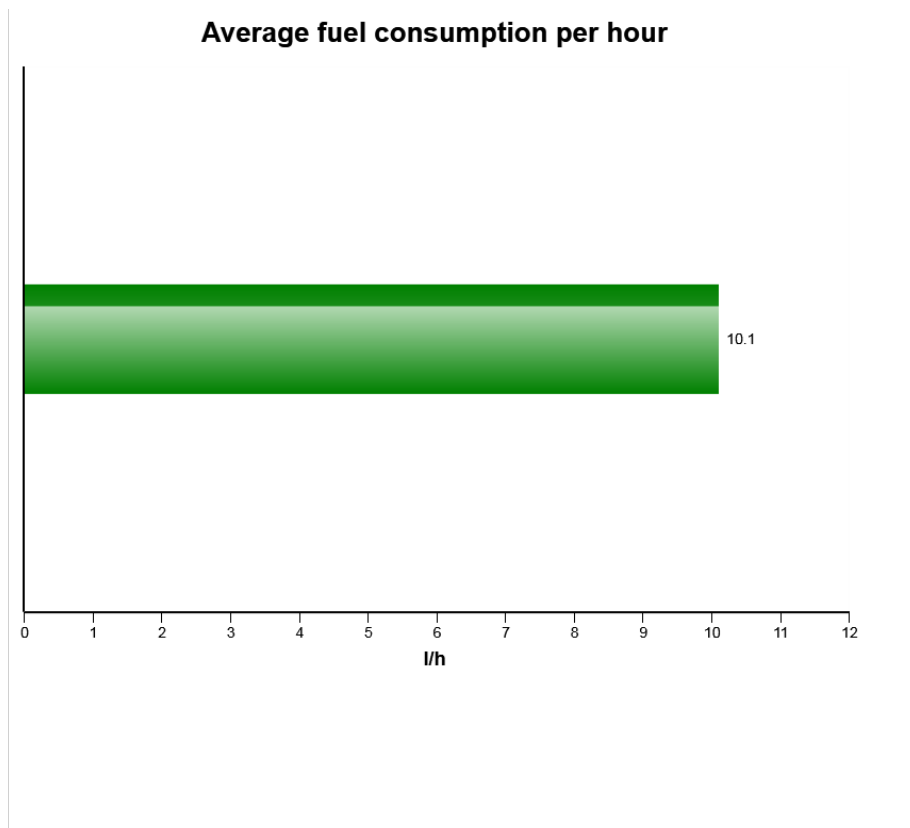
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the machines average speed based on the operating hours with gear engaged.



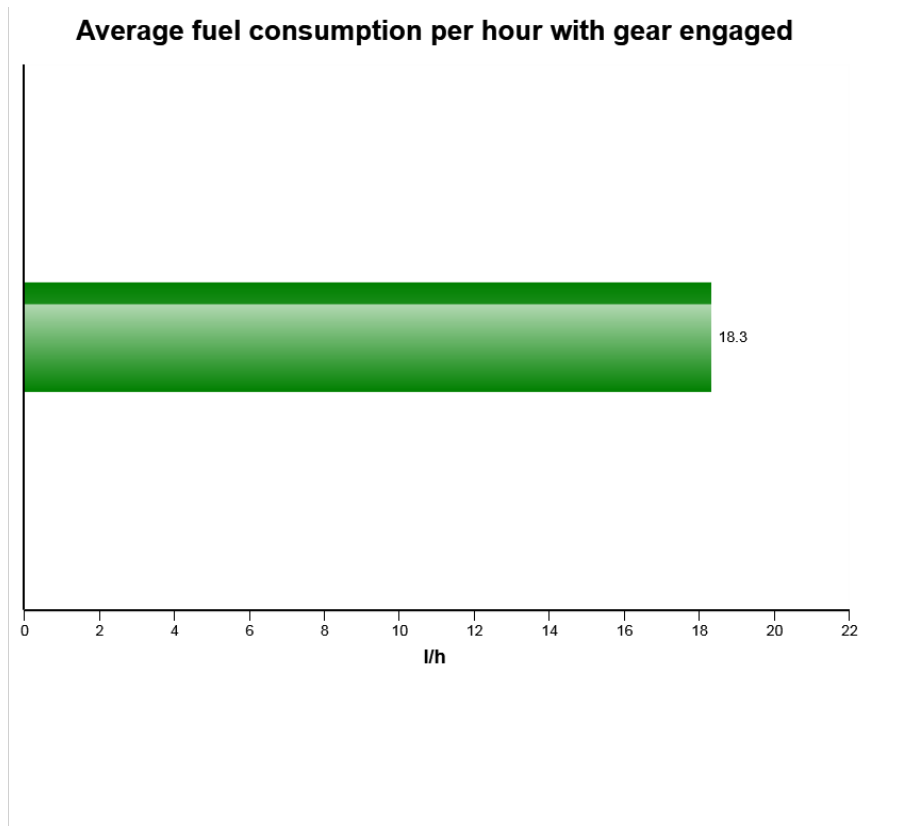
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the average fuel consumption based on total operating hours.



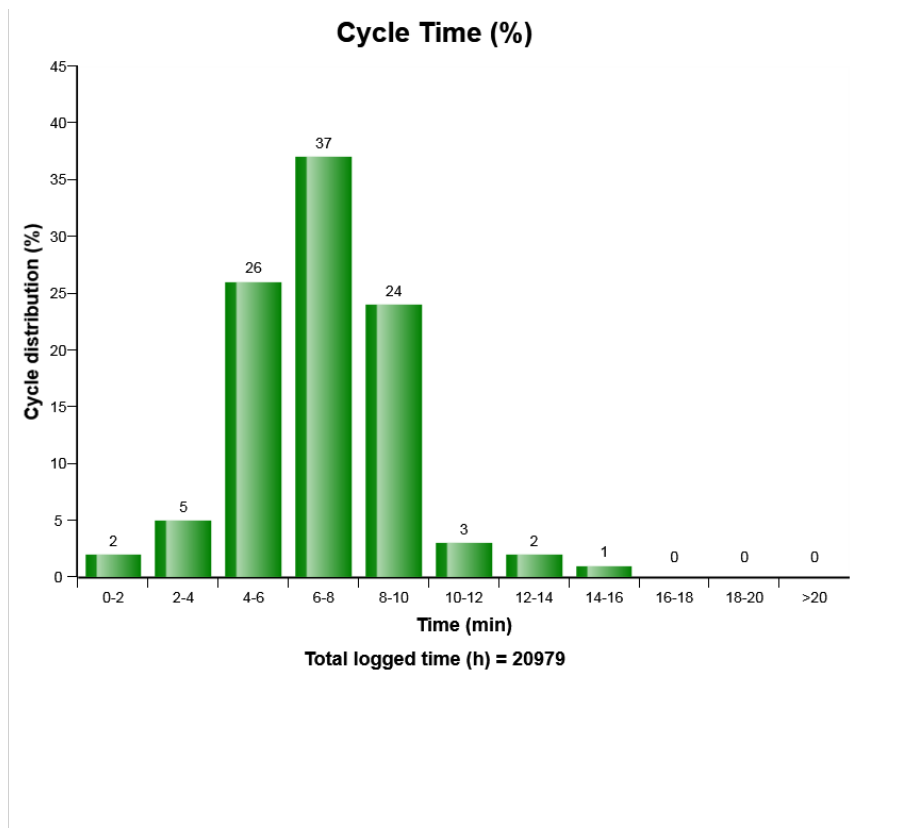
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the average fuel consumption based on the operating hours with gear engaged.



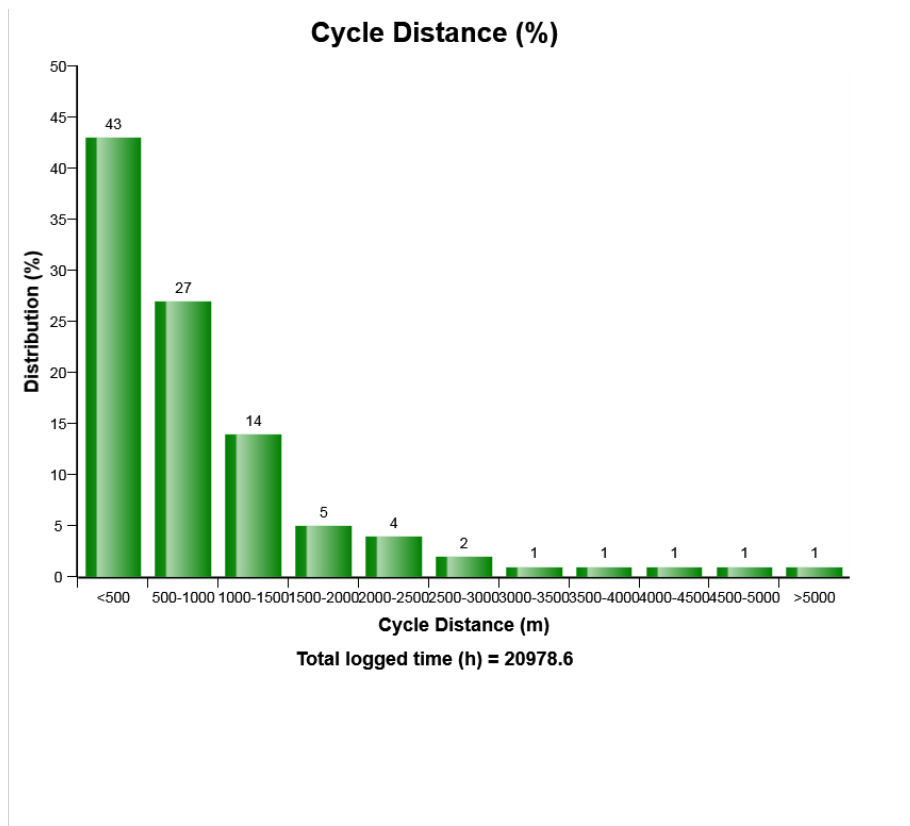
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the distribution of the working cycle time. The time between 2 valid cycle registrations is registered. Time starts from lifting the body.



