

MANUAL

# IRRIGATION PUMP

## BCI



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## PRESENTATION

### Dear Customer

**Thank you for choosing our brand and product. The IRRIGATION PUMP is an equipment from the AGRIMEC Irrigation Preparation line, developed with proprietary technology and refined through extensive field work.**

**We prepared this manual including the product as a tool for your reference.**

### MANUAL

This manual provides guidelines on assembly, setting, operation, safety, transport, maintenance, and warranty of AGRIMEC equipment. Please be familiar with your equipment, as we believe this optimizes all the aforementioned stages, avoiding unnecessary costs and achieving the expected performance of the product. The information contained in this manual is in plain language for easier understanding. We recommend that you share this manual with **tractor drivers, operators, and maintenance technicians.**

Observing the indicated procedures is essential to avoid failures or potential problems caused by improper use of the product.

## 1.INDICATION

The Irrigation Pump is ideal for a variety of applications, including flood irrigation in rice fields, draining or filling reservoirs, swamp drainage, transferring large volumes of water between tanks, and drying floods in mines. When coupled with a tractor, it becomes practical for water recovery in various locations, proving to be cost-effective for both shortterm and long-term operations. Its ease of operation, transport, maintenance, and versatility make this pump a highly useful product for rural companies.

## 2. COMPOSITION

Pumps were designed to operate at low rotation. The impeller's (2) diameter and the vane's shape and curvature provide smooth operation and high efficiency. Its oversized casing (1) is designed to be mounted on the tractor's three-point hitch or used in stationary applications. PTO-powered, with a cardan shaft (3) drive; it achieves an economical lift of up to 7 meters. It features an easy-to-maintain shaft sealing system with a gasket.

When powered by either an engine or the tractor with a rotational speed enhancement system, the Pump can withstand lifts of up to 14 meters, except for the BCI 300E model, which can reach heights of up to 20 meters. It comes with a 1.5-meter suction pipe (4), a 45-degree flanged elbow, and a foot valve with a strainer, as shown in Figure 01 below.

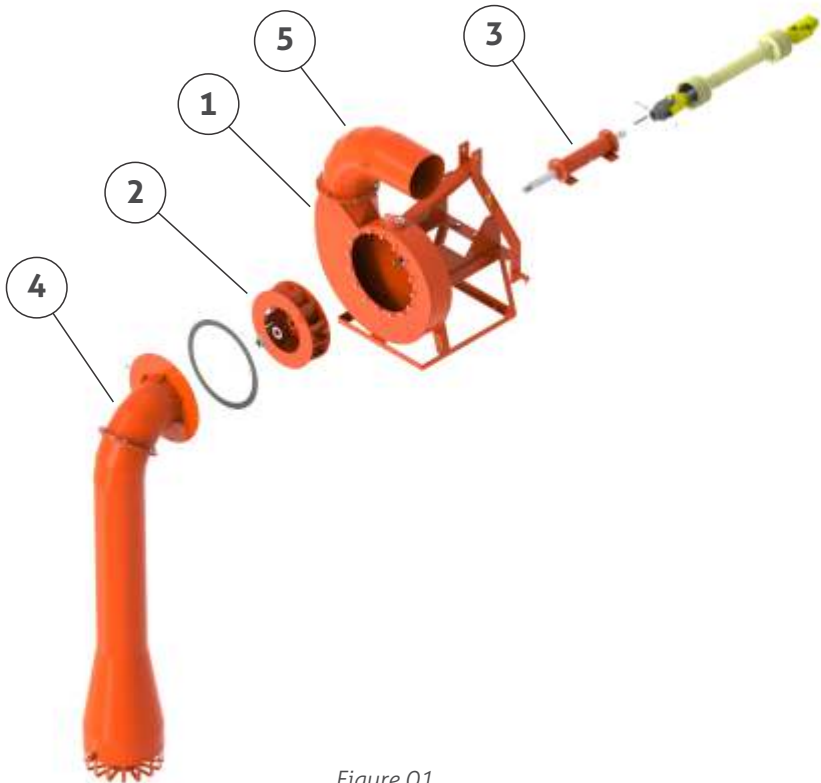


Figure 01

### 3. TECHNICAL SPECIFICATIONS

This manual applies to BCI 200, BCI 250, BCI 300, BCI 400, and BCI 500 irrigation pumps.

