CNP CDLF Vertical Multistage Pump Installation Manual

CDLF 2
CDLF 4
CDLF 8
CDLF 15
CDLF 20

CE

1. Introduction

Congratulations on your purchase of a CNP CDLF vertical multistage pump.

The CDLF Vertical Multistage has been part of the White International Product suite since 2008, first branded as Bianco CDLF and since 2010 as its own brand, CNP.

In this time, the cost effectiveness, quality and reliability of the product has been outstanding. Matched with the Bianco iCon pump control products, CNP Vertical Multistage delivers where it matters.

The CDLF is a vertical in-line (non-priming) multistage centrifugal pump with full stainless hydraulic parts and high efficiency impellers with a motor shaft close coupled to the pump shaft.

Suitable for pumping CLEAN, non-aggressive liquids without fibres in a variety of industries and in many applications.

- Pressure boosting
- Water supply for domestic, industrial, commercial or rural

  Agriculture, Horticulture, Viticulture – transfer, irrigation, wash down, water treatment

  Sprinkler/Firefighting, Boiler feed, HVAC, Food and Beverage, Seawater pumping.

ISO 7010 Symbols used in this manual

	Warning - Electrical safety
	Warning – Potential consequences of use outside of intended application(s). Includes environmental condition warnings.
	Mandatory warning
	Warning to disconnect power
	Read carefully

2. Contents

3. Warnings

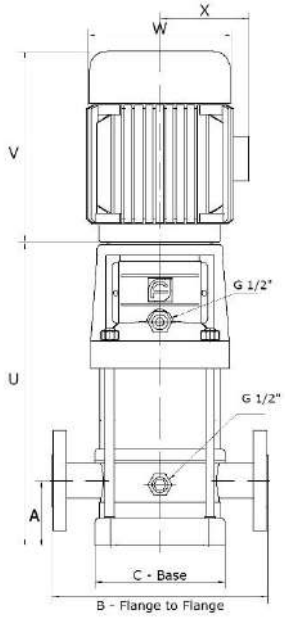
	Read the manual carefully before starting and retain for future reference.
	Prior to starting installation or any maintenance the pump must be disconnected from the power supply and pressure relieved from the system including controller, pump and associated pipework.
	Any changes or modification to the wiring must be carried out by suitably qualified personnel in accordance with all local regulations.
	A qualified electrician should correctly size and install circuit breakers to protect the power supply. The fitment of additional surge protection is recommended.
	Never open the pump terminal box cover while the pump controller is connected to electrical supply.
	This product is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
	To avoid excessive thermal shock to the motor the pump should not start more than 20 times in any one hour period.

4. Technical Specifications, materials and dimensions

Construction materials	
Pump base and Motor support – Cast Iron	Motor coupling - Carbon Steel
Shaft support bearings – Tungsten Carbide	Mechanical seal - Silicon Carbide/Carbon/EPDM
Suction and discharge casing, Pump shaft, Outer sleeve, Impeller sleeve, Impellers – 304 Stainless Steel	
Liquid temp: -15° to 70°C Max Ambient temp: 1Ph 45°C 3Ph 40°C Insulation Class F IP55	

