SAKAI

MASTERS OF COMPACTION

774 Diagnostic Information

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Please See Operators and Service Manual for additional information.

ALL Work Must be performed by a factory trained technician to prevent injury. This manual is not intended to replace the service manual but to assist with additional information.

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⚠ WARNING

Unexpected machine movement may cause a serious accident. When inspecting the machine while the engine is running, always follow the instructions below.

- **Park the machine on level, flat ground.**
- **Apply the parking brake.**
- **Set chocks in front and behind each drum or tire.**
- **Make sure that service personnel are given the appropriate information at the appropriate time.**
- **Make sure that no one can enter any hazardous area.**

⚠ CAUTION

Do not work on the hydraulic system while the engine is running and the system is hot and under pressure. Do not disconnect hydraulic hoses or fittings until the system has cooled and pressure has been properly relieved.

Before removing any plugs from the pressure measurement ports, always release any residual pressure from the piping and open the cap of the fluid tank to release and pressure.

⚠ WARNING

Inadvertent starting the engine may cause a serious accident.

When inspecting the engine, make sure to exchange the appropriate cues and hand signal with the person at the operator station to avoid any accidents.

⚠ CAUTION

Before inspecting inside of the engine compartment, always stop the engine.

Contact with the fan, V-belt or exhaust system parts while the engine is running may cause serious injury.

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774 Operators Manual
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ENGINE	KUBOTA	
	V3800-CR-TI-EV03	
	EPA Tier 4	
	Diesel, water cooled, 4 cycle, 4 cylinder, with turbo charger	
	3.769 (230.0)	
	81.8 (110) / 2,400	
	12(12 / 750×2)	
	12 / 80	
DRIVE SYSTEM	Hydrostatic	
	All wheel (2 drums)	
VIBRATION SYSTEM	Hydraulic	
	2	
	Single eccentric shafts	Double eccentric shafts
BRAKE SYSTEM	Dynamic braking through hydrostatic drive system / F-N-R lever	
	Hydrostatic + Spring applied hydraulically released type (SAHR) / Brake pedal	
	SAHR / Panel button	
STEERING SYSTEM	Hydraulic	
	36.7 / 6.5	
FLUID CAPACITY	186 (49.1)	
	90 (23.8)	
	300 + 450 (79.3 + 118.9)	
	20 (5.3)	

Lubricant	Service classification	Ambient temp. and applicable viscosity rating			Applicable standards
		–15 – 30°C (5 – 86°F) Cold	0 – 40°C (32 – 104°F) Moderate	15 – 55°C (59 – 131°F) Tropical	
Engine oil	API grade CJ-4	SAE 10W-30	SAE 10W-30	SAE 10W-30	MIL-L-2104B
Gear oil	API grade GL5	SAE 80W-90	SAE 90	SAE 140	MIL-L-2105
Hydraulic oil	Anti wear	ISO-VG32 over VI 140	ISO-VG46 over VI 140	ISO-VG68 over VI 110	ISO-3448
Grease	Lithium type extreme pressure				NLGI-2
Fuel	Diesel oil				ASTM D975-2D
DEF	ISO22241-1 or AUS32				

Compartment	Type of fluid	Capacity in liters (gal.)
Fuel tank	Diesel oil	186 (49.1)
Engine oil pan	Engine oil	13.2 (3.49)
Radiator	Coolant	18 (4.75)
Hydraulic oil tank	Hydraulic oil	90 (22.1)
Gear case (Wheel motor)	Gear oil	3.2 (0.84) × 2
Vibrator (SW774)	Gear oil	16.5 (4.36) × 2
Vibrator (SW774ND)	Gear oil	33 (8.71) × 2
Water tank	Water	Front : 300 (79.2) / Rear : 450 (118.8)
DEF tank	DEF	20 (5.3)

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Fuel pre-filter assembly
4032-71016-0
Filter element
4032-71011-0

Fuel filter assembly
4033-32006-0
Filter element
4033-37005-0

Fuel sedimenter assembly
4033-32008-0

Engine oil separator element
4033-32024-0

Line filter assembly (Hydraulic oil)
4218-7100-1
Filter element
4211-41004-1

Air cleaner assembly
4423-85000-0
Outer element
4419-53001-0
Inner element
4422-37001-0

DEF pump filter element
4033-74059-0

Gas damper
4418-04000-0

DEF tank filter
4033-74065-0

Sprinkler nozzle assembly
4715-96000-0
Nozzle
4715-96001-0
O-ring
4710-41003-0
Strainer
4710-41005-0

Battery
4906-11000-1

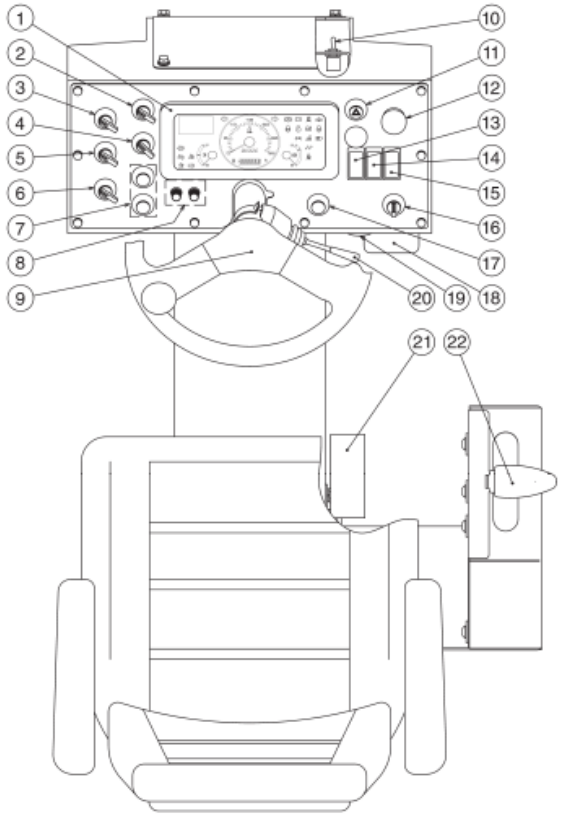
Suction filter element (Hydraulic oil)
4208-36000-0

Suction filter element (Hydraulic oil)
4207-79000-0

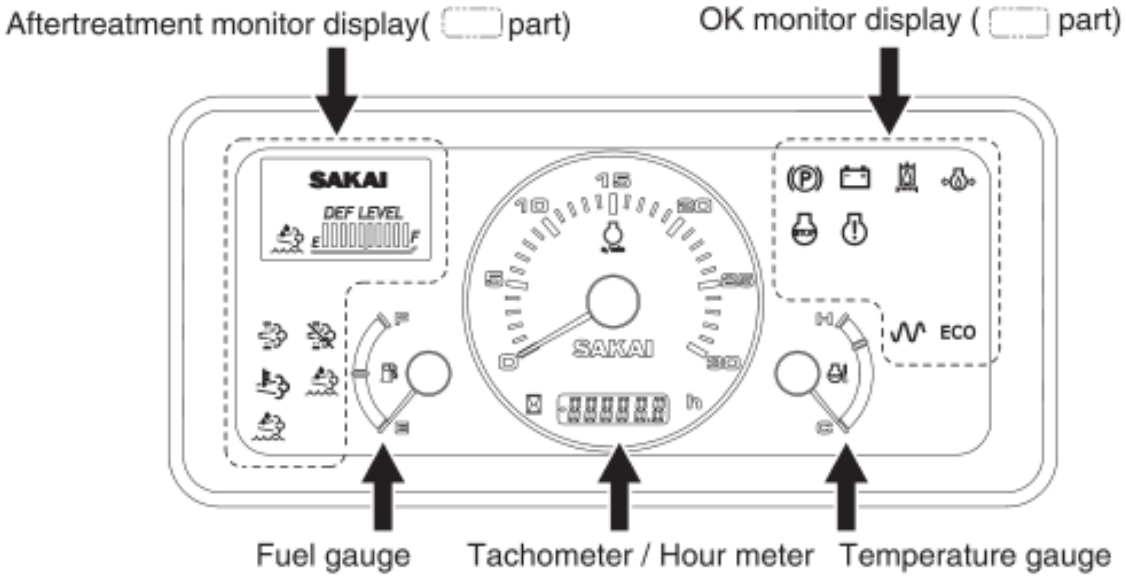
Sprinkler filter assembly
4715-98000-0
Element
4715-98001-0

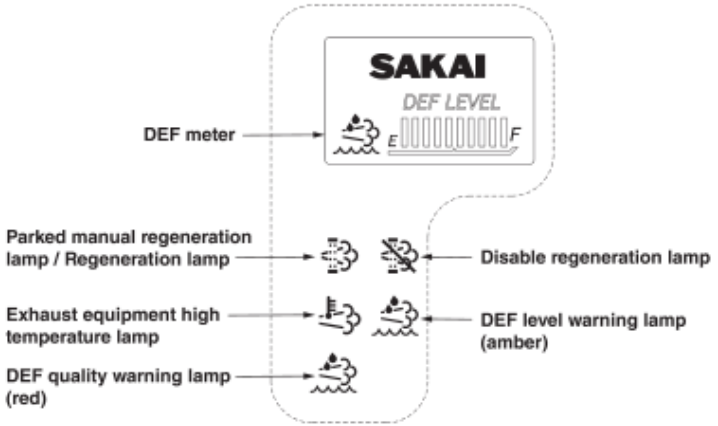
Engine oil filter element
4032-71010-0

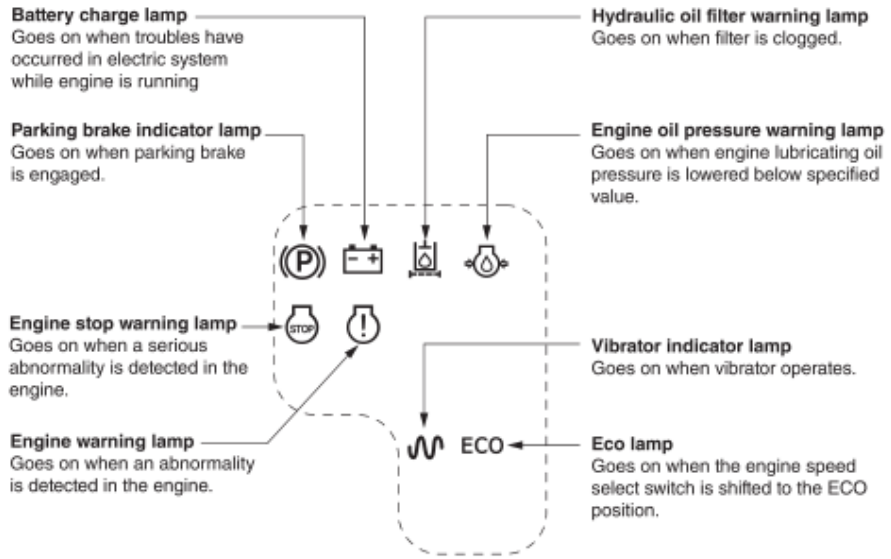
Scraper blade
1439-71002-0

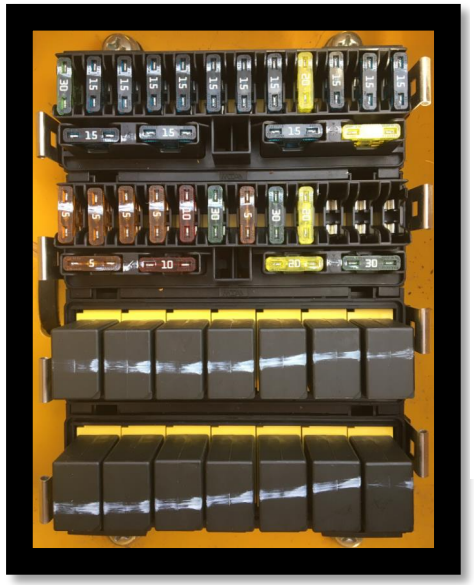


① Combination meter
② Vibration drum selector switch
③ Vibration mode selector switch
④ Vibration amplitude selector switch (For SW774)
Vibration type selector switch (For SW774ND)
⑤ Vibration frequency selector switch (Only SW774)
⑥ Sprinkler selector switch
⑦ Sprinkler switch
⑧ Sprinkler timer
⑨ Horn switch
⑩ Engine diagnostic switch
⑪ Hazard switch
⑫ Parking brake switch
⑬ Flood lamp switch
⑭ Dimmer switch
⑮ Lamp switch
⑯ Engine speed selector switch
⑰ Parked regeneration switch
⑱ Brake pedal
⑲ Starter switch
⑳ Turn signal lever
㉑ Swivel release pedal
㉒ Forward-Neutral-Reverse (F-N-R) lever with vibrator switch

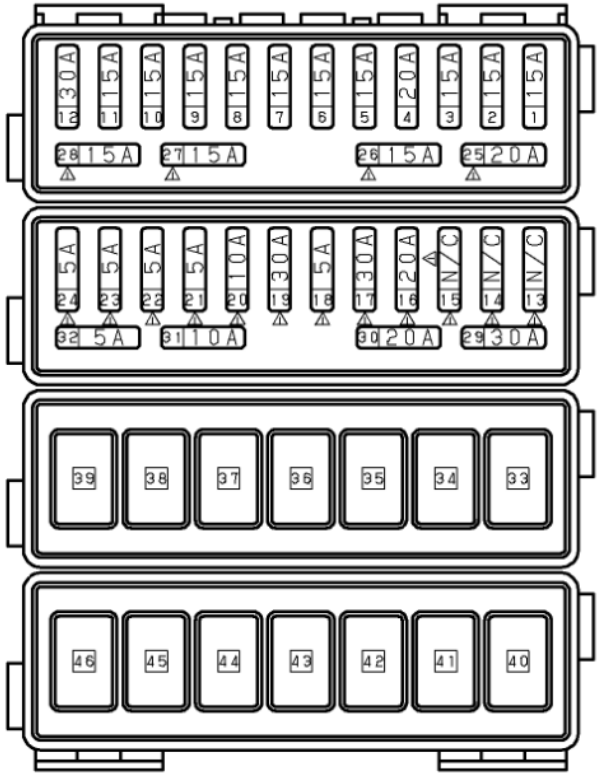








FUSE & RELAY BOX



	1	FUSE 15A WATER SPRAY
	2	FUSE 15A OPTION
⚠	3	FUSE 15A POWER OUTLET
	4	FUSE 20A OPTION
	5	FUSE 15A OPTION
	6	FUSE 15A LIGHTNING
	7	FUSE 15A FLOOD LAMP
⚠	8	FUSE 15A PEDAL BRAKE SW. BACK UP SW. PARKING SW.
	9	FUSE 15A FLASHER UNIT HORN RELAY
	10	FUSE 15A VIB. THOTTLE RELAY INTERLOCK SW.
	11	FUSE 15A OPTION
	12	FUSE 30A STARTER PRE-RELAY STARTER RELAY FUSE 5A
⚠	13	N/C
⚠	14	N/C
⚠	15	N/C
⚠	16	FUSE 20A COMP RELAY
⚠	17	FUSE 30A HEATER RELAY
⚠	18	FUSE 5A COMB. METER POWER
⚠	19	FUSE 30A ECU MAIN RELAY
⚠	20	FUSE 10A DEF TANK SENSOR PRE NOX SENSOR POST NOX SENSOR

⚠	21	FUSE 5A ECU A6 EGR VALVE
⚠	22	FUSE 5A ACU 18 IGNITTION SW. COMB. METER ECU VB/VBB IG-SW SERVICE TOOL
⚠	23	FUSE 5A PARKING INTERLOCK RELAY
⚠	24	FUSE 5A ECU V12 ST-SW
⚠	25	FUSE SPARE 20A
⚠	26	FUSE SPARE 15A
⚠	27	FUSE SPARE 15A
⚠	28	FUSE SPARE 15A
	29	FUSE SPARE 30A
	30	FUSE SPARE 20A
	31	FUSE SPARE 10A
	32	FUSE SPARE 5A
	33	RELAY PARKING INTERROCK
	34	RELAY NEUTRAL
	35	RELAY SPEED PULSE ON/OFF
	36	RELAY HORN
	37	RELAY WATER SPLAY
	38	RELAY WATER SPLAY PUMP (A)
	39	RELAY WATER SPLAY PUMP (B)
	40	RELAY VIB. GRIP-OFF-AUTO CHANGE
	41	RELAY VIB. FREQ. CHANGE 1
	42	RELAY VIB. FREQ. CHANGE 2
	43	RELAY STARTER PRE
	44	RELAY PARKING BRAKE
	45	RELAY VIB. THROTTLE
	46	RELAY FOR OPTION 1