<b>BCI Models</b>	<b>200</b>	<b>250</b>	<b>300</b>	<b>400</b>	<b>500</b>
Length (mm)	1.100	1.200	1.200	1.330	1.480
Width (mm)	850	900	900	1.050	1.350
Height (mm)	1.250	1.350	1.400	1.500	1.800
Suction pipe (mm)	200	250	300	400	500
Pressure pipe (mm)	200	250	300	400	500
Foot valve (mm)	240	320	380	550	660
Maximum lift at 540 RPM PTO (m)	8	8	8	8	8
Maximum lift at 940 RPM	20	20	20	20	18
Maximum flow rate* (m <sup>3</sup> /h) (l/s)	400 (111)	650 (180)	800 (222)	1.200 (333)	1.980 (550)
Maximum suction (mCA)	7	7	7	7	7
Irrigation capacity (hectares)	70	114	140	210	330
Approximate weight (kg)	160	190	210	290	560
Rated speed (RPM)**	540	540	540	540	540
Drive	TDP	TDP	TDP	TDP	TDP
Minimum power (hp) (kw)	40 (30)	65 (49)	80 (59)	130 (97)	160 (120)

## 4. RISK PREVENTION

Note there are some stickers on the equipment. Attention stickers are in yellow (figure 02). Warning stickers are in blue (figure 03). These stickers contain important safety and operating information, as well as lubrication points.



Figure 02 - Attention Labels.

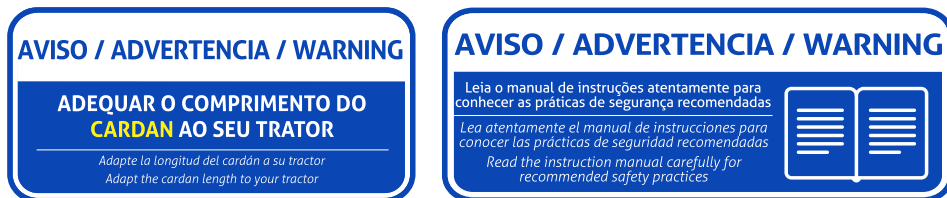


Figure 03 - Warning Labels.

## 5. SAFETY RECOMMENDATIONS

Every operation involves some level of risk, no matter how small. Therefore, we recommend, for the safety of the user/operator, making the necessary adjustments as per this manual, taking appropriate precautions to prevent work accidents.

### Before operating with the equipment

- ✓ Conduct a survey of the area where the equipment will be operated to identify potential obstacles and areas that may pose risks.
- ✓ Make sure no parts are in poor working conditions.
- ✓ Check if the equipment is well lubricated and the bolts are properly tightened

- ✓ When coupling it to the tractor, maneuvers should be done at idle speed and in a spacious area.
- ✓ If you are tired or unwell, refrain from operating the equipment, and avoid pushing your workday beyond your physical limits. Accidents are proven to increase under conditions of extreme fatigue.
- ✓ Be familiar with all the components of the tractor you are going to conduct;
- ✓ Make sure the transmission is properly coupled to the tractor PTO shaft and the pump shaft;
- ✓ Make sure all transmission, tractor, and pump shaft guards are in place and working properly;
- ✓ Shut the engine down and take out the keys from the ignition before carrying out any maintenance on the equipment;
- ✓ **Never** transport people on the pump frame.

### During the transport

- ✓ Make sure all the pins and other fasteners are properly tightened;
- ✓ Never let the pump cardan shaft coupled to the tractor's power take off (PTO);
- ✓ When the cardan shaft is uncoupled from the tractor, make sure it is attached to the support intended for it;
- ✓ When moving the equipment on roads, do not exceed the maximum speed limit recommended for agricultural machinery, which is 18 Km/h, in accordance with international safety rules;
- ✓ **Never** offer to ride on the tractor or equipment;
- ✓ **Any recklessness can be fatal.**

### During the operation

- ✓ Never operate at a rotation above 540 RPM;
- ✓ **Keep the suction pipe FULLY submerged before turning the PTO on and starting the operation;**
- ✓ Always wear PPE (Personal Protective Equipment) for your safety;
- ✓ Make sure you are familiar with all the controls on the tractor;
- ✓ Make sure there are no people or animals nearby when starting the operation;
- ✓ Never make any coupling, adjustment, lubrication or repair with the equipment moving or the tractor on.
- ✓ Turn off the power take off (PTO) when making a U-turn or a turn;
- ✓ Do not wear loose clothing with belts, flaps or parts that can catch on moving parts;

- ✓ Do not remove the cardan shaft cover guard. One of the main causes of accident with crushed limbs is the operation of the machine with the cardan shaft unprotected. Never do that. Attach the chains to the cardan shaft in such a way that they allow the transmission to link in all working and transport conditions;
- ✓ Avoid bearing weight or stepping on the transmission and its guards;
- ✓ **Never** enter the working area of the transmission while it is in motion. Contact may lead to severe accidents;
- ✓ Keep away from the linkage between the equipment and the tractor while it is in motion;

## 6. ASSEMBLY

- ✓ Carry out the assembly on a flat and/or level
- ✓ ground. Do not stand under **suspended parts**.