Model	Item Code	P2 Shaft kW	Input Voltage	Full Load Current	Cap uF	Inlet/Outlet	Max Flow	Max Head	Nominal Weight
CNP CDLF 2 - 9 M	600144	1.1	1ph 240V	6.38A	30	PN25 / DN25 Dia 32	58lpm 3.5m³/hr	88m	28kg
CNP CDLF 2 - 13 M	600143	1.5	1ph 240V	8.08A	30			124m	35kg
CNP CDLF 2 - 18 M	701200	2.2	1ph 240V	12.0A	40			175m	41kg
CNP CDLF 2 - 18 T	701201		3Ph 415V ⅄	4.25A					
			3Ph 240V Δ	**7.36A**					
CNP CDLF 4 - 8 M	701226	1.5	1ph 240V	8.08A	30	PN25 / DN25 Dia 32	116lpm 7.0m³/hr	80m	33kg
CNP CDLF 4 - 8 T	701228		3Ph 415V ⅄	3.02A					
			3Ph 240V Δ	**5.23A**					
CNP CDLF 4 - 10 M	701214	2.2	1ph 240V	12.0A	40			102m	37kg
CNP CDLF 4 - 10 T	701216		3Ph 415V ⅄	4.25A					
			3Ph 240V Δ	**7.36A**					
CNP CDLF 4 - 12 M	701217		1ph 240V	12.0A	40			120m	38kg
CNP CDLF 4 - 12 T	701218		3Ph 415V ⅄	4.25A					
			3Ph 240V Δ	**7.36A**					
CNP CDLF 4 - 16 T	701220	3.0	3Ph 415V ⅄	5.7A				158m	48kg
			3Ph 240V Δ	**9.9A**					
CNP CDLF 8 - 6 M	701242	2.2	1ph 240V	12.0A	40	PN25 / DN40 Dia 50	200lpm 12.0m³/hr	65m	45kg
CNP CDLF 8 - 6 T	701243		3Ph 415V ⅄	4.25A					
			3Ph 240V Δ	**7.36A**					
CNP CDLF 8 - 8 T	701244	3.0	3Ph 415V ⅄	5.7A				88m	53kg
			3Ph 240V Δ	**9.9A**					
CNP CDLF 8 - 10 T	701235	4.0	3Ph 415V	7.3A				108m	64kg
CNP CDLF 8 - 12 T	701237		3Ph 415V					130m	66kg
CNP CDLF 8 - 14 T	701239	5.5	3Ph 415V	9.8A				151m	81kg
CNP CDLF 15 - 6 T	701195	5.5	3Ph 415V	9.8A		PN25 / DN50 Dia 50	360lpm 21.5m³/hr	82m	78kg
CNP CDLF 15 - 8 T	701196	7.5	3Ph 415V	13.3A				110m	86kg
CNP CDLF 15 - 10 T	701192	11.0	3Ph 415V	19.4A				138m	157kg
CNP CDLF 20 - 5 T	701198	5.5	3Ph 415V	9.8A		PN25 / DN50 Dia 80	466lpm 28.0m³/hr	69m	76kg
CNP CDLF 20 - 7 T	701199	7.5	3Ph 415V	13.3A				97m	84kg

Model	Footing	Flange	Centre Height A	Flange to Flange B	Base Length C	Base Width D
CNP CDLF 2 - 9	180 W X 100 L 4 x Φ13mm	Φ115 4 x Φ18 100PCD	75mm	250mm	150mm	210mm
CNP CDLF 2 - 13						
CNP CDLF 2 - 18						
CNP CDLF 4 - 8		Φ140 4 x Φ18 100PCD				
CNP CDLF 4 - 10						
CNP CDLF 4 - 10						
CNP CDLF 4 - 12						
CNP CDLF 8 - 6	180 W X 110 L 4 x Φ14mm	Φ150 4 x Φ18 100PCD	80mm	280mm	199mm	247mm
CNP CDLF 8 - 8						
CNP CDLF 8 - 10						
CNP CDLF 8 - 12						
CNP CDLF 8 - 14						
CNP CDLF 15 - 6	215 W X 130 L 4 x Φ14mm	Φ165 4 x Φ18 125PCD	90mm	300mm		
CNP CDLF 15 - 8						
CNP CDLF 15 - 10						
CNP CDLF 20 - 5						
CNP CDLF 20 - 7						



5. General Cautions and advice

5.1 Fitment, servicing and replacement must be carried out by competent, skilled and qualified personnel.

5.2 Running the pump without water or allowing the pump to run dry will damage the mechanical seal, voiding the warranty.

5.3 Pumps and control devices installed in locations susceptible to insect infestation should ensure there is pest control plan in place.

5.4 The pump is designed for use with clean water. Contamination including sand or mineral deposits may affect the operation of the pump and shorten its life expectancy.

5.5 Protect the pump and any control devices from rain and moisture and minimise exposure to extremes of heat and cold. The technical specifications include the recommended air and water temperatures.

