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DISTRIBUTOR:

English

MODEL

TPUK-LA

CE

Operation & Maintenance Manual

PNEUMATIC LEVEL CONTROL SYSTEM FULLY AUTOMATIC

Instructions for the installation, start-up, operation, maintenance and repair

Spare parts

STOP

Read this instruction manual carefully before you install and operate this system!

Contents

Warranty / return form

Sketch of installation

Warranty / return form			
Company			
Address			
Country			
Contact Name			
Telephone		Fax	
E-mail			
Delivery date		Install date	
System Type		Serial No.	
Description of fault			
Media			
Temperature (^{O}C)		Viscosity (cPs)	
Spec. grav. (Kg/m^{3})		pH (Value)	
Particle content (%)		Particle size (mm)	
Duty (h/day)		Starts per day (No.)	
Media Pressure (bar)			
Air pressure (bar)		Air quality	
Notes			

EC DECLARATION OF CONFORMITY

CE

tapflo® pumps & systems

Name and Address of the manufacturer:	**Tapflo (UK) Ltd** Highcove House Chandlers Ford Ind Est Hampshire SO53 4BU UK
Description of Equipment:	Pneumatic level control system Fully automatic
Model / Type:	TPUK-LA
Directives / Conformity Assessment Procedures:	The Machinery Directive **(2006/42/EC) /** Non Annex IV Machinery, Self declaration/Technical file
Declaration:	**The person signing below declares that the above named equipment fulfils all the relevant provisions of the stated directives.**
Place of Declaration	**Tapflo (UK) Limited**, SO53 4BU, UK
Date:	8/7/2011
Signed:	
Printed Name of Authorised Signatory:	Mr. M. Barnes
Position in Company:	Managing Director

Introduction

Tapflo (UK) pump control systems are designed to offer simple solutions for industrial pumping applications. The systems work in harmony with each pump application utilising similar means of power and methods of construction to give safe, simple and reliable use.
With proper installation, set-up and maintenance Tapflo (UK) systems give efficient and trouble free operation. This manual will familiarize operators with detailed information about installing, operating and maintenance of the system.

Warning symbols

The following warning symbols are present in this instruction manual. The warning information should be observed when either of these symbols is present.

This symbol highlights all safety instructions in this manual where danger to persons may occur. Observe these instructions carefully and proceed with the utmost caution in these situations. Inform all users of all safety instructions. In addition to the instructions in this manual, the general safety and accident prevention regulations must be observed.

This symbol highlights points in the instruction manual of particular importance for compliance with regulations and directives, for correct work flow and the prevention of damage to, or destruction of the system or its associate equipment.

Receiving inspection

Although every precaution is taken when packing and shipping, please carefully check goods on receipt, ensuring all parts listed on the packing note are accounted for. Report any damage or shortages to the delivery company and Tapflo (UK) within 24 hours of receipt.

Storage

If the equipment is to be stored prior to installation, place in a clean dry location ensuring it is not exposed to extreme temperature or humidity, ideally in original packaging to prevent contaminates entering the system.

Warranty

Tapflo UK warrants products under conditions as below for a period of not more than 12 months from installation and not more than 24 months from date of manufacture.

1. The following terms and condition apply to the sale of machinery, components and related services and products, of Tapflo UK (hereinafter “the products”)

2. Tapflo UK (the manufacturer) warrants that:

   a. its products as being free of defects in material, design and workmanship at the time of original purchase;
   b. its products will function in accordance with Tapflo UK operative manuals; Tapflo UK does not guarantee that the product will meet the precise needs of the Customer, except for those purposes set out in any invitation to tender documents or other documents specifically made available to Tapflo UK before entering into this agreement;
   c. high quality materials are used in the construction of the products and that machining and assembly are carried out to the highest standards.

   Except as expressly stated above, Tapflo UK makes no warranties, express or implied, concerning the products, including all warranties of fitness for a particular purpose.