Centrifugal Pumps are factory- preassembled. You just have to assemble the Suction pipe (6) to the Suction Elbow (7), as shown in the figure 04 below.

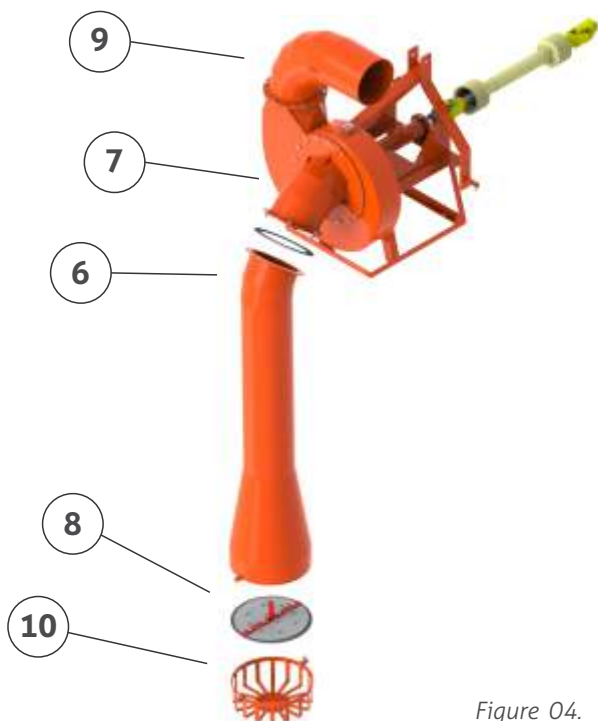


Figure 04.



## 7. SETTING

With the Pump properly coupled, adjust the direction of the suction pipe (4) by positioning the 45° elbow (7) and the straight suction pipe (6). If the suction pipe (4) is inclined, check the position of the check valve (8) at the base of the pipe.

The leaning angle **must not exceed 45°**, as shown in figure 05 below, as the check valve (8) required this leaning angle to perform its function. The check valve must be completely submerged such that air does not enter the piping.

Suction and pressure pipe extensions can be supplied as options.

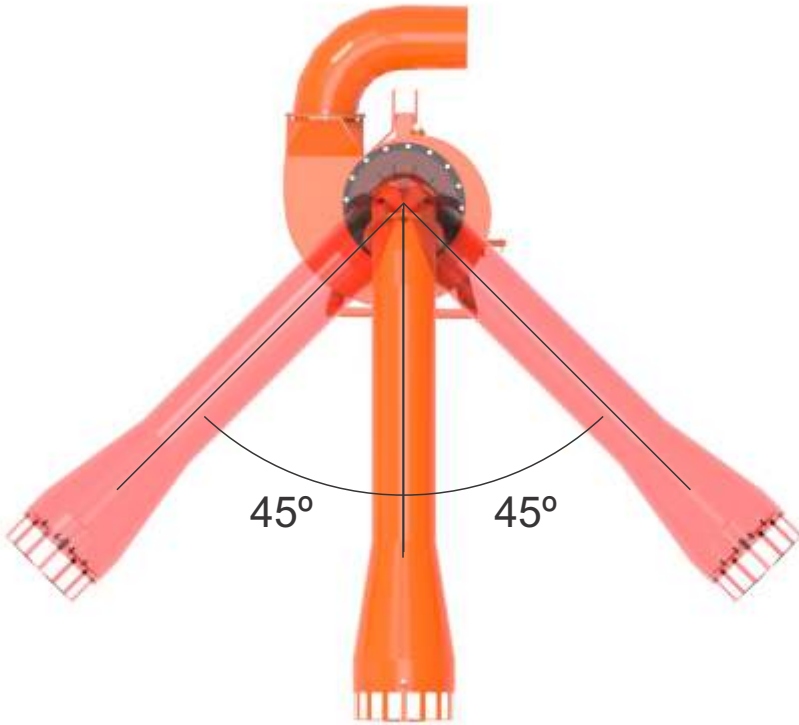


Figure 05.

