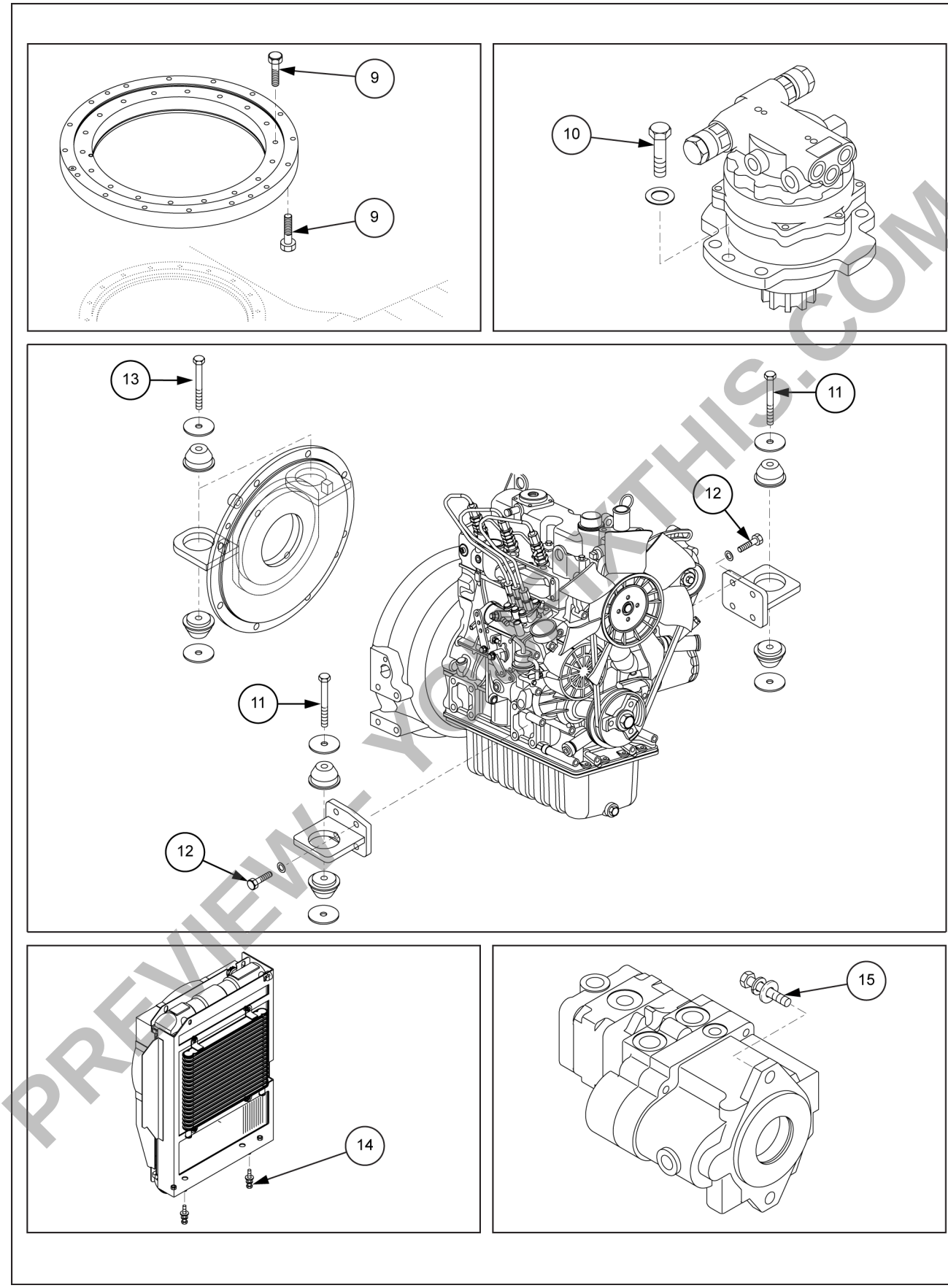
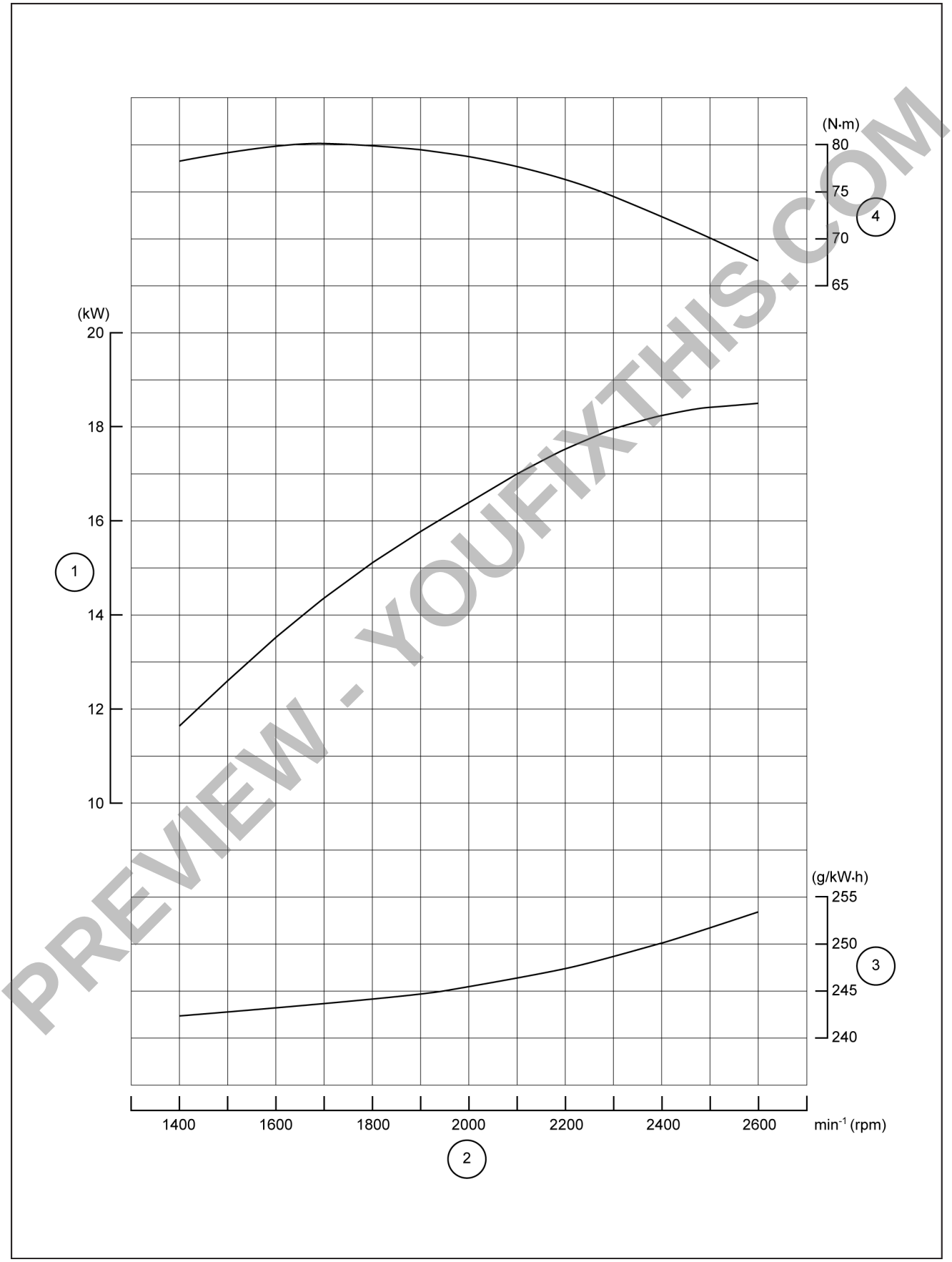


SMIL16MEX1226HB 2

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Engine - Engine horse power

Performances



SMIL16MEX0701HB 1

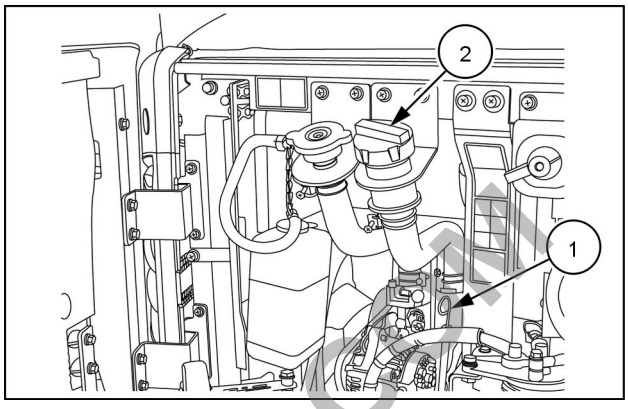
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Engine lubrication system - Check - Engine oil level

1. Park the machine on a flat and level place. Stop the engine, and remove the starter key.
2. After stopping the engine for **15 min** or more, open the engine door.

   Remove the dipstick **(1)**, and wipe oil off the dipstick with a clean cloth.

   Reinsert the dipstick **(1)** into the guide tube as far as it will go, and then take it out.

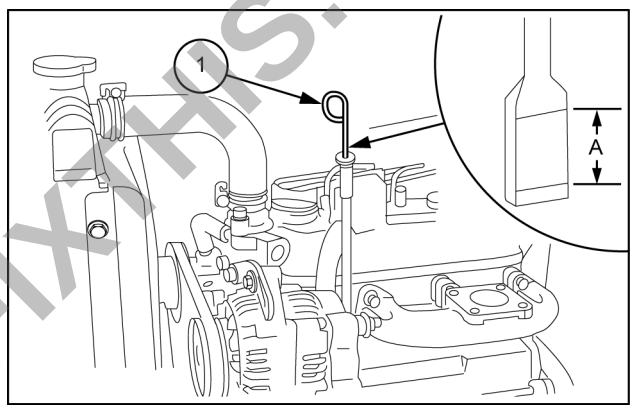


SMIL16MEX0924AA 1

3. The engine oil level is optimal when the level is between the lower (minimum) and the upper (maximum) marks **(A)**.
4. If the oil level is at or below the lower mark on the dipstick **(1)**, remove the fill plug **(2)** and pour in oil until the level reaches the upper mark.

