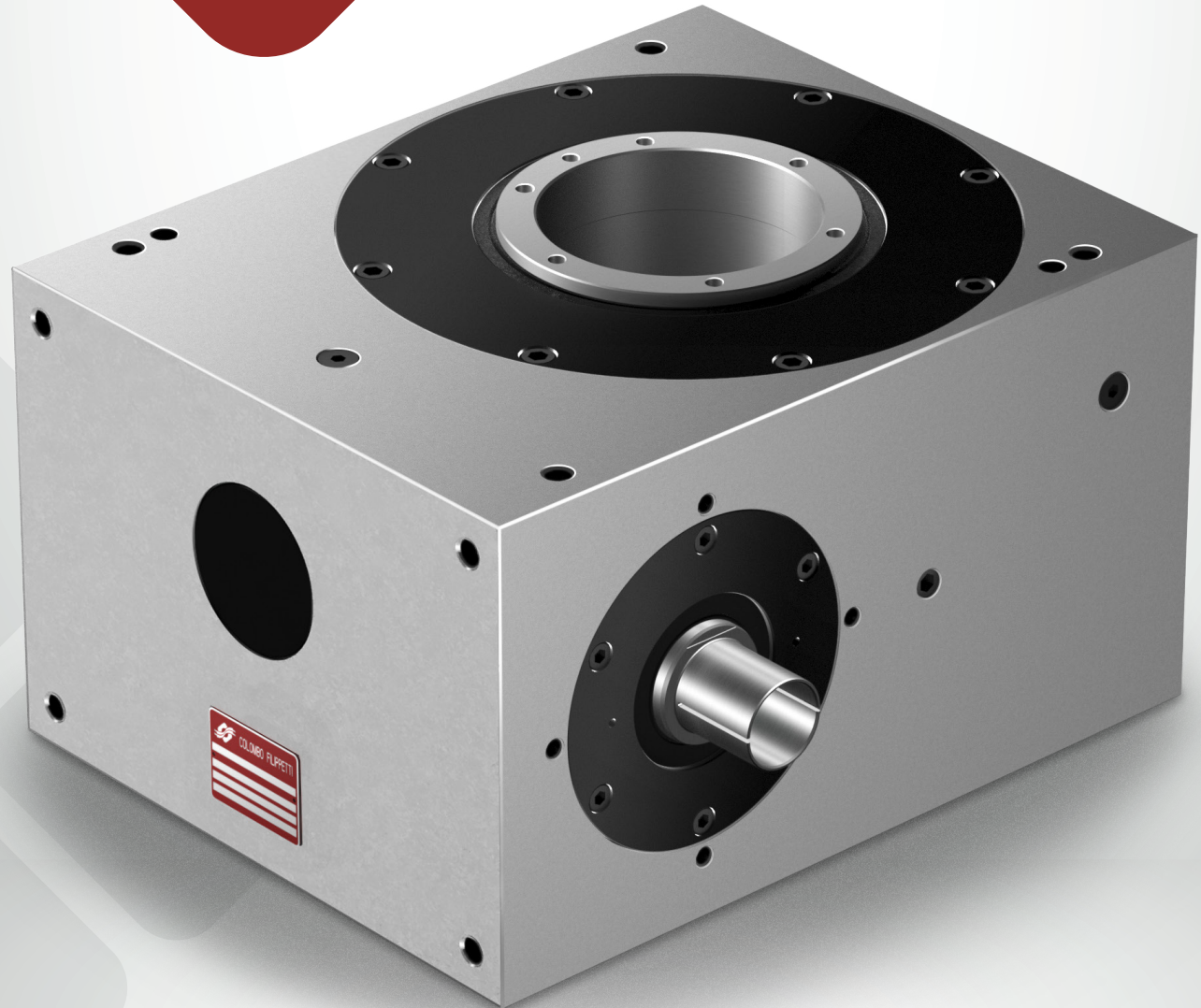




Smart Automation

SRI
Servo Roller Indexer

TECHNICAL CATALOGUE



Empowering your Servo





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Why?



The world of servo-driven tables is the connection between electronic and mechanical disciplines. The SRI table allows the machine designer to manage the know-how of the system and maintain full control over it. At the same time, it allows full flexibility of use, thus ensuring the Electronic Operator to perfect the tuning of the machine and enhance its combination of mechanical and electronic features. The high versatility and flexibility of this table helps the increasingly pressing market demands for the reduction of development times and time-to-market.



3



The SRI field of use crosses all industries: from automotive to medical and from packaging to filling. The SRI table can work in a wide range of conditions, involving extremely low speeds as well as high speeds with medium-high loads. The optimized cam profile allows a fluid and precise movement and the large central through-hole on the output disc allows a comfortable passage for the interlocks and supplies required for the system operation.





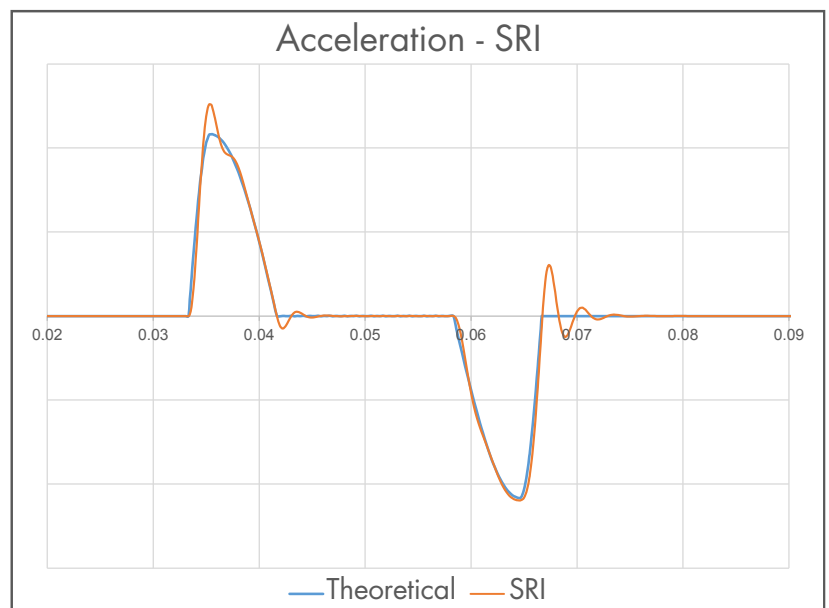
The value of displacement accuracy

Generally, the good operation of a mechanical system is a function of controlling key factors such as backlash and elasticity of the system, whilst respecting the assigned movement. The SRI rotary table, with orthogonal axes, was designed and manufactured to allow achieving these goals. The SRI is a constant-velocity rotary table, with no backlash and with high mechanical rigidity. These features can easily be appreciated in terms of system controllability and positioning accuracy, as shown in the charts.

