

## Watson-Marlow 501CC, 621CC and 701 ATEX User Manual

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## **Original instructions**

The original instructions for this manual have been written in English. Other language versions of this manual are a translation of the original instructions

# 1 Declaration of conformity



Watson-Marlow Limited  
Falmouth  
Cornwall  
TR11 4RU  
England

## EU declaration of conformity

1. 500 Series, ATEX compliant, configured peristaltic pumps.
2. Manufacturer:  
Watson Marlow Ltd  
Bickland Water Road  
Falmouth  
TR11 4RU  
UK
3. This declaration of conformity is issued under the sole responsibility of the manufacturer.
4. 501D (F,V,FX,VX,P variants ATEX closed coupled pumps, configured with 501RL(A, 2A, GA,2GA, CA, 2CA, CGA, 2CGA), 505(A, XA, GA), 313(DA, BA, XA, XBA, D2A, D2AK, B2A, X2A, XB2A) or 314(DA, BA, XA, XBA, D2A, B2A, X2A, XB2A) families of ATEX compliant pumpheads.
5. The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:  
ATEX Directive 2014/34/EU  
Machinery Directive 2006/42/EC  
EMC Directive 2014/30/EC  
ROHS Directive 2011/65/EU  
ATEX Rating:



II 2G Ex h IIB T4 Gb X

This declaration applies to the pump when using the Watson-Marlow tubing stated within the pumphead manual and in accordance with the operating instructions provided in the manual. The use of any other tubing material in the pump would invalidate this declaration.

6. Harmonised standards used:  
BS EN ISO 80079-36:2016  
BS EN ISO 80079-37:2016
7. Notified body, SGS Fimko Oy (CE0598), P.O Box 30 FI-00211, Helsinki, Finland, holds a copy of the technical reference file "ATEX-WM", containing full details of the conformity assessment procedure.

Signed for and behalf of:  
Watson Marlow Ltd  
Falmouth, 31 October 2019

Simon Nicholson, Managing Director, Watson-Marlow Limited  
Watson-Marlow Fluid Technology Group Telephone +44 (0) 1326 370370  
A Spirax-Sarco Engineering plc company



Watson-Marlow Limited  
Falmouth  
Cornwall  
TR11 4RU  
England

## EU declaration of conformity

1. 600 Series, ATEX compliant, configured peristaltic pumps.
2. Manufacturer:  
Watson Marlow Ltd  
Bickland Water Road  
Falmouth  
TR11 4RU  
UK
3. This declaration of conformity is issued under the sole responsibility of the manufacturer.
4. The following models and versions of the 621D (F, V, FX, VX, P variants) ATEX close-coupled pumps, configured with 620RA, 620REA, 620RE4A families of ATEX compliant pumpheads
5. The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:  
ATEX Directive 2014/34/EU  
Machinery Directive 2006/42/EC  
EMC Directive 2014/30/EC  
ROHS Directive 2011/65/EU

ATEX Rating:



II 2G Ex h IIB T4 Gb X

This declaration applies to the pump when using the Watson-Marlow tubing stated within the pumphead manual and in accordance with the operating instructions provided in the manual. The use of any other tubing material in the pump would invalidate this declaration.

6. Harmonised standards used:  
EN 80079-36:2016  
EN 80079-37:2016
7. Notified body, SGS Fimko Oy (CE0598), P.O Box 30 FI-00211, Helsinki, Finland, holds a copy of the technical reference file "ATEX-WM", containing full details of the conformity assessment procedure.

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A Spirax-Sarco Engineering plc company



Watson-Marlow Limited  
Falmouth  
Cornwall  
TR11 4RU  
England

## EU declaration of conformity

1. 700 Series, ATEX compliant, configured peristaltic pumps.
2. Manufacturer:  
Watson Marlow Ltd  
Bickland Water Road  
Falmouth  
TR11 4RU  
UK
3. This declaration of conformity is issued under the sole responsibility of the manufacturer.
4. The following models and versions of the 701D (B, FB,VB & PB variant), configured with 701RA, 701REA, 701RXA, 701REXA or 701RGA families of ATEX complaint pumpheads.
5. The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:  
ATEX Directive 2014/34/EU  
Machinery Directive 2006/42/EC  
EMC Directive 2014/30/EC  
ROHS Directive 2011/65/EU  
ATEX Rating:



II 2G Ex h IIB T4 Gb X

This declaration applies to the pump when using the Watson-Marlow tubing stated within the pumphead manual and in accordance with the operating instructions provided in the manual. The use of any other tubing material in the pump would invalidate this declaration.

6. Harmonised standards used:  
EN 80079-36:2016  
EN 80079-37:2016
7. Notified body, SGS Firmko Oy (CE0598), P.O Box 30 FI-00211, Helsinki, Finland, holds a copy of the technical reference file "ATEX-WM", containing full details of the conformity assessment procedure.

Signed for and behalf of:  
Watson Marlow Ltd  
Falmouth, 31 October 2019

Simon Nicholson, Managing Director, Watson-Marlow Limited  
Watson-Marlow Fluid Technology Group Telephone +44 (0) 1326 370370  
A Spirax-Sarco Engineering plc company

## 2 Introduction

Directive 2014/34/EU, commonly known as the ATEX directive, carries obligations to the person who places equipment on the market, in the EU territory, for use in potentially explosive environments.

All of Watson-Marlow's ATEX pumps have been rated as II 2G Ex h IIB T4 Gb X under the definitions of 2014/34/EU:

- Equipment group II
- Equipment category 2
- Environment G
- Mechanical protection concepts EX h
- Gas group IIB
- Temperature class T4
- Equipment protection level Gb
- Special operating restrictions X (see pumphead manual)

"Equipment category 2 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the manufacturer and of ensuring a high level of protection.

Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally. The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account."

**Watson-Marlow pumps must not be used in the underground parts of mines, and in surface installations of such mines, likely to become endangered by firedamp and/or combustible dust.**

As stated in the Directive, where two or more items of ATEX equipment are combined, the complete assembly shall carry the same rating as the lowest ranking individual piece of equipment.

All Watson-Marlow ATEX pumps covered by this manual are intended for use in gas based environments only.

If you are unsure about the meaning of this ATEX rating see section 13 "ATEX marking" on page 19 or contact your Watson-Marlow representative for advice. Watson-Marlow representatives can advise which rating and approvals products carry, but cannot evaluate nor recommend which product may be suitable for use in an end users hazardous installation. Only the end user or their qualified representative can confirm the ATEX rating of the equipment meets the requirements of their installation.



**DANGER! - EXPLOSION HAZARD**

**Incorrectly selected ATEX equipment can cause fire or explosion.**

### 3 Pump description

ATEX Industrial Close Coupled Pump units incorporating standard ATEX motors and Watson-Marlow ATEX pumpheads. Single pumphead versions available as standard with a selection of fixed output speeds.

For customer specific applications, further options can be configured such as drive speed, pumphead or drive orientations, and coatings or finishes.

Alternative drive options may also be requested such as pneumatic motors, duplex pumpheads and mechanical variators. For more information please contact your local Watson-Marlow representative.

## 4 Warranty

Watson-Marlow Ltd ("Watson-Marlow") warrants this product to be free from defects in materials and workmanship for two years (one year for air motors) 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.

### 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.

### 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.



## 5 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.wmftg.com/decon](http://www.wmftg.com/decon)

If you have any queries then please contact your local Watson-Marlow representative for further assistance at [www.wmftg.com/contact](http://www.wmftg.com/contact).

## 6 Safety notes

Refer to pumphead safety manual for safe operation of the pumphead.

313 ATEX pumpheads	PB0353
501RL ATEX pumpheads	PB0346
505 ATEX pumpheads	PB0379
620 ATEX pumpheads	PB0347
701 ATEX pumpheads	PB0348

This safety information should be used in conjunction with the rest of this operating manual.

In the interests of safety, this pump and pumphead should only be used by competent, suitably trained personnel after they have read and understood the manual and considered any hazard involved. If the pump is used in a manner not specified by Watson-Marlow Ltd, the protection provided by the pump may be impaired. 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.



**This symbol, used on the pump and in the manual, means: Caution, refer to accompanying documents.**



**This symbol, used on the pump and in the manual, means: Do not allow fingers to contact moving parts.**



This symbol, used on the pump and in the manual, means: **Caution, hot surface.**



This symbol, used on the pump and in the manual, means: **Caution, risk of electric shock.**



This symbol, used on the pump and in the manual, means: **Personal Protective Equipment (PPE) must be worn.**



This symbol, used on the pump and in the manual, means: **Recycle this product under the terms of the EU Waste Electrical and Electronic Equipment (WEEE) Directive.**



**Fundamental work with regard to lifting, transportation, installation, starting-up, maintenance and repair should be performed by qualified personnel only. The unit must be isolated from mains power while work is being carried out. The motor must be secured against accidental start-up.**



**Some pumps weigh more than 18kg (the exact weight depends on the model and pumphead - see on the pump). Lifting should be performed according to standard Health and Safety guidelines.**

This pump must be used only for its intended purpose.

The pump must be accessible at all times to facilitate operation and maintenance. Access points must not be obstructed or blocked. Do not fit any devices to the drive unit other than those tested and approved by Watson-Marlow. Doing so could lead to injury to persons or damage to property for which no liability can be accepted.



**If hazardous fluids are to be pumped, safety procedures specific to the particular fluid and application must be put in place to protect against injury to persons.**



Ensure the chemicals to be pumped are compatible with the pumphead, lubricant (where applicable), tubing, pipework and fittings to be used with the pump. Please refer to the chemical compatibility guide which can be found at: [www.wmftg.com/chemical](http://www.wmftg.com/chemical). If you need to use the pump with any other chemical please contact Watson-Marlow to confirm compatibility.



Explosion hazard. Failure to comply may cause severe or even fatal injuries.



All work, e.g. transportation, storage, installation, connection, commissioning, servicing and maintenance must be performed in a non-explosive atmosphere.



Always check to ensure that an ATEX pump assembly is suitably rated for the hazardous zone area in which it is to be used, including ATEX, Ex and any other hazardous area legislation for the country in which it is being installed. Exd motors should only be installed by Exd qualified personnel.



Primary operator protection from rotating parts of the pump is provided by the pumphead guard. Note that pumphead guards differ, depending on the type of pumphead.

There are moving parts inside the pumphead. Before opening the pumphead guard, ensure that the following safety directions are followed:



1. Ensure that any motor drive connected to the pumphead is isolated from any electrical or compressed air supply.

2. Ensure that there is no pressure in the pipeline



3. If a tube failure has occurred, ensure that any fluid in the pumphead has been allowed to drain to a suitable vessel, container or drain

4. Ensure the pumphead is isolated from the fluid supply

5. Ensure that appropriate Personal Protective Equipment (PPE) is worn

## 7 Pump specification

ATEX rating	II 2G Ex h IIB T4 Gb X
Operating temperature	5C to 40C (41F to 104F)
Storage temperature	-40C to 70C (-40F to 158F)
Humidity (non-condensing)	35% to 80%
Supply voltage	See motor specification label
Power consumption	See motor specification label
IP	See motor specification label
dB rating	< 70dB (A) @ 1m
dB rating (700 series)	< 85dB (A) @ 1m
Control ratio	See pump specification label

**Note:** Where specifications are listed in more than one operating manual, the lowest specification must be adhered to.

