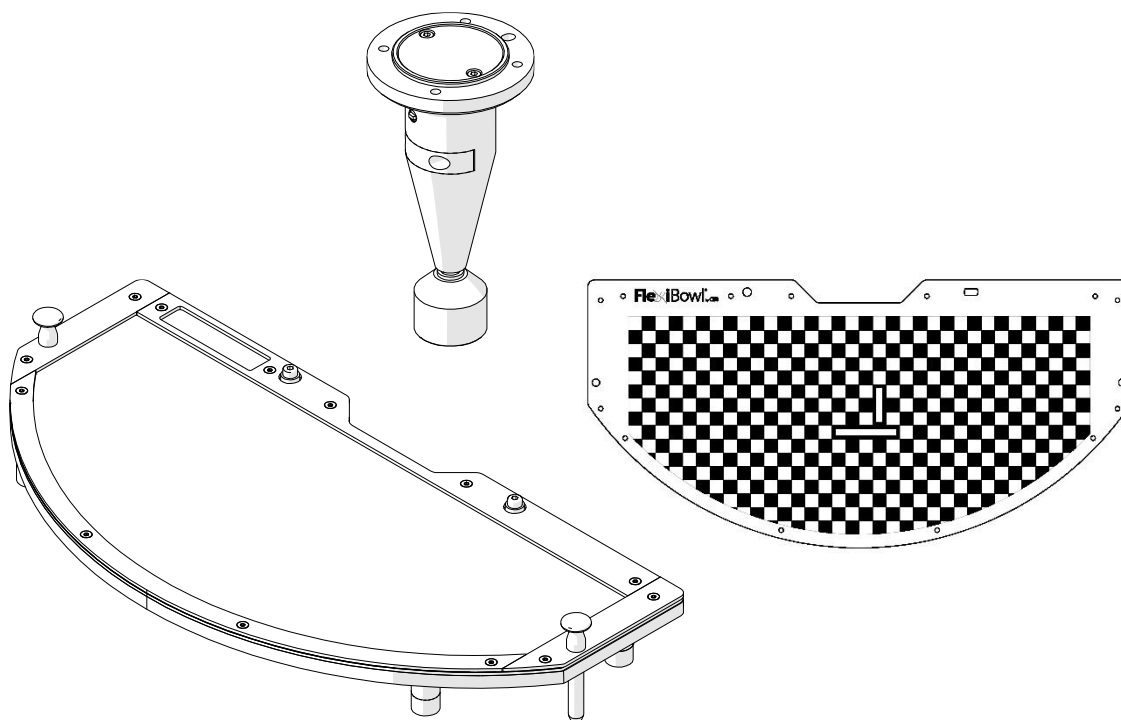


INSTALLATION MANUAL

ENGLISH TRANSLATION OF THE ORIGINAL INSTRUCTIONS



CALIBRATION PLAN

LASER CALIBRATION TOOL

For Flexibowl® 350-500-650-800 models
For FlexiVision and IRVision vision systems

YEAR OF CONSTRUCTION:	2021
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Revision 2.0 - Edition 08/2022

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INTRODUCTION

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The Manufacturer is in no way liable for the consequences resulting from any incorrect operations carried out by the user.

EDITOR'S NOTE

This documentation is specifically intended for technicians; therefore, some of the information that can easily be understood from reading the texts and analysing the drawings might not be detailed further.

The Publisher is in no way responsible for the information and data in this manual: all of the information contained herein has been provided, checked and approved by the Manufacturer.

The Publisher is in no way liable for the consequences resulting from any incorrect operations carried out by the user.

GENERAL REMARKS

All of the operating and maintenance instructions and recommendations described in this manual must be followed.

To obtain the best results, the Manufacturer recommends that the cleaning and maintenance operations be carried out regularly to keep the system in perfect working order.

It is particularly important to train personnel in charge of the accessory on its use, as well as on maintenance and monitoring compliance with the operating procedures and with all of the safety regulations set forth in this manual.

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1 IDENTIFICATION

1.1 Manufacturer's identification

Manufacturer	ARS S.r.l.
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1.2 Identification of accessories

Typology	CALIBRATION PLAN LASER CALIBRATION TOOL
Compatible Flexibowl® models	350-500-650-800
Compatible vision systems	FlexiVision - IRVision
Year of manufacture	2021

2 PRELIMINARY INFORMATION

2.1 Recipients

The manual is intended for operators in charge of using and controlling the accessories throughout all stages of its technical life.

It contains topics that refer to correct use, in order to maintain the operating and quality features unchanged over time.