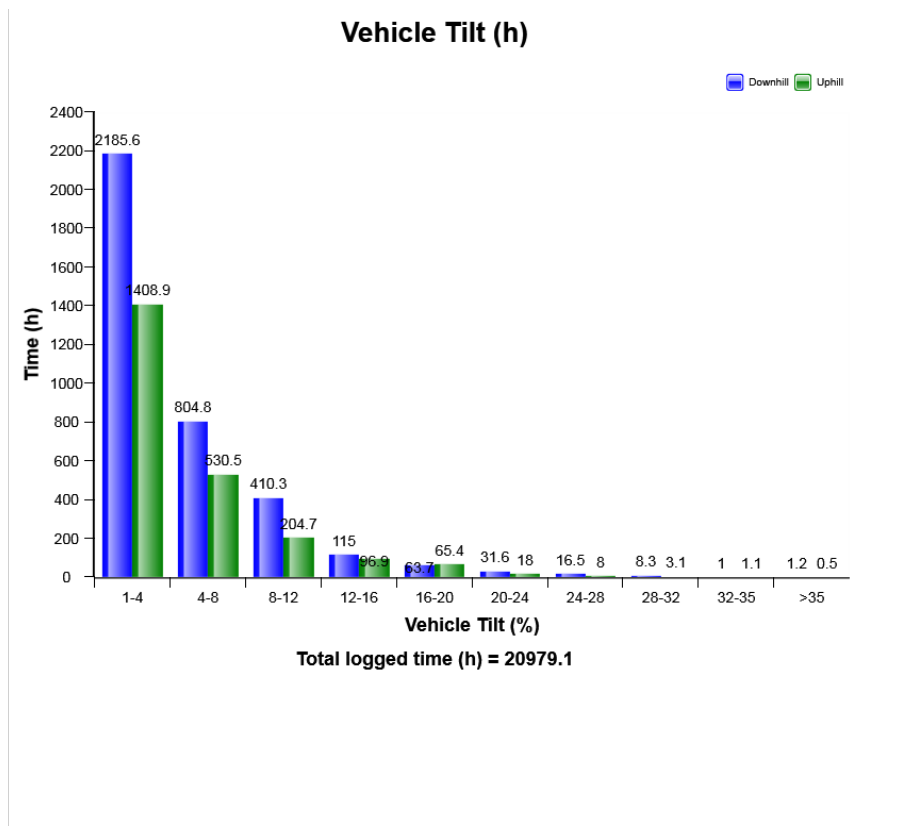
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the distribution of the working cycle distance. The distance driven between 2 valid cycle registrations.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the distribution of the longitudinal tilt in percent (not degrees), the criteria to get registrations is that the vehicle speed exceeds 1km/h (0,62mph) and that the engine is on.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Tip Lever in Hold
Total number of occurrences = 35552

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (km/h)
B	20970	2021	12	22	13	39	64	19
C	20970	2021	12	22	13	56	80	13
D	20972	2021	12	23	7	38	66	0
E	20972	2021	12	23	7	43	47	15
F	20973	2021	12	23	8	3	61	4
G	20973	2021	12	23	8	12	77	11
H	20974	2021	12	23	14	51	88	9
A	20975	2022	1	13	15	15	26	8
I	20975	2022	1	3	11	27	40	12
J	20975	2022	1	5	15	41	45	9

Definition :

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Over the table the total number of events is displayed

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The duration is counted as long as the criteria is fulfilled.

Extreme value :

The extreme value column displays the most extreme value during the event.



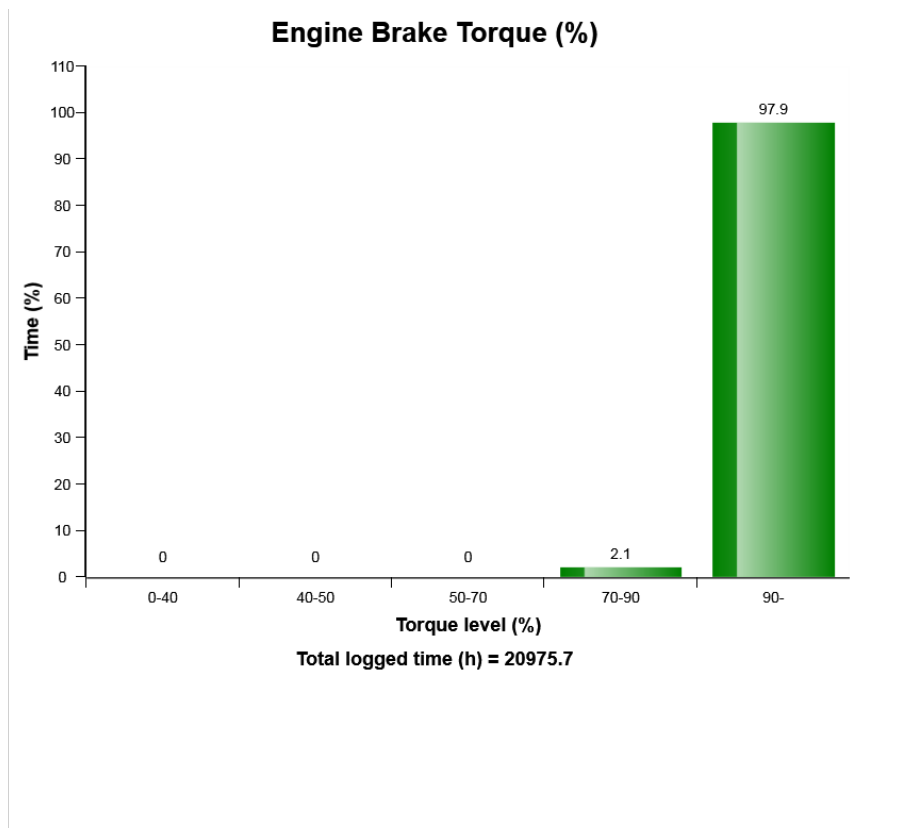
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Criteria :

If the body is down and the gearshift lever is moved out of "Neutral" with "Tipping lever" in hold an orange central warning is shown after 10 seconds. This warning will be recorded as one occurrence.



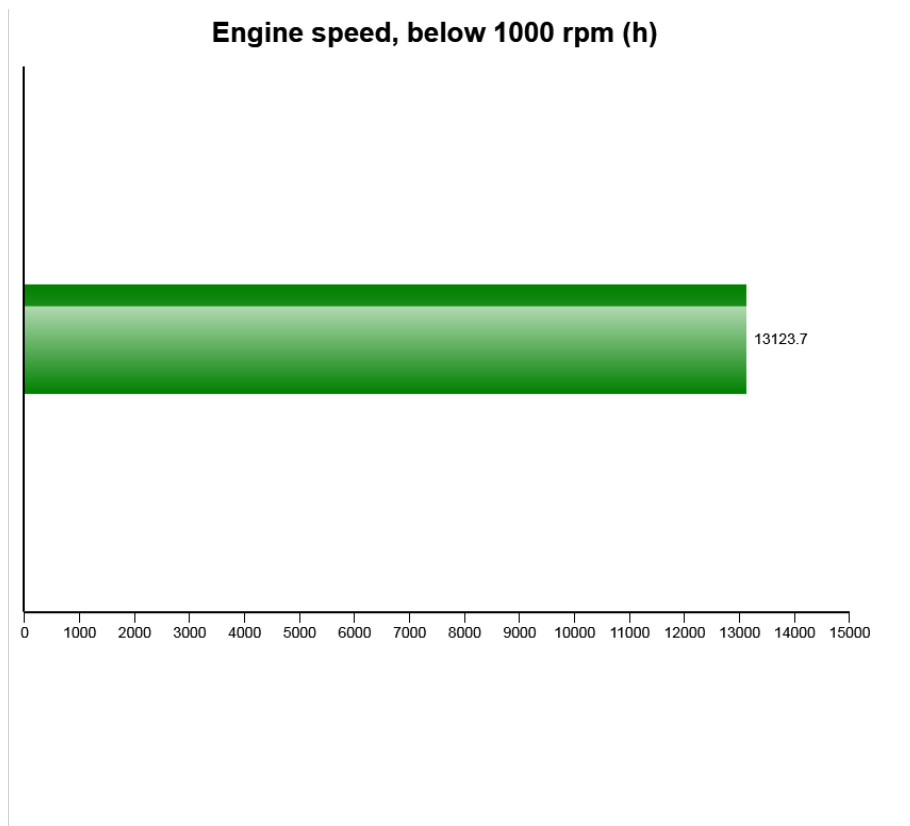
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the Engine Brake usage in terms of percent up to maximum torque.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