5.6 Avoid situations where the pump could be exposed to corrosive liquids or gasses, or to flammable materials, solvents etc.

5.7 Ensure the maximum pump pressure and maximum inlet pressure values are respected.

5.8 Maximum pump starts not to exceed 30/hr evenly spaced up to 3kW motor power. 3kW and greater 20 starts per hour evenly spaced.

Model	Maximum Pump Pressure	Maximum Inlet Pressure
CNP CDLF 2 - 9	**25 bar**	15.0 bar
CNP CDLF 2 - 13		10 bar
CNP CDLF 2 - 18		6 bar
CNP CDLF 4 - 8		15.0 bar
CNP CDLF 4 - 10		15.0 bar
CNP CDLF 4 - 10		10.0 bar
CNP CDLF 4 - 12		6 bar
CNP CDLF 8 - 6		18.5 bar
CNP CDLF 8 - 8		16.0 bar
CNP CDLF 8 - 10		14.0 bar
CNP CDLF 8 - 12		12.0 bar
CNP CDLF 8 - 14		10.0 bar
CNP CDLF 15 - 6	**22 bar**	13.5 bar
CNP CDLF 15 - 8		11.0 bar
CNP CDLF 15 - 10		8.0 bar
CNP CDLF 20 - 5	**25 bar**	18.0 bar
CNP CDLF 20 - 7		15.0 bar

If the pump is starting and stopping excessively check the system for leaks or residual low demand. Fitting a suitably sized and rated pressure accumulator will reduce pump cycling.

5.9 In continuous operation, best pump reliability, efficiency and longevity will be achieved with the pump operating between 50 – 130% of the pump rated flow.

i.e. CDLF**8** rated flow **8**m3/hr (133 lpm). 50% = 66lpm 130% = 173 lpm

6. Electrical Connections – Mandatory Warning

Always use an electrical outlet that is protected by Residual Current Device (RCD) Safety Switch with a trip current of 30mA or less. A Safety switch is required by Australian/New Zealand Standard AU/NZS 60335.1-2011.

6. Electrical Connections

Single Phase motors are supplied with a suitably rated power cord and plug

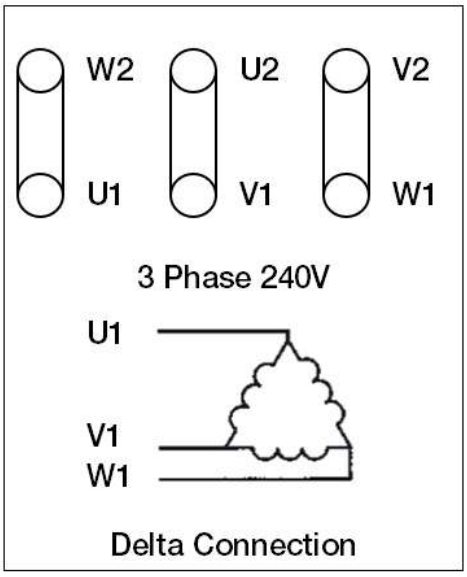
Refer to the motor data plate for electrical information (frequency, voltage, nominal current).

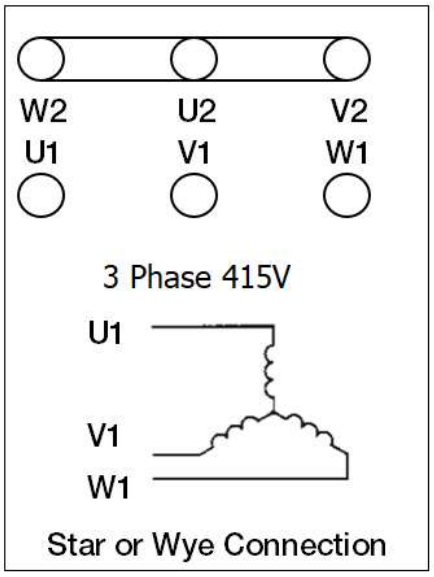
All motors must be protected by a circuit-breaker or contactor with overload set to the current marked on the motor data plate.

