|  |
| --- |
| **Information about optional components** |
| **KDI 2504 TM Workshop manual (Rev. 07.6)** |



Sommario

[1. TITOLO 1 2](#_Toc495648770)

[1.1. Asdfsdfsdf 2](#_Toc495648771)

[1.2. Asdfsdfsdfggg 2](#_Toc495648772)

# Information about optional components

## Oil dipstick in cylinder head

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| **11.1.1 Check**   1. Pull out the dipstick **B** in the direction of the arrow **A** . 2. Check that the mark left by the oil on the dipstick is between the **MIN** . and **MAX** . notches. | 11.1.jpg **Fig 11.1** |
| **11.1.2 Replacement**  **11.1.2.1 Disassembly**   1. Undo the screw **D** . 2. Pull out the oil dipstick hose **E** in the direction of the arrow **F** . | 11.2.jpg **Fig 11.2** |
| **11.1.2.2 Assembly**    Z_importante.jpg **Important**       * Always replace the gasket **G** every time it is disassembled.  1. Insert the gasket **G** in the seat **K** of the hose **E** . 2. Insert the hose **E** in the crankcase **H** . | 11.3.jpg **Fig 11.3** |
| 1. Tighten the oil dipstick hose **E** using the screw **D** on the manifold **L** (Tightening torque of **10 Nm** ). | 11.4.jpg  **Fig 11.4** |
| **NOTE:** Check the integrity of the gaskets **J.**   1. Insert the dipstick **B** inside the hose **E** . | 11.5.jpg **Fig 11.5** |

## Heater (replacement)

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| **11.2.1 Disassembly**   1. Undo the screws **A** and the relevant washers and remove the earth cable **B** . 2. Remove the flange **C** and the manifold **D** . 3. Remove the heater **E** and the relevant gaskets **F** . | 11.6.jpg **Fig 11.6** |
| **11.2.2 Assembly**    Z_importante.jpg **Important**       * Always replace gaskets **F** , with each assembly.      1. In sequence, fit the manifold **G** with the gasket **F** , the new heater **E** , the second gasket **F** , the flange **C,** the washers **H** , the screws **A** and the cable **B** . 2. Secure the flange **H** with the screws **A** (tightening torque at **22 Nm** ). 3. Secure the earth cable **B** with the nut **J** and the relevant washer on the heater  **E** . | 11.7.jpg **Fig 11.7** |

## Idler gear (for 3rd / 4th PTO)

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| **11.3.1 Disassembly**   1. Undo the screw **A** and remove the gear unit **B** . | imm11.20.jpg **Fig 11.8** |
| 2.   Remove the retainer ring **C** from the seat of the pin **D** . 3.   Remove the shoulder washer **E** , the gear **B** , the shoulder ring **F** and the bushing **G** from the pin **D** . | imm11.21.jpg  **Fig 11.9** |
| **11.3.2 Assembly**   1. Fit into the pin **D** : - The shoulder ring **F** (of least thickness) - The gear **B** - The shoulder ring **E** - The retainer ring **C** . 2. Insert the bushing **G** on the crankcase **L** . | imm11.22.jpg   **Fig 11.10** |
| Z_importante.jpg **Important**       * Always replace the washer **H** every time it is disassembled. **Modified component, see service letter 700019 -** **700021 .** * Check that the perforated screw **A** is free from impurities inside it.      1. Position the gear unit **B** on the hole **J** using the bushing **G** to centre. 2. Secure the gear **B** using the screw **A** inserting the washer **H** (tightening torque at **see service letter 700019 -** **700021** ). | Fig._11.11.jpg  **Fig 11.11** |