NOTE: *make sure that the oil level is not above the upper mark (maximum) on the dipstick **(1)**. Doing so will cause such problems as poor fuel economy and an abnormal rise in coolant temperature.*

5. Install the fill plug **(2)**.

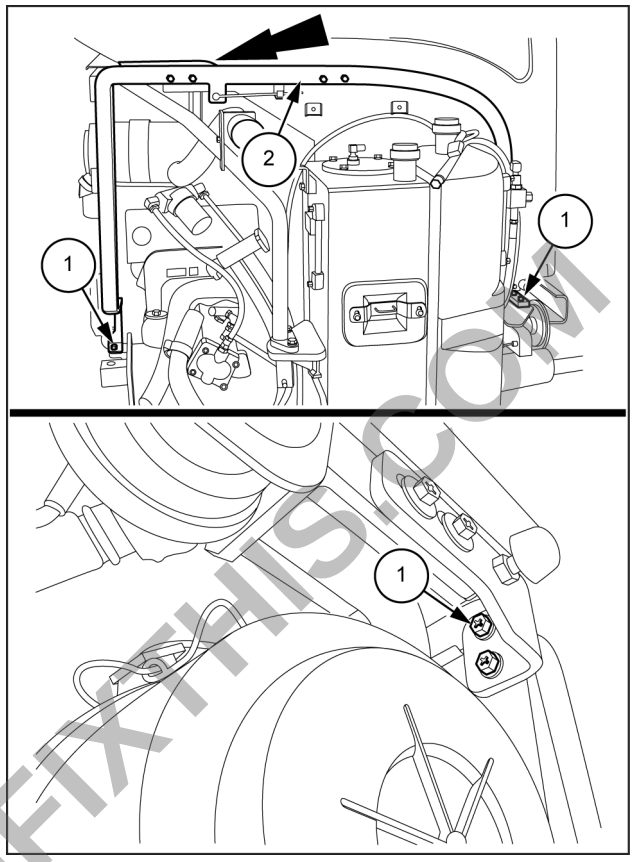


SMIL16MEX0708AB 2

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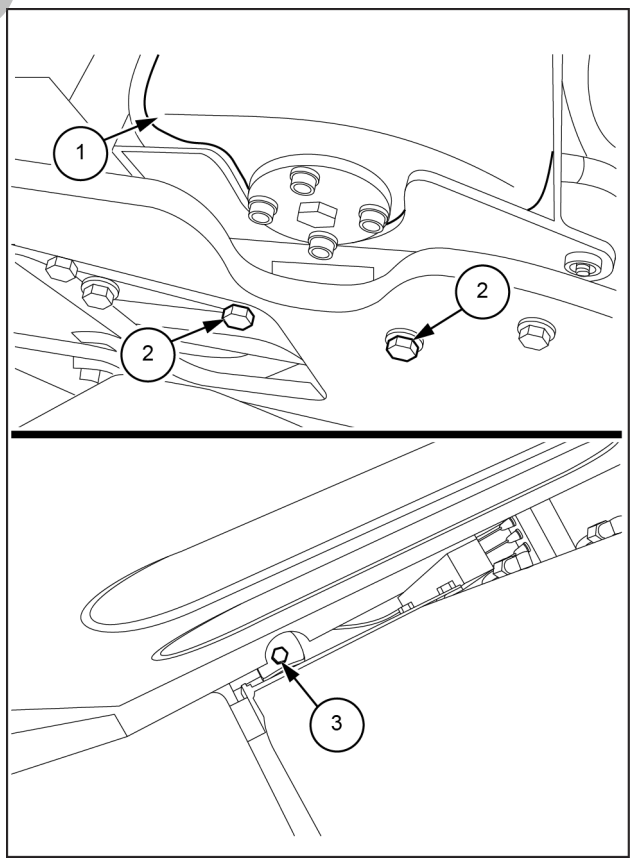
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13. Use a wrench [**13 mm**] to remove the six bolts **(1)** and then remove the bracket **(2)**.
14. Remove the rubber seal from the cab (see arrow).



SMIL16MEX2482BB 6

15. Use a wrench [**19 mm**] to remove the three bolts (**2**) and **(3)** and then remove the fuel tank **(1)**.
    - Fuel tank weight: **15 kg** (**33.1 lb**)



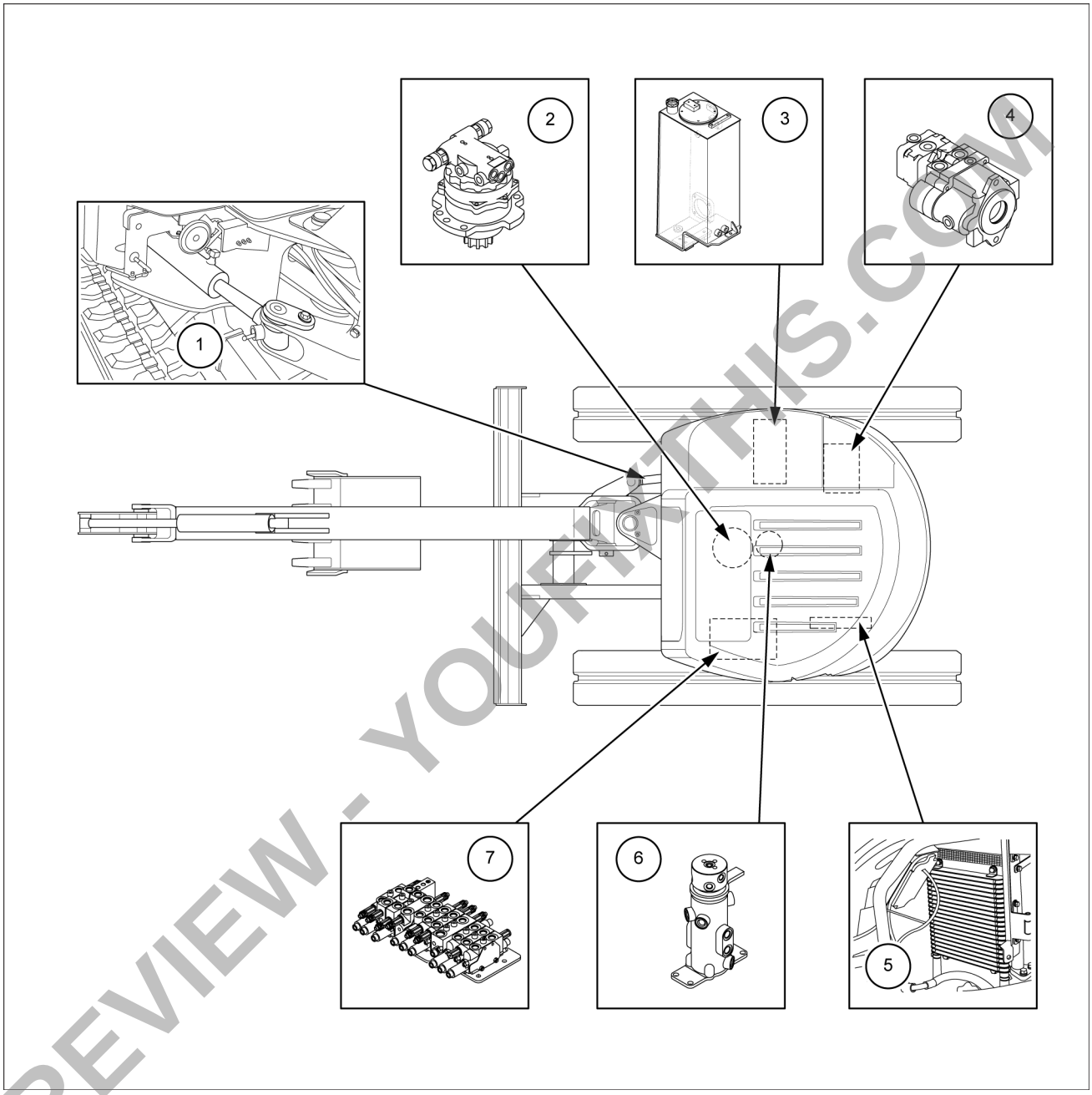
SMIL16MEX2484BB 7

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Hydraulic systems - Overview

Top view

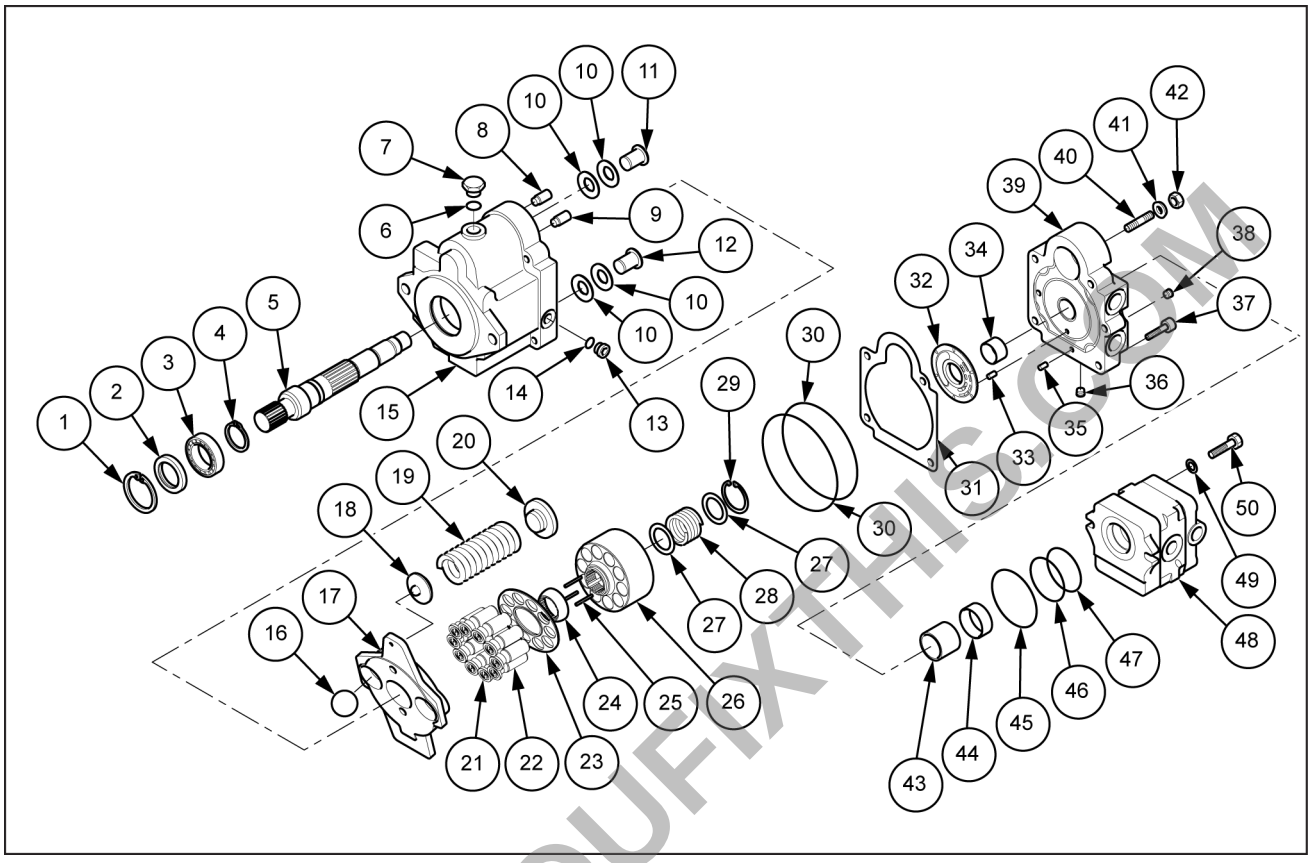


SMIL17MEX2554GB 1

	Component	Reference
1.	Boom swing cylinder	• **Swing cylinder - Sectional view (35.739)**
2.	Hydraulic swing motor	• **Hydraulic swing system - Overview (35.352)** • **Hydraulic swing system - Dynamic description (35.352)**
3.	Hydraulic oil reservoir	–
4.	Main pump	• **Pump - Overview (35.106)** • **Pump - Dynamic description (35.106)**
5.	Oil cooler	–
6.	Hydraulic swivel	• **Hydraulic swivel - Overview (35.354)**
7.	Main control valve	• **Main control valve - Overview (35.359)** • **Main control valve - Dynamic description (35.359)**