Mechatronic application with SRI

Advantages:

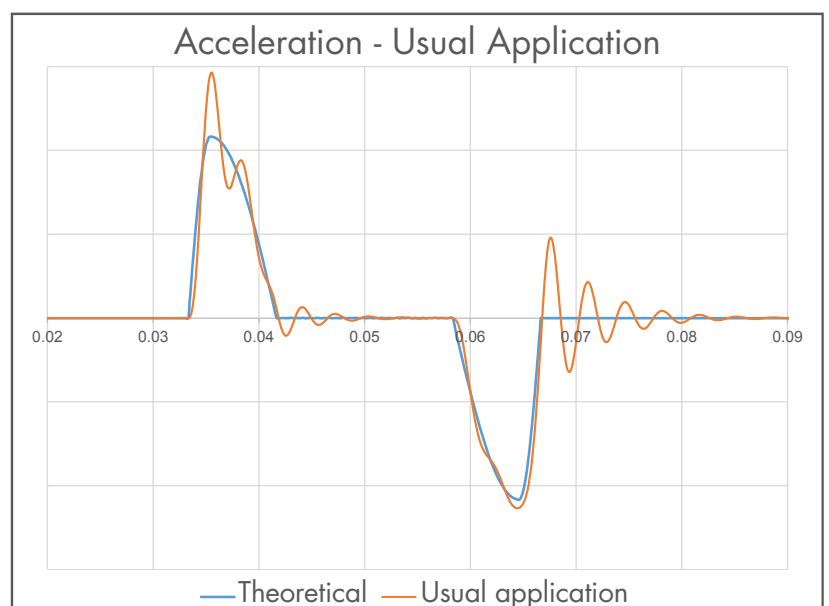
- High positioning accuracy
- Better controllability of the motor
- Minimization of vibration and overshooting effects



Traditional mechanical application

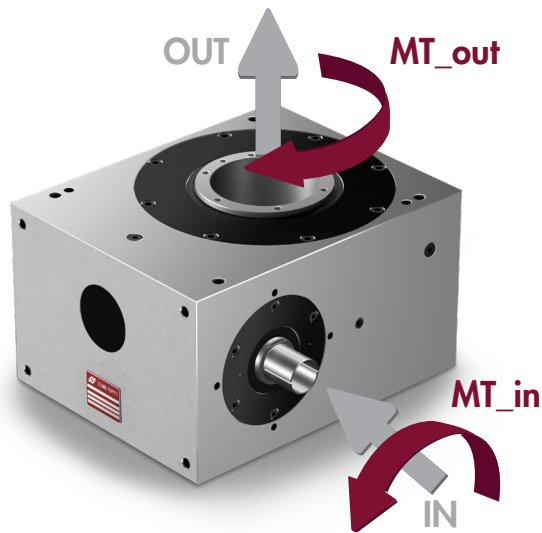
Limits:

- Excessive deviation of the actual trajectory with respect to the theoretical
- Reduced positioning accuracy
- Introduction of unwanted vibrations into the system

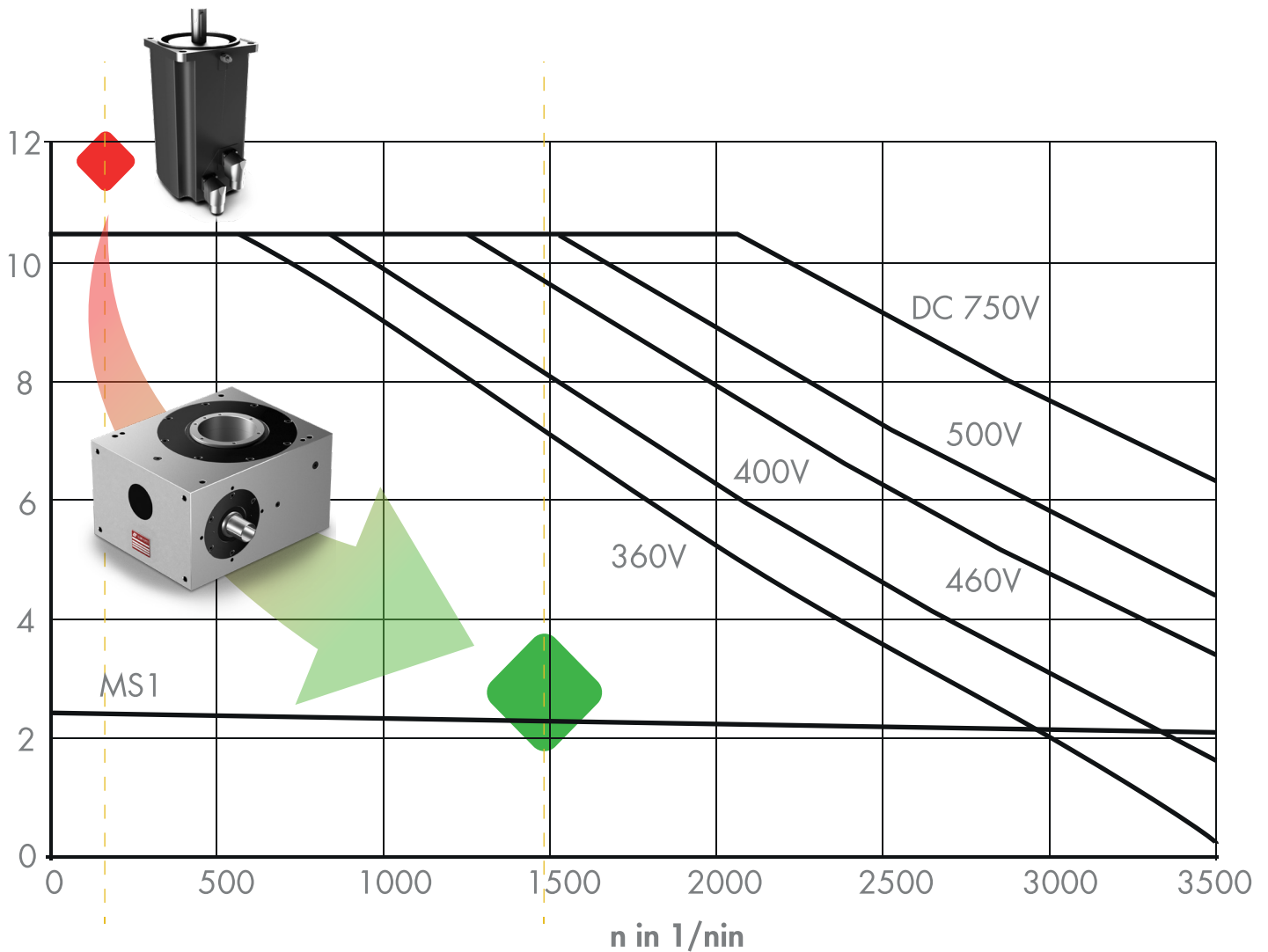




Enhancement of motor performance



One of the priorities for a machine designer is to manufacture a system to be energy efficient and effective, thus minimizing the average demand for plant power. Such an operation, for example, involves the homogenization of the electricity demand for the control of the motor and, therefore, of the application. Considering this, the SRI permits you to increase the motor revolution speed, thus reaching the optimal operation range and allowing the motor / table combination to enhance the mechanical features and ensure maximum efficiency of the system.



