



Section A

Optional Equipment

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Section A - Optional Equipment

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Section A - Optional Equipment

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Front Power Take-off (PTO)

PTO Drive Shaft and Flexible Couplings

Removal and Replacement

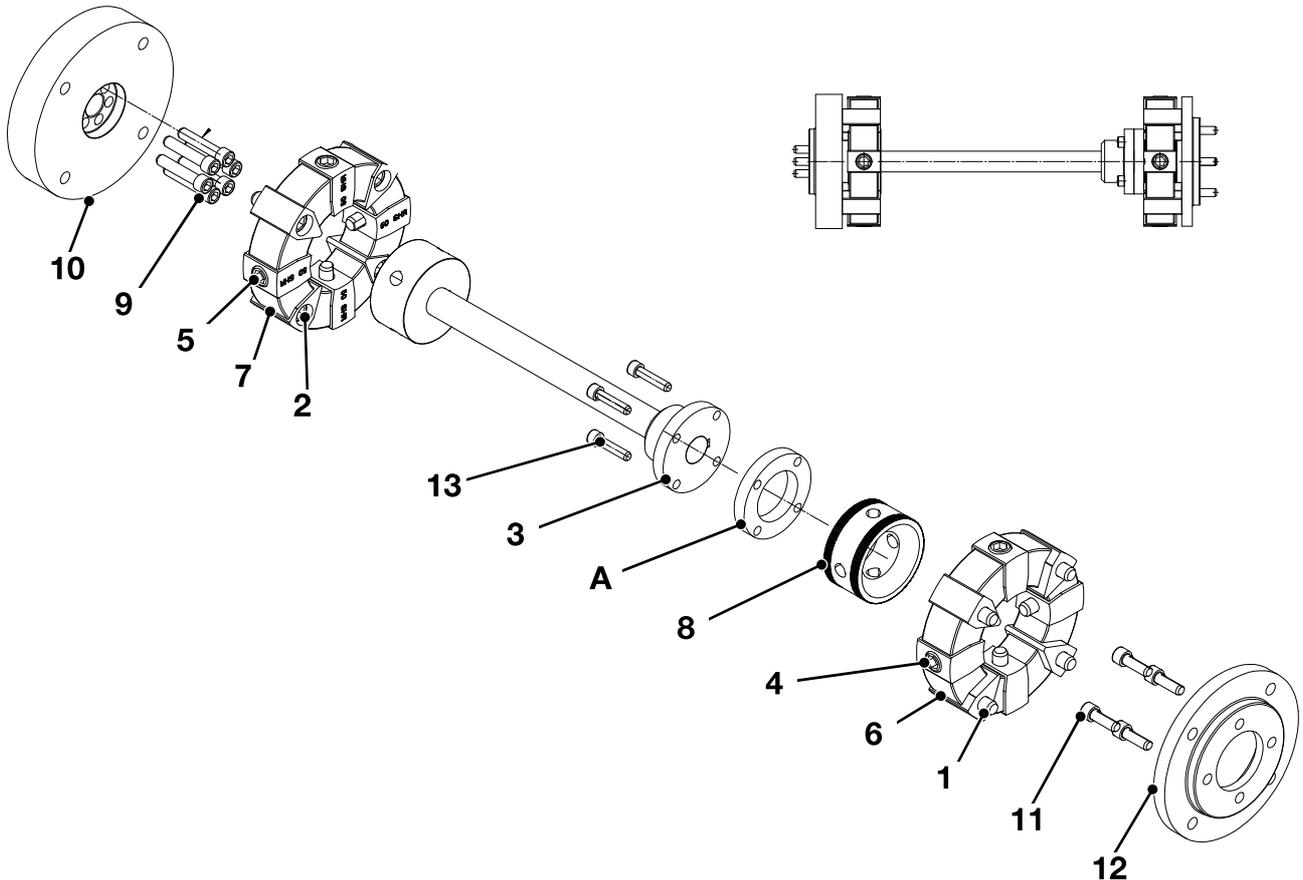


Fig 1.

The numerical sequence shown on the illustration is intended as a guide to removal and dismantling of the complete drive shaft assembly.

Note: *Spacer A is removable so that the fan belt can be removed and replaced without removing the complete PTO drive shaft (see Fan Belt, Section 3).*

If only one of the flexible couplings is to be removed and replaced, removal of screws 13, 4, 5, and plate A will allow the shaft to be separated from the couplings which can

then be disconnected from the engine and/or PTO gearbox.

When Removing

Remove the radiator.

Remove socket head screws 1 and 2 and lift out the drive shaft assembly 3.