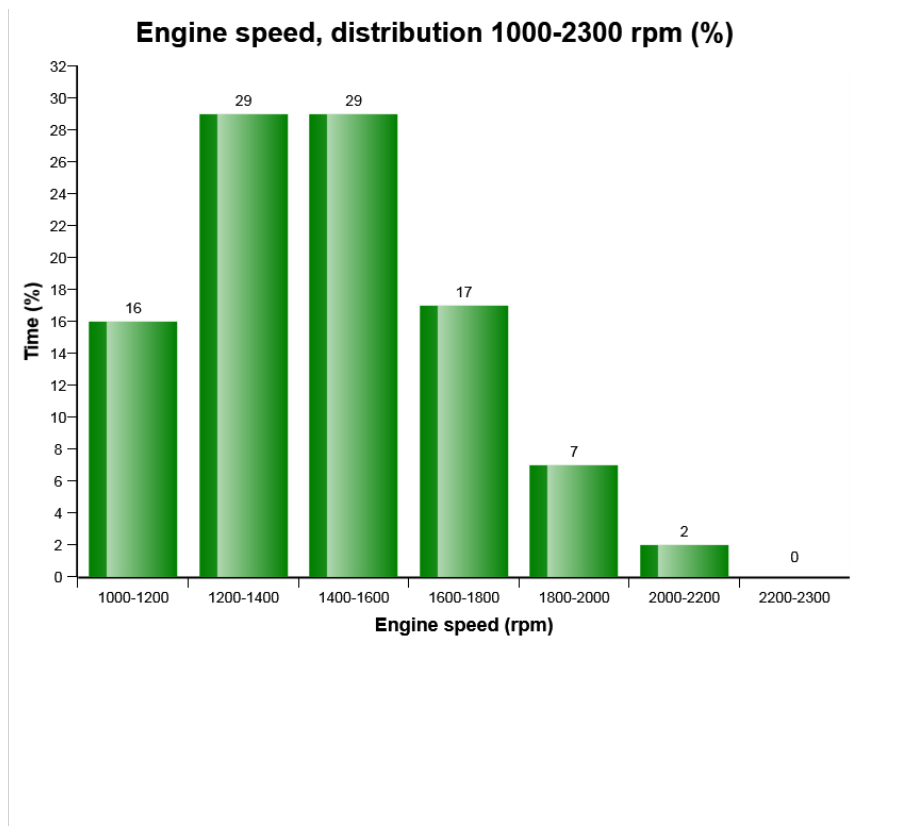
The diagram shows how long time the engine speed has been below 1000 rpm.

Long time at idle speed may indicate that the loading time is too long, the loading time should not exceed 1.5 minutes (1 minute and 30 seconds).

Long time at idle speed may also be the result of machines being warmed up for a long time or engines not being turned off during e.g. breaks.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the percentage distribution that the engine has operated in various engine speed ranges between 1000 and 2300 rpm.

The gear-shifting program of the machine strives to utilise the engine optimally, which means that the normal operating engine speed range is 1100-2250 rpm. Due to the engine characteristics and function of the gear-shifting program, the distribution of the engine speeds should be skewed towards the left in the diagram.

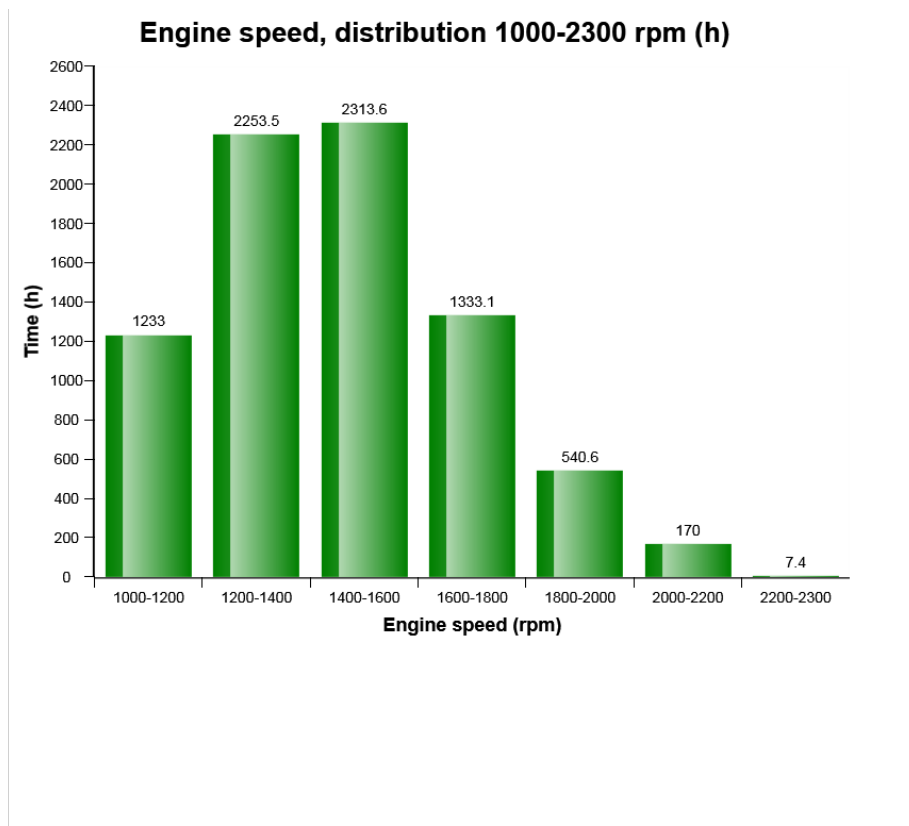
If the distribution is skewed to the right in the diagram, this may indicate that the machine has been operated frequently:

- At high-speed applications.
- With shift inhibitor (Hold) activated.

Therefore, check the "Machine speed, distribution". This is not necessarily abnormal but there is a risk that the engine has been over-speeding, check the diagram "Engine speed, over 2300 rpm".



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the time that the engine has operated in various engine speed ranges between 1000 and 2300 rpm.

The gear-shifting program of the machine strives to utilise the engine optimally, which means that the normal operating engine speed range is 1100-2250 rpm. Due to the engine characteristics and function of the gear-shifting program, the distribution of the engine speeds should be skewed towards the left in the diagram.

If the distribution is skewed to the right in the diagram, this may indicate that the machine has been operated frequently:

- At high-speed applications.
- With shift inhibitor (Hold) activated.

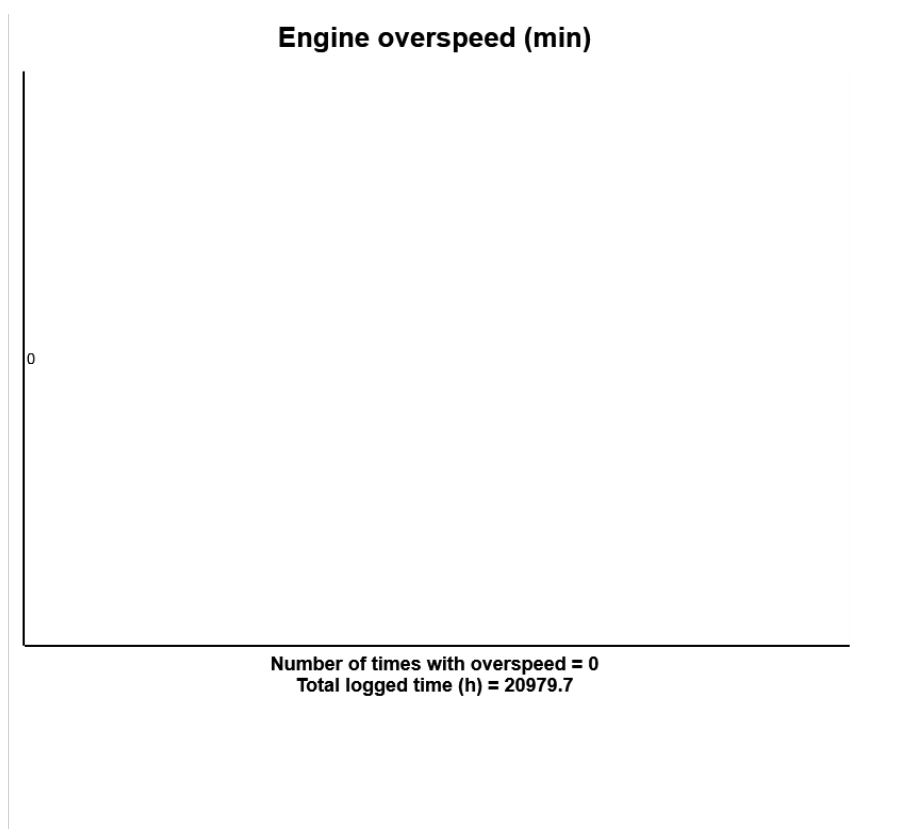
Therefore, check the "Machine speed, distribution". This is not necessarily abnormal but there is a risk that the engine has been over-speeding, check the diagram "Engine speed, over 2300 rpm".