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Pump - Exploded view



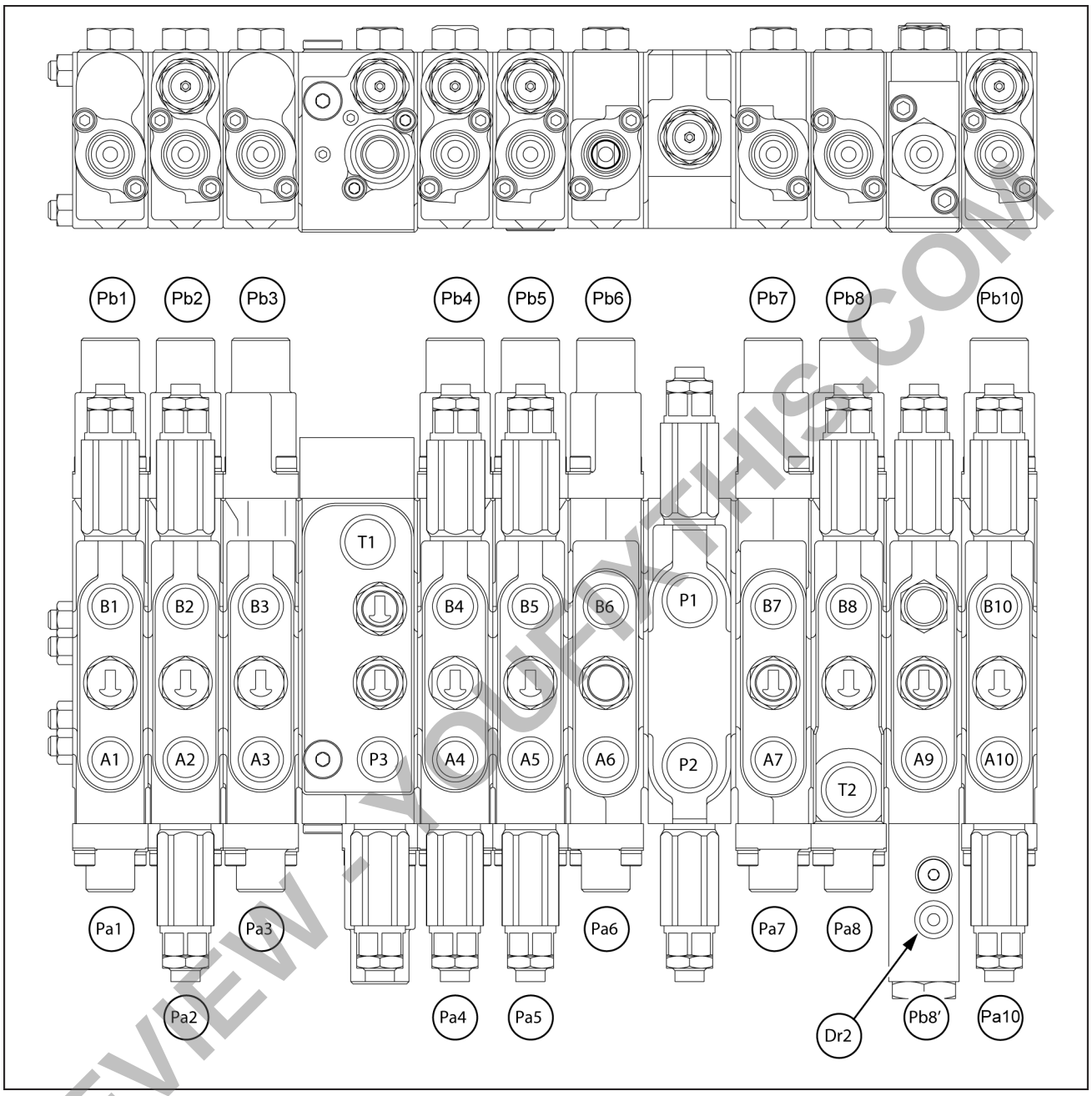
SMIL16MEX0051FB 1

1. Snap ring
2. Oil seal
3. Ball bearing
4. Snap ring
5. Shaft
6. O-ring
7. Plug
8. Rod C
9. Rod G
10. Dish spring
11. Stopper pin A
12. Stopper pin B
13. Plug
14. O-ring
15. Body S
16. Ball
17. Swash plate
18. Spring holder
19. Spring T1
20. Spring guide
21. Shoe
22. Piston
23. Shoe holder
24. Barrel holder
25. Needle
26. Cylinder barrel
27. Retainer
28. Spring C
29. Snap ring
30. O-ring
31. Gasket
32. Valve plate
33. Spring pin
34. Needle bearing
35. Pin
36. Plug
37. Screw
38. Plug
39. Body H
40. Adjusting screw
41. Seal washer
42. Nut
43. Coupling
44. Collar
45. O-ring
46. O-ring
47. O-ring
48. Gear pump
49. Washer
50. Screw

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Main control valve - Overview

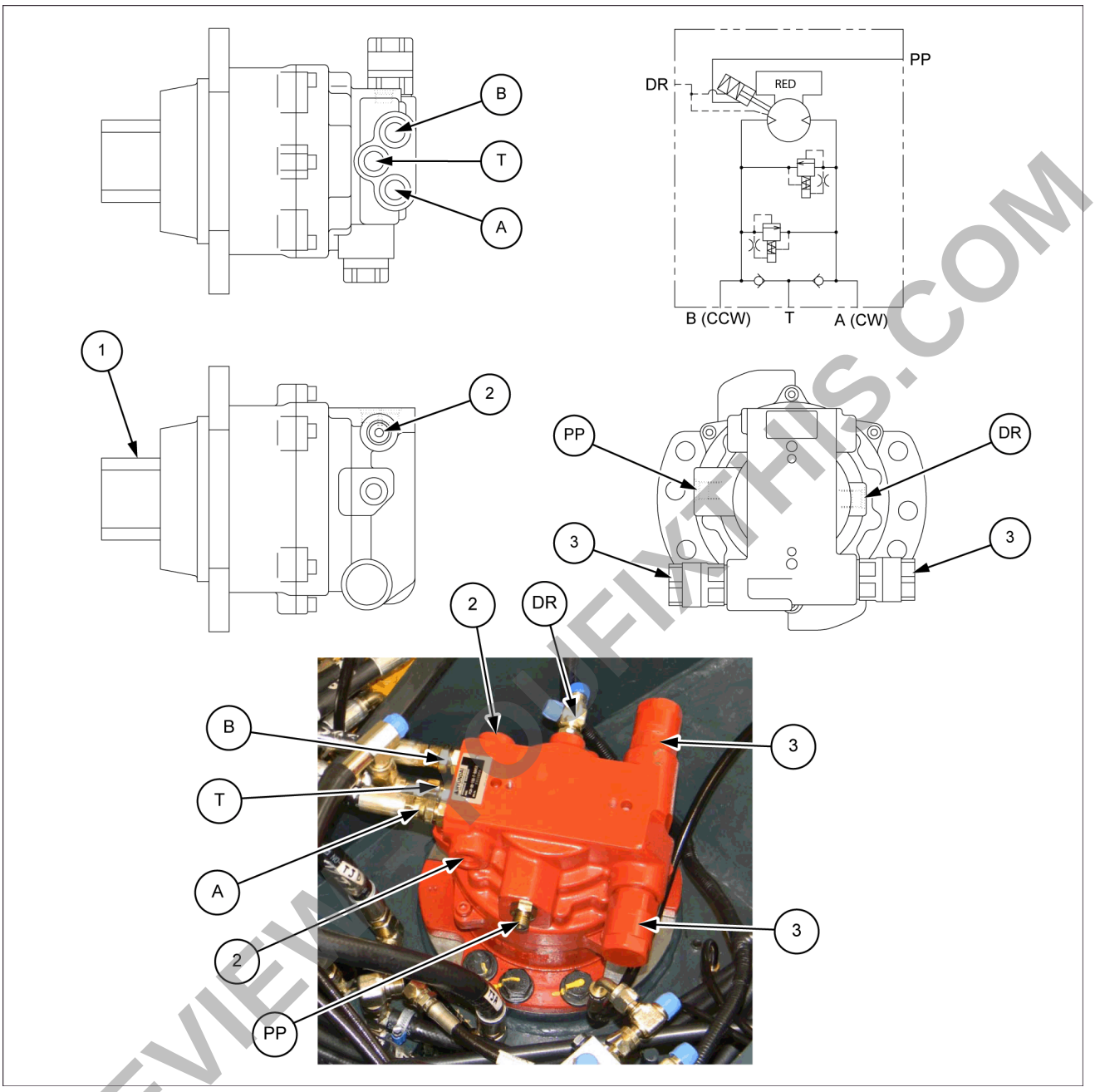


SMIL17MEX2875GB 1

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Hydraulic swing system - Overview