For further information please contact your Watson-Marlow representative.

## 8 Potential pump hazards

As part of the requirements of ATEX Directive 2014/34/EU all potential hazards, including expected malfunctions, have been identified and subjected to a risk assessment. In order to prevent these ignition sources becoming hazardous, a number of changes have been implemented. In addition to engineering modifications, the changes include comments in these instructions in order to specify correct usage in hazardous locations.

### Recognised ignition sources of the pumphead

Surface temperatures of rollers and spindles

Tube burst and subsequent spilling of pumped fluid

Mechanical failure of rotor hub

Exothermic chemical reaction

Electrostatic discharge

Bearing failure

Spring failure

For the motor and gearbox please refer to the manufacturer's instructions as supplied.

## 9 Installation

### Preliminary checks



#### **DANGER! - EXPLOSION HAZARD**

**Failure to inspect the pumphead unit for damage or check the ATEX labelling data may cause a fire or explosion.**

Check the label on the pump to ensure that the pump type and the ATEX labelling conform to the planning of the plant or machine.

Check that all components are present. Inspect components for damage in transit. If anything is missing or damaged, contact your Watson-Marlow representative immediately.

### Mechanical installation



**Fundamental work with regard to lifting, transportation, installation, starting-up, maintenance and repair should be performed by qualified personnel only. The unit must be isolated from mains power while work is being carried out. The motor must be secured against accidental start-up.**



**Some pumps weigh more than 18kg (the exact weight depends on the model and pumphead - see on the pump). Lifting should be performed according to standard Health and Safety guidelines.**



**Explosion hazard. Failure to comply may cause severe or even fatal injuries.**



**All work, e.g. transportation, storage, installation, connection, commissioning, servicing and maintenance must be performed in a non-explosive atmosphere.**

Site the pump on a flat, horizontal, vibration-proof surface allowing a free flow of air around it. Ensure there is 0.5m of straight tubing before the pumphead inlet and after the pumphead outlets.

If the pump is not supplied attached to a baseplate then the unit must be bolted down to a suitable substrate via the bolting holes identified in the motor and gearbox manuals.

Refer to the manufacturers instructions for the motor and gearbox for further installation instructions.

All Watson-Marlow ATEX rated pumpheads include provision for the prevention and dissipation of electrostatic charge. In order to dissipate electrostatic charge effectively there must be sufficient electrical contact between the pumphead and the suitably earthed drive.

**It is imperative that the 500, 600 and 700 series ATEX pumps are earthed. The pumphead guard, track, gearbox and motor and baseplate (where applicable) already have earth straps installed. The user must ensure that these earth straps are connected to a suitable earth point on installation.**

It is possible to check the effectiveness of any earth connection by measuring its electrical resistance. **To ensure reliable dissipation of static, the maximum resistance from the earth point identified above to earth should not exceed 1 MOhm.**

Peristaltic tubing is insulating and so its use should be limited to the length adjacent to the pumphead. Earthed, conductive pipework should be used elsewhere in the system.

### **AC motor/Air motor**

Please refer to the manufacturer's instructions as supplied with the ATEX certified motor.

## **9.1 Do's and do not's**

**Do** not build a pump into a tight location without adequate airflow around the pump.

**Do** keep delivery and suction tubes as short and direct as possible and follow the straightest route. Use bends of large radius: at least four times the tubing diameter. Ensure that connecting pipework and fittings are suitably rated to handle the predicted pipeline pressure. Avoid pipe reducers and lengths of smaller bore tubing than the pumphead section, particularly in pipelines on the suction side. Any valves in the pipeline (not usually needed) must not restrict the flow. Any valves in the flow line must be open when the pump is running.

**Do** use suction and delivery pipes equal to or larger than the bore of the tube in the pumphead. When pumping viscous fluids use pipe runs with a bore several times larger than the pump tube.

**Do** ensure that your system fluid supply and discharge pipework is suitable for the hazardous environment in which the pump is operating and doesn't allow for the accumulation of electrostatic charge.

**Do** site the pump at or just below the level of the fluid to be pumped if possible. This will ensure flooded suction and maximum pumping efficiency.

**Do** keep the pumphead track and all moving parts clean and free from contamination and debris.

**Do** run at slow speed when pumping viscous fluids. Flooded suction will enhance pumping performance in all cases, particularly for materials of a viscous nature.

**Do** limit peristaltic tubing to the length adjacent to the pumphead because peristaltic tubing is insulating. Electrostatic testing has been used to determine which Watson-Marlow tubing is suitable for use in hazardous environments. Refer to pumphead manual for more information. Earthed, conductive pipework should be used elsewhere in the system.

**When using Marprene or Bioprene** continuous tubing, do re-tension the tube after the first 30 minutes of running.

**Tube selection:** The chemical compatibility lists published in Watson-Marlow publications 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.



## 10 Start-up

If the unit has been supplied integrated with a air filter, lubricator and regulator then please refer to the manufacturers instructions as supplied, in conjunction with the recommendations in the air motor operating manual.

Please refer to the pumphead instructions to ensure correct loading and operation of the pumphead.

Prior to start-up ensure that the tubing material used is listed in the "Special conditions of use for safe operation - Tube materials suitable for use with this equipment" section of the pumphead manual.

The unit will self prime, minimise the time to prime the pump as dry running will reduce the life of the tube.

### 10.1 Check list for installation in explosive environments

Complete the following check list prior to starting installation in an explosive environment. All actions must be completed in accordance with Directive 2014/34/EU.

- Check ATEX pump and motor labelling and configuration. Ensure that they conform to actual installation (see section 13 "ATEX marking" on page 19).
- Check the ambient temperature of the site and the ability to maintain proper ambient temperature. (see section 7 "Pump specification" on page 12).
- Check the site to make sure that the motor will be adequately ventilated and that there is no external heat input (e.g. couplings). The cooling air may not exceed 104°F/40°C.
- Check that the pump is not damaged.
- Check the installation has been carried out correctly in accordance with pumphead, gearbox and motor manufacturers instructions.