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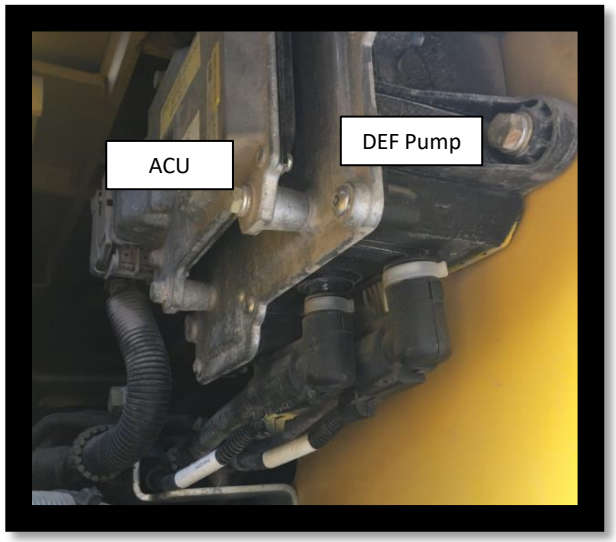
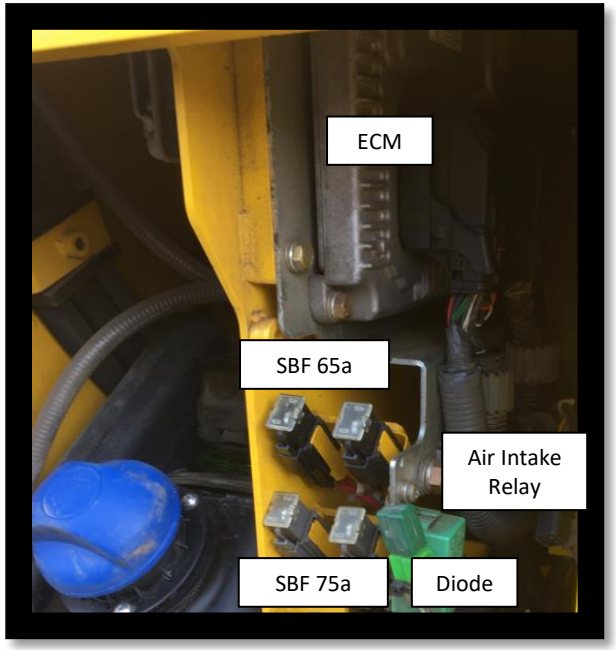
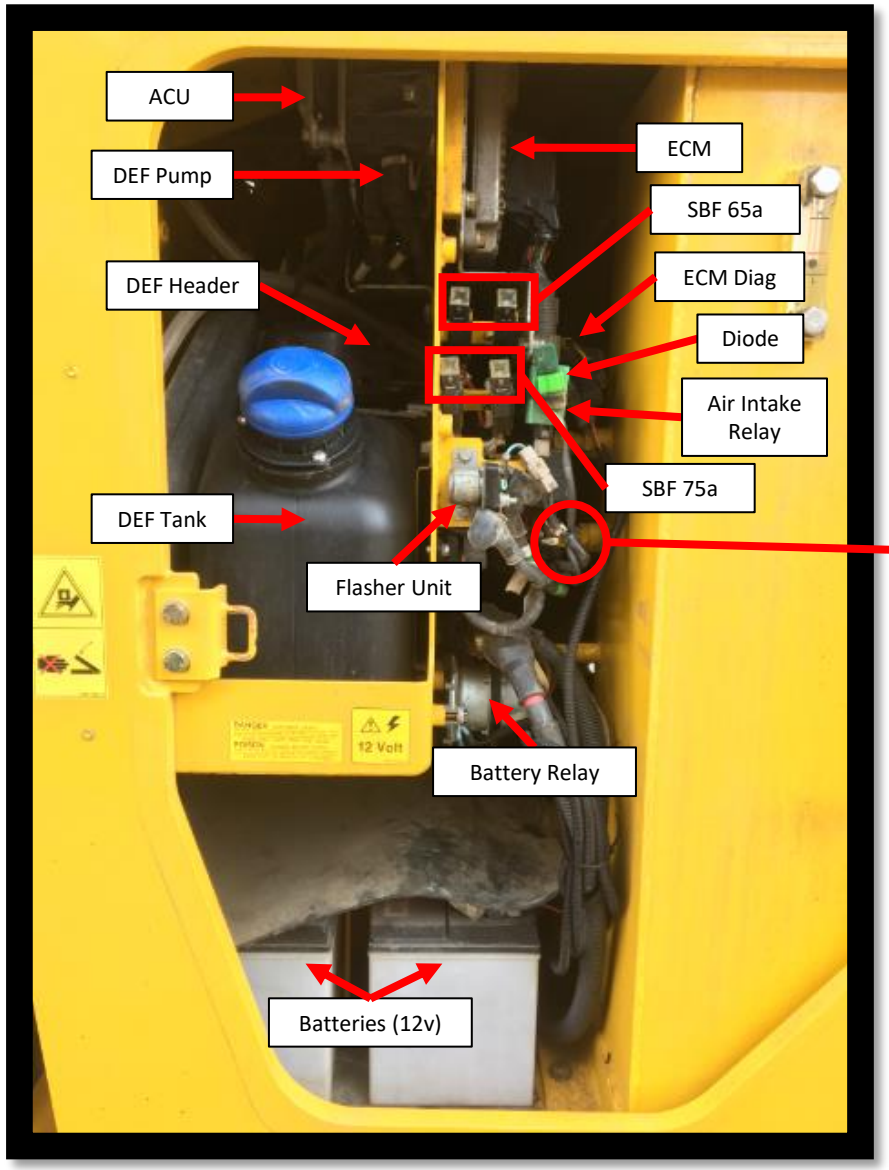
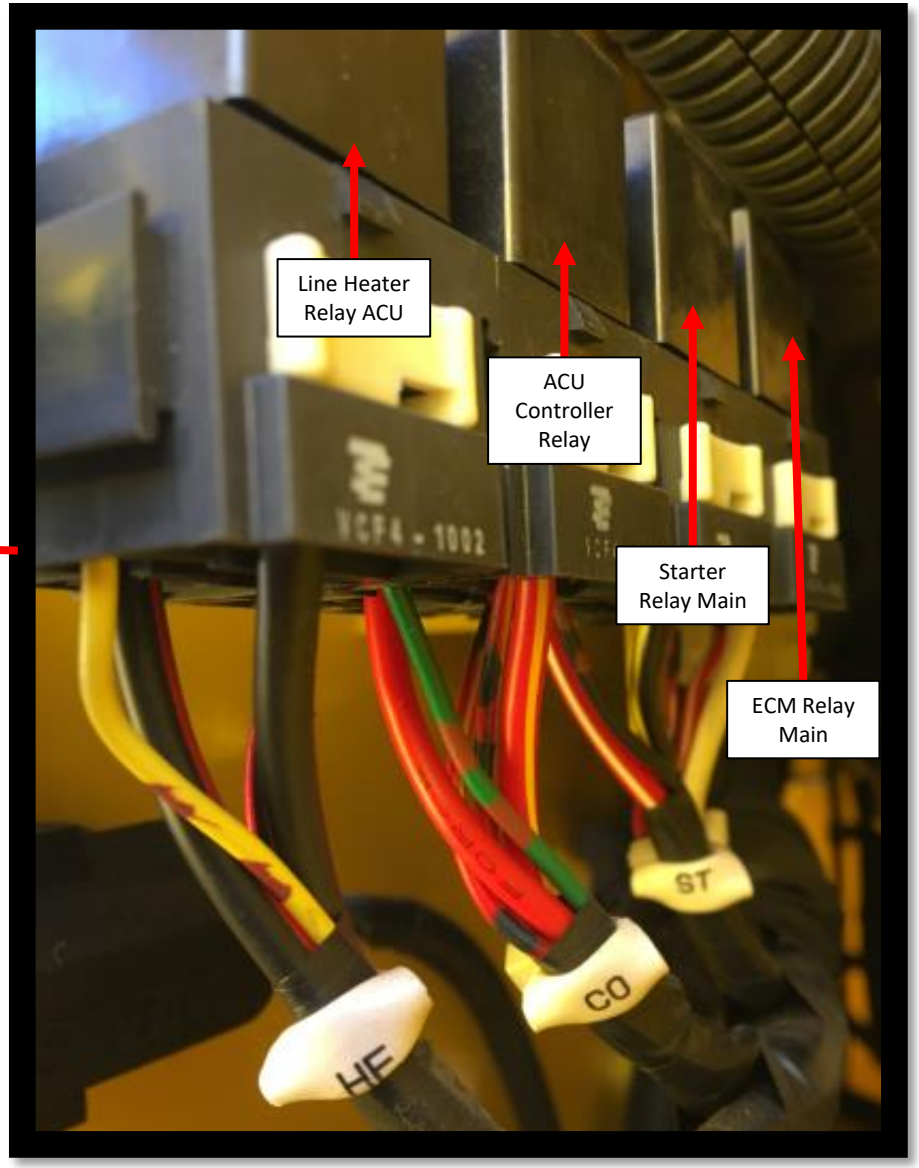

ACU
DEF Pump


ECM
SBF 65a
Air Intake Relay
SBF 75a
Diode


ACU
DEF Pump
DEF Header
DEF Tank
ECM
SBF 65a
ECM Diag
Diode
Air Intake Relay
SBF 75a
Flasher Unit
Battery Relay
Batteries (12v)
12 Volt

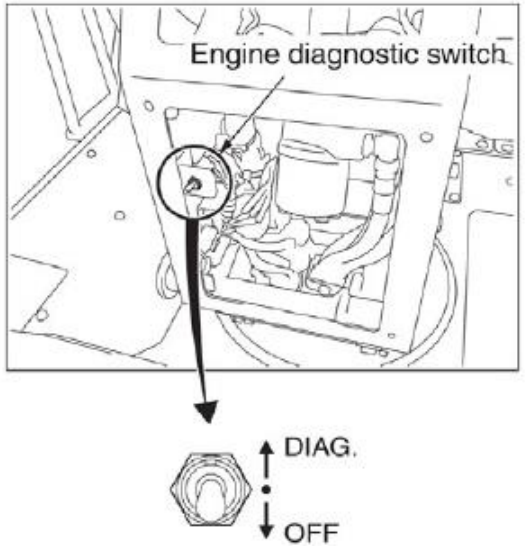

Line Heater Relay ACU
ACU Controller Relay
Starter Relay Main
ECM Relay Main
ST
CO
HF

Engine diagnostic switch

Engine troubleshooting can be conducted using the trouble code selector switch.
Do not operate this switch during the normal operation.
As shown in the figure, set the switch to the OFF position during the normal operation.

DIAG. position : Engine diagnostic is activated
OFF position : Engine diagnostic is shut off

IMPORTANT
When the engine malfunctions or fails, make for appropriate inspection, maintenance, or repair.



Under self-diagnosis

Wait to start

Find the cause of the failures by SPN & FMI Codes listed in Kubota Diagnosis Manuals

Without FAILURE

DTC MESSAGE : 0 OF 0
SPN : _____
FMI : __
SA : ___

With FAILURES

DTC MESSAGE : 4 OF 5
SPN : 32
FMI : 24
SA : 1

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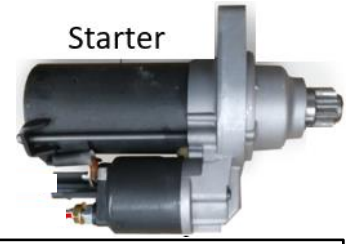
No Crank, No Start



Does the display come on when key is turned on?

- Yes, Is machine in “Neutral” drive position
  - Yes, Is the park brake “ON”?
    - Yes, Is there power at Terminal 50 Black/White wire on the Starter when turned to “Crank” position?
      - Yes, Repair connections or replace starter as needed.
      - No, Is there power at the Starter Black/White wire on the Starter when turned to “Crank” position?
        - Yes, Repair connections or replace starter as needed.
        - No, Check continuity across the Park Brake switch and Neutral Switch? Does the switches test good?
          - Yes, Test for power across relays for Starter, Starter Interlock, park brake switch and Neutral Switch? Do the switches test good?
            - Yes, Check fuse for ECM 5a, Park Brake Switch 15a, Interlock 15a, and Starter Relay 30a.
              - No, Replace fuses as needed or ECM needs to be tested.
            - No, Repair or replace as needed.
          - **No, Repair or replace as needed.**
    - No, Engage Park Brake. Does engine crank?
      - Yes, End diagnosis.
      - No, Is there power at the Starter Black/White wire on the Starter when turned to “Crank” position?
        - Yes, Repair connections or replace starter as needed.
        - No, Check continuity across the Park Brake switch and Neutral Switch? Does the switches test good?
          - Yes, Test for power across relays for Starter, Starter Interlock, park brake switch and Neutral Switch? Do the switches test good?
            - Yes, Check fuse for ECM 5a, Park Brake Switch 15a, Interlock 15a, and Starter Relay 30a.
              - No, Replace fuses as needed or ECM needs to be tested.
            - No, Repair or replace as needed.
          - **No, Repair or replace as needed.**
  - No, Shift drive lever to “Neutral”. Does engine crank?
    - Yes, End diagnosis.
    - No, Is the park brake “ON”?
      - No, Engage Park Brake. Does engine crank?
        - Yes, End diagnosis.
        - No, Is there power at the Starter Black/White wire on the Starter when turned to “Crank” position?
          - Yes, Repair connections or replace starter as needed.
          - No, Check continuity across the Park Brake switch and Neutral Switch? Does the switches test good?
            - Yes, Test for power across relays for Starter, Starter Interlock, park brake switch and Neutral Switch? Do the switches test good?
              - Yes, Check fuse for ECM 5a, Park Brake Switch 15a, Interlock 15a, and Starter Relay 30a.
                - No, Replace fuses as needed or ECM needs to be tested.
              - No, Repair or replace as needed.
            - **No, Repair or replace as needed.**
      - No, Is the park brake “ON”?
        - No, Engage Park Brake. Does engine crank?
          - Yes, End diagnosis.
          - No, Is there power at the Starter Black/White wire on the Starter when turned to “Crank” position?
            - Yes, Repair connections or replace starter as needed.
            - No, Check continuity across the Park Brake switch and Neutral Switch? Does the switches test good?
              - Yes, Test for power across relays for Starter, Starter Interlock, park brake switch and Neutral Switch? Do the switches test good?
                - Yes, Check fuse for ECM 5a, Park Brake Switch 15a, Interlock 15a, and Starter Relay 30a.
                  - No, Replace fuses as needed or ECM needs to be tested.
                - No, Repair or replace as needed.
              - **No, Repair or replace as needed.**
        - Yes, End diagnosis.
- No, Test Battery, is there 24v present?
  - Yes, Does Battery Relay, engage when key switch is turned to “ON” position?
    - Yes, Check connections and replace Battery Relay as needed.
    - No, Is there 24V power from key switch (Black/Red stripe) at Battery Relay?.
      - Yes, Repair Connection or Replace Battery Relay as needed.
      - No, Repair Wiring from Key Switch.
  - No, Replace or Charge Battery as needed.

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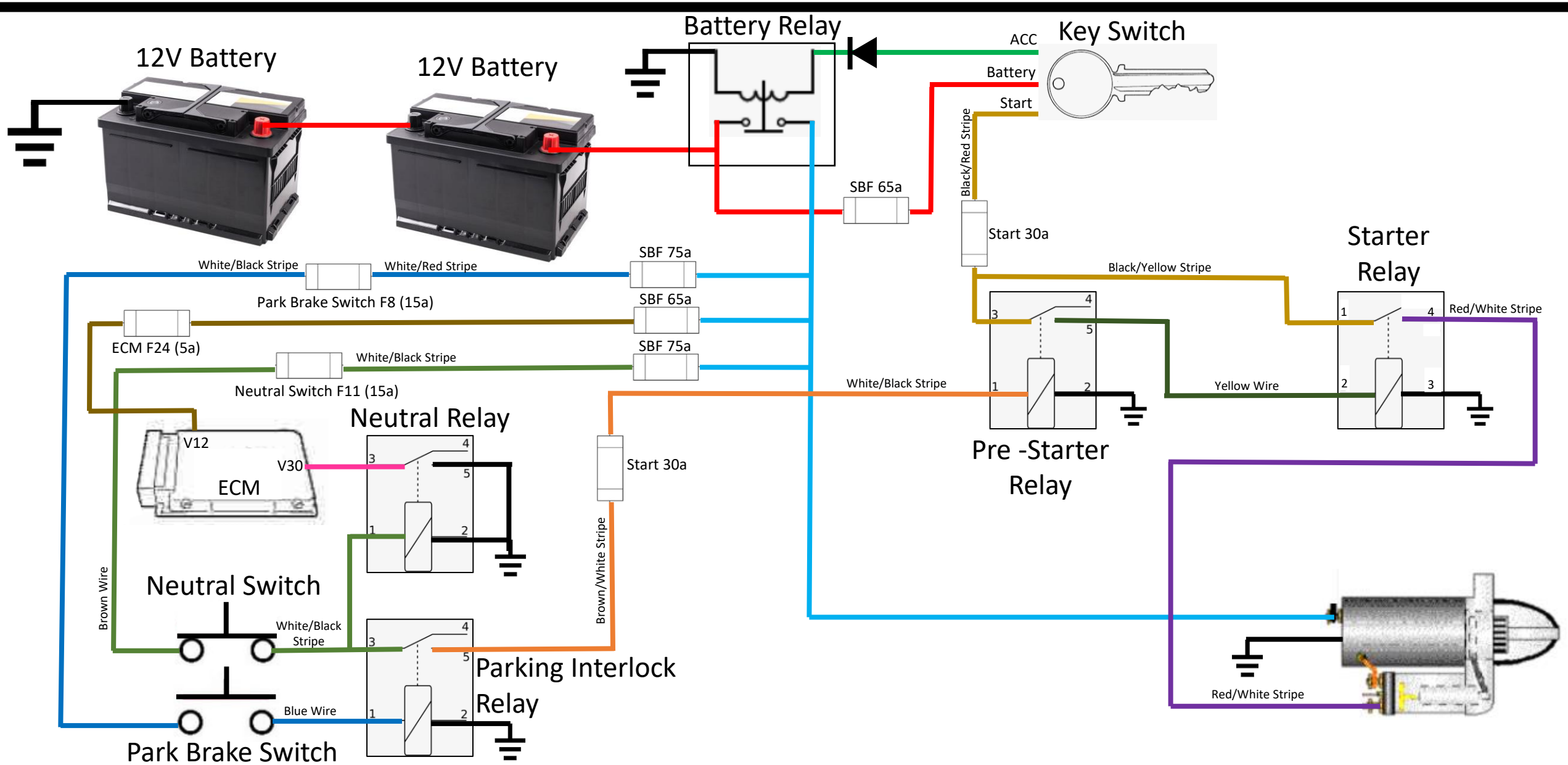
12V Battery
12V Battery
Battery Relay
Key Switch
ACC
Battery
Start
Black/Red Stripe
SBF 65a
Start 30a
Starter Relay
Black/Yellow Stripe
Red/White Stripe
White/Black Stripe
White/Red Stripe
SBF 75a
Park Brake Switch F8 (15a)
SBF 65a
ECM F24 (5a)
SBF 75a
White/Black Stripe
Neutral Switch F11 (15a)
White/Black Stripe
Yellow Wire
Pre -Starter Relay
Neutral Relay
V12
V30
ECM
Start 30a
Brown/White Stripe
Brown Wire
Neutral Switch
White/Black Stripe
Parking Interlock Relay
Blue Wire
Park Brake Switch
Red/White Stripe

