



# Dosing System

## User Guide

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# Introduction

Congratulations for purchasing one of Polymaster's quality dosing systems. Ensure this product is correctly installed, operated and regularly maintained and it should give you trouble free service for years to come.

**CORRECT SYSTEM INSTALLATION IS THE SOLE RESPONSIBILITY OF THE PURCHASER.**

**READ OPERATION MANUAL IN DETAIL BEFORE USE & COMPLY WITH ALL INSTRUCTIONS HEREIN. OPERATION MANUAL SHOULD BE KEPT WITH THE EQUIPMENT AT ALL TIMES.**

The following content is a guide only. Any vehicle/machinery affected negatively or positively is not covered by the systems warranty.

# Safety Guide

- A. This manual contains important information concerning the safe installation and use of this product. Read the manual carefully before installation and use. Pay attention to all safety warnings.
- B. Installation and use of this product should only be carried out by properly trained and approved personnel.
- C. Users of this product are responsible for the safe and correct use of this product.
- D. Any changes to this product, which have been done without consulting the manufacturer, will invalidate all warranties and guarantees.
- E. The components must not be altered or tampered with, due to potential risks to personnel.
- F. The manufacturer will not be responsible for any accidents or damages caused by incorrect installation or use of this product.
- G. This product is only suitable for storage and dispensing of Polymaster approved chemicals.
- H. If present, the control board contains electrical devices which are not suited for use in areas where there may be risks of explosion.

# Company Profile

## **ABOUT POLYMASTER**

A proud Australian business since 1994, we've earned an industry leading reputation through reliable products and honest, trusted, dependable service. We listen to our clients, and we respond with quality solutions which will help them to thrive. Because at the end of the day, their business is our business.

Polymaster manufactures an extensive range of quality products for industrial, residential and agricultural applications. Over the last two decades, Polymaster has been at the forefront of industry endorsed, product certified designs that have advanced the life span and functional capabilities of process vessels, bulk storage, rainwater tanks and animal care products. As an Australian owned, quality assured company.

## **PRODUCT DEVELOPMENT**

We continue to extend our manufacturing operations to achieve market diversification and operational longevity. Our Design & Mould team offers custom design solutions and continual scope for new product development, product improvements and modifications. Coupled with our ability to customize colours to specification and apply brand identities on request, Polymaster delivers on quality and quantity, on time and within budget.

## **LOGISTICS CAPABILITIES**

Polymaster tanks can be delivered direct to any site. We arrange specific delivery times to suit your timetable and on-site requirements.

Our logistics team are highly skilled at handling oversized freight – it's what they do every day. Polymaster's distribution fleet is experienced in over dimensional loads, general freight and site handling that provides flexibility and capability to deliver every Polymaster Product.

## **PROJECT MANAGEMENT**

Our dedicated project managers take full control of all our Engineered Solutions projects to ensure they stay on time and within budget, as well as providing you with the convenience of a single point of contact. At Polymaster our highly experienced project managers have an in-depth knowledge of all projects.

## **ENGINEERING**

Working closely with your engineering team, our own highly skilled engineers are ready to assist with all mechanical, polymer and chemical related requirements. Drawings are provided ensuring we've met your construction brief so there are no surprises with the delivered project. CAD drawings are available to your design team to save them precious time, so they can incorporate them into your overall plant drawings.

# Quality Assurance & Certification

Polymaster as a Quality Certified Company has a regimen of quality systems in place. These systems are recognised and certified internationally to ISO9001.

## **PREMIUM MATERIALS:**

Insisting on the finest quality components and proven manufacturing procedures, Polymaster exclusively uses premium resins in the manufacture of all Polyethylene products within the range, fully UV stabilised in all colours to AS/ NZS 4766.

## **ENGINEERED:**

Product Design & Mould operations see the extensive use of FEA testing and engineering, all Polymaster products are thoroughly tested and trialed before being released to the public.

## **CERTIFICATION:**

Polymaster Tanks are Independently Certified by BSI Benchmark

## **THE BENEFITS:**

- > Product Certification by an independent testing authority is your best guarantee of a quality and long lasting product.
- > Every tank is labelled with the full manufacturing details including a serial number for complete traceability.