## 11 Troubleshooting

Should the pump fail to operate, make the following checks to determine whether or not servicing is required.

- Refer to the motor manufacturer's manual to ensure correct connection of the electrical or air supply.
- Check that the pump is not stalled by incorrect fitting of tubing.



**Any deviation from normal operating conditions (increased power consumption, temperature, vibrations, noise) or warning signals by monitoring equipment suggest malfunction. Inform the responsible maintenance personnel at once to prevent the trouble from worsening. If in doubt disconnect the pump immediately.**

## 12 Maintenance

The pump should be cleaned regularly to avoid the accumulation of dust, this will prevent build up of electrostatic charge due to the presence of dust. This product is not certified for use in ATEX dust environments.

Visually inspect the earth straps monthly to ensure mechanical integrity. Electrical conductivity of the earth system must be verified six monthly.

On the 701 series ATEX products, the shaft coupling should be examined every six months for signs of wear to the spider. If the spider is worn then it should be replaced. Please refer to the shaft coupling manufacturers instructions.

Monthly visual inspection must be undertaken to determine if the product has been damaged due to (but not limited to) adverse operating conditions caused by worn components, loose bolts or environmental conditions.

### 12.1 AC motor maintenance

Please refer to the manufacturer's instructions as supplied with the ATEX certified motor.

### 12.2 Gearbox maintenance

Please refer to the manufacturer's instructions as supplied with the ATEX gearbox.

### 12.3 Pneumatic (air) motor maintenance

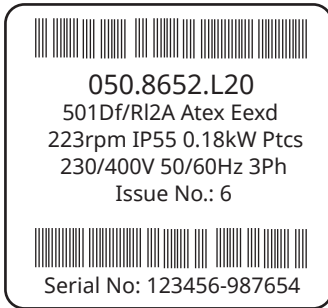
Please refer to the manufacturer's instructions as supplied with the ATEX certified pneumatic motor.

### 12.4 Pumphead maintenance

Please refer to the ATEX pumphead manual as supplied separately for the relevant pumphead.

## 13 ATEX marking

The pumps have been marked with the following labels:



### 13.1 Key

II	Equipment Group II for above ground areas (surface)
2G	Equipment Category 2G (Gas) - Zone 1
Ex h	Ignition protection labelling for mechanical devices
IIB	Group IIB - typical gas: Ethylene
T4	Temperature classification (Gas) $\leq 135^{\circ}\text{C}$
Gb	Group II (Gas); protection Level: High
X	Special conditions of use for safe operation - See pumphead manual

## 14 Replacements

Spares and replacements should be ordered through Watson-Marlow pumps or through an official representative. Only Watson-Marlow spares and replacements should be used in order to guarantee continued compliance with the ATEX directive.

Watson-Marlow's policy is to provide spare parts for all products for a minimum of 7 years from discontinuation. The ability to implement this policy is not entirely within Watson-Marlow's control and cannot be guaranteed, but every effort will be made to honour this policy.

Please contact your local Watson-Marlow representative for assistance.

## 15 Patient-connected use—warning

Warning, These products are not designed for use in, and should not be used for patient connected applications.

## 16 Disclaimers

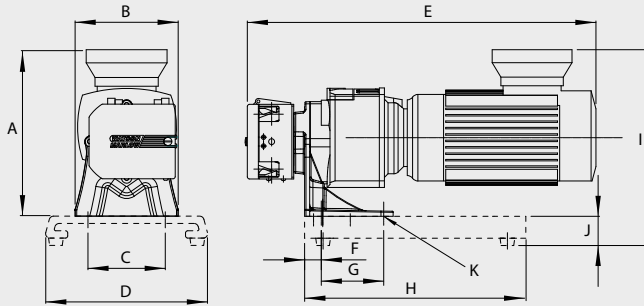
The information contained in this document is believed to be correct but Watson-Marlow Limited accepts no liability for any errors it contains and reserves the right to alter specifications without notice. It is the users responsibility to ensure product suitability for use within their application. Watson-Marlow, LoadSure, Qdos, ReNu, LaserTraceability, Pumpsil, PureWeld XL, Bioprene, Marprene are registered trademarks of Watson-Marlow Limited. Tri-Clamp is a registered trademark of Alfa Laval Corporate AB.

GORE and STA-PURE are registered trademarks of W.L. Gore and Associates.

## 17 Dimensions

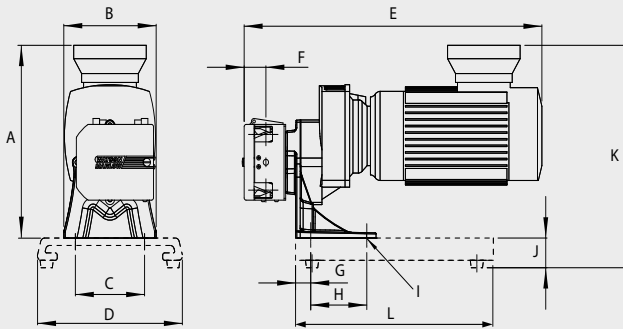
### 17.1 501CC Dimensions

#### 501CC ATEX Leroy Somer Motor and Gearbox (62 rpm) (Optional baseplate)



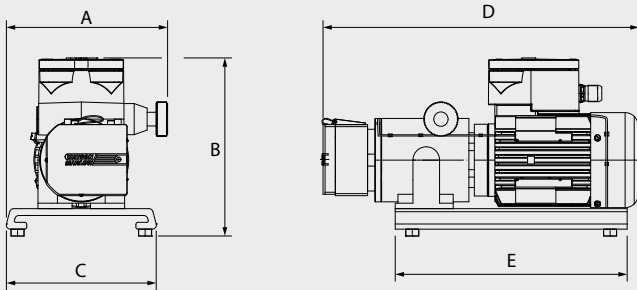
	A	B	C	D	E	F	G	H	I	J	K
mm	252	140	105	220	473	23	85	300	292	40	4 Holes Ø9 Thro.
inch	9.92	5.51	4.13	8.66	18.6	0.91	3.35	11.8	11.5	1.57	4 Holes Ø0.35 Thro