- Reduction of the motor torque requirement
- Better controllability of the motor by the drive
- Increased system rigidity
- Increased accuracy

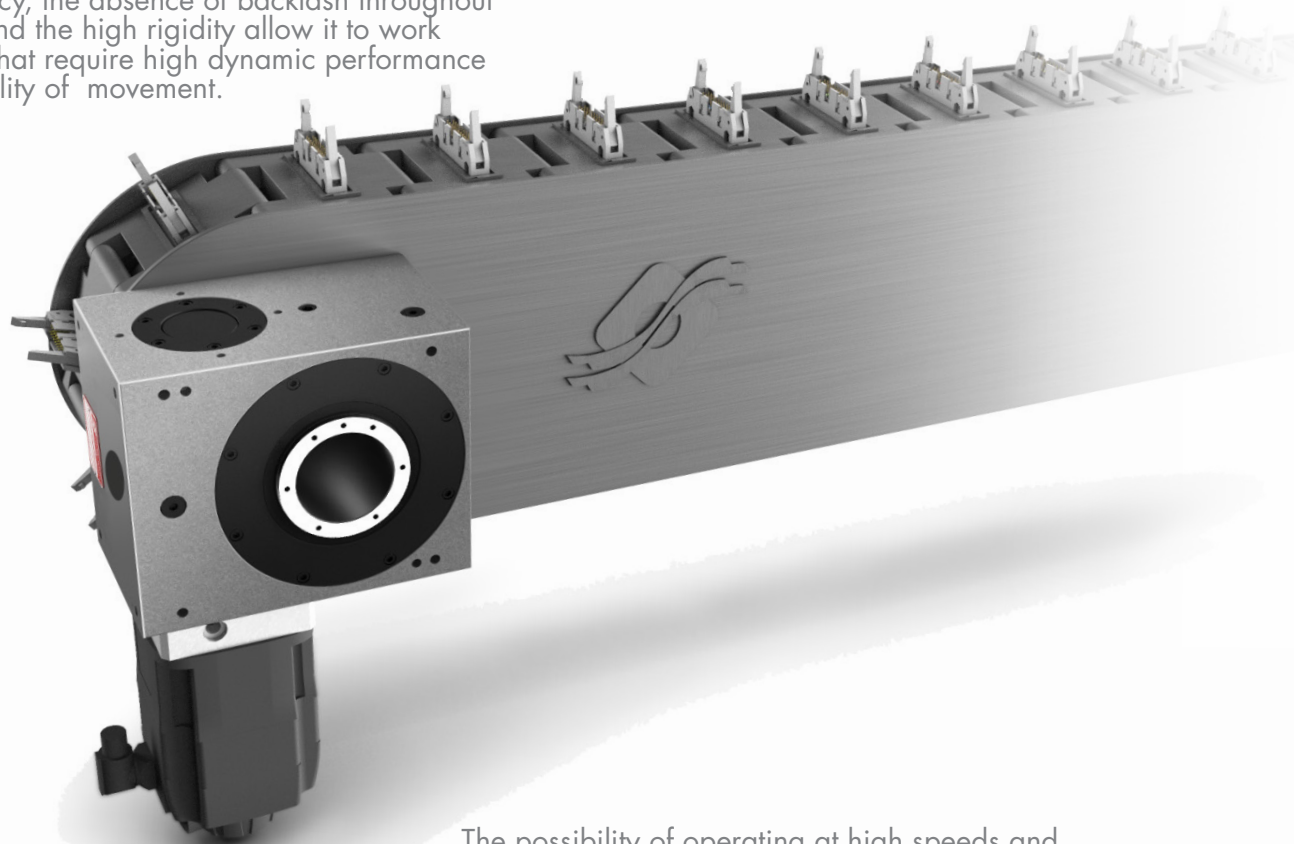




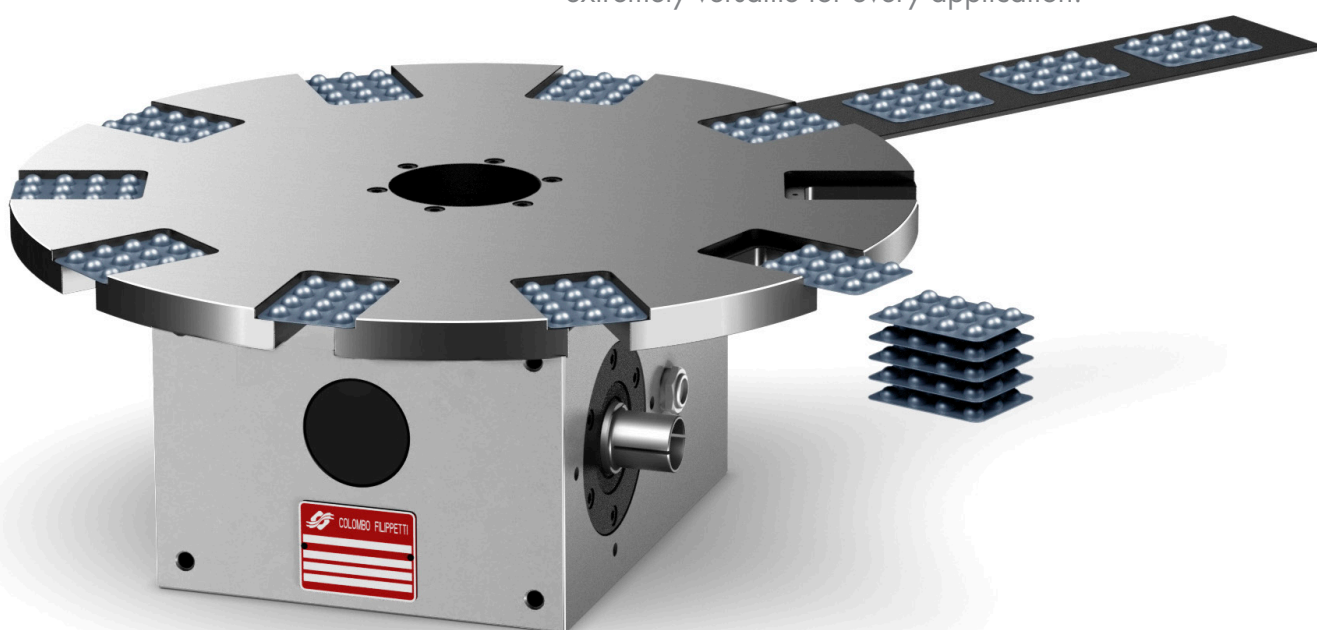
Versatility of application

The compact and symmetrical design, the possibility to vary at will the law of motion and the large central through-hole make this table suitable for any situation and field of application. This flexibility allows the configuration of a unique machine, permitting any subsequent project change or variation required by the end-user.

The high accuracy, the absence of backlash throughout the movement and the high rigidity allow it to work in applications that require high dynamic performance and wide flexibility of movement.



The possibility of operating at high speeds and choice between the two ratios $1/5$ and $1/10$ allow the SRI to adapt to every need, thus making the table extremely versatile for every application.

