

UARA.3100 SPLIT SHAFT PTO USER MANUAL

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Safety Information

The following information is for your safety. Make sure to read and understand them before attempting to use the equipment.

General Safety Instructions

- ✓ Carefully read the user manual provided and take notice of the instructions indicated.
- ✓ The important sections for operator's safety and for prolonged product life are marked with symbols. Take notice of such symbols.
- ✓ Make sure to check if the instructions you follow and the tools you use are proper for the work you are engaging in.
- ✓ Never work alone when repairing or maintaining under the vehicle.
- ✓ Ensure to mount the parts properly.
- ✓ Never use worn or damaged parts.
- ✓ Do not attempt any modification on the split shaft PTO or any other drive components of the vehicle.

Instructions for Operation in Cold Weather

For prevention of injuries and damage to the gearbox;

- ✓ Check the drive components of the vehicle.
- ✓ Do not attempt to use drive components without warming up the vehicle for a minimum period of 5 minutes.

UARA.3100 Split Shaft PTO Features

UARA.3100 is a gearbox connected to the drive system of the vehicle, and provides:

- ✓ In forward gear mode; it has no effect on normal vehicle navigation.
- ✓ In reverse gear mode; it allows the railway vehicles to move at the same speed as forward gear mode.

Features:

- UARA.3100 has three axes.
- It has pneumatic control.

Technical Data

Input & Output

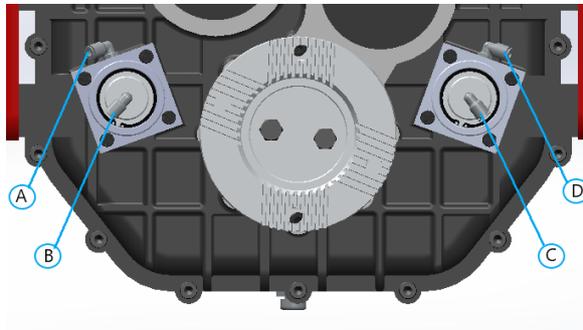
Maximum Torque	2000 Kgm
Maximum RPM	2500 Rpm



This split shaft PTO guarantees the indicated values provided that it is used in suitable conditions and safety rules are abided by.

Engage and Disengage

UARA.3100 Split shaft PTO is engaged-disengaged pneumatically with 4 single acting rotating pneumatic cylinder (6 – 8 bar). Engagement-disengagement process must be done after the main shaft is fully stopped. Reverse gear mode is engaged through two different synchronesh systems.



- A: Air Input (Reverse driving gear mode, Pre-engagement)
- B: Air Input (Reverse driving gear mode Pre-disengagement)
- C: Air Input (Engaging reverse driving gear mode)
- D: Air Input (Disengaging reverse driving gear mode& engaging forward driving gear mode)

Split shaft PTO operation functions and air input controls are as follows.

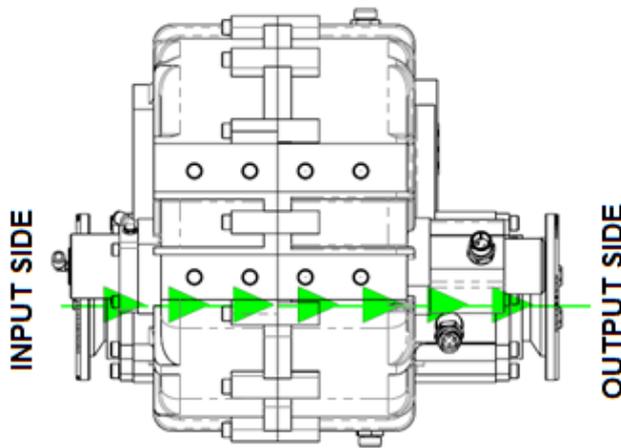


Figure 1

- 1) Forward gear driving function (Drawing 1); First (B) input is activated. (Reverse gear driving mode pre-disengagement). Then, (D) input is activated. Air supply must continue throughout this operation (Air inputs are defined on Figure 2).