#### 501CC ATEX Leroy Somer Motor and Gearbox (223 rpm or 281 rpm) (Optional baseplate)



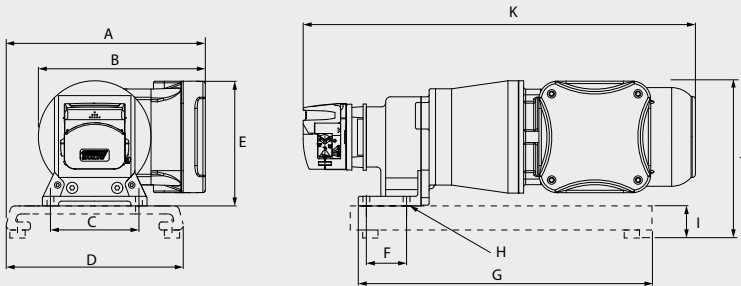
	A	B	C	D	E	F	G	H	I	J	K	L
mm	284	140	105	220	452	33	23	85	4 Hole Ø9 Thro.	40	324	300
inch	11.2	5.51	4.13	8.66	17.8	1.30	0.90	3.34	4 Hole Ø0.35 Thro.	1.57	12.8	11.8

**501CC ATEX 501DV/RLCA Motor and Gearbox, Mechanical ball variator unit (7-250rpm), Baseplate mounted**



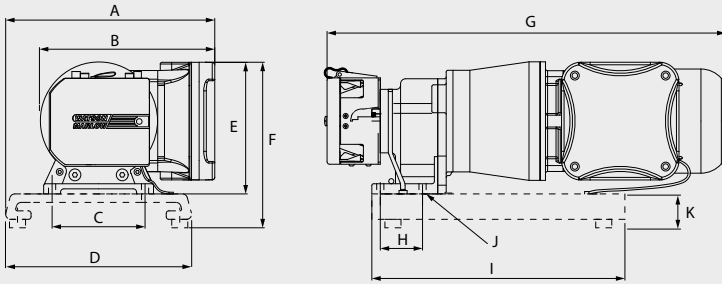
	A	B	C	D	E
mm	235	261	220	463	340
inch	9.25	10.3	8.66	18.2	13.4

**501DF/DA ATEX Nord Motor and Gearbox (Optional baseplate)**



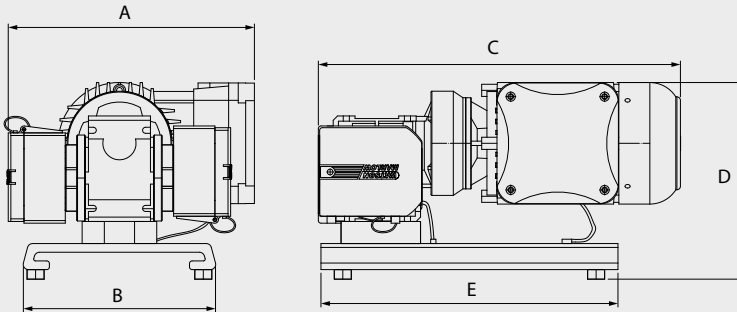
	A	B	C	D	E	F	G	H	I	J	K
mm	247	208	110	220	156	50	375	4 Holes Ø8.5 Thro.	40	196	487
inch	9.72	8.19	4.33	8.66	6.14	1.97	14.8	4 Holes Ø0.35 Thro	1.57	7.72	19.2

**501DF/RL2C ATEX Nord Motor and Gearbox (Optional baseplate)**



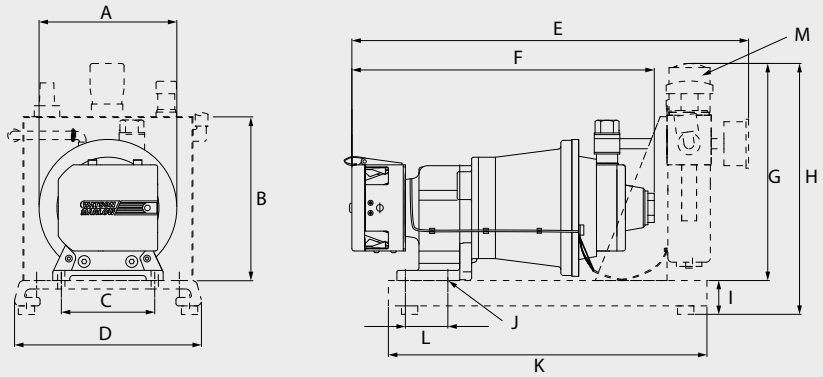
	A	B	C	D	E	F	G	H	I	J	K
mm	247	208	110	220	156	196	472	50	300	4 Holes Ø8.5 Thro.	40
inch	9.72	8.19	4.33	8.66	6.14	7.72	18.6	1.97	11.8	4 Holes Ø0.35 Thro	1.57