The manual is an integral part of the accessories and must always accompany them whenever they are moved and/or resold. It is the responsibility of the user to keep this documentation intact so that it can be consulted throughout the accessories' service life.

2.2 Supply and storage

The manual is supplied in **paper and electronic format**.

All additional documentation is provided as an annex to this manual.

Store this manual with the accessories so that it can be easily consulted by the operator.

The manual is an integral part for safety purposes, therefore:

- **it must be stored intact** (in its entirety). If it is lost or damaged, immediately request another copy.
- **must follow the accessories until demolition** (also in case of relocation, sale, etc....);
- **the attached documents are an inherent part of this documentation** therefore the same recommendations/requirements in this manual apply to them.

The **Manufacturer** disclaims any liability for accessories misuse and/or for damage caused following operations not specified in the technical documentation.

2.3 Updates

If the accessories requires modifications or functional replacements, the Manufacturer is responsible for reviewing or updating the manual.

The Manufacturer is in charge of delivering the updated manual.

Moreover, if this document is altered in any way by the Manufacturer, the user is responsible for ensuring that only the updated version of the manual is actually made available in the points of use.



2.4 Language

The original manual is written in **Italian**.

Any translations into additional languages must be done from the original instructions.

The Manufacturer shall be held responsible for the information in the original instructions; translations into different languages cannot be completely verified, therefore, if an inconsistency is found, please follow the text in the original language or contact our Technical Documentation Office.

2.5 Symbols used in the manual

SYMBOL	DEFINITION
	Symbol used to identify important warnings for the safety of the operator and/or the machine.
	Symbol used to identify important information in the manual. The information also concerns the safety of personnel involved in machine use.

2.6 Glossary

Technical terminology or terminology with an uncommon meaning is used in the manuals.

The terms used are explained below:

TERM	DEFINITION
Harm	Any negative consequence deriving from the occurrence of a hazardous event.
Machine	An assembly, fitted with or intended to be fitted with a drive system, consisting of linked parts or components, at least one of which moves, and which are joined together for a specific application.
Prevention	The set of provisions or measures that are also necessary according to the particular nature of the work, experience and technique, in order to avoid risks or reduce the probability of their occurrence.
Intended use	Use of machinery in accordance with the information provided in the instructions for use.
Reasonably foreseeable misuse	Use of machinery in a way not intended by the designer, but which may result from readily predictable human behaviour.
Pattern	Image used as a reference for calibrating vision systems.
Calibration	Use of a measurement standard to determine the relationship between the value displayed by the instrument and the actual value. The reliability of a measuring instrument can be ensured by calibrating it to a measurement standard.
Vision system	Technology that simulates the behaviour of an operator, in the functions of vision and interpretation, in order to automatically perform control or industrial automation operations.
Flexibowl®	Part feeder compatible with any robot and machine vision system.

2.7 Warranty

The full warranty terms are included in the sales contract.

The conditions set forth in the sales contract (if different) have priority over the contents of this section.

The warranty **is subject** to the following general conditions:

- **unpacking and installation** must be carried out as described in this manual;
- **the accessories must be used within the limits declared in** the contract and specified in the technical documentation.

The warranty shall be rendered **null and void** in the event of:

- **improper use of** accessories;
- **installation not** in accordance with this manual;
- **modifications or repairs** made by the user without written authorisation from the Manufacturer;
- partial or total **failure** to comply with the instructions;
- **lack of** maintenance;
- use of **non-original spare parts**;
- **exceptional events** such as floods, fire (if not caused by the machines).



Further details may be contained in the sales contract.

The conditions set forth in the sales contract (if different) have priority over the contents of this section.

3 GENERAL DESCRIPTION

3.1 Intended use (correct)

The accessories covered by this manual are intended for:

OPERATION	PERMITTED	NOT PERMITTED
Calibration of:	FlexiVision and IRVision vision systems for Flexibowl® models 350-500-650-800	Any other use other than that permitted.

The accessories were created for:

- meet the specific requirements indicated in the sales contract;
- be used according to the instructions and limits of use given in this manual.

3.2 Reasonably foreseeable misuse

Reasonably foreseeable misuse is given below:

- install the accessories on machines other than those permitted;
- using the machine in a way that is not specified in the **“Intended (correct) use”** section.

Any other accessory use that is not specified must be authorised in writing beforehand by the Manufacturer.

In the absence of this written authorisation, the use is considered **“misuse”**; therefore, the Manufacturer disclaims any liability for damage caused to property or people and deems every type of accessory warranty null and void.



IMPORTANT!

Misuse of the accessories excludes any liability of the Manufacturer.