Remove socket head screws **4** and **5** to separate the flexible couplings **6** and **7** from the drive shaft **3** and hub **8**.

being re-used. (New socket head screws **1**, **2**, **4** and **5** are pre-coated with locking fluid.)

Remove socket head screws **9** to separate flywheel **10** from the PTO gearbox.

Torque Settings

Remove socket head screws **11** to separate adaptor plate **12** from the engine.

Item	Nm	kgf m	lbf ft
1	220	22	162
2	220	22	162
4	220	22	162
5	220	22	162
9	147	15	108
11	147	15	108
13	85	8.7	63

When Replacing

Make sure that the flexible couplings **6** and **7** are not distorted as shown at **X**. Correct alignment as shown at **Y** can be more easily achieved if general purpose grease is applied to socket head screws **1**, **2**, **4** and **5** to reduce friction between screws and couplings.

Note: *Spacer A is available in three different thicknesses. Select a suitable thickness of spacer to reduce the axial load on the flexible couplings 6 and 7.*

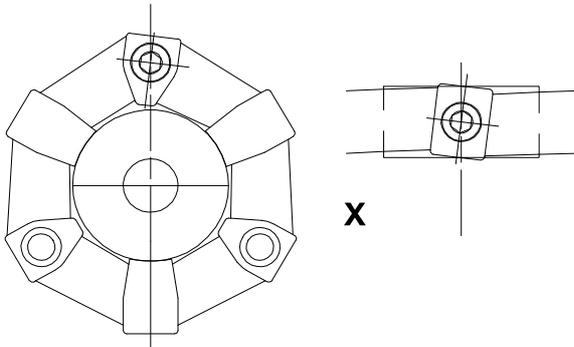


Fig 2.

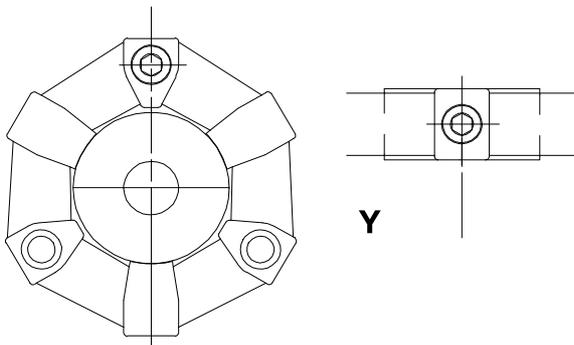


Fig 3.

Apply locking fluid to socket head screws **9** and **11** also to socket head screws **1**, **2**, **4** and **5** if the existing screw are

