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## Kalmar Group Standard

# KGS 60102

Part

**Method Standard**

Name

**Cleanliness – Fluid Tanks, Cylinders, Valves & Pumps**

Group

**Requirements for Suppliers**

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### 1 Scope

This Kalmar Group Standard, hereinafter referred to as KGS, specifies the cleanliness requirements for fluid tanks, cylinders, valves and pumps.

### 2 Purpose

The purpose of this KGS is to ensure sufficient cleanliness of fluid tanks, cylinders, valves and pumps.

### 3 Responsibilities

Design Engineers - Make a note of the required details on the technical documentation, such as the drawings and BOMs.

Supplier Development Engineers - To inform suppliers about this KGS and make sure that the cleanliness standards set by this KGS are met.

### 4 Definitions

BOM - Bill Of Materials

### 5 Records / References / Attachments

KGS 60101      Cleanliness - Designation

ISO 11500      Particle counting procedure by automatic particle counter (APC)

### 6 Procedure Description / Requirements

#### 6.1 Requirement

	Cleanliness Requirements	Max. Metallic Particle size	Hydraulic oil for testing
<b>Hydraulic tanks</b>	-/17/13	500 µm	AW46 Grade or Equivalent
<b>Fuel tanks</b>	-/18/15	500 µm	AW46 Grade or Equivalent
<b>Cylinders</b>	19/16/13	100 µm	AW46 Grade or Equivalent
<b>Valves</b>	19/16/13	100 µm	AW46 Grade or Equivalent
<b>Pumps</b>	19/16/13	100 µm	AW46 Grade or Equivalent

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## **6.2 Test Procedure**

Fill the part/assembly with the appropriate volume of extraction fluid and shake it vigorously to remove contaminants from the inner surface and collect them in the sample bottle.

Take a sample from the extraction fluid for particle counting analysis.

It is advised to conduct particle counting procedures in accordance with ISO 11500 guidelines to determine the number and sizes of particles contained in bottle test samples. Make sure that oil sample particle count reading as per requirement, if not repeat procedure with new extraction fluid.

## **6.3 Cleaning and Washing**

Fluid tank: welded details must be cleaned by grinding or brushing. Sand-blasting may not be used.

Machining and surface treatment must be carried out so that remains from cutting and peeling do not remain in the finished component.

Testing of valves/pumps/cylinders shall be carried out so that no foreign particles stay in the finished component.

For Kalmar in-house assembly of valves/pumps/cylinders/tanks the cleaning shall be done by pressurized air/ fluid as per product requirement.

## **6.4 Drying**

Finished part/assembly must be dried either by heat drying or by blowing dry filtered pressure air to guarantee that all cleaning fluid from the washing process is evacuated.

## **6.5 Anti-corrosive treatment**

To maintain cleanliness until installation, the part/component shall be treated with an anti-corrosive agent if required that does not influence the system fluid or the component's hoses and seals.

## **6.6 Sealing, storage and transportation**

Components should be sealed with appropriate protection immediately after assembly and stored in dry areas until used.

Storage locations and material handling devices shall be kept free of dust, dirt, and metal particles.

Parts that have been cleaned can be kept in trays/sealed plastic bags/packed in boxes to prevent re-contamination while transportation/storage.

Necessary actions shall be taken to protect components from contamination.

## **6.7 Indication on technical documents**

The cleanliness requirements shall be indicated on the drawing according to KGS 60101.