

505CA pumphead user manual

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2 Certification

Certification documents follow on the next pages.

EU DECLARATION OF INCORPORATION

1. Manufacturer: Watson Marlow Limited, Bickland Water Road, Falmouth, TR11 4RU, UK
2. This declaration of incorporation is issued under the sole responsibility of the manufacturer.
3. Object of the Declaration: 505CA.
4. The object of the declaration described above conforms in part with the relevant Union harmonisation legislation:
Machinery Directive 2006/42/EC
5. The object of the declaration described above conforms in part with the following directive(s):
EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU
6. We undertake to transmit, in response to a reasoned request by the appropriate national authorities, relevant information on the partly completed equipment identified above. The method of transmission shall be by mail or email.
7. The pumphead is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive(s).

SIGNED FOR ON BEHALF OF:

Watson-Marlow Limited
Falmouth, 31st December 2022



Simon Nicholson, Managing Director,
Watson-Marlow Limited
Watson-Marlow Fluid Technology Solutions
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A Spirax-Sarco Engineering plc company

PERSON AUTHORIZED TO COMPILE THE TECHNICAL DOCUMENTS:

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Managing Director

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UK DECLARATION OF INCORPORATION

1. Manufacturer: Watson Marlow Limited, Bickland Water Road, Falmouth, TR11 4RU, UK
2. This declaration of incorporation is issued under the sole responsibility of the manufacturer.
3. Object of the Declaration: 505CA.
4. The object of the declaration described above conforms in part with the relevant statutory requirements:

Supply of Machinery (Safety) Regulations 2008, Electromagnetic Compatibility Regulations 2016, The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

5. We undertake to transmit, in response to a reasoned request by the appropriate national authorities, relevant information on the partly completed equipment identified above. The method of transmission shall be by mail or email.
6. The pumphead is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive(s).

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3 Warranty

Watson-Marlow Ltd ("Watson-Marlow") warrants this product to be free from defects in materials and workmanship for 1 year from the date of shipment, under normal use and service.

Watson-Marlow's sole responsibility and the customer's exclusive remedy for any claim arising out of the purchase of any product from Watson-Marlow is, at Watson-Marlow's option: repair, replacement or credit, where applicable.

Unless otherwise agreed in writing, the foregoing warranty is limited to the country in which the product is sold.

No employee, agent or representative of Watson-Marlow has the authority to bind Watson-Marlow to any warranty other than the foregoing unless in writing and signed by a director of Watson-Marlow. Watson-Marlow makes no warranty of the fitness of its products for a particular purpose.

In no event:

- i. shall the cost of the customer's exclusive remedy exceed the purchase price of the product;
- ii. shall Watson-Marlow be liable for any special, indirect, incidental, consequential, or exemplary damages, however arising, even if Watson-Marlow has been advised of the possibility of such damages.

Watson-Marlow shall not be liable for any loss, damage, or expense directly or indirectly related to or arising out of the use of its products, including damage or injury caused to other products, machinery, buildings, or property. Watson-Marlow shall not be liable for consequential damages, including without limitation, lost profits, loss of time, inconvenience, loss of product pumped, and loss of production.

This warranty does not obligate Watson-Marlow to bear any costs of removal, installation, transportation, or other charges which may arise in connection with a warranty claim.

Watson-Marlow shall not be responsible for shipping damage of returned items.

3.0.1 Conditions

- o Products must be returned by pre-arrangement to Watson-Marlow, or a Watson-Marlow approved service centre.
- o All repairs or modifications must have been made by Watson-Marlow Ltd, or a Watson-Marlow approved service centre or with the express permission in writing of Watson-Marlow, signed by a manager or director of Watson-Marlow.
- o Any remote control or system connections must be made in accordance to Watson-Marlow recommendations.
- o All PROFIBUS systems must be installed or certified by a PROFIBUS approved installation engineer.