SMIL17MEX2583GB 1

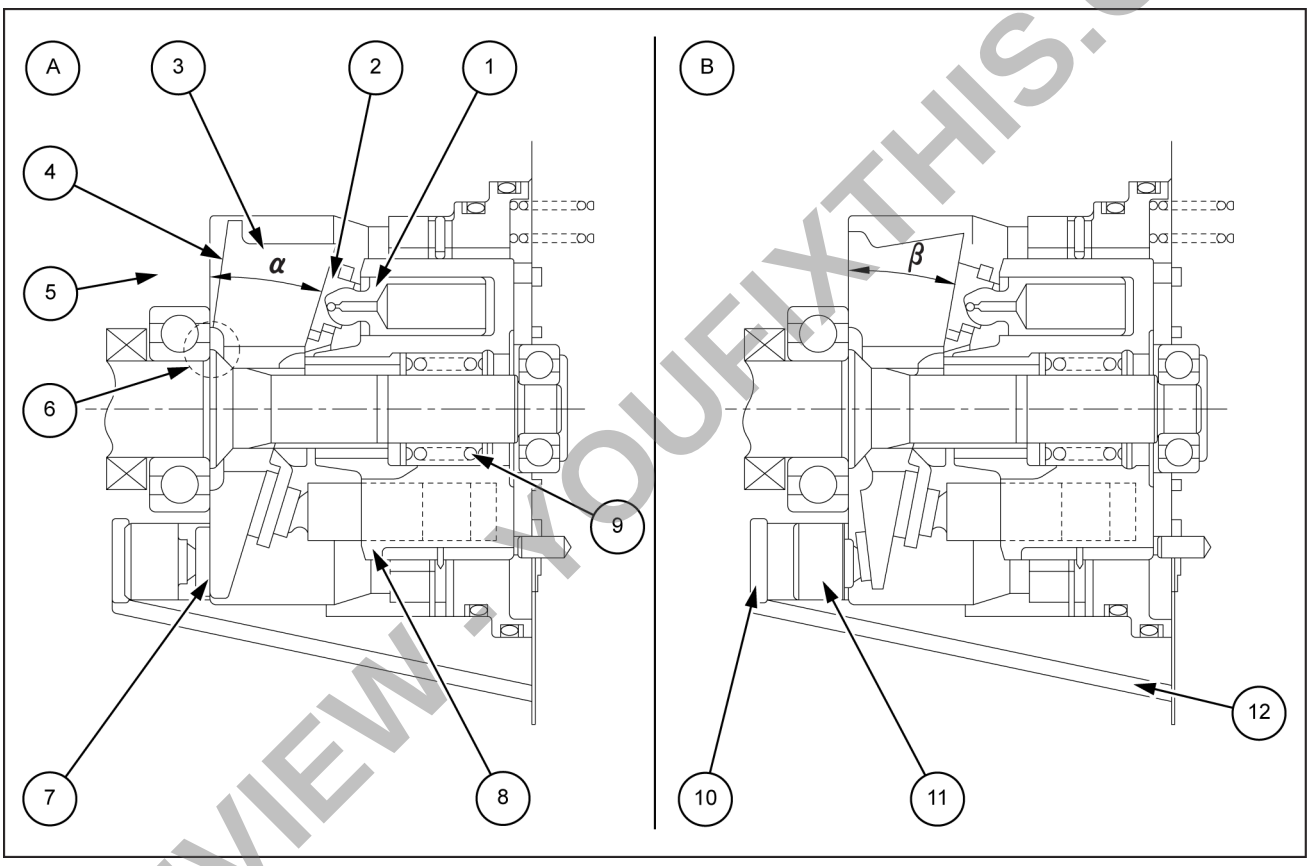
1. Output shaft
2. Make-up valve
3. Relief valve

Port	Port name	Port size
A	Main port (left swing)	PF 3/8
B	Main port (right swing)	PF 3/8
DR	Drain port	PF 3/8
PP	Brake release port	PF 1/4
T	Make-up port	PF 3/8

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2 Speed motor operation

The swash plate **(3)**, which has surface **(7)** and **(4)** in the opposite side to the shoe sliding surface **(2)**, is supported by the 2 balls **(6)** which are fixed to the body 2 **(5)**.
Since the balls **(6)** are located in the eccentric position, in the low speed range (pos. A), the surface **(7)** is faced to the body 2 **(5)** by the oil pressure in the piston **(1)** and the spring **(9)** force in the cylinder barrel **(8)**.
The swash plate angle is α (max. capacity).
When the pressurized oil is supplied to the **(PP)** port, the two-speed spool moves to the high position (pos. B) and the pressurized oil **(12)** of inlet is led to the control chamber **(10)** through the two-speed spool.
The control piston **(11)** moves forward until the surface **(4)** of the swash plate **(3)** is in contact with the body 2 **(5)**, and the swash plate **(3)** angle becomes β.
The capacity of the hydraulic motor is made small. The pressurized oil of the **(PP)** port is shut off (or the engine is stopped), the two-speed spool moves to the low position.
And the control chamber **(10)** is led to the tank port through the two-speed spool and the swash plate **(3)** position comes to the low speed by the spring force.



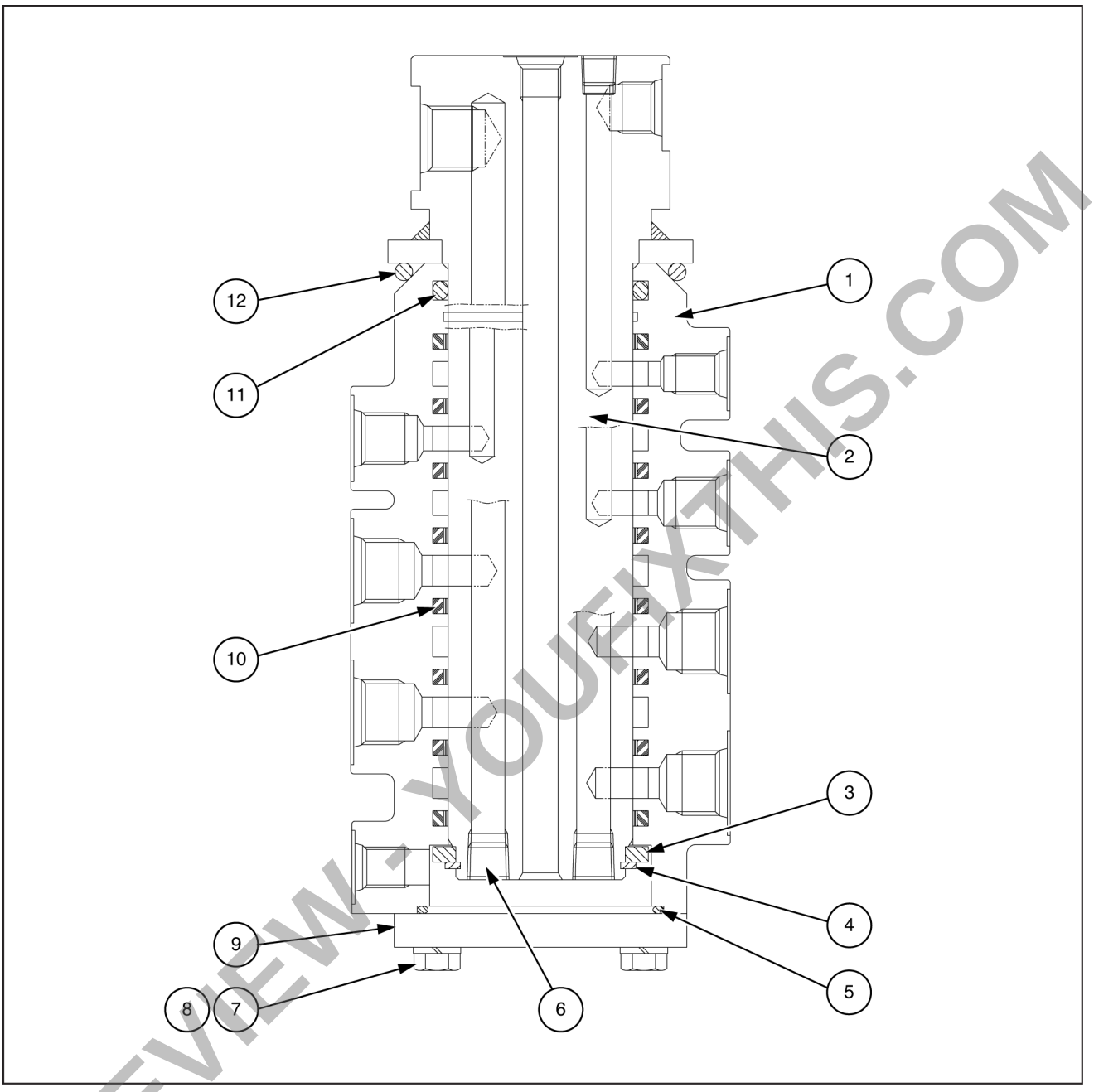
SMIL16MEX0323FB 3

1. Piston
2. Shoe
3. Swash plate
4. Surface of the swash plate **(3)**
5. Body 2
6. Ball
7. Surface of the swash plate **(3)**
8. Cylinder barrel
9. Spring
10. Control chamber
11. Control piston
12. Pressurized oil

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Hydraulic swivel - Sectional view



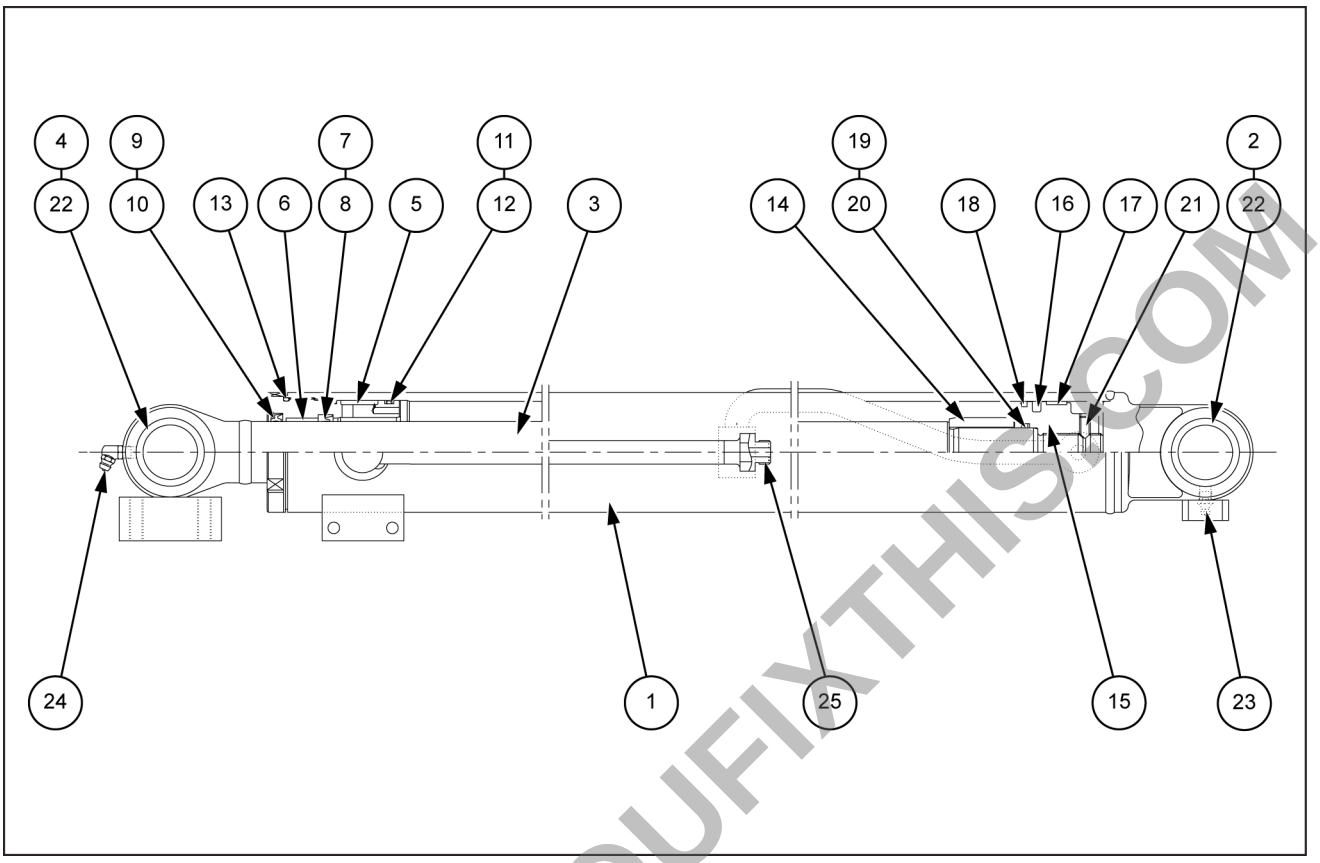
SMIL16MEX0196GB 1

1. Rotor
2. Axle
3. Spacer
4. Snap ring
5. O-ring
6. Plug
7. Hexagon screw
8. Spring washer
9. Cover
10. Slipper seal
11. O-ring
12. O-ring