3. This warranty shall not be applicable in circumstances other than defects in material, design, and workmanship. In particular warranty shall not cover the following:

   a. Periodic checks, maintenance, repair and replacement of parts due to normal wear and tear (seals, O-rings, rubber items, bushings, etc..);
   b. Damage to the product resulting from:
      1. Tampering with, abuse or misuse, including but not limited to failure to use the product for its normal purposes as stated at the time of purchase or in accordance with Tapflo UK instructions for use and maintenance of the product, or the installation or improper ventilation or use of the product in a manner inconsistent with the technical or safety standard in force;
      2. Repairs performed by non-skilled personnel or use of non-original Tapflo UK parts
      3. Accidents or any cause beyond the control of Tapflo UK, including but not limited to lightning, water, fire, earthquake, and public disturbances, etc.;

4. The warrantee shall cover the replacement or repairing of any parts, which is documentedly faulty due to construction or assembling, with new or repaired parts free of charges delivered by Tapflo. Parts subjected to normal tear and wear shall not be covered by the warranty. Tapflo shall decide as to whether the defective or faulty part shall be replaced or repaired.

5. The warrantee of the products shall be valid for a period in accordance to the current law from the date of delivery, under the condition that notice of the alleged defect to the products or parts thereof be given to Tapflo UK in written within the mandatory term of 8 days from the discovery.

6. Repair or replacement under the terms of this warranty shall not give a right to an extension to, or a new commencement of, the period of warranty. Repair or replacement under the terms of this warranty may be fulfilled with functionally equivalent reconditioned units. Tapflo UK qualified personnel shall be solely entitled to carry out repair or replacement of faulty parts after careful examination of the pump. Replaced faulty parts or components will become the property of Tapflo UK

7. The products are built in accordance with standard CE normative and are tested (where applicable) by Tapflo UK. Approval and tests by other control authority are for the customers account. The products shall not be considered defective in materials, design or workmanship if they need to be adapted, changed or adjusted to conform to national or local technical or safety standards in force in any country other than that for which the unit was originally designed and manufactured. This warranty shall not reimburse such adaptations, changes or adjustments, or attempt to do so, whether properly performed or not, nor any damage resulting from them, nor any adaptation, change or adjustments to upgrade the products from their normal purpose as described in the products operative manual without the prior written consent of Tapflo UK

8. Installation, including electric and other connections to utility mains according to Tapflo UK drawings, is for the cost and responsibility of the customer, unless otherwise agreed in writing.

9. Tapflo UK will not be liable on any claim, whether in contact, tort, or otherwise, for any indirect, special, incidental, or consequential damages, caused to the customer or to third parties, including loss of profits, arising by any possible infringement of par. 3 above or by the customer or third parties being in the impossibility of using the products.

Notwithstanding the above, Tapflo UK liability to the customer or third parties from any claim, whether in contract, tort, or otherwise, shall be limited to the total amount paid by the customer for the product that caused the damages.

Spare parts

There are no user serviceable parts within the system.
The essential accessories are detailed below.
Please consult Taplfo (UK) for service.

Quantity	Description	Part number
1	Combined blocking/needle valve	TPUK-B/NV-*size*

How to order parts

When ordering parts for Tapflo (UK) system, please provide the model number and serial number of the system, position number and quantity of items required.

Returning parts

To return parts to Tapflo (UK) please follow this procedure.

- Consult Tapflo (UK) for shipping instructions
- Cleanse, neutralise and rinse the part making sure the part is completely free from media
- Provide a certificate of decontamination, where appropriate
- Complete the Warranty / Returns form on following page and return articles carefully to prevent any damage during transport

Mounting

Tapflo (UK) systems will operate properly without being mounted unless otherwise stated. If the system is to be mounted please ensure the surface is suitable for the load detailed in the specifications and appropriate to the system and application.

Air connections

Please ensure all connections observe the specifications of the system, failure to observe this could result in damage to the system and danger to personnel.