3.0.2 Exceptions

- Consumable items including tubing and pumping elements are excluded.
- Pumphead rollers are excluded.
- Repairs or service necessitated by normal wear and tear or by lack of reasonable and proper maintenance are excluded.
- Products which, in the judgement of Watson-Marlow, have been abused, misused, or subject to malicious or accidental damage or neglect are excluded.
- Failure caused by electrical surge is excluded.
- Failure caused by incorrect or sub-standard system wiring is excluded.
- Damage by chemical attack is excluded.
- Ancillaries such as leak detectors are excluded.
- Failure caused by UV light or direct sunlight.
- Any attempt to disassemble a Watson-Marlow product will invalidate the product warranty.

Watson-Marlow reserves the right to amend these terms and conditions at any time.

4 Information for returning pumps

Before returning products, they must be thoroughly cleaned/decontaminated. The declaration confirming this should be completed and returned to us in advance of the item being shipped.

You are required to complete and return a decontamination declaration stating all fluids that have been in contact with the equipment being returned to us.

On receipt of the declaration, we will issue a Returns Authorisation Number. We reserve the right to quarantine or refuse any equipment that is not displaying a Returns Authorisation Number.

Please complete a separate decontamination declaration for each product and use the correct form that denotes the location you wish to return the equipment to.

A copy of the appropriate decontamination declaration can be downloaded from the Watson-Marlow website at www.wmfts.com/decon

If you have any queries then please contact your local Watson-Marlow representative for further assistance at www.wmfts.com/contact.

5 Safety

In the interests of safety, this pumphead and the tubing selected should only be used by competent, suitably trained personnel after they have read and understood this manual, and considered any hazard involved.

Any person who is involved in the installation or maintenance of this equipment should be fully competent to carry out the work. In the UK this person should also be familiar with the Health and Safety at Work Act 1974.

6 Recommended operating procedures

DO keep delivery and suction lines as short as possible using a minimum number of swept bends.

DO use suction and delivery pipelines with a bore equal to or larger than the bore of the tube fitted in the pumphead.

When pumping viscous fluids, the losses caused by increased friction can be overcome by using pipe runs with a cross sectional area several times greater than the pumping element.

DO fit an extra length of pumphead tube in the system to enable tube transfer. This will extend tube life and minimise the downtime of the pumping circuit.

DO keep the track and rollers clean.

The self-priming nature of peristaltic pumps means valves are not required. Any valves fitted must cause no restriction to flow in the pumping circuit.

Tube selection: The chemical compatibility lists published on the Watson-Marlow website are guides. If in doubt about the compatibility of a tube material and the duty fluid, request a Watson-Marlow tube sample card for immersion trials.

7 Pumphead installation

If the pumphead is fitted ignore this section (applicable for all cassette pumpheads).

- Mount the 505CA drive adaptor plate to the cased drive using 2 slot-headed screws provided (2)
- Apply grease to the drive tongue (1), align to pumphead centre shaft and locate together.
- Remove the planetary gear system cover by pulling gently towards the front of the pumphead.
- Mount CA pumphead to drive adaptor plate.
- Tighten the socket head retaining screws (4) at each side of the pumphead with a 5mm A/F ball ended Allen key.

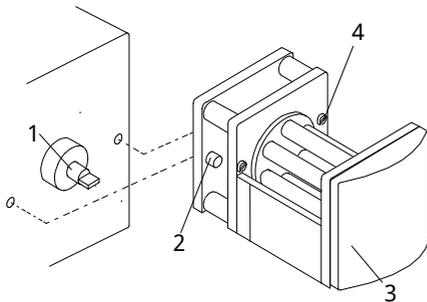


Figure 1 - Pumphead installation

8 Fitting an extension pumphead

- Remove the front cover plate (3).
- Remove the end plate using a No.2 Pozi screwdriver on the first pumphead to expose the two locating pins and drive shaft slot.
- Remove the planetary gear system cover from the extension pumphead.
- Fit the extension pumphead onto the two locating pins, ensuring the tongue of its drive shaft aligns with the pumphead centre shaft.
- Tighten the socket head retaining screws on the right and left of the extension pumphead. Fit the end plate to the last pumphead and replace the covers.