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Boom cylinder - Sectional view



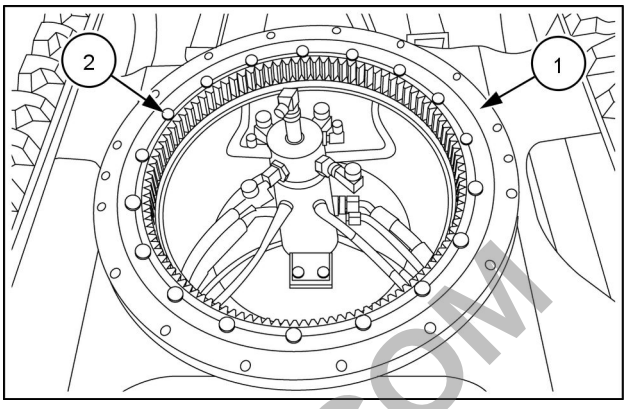
SMIL16MEX0273FB 1

1. Tube assembly
2. Pin bushing
3. Rod assembly
4. Pin bushing
5. Rod cover
6. Rod bushing
7. U-packing
8. Backup ring
9. Dust wiper
10. Retaining ring
11. O-ring
12. Backup ring
13. O-ring
14. Cushion ring
15. Piston
16. Piston seal
17. Wear ring
18. Dust ring
19. O-ring
20. Backup ring
21. Adjusting screw
22. Pin wiper
23. Grease nipple
24. Grease nipple
25. O-ring

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10. Use a wrench [**19 mm**] to remove the eighteen bolts **(2)** from the swing bearing **(1)**.

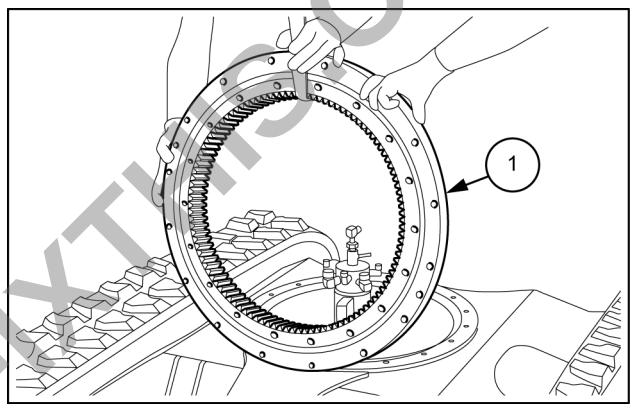


SMIL16MEX2753AA 4

11. Secure the swing bearing **(1)** with a lift-crane and nylon sling so that it does not fall during removal operations.
    - Swing bearing weight: **47 kg** (**103.6 lb**)

NOTICE: *pay attention to not damage the hydraulic connectors of the grease.*

12. Remove the swing bearing **(1)** from the undercarriage.
13. Thoroughly check that the location is safe before placing the swing bearing **(1)** on the wood plank.

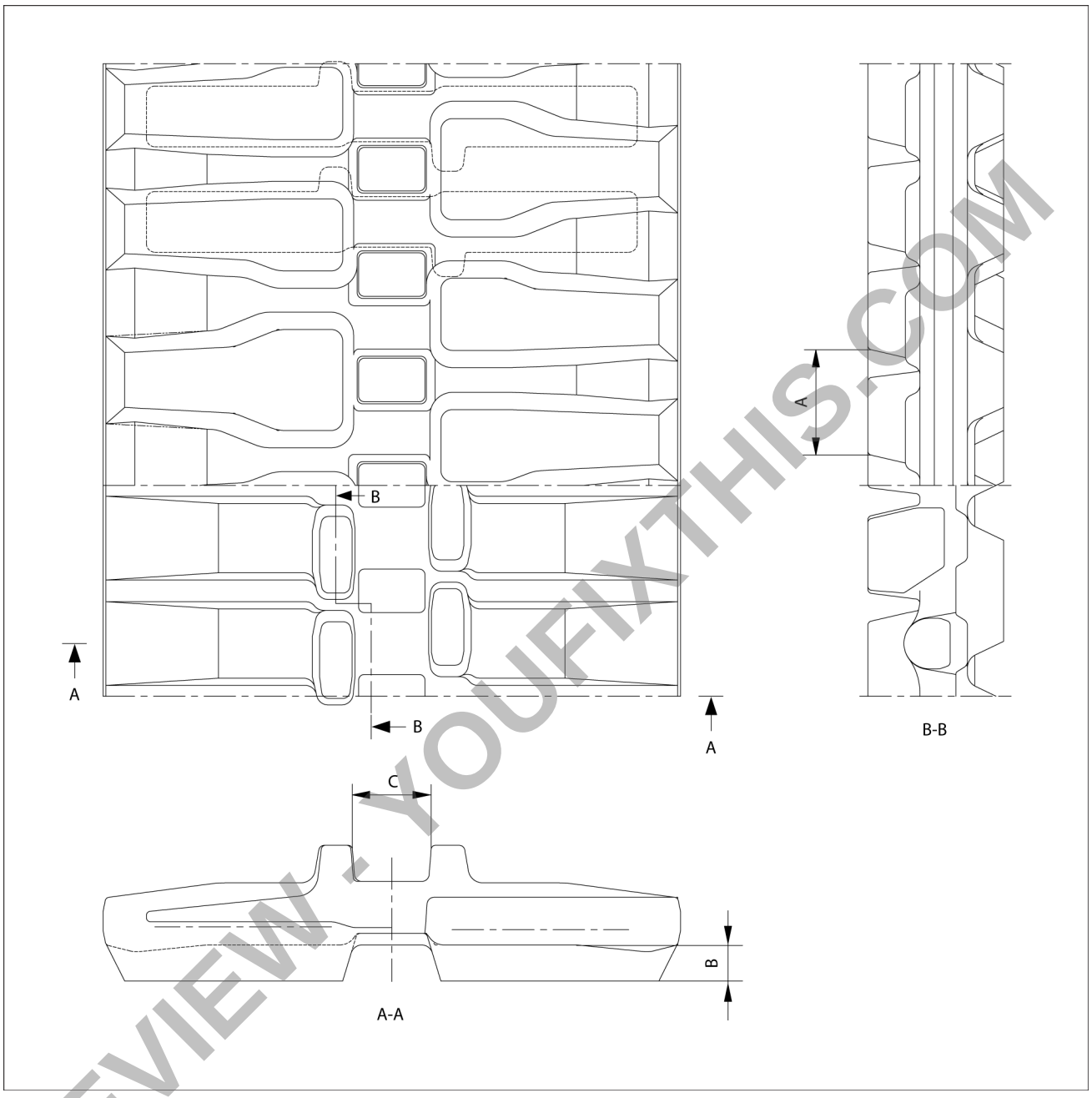


SMIL16MEX2754AB 5

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Rubber track - Service limits - Shoe

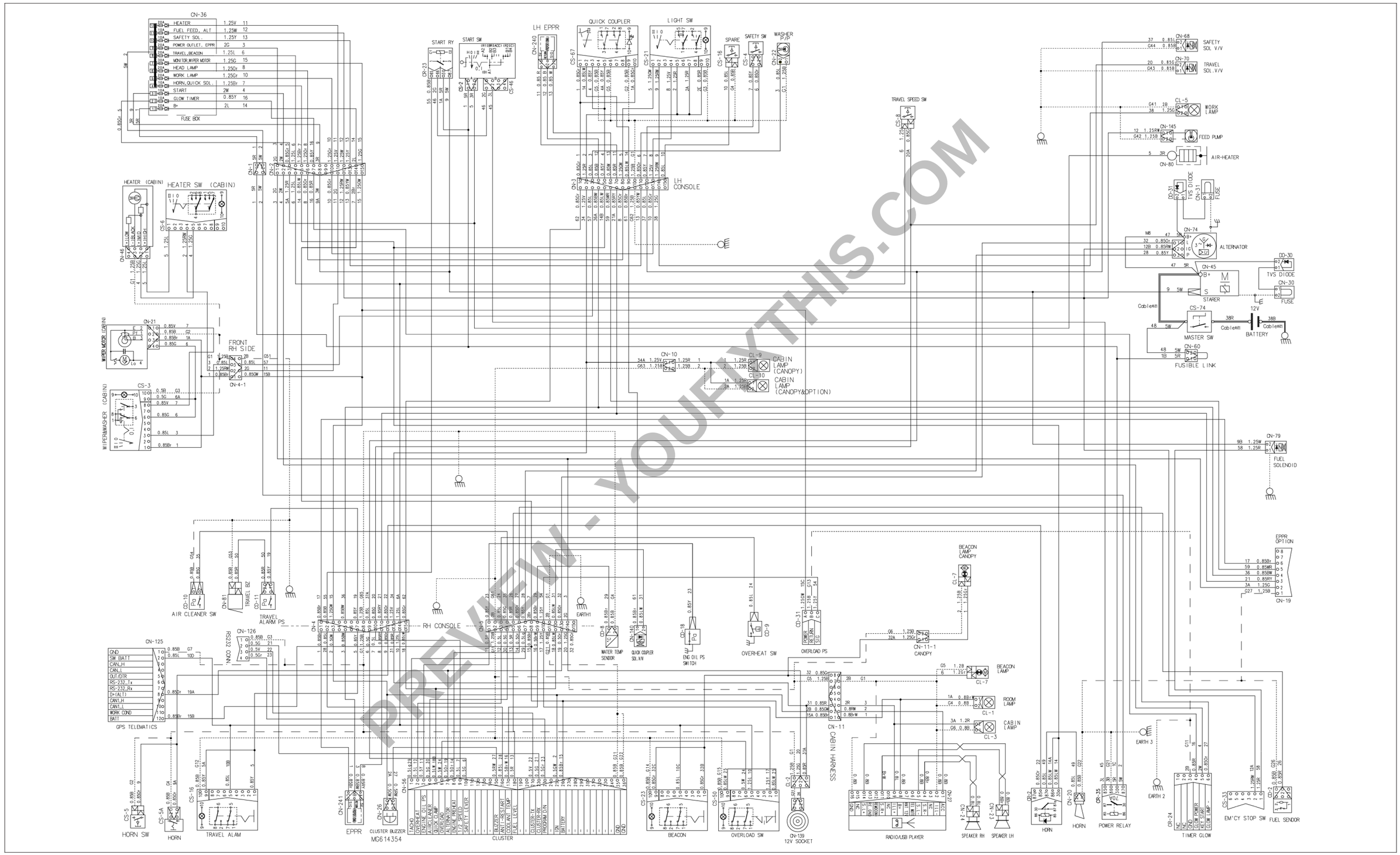


SMIL17MEX3003GA 1

Code	Part name	Standard value	Usage limits	Solution
A	Link pitch	**52.5 mm** (**2.067 in**)	**54.5 mm** (**2.146 in**)	Replace
B	Height of the grouser	**24 mm** (**0.945 in**)	**5 mm** (**0.197 in**)	
C	Width of the link	**34 mm** (**1.339 in**)	**46 mm** (**1.811 in**)	