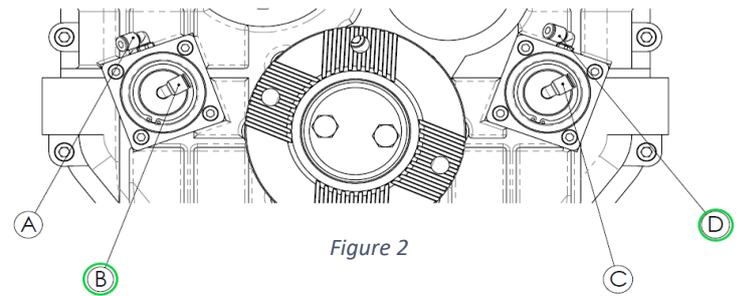
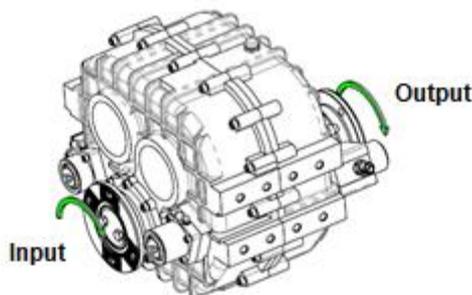


Figure 2



⚠ In this driving mode, the gear does not change the rotation. The rotation continues in the same direction.

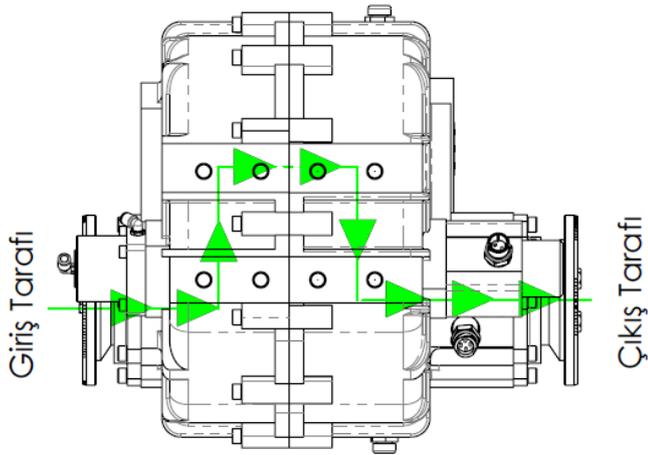


Figure 3

2) Reverse gear driving function (Drawing 3); First (A) input is activated.(Main drive is deactivated and reverse gear pre-engagement will be activated) Then reverse gear driving engagement will be completed by activating (C) input. Air supply must continue throughout this operation (Air inputs are defined on Drawing 4).

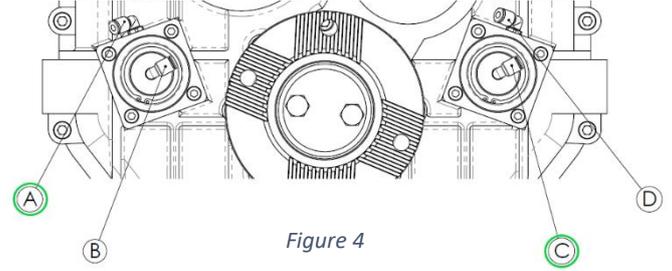
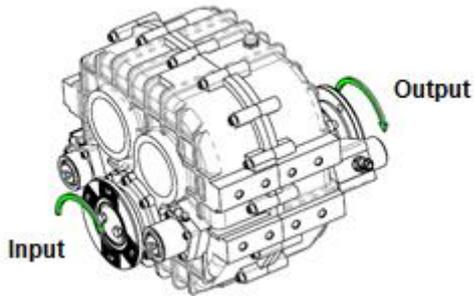


Figure 4



In this driving mode; gearbox main driving system rotation will be opposite to the input rotation.



The above engage-disengage operations are effected once the main shaft is totally still. Do not attempt to engage or disengage while driving. Damage resulting from engagement or disengagement done during drive is not under warranty coverage.

Split Shaft PTO Mounting

Oil must be added into the PTO before the mounting. After adjusting the position, the PTO must be fastened with suitable connection brackets and rubber pads on the connection holes. Make sure that the loadbearing direction of the pads are correctly aligned with this PTO (See Figure 1).