PTO Gearbox

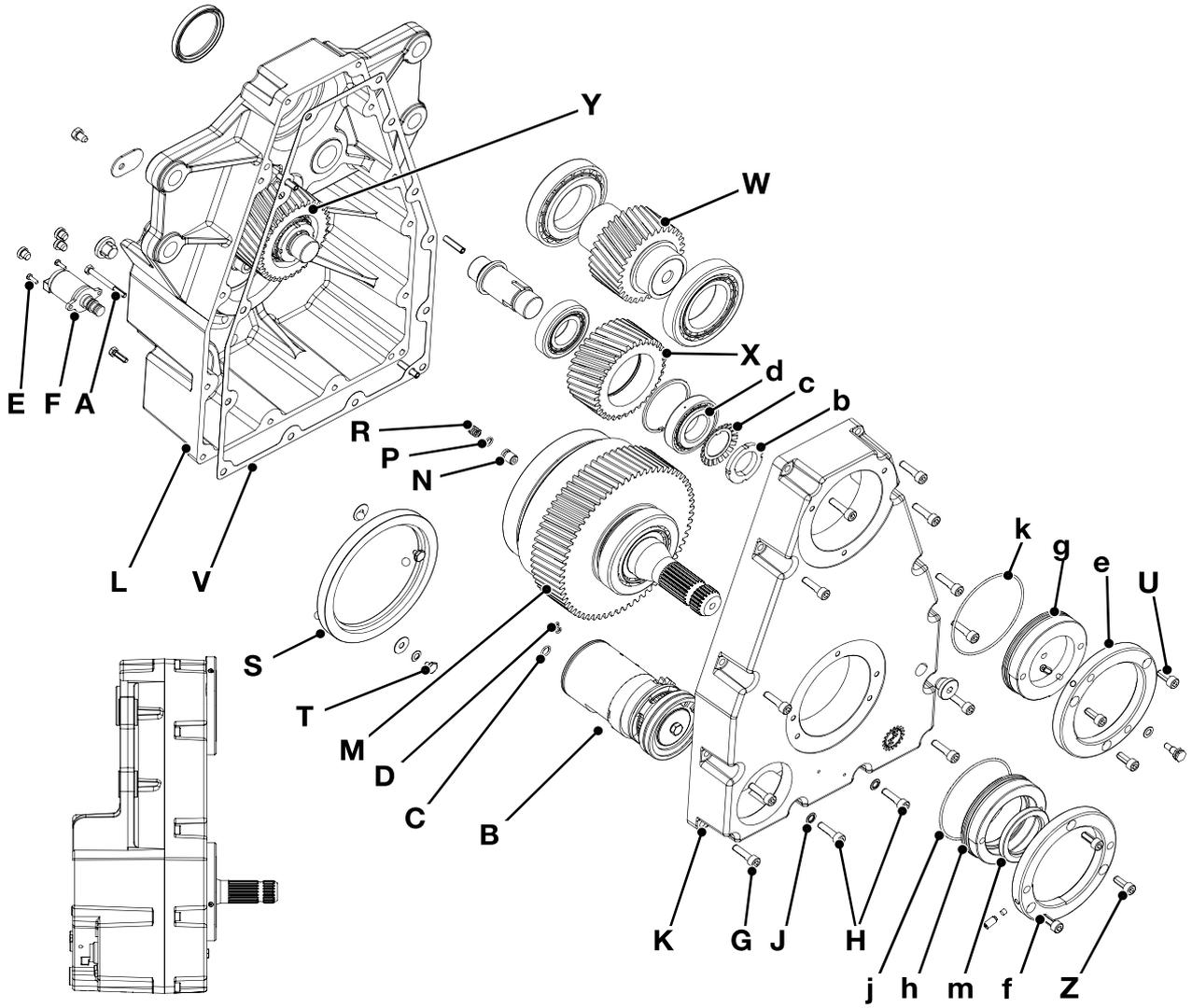


Fig 4.

Dismantling

- 1 Drain oil and remove filter (*see Section 3*).
- 2 Remove gearbox from machine.
- 3 Remove M6 bolts **A** and withdraw pump **B** through the front casing **K**. Take care to remove 'O' rings **C** and **D** from the PTO casing.
- 4 Remove M5 bolts **E** and proportional valve **F** complete with 'O' ring.
- 5 Remove M8 screws **G** and the two screws **H** with bonded seals **J**.
- 6 Hit the output shaft with a soft-faced hammer to separate the front and rear casings **K** and **L**.
- 7 Prise the clutch assembly **M** away from the rear casing using two levers. To service the clutch → [PTO Clutch Dismantling and Assembly \(□A-6\)](#)
- 8 Remove bronze bush **N**, 'O' ring **P** and spring **R**.
- 9 Remove input gear and bearings **W**.
- 10 Release intermediate gear **X** from its shaft by unscrewing nut **b** and removing washer **c** and inner race of bearing **d**.
- 11 Remove intermediate gear **Y** in the same way as removing intermediate gear **X**.
- 12 Remove screws **U** and **Z** to release rings **e** and **f** from the front casing.
- 13 Unscrew the adjusting discs **g** and **h** from the rings and remove 'O' rings **j** and **k** also oil seal **m**.

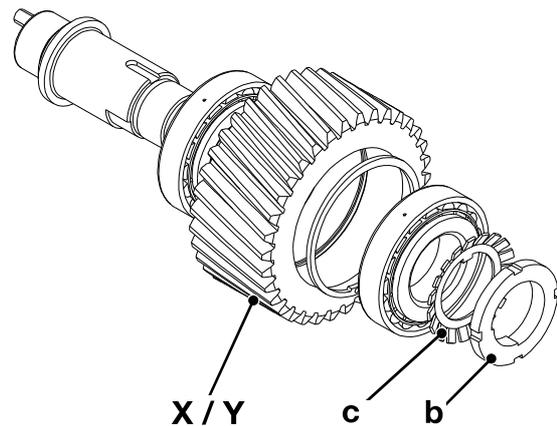


Fig 5.

- 4 Pre-assemble the intermediate gears **X** and **Y** onto their shafts. Tighten nut **b** to 40 Nm whilst rotating the gear to seat the bearings. If they do not seat correctly apply more torque. Then release the nut, rotate the gear a few turns and re tighten to 10Nm. Lock the nut with washer **c**.
- 5 Lay the rear casing on its back face and refit the clutch assembly and gears into rear casing **L**.
- 6 Grease gasket **V** to keep it in position and place the front casing in position, using a soft-faced hammer to bring the casings together.
- 7 Fit bolts **G** and **H**, making sure the the two 'O' rings are fitted to bolts **H**. Tighten bolts to specified setting.