## 3rd PTO (replacement)

 **Fig 11.12**

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| **11.4.1 Disassembly**   1. Undo the screws **A** and remove the pump **B** . | 11.13.jpg **Fig 11.13** |
| 1. Remove the centring ring **C** and the relative gaskets 2. Undo the screws **N** . | 11.14.jpg **Fig 11.14** |
| 1. Remove the flange **F** with the components **D,** **E** , **G** and **H** in the direction of the arrow **P** . 2. Remove the gasket **J** . | 11.15.jpg **Fig 11.15** |
| 1. Remove the retainer ring **D** and the shoulder washer **E** . 2. Remove the gear **H** and the shoulder ring **G** from the flange **F** in the direction of the arrow **Q** . | imm11.28.jpg **Fig 11.16** |
| **11.4.2 Assembly**    Z_importante.jpg **Important**       * Always replace the gasket **J** after each assembly. * Lubricate the gear H with oil. * It is mandatory to replace the screws **N** or apply a few beads of **Loctite 2701** .  1. Insert the gear H in the flange **F** in the direction of the arrow **R** inserting the shoulder ring **G** . 2. Insert the shoulder ring **E** on the flange **F** and clamp the gear **H** using the retainer ring **D** . 3. Position the flange **F** on the crankcase **K** inserting the gasket **J** , and inserting the gear **H** up to the stop on the bearing **L** ( **Fig. 11.31** ). | imm11.29.jpg **Fig 11.17**11.18.jpg **Fig 11.18** |
| 1. Secure the flange **F** using the screws **N** (tightening torque at **25 Nm** ).     Z_importante.jpg **Important**       * Always replace the gaskets **P** and **Q** at each assembly.  1. Insert the centring ring **C** in the flange **F** up to the stop. | Fig._11.19.jpg **Fig 11.19** |
| 1. Insert the pump **B** on the flange **F** engaging the gear **H** . 2. Secure the pump **B** using the screws **A** on the flange **F** (tightening torque at **25 Nm** ). | 11.20.jpg **Fig 11.20** |

## 4th PTO (replacement)

 **Fig 11.21**

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| **11.5.1 Disassembly**   1. Undo the screws **A** and remove the pump **B** . | imm11.34.jpg **Fig 11.22** |
| 1. Undo the screws **C** and remove the flange **D** . | Fig._11.23.jpg **Fig 11.23** |
| 1. Undo the screws **E** and remove the cover **F** . | Fig._11.24.jpg **Fig 11.24** |
| 1. Undo the screws **G** and remove the flange **K** with the components **H** , **J** , **M** and **N** . | Fig._11.25.jpg **Fig 11.25** |
| 1. Remove the retainer ring **H** and the shoulder ring **J** from the flange **K** . 2. Remove the gear **N** and the shoulder ring **M** from the flange **K** . | imm11.38.jpg **Fig 11.26** |
| **11.5.2 Assembly**    Z_importante.jpg **Important**       * Always replace the shoulder ring **J** after each assembly. * Lubricate the gear **N** with oil. * It is mandatory to replace the screws **G** or apply a few beads of **Loctite 2701** .  1. Insert the gear **N** in the flange **K** in the direction of the arrow **W** inserting the shoulder ring **M** . 2. Insert the shoulder ring **J** on the flange **K** and clamp the gear **N** using the retainer ring **H** . | imm11.39.jpg **Fig 11.27** |
| 1. Position the flange **K** on the crankcase **Q** inserting the gasket **P** , and insert gear **N** in crankcase **Q** . 2. Secure the flange **K** using the screws **N** (tightening torque at **25 Nm** ). | Fig._11.28.jpg **Fig 11.28** |
| Z_importante.jpg **Important**       * Always replace the gasket **V** after each assembly.  1. Insert the gasket **V** on the cover **F** , insert and position the cover **F** on the flange **K** . 2. Secure the cover **F** using the screws **E** on the flange **K** (tightening torque at **25 Nm** ) | Fig._11.29.jpg **Fig 11.29** |
| Z_importante.jpg **Important**       * Always replace the gasket **T** after each assembly.  1. Position and secure the flange **D** using the screws **C** on the crankcase **S** (tightening torque at **10 Nm** ). | Fig._11.30.jpg **Fig 11.30** |
| Z_importante.jpg **Important**       * Always replace the gasket **U** after each assembly.  1. Position the gasket **U** on the flange  **D** . 2. Secure the pump B using the screws A on the flange D (tightening torque at **25 Nm** ). | Fig._11.31.jpg **Fig 11.31** |