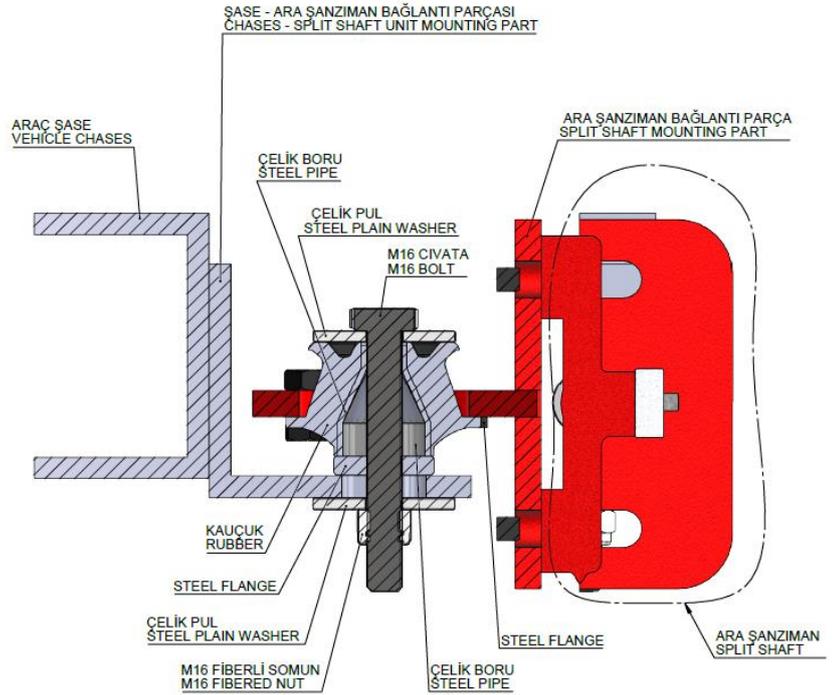


Figure 1

U-connection flanges and the centers indicated by arrows must be parallel to each other in planar sense. Such a position would prevent vibration and noise. The transmission shaft must be mounted accordingly. B_1 and B_2 angles must be identical. These angles vary depending on the chassis and operating rpm, however they must be between 3° and 7° (Ensure that the shaft manufacturers have provided shaft connections complying with operating rpm-connection angle values). It must be borne in mind that connections with bigger shaft angle would cause noise (See Figure 2)

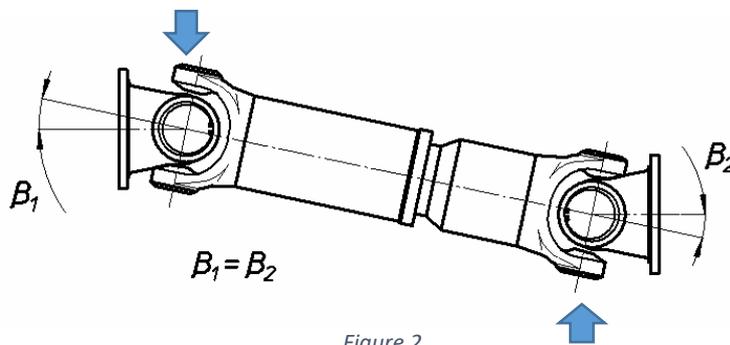


Figure 2

Mounting UARA.3100 split shaft PTO on vehicle driving system;

UARA.3100 split shaft PTO must be mounted keeping the proper angles of the shaft on vehicle chassis in mind. Existing shafts can be used by modification or can be provided brand new. In case of shaft modification, shaft balance should be adjusted properly. The proper installation of UARA.3100 is indicated on the Figure 3.