Ensure an isolating switch is fitted which complies with local standards.

It is strongly recommended to fit protective device(s) which protect against voltage fluctuations, running outside of reasonable current variances and in the case of 3 phase motors, provide loss of phase protection

Three phase motors 3.0kW and below can be configured 3Ph 415V or 3Ph 240V





ENSURE THE PUMP IS WELL EARTHED

The pump motors can be connected to a soft starter or variable frequency drive.

The drive must not generate a peak change of voltage dV/dt more than 500 V/ms as this would cause noise and damage the motor windings. In cases approaching or exceeding this guideline value place an IC (inductance-capacitance) filter between the drive and the motor

7. General installation notes

Handle the pump carefully avoiding shock loading or knocks which could alter the alignment of the pump hydraulic assembly.

It is possible to remove the bolts securing the motor and rotate to re-position the terminal box. Extreme care must be exercised to ensure the pump alignment is maintained.

Before installation, inspect the pump for any shipping damage. Remove protective inserts from pump ports before fixing.

Choose a pump location with a firm base as close to your water source as possible and close to a suitable power supply.

The pump should be housed in a weatherproof, free draining, well vented enclosure to protect it from the extremes of temperature, moisture, flooding, chemicals, vermin and insects, dust etc.

Allow a minimum of 150mm around the pump to ensure effective cooling.

Arrows on the inlet/outlet casting indicate the direction of flow.

Ensure the pump is mounted with pump motor uppermost and bolted down securely preferably on a concrete base.

Reinforced rubber or other suitable material(s) can be installed under the pump footing to reduce noise transference. Care must be taken that the pump is installed plumb to the vertical.

Avoid strain on the pump casing by supporting your pipework.

8. Intake (suction) piping notes

The intake suction piping is the most critical part of any installation. Errors or leaks will cause significant issues for performance and pump reliability.

Hydraulic connections

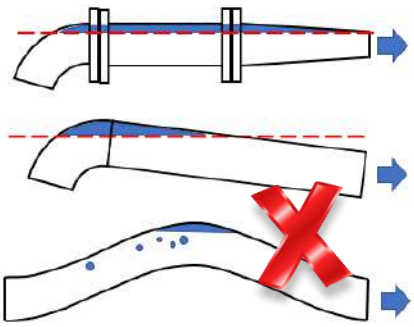
- The diameter of the suction piping must **never** be less than the pump inlet.
- The inlet pipe must be a short and straight as practical.
- Avoid features such as unnecessary tapers or bends as they create head losses.
- The suction pipe must be fully airtight under negative pressure.
- The suction line should rise continuously from the water source to the pump in order to avoid vapor locks.

Pumps operate more efficiently with positive suction.
Multistage pumps generate suction lift but lack self-priming ability.
Where a pump is installed with a suction lift, ensure the suction line is kept as short as possible and the pipe diameter is at least one size larger than the pump inlet.
Every care must be taken in suction lift situations that the pump does not lose prime.
Consult the pump data sheet for the pump NPSH performance

Reminders of best practice:

Inlet pipe size must be equal to or larger than the inlet port size.

Note that intake pipes which are too small, too long or must lift significantly result in a substantial reduction from the pump rated duty.

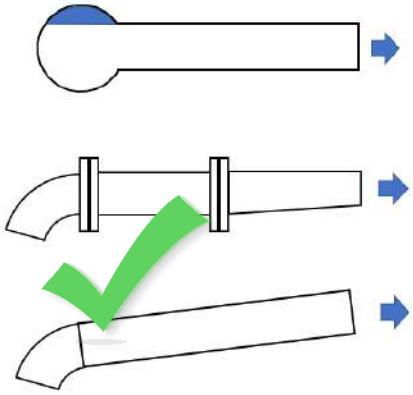


If the suction line is quite long fit an isolating valve close by the pump.

A non-return valve in the suction line is recommended.

Avoid bends within [5 x pipe diameter] of the inlet port.