Assembly

- 1 Make sure that the working surface of bush **N** is in good condition and that length of spring **R** is 13mm (0.51 in). Renew if required.
- 2 Renew bearings if worn and all seals and 'O' rings.
- 3 Check that rotation ring **S** turns without restriction. Tighten M5 bolts **T** to 5 Nm (44 lbf in).

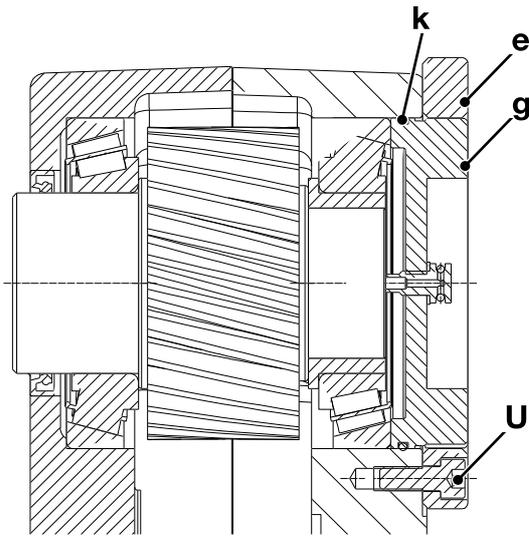


Fig 6.

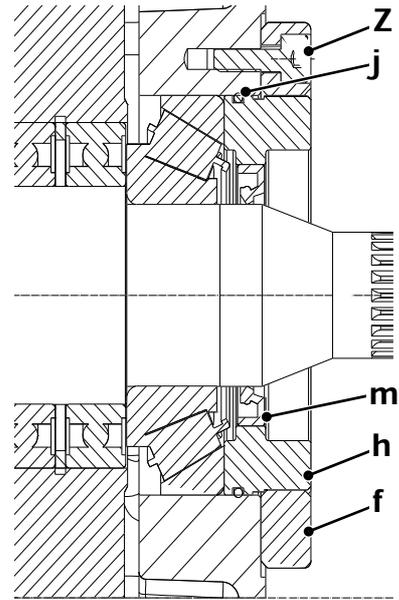


Fig 7.

- 8 Fit new 'O' ring **k** to the input shaft adjusting disc **g**. Grease the threads and screw the adjusting disc **g** into the ring **e**. Fit the ring to the front casing and tighten screws **U** to the specified torque setting.
- 9 Tighten adjusting disc **g** to 120 Nm whilst rotating the input shaft, then release the disc.
- 10 Repeat step 9 twice then tighten the disc to 40 Nm.
- 11 Fit new 'O' ring **j** and oil seal **m** to the output shaft adjusting disc **h**. Grease the threads and screw the adjusting disc **h** into the ring **f**. Fit the ring to the front casing and tighten screws **Z** to the specified torque setting.
- 12 Tighten adjusting disc **h** to 120 Nm whilst rotating the output shaft, then release the disc.
- 13 Repeat step 12 twice then tighten the disc to 60 Nm.
- 14 Make sure that it is possible to rotate the output shaft by hand. If not, decrease the torque of disc **h** and/or **g**.
- 15 Refit pump **B** making sure that new 'O' rings **C** and **D** are held in position with grease. Tighten bolts **A** to specified setting.