Once the system is assembled, prime the pump by pouring water into its body until it is completely filled. To do so, make sure the check valve (8) on the pump is fully closed and add water through the plug (9) at the top of the pump body until it is full.

This procedure allows the pump to work perfectly without an initial shock, preserving the pump's structure. The Pump was designed to operate at 540 RPM and a maximum height of 8 meters, per figure 06 below.

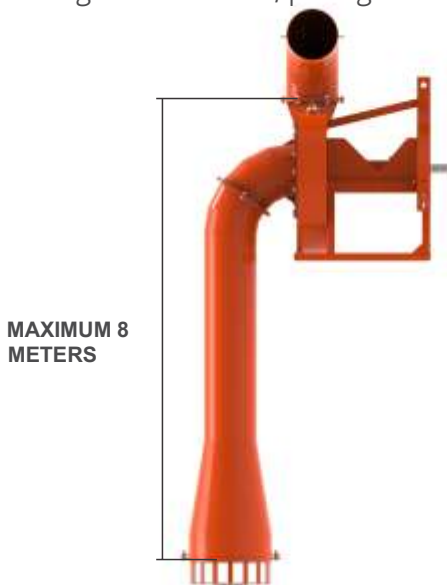


Figure 06.

## 8. COUPLING THE PUMP TO THE TRACTOR

Always on a flat ground, couple the pump shaft as follows:

- ✓ Position the lower arms of the tractor's three point hitch and attach to the pump and lock with the linch pins;
- ✓ Adjust the top rod of the threepoint hitch so that the pump is in a vertical position, perfectly level;
- ✓ Attach the cardan shaft to the tractor using the splined sleeve and check the connection between the cardan shaft and the pump shaft using the key and the through bolt;

**✓ Only use cardan shafts with the plastic guard and chain, to prevent the guard from rotating.**

## 9. OPERATION

- ✓ Do not start work until the water pump has been completely filled (primed), as described in the setting procedure;
- ✓ Periodically check the oil level in the Transmission Bearing (3);
- ✓ Check flange seals. When activated, check for water leaking from the flanges or air entering through the Suction Pipe (4). Replace any damaged flanges, retighten screws and close pipe holes.

## 10. MAINTENANCE

To extend service life and avoid interruptions in operation, we recommend some basic precautions:

- ✓ Check the condition of the shaft seal gasket, tighten the adjusting nuts or replace if water leaks;
- ✓ Check the check valve (strainer) (8) for perfect opening and closing and replace if there are any sealing problems;
- ✓ Stop the engine every day and clean the mesh (10) in the pump suction to prevent debris from hitting the impeller (2);
- ✓ Re-tighten all bolts and nuts after the first 24 hours of service;
- ✓ Check the tightness of nuts, bolts, plugs, caps, and other fasteners daily;
- ✓ Check the fastening of pins and other moving parts of the equipment daily;
- ✓ Check the cardan shafts and their respective cover guards daily;
- ✓ Avoid working with parts in improper conditions. Replace worn or damaged parts with genuine parts;
- ✓ Check the oil level daily and for leaks and noises in the fluid and lubricant storage components;
- ✓ Lubricate the lubrication points with grease and oil at the intervals indicated in the lubrication guide.

## 11. FLUIDS AND LUBRICANTS

Components with lubrication points are indicated in the lubrication guide.

### 11.1. LUBRICATION GUIDE

Use multi-purpose grease with consistency grade 2 or 3 (according to NLGI standard) and **water resistance** as indicated in item 11.

The drive shaft, item 3, contains SAE 140 API GL oil – 0.5 liter.



