

FlexiBowl®

by ars

FlexiTrack option



Summary

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1 FlexiTrack option

1.1 Connection to internal encoder

The FlexiBowl® control panel input connector can be used to connect to the internal encoder and read data from it. The connector pinout and the functions of each contact are shown in the table below.

| Pin | Signal | Image |
|-----|--|-------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
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| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | A+ Encoder (Read-only and with FlexiTrack option) | |
| 19 | A- Encoder (Read-only and with FlexiTrack option) | |
| 20 | B+ Encoder (Read-only and with FlexiTrack option) | |
| 21 | B- Encoder (Read-only and with FlexiTrack option) | |
| 22 | Z+ Encoder (Read-only and with FlexiTrack option) | |
| 23 | Z- Encoder (Read-only and with FlexiTrack option) | |
| 24 | GND Enc. (Read-only and with FlexiTrack option) | |

The encoder is a 2-channel square wave, TTL type, and has a resolution of 4000 counts per revolution. The encoder of the FlexiBowl® is installed on the motor shaft, so in the case of FlexiBowl® 500-650-800 that have a drive belt, a reduction ratio of 1:3 must be considered to calculate the corresponding belt rotation (one full belt rotation corresponds to 12000 encoder counts).

1.2 Connection to external encoder

ARS S.r.l., in agreement with the customer, provides a support kit on which to install a different external encoder. This kit consists of a shaft integral with the driven pulley, and therefore with the FlexiBowl® belt, with a 20 mm projection at the bottom of the gearbox. The external encoder is installed on the shaft integral with the belt by means of a suitable support bracket and coupling with elastic element.



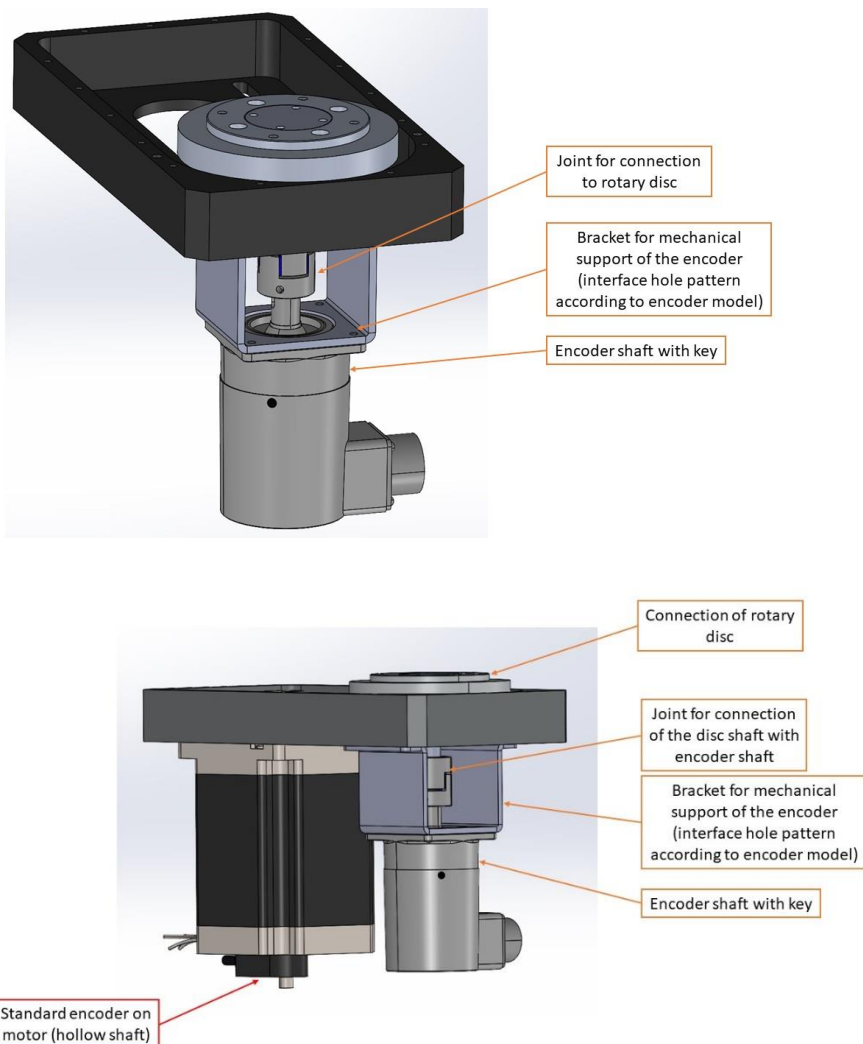
IMPORTANT!