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows how long time in minutes that the engine-speed has exceeded 2200 rpm for A35E or 2100 rpm for A40E. Information regarding how many times the engine speed has been above 2200 or 2100 rpm is noted below the diagram.

Over-speeding is always damaging. If the engine speed has exceeded 2200 or 2100 rpm several times, this indicates that over-speeding has occurred during short time periods. However, it is more serious if over-speeding has continued for a longer time at a few occasions as this may indicate continuous over-speeding, for example, during operation on downhill grades.

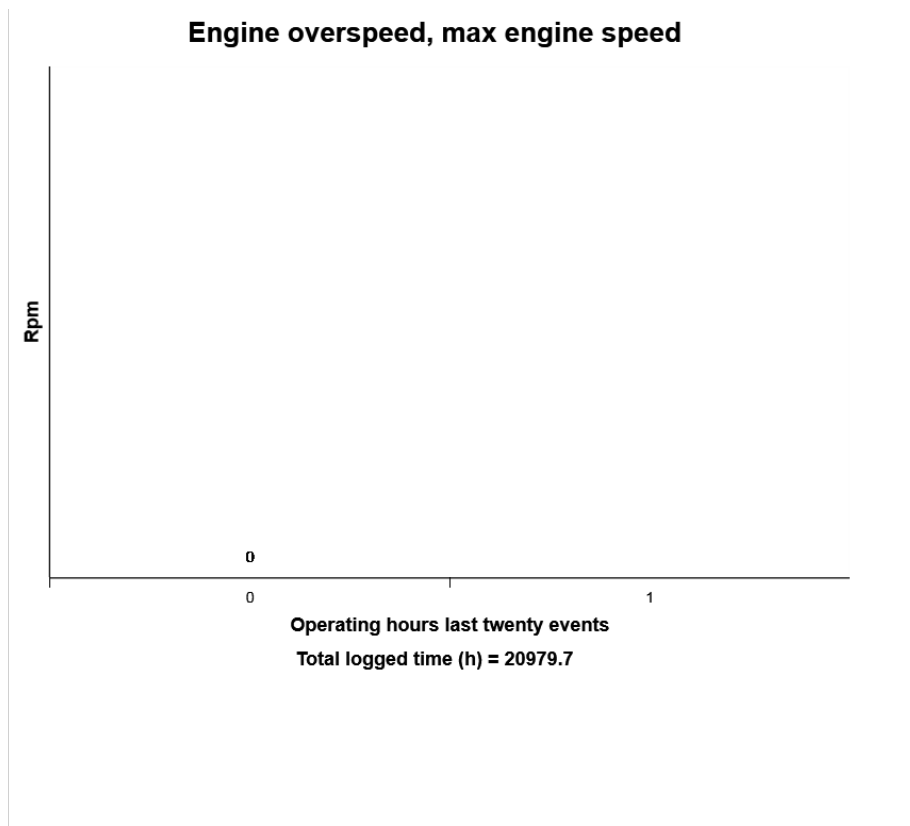
Over-speeding may cause serious damage to the engine and transmission.

Check to see if the machine has been operated with the Hold function activated. Operation with activated Hold function increases the risk for over-speeding during operation on downhill grades.

Note that red central warning is shown in cab over 2300 rpm for A35E and 2200 rpm for A40E. At 2200 or 2100 rpm in 2 seconds orange central warning is shown. Overspeeding can also be added if the engine is speeded when cold, check "Engine overspeed, max engine speed"



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the maximum engine-speed the last twenty times the engine have exceeded 2200 rpm (A35E) or 2100 rpm (A40E) (over-speed)

Over-speeding is always damaging. The higher over-speed, the more damaging it is to the engine. If the same over-speed occurs with regular intervals it can indicate that the machine is not properly operated.

Check to see if the machine has been operated with the Hold function activated. Operation with activated Hold function makes it easier for over-speeding to occur during operation on downhill grades.

To see the duration of the over-speed on each interval check " Engine overspeed, duration"

Over-speeding may cause serious damage to the engine and transmission

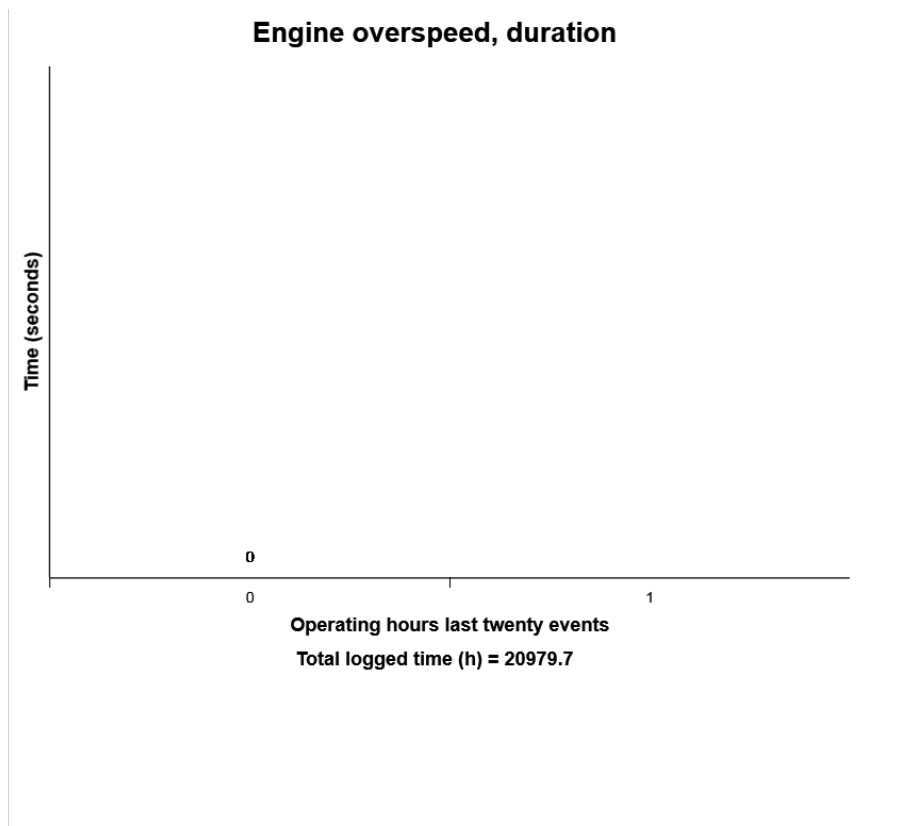
Note that red central warning is shown in cab over 2300 rpm (A35E) or 2200 rpm (A40E). At 2200 rpm (A35E) or 2100 rpm (A40E) in 2 seconds orange central warning is shown.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows how long time in seconds that the engine speed has exceeded 2200 rpm (A35E) or 2100 rpm (A40E) (over-speed) the last twenty times related to the total operating hours when it occurred.

Over-speeding is always damaging. The longer the over-speed, the more damaging it is to the engine. If the same over-speed occurs with regular intervals it can indicate that the machine is not properly operated

Check to see if the machine has been operated with the Hold function activated. Operation with activated Hold function makes it easier for over-speeding to occur during operation on downhill grades.

To see the maximum engine-speed on each interval check " Engine overspeed, max overspeed"

Over-speeding may cause serious damage to the engine and transmission.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

**High engine coolant temperature
Total number of occurrences = 0**

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (°C)
A	0	2000	0	0	0	0	0	0
B	0	2000	0	0	0	0	0	0
C	0	2000	0	0	0	0	0	0
D	0	2000	0	0	0	0	0	0
E	0	2000	0	0	0	0	0	0
F	0	2000	0	0	0	0	0	0
G	0	2000	0	0	0	0	0	0
H	0	2000	0	0	0	0	0	0
I	0	2000	0	0	0	0	0	0
J	0	2000	0	0	0	0	0	0

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Duration :

The duration of each event is shown after the timestamp of the event.