Avoid pipework which results in air pockets.



9. Priming, Start Up Checks and Operation

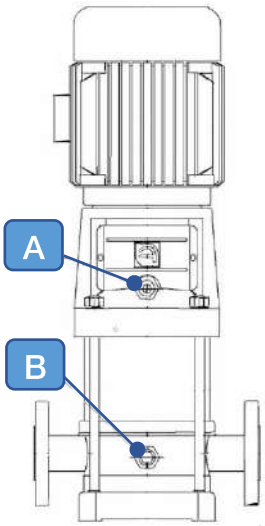
Protection against dry running

Ensure a suitable device is fitted to prevent dry running and protect against loss of prime occurrences.

Pump Priming

Flooded suction installations

- Close the discharge valve.
- Unscrew the bleed plug fitted to pump head.
- Gradually open the valve on the suction line and allow the pump to fill completely.
- Once water is flowing out freely, and all air has been eliminated, screw the bleed plug back in.



Pump with suction lift – *check the pump data sheet for the NPSH curve.*

- Close the discharge valve.
- Open the suction valve (if fitted).
- Remove the prime / bleed plug A on the main body of the pump.
- Unscrew the bottom drain / priming plug B on the pump casing four or five turns.
- Put a funnel into the bleed plug and slowly and completely fill the pump and the suction pipe.
- When water flows out and all air has been eliminated, filling is complete.
- Screw the bleed plug and the bottom drain and priming plug back in.

9a. Priming, Start Up Checks and Operation cont.

Check direction of rotation

Remove one of the shaft coupling protective covers. With the power disconnected, turn the coupling by hand to make sure that it turns freely. Refit the cover

Start the motor briefly.

The direction of rotation is indicated by the arrow on the pump head.
Viewed from above and looking down at the motor fan, the shaft movement should be anti-clockwise.

Note that a pump running in reverse will pump liquid,
but the performance will be nowhere close to the design expectation.

Post Priming

- Unscrew the prime plug A and top up the water in the pump.
- If necessary, repeat this operation until all air is expelled from the pump.

Initial Start Up

The pump must not be operated in a no-flow condition (discharge valve closed) formore than 5 minutes with cold water.

- To avoid the formation of a gaspocket at the top of the pump a minimum flow around 10% of the rated capacity of the pump is recommended.
- A pressure gauge will enable you to assess the stability of the discharge pressure.
- When discharge pressures are unstable, bleed the pump again or repeat the priming operation.
- Check that the current draw does not exceed the value marked on the motor data plate.

Servicing

No special servicing is required in normal operation.
To improve motor cooling and efficiency, keep the pump clean of dust, cobwebs etc. especially the motor and fan cover.

For a prolonged shutdown, where there is a risk of freezing, empty the pump by removing the drain plug and the air bleed plug.

Motors with grease fittings

Motor power 5.5kW and above require greasing every 5000 hrs running
Smaller units have bearings greased for life and require no lubrication.

Mechanical seal

The mechanical seal needs no servicing in operation.
It must never be allowed to operate dry.

10. Warranties – Terms and Conditions

This warranty is given in addition to the consumer guarantees found within the Australian Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 NZ for goods purchased in New Zealand:

1) White International Pty Ltd / White International NZ Ltd (White International) warrant that all products distributed are free from defects in workmanship and materials, for their provided warranty period as indicated on the top or opposite side of this document. Subject to the conditions of the warranty, White International will repair any defective products free of charge at the premises of our authorised service agents throughout Australia and New Zealand if a defect in the product appears during the warranty period. If you believe that you have purchased a defective product and wish to make a claim under this warranty, contact us on our Sales Hotline on 1300 783 601, or send your claim to our postal address or fax line below and we will advise you as to how next to proceed. You will be required to supply a copy of your proof of purchase to make a claim under this warranty.