**501DFX/RL2C ATEX Duplex pump Nord Motor and Gearbox (Baseplate mounted)**



	A	B	C	D	E
mm	282	220	414	226	340
inch	11.1	8.66	16.3	8.90	13.4

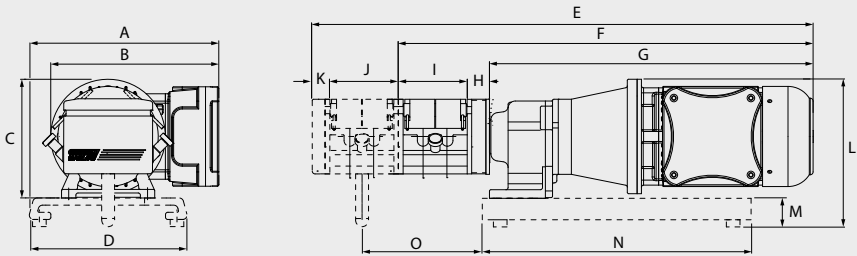
**501DP ATEX Pneumatic pump 257rpm (Optional baseplate and filter regulator lubricator)**



	A	B	C	D	E	F	G	H	I
mm	162	190	110	220	467	356	275	315	40
inch	6.38	7.48	4.33	8.66	18.4	14.0	10.8	12.4	1.57
	J	K	L	M					
mm	4 Holes Ø8.5 Thro.	375	50	Note: Optional air supply filter regulator lubricator unit					
inch	4 Holes Ø0.35 Thro.	14.8	1.97						



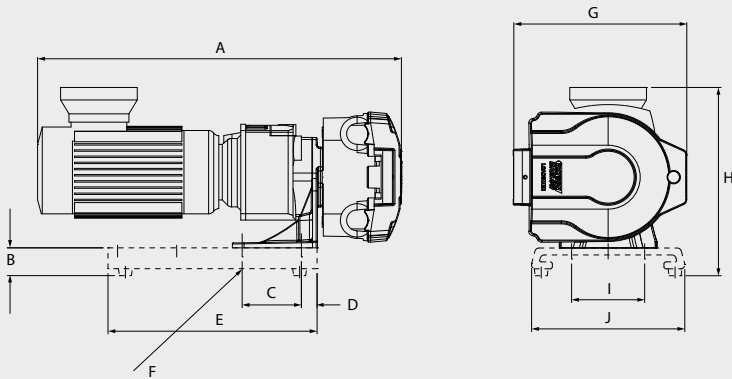
### 501DF/L ATEX Nord Motor and Gearbox (Optional baseplate and expansion pumhead)



	A	B	C	D	E	F	G	H
mm	265	217	166	220	700	596	451	25
inch	10.4	8.5	6.5	8.66	27.6	23.5	17.8	0.98
	I	J	K	L	M	N	O	-
mm	102	102	18	206	40	375	168	-
inch	4.01	4.01	0.70	8.11	1.57	14.8	6.61	-

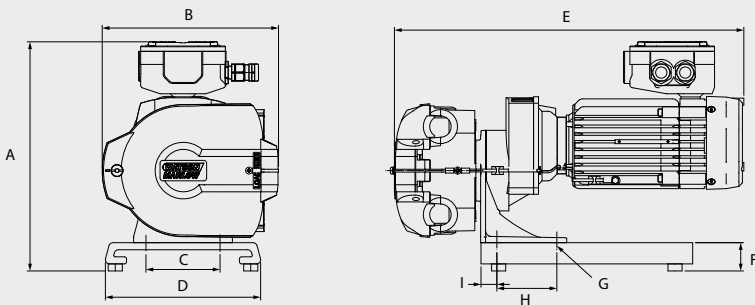
## 17.2 621CC Dimensions

### 621DF/RA ATEX Leroy Somer Motor and Gearbox (Optional baseplate)



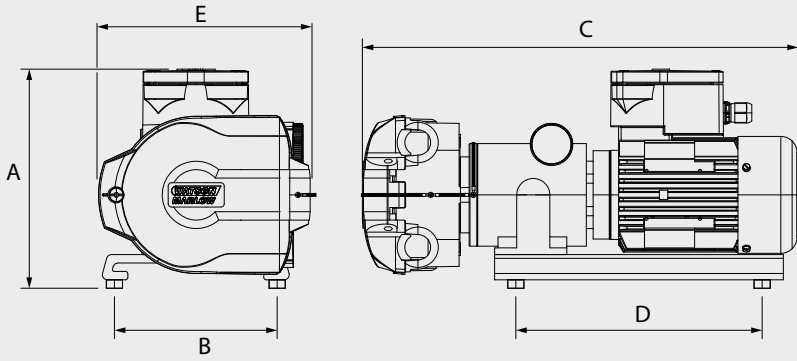
	A	B	C	D	E	F	G	H	I	J
mm	522	40	85	23	300	4 Holes Ø8.5 Thro.	250	292	105	220
inch	20.6	1.57	3.35	0.91	11.8	4 Holes Ø0.35 Thro.	9.84	11.5	4.13	8.66

### 621DF/RA ATEX Leroy Somer Motor and Gearbox (Optional baseplate)



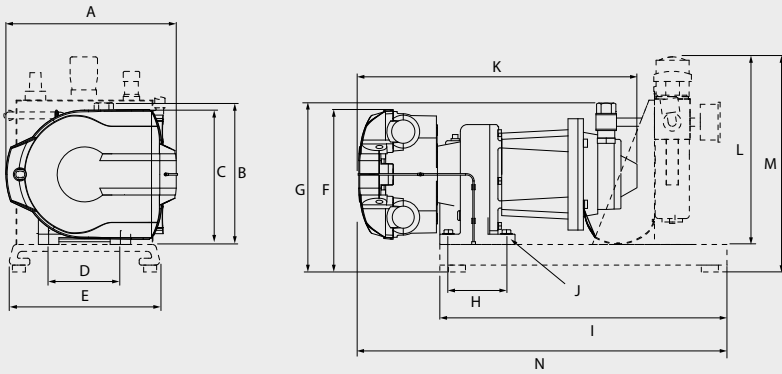
	A	B	C	D	E	F	G	H	I
mm	324	250	105	220	495	40	4 Holes Ø8.5 Thro.	85	22.5
inch	12.7	9.84	4.13	8.66	19.5	1.57	4 Holes Ø0.35 Thro	3.35	0.89