3.3 Calibration grid layout

**IMPORTANT!**

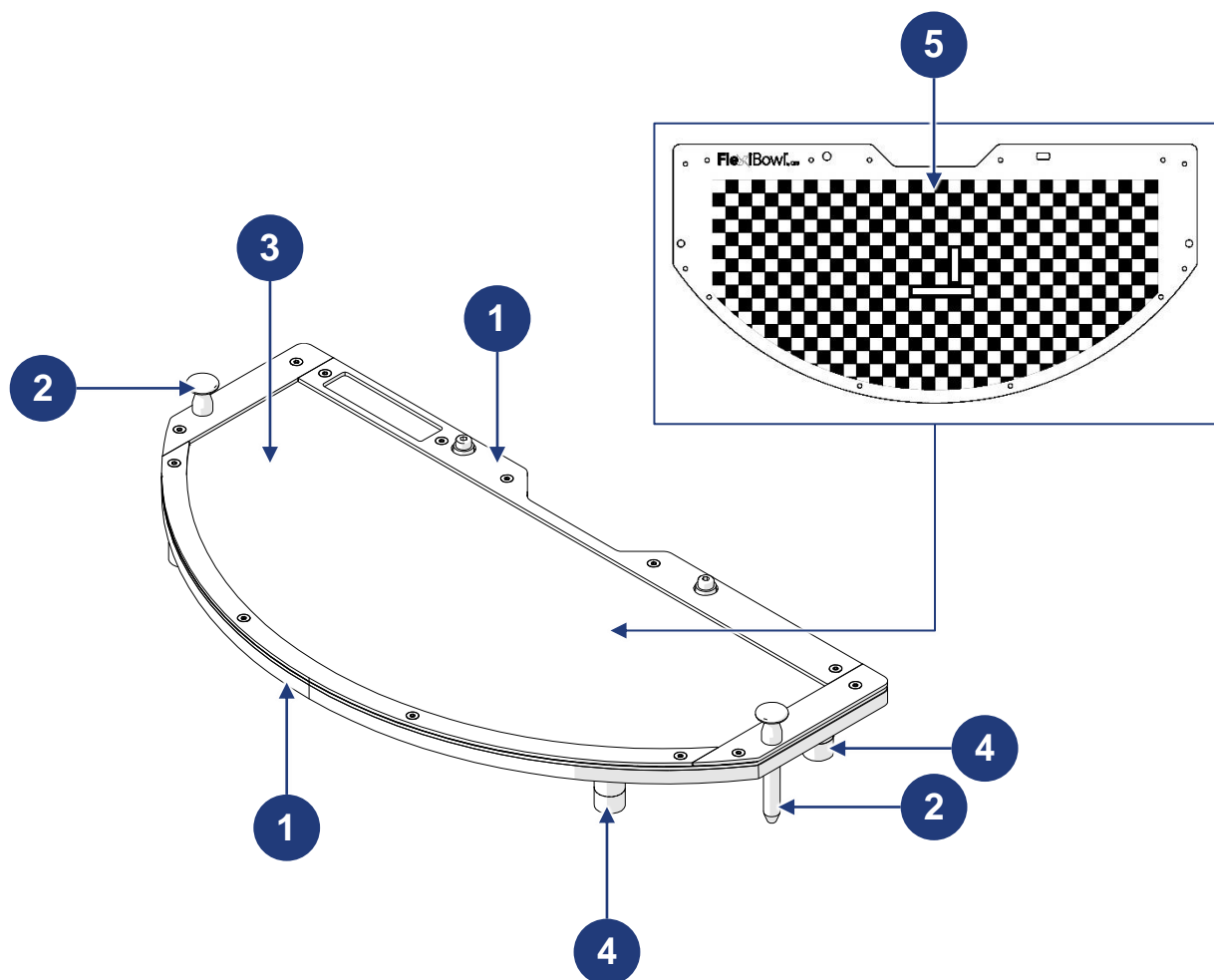
Please refer to the tables attached to this manual for the layouts of the available calibration grids, depending on the different installation models.