Torque Settings

Item	Nm	kgf m	lbf ft
A	10	1.0	7
G	42	4.3	31
H	42	4.3	31
U	42	4.3	31
Z	42	4.3	31

PTO Clutch Dismantling and Assembly

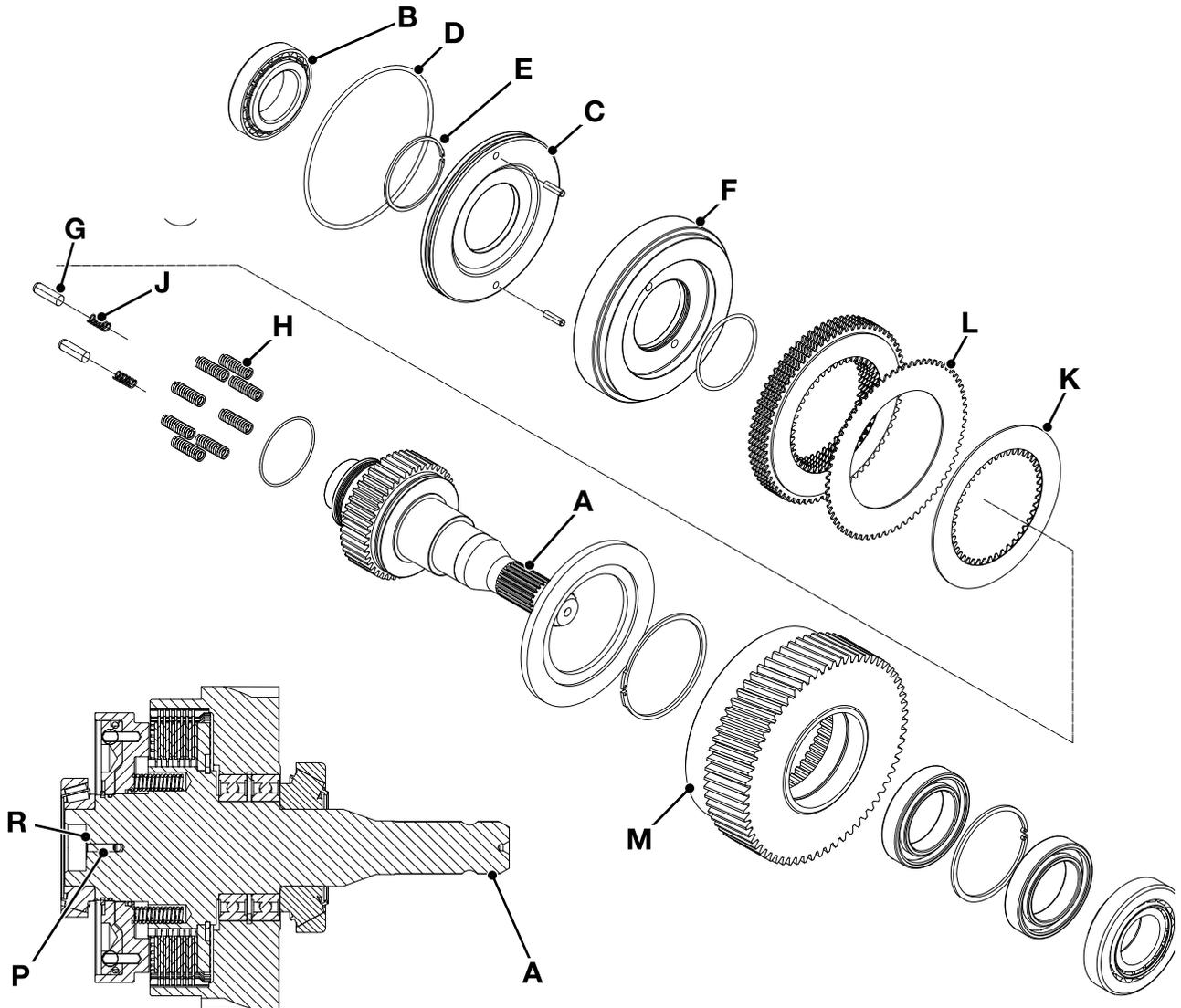


Fig 8.

- 1 Remove clutch from gearbox. [⇒ Dismantling \(A-4\)](#)
- 2 Clamp the clutch assembly in a press with the shaft **A** pointing downwards.
- 3 Lever off rear bearing **B**.
- 4 Check the condition of surface **R** which contacts bronze bush **N** [⇒ Fig 4. \(A-3\)](#) If this surface is damaged, renew the complete clutch assembly.
- 5 Using the press, apply light pressure to clutch piston **C** and remove circlip **E**, 'O' ring **D** and cylinder **F**.
- 6 Check that dowel pins **G** are free and not damaged.

- 7 Check length of springs **H** is 42.4 mm (1.67 in).
- 8 Check length of springs **J** is 22.5 mm (0.89 in).
- 9 Remove clutch from press and with shaft **A** pointing upwards, tip plates **K** and **L** out of the housing **M**.
- 10 Press shaft **A** out of the housing.
- 11 Clean and check all parts and sealing surfaces for wear or damage, especially dowel pins and mating surfaces of piston **C** and cylinder **F**. Renew all seals.
- 12 Check thickness of clutch pack and renew if worn, warped or damaged. Total thickness of new clutch pack is 28 mm (1.1 in). Minimum acceptable thickness of worn clutch pack for re-use is 24.2 mm (0.95 in).
- 13 Assemble paper plates **K** and metal plates **L** alternately, starting and finishing with a paper plate.
- 14 Refit springs **H** and **J** and dowel pins **G**, making sure that the rounded end of each dowel pin is pointing upwards.
- 15 Fit new 'O' ring **D**. Locate the piston and cylinder in the housing, apply pressure with the press and fit circlip **E**.
- 16 Check operation of the clutch by means of compressed air at **P**.
- 17 Refit bearings. → [Dismantling \(A-4\)](#)