**621DV/RA ATEX Planetroll Motor and Gearbox, Mechanical ball variator unit(7-250rpm),  
Baseplate mounted**



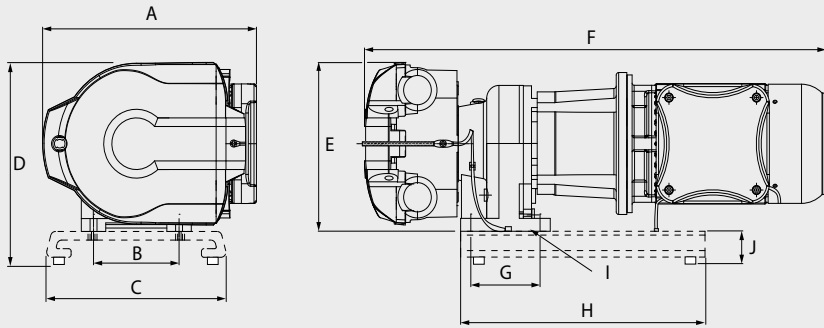
	A	B	C	D	E
mm	261	192	513	290	250
inch	10.3	7.56	20.2	11.4	9.84

**621DP/RA ATEX Pneumatic pump (Optional baseplate and filter regulator lubricator)**



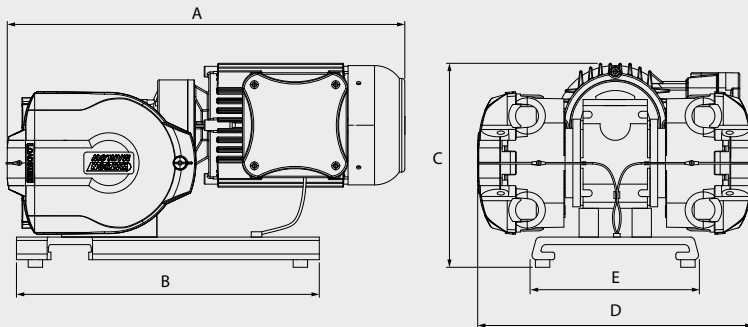
	A	B	C	D	E	F	G	H	I
mm	250	206	196	105	220	236	246	85	420
inch	9.84	8.11	7.72	4.13	8.66	9.29	9.69	3.35	16.5
	J	K	L	M	N				
mm	4 Holes Ø8.5 Thro.	408	275	315	540				
inch	4 Holes Ø0.35 Thro.	16.1	10.8	12.4	21.3				

**621DF/RA ATEX Nord Motor and Gearbox (Optional baseplate)**



	A	B	C	D	E	F	G	H	I	J
mm	262	105	220	236	196	567	85	300	4 Holes Ø8.5 Thro.	40
inch	10.3	4.13	8.66	9.29	7.72	22.3	3.35	11.8	4 Holes Ø0.35 Thro	1.57

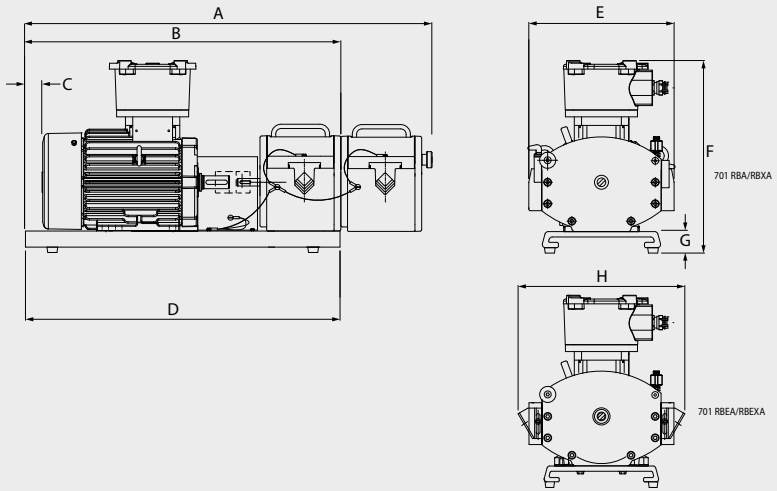
**621DFX/RA ATEX Duplex pump Nord Motor and Gearbox (Baseplate mounted)**



	A	B	C	D	E
mm	525	400	270	363	220
inch	20.7	15.7	10.6	14.3	8.66

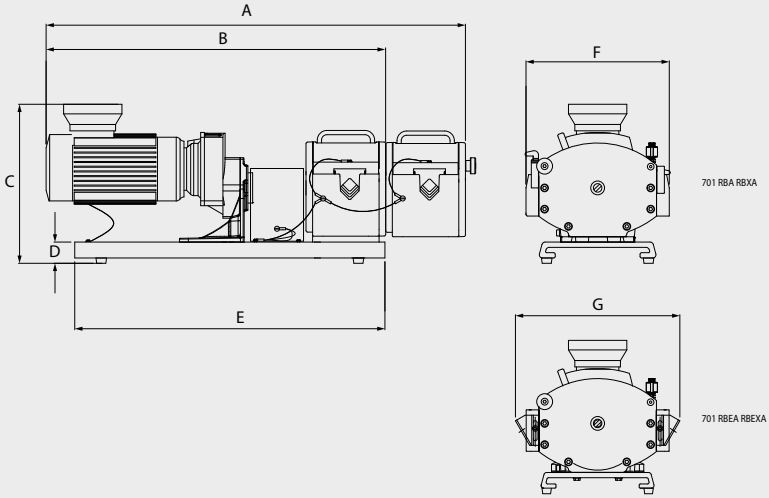
## 17.3 701CC Dimensions

### 701RBA/RBXA/RBEA/RBEXA ATEX Leroy Somer Motor and Gearbox (360 rpm) (Baseplate mounted / Optional extension pumphead)