2) This warranty excludes transportation costs to and from White International or its appointed service agents and excludes defects due to non-compliance with installation instructions, neglect or misuse, inadequate protection against the elements, low voltage or use or operation for purposes other than those for which they were designed. For further information regarding the suitability of your intended application contact us on our Sales Hotline on 1300 783 601. If you make an invalid claim under this warranty, the original product will be sent back to you unrepaired.

3) This warranty refers only to products sold after the 1st January 2012, and is not transferable to another product type and only applies to the original owner, purchaser or end user, and is in addition to the consumer guarantees found within the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand.

4) Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. 2 YEAR WARRANTY

5) To the fullest extent permitted by law, White International excludes its liability for all other conditions or warranties which would or might otherwise be implied at law. To the fullest extent permitted by law, White International's liability under this warranty and any other conditions, guarantees or warranties at law that cannot be excluded, including those in the Competition and Consumer Act 2010 (Cth), is expressly limited to: (a) in the case of products, the replacement of the product or the supply of equivalent product, the payment of the cost of replacing the product or of acquiring an equivalent product or the repair of the product or payment of the cost of having the product repaired, is at the discretion of White International or a 3rd party tribunal elected under the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand; and

6) To the fullest extent permitted by law, this warranty supersedes all other warranties attached to the product or its packaging.

7) In the case of services, supplying the services again or the payment of the cost of having the services supplied again, is at the discretion of White International or a 3rd party tribunal elected under the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand. 8) Our warranty commences from the date of purchase of the above-mentioned pumps. Proof of purchase is required before consideration under warranty is given.

Record your date of purchase in the space below and retain this copy for your records.

Date of Purchase .....**Model Purchased** .....

11. Trouble Shooting Guide

	POSSIBLE CAUSE	POTENTIAL SOLUTIONS
The pump won't start and makes no noise	1. No electricity 2. Fuses or RCD tripped 3. Internal motor fault 4. The static head pressure is greater than the cut in setting (applies when commissioning) 5. Controller has sensed dry run and is protecting the pump	1. Check the power supply. Is the power LED on the controller illuminated? 2. Fuses or RCD tripped may indicate more serious problems 3. Contact an expert to check the motor 4. Static water head above the controller must be less than cut in pressure 5. Check the pump protection/control
The pump doesn't start but makes a noise	1. Motor not free to turn i.e. internal jamming 2. Faulty capacitor (1 Ph motors)	1. Check whether pump can rotate freely 2. Contact an expert to check/replace capacitor
The pump runs but there is no flow or only poor flow	1. Valves closed 2. Air entering suction line (loss of prime) 3. The water level may be too low 4. Pump may be worn or damaged 5. Blockages in the pump, suction or discharge 6. The piping may be too long or too small	1. Check suction and discharge isolating valves 2. Check for leaks and ensure all joins or fittings are sealed 3. Check water availability 4. Contact your service agent for repair 5. Contact your service agent for repair 6. Contact your pump professional
The pump runs. There is flow but poor pressure	1. Excessive flow demand 2. Total head requirement too great for the pump 3. Pump may be worn or damaged 4. Air entering suction line reducing performance	1. Check that the pump selected is correct for the application 2. Check the pump specification 3. Contact your service agent 4. Ensure the suction line is sealed correctly
Pump cycling on and off	1. Small water draw off or leak 2. Leak in suction or discharge line	1. Check for small leaks i.e. taps or cistern 2. Check for leaks including suction line non return valve
Pump runs intermittently	1. Overheating and thermal protection tripping	1. Ensure the water temp is less than 40 deg C. Ensure sufficient airflow to cool the motor. *Note that low voltage can cause the motor to overheat.*
Pump vibrates and is noisy	1. Incorrectly mounted/fixed 2. Internal blockage causing impeller imbalance 3. If the flow requirement is greater than the pump is capable of it will cavitate. *Cavitation sounds like gravel inside pump.*	1. Ensure the pump is solidly attached to a base 2. Contact your service agent 3. Reduce the water demand to see if the noise disappears. Ensure the suction pipe is sized correctly A different pump model may be required Contact your service agent
Water leaking from the centre of the pump	1. The mechanical seal is leaking	1. Contact your service agent for repair

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