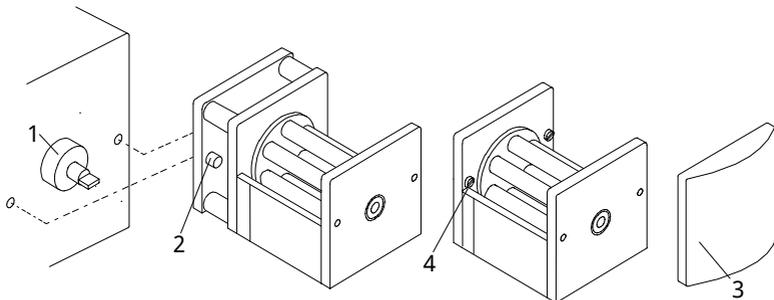
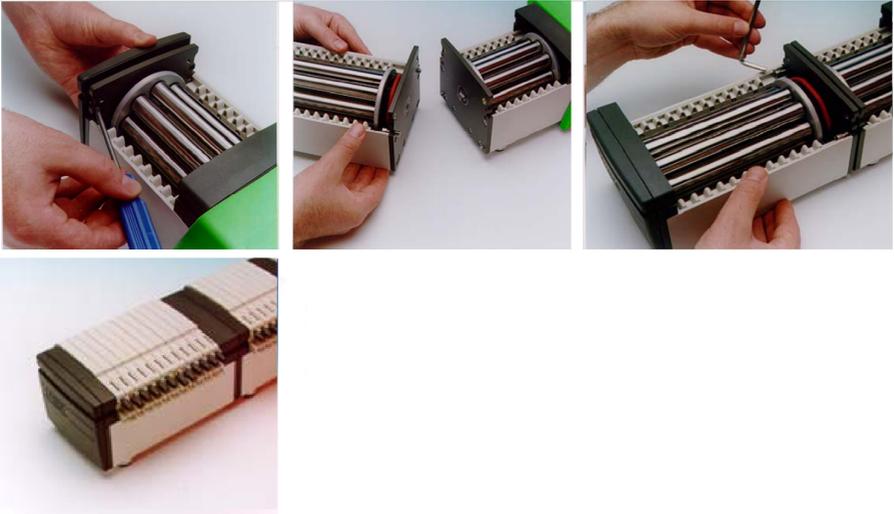


Figure 2 - Extension pumphead installation

9 CA cassette loading

Only use cassettes with manifold tubing.

- Place the tube into the tube retaining slots without twisting or stretching it, 1.
- Lift the cassette release lever 2.
- Load the cassettes into the pumphead, ensuring that they are engaged on the to the cassette guides at each end, 3.
- Ensure that both retaining clips are engaged and then squeeze the cassette release lever and the tube retaining lug together until you hear a click, 4.

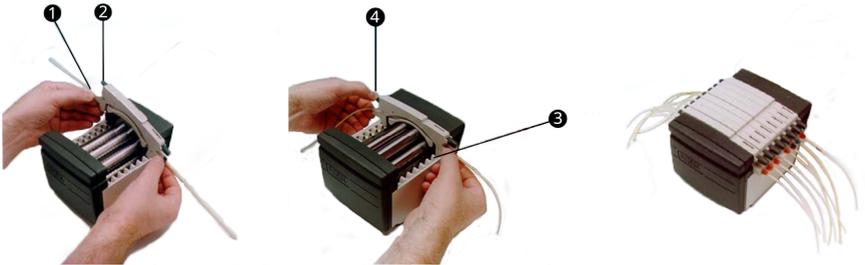


Figure 3 - CA cassette loading

10 CA cassette removal

- Lift the cassette release lever and pull out the cassette.
- With care, a single cassette can be removed for tube changing without stopping the drive and disturbing the pumping action of other cassettes.



All cassettes must be in position in the pumphead during normal running, even if some do not contain tubing. Do not place fingers inside the pumphead.