The duration is counted as long as the criteria is fulfilled.

Extreme value :

The extreme value column displays the most extreme value during the event.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Criteria :

The criteria to get an registration, is that the alarm signal for high engine coolant temperature is active and that the diesel engine is running.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Low engine oil pressure
Total number of occurrences = 28

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (bar)
A	19865	2020	11	3	16	39	352	0
I	19865	2020	11	3	16	10	455	0
J	19865	2020	11	3	16	19	1133	0
B	19868	2020	11	4	10	22	74	4
C	19868	2020	11	4	10	25	326	4
D	19868	2020	11	4	10	32	1196	1
E	19868	2020	11	4	10	54	72	1
F	19868	2020	11	4	10	57	655	2
G	19869	2020	11	4	11	9	346	2
H	19869	2020	11	4	11	17	835	1

Definition :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating hours is displayed in the first column, followed by year, month, day, hour and minute to show when an event has occurred.

The rows are not ordered chronological (The latest event may be in the middle).

Only one event per minute is registered.

Over the table the total number of events is displayed

Duration :

The duration of each event is shown after the timestamp of the event.

The duration is counted as long as the criteria is fulfilled.

Extreme value :

The extreme value column displays the most extreme value during the event.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Criteria :

In order for an occurrence of low engine oil pressure to be recorded in a data point and the count to increment by 1, the engine oil pressure state must change from "normal" or "error" to "low." The event of low transmission oil pressure will end when the status changes from "low" back to "normal" or "error."



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

High engine oil temperature
Total number of occurrences = 0

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (° C)
A	0	2000	0	0	0	0	0	0
B	0	2000	0	0	0	0	0	0
C	0	2000	0	0	0	0	0	0
D	0	2000	0	0	0	0	0	0
E	0	2000	0	0	0	0	0	0
F	0	2000	0	0	0	0	0	0
G	0	2000	0	0	0	0	0	0
H	0	2000	0	0	0	0	0	0
I	0	2000	0	0	0	0	0	0
J	0	2000	0	0	0	0	0	0

Definition :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating hours is displayed in the first column, followed by year, month, day, hour and minute to show when an event has occurred.

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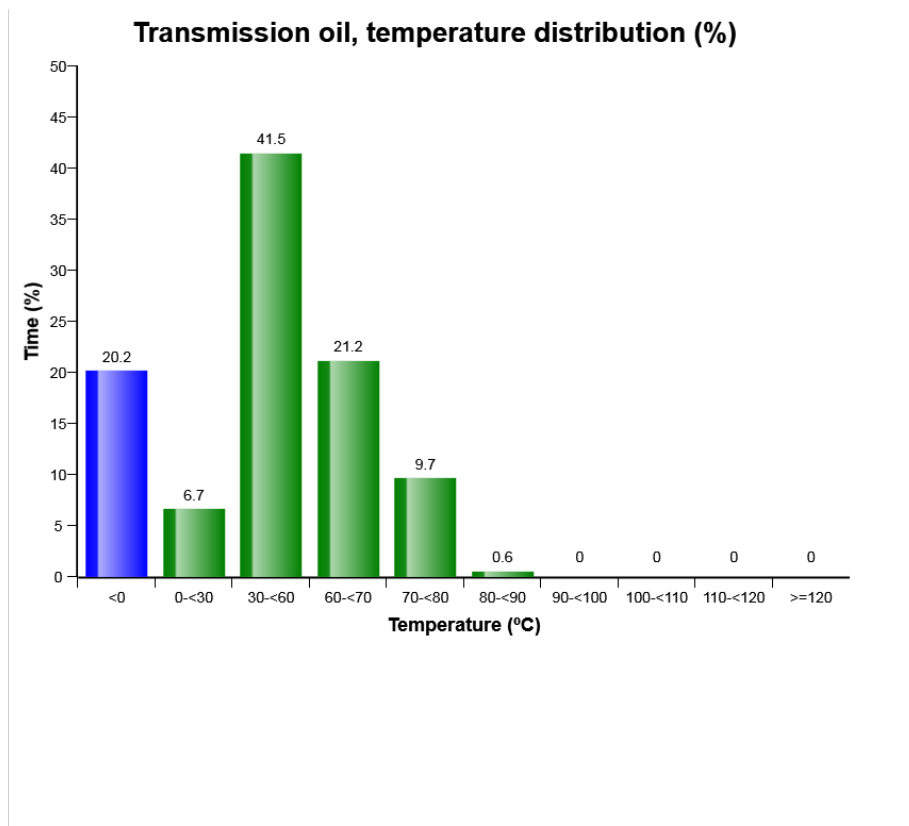
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Criteria :

The criteria to get an registration, is that the alarm signal for high engine oil temperature is active and that the diesel engine is running.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the transmission oil temperature in various temperature ranges. The time is displayed in the following ten temperature ranges:

<0°C Temperatures below 0°C

0 - <30°C Temperatures from 0°C until 30°C

30-<60°C Temperatures from 30°C until 60°C

60-<70°C Temperatures from 60°C until 70°C

70-<80°C Temperatures from 70°C until 80°C

80-<90°C Temperatures from 80°C until 90°C

90-<100°C Temperatures from 90°C until 100°C



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

100-<110°C Temperatures from 100°C until 110°C

110-<120°C Temperatures from 110°C until 120°C

≥120°C Temperatures over 120°C

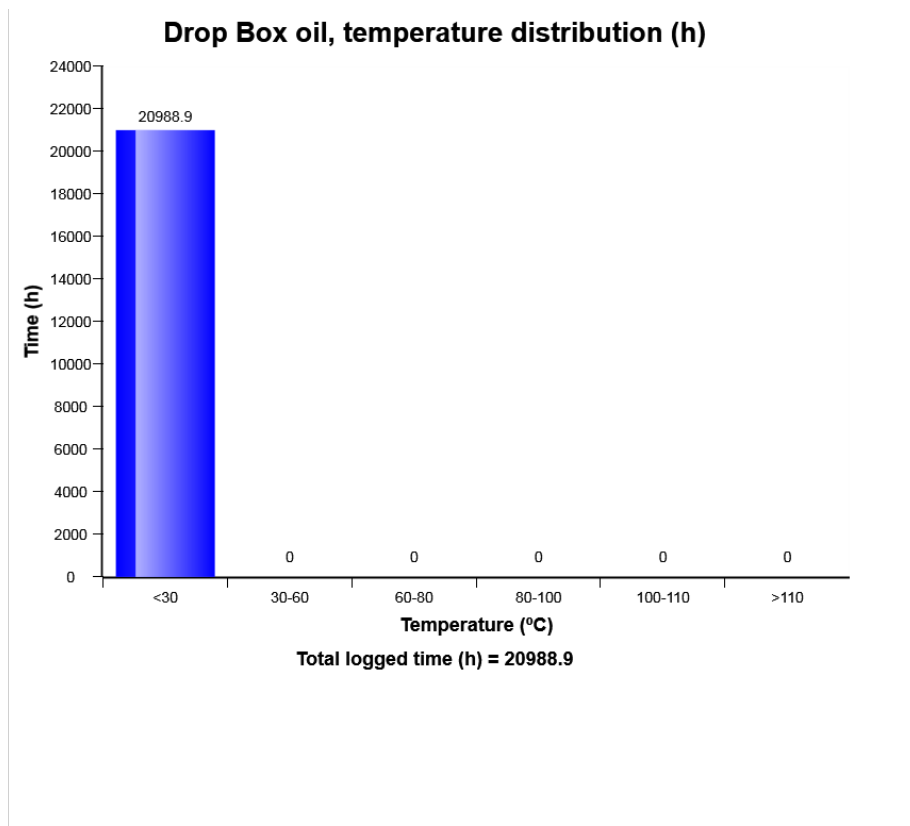
The bar that describes temperatures from 110°C until 120°C is yellow and means that the oil has begun to be overheated. Driver has been given orange central warning

The bar that describes >120°C is red and means that the oil has been overheated. Driver has been given red central warning.

Oil temperatures exceeding 110°C must be avoided since the properties of the oil are degraded



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



Definition:

The graph shows the time distribution of the temperature, while engine running.

Explanation:

Y-axis: Time

X-axis: Temperature distribution in classes.

Blue bar = Warm-up phase.

During the engine warm-up phase, this temperature region is passed.