## 3rd + 4th PTO (configurations)



**Fig. 11.32**

|  |  |
| --- | --- |
| **11.6.1 Information**  Hydraulic pumps on the 3rd and 4th PTO can be installed at the same time. In some configurations, there is also the centering ring **C** on the 4th PTO.    Z_importante.jpg **Important**       * For disassembly or installation, refer to [**Par. 11.4**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=707&parent=1527) **,** [**Par. 11.5**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=708&parent=1527) **e** [**Par. 11.6**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=709&parent=1527) **.** * Always replace the gasket of the rings **B** and **C** and flanges **D** and **K** at each assembly. * Lubricate the gear **H** with oil. | Fig._11.33.jpg  **Fig. 11.33** |

## Air filter (cartridge replacement)

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| 1. Release the two hooks **A** and remove the cover **B** from the body **C** . 2. Remove the cartridges **D** . | 11.34.jpg **Fig 11.34** |
| 1. Insert the new cartridge **D** and both of them inside the filter body **C** . 2. Secure the cover **B** via the hooks **A** . | 11.47.jpg  **Fig. 11.35** |

## Remote oil filter (disassembly and assembly)

|  |  |
| --- | --- |
| Z_importante.jpg **Important**       * **Modified component, see service letter 700018** **.**   **11.9.1 Disassembly**   1. Perform the operations described in [**Par. 5.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=657&parent=1527) **.**     Z_importante.jpg **Important**       * + Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) .   + For the replace the cartridge, please refer to operation number **6 (Par. 11.9.1) and 2 (Par. 11.9.2)** .   + For the disassembly of the pipes **B** **and** **C,** lock with a tool the fittings **K, H (Fig. 11.37) and L (Fig. 11.38)** in order to prevent their lose together with the nuts A , with the consequent of oil leakage.  1. Undo the nuts A and remove the hoses **B** **and C** . | 11.48.jpg **Fig 11.36** |
| 1. Release the clamps **D** and remove the hoses **E** and **F** from Oil Cooler **G** . 2. Unscrew and remove the fitting **H** with its copper gasket from the oil filter head **J** . 3. Unscrew and remove:     - the fitting **K** with the copper gasket;     - Oil Cooler **G** and the relative gaskets;     - the oil filter head **J** . | 11.49.jpg **Fig 11.37** |
| 1. Unscrew the fittings **L** and remove the copper gaskets from the support **M** . 2. Unscrew the cartridge **N** with gasket from the support **M** . | Fig._11.50.jpg  **Fig 11.38** |
| **11.9.2 Assembly**      Z_importante.jpg **Important**       * Always replace the gaskets **V** after each assembly. * Always replace the gaskets **P, Q, and U** at each assembly. * Lubricate the gaskets **P, Q** with oil before assembling them.  1. Clamp unions **L** on support M inserting  gasket **V** (tightening torque at **40 Nm** ). 2. Lubricate gasket **W** and clamp cartridge **N** on support **M** (tightening torque at **20 Nm** ). 3. Insert the gasket **P** on the seat of the fitting **K** . 4. Insert flange head **J** on the union **K** and the gasket **Q** in the seat of head **J** . 5. Insert the Oil Cooler **G** on the union **K** and the gasket **R** in the seat of Oil Cooler **G** . 6. Onto crankcase **S** apply Oil Cooler **G** and flange **J** by means of union **K** (tightening torque at **25 Nm + Loctite 2701** on thread) as positioned in **Fig. 11.39** . 7. Clamp union **H** on flange **J** inserting gasket **U** (tightening torque at **40 Nm** ). | 11.51.jpg  **Fig 11.39** |
| 1. Connect the hose **B** to the central fitting of support **M** and of flange **J** . 2. Connect the hose **C** to the side fitting of the support **M** and of head **J** . 3. Clamp the nuts **A** on the head **J** (tightening torque at **30 Nm** ). 4. Clamp the nuts **A** on the support **M** (tightening torque at **35 Nm** ).     Z_importante.jpg **Important**       * Check the tightening of the fittings **K, H (Fig. 11.37) and L (Fig. 11.38)** (tightening torque at **40 Nm** ). | 11.52.jpg **Fig 11.40** |