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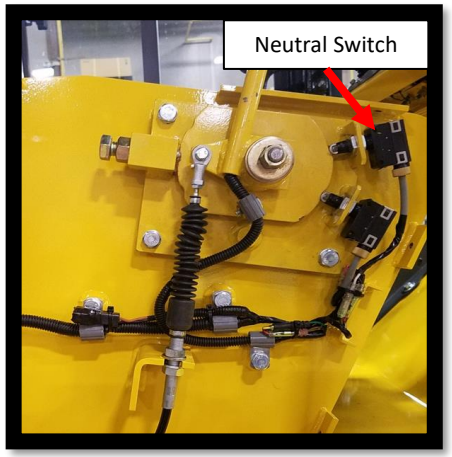
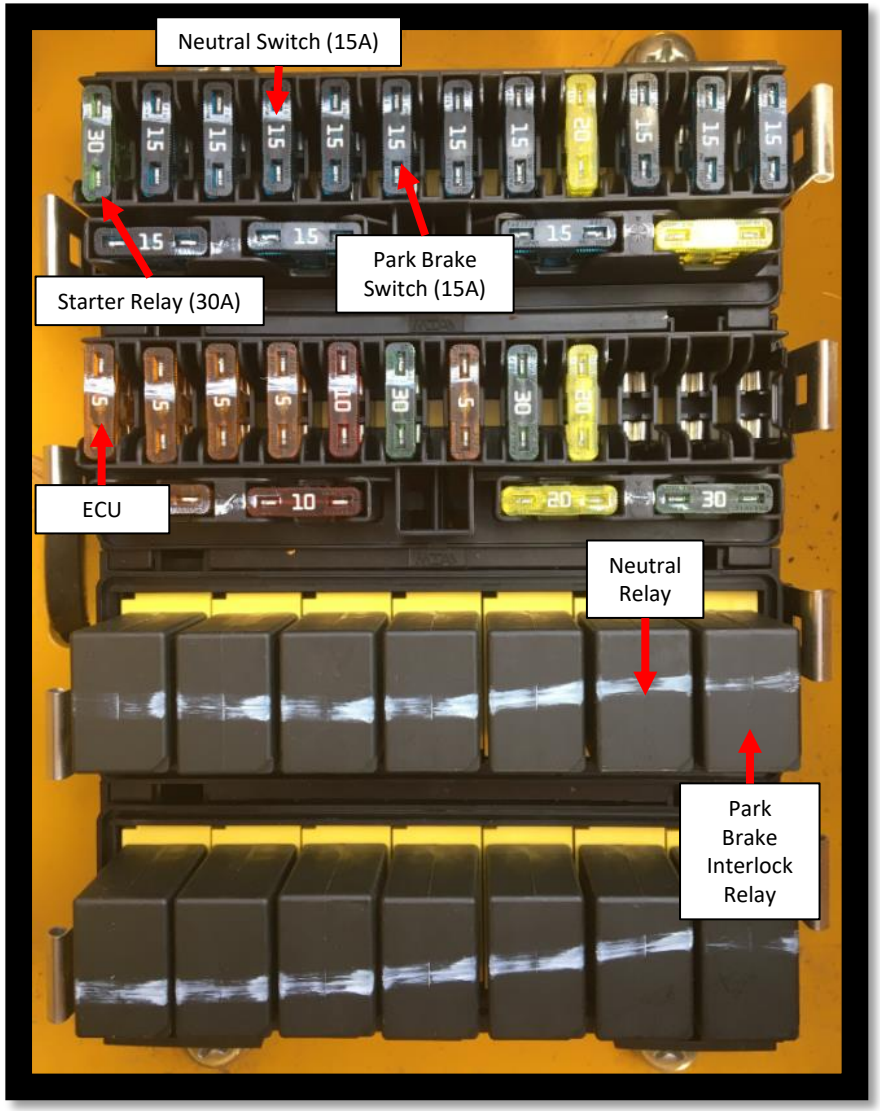
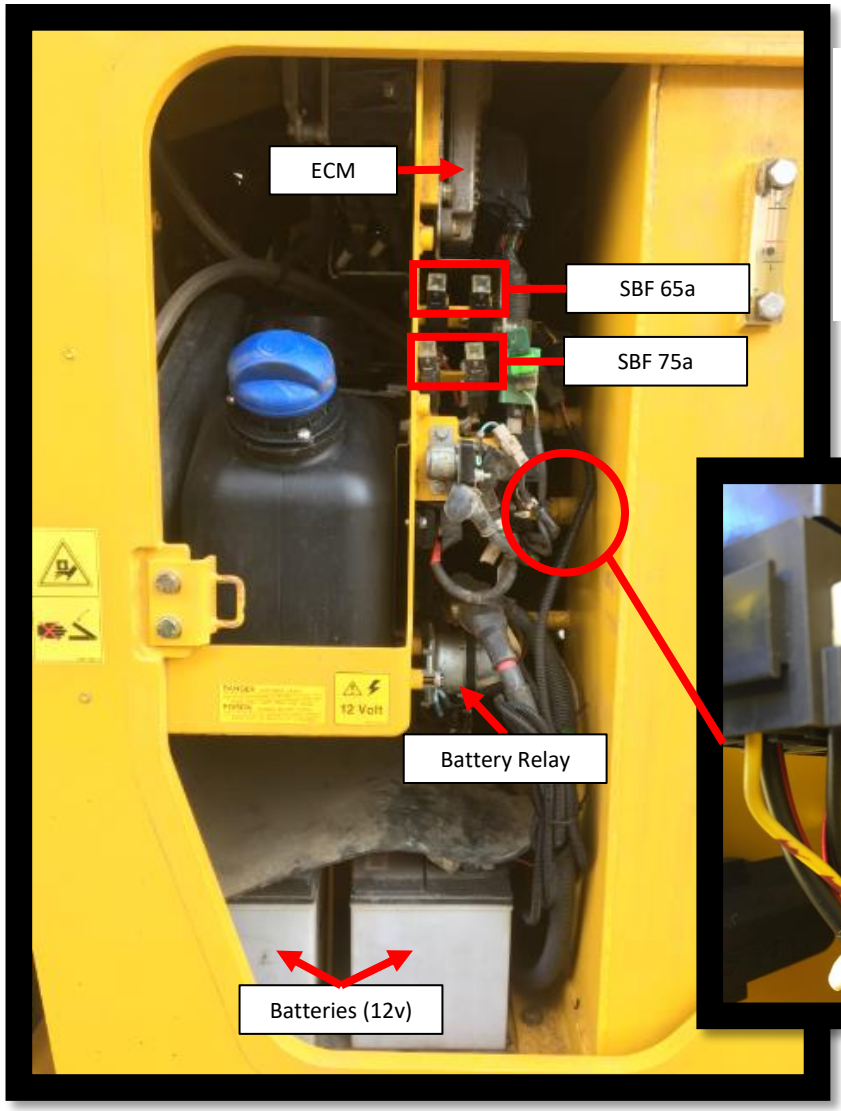
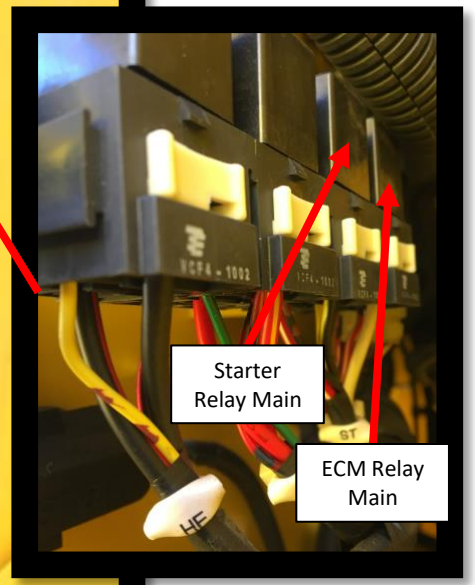

Neutral Switch


Park Brake Switch
MIDDLE
IDLE
FULL


Neutral Switch (15A)
Starter Relay (30A)
Park Brake Switch (15A)
ECU
Neutral Relay
Park Brake Interlock Relay


ECM
SBF 65a
SBF 75a
Battery Relay
Batteries (12v)


Starter Relay Main
ECM Relay Main

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Crank, No Start

Are there any Engine Codes present?

No, Is there fuel in the machine?

No, Add Fuel and Prime using hand pump.

Yes, Is there fuel present at filters?

No, Replace filters as needed or remove fuel restriction, repair as needed.

Yes, There fuel present at Fuel Pump ?

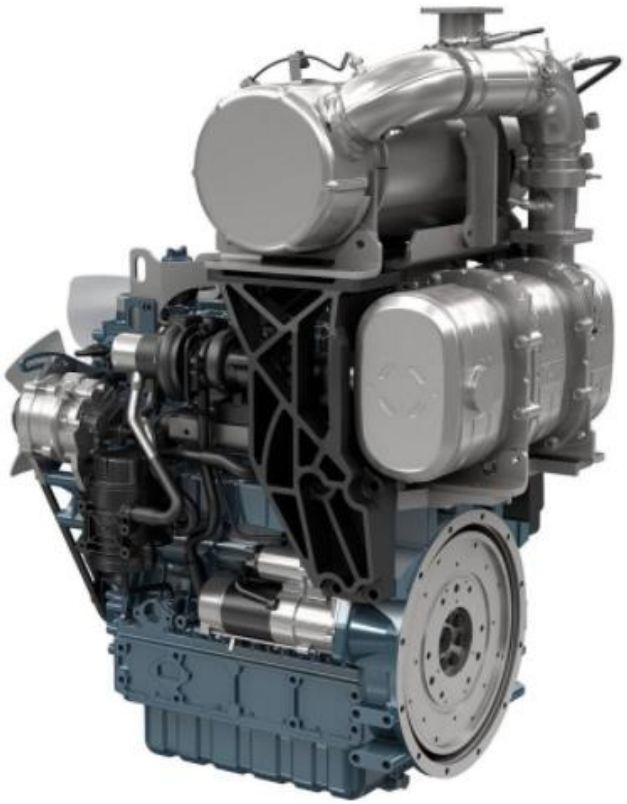
No, Replace filters as needed or remove fuel restriction, repair as needed.

Yes, Connect Diagmaster and check for Target and Actual rail pressure. Should be almost the same to start.

No, Check SCV and Injector Pump

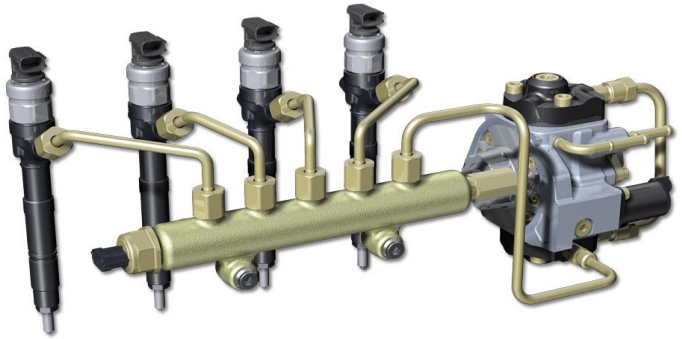
Yes, Test Compression and have injectors tested.

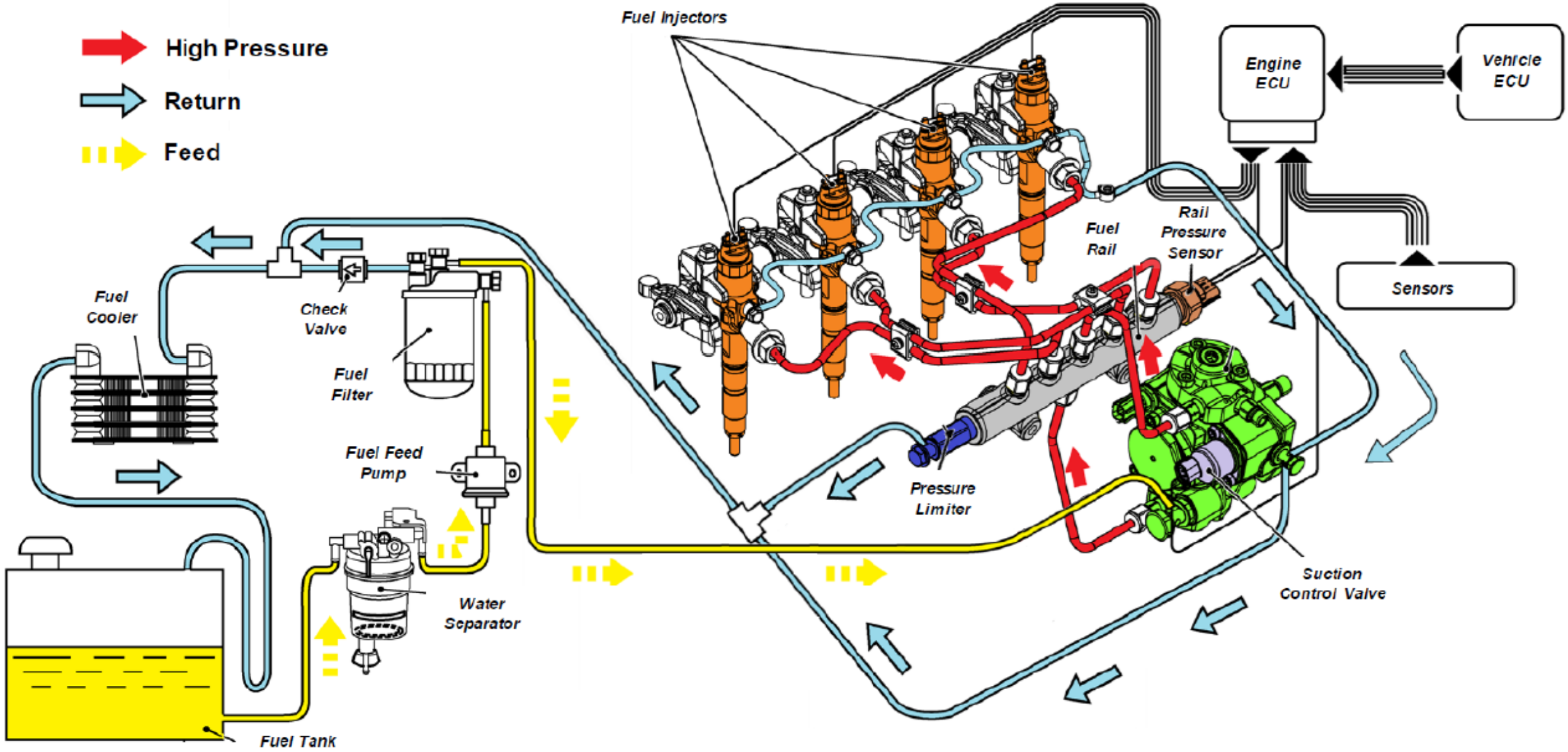
Yes, Please Kubota Diagnostic Manual for info.



Injector Pump

SCV (Suction Control Valve)




High Pressure
Return
Feed
Fuel Injectors
Engine ECU
Vehicle ECU
Fuel Rail
Rail Pressure Sensor
Sensors
Fuel Cooler
Check Valve
Fuel Filter
Fuel Feed Pump
Pressure Limiter
Water Separator
Suction Control Valve
Fuel Tank

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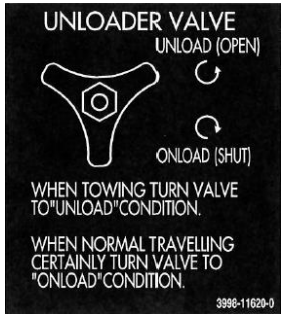
Will not Drive

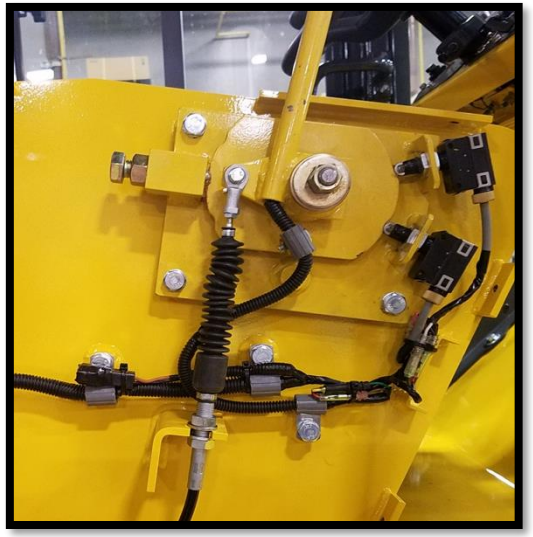
Is the Unloader valve open? Will not drive with valve open

- Yes, Close valve to drive.
- No, Is the Parking brake engaged?
  - Yes, Disengage park brake.
  - No, Inspect Drive Cable. Is cable still connected?
    - No, Re-Install Cable and test.
    - Yes, Test for power at the Park Brake Vale (Brown/Red wire). there voltage present at the switch?
      - Yes, Test coil and solenoid valve. Repair and replace as needed.
      - No, Check for power at Park Brake relay (Brown/Red wire). Is there power present?
        - Yes, Repair broken wire from Park brake relay to the Park Brake solenoid.
        - No, Is there power on Park Brake relay on Pin 1 (Green/White Wire)?
          - Yes, Is there a good ground on Pin 2 (Black Wire) of Park Brake Relay?
            - No, Repair Connections or Repair Ground wire to Relay.
            - Yes, Test F8 15a. Is fuse good?
              - No, Repair Connections or Replace defective fuse.
              - Yes, Test Foot Brake Switch and Repair or Replace as needed.
          - No, Is there power at the Park Brake Switch on Green/White Wire?
            - Yes, Repair broken wire from Park brake relay to the Park Brake Switch.
            - No, Is there power at the Park Brake Switch on White/Black Wire?
              - Yes, Test F8 15a. Replace as needed
              - Yes, Test Park Brake Switch and Repair or Replace as needed.



Note: If all checks out electrically. Test Charge Pressure at **350-400** PSI. And Drive Pump at **6236** PSI.