**Granted to:** Polymaster Pty Ltd by BSI Benchmark



**Quality  
Certified  
Company  
ISO 9001**

# Product Specification

Polymaster's Standard Dosing Systems are designed as an 'essential elements' dosing system that provides high levels of functionality and practicality

## GENERAL SAFETY STATEMENT

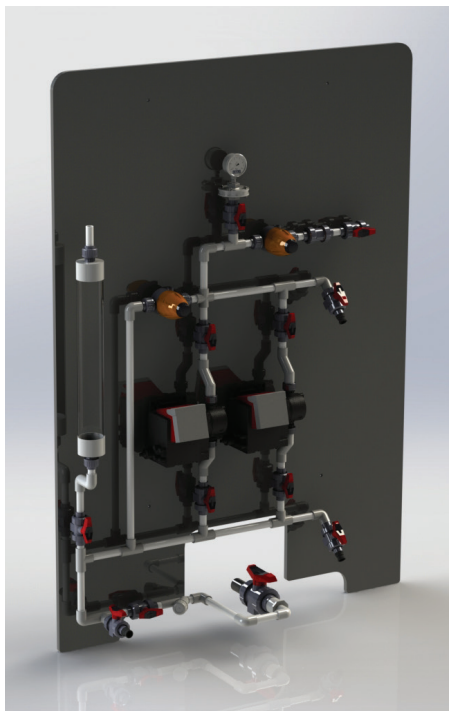
This product has the potential to result in injury or worse if not operated in accordance with this guide and industry best practice. Operators shall be sufficiently competent in the operation of such systems prior to commissioning/operating this product. Appropriate PPE is to be worn at all times when operating this equipment, regardless of the chemical being handled.

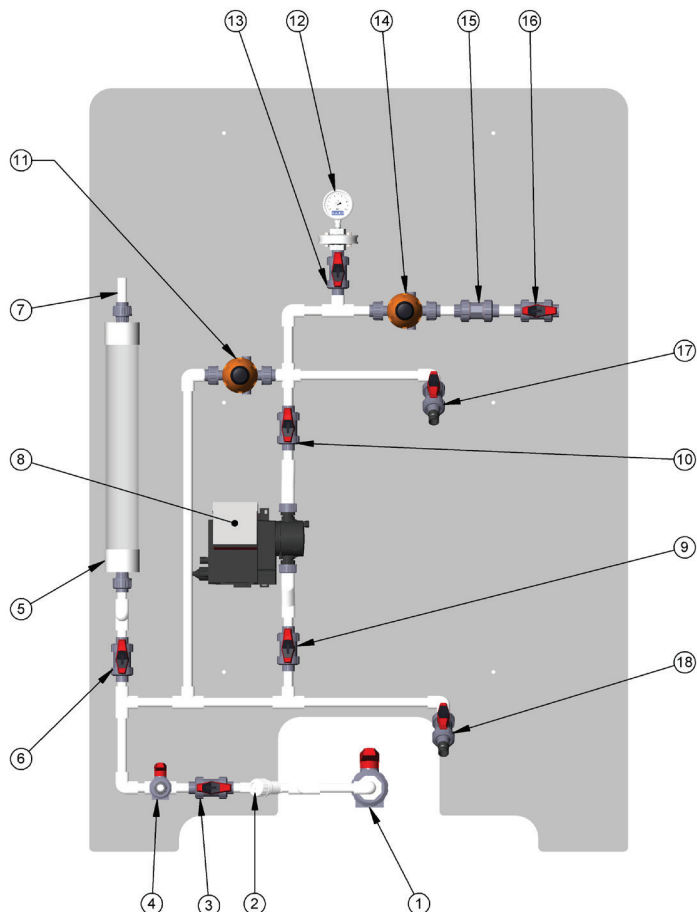
## HOW IT WORKS

The primary function of the Polymaster standard dosing system is to provide a safe and efficient means of providing a measured and controlled volume of fluid to a process. This is achieved by an engineered dosing system. All Polymaster standard dosing systems provide an operating environment suitable to the pump, and functionality to the operator to be able to effectively control and adjust the pump and associated equipment.