Air preparation

All Tapflo (UK) systems are designed to run on clean, dry air, lubrication is not recommended. Maximum pressure is 7 bar (G) unless otherwise stated. An inline filter of 5 micron or finer is recommended to preserve the life of the system.

Air pressure

The maximum pressure specified in the data section of this manual must not be exceeded. Higher pressures can cause damage and may cause injury to personnel.

Health and Safety

Systems must be installed according to local and national safety rules. The system must be suitable for the application. Failure to do so could result in poor performance and a risk to plant and personnel. Consult Tapflo (UK) if in doubt.

Protection

In the interest of health and safety it is essential to wear appropriate PPE when operating and/or working in the vicinity of the application.

Explosive environments

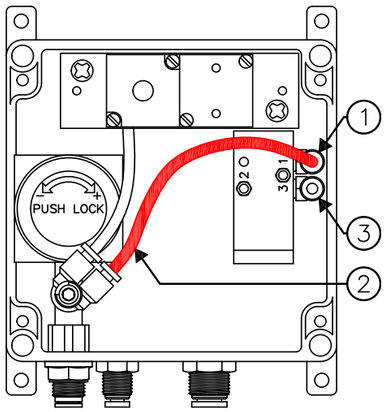
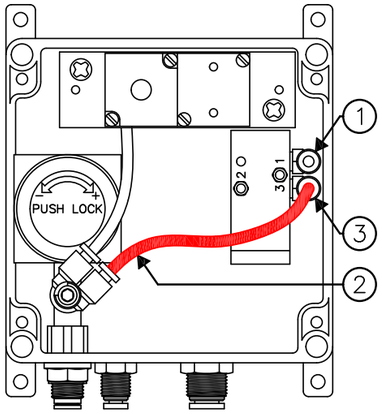
Tapflo (UK) Ltd systems are not certified for use in explosive environments. Consult Tapflo (UK) for further information. Incorrect installation or use may cause injury or death to personnel in the vicinity of the installation!

Principle of operation

Tapflo (UK)'s fully pneumatic, automatic level control system utilizes low-pressure air passed through dip tubes to detect liquid levels. The system controls the liquid level between the dip tubes and can be configured in either *'filling'* or *'emptying'* modes.

Configuring filling or emptying modes

The system is supplied configured in 'emptying' mode (Fig.1a). To reconfigure to 'filling' mode (Fig.1b) ensure compressed air supply is off, remove the systems enclosure lid, remove the control pipe (Fig.1a-2) from push fit fitting in port 1 (Fig.1a-1), and reposition in push fit fitting in port 3 (fig.1b-3).

Emptying mode	Filling mode
Pump output 'A' is enabled when the 'full' dip tube is immersed, continuously pumping until the 'empty' dip tube is exposed. Pump restarts when 'full' dip tube is re-immersed.	Pump output 'A' is enabled when the 'empty' dip tube is exposed, continuously pumping until the 'full' dip tube is immersed. Pump restarts when 'empty' dip tube is re-exposed.
 (Fig.1a)	 (Fig.1b)

Essential accessories

Item 3 (Fig.2) is an essential accessory available from Tapflo (UK). Please consult Tapflo (UK) for further details.

Maintenance

Routine inspection

Routinely check the function and calibration, as normal wear can affect performance. To re-calibrate; follow the instructions in the application specific sections of this manual.

Routinely check the condition of the dip tubes as damage or blockage can cause inconsistent switching.