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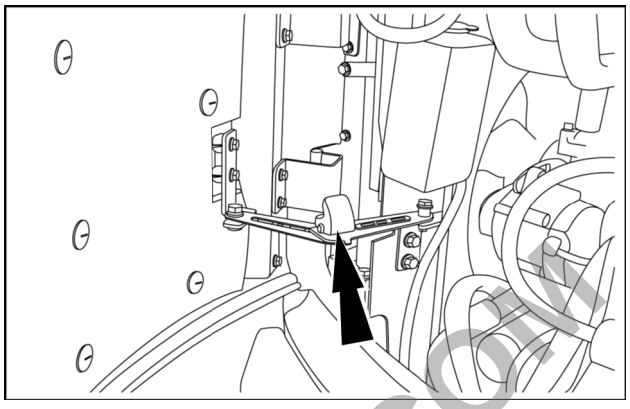


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SMIL19MEX0164JA 1

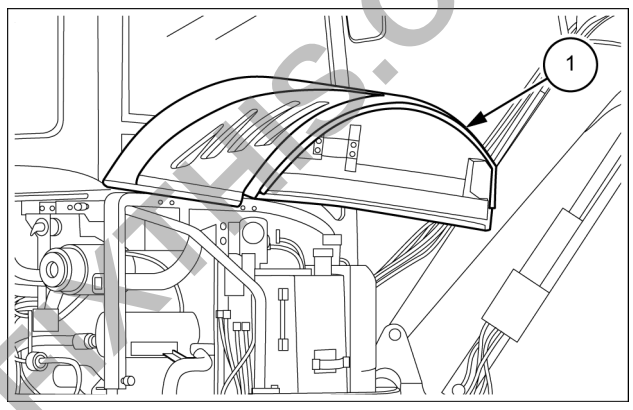
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2. Use the starter key to unlock the engine door.
3. Use the handle to open the door and press the hook until the door is completely secured.



SMIL16MEX0929AA 2

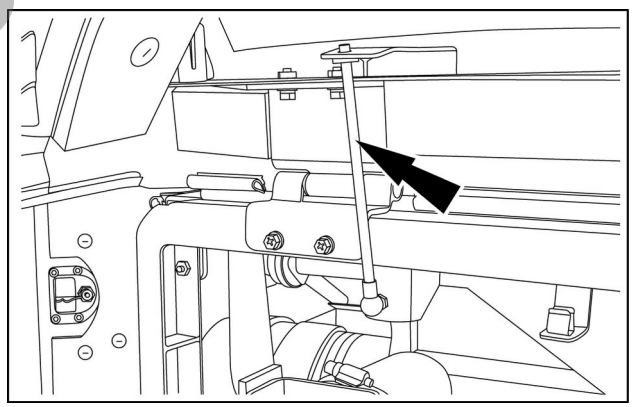
4. Use the starter key to unlock the side hood **(1)**.
5. Use the hook to gently lift up the hood **(1)**.



SMIL16MEX3040AB 3

6. Use the lifting stem to secure the hood.

NOTICE: *while lifting the hood, make sure the hood does not contact the cab. Machine damage could result.*



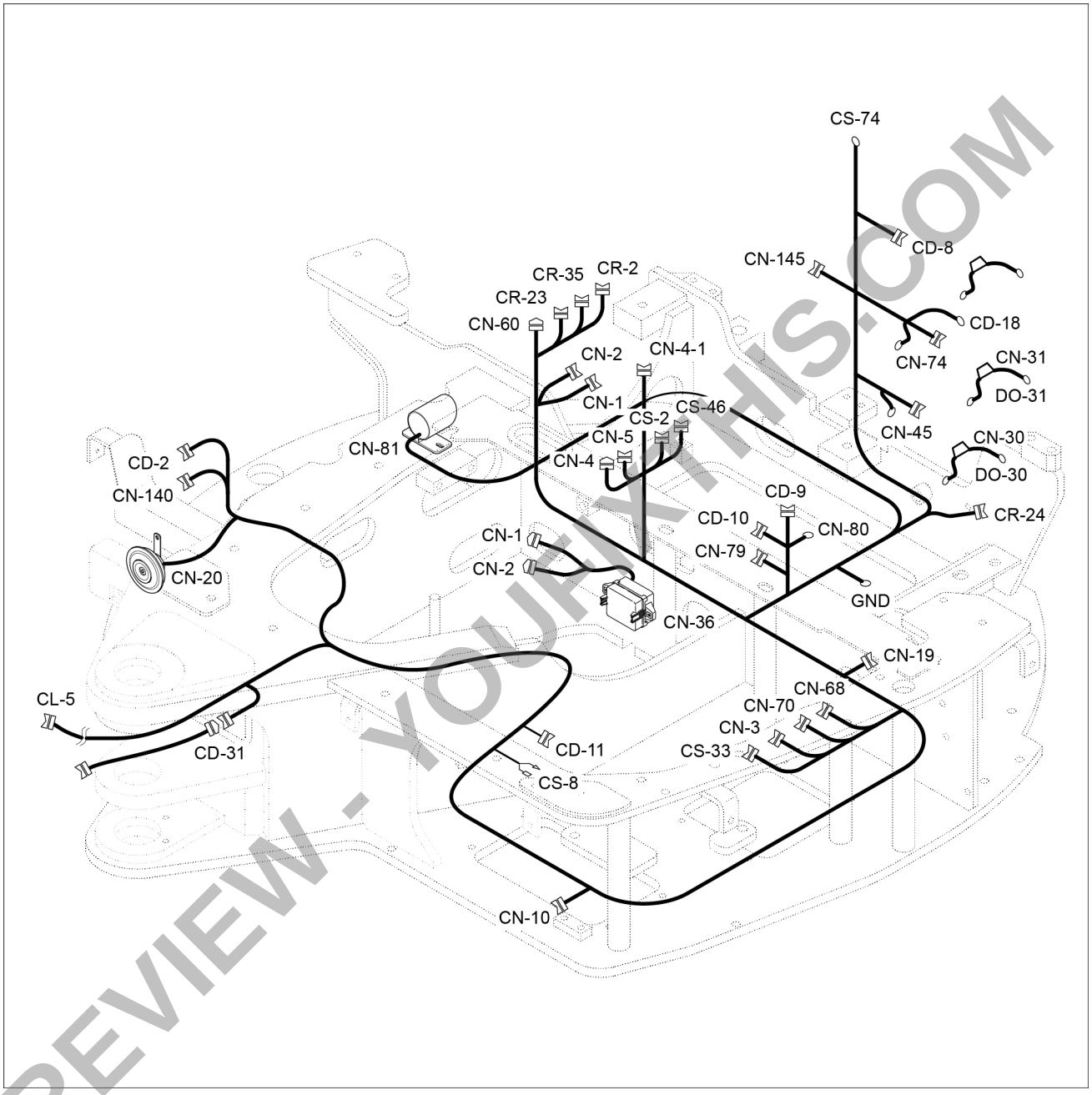
SMIL16MEX0930AA 4

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Harnesses and connectors - Component localization