3.4 Main components

3.4.1 Calibration plan

The accessory consists of the following main parts:

POS.	DESCRIPTION
1	FRAME
2	CENTRING PINS
3	GRID SUPPORT SURFACE
4	THICKNESS MODULES
5	CALIBRATION GRID



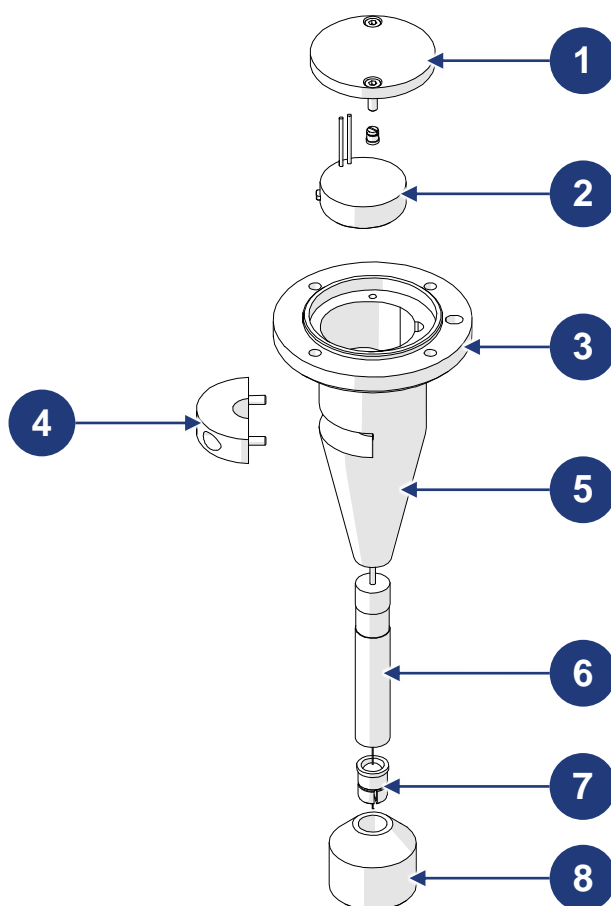
IMPORTANT!

The image above represents a generic version of the accessory and the calibration grid. Depending on the Flexibowl® and your vision system, the layouts may be different, but the main features will remain the same.

3.4.2 Laser calibration tool

The accessory consists of the following main parts:

POS.	DESCRIPTION
1	TOP CLOSURE CAP
2	BATTERY CONTAINER
3	COUPLING FLANGE
4	CLAMP
5	TOOL BODY
6	LASER POINTER
7	SPRING-LOADED SHOCK ABSORBER
8	SPACER SUPPORT



IMPORTANT!
Only CR2032 3V button batteries should be used to operate the tool.

4 TRANSPORT

4.1 Packaging and transport

The accessories are shipped by the manufacturer from the production plant to the customer's premises.

Based on the distance it needs to be transported, on the specific requests from the Customer, and on how long the load will remain in the packaging, the accessories will be shipped in the following ways:

- normal protective packaging for short and medium distances;
- special protective packaging for long distances.

When the are is received, it is mandatory for the customer to check that there is no damage caused by the mode of transport or by the personnel in charge of the specific operations.

If any damage is discovered, leave the packaging in question in the state found and immediately request that the damage be assessed by the relevant shipping company, after which you must notify the manufacturer.

4.1.1 Disposing of the packaging

The packaging is an integral part of the supply and is not collected, hence it must be disposed of by the buyer. Any disposal or destruction must be carried out in compliance with the regulations in force in the user's country, taking into account the nature of the materials.

4.2 Handling



IMPORTANT!

Due to the size and weight of the accessories covered in this manual, they can be handled manually by the installation operator.

4.2.1 Weight table

ITEM	REF. MOD. FLEXIBOWL®	WEIGHT
CALIBRATION PLAN	350	0.50 kg
	500	1.22 kg
	650	1.90 kg
	800	2.43 kg
CALIBRATION TOOL	All models	0.26 kg

5 INSTALLATION



IMPORTANT!

The accessories must only be installed on the machines indicated in the "Intended use" section of this manual.

5.1 Installation of calibration plan

5.1.1 Creation of installation holes on Flexibowl®

If you wish to install the calibration table on a Flexibowl® that does not have the appropriate holes for inserting the table, you must drill the holes yourself, following the diagrams provided by the manufacturer.

To **drill the preparation holes in the Flexibowl® surface**, proceed as described below:

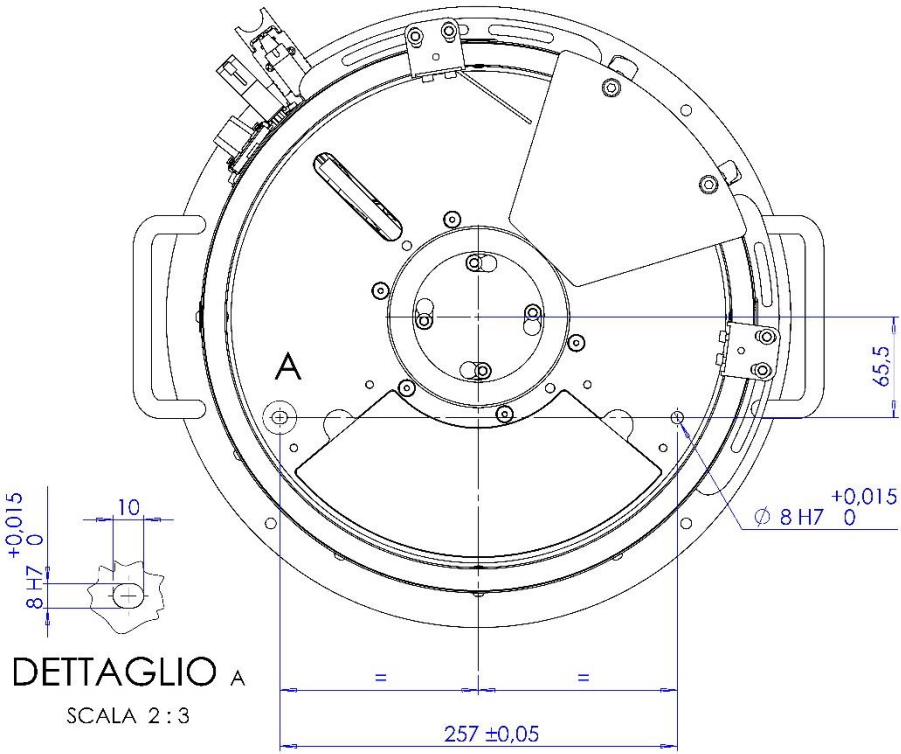
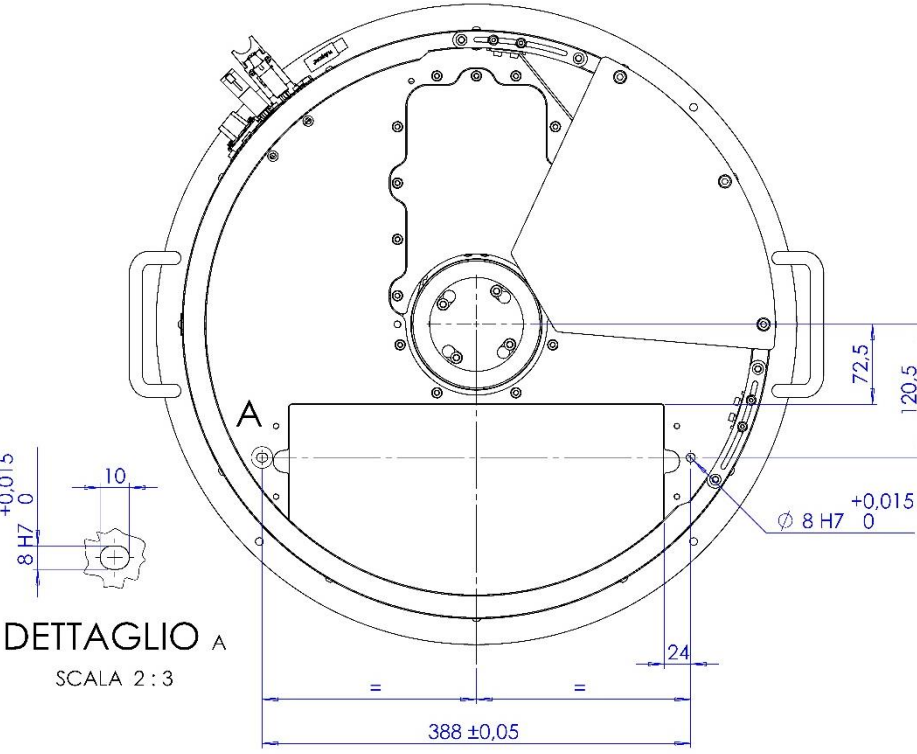
STEP	ACTION
1	Ensure that there are no components below the drilling area of the Flexibowl® table to prevent damage to the equipment. Note: If there are components below the drilling area, consult the manufacturer before proceeding.
2	Place a container underneath the drilling area to collect the waste material and prevent it from spilling into the equipment.
3	Drill the holes, following the diagrams in the " Drilling diagrams " section.
4	At the end of the procedure, thoroughly clean the Flexibowl® of any residue from the drilling of the plate.