## Poly-V alternator belt (replacement and adjustment)

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| 1. Loosen the nut **B** and manually tighten the screw **C** until it just touches the pulley pin **D** . | imm11.8.jpg **Fig 11.41** |
| 1. Untighten the screw **E** by around **32mm (A)** . 2. Untighten the screw **C** .     **NOTE:** The belt tensioner pulley **F** should move towards the arrow **G** . If it does not, please move it manually. | imm11.9.jpg **Fig 11.42** |
| 1. Remove the V-Belt **H** and install the new one.     **NOTE:** Ensure that the internal profile of belt **H** is properly inserted into the grooves of the pulley **A** (as illustrated in **D1 e D2** ). | imm11.10.jpg **Fig 11.43** |
| 1. Tighten capscrew **C** , to shift gudgeon **D** fully to the bottom of the grooved guide. 2. Tighten capscrew **E** (tightening torque at **45Nm** ). 3. Hold the screw **C** still with a key, and tighten the screw **B** on the plate **L** to secure the screw **C** (tightening torque at **45Nm** ). 4. Check, in point **P (Fig. 11.8)** ,the tension of the belt. Check by the appropriate tool that at point **p** the tension value is between **149 and 196 Hz** .     **NOTE:** After the engine has been in operation for around 15 minutes, repeat point **8** . | imm11.11.jpg **Fig 11.44** |

## Tightening pulley and alternator for Poly-V belt

|  |  |
| --- | --- |
| Z_importante.jpg  **Important**       * Before proceeding with operation, read  [**Par. 3.3.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=437&parent=1527) . |  |
| **11.4.1 Disassembly**   1. Perform the operations from [**point 1 to 3 of**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=720&parent=1527) [**Par. 11.9.**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=720&parent=1527) 2. Remove the belt **H (** [**Fig. 11.43**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=720&parent=1527) **)** . 3. Undo and remove the screw **A** . 4. Fully undo the screw **B** and remove the tightening pulley **C** . | CAP_11_POLY-V_prot_galoppino_06.png **Fig 11.45** |
| 1. Undo the screws **D** and remove the plate **E** and the pin **F** . | imm11.13.jpg **Fig 11.46** |
| 1. Undo the screws **G and H** remove the alternator **L** . | imm11.14.jpg **Fig 11.47** |
| 1. Undo the screws **M** and remove the bracket **N** . | imm11.15.jpg **Fig 11.48** |
| **11.4.2** **Assembly**   1. Secure the bracket **N** using the screws **M** on the cylinder head **P** (tightening torque at **25 Nm** ). | imm11.16.jpg **Fig 11.49** |
| 1. Insert the screw **H** into the fixing hole on the alternator **L** . 2. Insert the spacer **R** on the screw **H** (between the alternator and crankcase). 3. Tighten the screw manually **H** onto the crankcase **Q** . 4. Orientate the second fixing hole of the alternator **L** with the hole of the bracket **N** , secure the alternator **L** using the screw **G** (tightening torque at **25 Nm** ) onto the bracket **N** and then the screw **H** (tightening torque at **25 Nm** ). | imm11.17.jpg **Fig 11.50** |
| 1. Insert the pin **F** in the plate slot **E** . 2. Orientate the pin **F** with the surface **S** (support for screw **A** ) upwards. 3. Secure the plate **E** using the screws **D** on the bracket **N** (tightening torque at **25 Nm** ). | imm11.18.jpg **Fig 11.51** |
| 1. Insert the screw **B** in the plate **C1** and pulley **C** . 2. Manually tighten the screw **B** onto the pin **F** up to the stop; Undo the screw **B** again by one turn.     **NOTE:** The screw **B** must protrude by about 32 mm **(A)** from the surface of the tightening pulley **C** (see detail **X** ).     1. Install the new belt **H** **(** [**Fig. 11.43**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=720&parent=1527) **)** . 2. Tighten the screw **A** onto the plate **E** up to the stop on the pin **F** . 3. Perform the operations [**point 6 to 8 of**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=720&parent=1527) [**Par. 11.9**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=720&parent=1527) . | CAP_11_POLY-V_prot_galoppino_07.png **Fig 11.52** |