It is normal to have registrations in this region.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

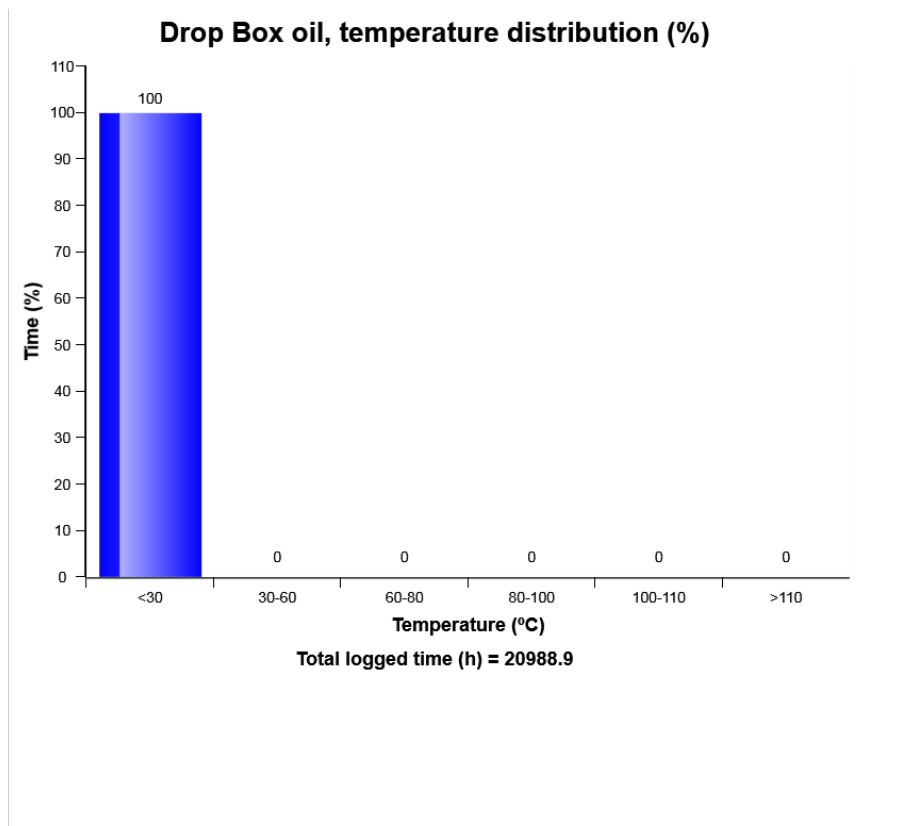
Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

Registrations in this region is not normal, running in this region may cause severe damage.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



Definition:

The graph shows the time distribution of the temperature, while engine running.

Explanation:

Y-axis: Time

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During the engine warm-up phase, this temperature region is passed.

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Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

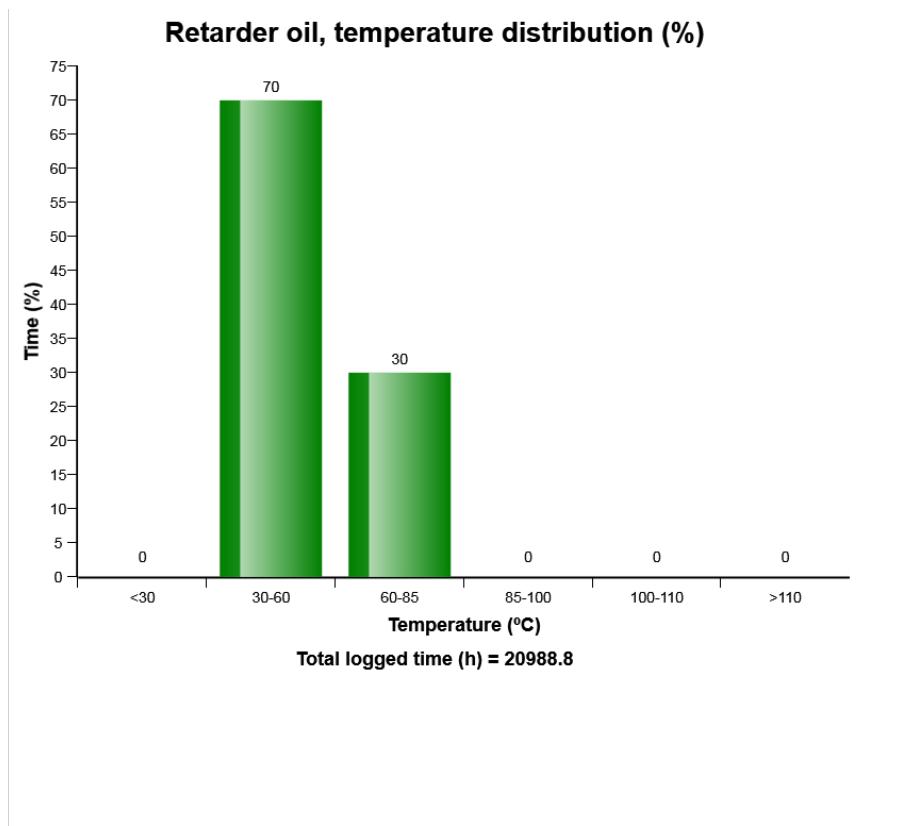
Yellow bar = High working temperature. It is normal to have some registrations in this region.

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Machine model	SerialNo	Operating Hours	Reading Date
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Definition:

The graph shows the time distribution of the temperature, while engine running.

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Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

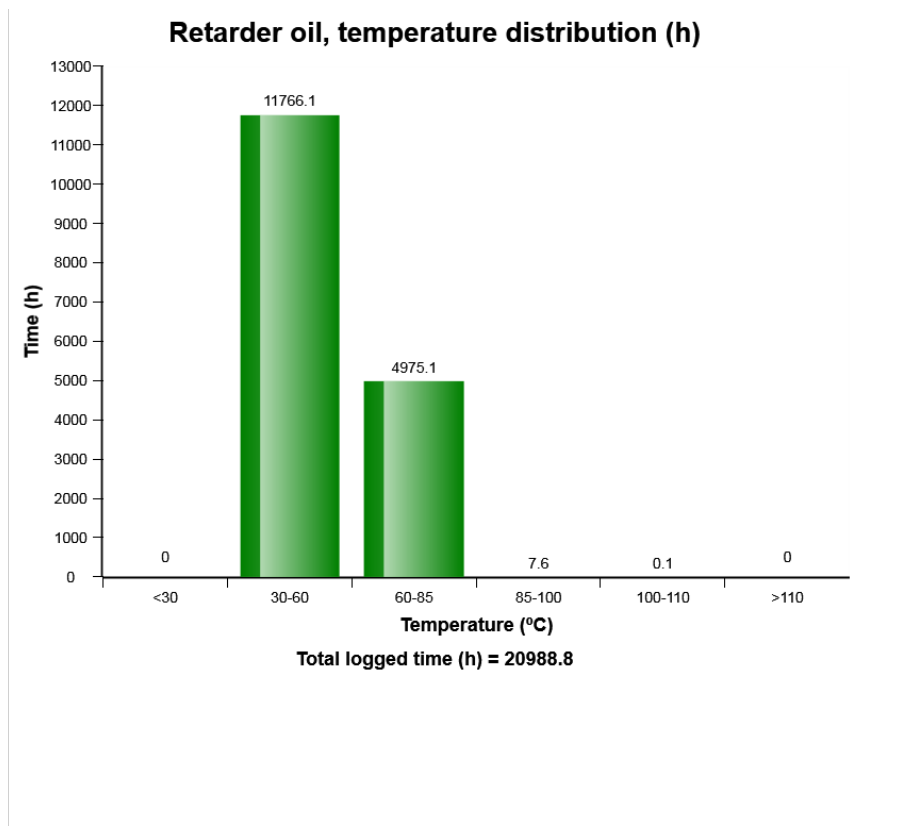
Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

Registrations in this region is not normal, running in this region may cause severe damage.



Machine model	SerialNo	Operating Hours	Reading Date
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Definition:

The graph shows the time distribution of the temperature, while engine running.

Explanation:

Y-axis: Time

X-axis: Temperature distribution in classes.

Blue bar = Warm-up phase.

During the engine warm-up phase, this temperature region is passed.

It is normal to have registrations in this region.