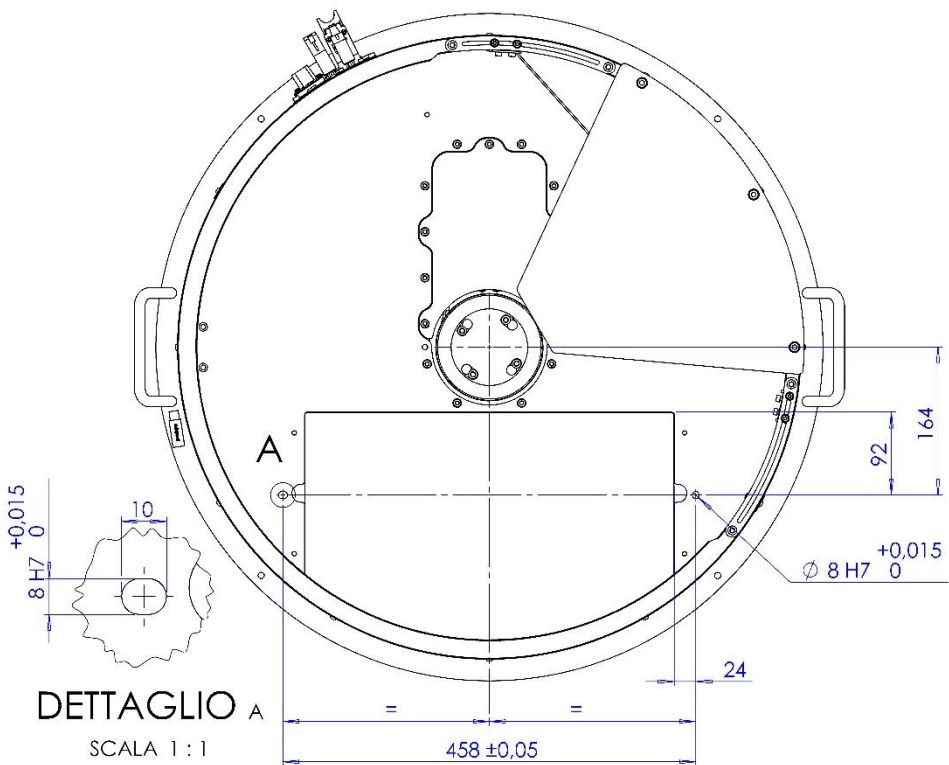
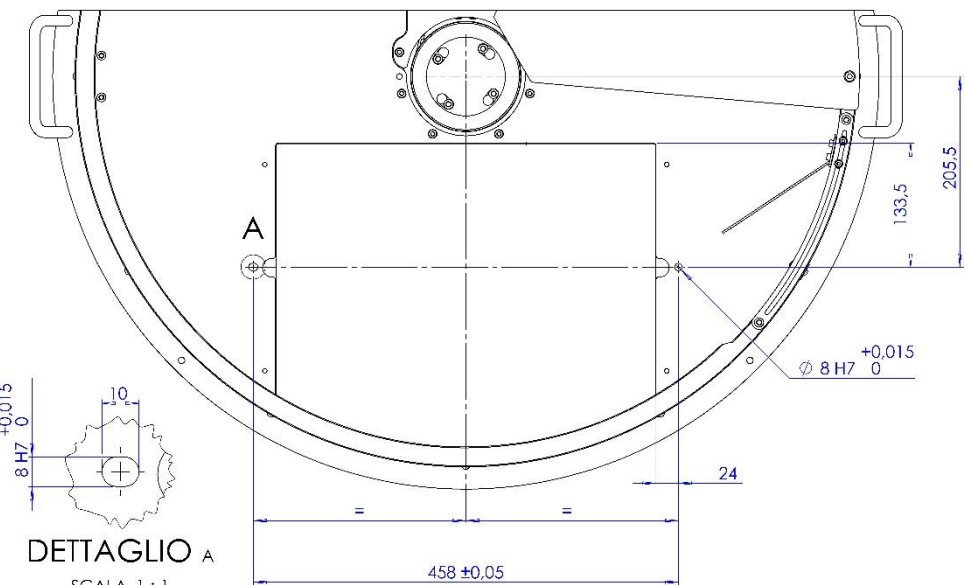


CAUTION!

In case of doubt about the procedure, it is forbidden to operate.
Consult the manufacturer.