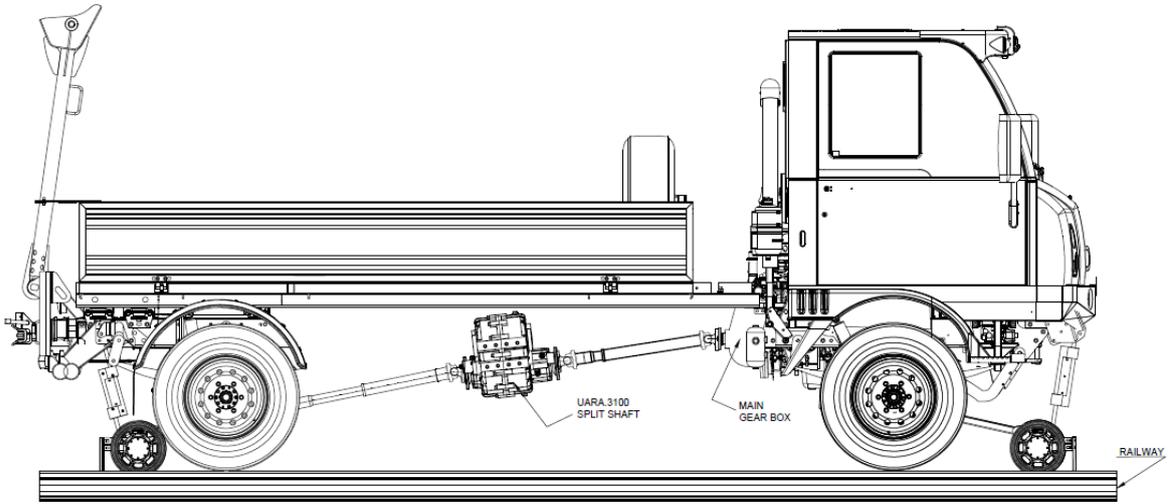


Figure 3

Servicing and Maintenance

Adding Oil

Split shaft PTOs are shipped without oil inside. Oil must be added into them before commissioning through the oil filling mechanism. The task must be performed on a flat ground. Oil must be added by checking the oil level indicator provided on the equipment. The oil must be completely clean. You should only use the recommended oil types

Recommended Oil Types

- 75W90 Gearbox Oil
- 80W90 Gearbox Oil



Oil capacity:

- 4,9 Liters



Oil use other than the recommended oil types would put the equipment out of warranty coverage.



The oil adding operation should be done by referring to the oil level indicator on the split shaft PTO. If the equipment does not have such an indicator, then fill oil to the extend recommended by KOZMAKSAN.

Oil Level Inspection

Oil level should be inspected referring to the oil level indicator on the split shaft PTO. The equipment periodic maintenance should be performed weekly, and maintenance works should also be done after long operation hours. The maintenance must be performed on ground level and when the engine is off. Add oil if the oil levels are below the required limit.

Oil Change

Make sure to drain the used oil completely before changing oil. It can be drained by opening the drainage cap. It is recommended to remove the filling cap to accelerate the process. The drainage cap must be cleaned before fastening it back. Care must be taken to have a new oil from the

types recommended. Mixing old and new oil would result in shortening gearbox oil life.

Oil Leakage Detection

Check for oil leakage periodically. Watch for oil leakage in vehicle operation site or surroundings. Upon detecting leakage, prevent it. After checking the available oil level, add oil into the equipment where necessary. Contact KOZMAKSAN if the oil leakage persists in spite of the intervention.



Avoid contacting the hot oil during oil change for your occupational health. Remember to use your required personal protective equipment during split shaft PTO maintenance keeping in mind the occupational health safety requirements. Act in accordance with the applicable regulations considering environmental protection concerns while disposing the used oil