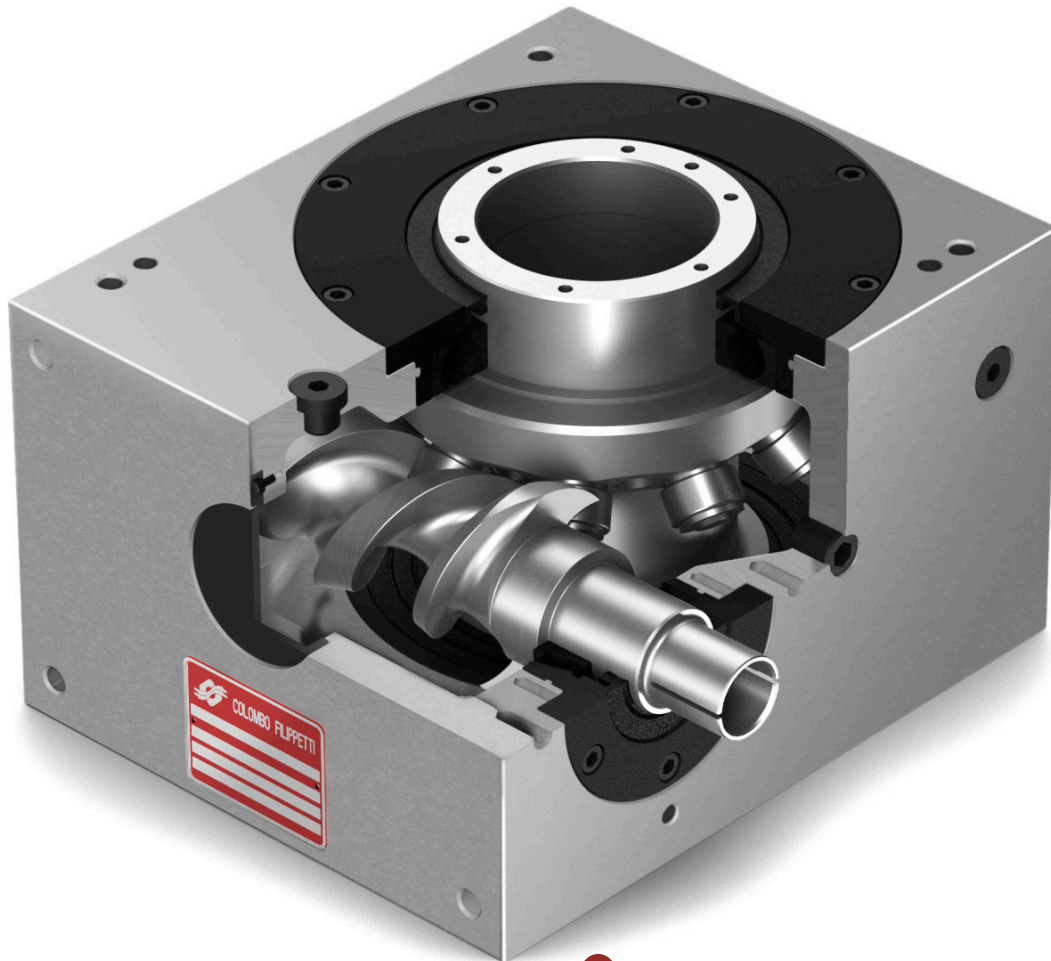




Benefits of use - example

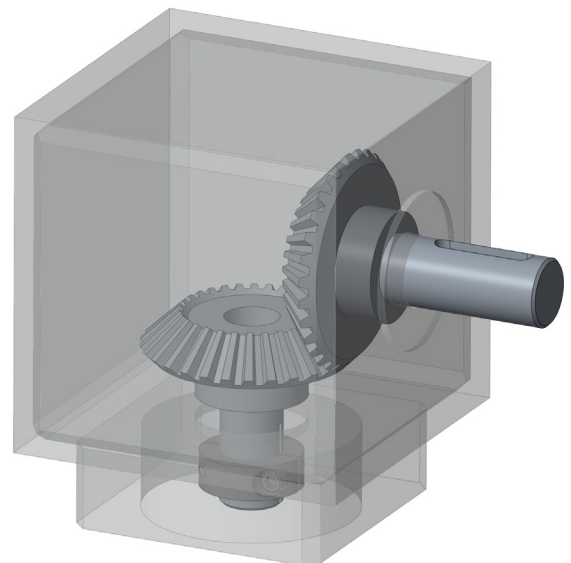
SRI

- Operation without backlash
- Minimized noise of the mechanism
- Very high operating accuracy
- Low volume yet high load; minimal design impact when built into the machine



Gearbox

- Operation with backlash or with reduced backlash
- Low positioning accuracy
- Noise generated by the backlash in high dynamic solutions

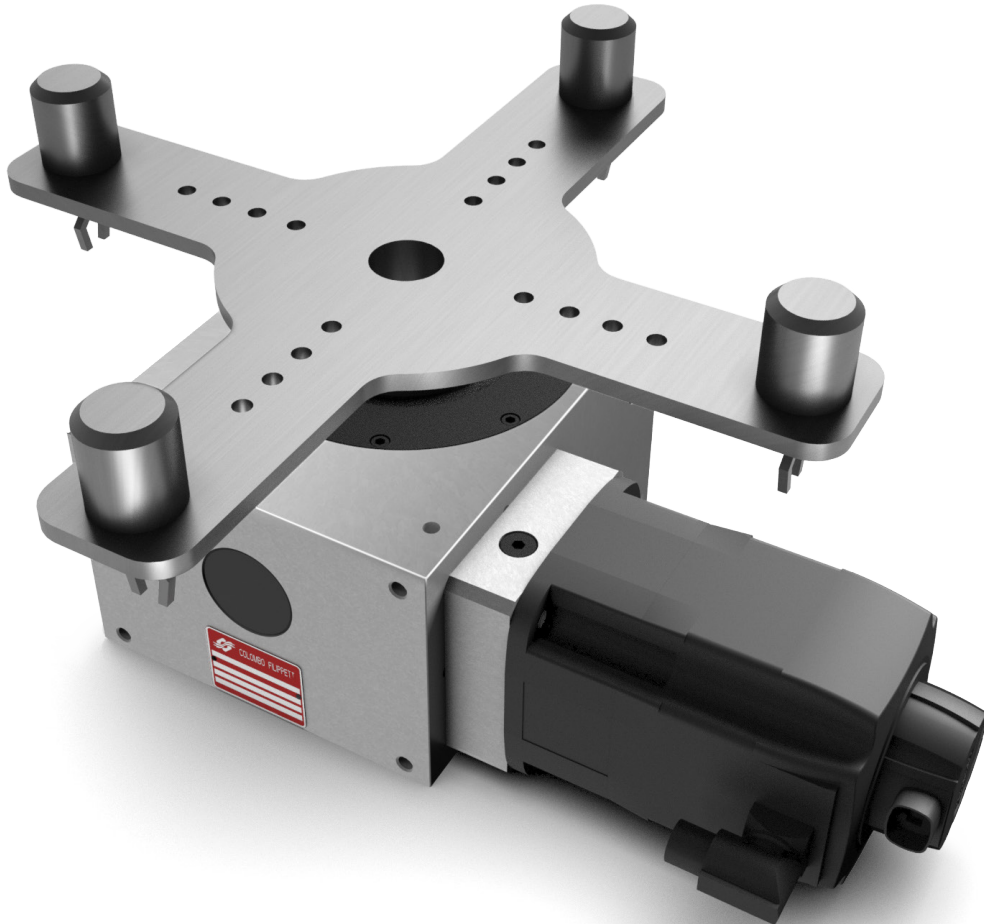




Benefits of use - example

SRI

- Lower motor torque requirement
- Reduced positioning error of the motor (1/5 - 1/10)
- Reduced application inertia; greater system controllability
- Significant reduction of the overshooting effects