All Polymaster standard dosing systems comprise of the following features

- > A means of providing the minimum required backpressure for the pump to properly operate.
  - > A method of determining back pressure / pressure relief setpoints (Pressure gauge).
  - > A convenient means of connection to the dosing system (outlet valve).
- 
- > A means of calibrating the dosing pump (calibration systems).
  - > A means of draining or flushing the systems contents (drain valves).
  - > A means of proving an alternate path for fluid in the event of a blockage upstream (pressure relief valve).

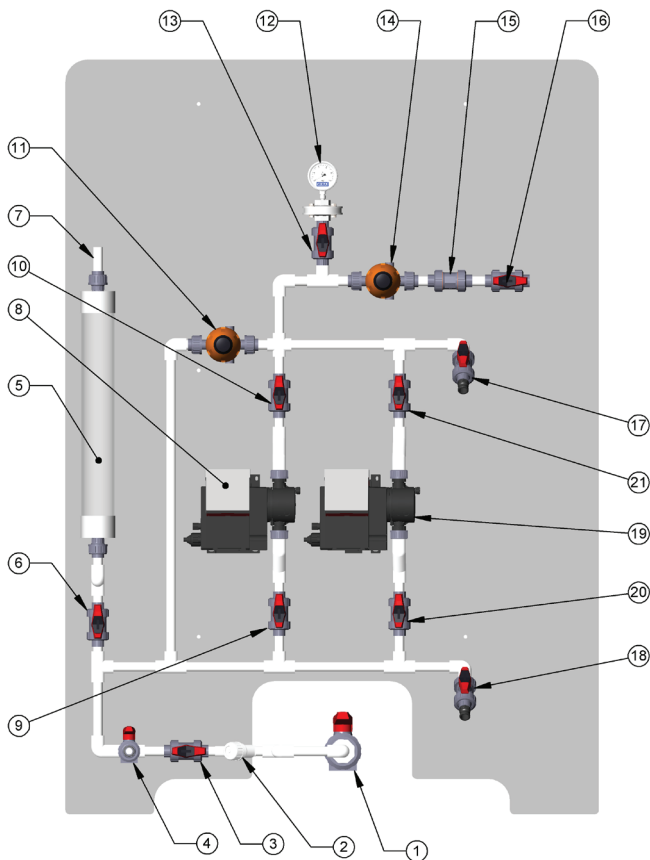




## Dosing System Components (Duty)

1	Isolator valve - Supply Tank
2	Strainer - system input
3	Isolator valve - Strainer
4	Drain valve with 1/2" male Camlock - System inlet side (suction)
5	Calibration cylinder
6	Isolator valve - Calibration cylinder
7	Vent/ Overflow return – Calibration Cylinder
8	Pump - Duty cycle
9	Isolator valve - Duty cycle pump inlet side (suction)

10	Isolator valve - Duty cycle pump outlet side (pressure)
11	Regulator valve - Pressure relief
12	Pressure Gauge - system
13	Isolator valve - pressure gauge
14	Regulator valve - Back pressure
15	Check valve - none return output
16	Isolator valve - system output
17	Drain valve with 1/2" male Camlock - System outlet side (pressure)
18	Drain valve with 1/2" male Camlock - System inlet side (suction)



Dosing System Components (Duty/Standby)

1	Isolator valve - SupplyTank
2	Strainer - system input
3	Isolator valve - Strainer
4	Drain valve with 1/2" male Camlock - System inlet side (suction)
5	Calibration cylinder
6	Isolator valve - Calibration cylinder
7	Vent/ Overflow return – Calibration Cylinder
8	Pump - Duty cycle
9	Isolator valve - Duty cycle pump inlet side (suction)
10	Isolator valve - Duty cycle pump outlet side (pressure)
11	Regulator valve - Pressure relief