5.1.1.1 Drilling patterns

REF. MODEL	GM000019 FB350C/E V2.0 - GM000370 FB350CC/E V2.0
<p>DRILLING DIAGRAM</p>	 <p>DETAGLIO A SCALA 2:3</p>
REF. MODEL	GM000020 FB500C V2.0 - GM000021 FB500CC V2.0 - GM000217 FB500C/E V2.0 GM000218 FB500CC/E V2.0
<p>DRILLING DIAGRAM</p>	 <p>DETAGLIO A SCALA 2:3</p>

REF. MODEL	GM000215 FB650C V2.0 - GM000216 FB650CC V2.0
<p>DRILLING DIAGRAM</p>	 <p>DETTAGLIO A SCALA 1:1</p>
REF. MODEL	GM000117 FB800C V2.0 - GM000118 FB800CC V2.0
<p>DRILLING DIAGRAM</p>	 <p>DETTAGLIO A SCALA 1:1</p>

5.1.2 Positioning the calibration plane

To position the calibration table on the Flexibowl®, proceed as follows:

STEP	ACTION
1	Insert thickness modules (A), if any, on both sides of the board according to the required calibration height. Note: Shims are not available for the 350 model.



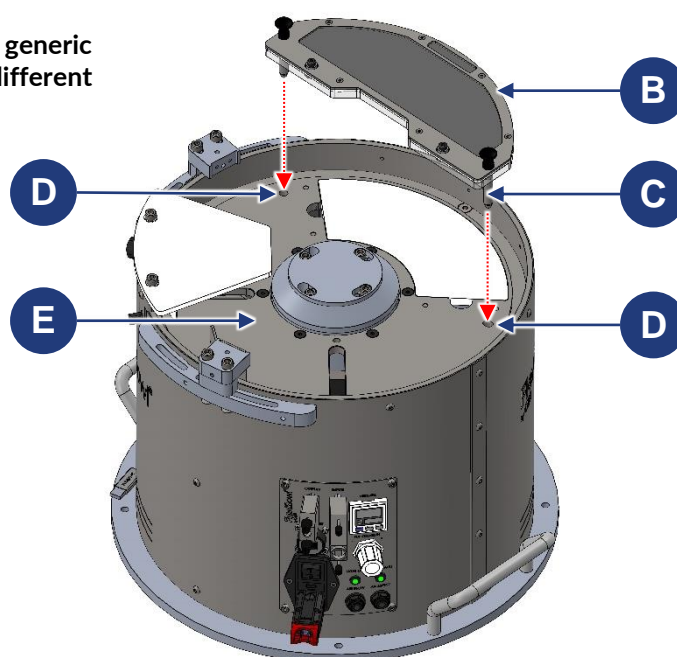
IMPORTANT!
The image shows a generic version of the different components.



STEP	ACTION
2	Insert the calibration plane (B), matching the centring pins (C) to the holes (D) in the Flexibowl® plane (E).



IMPORTANT!
The image shows a generic version of the different components.

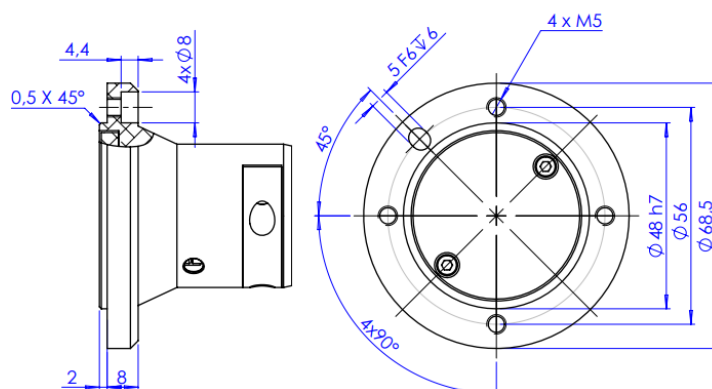


5.2 Laser calibration tool installation

5.2.1 Interface flange construction

The tool can be installed on multiple quantities of vision systems (robots) and must therefore be equipped with a suitable interface to allow installation.

The interface is represented by a flange, for which reference should be made to the diagram below.



Note: the image refers to the tool described at paragraph 3.4.2

5.2.2 Laser tool installation

To **install the calibration laser tool on the vision system (robot)**, proceed as described below:

STEP	ACTION
1	Place the interface flange between the tool and the robot head.
2	Secure the tool to the robot head, using suitable screws (4 x M5).

6 USE

6.1 Using the calibration plan

**IMPORTANT!**

Before performing the calibration procedure, the appropriate pattern, chosen according to the type of Flexibowl® and vision system, must be placed on the table. Please refer to the annexes of this manual for the types of patterns compatible with the different systems.

The use of the calibration plan varies according to the type of vision system (robot) installed.

**IMPORTANT!**

When using the vision system supplied by ARS, please refer to the "Flexivision" software manual for the calibration procedure.