## Oil sump with supporting structure

|  |  |
| --- | --- |
| **11.11.1 Flywheel (J) disassembly**   1. Execute the operations described in [**Par. 7.11.1**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=676&parent=1527) .   **11.11.2 Plate/flange housing (L) disassembly**   1. Loosen supplementary capscrews **A** and **B** . 2. Execute the operations described in [**Par. 7.11.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=676&parent=1527) . 3. Remove housing or plate **L** . | 11_53.jpg  **Fig. 11.53** |

|  |  |
| --- | --- |
| **11.11.3 Oil sump disassembly**   1. Execute the operations described in [**Par. 5.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=657&parent=1527) . 2. Loosen capscrews **C** and remove bypass tube **D** . 3. Loosen capscrews **E** and remove oil sump **F** . | 11_73.jpg  **Fig. 11.54** |

|  |  |
| --- | --- |
| **11.11.4 Oil sump assembly**   1. Make sure contact surfaces **G** of oil sump **F** and crankcase **H** have no impurities. 2. Apply a sealing bead of approximately **2.5 mm** ( **Loctite 5660** ) onto surface **G** of crankcase **H** . 3. Place oil sump **F** onto crankcase **H** in correspondence with the fastening holes (use tool [**ST\_18**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=339&parent=1527) ). | 11_74.jpg  **Fig. 11.55** |

|  |  |
| --- | --- |
| 11_75.jpg  **Fig. 11.56** | |

|  |  |
| --- | --- |
| 1. Apply capscrews **E** into the fastening holes and use torque at **10 Nm** . 2. Loosen capscrews **E** , leaving approximately 1 mm leeway ( **position A** ) between the neck surface of capscrews **E** and oil sump **F** . 3. Place flange housing or plate **L** onto crankcase **H** , complying with centring tap pins **M** . 4. Using 2 capscrews **A** , fasten housing or plate **L** onto crankcase **H** (tightening torque at  **20 Nm** ). 5. Using 2 capscrews **A** , fasten housing or plate L onto oil sump **F** (tightening torque at **20 Nm** ). | 11_76.jpg  **Fig. 11.57** |

|  |  |
| --- | --- |
| 11_77.jpg    **Fig. 11.58** | |

|  |  |
| --- | --- |
| 1. Fasten oil sump **F** by tightening capscrews **E** and strictly following the order shown in **Fig. 11.59** (tightening torque at  **20 Nm** ). 2. Loosen capscrews **A** and remove housing or plate **L** ( **Fig. 11.58** ). 3. Fasten oil sump **F** by tightening capscrews **E** and strictly following the order shown in **Fig. 11.59** (tightening torque at  **47 Nm** ). Loosen the screw **1** again and tighten it to **47 Nm** . | 11_78.jpg  **Fig. 11.59** |

|  |  |
| --- | --- |
| 1. Insert gaskets **N** into seats **P** of bypass tube **D** . 2. Fasten bypass tube **D** onto oil sump **F** using capscrews **C** (tightening torque at **10 Nm** ). | 11_79.jpg  **Fig. 11.60** |

|  |  |
| --- | --- |
| **11.11.5 Flange plate / housing assembly**   1. Execute the operations described in **point 6** of **Par. 11.11.4** . 2. Fasten housing or plate **L** by using capscrews **A** and strictly following the order shown in **Fig. 11.61** (tightening torque at **85 Nm** ). 3. Fasten housing or plate **L** by using capscrews **B** (tightening torque at **270 Nm** ).   **11.11.6 Flywheel assembly**   1. Execute the operations described in [**Par. 9.5.2**](https://iservice.lombardini.it/jsp/Template2/manuale.jsp?id=692&parent=1527) **.** | 11_80.jpg  **Fig. 11.61** |