12	Pressure Gauge - system
13	Isolator valve - pressure gauge
14	Regulator valve - Back pressure
15	Check valve - none return output
16	Isolator valve - system output
17	Drain valve with 1/2" male Camlock - System outlet side (pressure)
18	Drain valve with 1/2" male Camlock - System inlet side (suction)
19	Pump - standby cycle
20	Isolator valve - Standby cycle pump inlet side (suction)
21	Isolator valve - Standby cycle pump outlet side (pressure)



# Scope of Supply

<b>System Configuration:</b>	Available in Duty or Duty/Standby
<b>Fit-out:</b>	Polymaster double door cabinet
<b>Compatibility:</b>	User to review equipment list (refer datasheet) to make determination (contact Polymaster for assistance for further information)
<b>Pulsation Dampener:</b>	Not included*
<b>Y-Strainer:</b>	Included as standard (x1)
<b>Dosing Pump:</b>	Grundfos DDA FCM series pump(s) (Pumps supplied loose)
<b>Dosing pump materials/seals:</b>	Standard (PVDF, Teflon, Ceramic)
<b>Pump mounting:</b>	(Direct to cabinet backboard or via Polymaster pump shield)
<b>Pressure relief valve:</b>	Included as standard (x1)
<b>Back Pressure Valve:</b>	Included as standard (x1)
<b>Check Valve:</b>	Included as standard (x1)
<b>Pressure Gauge:</b>	Included (63mm S/Steel 0-1000kpa)
<b>Pressure gauge guard:</b>	Included PVC / PTFE
<b>Piping:</b>	Georg Fischer - PVC-U
<b>Ball Valves:</b>	Georg Fischer - Type 546
<b>Connection in:</b>	(clearance hole in cabinet - not sealed) Single
<b>Connection out:</b>	Single – finishing inside cabinet#
<b>Calibration Cylinder:</b>	Included (0 - 500ml)
<b>Drain Valves:</b>	Included as standard
<b>Flow Meter:</b>	Not included* (Flow metering can be achieved via Grundfos DDA FCM pump)
<b>Valve Tags:</b>	Not Included*
<b>Vented ball valves:</b>	Standard
<b>GPO for Pumps:</b>	Not Included as standard* (GPO/signal cable kits available on request)
<b>Input Signal Cables:</b>	Not Included as standard* (GPO/signal cable kits available on request)
<b>Pump Output Signal Cables:</b>	Not Included as standard* (parts available on request)
<b>Pipe Pressure Test:</b>	Included as standard
<b>Construction Drawings:</b>	Included as standard for client approval
<b>Cabinet Drain:</b>	Not included* (available on request)
<b>Pipework Painting:</b>	Not included* (available on request)
<b>Cabinet return pipework:</b>	Included as standard

\* Not included as part of the standard offer – can be optioned as part of a custom order if required.

# End user to penetrate the cabinet in an appropriate location for external connection and ensure its adequate weather seal.

## Out of Scope

- > Installation
- > Handling on site
- > On site electrical works
- > Any equipment not specifically outlined in the above equipment summary

# Setup & Installation

## INITIAL INSPECTION

On initial arrival and during commissioning of the dosing system, a thorough check must be conducted to ensure equipment is free from damage and is fit for use. If any damage is found, please contact Polymaster for further direction.

Whilst all systems are pressure tested during manufacturing, a check must also be conducted prior to the system being commissioned to ensure all fittings and connections are secure and have not come loose during transport.

## INSTALLATION

The dosing cabinet should be securely fixed to the foundation on which it is placed to ensure stability whilst in operation. Consideration of placement should be given to ensure ease of integration/connection with site pipework/processes without creating distortion to new/existing equipment.

## INITIAL SETUP NOTES

It is recommended that during installation/commissioning of dosing system, that the maximum pressure limit of the pump is set to a conservative value to safeguard system / operator - This control measure is only possible if FCM variant of pump is being used, for pumps with no pressure monitoring capability, it is recommended that pressure relief and backpressure valves are set to a low possible value and adjusted to appropriate value during commissioning.