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Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

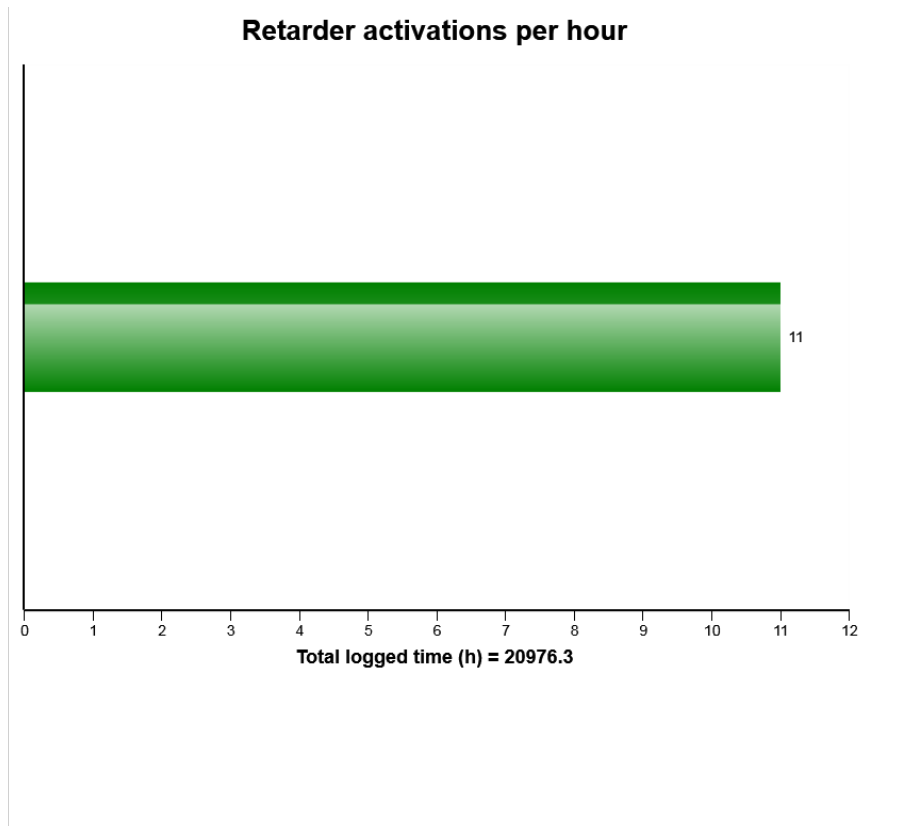
Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

Registrations in this region is not normal, running in this region may cause severe damage.



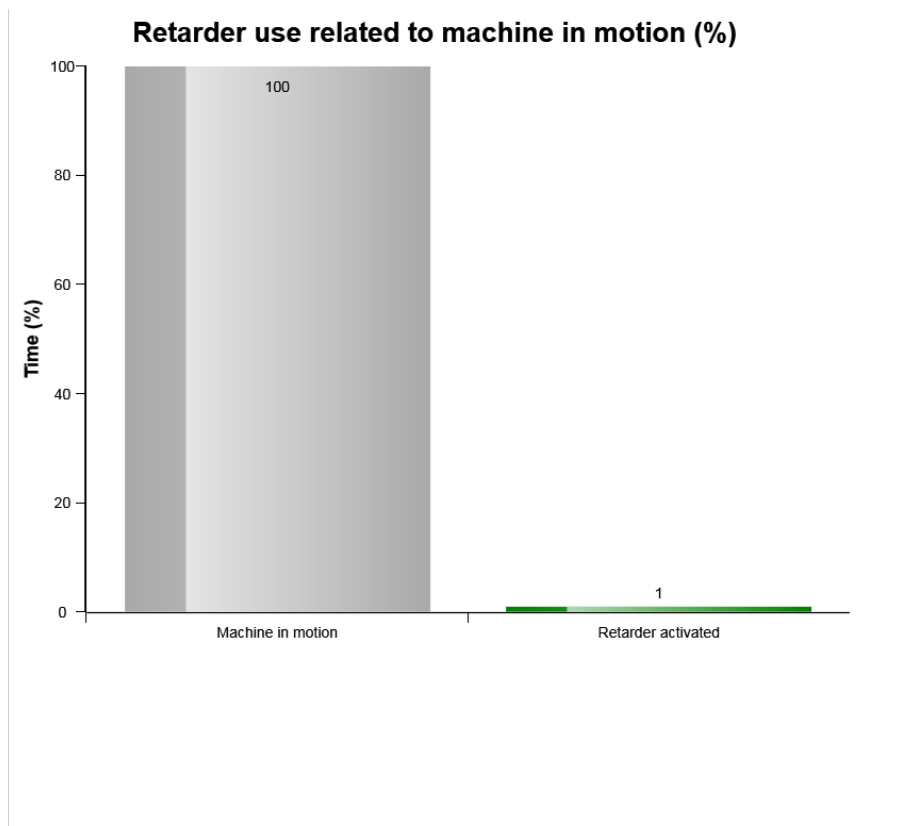
Machine model	SerialNo	Operating Hours	Reading Date
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The diagram shows the number of times per hour that the retarder has been activated with the pedal.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the percentage of retarder use in relation to machine in motion on all gears.

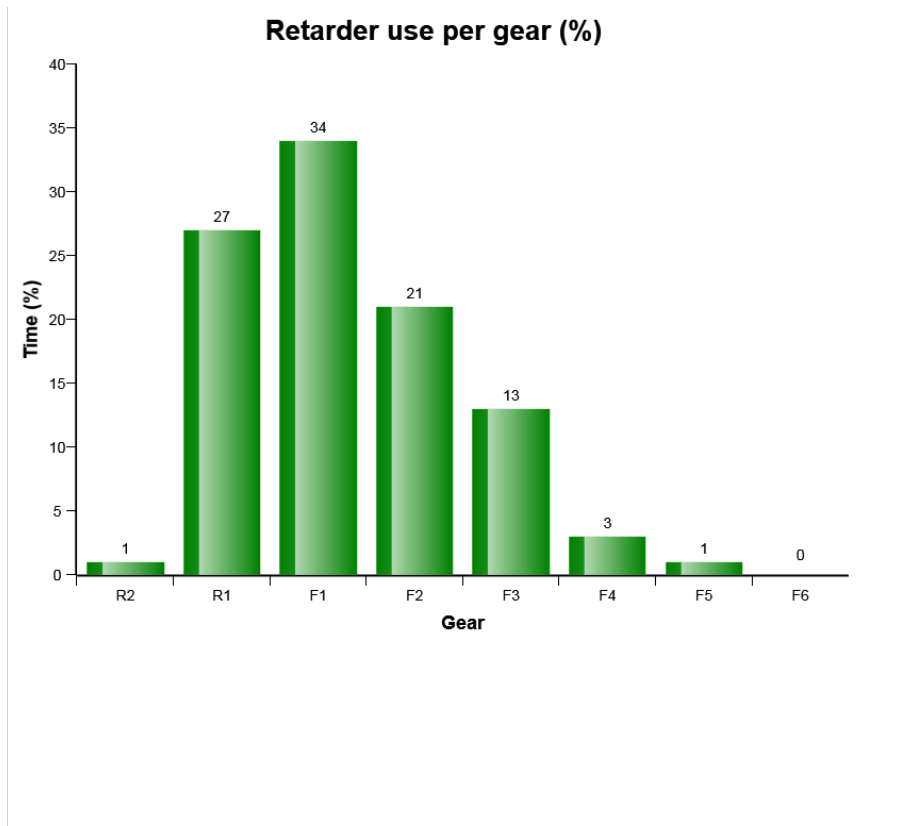
The retarder should always be used when braking for the best operating economy.

The normal use of the retarder in relation to the time that the machine has been operated depends on the operating conditions. Generally, the more downhill grades that the machine operates on, the higher the retarder use should be in relation to the time that the machine has been operated. Low retarder use may result in excessive brake wear.

Also check "Retarder and servicebrake (%)"



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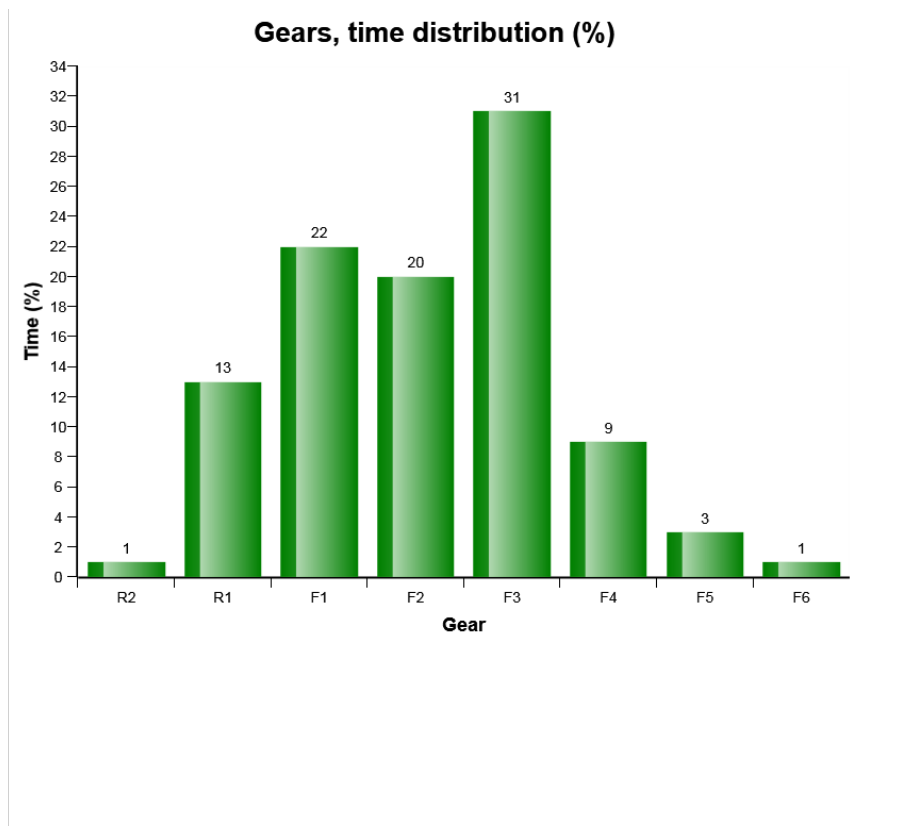


The diagram shows the time in percent of retarder in use related to respective gear.