By default, ARS S.r.l. does not supply the external encoder and the cable for its connection, unless otherwise agreed. Customers purchasing the FlexiTrack option with an external encoder must therefore submit the encoder model to ARS for approval and designate supports and drive coupling at the design stage.

The recommended encoder technical requirements are listed below:

- Incremental type;
- TTL square wave signal (RS422 output);
- Pulses per rotation equal to or greater than 12000;
- Maximum cable length 5m (depending on application).

Below are some explanatory pictures regarding the assembly of this kit.



1.3 Command description



IMPORTANT!

Please refer to chapter "5.4 - Connections" of the FlexiBowl user manual before programming.



IMPORTANT!

You can control the movement of the FlexiBowl using only the Ethernet protocol. I/O protocol cannot be used.

Below are the main controls for controlling the movement of the FlexiBowl®:

- **JA – Jog Acceleration:** Sets (writing operation) the acceleration/deceleration value expressed in revs/sec². Alternatively, the command can read the current acceleration/deceleration value if it is sent without a parameter (reading operation). Setting a certain value of JA also overwrites the value of JL (Jog Deceleration). If you wish to have a deceleration value different than the acceleration value, it is necessary to first send the JA command and then the JL command. It is not possible to change the JA value if the FlexiBowl® is already rotating.
- **JL – Jog Deceleration:** Sets the deceleration value in revs/sec². If you wish to have a deceleration value different than the acceleration value, it is necessary to first send the JA command and then the JL command. It is not possible to change the JL value if the FlexiBowl® is already rotating.
- **JS – Jog Speed:** Sets the value of the rotation speed expressed in revs/sec. Alternatively, the command can read the current speed value if it is sent without a parameter.
- **CC – Change Current:** Sets the direct current applied to the motor.
- **CJ – Commence Jogging:** Starts motor rotation. It accelerates with the value set by JA until it reaches the speed set by JS; it then continues to rotate until the stop command is given.
- **SJ – Stop Jogging:** Stops motor rotation by decelerating with the value set by JL (if not present, decelerates with the value of JA). For a "drier" stop, the ST control can be used, but if the speed or inertial load is high, the motor may stall and/or fail.

The recommended FlexiBowl rotation parameters are:

- JA0.2
- JL0.2
- JS0.2
- CC1.3

If you wish, for example, to increase or reduce the rotation speed, simply change the JS parameter (JS0.1 slower rotation - JS0.3 faster rotation). If you want to change acceleration or deceleration, the logic is the same. It is recommended not to change the current value.

With regard to the operation of Flip and Blow (if installed), the commands are as follows:

- **IL2 – Immediate Low Output 2:** Switches the status of the Flip solenoid valve by raising the drill.
- **IH2 – Immediate High Output 2:** Switches the status of the Flip solenoid valve again by retracting the drill.
- **IL3 – Immediate Low Output 3:** Switches the status of the Blow solenoid valve (if installed), opening it.
- **IH3 – Immediate High Output 3:** Switches the status of the Blow solenoid valve (if installed) again, closing it.

Since it is not possible to operate the flip with the classic QX command, it is necessary to create a background program with an iterative cycle that constantly switches the state of the solenoid valve, with waiting times and number of iterations at the customer's discretion. The same applies to the blow (if installed), but it is recommended to activate it at the start of the cycle and to stop it when the FlexiBowl® stops.



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