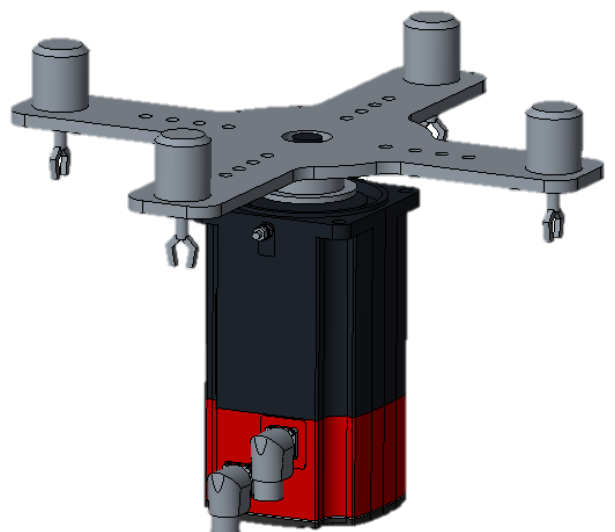


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Direct motor

- Use of a motor with high torque and power
- Use of a drive controller, capable of managing the demand for high torque and power
- Possible overshooting in dynamic driving conditions
- High thermal energy losses

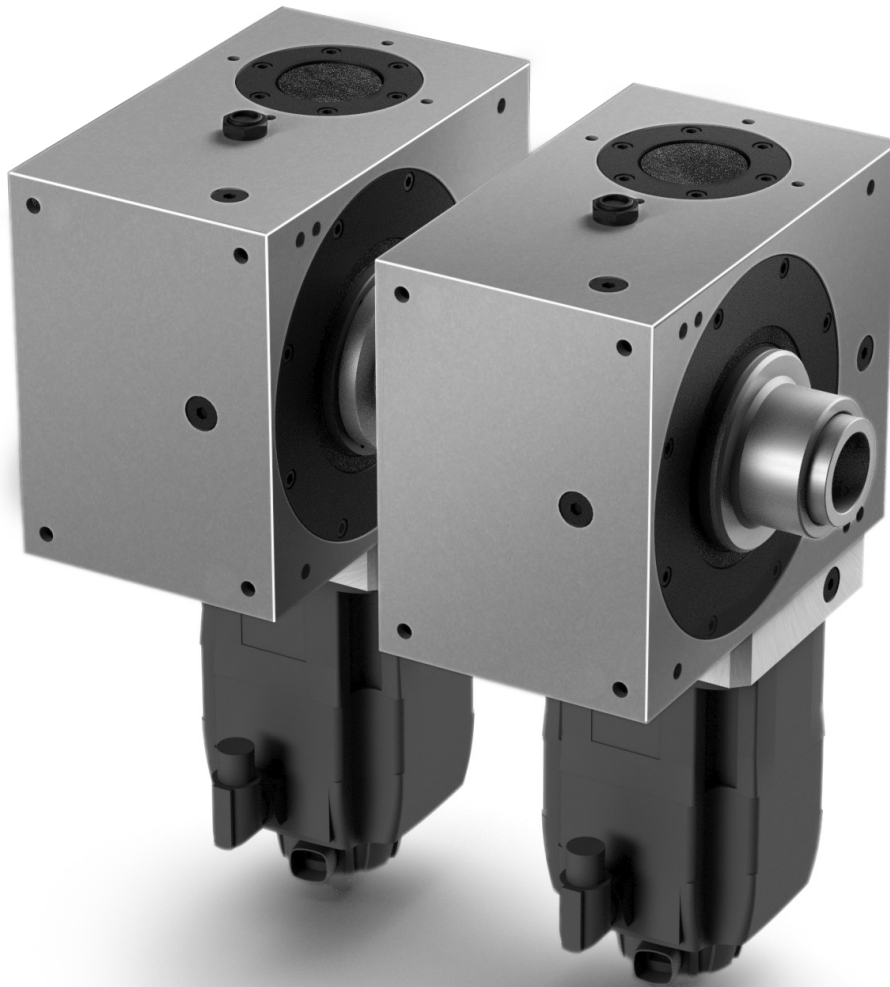




Benefits of use - example

SRI

- Possibility of axially connecting two or more independent motions
- Through-hole to allow passage of shafts and accessory cables
- High positioning accuracy for each output axis

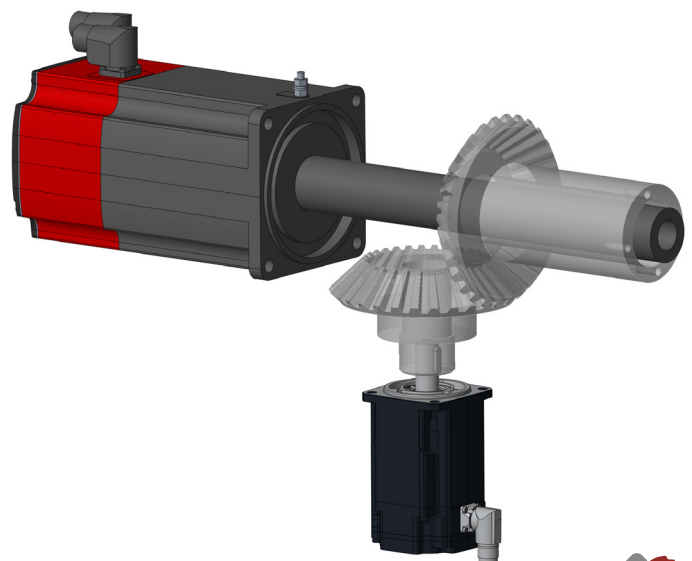


9



Coaxial outputs

- Use of angular transmissions
- Introduction of backlash makes it unsuitable for axis tracking operations
- Impossible to specify a through-hole coaxial with the output axis