Drive Cable



Foot Brake Switch

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Neutral Switch (15A)
Park Brake Switch (15A)
Neutral Relay
Park Brake Interlock Relay


Park Brake Switch
MIDDLE
IDLE
FULL


Park Brake Solenoid
12 Volt

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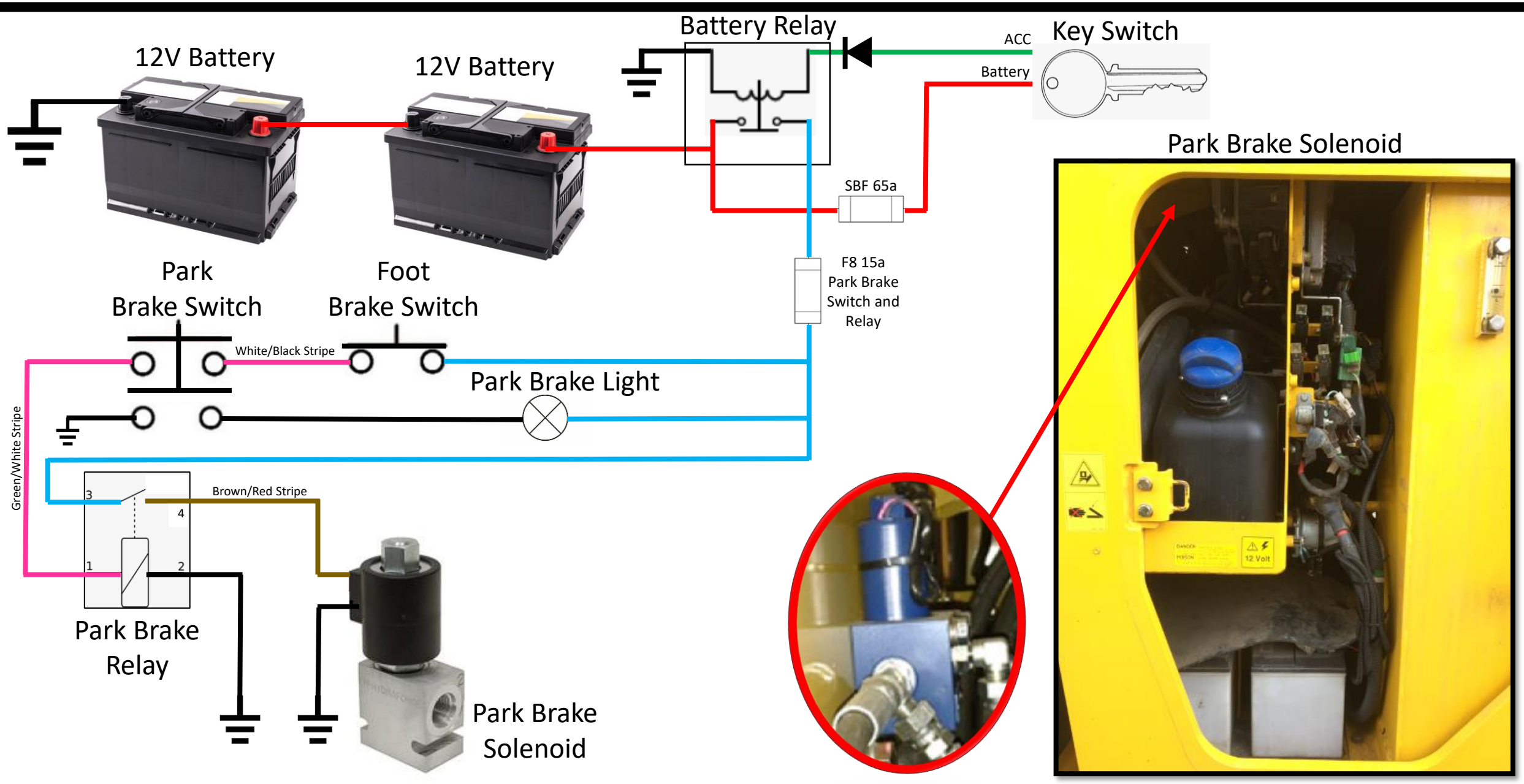
12V Battery
12V Battery
Battery Relay
ACC
Key Switch
Battery
Park Brake Solenoid
SBF 65a
F8 15a
Park Brake
Switch and
Relay
Park
Brake Switch
Foot
Brake Switch
White/Black Stripe
Park Brake Light
Green/White Stripe
Brown/Red Stripe
3
4
1
2
Park Brake
Relay
Park Brake
Solenoid
12 Volt

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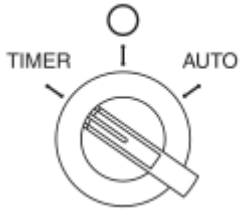

○ : Continuous sprinkling
AUTO : Spraying is done interlocking with forward / backward movement.
TIMER : Intermittent (timer) sprinkling

Will not Spray Water

Is there water in the tanks?

- No, Fill tanks with water and test.
- Yes, Are both Front and Rear Pump sprayers not spraying?
  - No, Isolate circuit and Test.
    - Is the pump running?
      - Yes, check for obstruction or replace pump as needed.
      - No, Is there good Power and Ground at Pump?
        - Yes, check connections or replace pump as needed.
        - No, Check F1 15a. Is the fuse Good?
          - Yes, Check Pump Relay for that Circuit and replace as needed.
          - No, Replace fuse and Test.
  - Yes, Check F1 15a for Power. Is fuse good?
    - No, Remove and Replace as needed and Test.
    - Yes, Is there Power at the Spray Mode Switch on Blue/Black Wire?
      - No, Test wire from F1 to Switch and Repair or Replace as needed.
      - Yes, Move the Spray Mode Selector Switch and Test for power across switch on Blue/White and Blue/Yellow wire. Is there Power Across the Switch?
        - No, Replace defective switch and test.
        - Yes, Is there power coming out of the Water Spray Relay on Light Green Wire?
          - No, Repair Connections or Replace defective Water Spray Relay.
          - Yes, Test Light Green Wire from Water Spray Relay to Pump A and B Switches for continuity and repair as needed.

Water Mode

Water Pump A

Water Pump B

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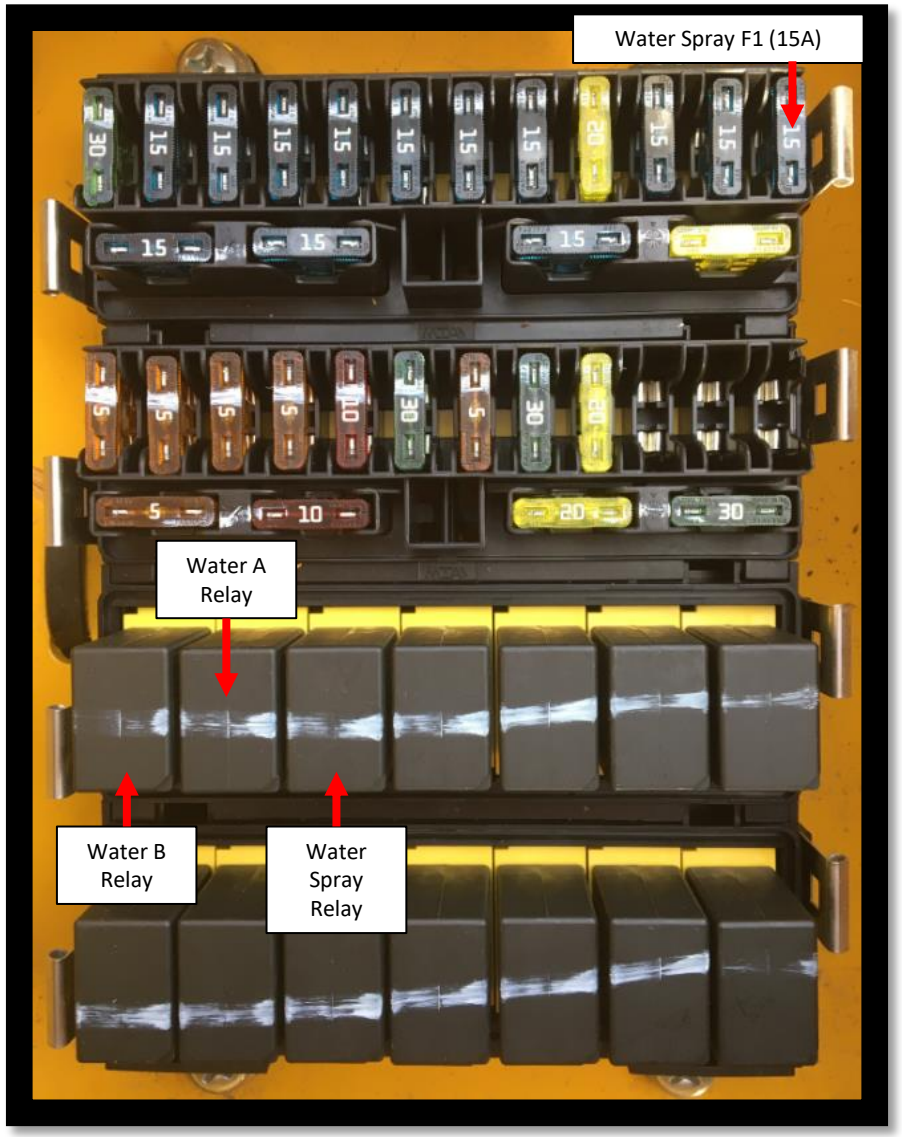
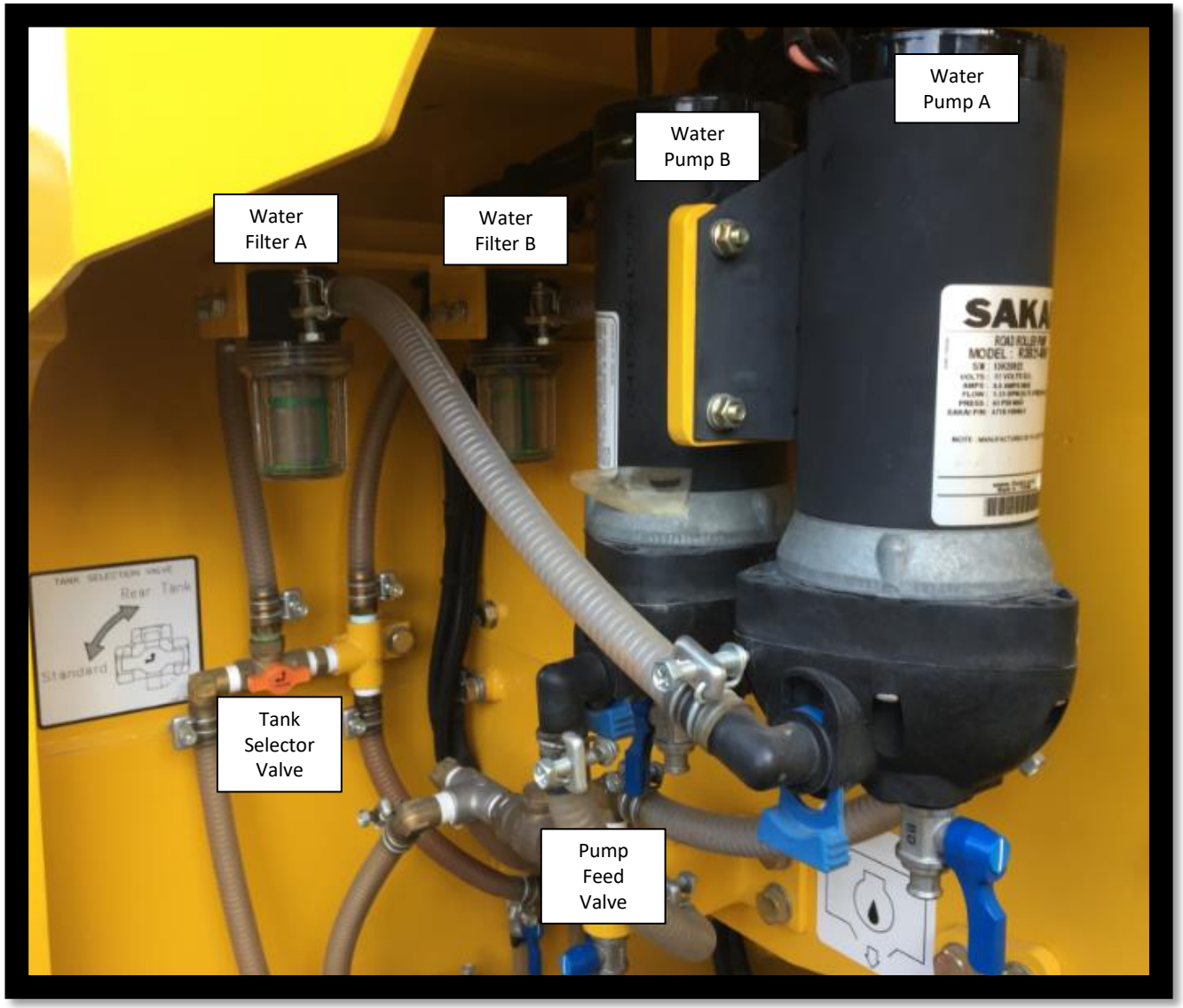

Water Spray F1 (15A)
Water A Relay
Water B Relay
Water Spray Relay


Water Pump A
Water Pump B
Water Filter A
Water Filter B
Tank Selector Valve
Pump Feed Valve

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Machine will not vibrate

Is there Power on the Light Green wire at the Mode Vibrate Switch?

No, Inspect fuse F10 (F15a). Is there power across the fuse?

Yes, Inspect wire from Fuse to Vibrate Mode Switch Light Green. And repair as needed.

No, replace fuse or inspect SBF 75a from battery relay.

Yes, Is there power on Pin 5(Blue Wire) of the Vibrate Mode Switch when turned to Vibrate?

Yes, Inspect the Vibrate relay, Is there power on Pin 1 (Blue Wire)?

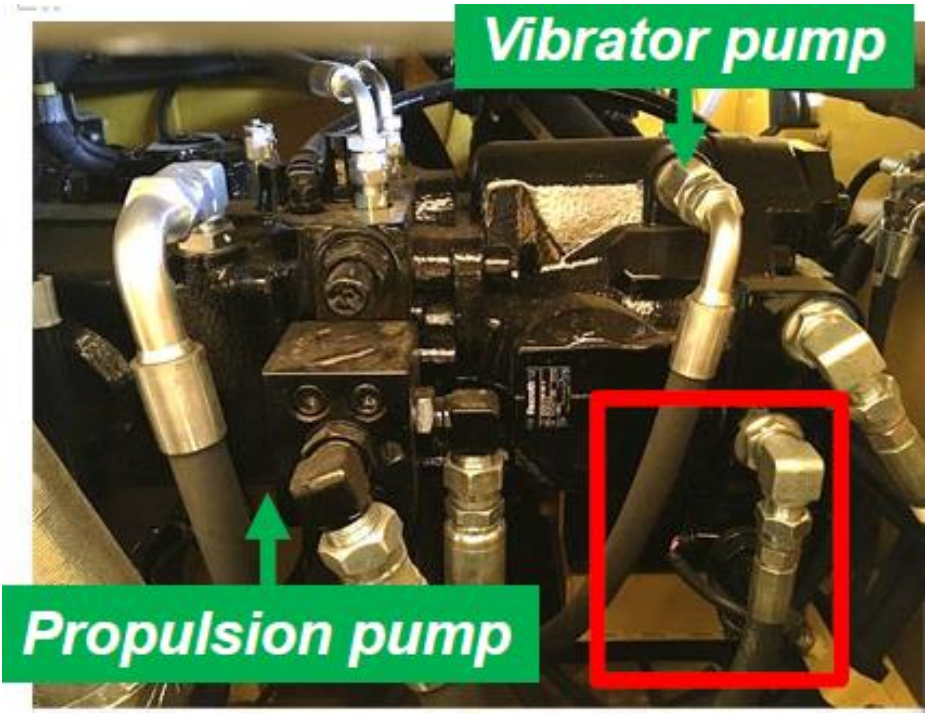
No, Repair or Replace switch as needed

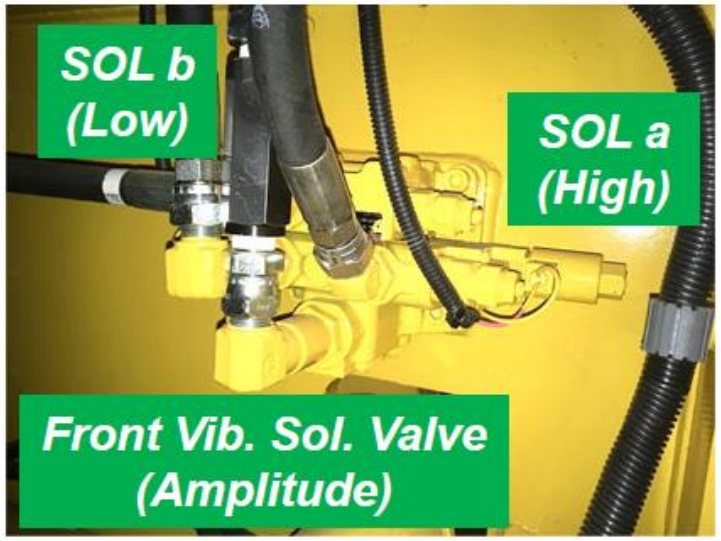
Yes, Inspect relay for proper function. Does relay function properly?

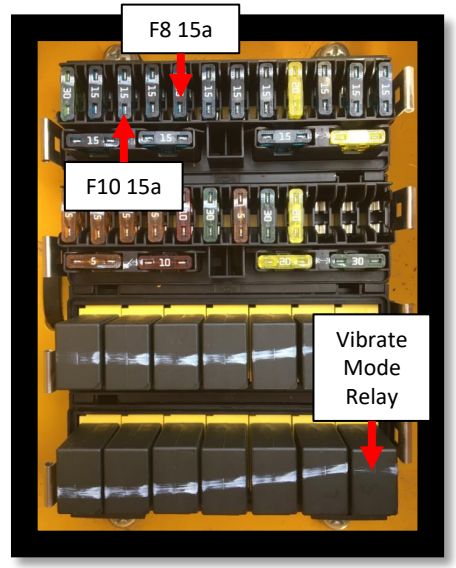
No, Repair wire or Connections from Switch to Relay

Yes, Test Vibrate Pump for proper pressure.

No, Repair connections to relay or replace as needed.







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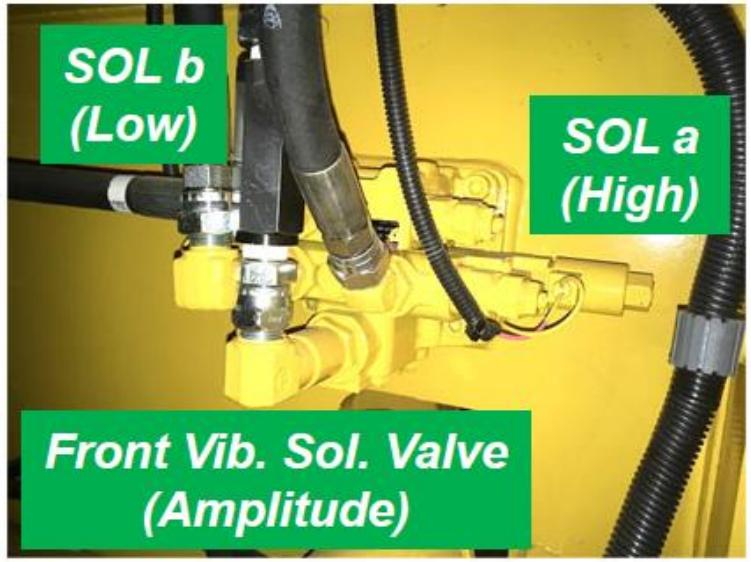
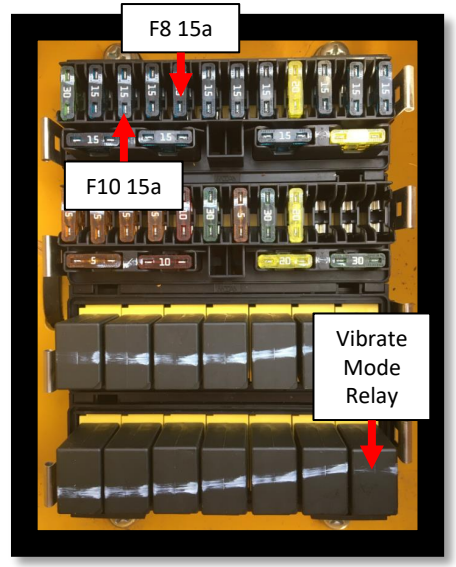
Front Drum will not vibrate low

Are the Vibrate Switches in correct position?