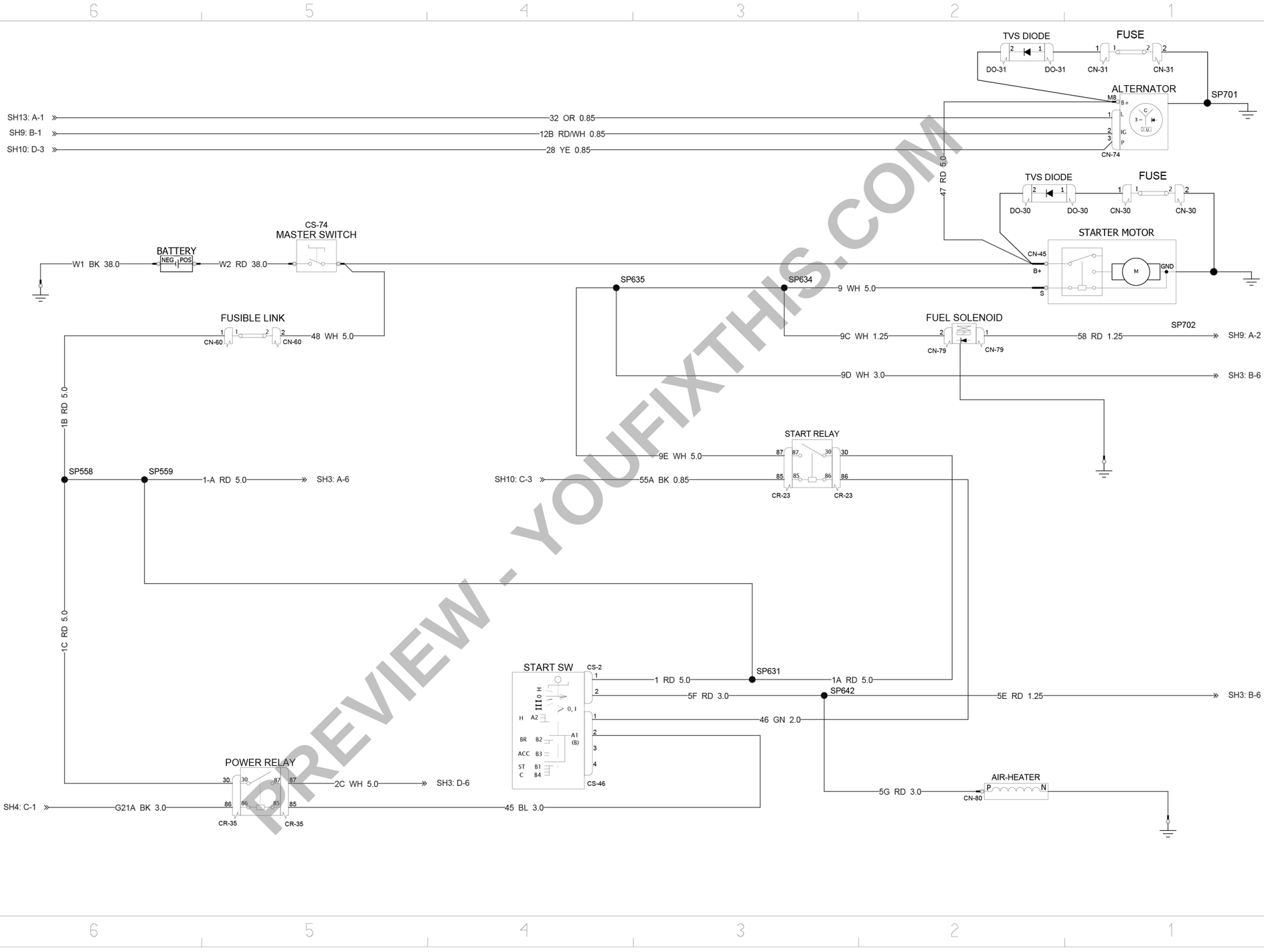
Under carriage



SMIL19MEX0168GB 1

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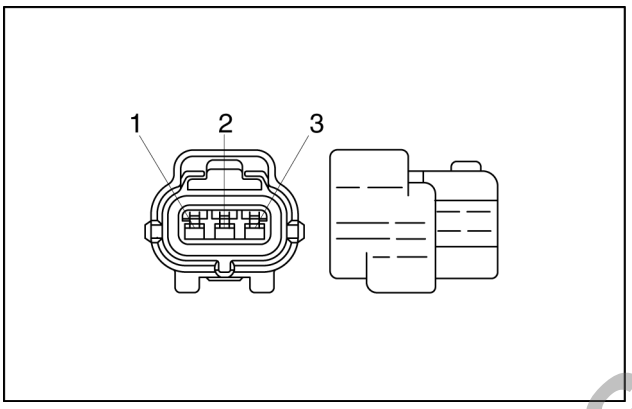
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Wire connectors - Component diagram 00

CONNECTOR CD-2: FUEL SENSOR (Female)



S816-003002 1

Pin	From	Wire	Description	Color-Size	Frame
1	SP582-P-X	G26A		BK-0.85	**SHEET 04 - Grounding**
2	CN-5F-P-5	26A		RD-0.85	**SHEET 10 - Cluster**

To locate the connector refer to **Harnesses and connectors - Component localization (55.100)**.

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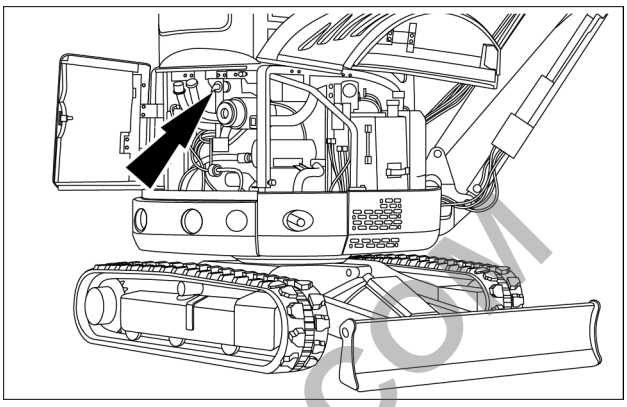
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Mechanical battery isolator - Dynamic description

The battery disconnect switch is located in the engine compartment. Open the engine access door to access to the battery disconnect switch.

The battery disconnect switch allows to cut off any power supply in the electrical system of the machine.

NOTE: *when the switch is turned to OFF position, all electrical circuits are cut off and the stations stored on the radio presets and the time set for the clock will be cleared.*

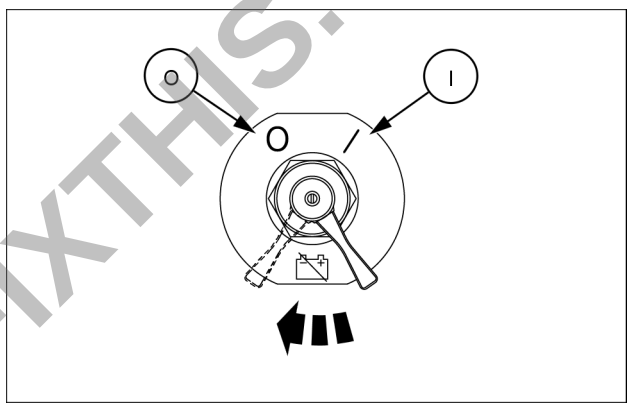


SMIL16MEX0435AA 1

Place the battery disconnect switch in the **(I)** position during normal operation.

Place the battery disconnect switch in the **(O)** position only during the following operations:

- Battery removal
- Electrical system connector removal
- Electrical system service
- Long-term storage
- As required for inspections and repairs
- Welding



SMIL16MEX0410AA 2

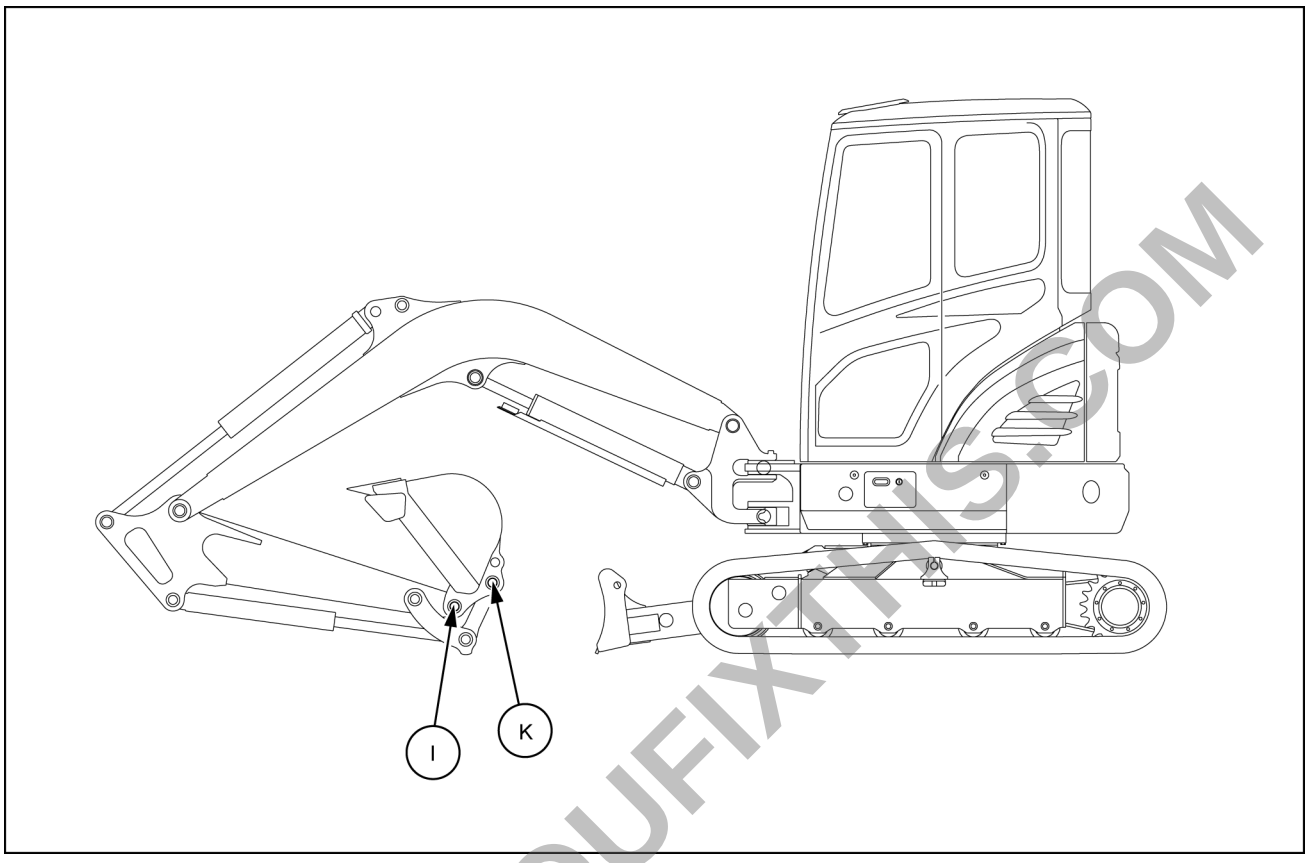
NOTICE: *never turn the battery disconnect switch to* ***(O)*** *position with the engine running. This could damage the electrical system.*

NOTICE: *never turn the battery disconnect switch to* ***(O)*** *position within* ***3 min*** *after the starter key is turned off. The machine control system and the engine control system will be damaged.*

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Bucket - Service limits - Cylinders pins and bushings



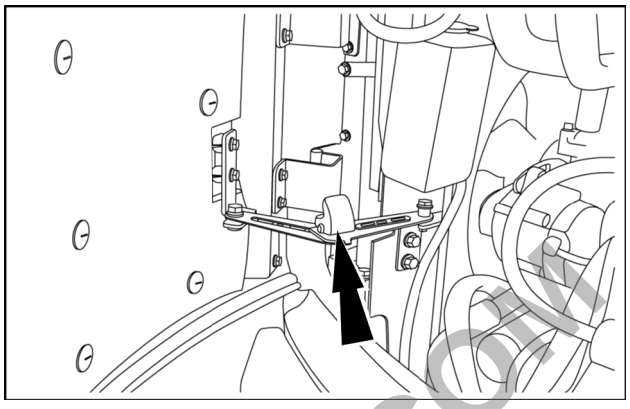
SMIL19MEX0161FB 1

Item	Measuring point	Standard value	Pin service limit	Pin limit of use	Bushing service limit	Bushing limit of use	Action
(I)	Bucket and arm link	**35.0 mm (1.38 in)**	**34.0 mm (1.34 in)**	**33.5 mm (1.32 in)**	**35.5 mm (1.40 in)**	**36.0 mm (1.42 in)**	Replace
(K)	Bucket link	**35.0 mm (1.38 in)**	**34.0 mm (1.34 in)**	**33.5 mm (1.32 in)**	**35.5 mm (1.40 in)**	**36.0 mm (1.42 in)**	Replace

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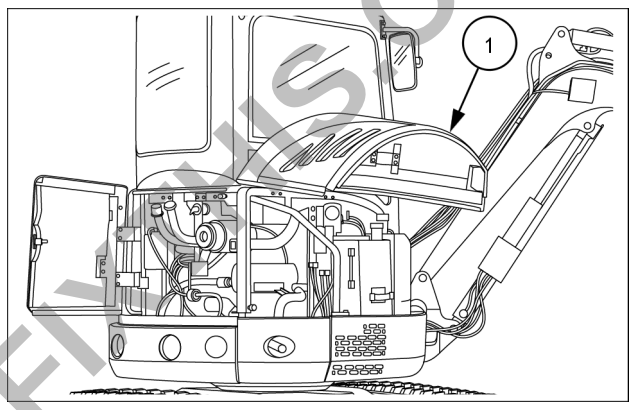
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2. Use the starter key to unlock the engine access door.
3. Use the handle to open the door and press the hook until the door is completely secured.