General information

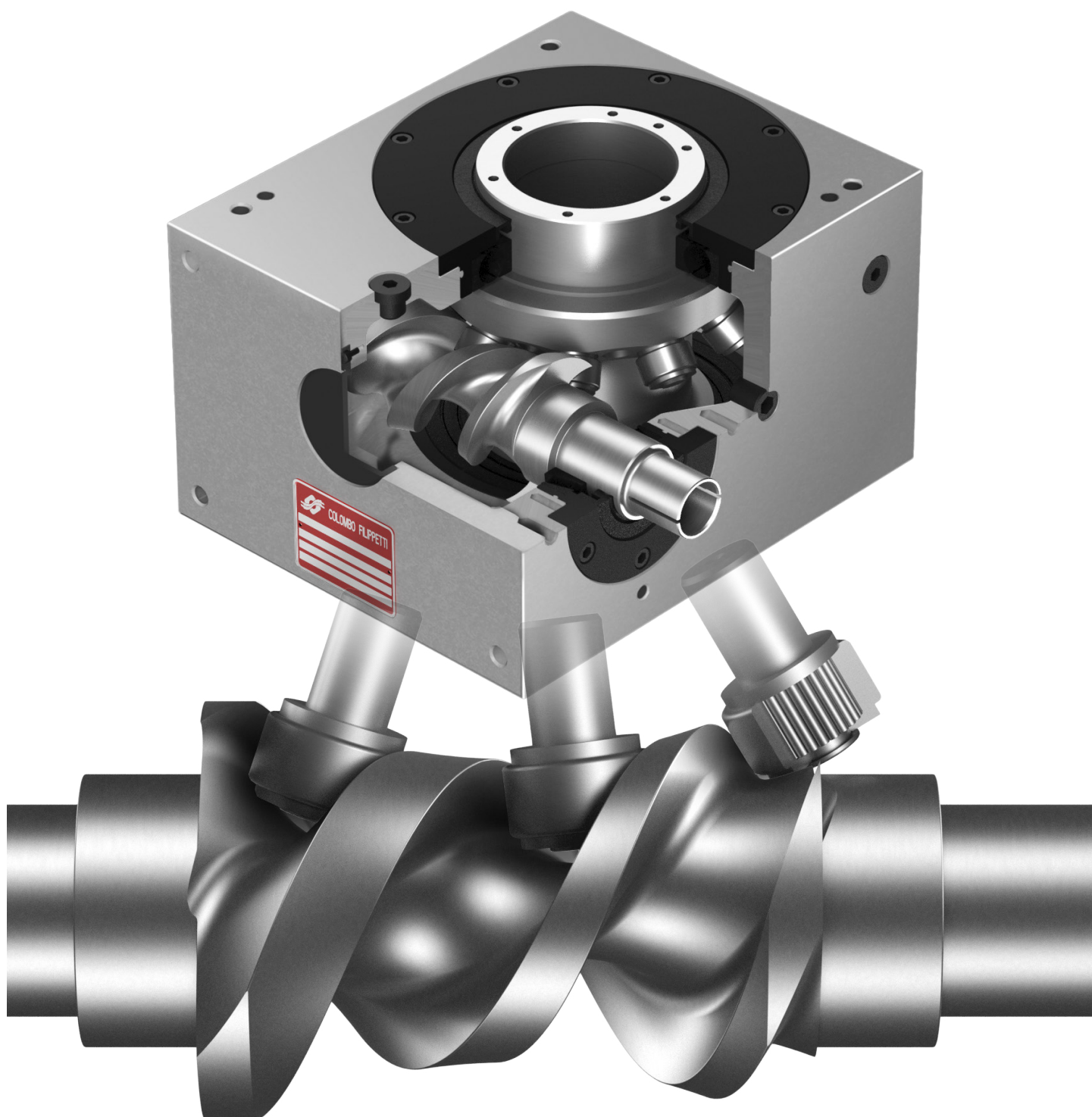
SRI80 - SRI105 - SRI130

SERVO-DRIVEN ROLLER INDEXER are rotary roller positioners with a constant-velocity globoconical cam and no backlash.

The globoconical cam moves an output disc, onto which the needle rollers are installed and preloaded together in order to guarantee the total absence of backlash in any position of the cam.

This type of table is ideal for applications that require high speeds on the output disc with medium-high loads.

The tables are available in 3 sizes: SRI80, SRI105, SRI130.





Series



Optimized internal inertia

High accuracy

Installation in any position

Compact cast-iron housing

Prepared for servo-motor with movement programmable by the user

High dynamic performance

High rigidity output disc

Large through-hole in the output disc

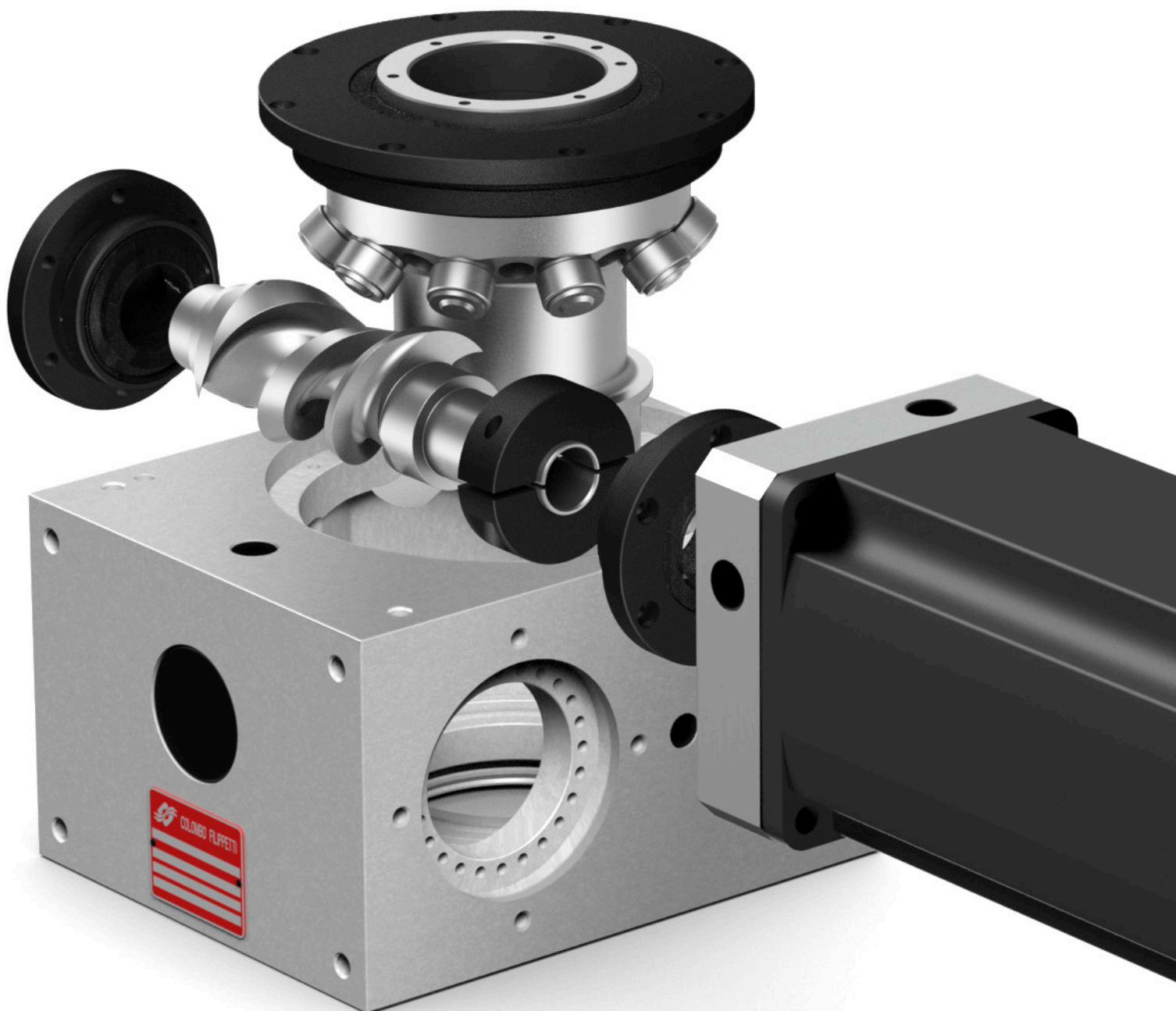
11





Servo-driven Roller Indexer

The preloading system, the absence of backlash and the needle rollers guarantee a regular movement along the entire operating cycle, a high rigidity and repeatability of positioning, high yields accompanied by a long life and very low maintenance. The servo-motor fitted on the cam input shaft and secured directly on the side of the box allows free programming of the table, with total control of its movement and speed and the acceleration of the output disc, as well as all the dynamic and kinematic parameters enabled by the drive selected.