- No, See Next Page Or Ops Manual for More Info.
- Yes, Is there power at the Low Solenoid(White/Blue Stripe) when turned to “ON” position?
  - Yes, Is there a good ground on the solenoid?
    - No, Repair ground and test.
    - Yes, Remove the coil from the solenoid. Does it magnetize when turned to “ON” position?
      - No, Repair or Replace coil.
      - Yes, Internal Failure. Repair solenoid valve as needed.
  - No, Is there power at the Low/High Switch Pin 6 (White/Blue Stripe)?
    - Yes, Repair broken wire connection to solenoid.
    - Yes, Is there power at the Low/High Switch on Pin 4 (Green/Blue Stripe)?
      - Yes, Repair or Replace defective High/Low Switch.
      - No, Is there power on Front/Rear Selector Switch on Pin 6 (Green/Blue Wire)?
        - Yes, Repair broken wire from High/Low Switch to Front/Rear Switch.
        - No, Is there power on Front/Rear Selector Switch on Pin 4 (Green/Blue)?
          - Yes, Repair or Replace defective Front/Rear Switch.
          - No, Is there power (Yellow/Green) Mode Selector Relay Pin 5 (Yellow/Green Wire?
            - Yes, Repair Broken wire from Relay.
            - Yes, Test and Or Replace Relay.





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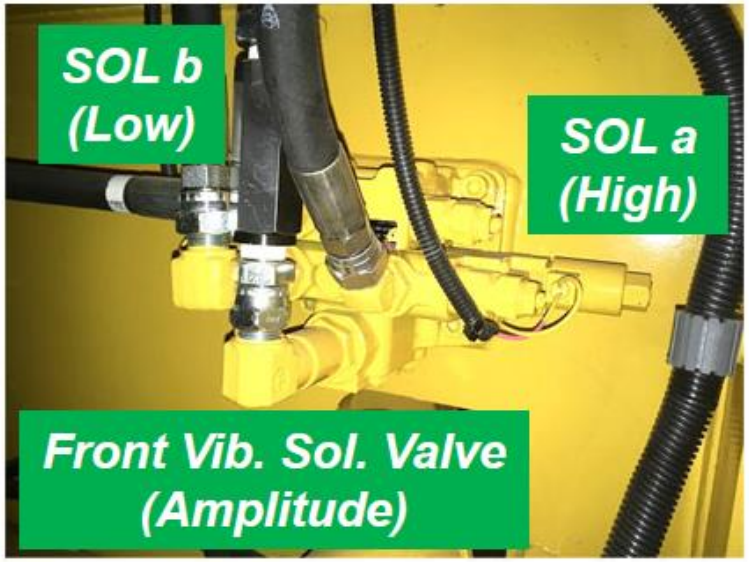
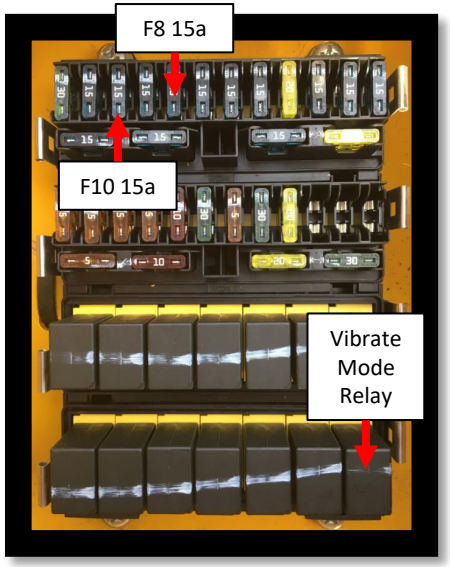
Front Drum will not vibrate high

Are the Vibrate Switches in correct position?

- No, See Next Page Or Ops Manual for More Info.
- Yes, Is there power at the Low Solenoid(Brown/Yellow Stripe) when turned to “ON” position?
  - Yes, Is there a good ground on the solenoid?
    - No, Repair ground and test.
    - Yes, Remove the coil from the solenoid. Does it magnetize when turned to “ON” position?
      - No, Repair or Replace coil.
      - Yes, Internal Failure. Repair solenoid valve as needed.
  - No, Is there power at the Low/High Switch Pin 5 (Brown/Yellow Stripe)?
    - Yes, Repair broken wire connection to solenoid.
    - Yes, Is there power at the Low/High Switch on Pin 4 (Green/Blue Stripe)?
      - Yes, Repair or Replace defective High/Low Switch.
      - No, Is there power on Front/Rear Selector Switch on Pin 6 (Green/Blue Wire)?
        - Yes, Repair broken wire from High/Low Switch to Front/Rear Switch.
        - No, Is there power on Front/Rear Selector Switch on Pin 4 (Green/Blue)?
          - Yes, Repair or Replace defective Front/Rear Switch.
          - No, Is there power (Yellow/Green) Mode Selector Relay Pin 5 (Yellow/Green Wire?
            - Yes, Repair Broken wire from Relay.
            - Yes, Test and Or Replace Relay.

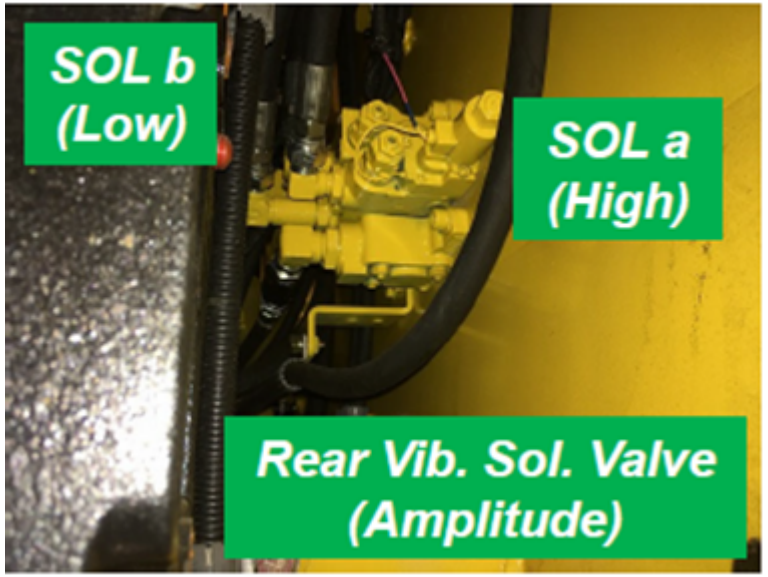


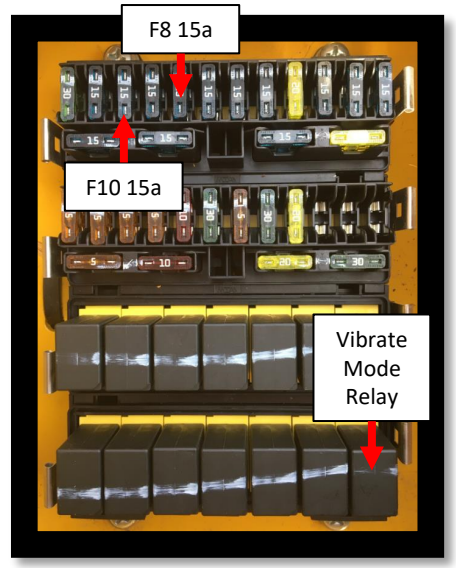


Rear Drum will not vibrate low

Are the Vibrate Switches in correct position?

- No, See Next Page Or Ops Manual for More Info.
- Yes, Is there power at the Low Solenoid(Light Green/Black Stripe) when turned to “ON” position?
  - No, Is there power at the Low/High Switch Pin 3 (Light Green/Black Stripe)?
    - Yes, Is there power at the Low/High Switch on Pin 1 (Blue/Red Stripe)?
      - No, Is there power on Front/Rear Selector Switch on Pin 3 (Blue/Red Wire)?
        - No, Is there power on Front/Rear Selector Switch on Pin 1 (Yellow/Green)?
          - No, Is there power (Yellow/Green) Mode Selector Relay Pin 5 (Yellow/Green Wire?
            - Yes, Test and Or Replace Relay.
            - Yes, Repair Broken wire from Relay.
          - Yes, Repair or Replace defective Front/Rear Switch.
        - Yes, Repair broken wire from High/Low Switch to Front/Rear Switch.
      - Yes, Repair or Replace defective High/Low Switch.
    - Yes, Repair broken wire connection to solenoid.
  - Yes, Is there a good ground on the solenoid?
    - No, Repair ground and test.
    - Yes, Remove the coil from the solenoid. Does it magnetize when turned to “ON” position?
      - No, Repair or Replace coil.
      - Yes, Internal Failure. Repair solenoid valve as needed.

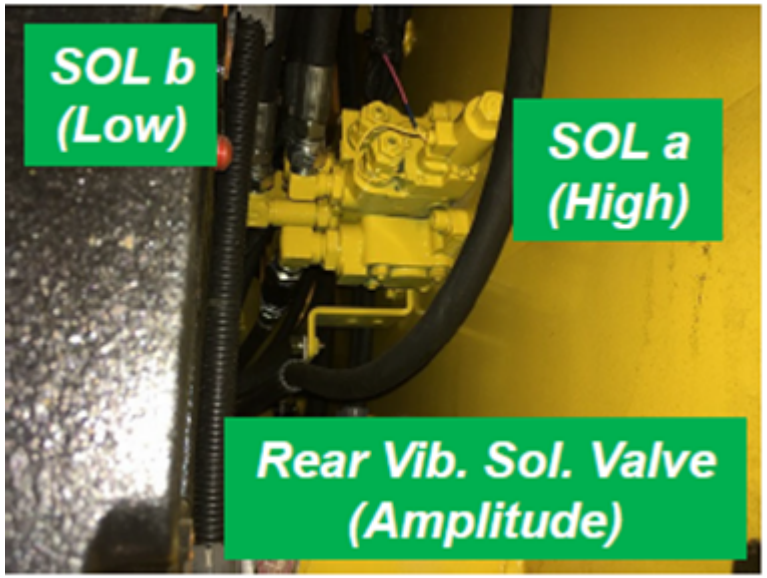


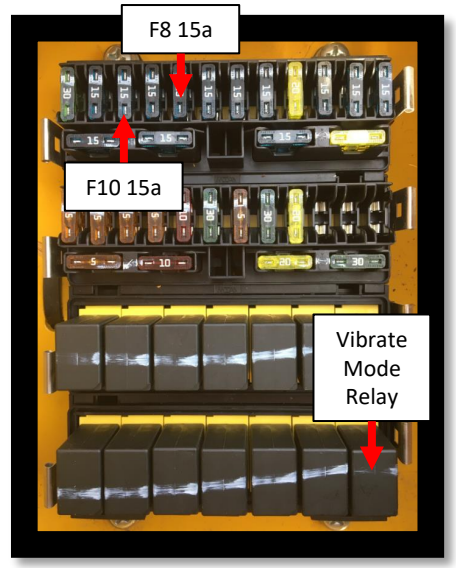


Rear Drum will not vibrate High

Are the Vibrate Switches in correct position?

- No, See Next Page Or Ops Manual for More Info.
- Yes, Is there power at the Low Solenoid(Yellow/Red Stripe) when turned to “ON” position?
  - No, Is there power at the Low/High Switch Pin 2 (Yellow/Red Stripe)?
    - Yes, Is there power at the Low/High Switch on Pin 1 (Green/Blue Stripe)?
      - No, Is there power on Front/Rear Selector Switch on Pin 3 (Blue/Red Stripe)?
        - No, Is there power on Front/Rear Selector Switch on Pin 1 (Yellow/Green)?
          - No, Is there power (Yellow/Green) Mode Selector Relay Pin 5 (Yellow/Green Wire?
            - Yes, Test and Or Replace Relay.
            - Yes, Repair Broken wire from Relay.
          - Yes, Repair or Replace defective Front/Rear Switch.
        - Yes, Repair broken wire from High/Low Switch to Front/Rear Switch.
      - Yes, Repair or Replace defective High/Low Switch.
    - Yes, Repair broken wire connection to solenoid.
  - Yes, Is there a good ground on the solenoid?
    - No, Repair ground and test.
    - Yes, Remove the coil from the solenoid. Does it magnetize when turned to “ON” position?
      - No, Repair or Replace coil.
      - Yes, Internal Failure. Repair solenoid valve as needed.





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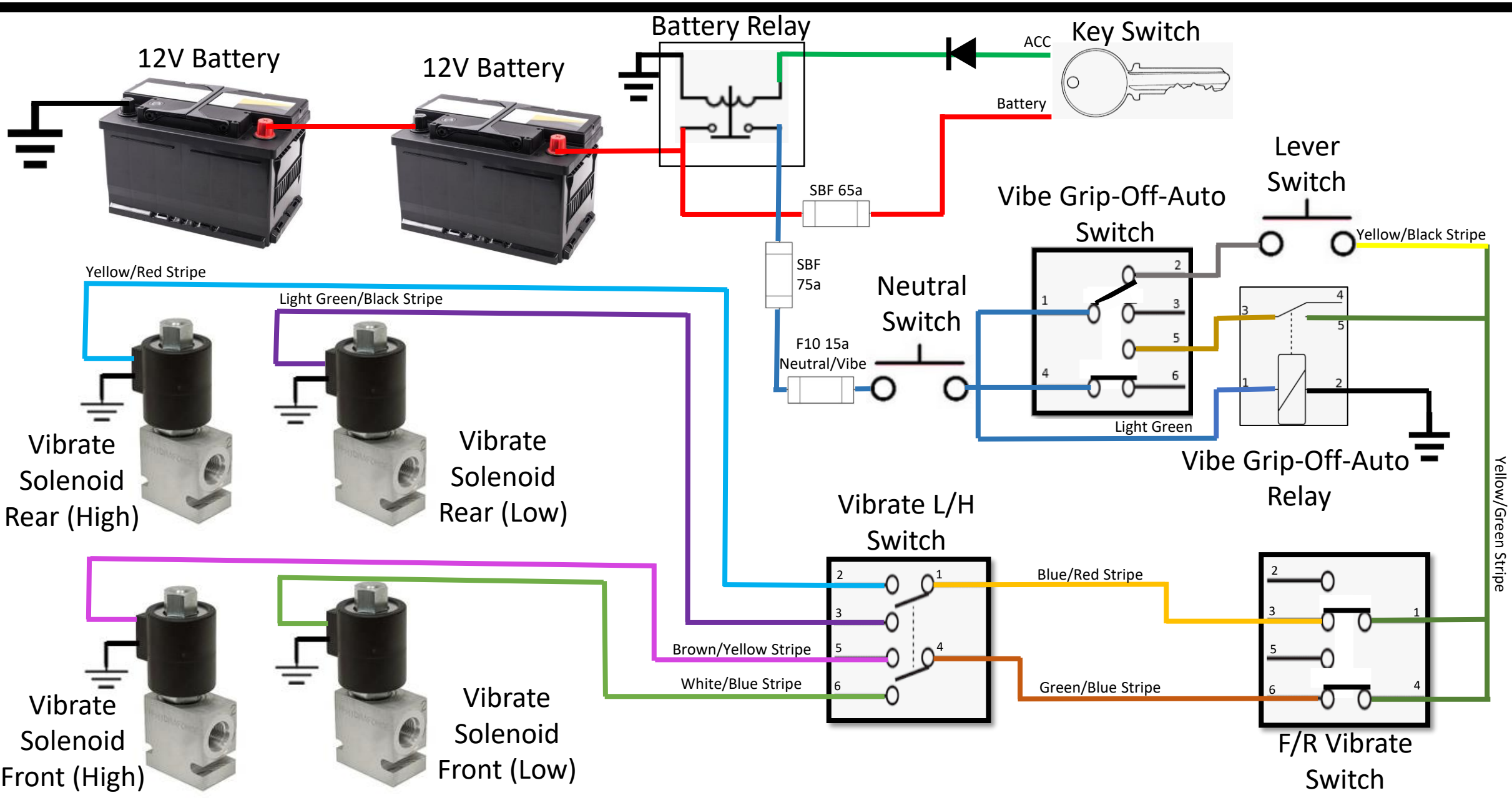
12V Battery
12V Battery
Battery Relay
ACC
Key Switch
Battery
SBF 65a
SBF
75a
Lever
Switch
Vibe Grip-Off-Auto
Switch
Yellow/Black Stripe
Yellow/Red Stripe
Light Green/Black Stripe
Neutral
Switch
F10 15a
Neutral/Vibe
Light Green
Vibe Grip-Off-Auto
Relay
Vibrate
Solenoid
Rear (High)
Vibrate
Solenoid
Rear (Low)
Vibrate L/H
Switch
Blue/Red Stripe
Yellow/Green Stripe
Brown/Yellow Stripe
White/Blue Stripe
Green/Blue Stripe
Vibrate
Solenoid
Front (High)
Vibrate
Solenoid
Front (Low)
F/R Vibrate
Switch

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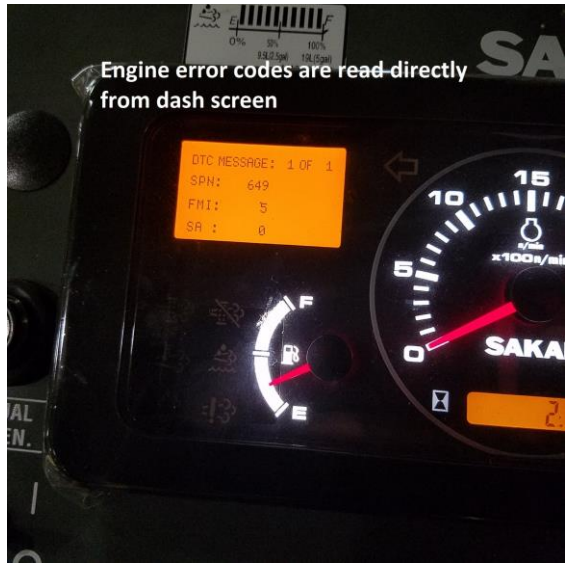

Code No.	Description
P0016	Crankshaft Postion Sensor (NE)
P0087	Pressure Limiter Opening Abnormal
P0088	High Rail Pressure Abnormality
P0089	SCV Stuck
P0093	High Pressure Fuel Leak
P0112	Intake Air Temp Abnormal (Low)
P0113	Intake Air Temp Abnormal (High)
P0117	Coolant Temp Sensor Abnormal (Low)
P0118	Coolant Temp Sensor Abnormal (High)
P0182	Fuel Temp Sensor Abnormal (Low)
P0183	Fuel Temp Sensor Abnormal (High)
P0192	Rail Pressure Sensor Abnormal (Low)
P0193	Rail Pressure Sensor Abnormal (High)
P0200	Overcharge
P0201	Fuel Injector Cylinder 1 Open Circuit
P0202	Fuel Injector Cylinder 2 Open Circuit
P0203	Fuel Injector Cylinder 3 Open Circuit
P0204	Fuel Injector Cylinder 4 Open Circuit
P0217	Engine Overheat
P0219	Engine Overrun
P0335	Crankshaft Sensor Abnormal (Low)
P0336	Crankshaft Sensor Abnormal (High)
P0340	Camshaft Sensor Abnormal (Low)
P0341	Camshaft Sensor Abnormal (High)
P0380	Air Heater Relay Abnormality
P0400	EGR Feedback Abnormal
P0404	EGR Motor Temp Abnormal
P0628	SCV Abnormal (Low)
P0269	SCV Abnormal (High)

NOTE:

For full description and additional troubleshooting, please see the Kubota Diagnostic manual.