**Lubricate every 8 hours of operation.**

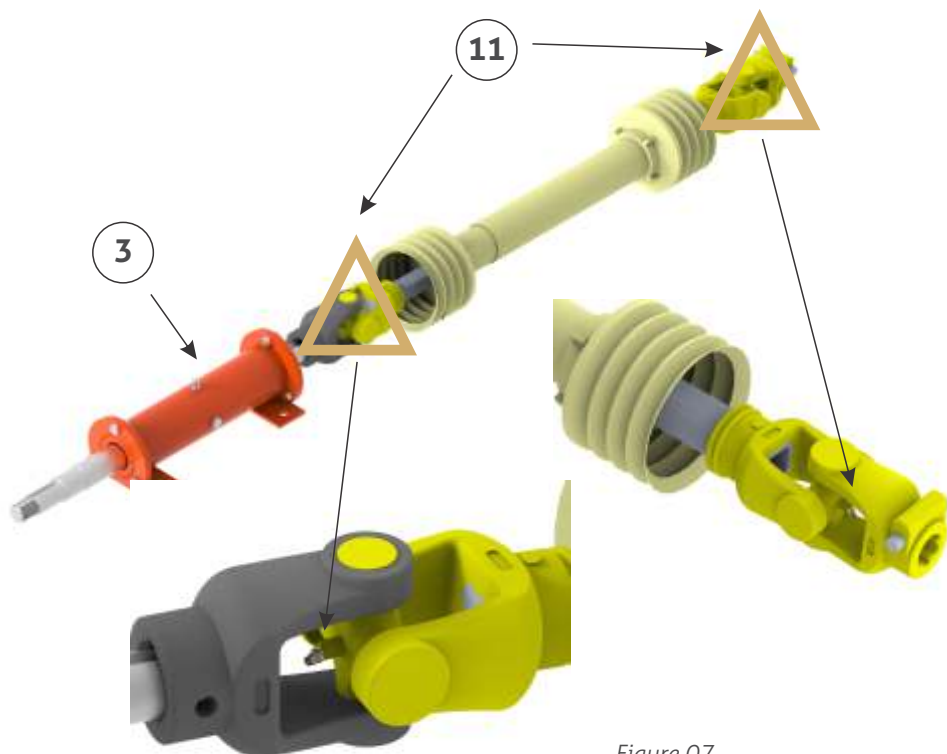


Figure 07.

## 12. WARRANTY

AGRIMEC offers a warranty against any manufacturing defects in the product that appear within a period of 12 months from the date of issue of the sales invoice to the customer. When claiming the warranty, inform the serial number contained in the nameplate (figure 19).



Figure 08: Nameplate.

During the warranty period, do not modify parts or allow third parties to carry out any change to the equipment without the formal authorization of the manufacturer.

In the event of an inspection by our technical staff, they will observe whether the equipment has undergone overload, improper operation, modifications, improper or no maintenance, which will renders this warranty NULL AND VOID. To maintain the benefits of the warranty, the owner should follow the guidelines described in this manual.

**NOTE: Parts presenting wear and tear are not covered by the warranty.**

- **AGRIMEC is responsible for any defects arising from the manufacturing process of the equipment;**
- **AGRIMEC declines any liability for any damage resulting from incorrect or improper use of the equipment.**

### 13. SPARE PARTS

You can order them directly from factory. Contact us via the channels below for any inquiry, doubt, or order:



+55 55 3222-7710  
 +55 55 99915-8924  
 +55 55 99648-7969  
 pecas@agrimec.com.br

**IN CASE OF WARRANTY CLAIM:**  
 +55 55 99983-1590  
 assistencia@agrimec.com.br

The User Manual includes the spare parts catalog. All the items that make up this equipment are identified in the catalog through pictures and tables, making customer service faster.

### 14. IMPROVEMENTS AND CHANGES

AGRIMEC, attentive to the specific demands of a constantly changing agriculture, continuously tests its products, perfecting them through field operations, which guarantees its excellent *know-how*. As a manufacturer, AGRIMEC informs you that it may make changes to its products without prior notice and is not obliged to change the batches already produced.

### 15. POSSIBLE OCCURRENCES

We list some causes of fault or malfunction below:

PROBLEM	POSSIBLE CAUSE	SOLUTION
Water is not pumping	There is air in the suction pipe	Immerse the entire check valve and prime again
	Insufficient priming	Drain until the water pump body is complete
	Clogged mesh	Inspect the valve mesh and remove any debris that prevents the water to pass

PROBLEM	POSSIBLE CAUSE	SOLUTION
Water is not pumping	Damaged check valve	Check the opening and closing of the valve, replace if there are sealing problems
		Check the opening and closing of the valve, replace if there are sealing problems
	The suction pipe has a leaning angle above 45°	Position the suction pipe at a leaning angle below 45°
Excess noise	Insufficient bearing oil level	Check for leaks and top up oil if necessary
	Loose bearing bolt	Tighten bolt bearings
Water is leaking	Flange nuts with poor tightening	Check and tighten nuts and bolts that secure the flange
	Damaged or poorly fitted sealing	Check seal fit and replace if damaged
	Holes in pipes due to use	Check for holes and seal them if there are any
	Damaged flange	Check the flanges and replace them if necessary





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