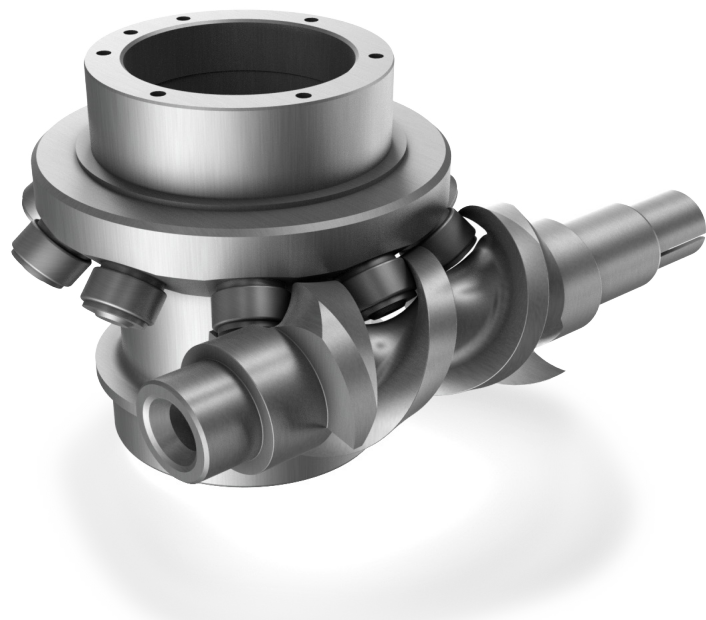




Servo-driven Roller Indexer

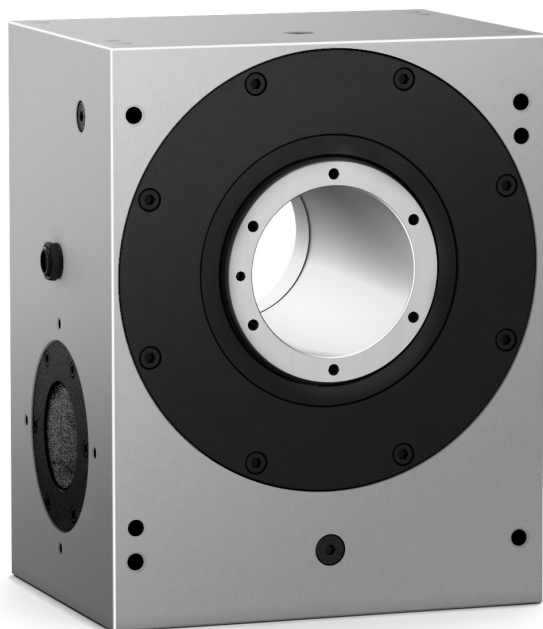
Setting

Mechanism with orthogonal axes preloaded without backlash. The globoconical cam allows reduction of the overall dimensions of the mechanism with the same load capacity, compared to a traditional globoidal cam, thus permitting a large diameter central through-hole.



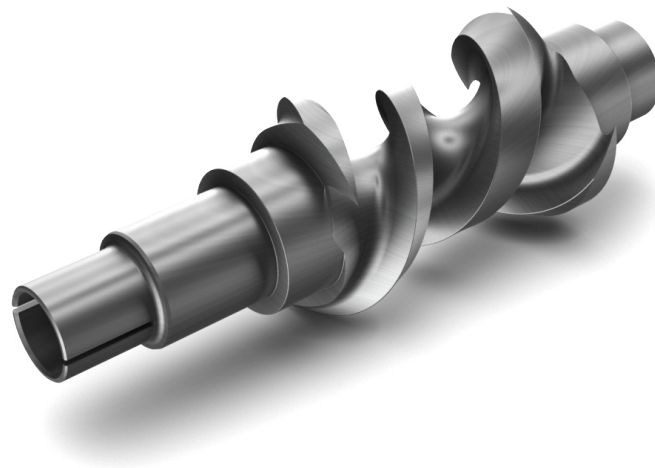
Through-hole

The large through-hole in the output disc allows easy passage of control and power systems, as well as shafts and other equipment, providing maximum design freedom.



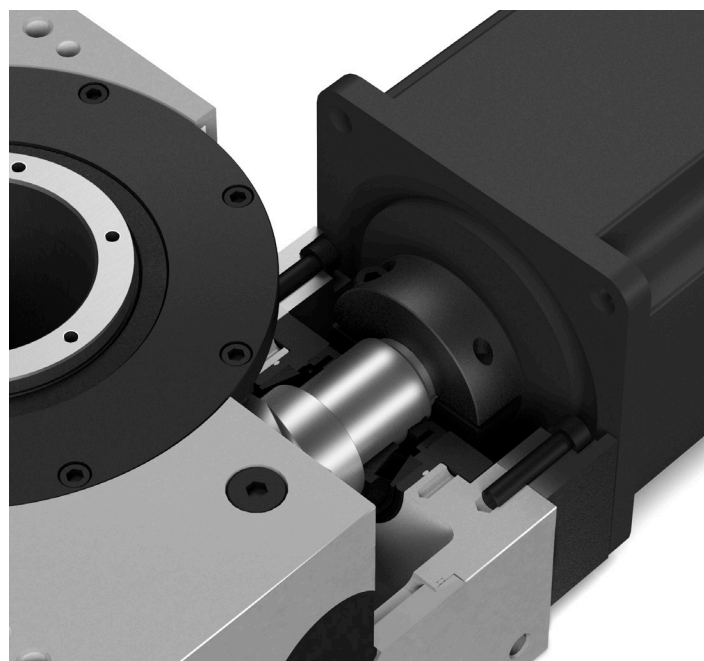
Reduced inertia

The cam has been lightened and designed to minimize its inertia, in order to promote better control of the motor at all speeds.