SMIL16MEX0929AA 2

4. Use the starter key to unlock the side hood **(1)**.

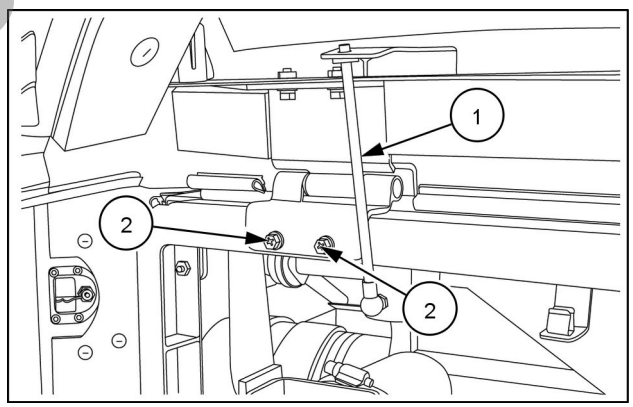


SMIL16MEX2477AA 3

5. Use the hook to gently lift up the hood and use the lifting stem **(1)** to secure the hood.

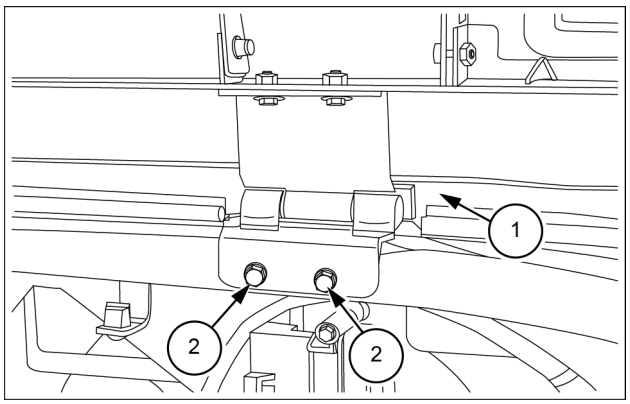
NOTICE: *while lifting the hood, make sure the hood does not contact the cab. Machine damage could result.*

6. Wrap the nylon sling around the engine hood, and then use the lift-crane to secure the side hood.
7. Use a wrench [**13 mm**] to remove the 2 bolts **(2)**.



SMIL16MEX0930AA 4

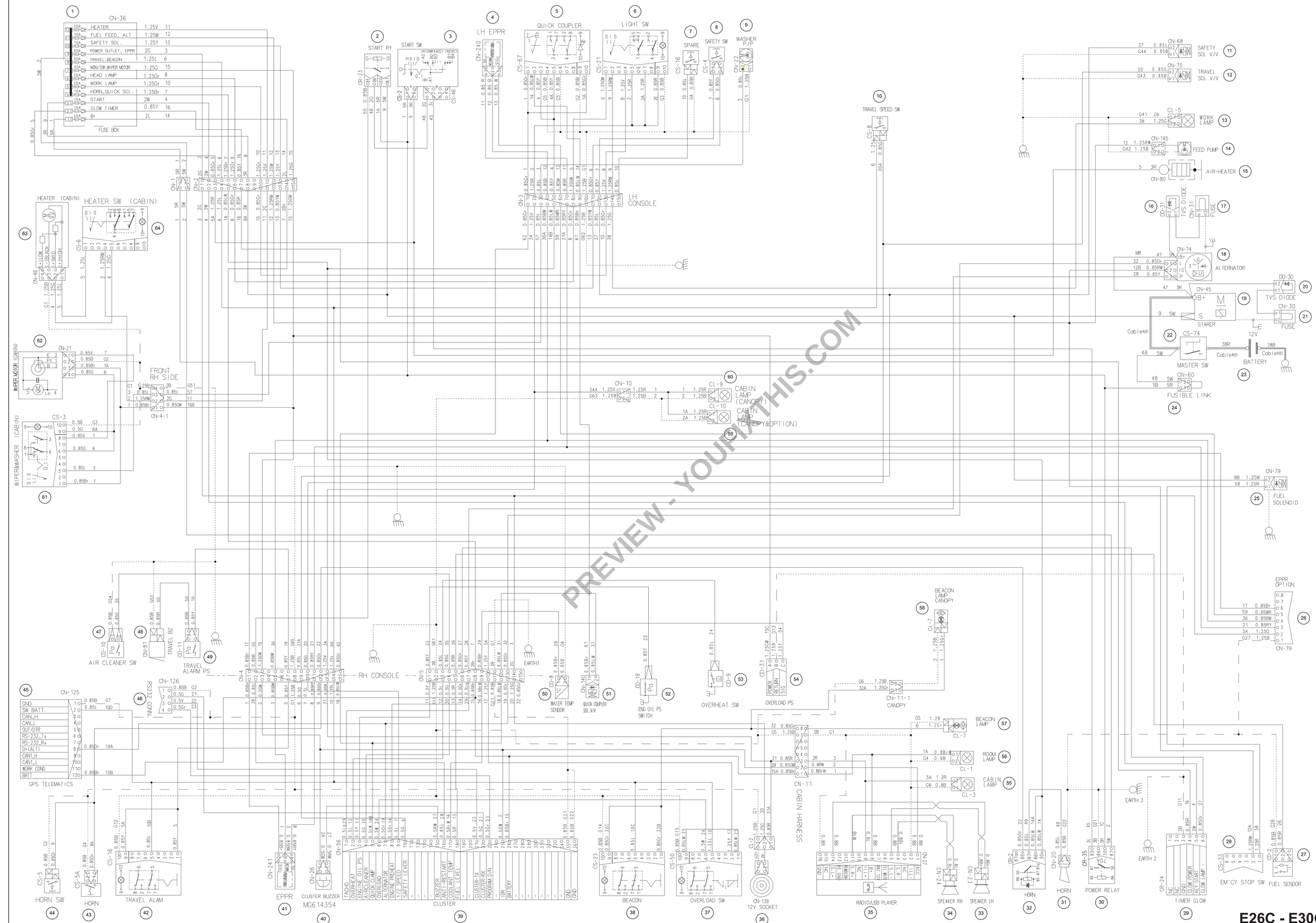
8. Use a wrench [**13 mm**] to remove the 2 bolts **(2)**, and then remove the side hood **(1)**.



SMIL16MEX2559AB 5

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LEGEND

1. Fuse box
2. Engine start relay
3. Starter switch
4. Left-hand EPPR
5. Quick coupler switch
6. Light switch
7. Spare
8. Safety switch
9. Washer pump
10. Travel speed switch
11. Safety solenoid valve
12. Travel solenoid valve
13. Work lamp
14. Feed pump
15. Air-heater
16. Diode (alternator TVS external harness)
17. Fuse (alternator TVS external harness)
18. Alternator
19. Engine starter
20. Diode (engine starter TVS external harness)
21. Fuse (engine starter TVS external harness)
22. Master switch
23. Battery
24. Fusible link
25. Engine stop solenoid
26. EPPR option
27. Fuel sensor
28. Emergency stop switch
29. Glow timer relay
30. Power relay
31. Horn
32. Horn relay
33. Speaker (left)
34. Speaker (right)
35. Radio and USB player
36. 12V socket
37. Overload switch
38. Beacon switch
39. Cluster
40. Cluster buzzer
41. Right-hand EPPR
42. Travel alarm switch
43. Horn switch
44. Horn switch
45. GPS telematics
46. RS232 connector
47. Air cleaner restriction sensor
48. Travel buzzer
49. Travel alarm pressure switch
50. Coolant temperature sensor
51. Quick coupler solenoid valve
52. Engine oil pressure switch
53. Coolant high temperature sensor
54. Overload pressure switch
55. Cabin lamp
56. Room lamp
57. Beacon lamp
58. Beacon lamp (Canopy version)
59. Cabin lamp (Canopy version and option)
60. Cabin lamp (Canopy version)
61. Wiper and washer switch
62. Wiper motor
63. Heater
64. Heater switch

E26C - E30C EXCAVATOR ELECTRICAL SCHEMATIC

51605726EN - 1/2

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Hand control - Dynamic description - Optional

Remote control valves (E and K type)

NOTE: *for the numbering refer to* ***Hand control - Sectional view - Optional (35.355)****.*

Structure

The structure of the remote control valve is as shown in the structural diagram. There is a longitudinal axial hole in the casing and the pressure reduction valve is installed in it.

The pressure reduction valve comprises the spool **(15)**, secondary pressure setting spring **(13)**, return spring **(14)**, spring seating **(12)**, and washer **(2)**.

The secondary pressure setting spring **(13)** is set so that the secondary pressure calculation is **0.5 – 1 MPa** (**73 – 145 psi**).

The spool **(15)** is pressed against the push rod **(9)** by the return spring **(14)**.

When the push rod **(9)** is pushed down by tilting the handle or another operation, the spring seating goes down at the same time and the secondary pressure setting spring **(13)** setting is changed.

The casing **(1)** has the oil inlet (primary pressure) port P and the outlet (tank) port T and, furthermore, the secondary pressure is taken out from the ports 1, 2, 3, 4.

Basic functions

The remote control valve is for controlling the control valve spool stroke quantity, direction, etc. This is done by operating the pilot valve output pressure on the control valve spool end section.

In order to satisfy this function, the remote control valve is made up of the following elements:

1. Inlet port (P) to which the oil is fed from the hydraulic pump.
2. Multiple output ports (1, 2, 3, 4) for operating the feed pressure from the inlet port on the control valve spool end.
3. Tank port (T) required for controlling the above output pressure.
4. Spool connecting the output port to the inlet port or tank port.
5. Mechanical means including a spring operating on the above spool in order to control the output pressure.

Main part functions

The function of the spool **(15)** is to switch the oil path either to have the hydraulic pressure fed from the hydraulic pump received by the P port and lead the P port pressure oil to the output ports (1, 2, 3, 4) or to lead the output port pressure oil to the T port. The output pressure operating on this spool **(15)** is determined by the secondary pressure setting spring **(13)**.

In order to change the deflection quantity of the secondary pressure setting spring **(13)**, the push rod **(9)** is inserted into the plug **(11)** in such a way that it can slide.

The return spring **(14)** operates on the casing **(1)** and spring seating **(12)** and operates to return the push rod **(9)** in the displacement zero direction regardless of the output pressure and makes the spool **(15)** neutral return reliable. It also has the effect of a counter-force spring for giving an operator an appropriate operation feel.

Remote control valve usage example

Operation of the remote control valve is explained based on the hydraulic circuit diagram (Fig. **1**) and operation explanation diagrams (from Fig. **2** to Fig. **4**).

Fig. **1** is a typical usage example for the remote control valve.

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Electrical system - Component identification - EPPR switch

Specification: **700 mA**

Check resistance
Normal: **15 – 25 Ω** (for terminal 1-2)

A. Left-hand EPPR switch (**CN-240**)
B. Right-hand EPPR switch (**CN-241**)



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