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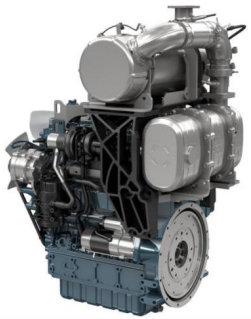


Kubota V3800 Engine Specifications

Engine Model ..... Kubota V3800
Engine Type ..... 4-Stroke, vertical, water-cooled diesel
Number of Cylinders 4
Total displacement, cc (cu.in) 3769 (230.0)
Engine Bore, mm (in) 100.0 (3.94)
Engine Stroke, mm (in) 120.0 (4.72)
Rated Engine Power, hp (kW) 99.2 (74.0)
Rated Engine Speed, rpm 2600
Maximum Engine Speed, rpm 2800
Idle Speed, rpm 775-825
Compression Ratio 19:1
Firing Order 1-3-4-2
Lubrication System ..... Forced lubrication by trochoid pump
Oil Filter Type ..... Full Flow Paper

Fuel System

Fuel System Type ..... Direct injection
Fuel Injection Pump ..... Bosch Type Mini
Injection Nozzle ..... Bosch throttle type
Governor Type ..... All speed mechanical governor

Engine Oil and Filter

Engine Oil Type SAE20, SAE30, 10W-30
Oil Classification ..... API CF-4, CG-4, CH-4 or CI-4
Oil Capacity, L (qts) 13.2 (14.0)
Oil Filter Part Number HH1C0-32430

Service Intervals

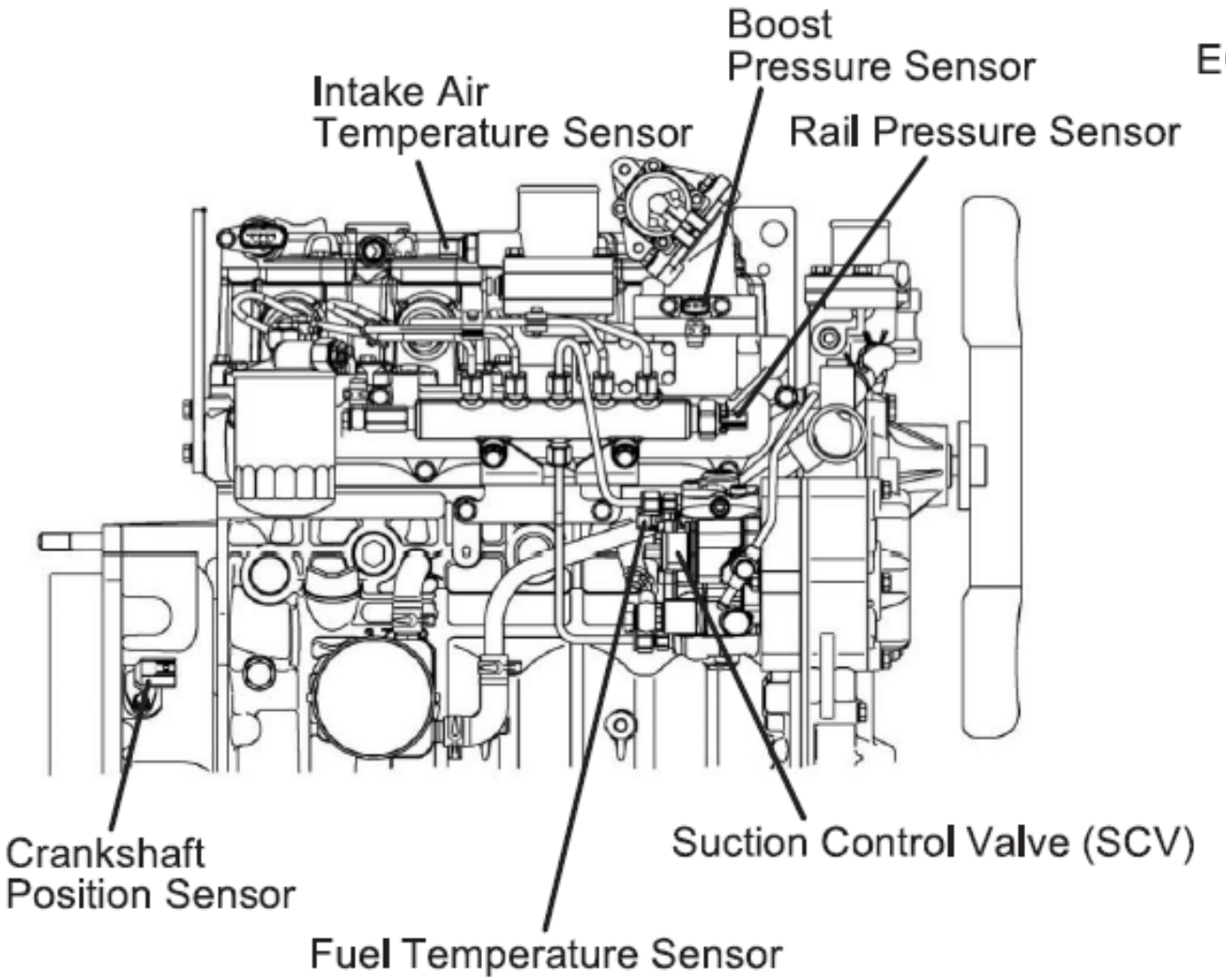
Service Air Cleaner Element ..... Every 250 hours
Service Fuel Filter (Element Type) ..... Every 250 hours
Change Engine Oil ..... Every 500 hours
Change Oil Filter Cartridge ..... Every 500 hours
Replace Fuel Filter Cartridge ..... Every 500 hours
Replace Fan Belt ..... Every 500 hours
Check and Adjust Valve Clearance ..... Every 1000 hours
Replace Air Cleaner Element ..... Every 1500 hours
Check Fuel Injection Pump ..... Every 3000 hours

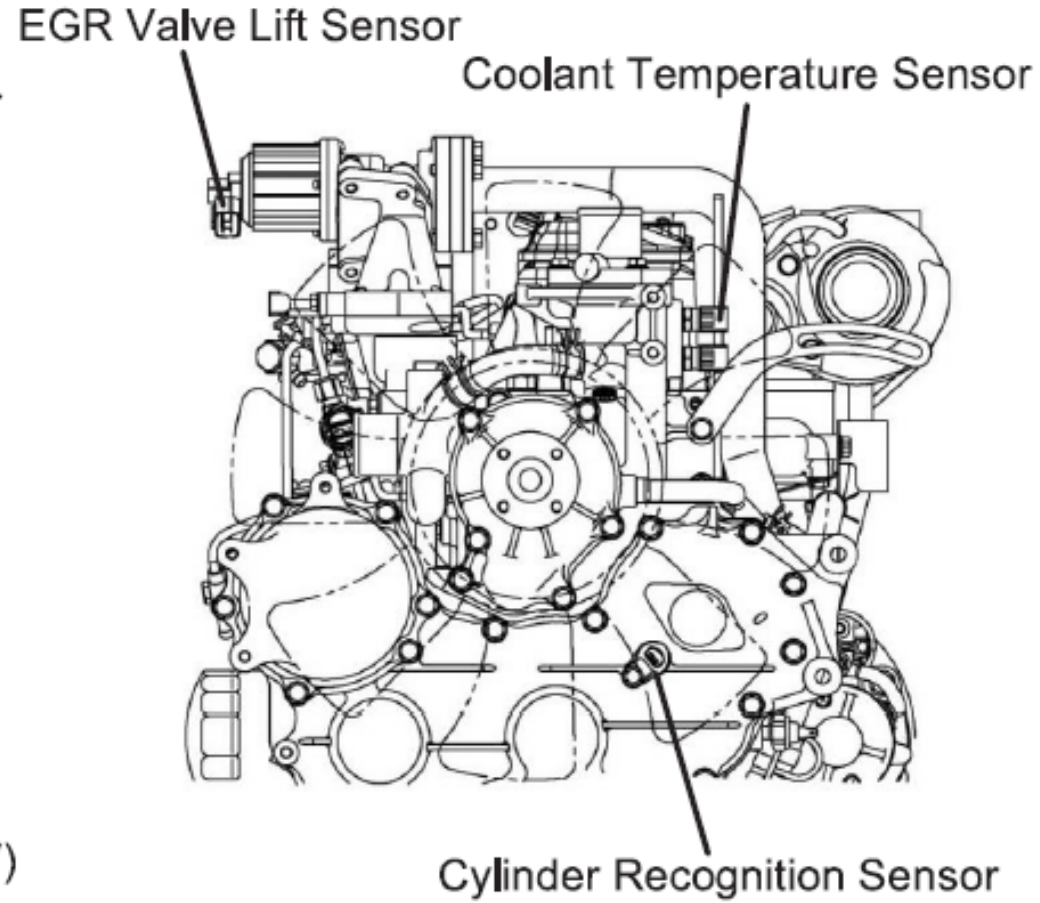
Kubota V3800 Service Specifications

Cylinder Block

Compression Pressure ..... 3.47 MPa (504 psi)
Cylinder Bore I.D (Standard) ..... 100.000-100.022 mm (3.93701-3.93787 in.)
Cylinder Bore I.D (Wear Limit) ..... 100.150 mm (3.9429 in.)
Cylinder Bore Oversize I.D (Standard) ..... 100.500-100.522 mm (3.95670-3.95755 in.)
Cylinder Bore Oversize I.D (Wear Limit) ..... 100.650 mm (3.96260 in.)
Rocker Arm Shaft to Rocker Arm Clearance ..... 0.016-0.045 mm (0.00063-0.0017 in.)
Rocker Arm Shaft O.D ..... 15.973-15.984 mm (0.62886-0.62929 in.)
Rocker Arm I.D ..... 16.000-16.018 mm (0.62993-0.63062 in.)

Sensor Locations





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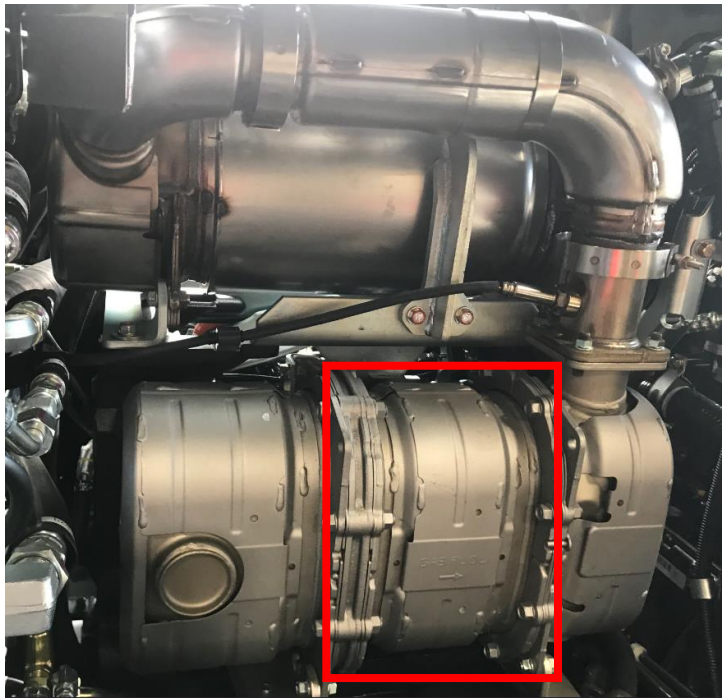
Vehicle Errors Codes

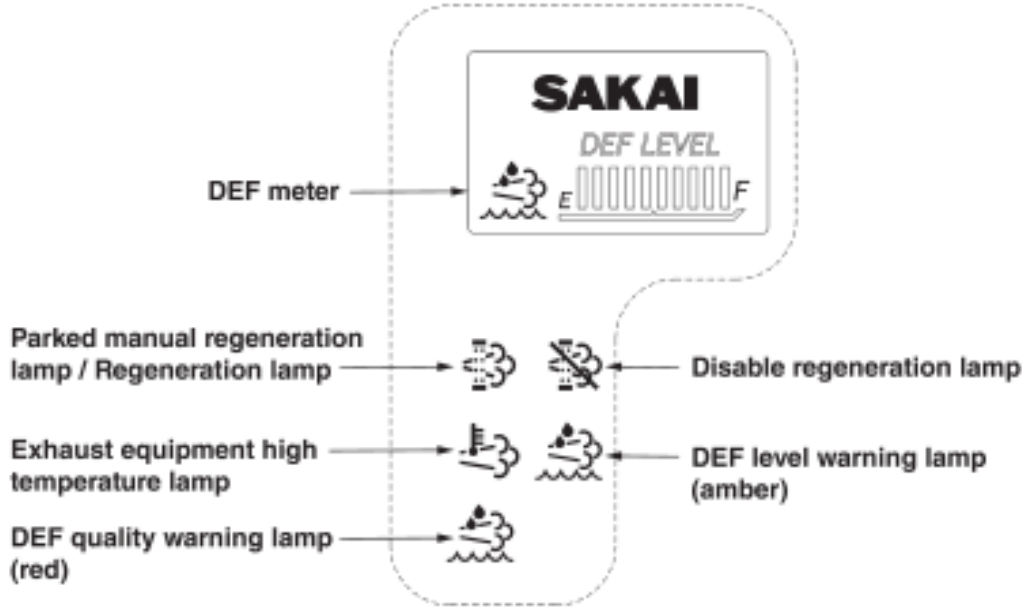
Error Code	*Error Details*
3360	DPF over-trapping (Lv2)
3370	DPF over-trapping (Lv1)

Engine Errors Codes

	SPN	*FMI*	*Error Details*
Kubota	3701	15	Excessive PM3
Kubota	3701	16	Excessive PM4
Kubota	3701	0	Excessive PM5



Regen Errors



Levels 1 – 3 Machine can be regened using the interior switch.

Level 4 – Diagmaster Needed to perform soot load reset, and force, reset intervals.

Level 5 – Diagmaster needed. Filter must be cleaned, and soot load reset performed along with intervals.

DO NOT FORCE REGEN WITHOUT CLEANING AT LEVEL 5!

Regen Conditions Needed:

1. Machine above 65 deg C or 150 deg F.
2. Engine at low Idle
3. No engine codes present

To Regen:

Press and Hold “Regen” button up to 10 seconds or until you hear engine pitch change and begin to idle up. DO NOT TOUCH CONTROLS! Leave machine alone until process has finished.

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- SPN: 1239 FMI: 1/ P0093
  Fuel Leak (In High Pressure System)
  - De-rated 50%
  - DTC is set when total flow/injected fuel flow volume deviates.

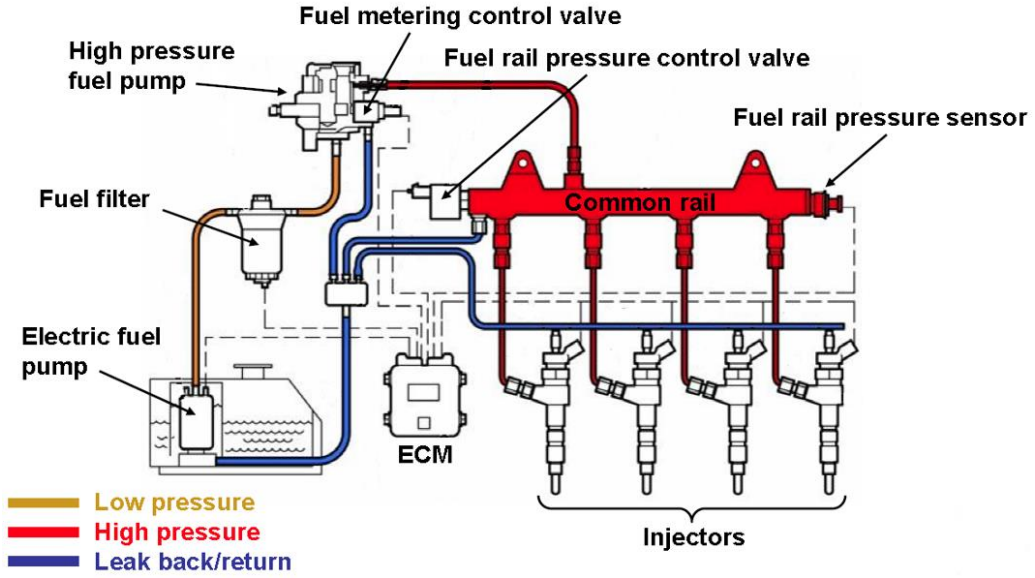
Code Is commonly caused from air getting into the system from the low pressure fuel side.