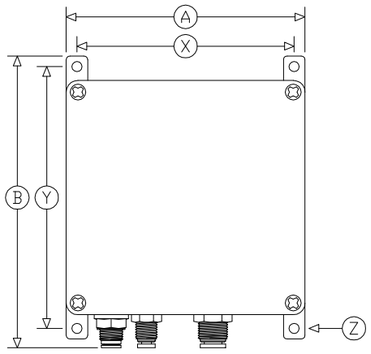
Trouble shooting

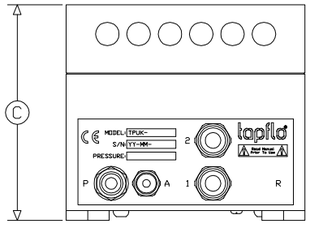
Check the system is configured as shown in the recommended configuration then see possible solutions below. If the problem persists consult Tapflo (UK).

Please refer to the pump manual for more detail specific to pump issues.

Symptom	Cause	Remedy
System is inoperative	Insufficient air supply.	Check all incoming air supplies are connected and meets minimum requirements.
	Dip tube is blocked or damaged.	Check dip tubes and interconnections for damage or blockage.
	Speed control adjusted too closed position.	Adjust the speed control (3).
	Control system is out of calibration.	Check calibration as detailed in this O&M manual
	Pump issue.	See pump O&M manual.
System switches rapidly	Dip tube function is reversed.	Check dip tube configuration, ensuring the 'empty' dip tube is connected to '2' and 'full' is to '1'

Technical data



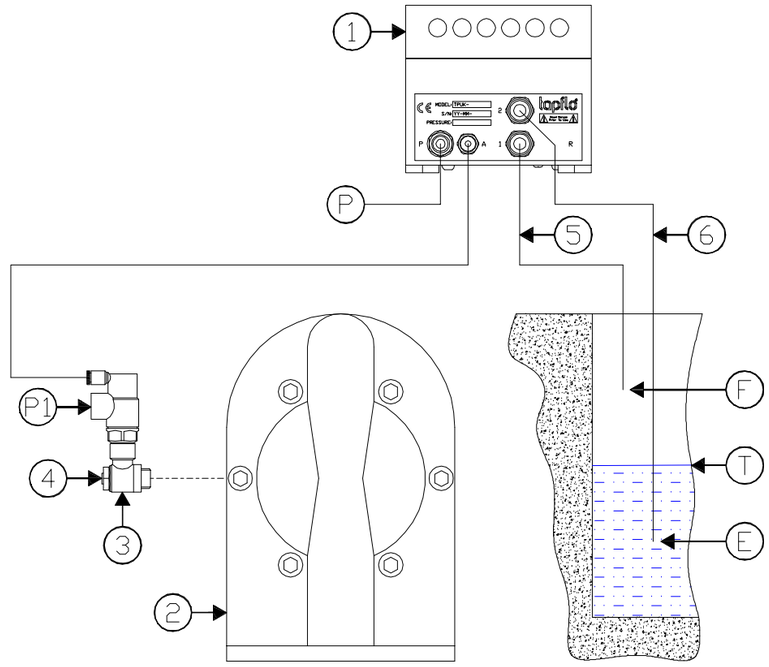


Dimensions			
A	122 mm	X	111 mm
B	150 mm	Y	134 mm
C	110 mm	Z	Diameter 5 mm

Connections		
Port No.	**Description**	**Connection type**
P	Air supply	6mm push fit
A	Pump pilot output	4mm push fit
1	‘Full’ dip tube	8mm push fit
2	‘Empty’ dip tube	8mm push fit
R		

Specifications	
Temperature range – Ambient	-5^{O}C to +40^{O}C
Air pressure – Min/Max	3-7 BAR (G)
Pilot output flow rate at 6 bar with p=1	120 Nl/min (Effective orifice = 2.5mm)
Air consumption (system only)	2 L/min (Average)
Weight	850 g

Recommended installation



(Fig.2)

Item No.	Desription
1	Tapflo (UK) pneumatic automatic level control system (TPUK-LA)
2	Pump (for representation purposes only)
3	Combined blocking/needle valve (essential accessory) (Part No. TPUK-B/NV-*size*, sized to suit pump)
4	Pump speed control adjustment screw
5	Connection to ‘full’ dip tube
6	Connection to ‘empty’ dip tube
P	System compressed air supply connection
P1	Pump compressed air supply port
E	‘Empty’ level dip tube
F	‘Full’ level dip tube
T	Tank liquid level (for representation purposes only)