**IMPORTANT!**

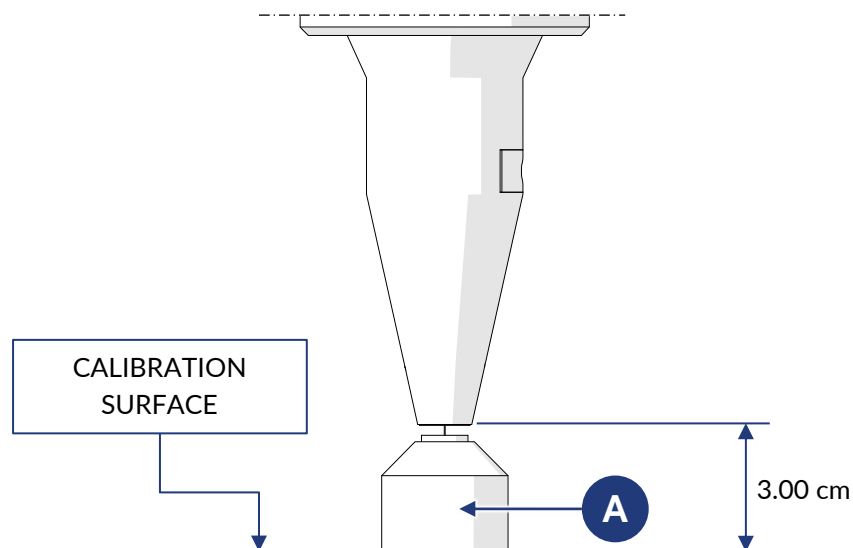
When using the vision system supplied by FANUC, please refer to the supplier's documentation for the calibration procedure.

6.2 Using the laser calibration tool

The laser calibration tool can be used with all Flexibowl® models and all available calibration planes and patterns.

For a correct calibration procedure, the laser pointer must be positioned at a distance of 3 cm from the calibration plane.

In order to determine this distance, the spacer bracket **(A)** must be used. This bracket, when placed between the pointer and the plane, ensures the optimum distance for use.

**IMPORTANT!**

For the use of the vision system, please refer to the vision system manual, which is included with the vision system.

7 MAINTENANCE

The maintenance of accessories includes work necessary as a result of their normal use.

For a correct maintenance, only use original spare parts and tools that are suitable for the purpose and in good condition.



IMPORTANT!

In case of doubt, it is forbidden to operate.

Contact the Manufacturer for any explanations.

Machine maintenance jobs, in terms of operation, are divided into two main categories:

Maintenance ordinary	All those operations that need to be carried out, in a preventive manner, to ensure the good functioning of the accessories over time.
Maintenance extraordinary	All those operations that need to be carried out when an accessory needs it.

7.1 Routine maintenance

7.1.1 Routine maintenance table

OPERATION	FREQUENCY
Cleaning the calibration table	Whenever necessary
Laser pointer cleaning	Whenever necessary

7.1.1.1 Cleaning the calibration table

To **clean the calibration table**, proceed as follows:

STEP	ACTION
1	Use a soft, dry cloth to clean the calibration table.
2	Remove any residue that may affect the calibration procedure.

7.1.1.2 Laser calibration tool cleaning

To **clean the calibration laser tool**, proceed as described below:

STEP	ACTION
1	Use a soft, dry cloth to clean the laser exit hole from the pointer.

7.2 Special maintenance

CAUTION!

Replacement spare parts must be ordered by the Manufacturer.



If the customer does not use spare parts that are original or authorised in writing by the Manufacturer, the latter shall be deemed free from any liability concerning operation of the accessories.

Authorisation and/or instructions must always be provided in writing.

In the absence of written authorisation, it is forbidden to operate and the Manufacturer declines all liability.

**CAUTION!**

In the event of extraordinary maintenance operations being necessary on the accessories, contact the manufacturer.

8 DISPOSAL

8.1 Disposal

When **disposing of accessories**, proceed as described below:

STEP	ACTION
1	Remove the power batteries from the laser calibration tool.
2	As far as possible, separate accessories according to their components, so that they can be disposed of separately.



Pursuant to the **“WEEE” Directive 2012/19/EU**, if the component/equipment purchased is marked with the following crossed-out wheeled bin, it means that at the end of its service life the product must be collected separately to other waste.



CAUTION!

It is mandatory to comply with the laws in force regarding disposal in the country of accessory installation.

9 ATTACHMENTS

9.1 List of attachments

The following table lists the annexes that form an integral part of this manual:

REF.	ANNEX
1	CALIBRATION GRID LAYOUT
2	LAYOUT CALIBRATION PLAN



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