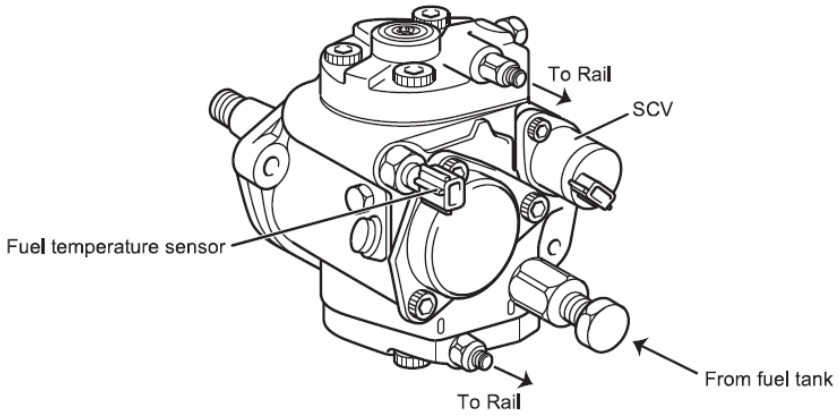
Common Causes-

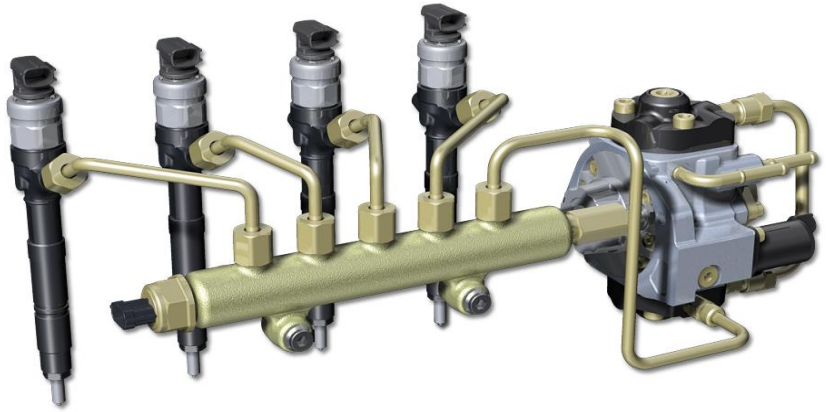
1. Loose hose Clamps.
2. Filter Not Tight.
3. Hole in Fuel Lines.
4. Trash in Fuel tank/lines
5. Low Fuel and air into pick up tube.

Other Causes

1. **Leaking Injectors**
2. **Leaking PRV**
3. **Supply Pump.**







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DEF Tester

DEF Quality Sensor Errors

Inspect the DEF quality. The quality should be 32%. Is the quality Correct?

Yes, Inspect Wiring to ACU. Is wiring good?

Yes, Possible bad ACU or DEF Header. Replace as Needed. Try using an ACU from loaner machine to determine ACU.

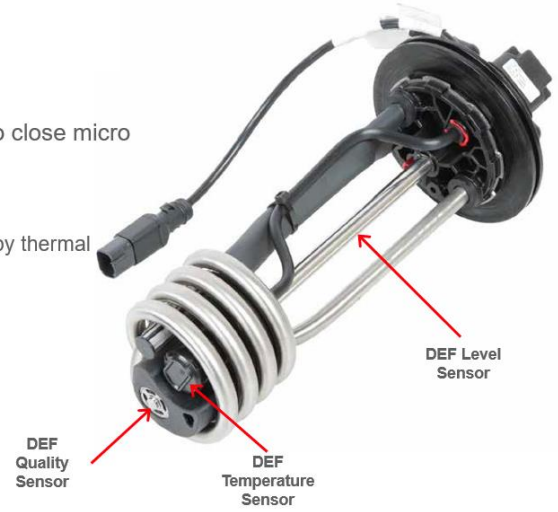
No, Repair wiring and test unit.

No, Drain is replace test unit. Does code re appear?

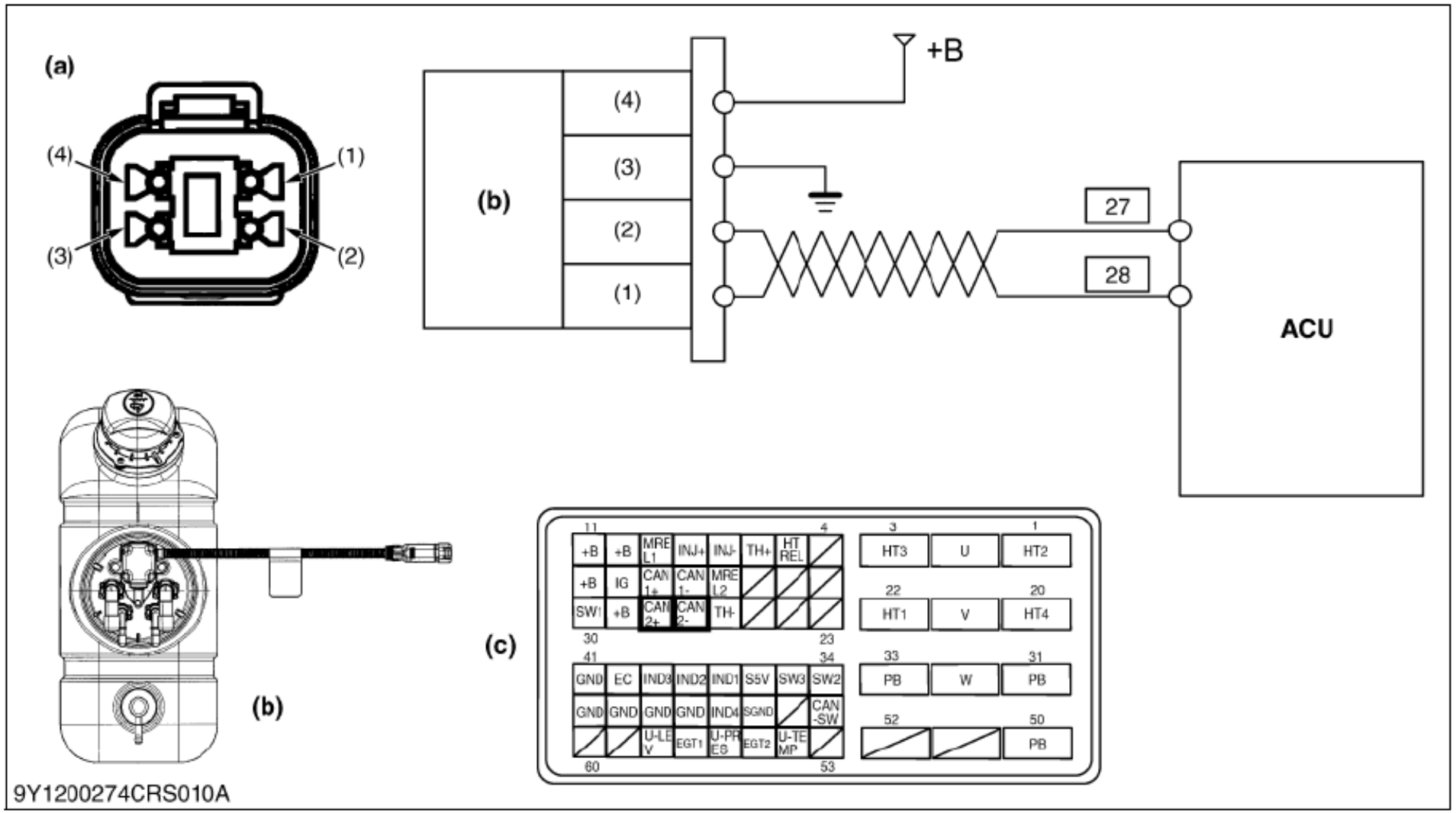
Yes, Possible bad ACU or DEF Header. Replace as Needed. Try using an ACU from loaner machine to determine ACU.

No, Repair is complete, Stop!

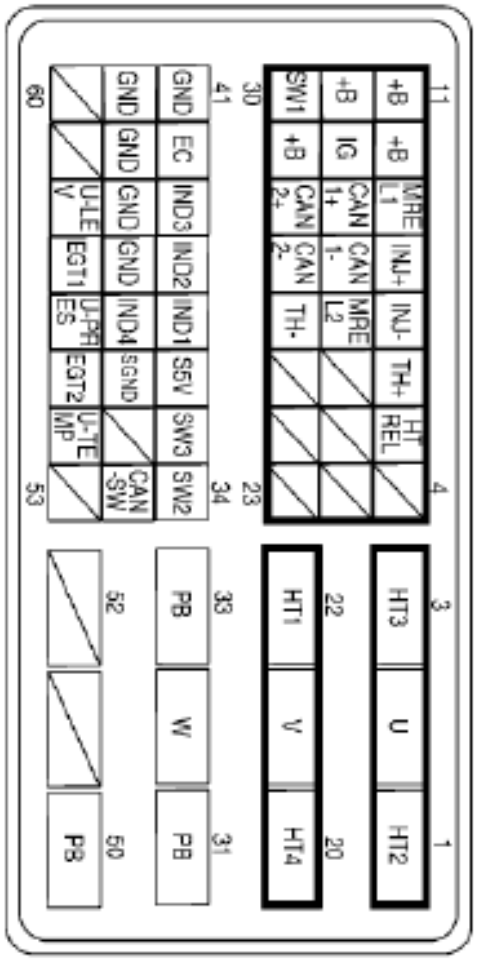
- **DEF Level Sensor**
  - Uses magnetic float to close micro switches inside tube.
- **DEF Quality Sensor**
  - Measures DEF Density by thermal conductivity.



DEF Typical Physical Properties		
Urea	mass %	32.5
Biuret	mass %	0.3 max
Water	mass %	67.5 typical
Flash Point	°F/°C	250/121
Weight per gallon approximate	lbs	9.0
Density @ 20C	kg/M^3	1089.7 typ



ACU Terminal Layout



(1) Terminal CAN2-L
(2) Terminal CAN2-H
(3) Terminal Ground
(4) Terminal Power (+12 V)

(a) Terminal Layout
(b) DEF Tank Unit
(c) ACU Connector

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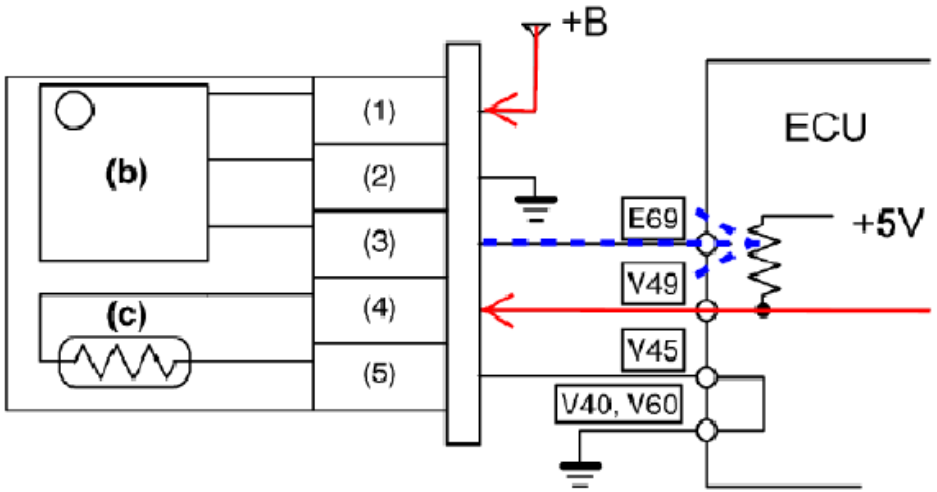
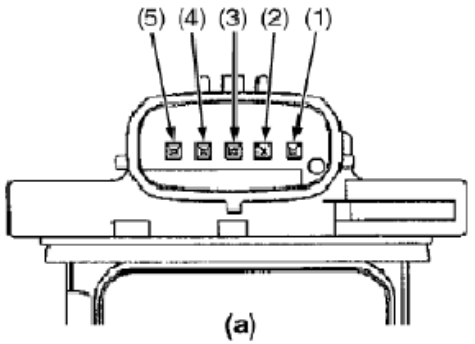
MAF Sensor Error 132

SPN 132 FMI 3 – Mass Air Flow Sensor Voltage High
Shorted Wire
Faulty MAF Sensor

SPN 132 FMI 4 – Mass Air Flow Sensor Voltage Low
Shorted Wire
Faulty MAF Sensor



Pin 1 – 12 VDC from Battery
Pin 2 – Frame ground
Pin 3 – Signal to ECU
Pin 4 – 5 VDC from ECU
Pin 5 – ECU ground



Signal wire goes to ECU pin E69 which is E12 on the Harness.

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DEF Injector Fault

DEF Injector short to ground or open circuit or short to +B	P2047
DEF Injector QR Data Fault: Invalid QR Data	P1A24
DEF Injector QR Data Fault: No QR Data	P1A23

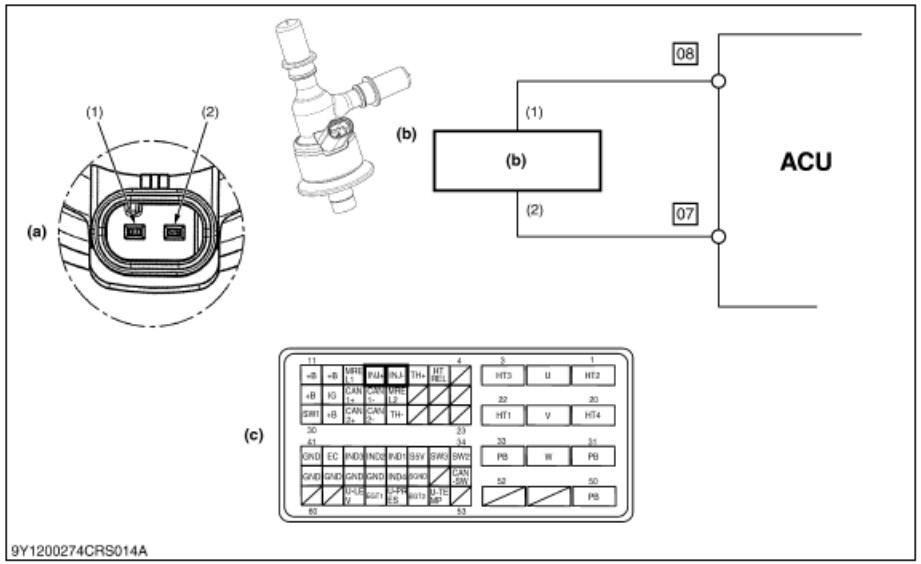
P2047 – DEF Injector short to ground or open circuit.
Possible cause: DEF Injector, ACU Harness, ACU Controller

Check DEF injector, injector may be shorted. Recommend removing and test on different machine.

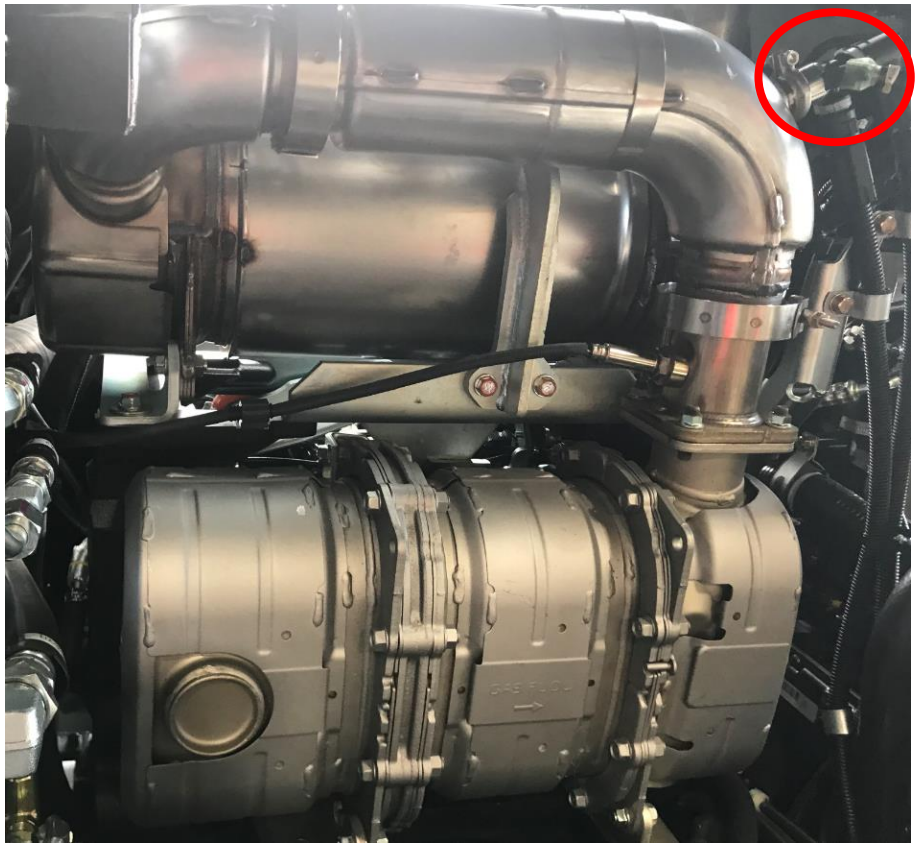
Def injector harness – Check for Continuity on wires and check for corrosion in connector. Replace as needed.