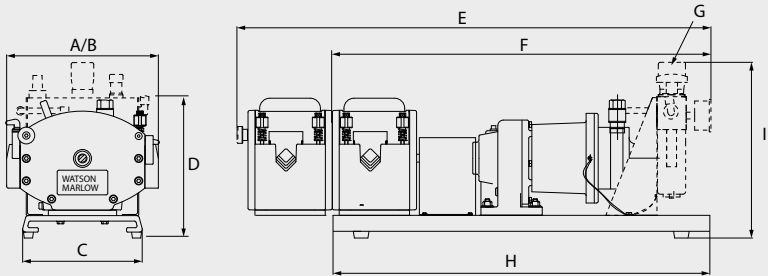
	A	B	C	D	E	F	G	H
mm	755	605	30	585	270	359	40	310
inch	29.7	23.8	1.18	23.0	10.6	14.1	1.57	12.2

**701RBA/RBXA/RBEA/RBEXA ATEX Leroy Somer Motor and Gearbox (112 rpm) (Optional extension pumphead)**



	A	B	C	D	E	F	G
mm	811	661	324	40	585	270	310
inch	31.9	26.0	12.8	1.57	23.03	10.6	12.2

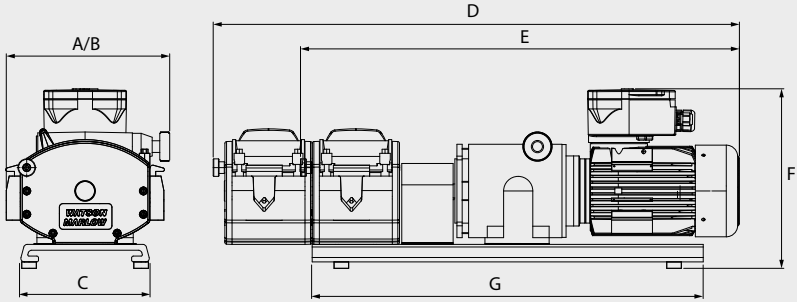
**701DPB/RA/RXA ATEX Pneumatic pump 316rpm (Optional extension pumphead and Filter Regulator Lubricator)**



	A (701 RBA/RBXA)	B (701 RBEA/RBEXA)	C	D	E	F	G
mm	280	310	220	247	842	692	Note: Optional air supply filter regulator lubricator unit
inch	11.0	12.2	8.66	9.72	33.1	27.2	
	H	I					
mm	670	315					
inch	26.4	12.4					



**701 ATEX Mechanical Variator pump 5-300rpm (Optional extension pumphead)**



	A (701 RBA/RBXA)	B (701 RBEA/RBEXA)	C	D	E	F	G
mm	280	310	220	902	752	307	670
inch	11.0	12.2	8.66	35.5	29.6	12.1	26.4

## 18 Materials of construction

Description	Material	Finish
ATEX pumphead		See pumphead user manual
ATEX gearbox		See manufacturer's instructions
ATEX electric motor		See manufacturer's instructions
ATEX air motor		See manufacturer's instructions
ATEX air filter regulator lubricator		See manufacturer's instructions
ATEX drive coupling		See manufacturer's instructions

### 18.1 Watson-Marlow manufactured parts

#### Close coupled pumphead adaptors

Description	Material	Finish
313 Close coupled adaptor	Aluminium	Umber grey powder coating
505L Close coupled adaptor assembly (including cover)		
501 & 621 Close coupled duplex adaptor [DFX]	Aluminium	Black anodised
501 & 621 Close coupled adaptor mechanical variator [DV]		

#### 621 duplex close coupled pump drive shaft components

Description	Material	Finish
Key	Mild steel	Natural
Shaft	Steel alloy	Natural

#### Baseplates

Description	Material	Finish
501, 621 & 701 Series CC pumps baseplate	Aluminium	Umber grey powder coating
501, 621, 701 Series CC pumps stainless steel baseplate	304 & 316 Stainless steel	Natural

#### Motor (drive) spacers and mounting blocks

Description	Material	Finish
501/621/701 Series motor (drive) foot spacer(s)	Aluminium	Umber grey powder coating

Description	Material	Finish
501/621/701 Series motor (drive) stainless steel foot spacer	304 & 316 Stainless steel	Natural
501/621 Series duplex CCP spacer(s) - mounting blocks	Aluminium	Umber grey powder coating
501/621 Series duplex stainless steel CCP spacer(s) - mounting blocks	304 & 316 Stainless steel	Natural
501/621 Series mechanical variator [DV] optional mounting block	Aluminium	Black Anodised

## 701 coupling covers

Description	Material	Finish
Coupling cover for 701 series units	Aluminium	Umber grey powder coating
Coupling cover for 701 series units	304 & 316 Stainless steel	Natural
701 pump head drain guard	Aluminium	Natural
Support bracket for filter regulator lubricator	Aluminium	Umber grey powder coating
Support bracket for filter regulator lubricator	304 & 316 Stainless steel	Natural
Flat earthing cable braid	Copper	Soft tinned
Pneumatic motor – air supply swivel elbow male	316L Stainless steel body	
Pneumatic motor restrictor silencer [Festo] (Exhaust air flow control valve)	Sintered metal	Threaded plug - wrought aluminium alloy Adjustment screw - brass
Pneumatic tubing [Festo]	Polyurethane	Blue
Pneumatic motor – Air supply reducer ½ female to ¼ male	Brass	Nickel plated