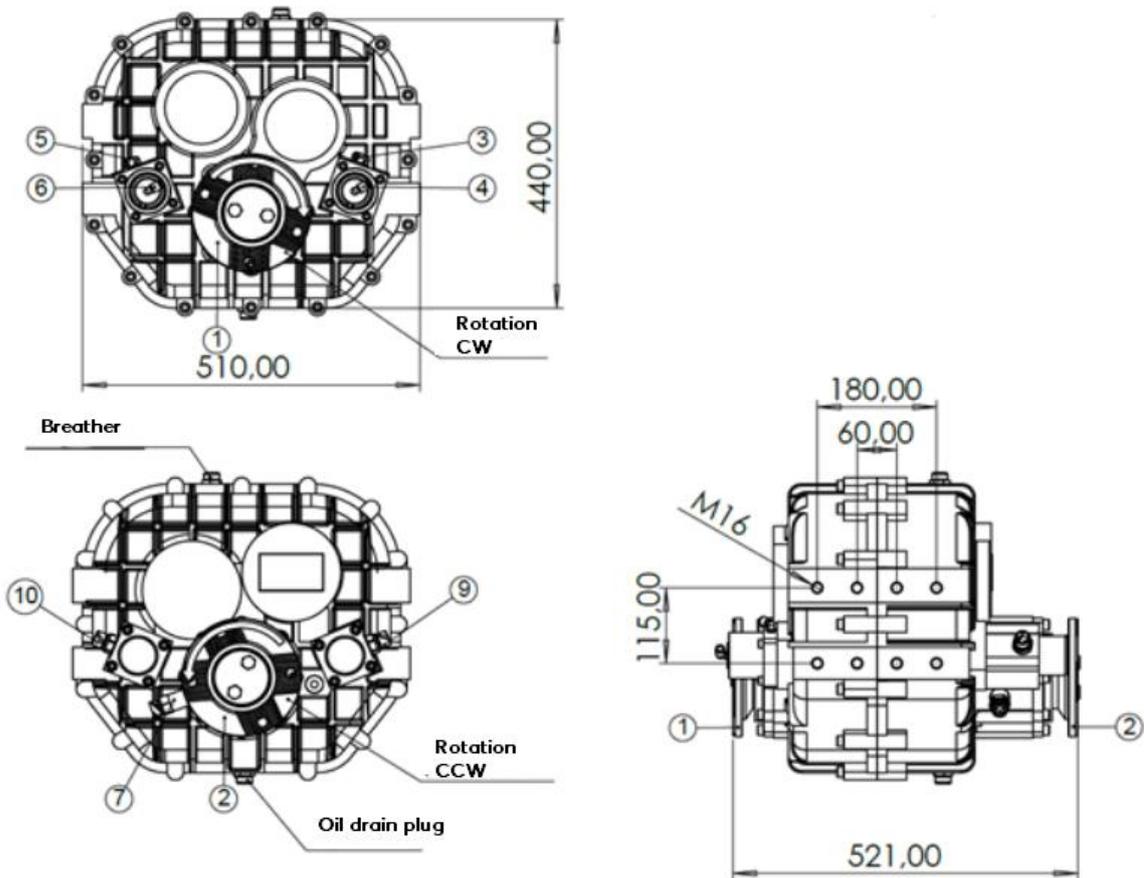
Maintenance Period	Actions
Regularly on a daily, weekly, monthly basis	✓ Regularly check the PTO for oil leakage.
First 100 Hours or 1 Month	✓ After 100 hours or 1 Month (whichever lapses first), change the oil.
First 700 Hours or 6 Months	✓ After 700 hours or 6 Months (whichever lapses first), change the oil.
1500 Hours or Annual Maintenance	✓ After 1500 hours or a year (whichever lapses first), change the oil.
3000 Hours or after 2 Years	✓ After every 3000 hours or after 2 years (whichever lapses first), change the sealing components (O-ring, seal etc.).
After 6000 Hours or after 4 years	✓ After every 6000 hours or after 4 years (whichever lapses first), change the sealing components and all bearings.

⚠ Do not forget that this is a technical product, and change the replacement parts on time for its maintenance. Check the components periodically. Inspect mounting components, transmission elements, drive and pump connection shafts. If required, tighten them again.

Precautions for Emergency

If you wish to disengage the split shaft PTO in case of emergency, use the emergency stop mechanism provided by the manufacturer of the vehicle superstructure. This has to be done only by pressing the vehicle clutch pedal.

Technical Drawings



Warranty Terms

1. Warranty period is one (1) years from the delivery of the product.
2. In the event that the product fails during the warranty period, the following shall apply:
 - Failure repair time is 1 to 8 working days depending on its nature. (Within Turkish Borders)
 - Where the repair time lasts more than 7 working days (except transportation time), a new product shall be supplied to the customer till the failure has been repaired.
3. Where a failure occurs within the warranty period due to the defects possibly arising from the manufacturing stages, the product shall be repaired free of charge in terms of servicing and replaced part price.
4. Warranty certificate has to be presented when asking for services for the products under warranty. Where the certificate is lost or not presented, then sales invoice (invoice with waybill) has to be presented.

Situations Which Terminate Warranty Obligations

The warranty obligations shall become null and void in following situation:

1. Using the product for a purpose other than the intended use,
2. Changes to the product that are not approved by us,
3. Digression from defined specifications and reference limits,
4. Selling to third parties one or more products not bearing our approval,
5. Failing to perform indicated product maintenance,
6. Having a service provider, other than the manufacturer or trader, repair, carry out maintenance works or replace parts of the product within the warranty period,
7. Using the product against the usage terms set forth in the usage instructions,
8. Where the product is damaged due to the mounting.