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Machine model	SerialNo	Operating Hours	Reading Date
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The diagram shows the time for each gear R2, R1, F1, F2, F3, F4, F5 and F6. Each bar represents a gear, see explanation below.

R2 = 2nd gear Reverse

R1 = 1st gear Reverse

F1 = 1st gear Forward

F2 = 2nd gear Forward

F3 = 3rd gear Forward

F4 = 4th gear Forward

F5 = 5th gear Forward



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F6 = 6th gear Forward

How the time is distributed between the gears depends on the operating conditions.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Hold Activations Event
Total number of occurrences = 17403

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)
F	0	2021	12	23	9	25	1
G	20952	2021	12	8	12	19	0
H	20955	2021	12	9	11	8	0
I	20955	2021	12	9	11	12	2
J	20961	2021	12	15	8	54	0
A	20968	2021	12	22	10	42	8
B	20969	2021	12	22	11	47	0
C	20969	2021	12	22	12	10	0
D	20970	2021	12	22	13	59	0
E	20971	2021	12	22	14	43	2

Definition :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating hours is displayed in the first column, followed by year, month, day, hour and minute to show when an event has occurred.

The rows are not ordered chronological (The latest event may be in the middle).

Only one event per minute is registered.

Over the table the total number of events is displayed.

Duration :

The duration of each event is shown after the timestamp of the event.

The duration is counted as long as the criteria is fulfilled.

Criteria :

The criteria to get an registration, is that the Hold function is active and that the diesel engine is

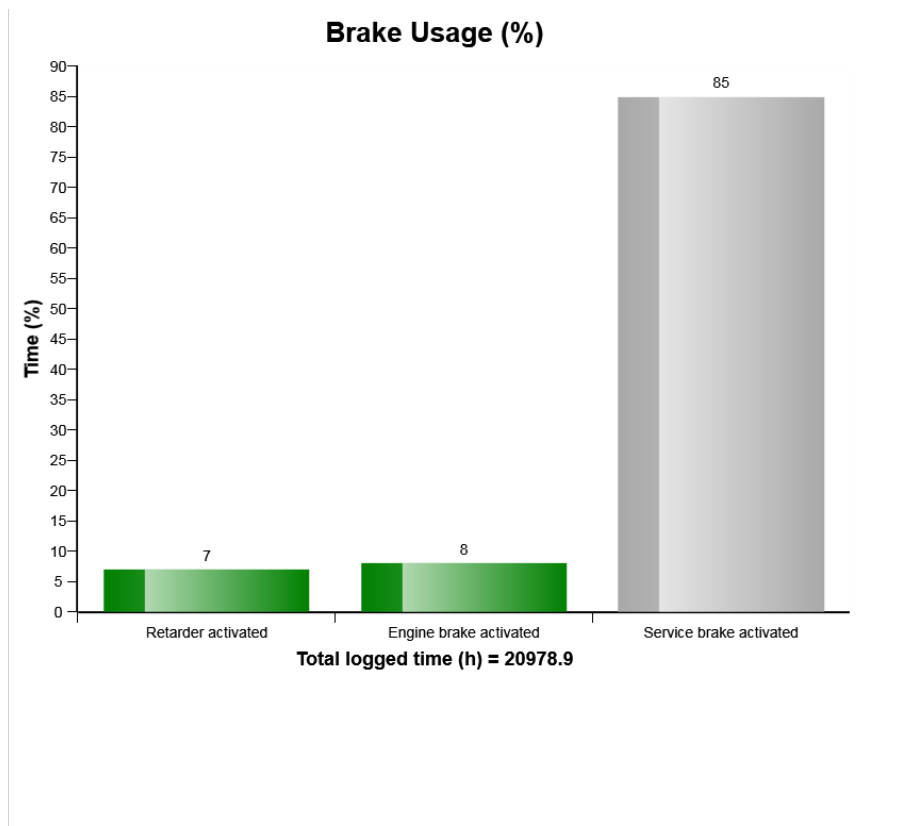


Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

running.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



The diagram shows the total time for activated retarder, engine brake and the total time for activated service brake (exceeding 4 bar).

A high proportion of retarder and engine brake use indicates correct and efficient operation.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Low Brake Servo Pressure
Total number of occurrences = 133

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (bar)
D	541	2021	5	28	6	51	2	4
E	642	2021	6	25	6	35	7	1
F	652	2021	6	29	11	38	29	2
G	652	2021	6	29	11	39	2	4
H	659	2021	7	1	7	46	2	3
I	720	2021	7	29	11	8	1	4
J	757	2021	8	13	14	34	50	1
A	773	2021	8	24	7	46	7	4
B	809	2021	8	31	11	32	3	4
C	841	2021	9	6	7	39	62	1

Definition :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating hours is displayed in the first column, followed by year, month, day, hour and minute to show when an event has occurred.

The rows are not ordered chronological (The latest event may be in the middle).

Only one event per minute is registered.

Over the table the total number of events is displayed

Duration :

The duration of each event is shown after the timestamp of the event.

The duration is counted as long as the criteria is fulfilled.

Extreme value :

The extreme value column displays the most extreme value during the event.



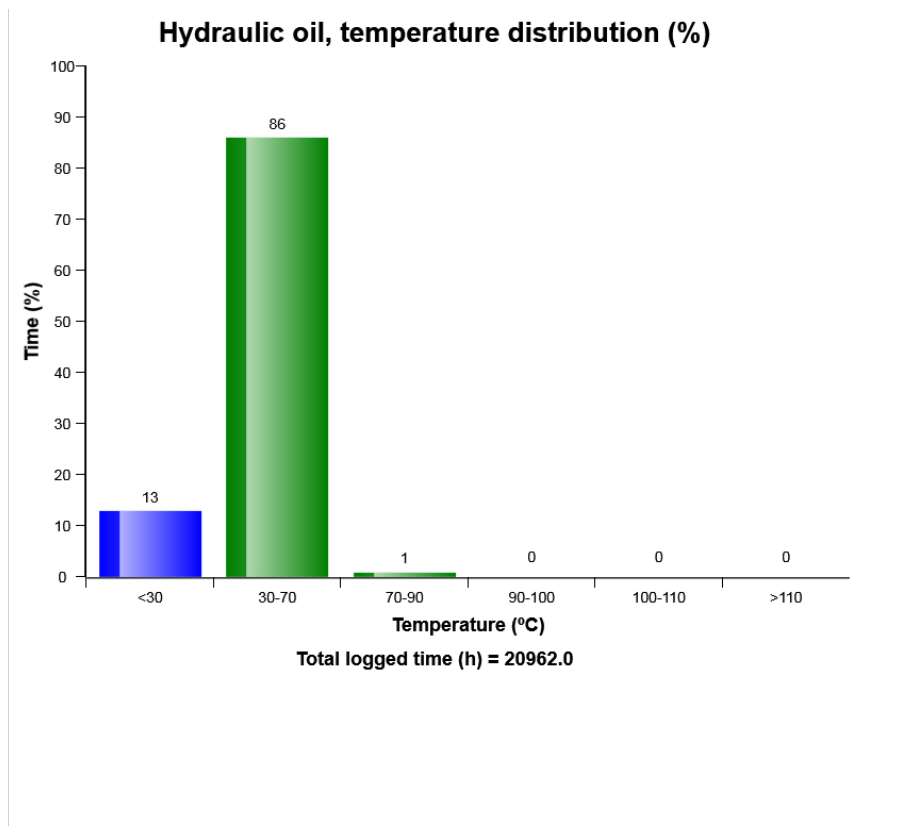
Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Criteria :

In order for an occurrence of low brake servo pressure to be recorded in a data point and the count to increment by 1, the low brake servo pressure state must be alarm. Gear not in Neutral and engine must be on.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022



Definition:

The graph shows the time distribution of the temperature, while engine running.

Explanation:

Y-axis: Time

X-axis: Temperature distribution in classes.

Blue bar = Warm-up phase.

During the engine warm-up phase, this temperature region is passed.

It is normal to have registrations in this region.



Machine model	SerialNo	Operating Hours	Reading Date
A25E	13334	20975.2	13/01/2022

Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

Registrations in this region is not normal, running in this region may cause severe damage.