Swap ACU to another machine to test

Harness part No. 1J508-65090



(1) Terminal INJ (+) (2) Terminal INJ (-) (a) Terminal Layout (b) DEF Injector (c) ACU Connector



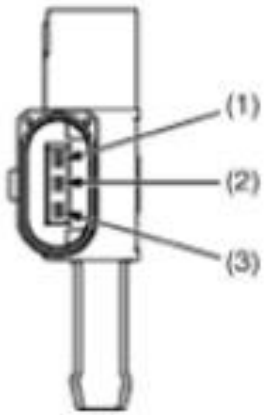
Code 3251 – DPS Error (Differential Pressure Sensor)

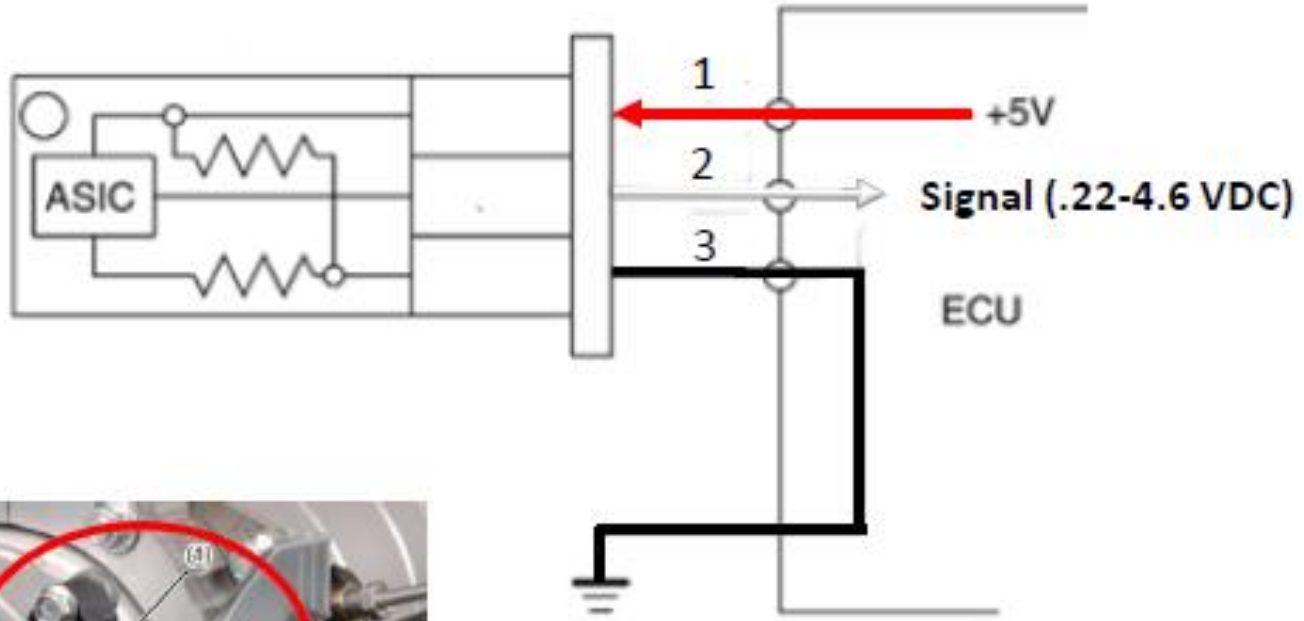
SPN: 3251 FMI: 3 Differential Pressure sensor voltage error (too high)

- Voltage on signal wire back to ECU is 4.7 VDC or above
- Common causes
  - Broken ground wire
  - Shorted Reference voltage wire to signal wire. (Red to white)
  - Faulty sensor

SPN: 3251 FMI: 4 Differential Pressure sensor voltage error (too low)

- Voltage on signal wire back to ECU is 0.21 VDC or less
- Common causes
  - Broken Reference voltage wire to sensor
  - Broken signal wire back to ECU
  - Faulty sensor





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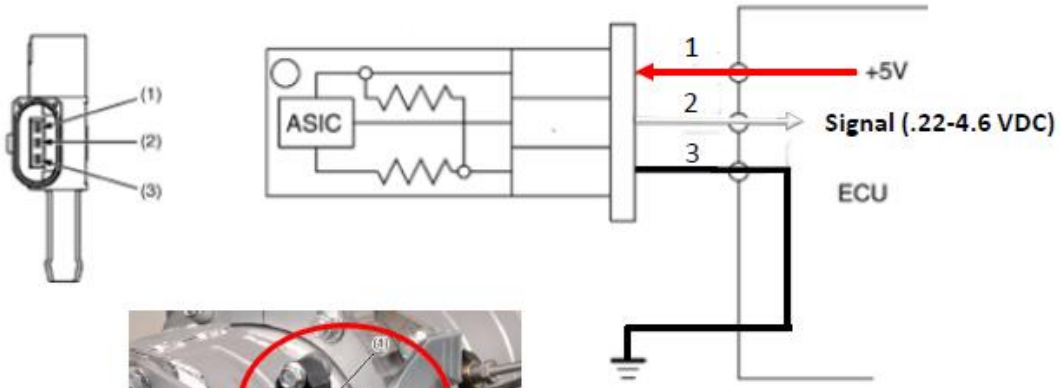
High Frequency Regen Code 523602

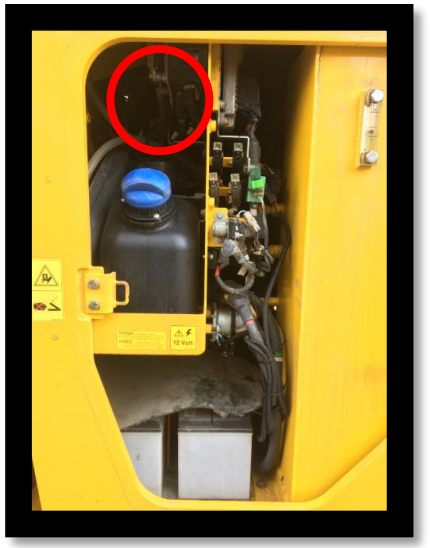
- SPN: 523602 FMI: 0/ P3024
  High Frequency of Regeneration
  - Regeneration request three consecutive times in 30 minutes.
  - Can be caused by operator error. (pushing regen button 3 times within 30 minutes)
  - Check differential pressure sensor and connection for any broken wires.
  - Check air intake system
  - DiagMaster is required to clear code.
  - Perform a regen interval time reset and operate machine for 30 minutes.
  - Check PM sedimentation quantity. If greater than 16k mg, have filter cleaned.

Differential Pressure Sensor (DPS)

Inspect Turbo for Oil



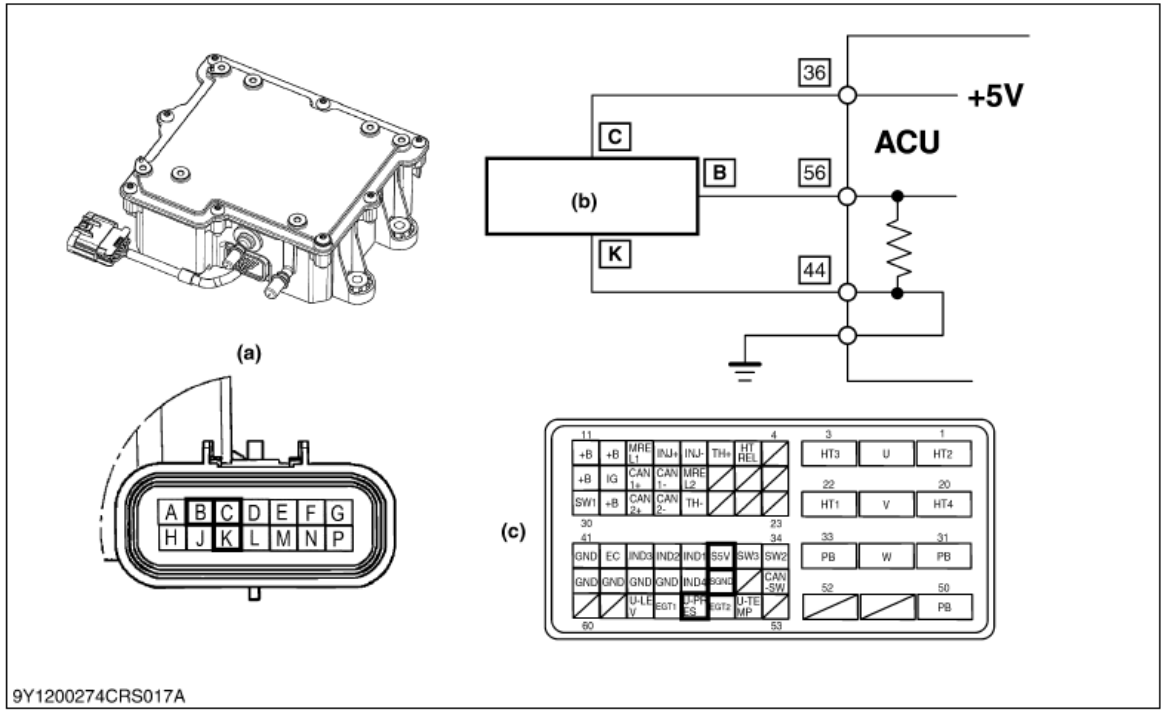
Code 4334 - DEF Pressure Sensor Errors



Possible Causes:

1. **Clogged Filter or Lines**
2. **Faulty DEF Pump – Internal Sensor**
3. **Faulty Wiring**
4. **Faulty ACU**

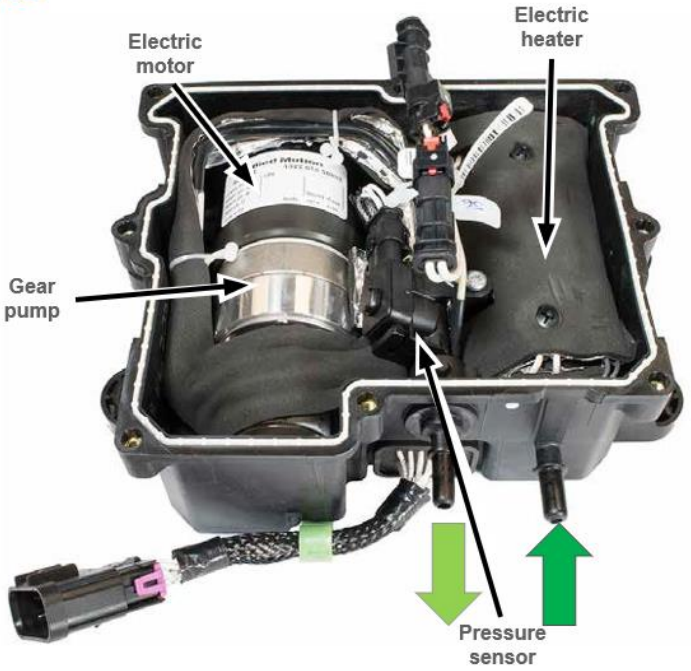
3	DEF Pressure sensor error:Out-of-Range High	P204D
4	DEF Pressure sensor error: Out-of-Range Low	P204C
15	DEF Pressure sensor error: Offset High	P204B
16	DEF Dosing Pressure error: High	P20E9
18	DEF Dosing Pressure error: Low	P20E8



B: Terminal U-PRES
C: Terminal S5V
K: Terminal SGND
(a) Terminal Layout
(b) DEF Pump Unit
(c) ACU Connector

DEF Pump Components

- DEF Pressure sensor
- Electric heater
- Motor
- Gear pump
- Filter



Code 4364 FMI 1 - Low Conversion Efficiency

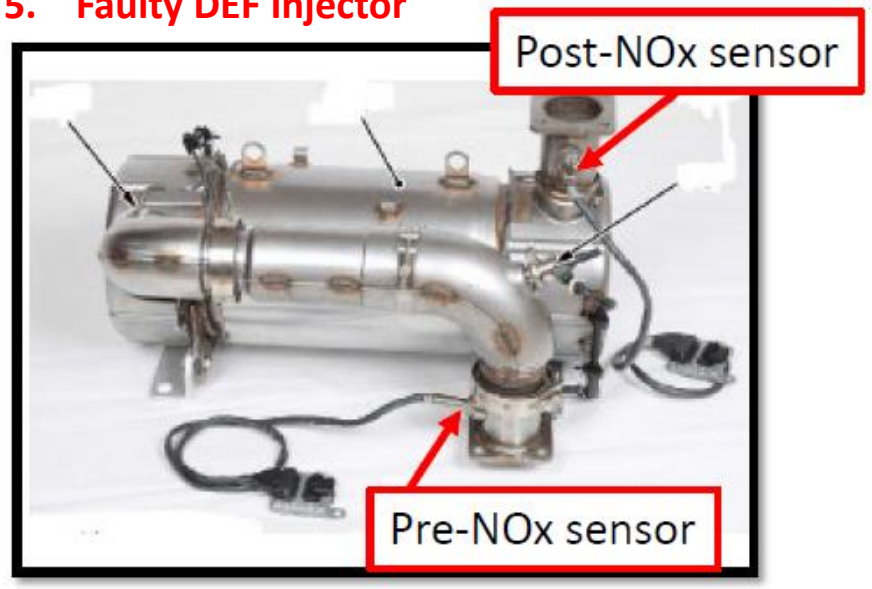
1	Low Conversion Efficiency	P20EE

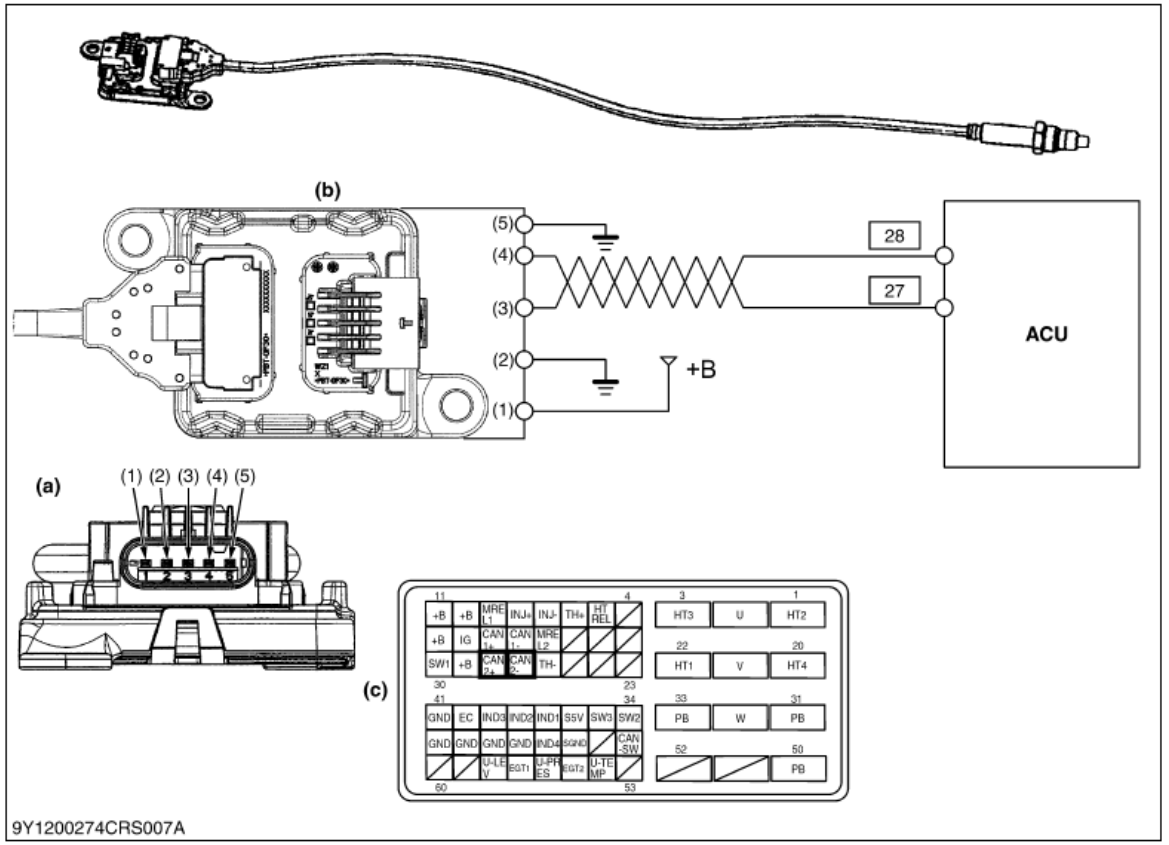
Common Causes-

1. **Contamination in SCR – Diesel in DEF Tank**
2. **Oil in SCR – Check Turbo and Intake**
3. **Damaged SCR**
4. **Faulty Sensor**
5. **Faulty DEF Injector**

Kubota SPN: 4364 FMI: 1
P20EE – Low Conversion Efficiency

Code is active when averaged Post-NOx is greater than the NOx concentration estimated by NOx reduction efficiency (NOx out is higher than NOx in)





(1) Terminal Power (+12 V)
(2) Terminal Ground
(3) Terminal CAN2-L
(4) Terminal CAN2-H
(5) Terminal Ground
(a) Terminal Layout
(b) Pre NOx Sensor Assembly
(c) ACU Connector

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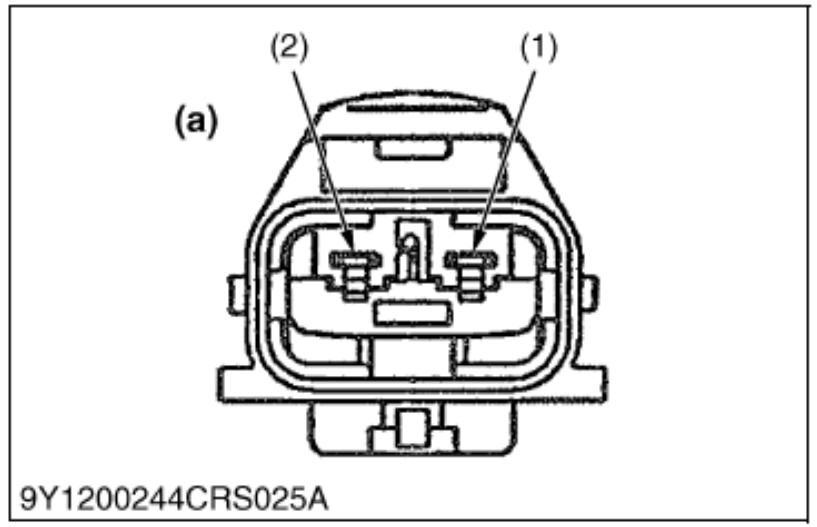
Temp Sensor Errors T0 T1 T2

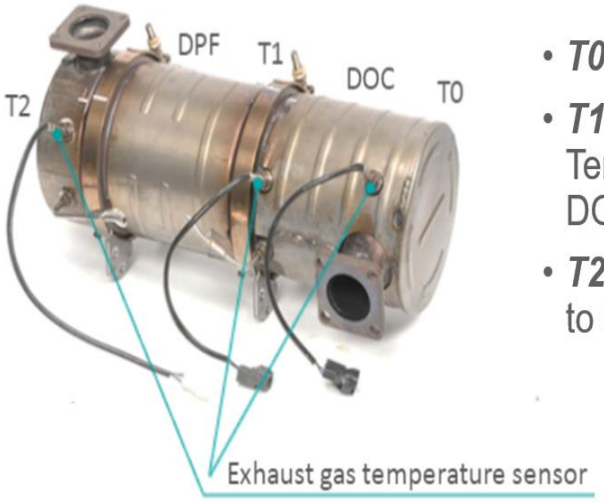
T0 – Black Connector

T1 – Grey Connector

T2 – White Connector

4765	0	Exhaust gas temperature sensor 0: High
	2	Invalid DOC Inlet Temperature (T0) Data
	3	Exhaust gas temperature sensor 0: High
	4	Exhaust gas temperature sensor 0: Low
3242	0	Exhaust gas temperature sensor 1: High
	3	Exhaust gas temperature sensor 1: High
	4	Exhaust gas temperature sensor 1: Low
3246	0	Exhaust gas temperature sensor 2: High
	3	Exhaust gas temperature sensor 2: High
	4	Exhaust gas temperature sensor 2: Low





- ***T0*** – Inlet Temp.
- ***T1*** – Intermediate Temp. between DOC and DPF.
- ***T2*** – Outlet Temp to the Muffler.

Factory specification	
Temperature	Resistance
100 °C (212 °F)	Approx. 18.3 kΩ
150 °C (302 °F)	Approx. 7.88 kΩ
200 °C (392 °F)	Approx. 4.00 kΩ
250 °C (482 °F)	Approx. 2.30 kΩ

OK	Wiring harness open circuit or connector fault → Check and repair.
NG	Exhaust gas temperature sensor fault → Replace the exhaust gas temperature sensor 0 (T0).

(1) Terminal A-GND3 (2) Terminal IDOC