11 CA cassette adjustment and flow rates

- Flow rates for pumping water at 20 °C with zero suction and delivery pressure in PVC tubing, with clockwise rotation of the pumphead are published at the back of this manual.
- Dedicated occlusion adjustment with a vernier indicator has been incorporated into the cassette. This is to enable repeatable accurate flow rates despite variations that may be caused by the system or when pumping fluids other than water.
- The track geometry has been designed so that when the indicator is at the centre position it is indicating the normal set-up.
- To adjust, pull out the adjusting knob and turn. To lock, push back.
- Moving the indicator towards the '+' will increase the track occlusion (reduced roller/track gap) enabling higher pressures to be obtained without a fall off in flow rate.
- Moving the indicator towards the '-' will reduce the occlusion. Remember that higher the occlusion, the shorter the tube life.
- The mechanism also enables small adjustments in the flow rate. This is particularly useful when using a number of channels where the inter channel flow rate is critical. As a guide only, one graduation move will vary the flow by approximately 1%.

12 Care and maintenance

When the pumphead needs cleaning, switch the drive off and isolate it from the mains. Remove the cassettes from the pumphead and remove the tubing. Wash the cassettes in water and mild detergent.

If fluid has been spilled into the pumphead, removal of the pumphead from the drive will make cleaning easier.

Periodically, inspect all moving parts for wear and ensure all bearings and rollers are free to rotate.

13 Pumphead spares

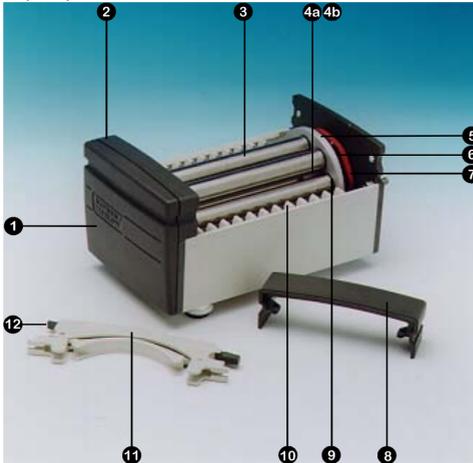


Figure 4 - Pumphead spares

Table 1 - Pumphead spares		
Number	Spare	Description
1	DE 0410M	End plate
2	DE 0412M	Front cover plate
3	DE 0416T	Roller 4 way
	DE 0417T	Roller 8 way
	DE 0418T	Roller 12 way
	DE 0419T	Roller 16 way
4a	BB 0038 (2 off)	Center shaft bearing
4b	BB 0014 (2 off)	Center spacer bearing
5	DE 0429T	Center gear
6	MN 0983M	Roller gear
7	OS 0047	Friction O ring
8	DE 0411M	Planetary system gear cover
9	BB 0034 (2 per roller)	Roller bearing
10	DE 0407M	Cassette guide
11	DEA0080A	Cassette PVDF (option)
	DEA0081A	Cassette Acetal (standard)
12	N/A	Cassette release lever

14 Dimensions

Table 2 - Dimensions

Pumphead channels	Dimension 'X'
4	99
8	148
12	197
16	246

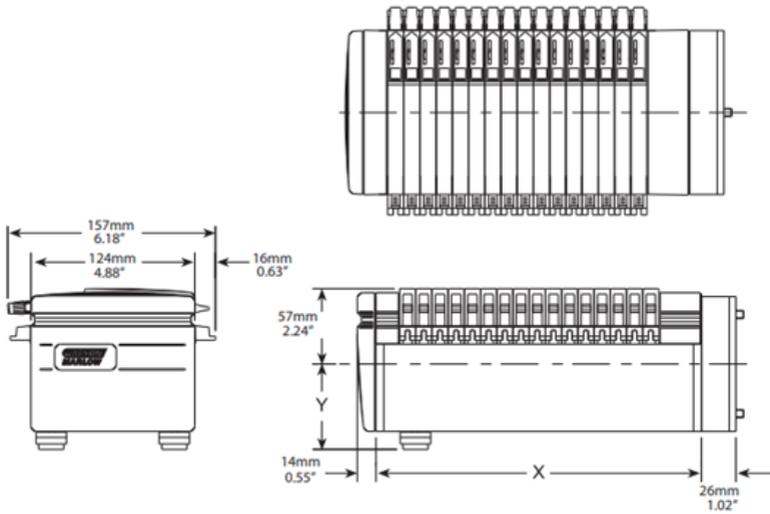


Figure 5 - Dimensions

15 Publication history

m-505ca-en-01

First published 12/22

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