## PUMP CALIBRATION

Calibration may be checked or adjusted using the provided calibration cylinder. (From Grundfos user manual) The pump is calibrated in the factory for media with a viscosity similar to water at maximum pump backpressure (see section 3.1 Technical data). If the pump is operated with a backpressure that deviates or if dosing a medium whose viscosity deviates, the pump must be calibrated. For pumps with FCM control variant, it is not necessary to calibrate the pump if there is deviating or fluctuating backpressure so long as the "AutoFlowAdapt" function has been enabled (see section 6.10 AutoFlowAdapt). Polymaster recommends that the calibration is ran for the chemical being dosed.

## SETTING BACK PRESSURE

The recommended minimum backpressure for a Grundfos DDA FCM pump is 2 bar. Using the supplied pressure gauge, the systems backpressure valve be adjusted accordingly.

# Setup & Installation (continued)

## SETTING PRESSURE RELIEF

Like the setting of the back pressure valve, the pressure relief valve can be set using the provided pressure gauge. With the pressure relieve valve fully 'backed off' (opening at the lowest possible pressure), and the outlet valve in the almost (or fully) closed position, adjust the pressure relief valve to open at the desired pressure. Note that if the system becomes blocked or the pressure relief valve does not function, the pump is capable of generate pressure sufficiently high to damage the system or worse.

The Grundfos DDA FCM pump does have the ability to have a pre-programmed max pressure set, it is recommended a conservative max pressure is set during commissioning as a safeguard to the system and operators.

## JUNCTION BOX - SITE CONNECTION (If applicable)

If dosing system has been supplied with a junction box, a qualified electrician will be required to connect mains power to the junction box, a wiring diagram for the junction box is available on request.

## OPERATION

Please refer to relevant Grundfos DDA pump installation and operating instruction document for operation and control modes.

## STRAINER

It is recommended that the strainer is positioned with the basket facing up, to minimise the loss of fluid when the basket is removed.

To clean y-strainer, it is necessary to pause pump and then isolate the strainer via the immediate upstream and downstream valves, with an appropriate container in place to collect any spilled liquid remove the strainer and clean, then reinstall the strainer, ready for use.

Operators may wish to use the closest drain valves to drain the majority of fluid prior to removing the strainers basket.

Operators may look to use the calibration cylinder as a temporary draw down reservoir through the opening/closing of appropriate ball valves to keep the pump on-line whilst cleaning out strainer, it is recommended that the fluid is completely drawn down, leaving the cylinder empty once strainer has been reinstalled and the system can be reconnected to main fluid reservoir. Regular maintenance and inspections should be a normal part of any dosing systems operation, please refer to the below as a starting point for suggested maintenance intervals. This section serves as a guide only, end users should look to develop and maintain their own maintenance and servicing schedules. Appropriate PPE is to be worn whilst conducting maintenance or repairs.

**Important Note:** Dosing system can expose operators to dangerous chemicals under high pressure. Care must be taken to ensure that

# Maintenance/Service & Care

appropriate PPE and shutdown procedures are used to avoid chemical spills and or exposure. Contact with some chemicals can lead to extreme burns or worse. Consult with relevant SDS before handling.

## PUMP DIAPHRAGM

(Grundfos DDA pump manual) –  
Warning If the diaphragm leaks or is broken, dosing liquid will escape from the drain opening on the dosing head

Please refer to relevant Grundfos DDA pump installation and operating instruction document (available via web download)

## WARRANTY

Standard warranty for non-consumable parts is 12 months from date of receiving unit.

Description	Recommended Inspection/Service Interval
General system inspection (visual inspection)	Daily
Pump Diaphragm	Replacement at 12-24 months
Pressure relief valve function	Check every 6 months
Ball valve function	Check monthly
Y strainer clean out	Visual inspection monthly

# Trouble Shooting

TOPIC	POSSIBLE CAUSE	ACTION	CONTACT

# Activate your Warranty

Please activate your warranty online at [polymaster.com.au/warranty](https://polymaster.com.au/warranty)



Alternatively, if you do not have access to the online warranty page, contact us on

1300 062 064

We would love to hear about your experience with Polymaster. Please share your comments on our facebook page. [facebook.com/polymastergroupaust](https://facebook.com/polymastergroupaust)



Together we  
hold the future.

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