sensia
Rockwell Automation + Schlumberger

+ MEASUREMENT SOLUTIONS

OPERATING & INSTALLATION MANUAL

FOR THE

CPC VOLUME SENSOR

This JISKOOT Product is designed to provide outstanding service if correctly installed, used and maintained recognising the effects of the process conditions (temperature, pressure, wax/pour point, sediment, etc.).

Truly representative sampling of crude oils etc., cannot be achieved by one single product in isolation. A well designed system and operating procedures as laid down in the Sampling Standards ISO 3171*, API 8.2 and* IP Chapter VI section 2 *are mandatory.*

Please consult JilSKOOT for further information and assistance.

Document No. H49

TABLE OF CONTENTS

1 Introduction

The CPC volume sensor is designed to operate with the Jiskoot constant pressure cylinder (CPC) sample receiver, or other manufacture's receivers that also use a displacement piston carrying a magnet to detect the piston position.

The length of the unit is selected to cover the movement range of the receiver in question and can provide a signal proportional to the volume within the receiver.

2 Functional Description

The sensor is influenced by the movement of the magnetic field set up by the piston magnet as it travels the length of the receiver. A series of switching devices within the transmitter are activated which in turn introduce more, or less total loop resistance depending on the switch position within the sensing tube.

This resulting resistance can be converted to a standard 4 to 20mA signal externally, or, more often by an integral converter mounted in the transmitter head.

The unit is powered from a 12 to 30Vdc source, the measurement resolution is 2.5 to 5.0mm and the expected accuracy is 1.5%.

Installation, Operating Instructions & Safety Information

Please refer to KSR Keubler "Mounting and operating instruction" manual for Level Sensors NMG125, MG (KEMA 01ATEX1052 X) for complete information.

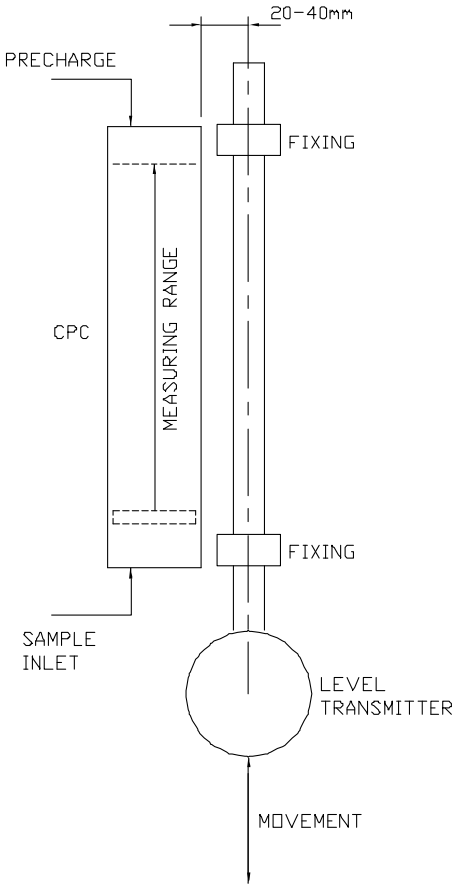
3 Installation

The mounting of the transmitter will depend upon the available space surrounding the receiver. It should be mounted in a parallel fixed position whereby the removal and replacement of the receiver will maintain the lateral position and spacing between the receiver and transmitter.

When provided within a system the transmitter will be positioned correctly, in a new installation a test may be required to ascertain the lateral position of the transmitter in relationship to the receiver.

It's recommended that the distance from the outer wall of the receiver to the centre line of the sensing tube should be 20 to 40mm. Fixing should be such that the transmitter can move laterally to enable it be adjusted to the start position of the piston.

14mm "STAUFF" tube clamps provide an easy fixing method.



4 Calibration

To check the positioning and calibration, temporary fittings and instrument air or inert gas can be used to push the piston throughout its travel by applying pressure to one end of the receiver whilst venting the other and the output signal of the transmitter is then monitored by a multimeter.

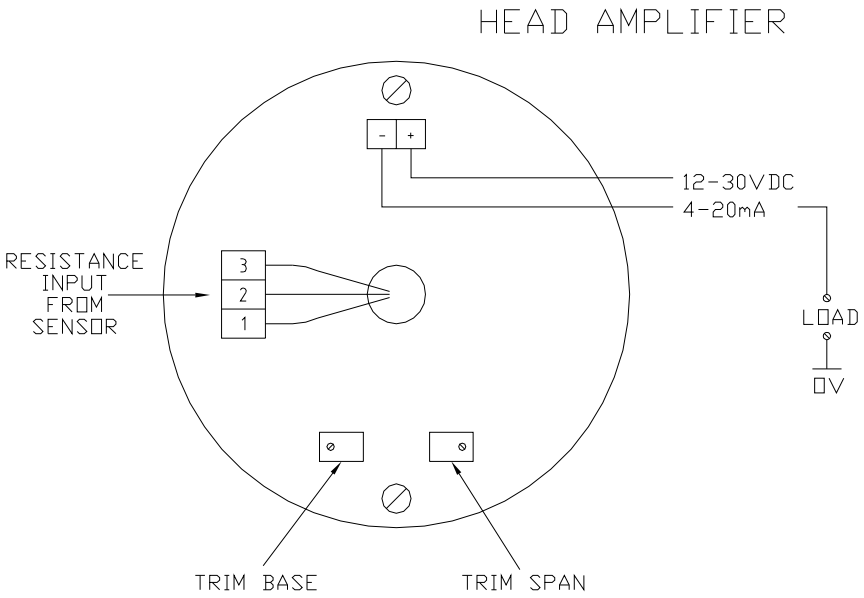
If the receiver has an external indicator it can be used to determine the piston position, if not only the extremes (when the piston arrives at its mechanical stop at each end) can be determined.

The base and span adjusters within the transmitter head are factory set by the manufacturer. These may be trimmed to calibrate against the actual position of the piston.

With the piston at its zero position the transmitter should moved until the output signal just lifts from its 4mA output then back it off for 4.0mA. This is to ensure the first switch within the sensor is reacting to the encroaching magnetic field with the piston at its empty position.

The piston can then be forced to its full position to check the range and the span adjusted to give 20mA output. Repeat this process and adjust for any interaction of the adjustments.

Intermediate positions can be checked if an indicator is fitted.



5 Disclaimer

Whilst Jiskoot Limited has taken every care in the preparation of this document, it cannot accept responsibility for printing errors or omissions and does not warrant that it is correct and comprehensive in every particular. Equipment supplied should always be operated by persons with an appropriate level of skill and training.

Jiskoot Limited shall not be liable for incidental or consequential damages resulting from the furnishing, performance or use of this material.

Jiskoot pursue a policy of continuous improvement, and information given herein may be updated without notice. Further, this information is proprietary to Jiskoot Limited, and must not be disclosed to any third party except as may be required to operate the equipment supplied in accordance with the purposes for which it was sold by the persons properly licensed to operate it.

0	First issued	IS	MF	3rd Jan'09
Issue	**Revision History**	**Issued**	**Approved**	**Date**