Set up

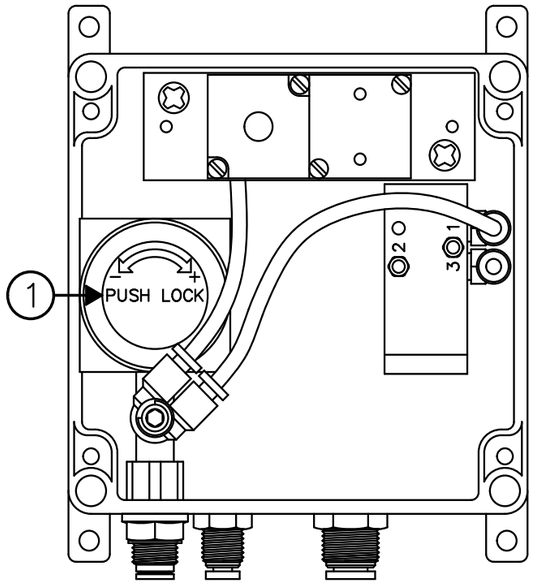
Before using the system ensure the following

- The system is configured correctly and has not been modified.
- Make all connections as instructed.
- Set the air pressure.
- Turn the compressed air supply on.
- Check for leaks. (N.B. the system utilizes an 'air bleed' design and discharges a small amount of air during normal use).
- The system is located on a clean, flat surface.

Adjusting the sensitivity

The system will require adjustment of the sensitivity prior to first use, failure to adjust the system correctly could result in poor performance and/or damage to the internal components.

Tapflo (UK) recommend the setting of the sensitivity of the system is completed with the pump running dry.



(Fig.3)
(Shown in ‘emptying’ mode – see fig.1a & fig.1b)

To adjust the sensitivity of the system use two short pieces of 8mm pipe in place of the normal dip tubes with a small container filled with water to locally replicate the tank and dip tubes (see fig.2).

The system is best set by rising pressure therefore firstly unlock the ‘sensitivity adjustment’ regulator (fig.3-1) by pulling the control knob forwards. Then reduce the pressure to the minimum by rotating the knob fully counter-clockwise.

Immerse both of the short temporary dip tubes into the water by at least 25mm, ensuring they are positioned to represent ‘full’ and ‘empty’.

Turn on the compressed air supplies P & P1 (fig.2).

Gradually increase the pressure by turning the control knob of the ‘sensitivity adjustment’ regulator (fig.3) clockwise until bubbles begin escaping from one of the dip tubes, and/or the pump either starts or stops dependant on the configuration.

Raise and lower the dip tubes (or the container) replicating changing level of liquid and ensure the pump starts and stops as expected, whilst adjusting the regulator to give the desired performance.

Once the adjustment is complete lock the ‘sensitivity adjustment’ regulator (fig.3-1) by pushing the control knob in until it clicks into the locked position.

Turn off compressed air supplies P & P1 (fig.2) and install the system into its application and run a test cycle (see Note 2 below).

Note 1 : If the system switches repeatedly in rapid succession, the dip tubes are reversed in their operation.

Note 2 : Dip tube length does not affect sensitivity, however elongated runs will slow detection. For runs in excess of 3 metres it is recommended to increase the dip tube diameter to 10mm, 1 metre from the system, to a maximum length of 20 metres.

Pump speed

Adjust the pump speed to the desired flow rate by adjusting “Pump speed control adjustment screw” 4 (fig.2).

Operation

The system is fully automatic, controlling the pump to maintain the liquid level between the ‘full’ and ‘empty’ dip tubes E & F (fig.2) in the configured ‘filling’ or ‘emptying’ mode.