Direct connection to the motor

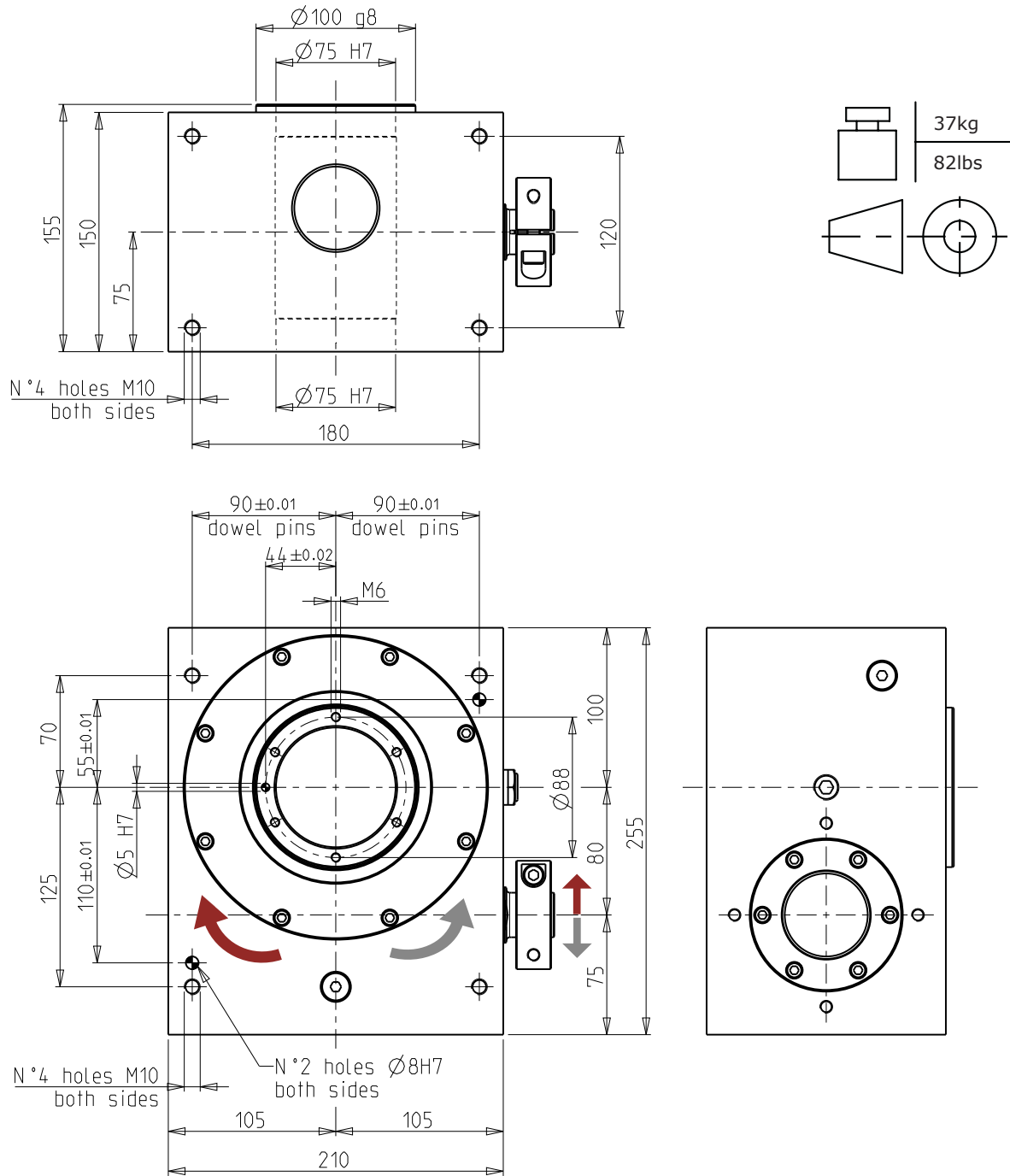
The motor can be easily connected to the table by means of a clamp. This solution minimizes the inertia on the motion axis, thus favouring its control and the complete absence of any backlash.





SRI80

Overall dimensions



Notes

- Reversing the direction of rotation of the input shaft reverses the direction of rotation of the output disc.
- Direction of rotation as indicated by the arrows in the drawing.
- The two H7 dowel pin holes in the top and bottom housing surfaces are referenced to the through-hole of the output disc.
- Motor shaft without feather key.

Features

Centre distance	80 mm	80 mm
Internal ratio	1:5	1:10
Vmax	2000 rpm	2500 rpm
Mtu_Max	400 Nm	430 Nm
Inertia at the input shaft $\times 10^{-4}\text{ kgm}^2$	9,5	5
Maximum motor shaft diameter	30 mm	

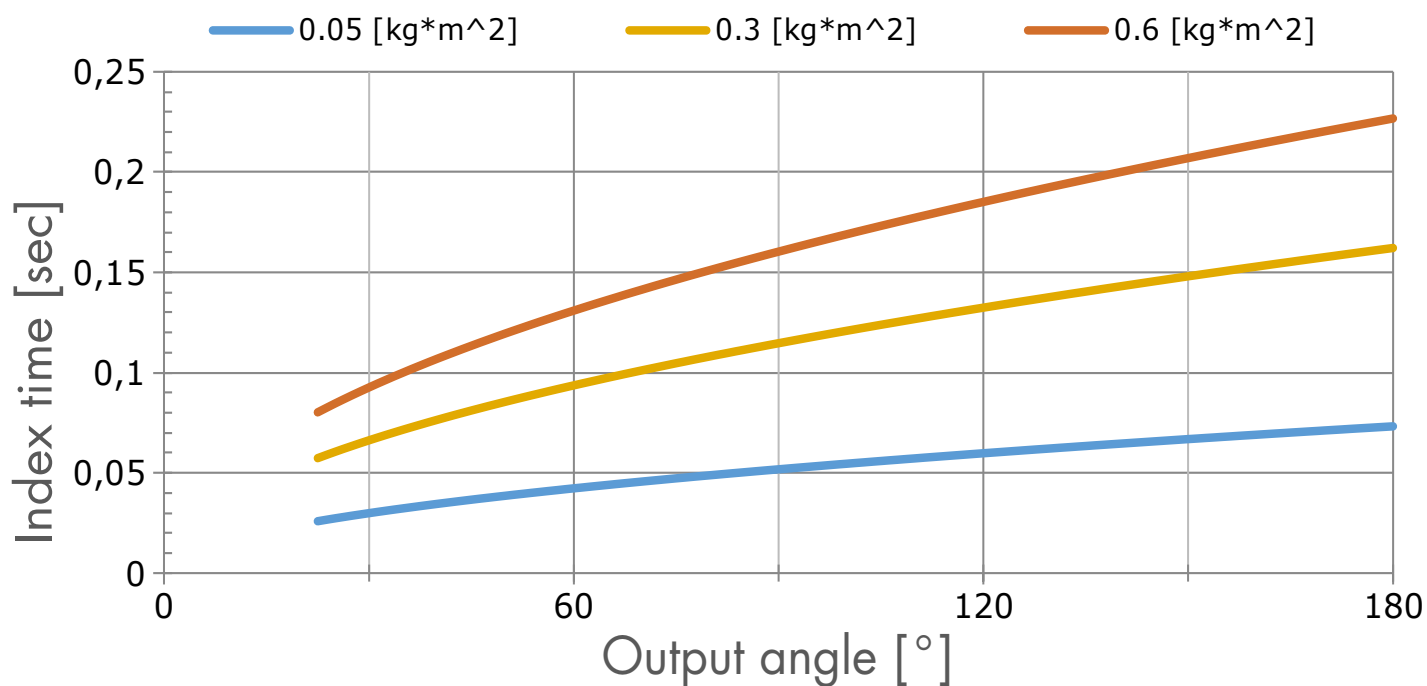




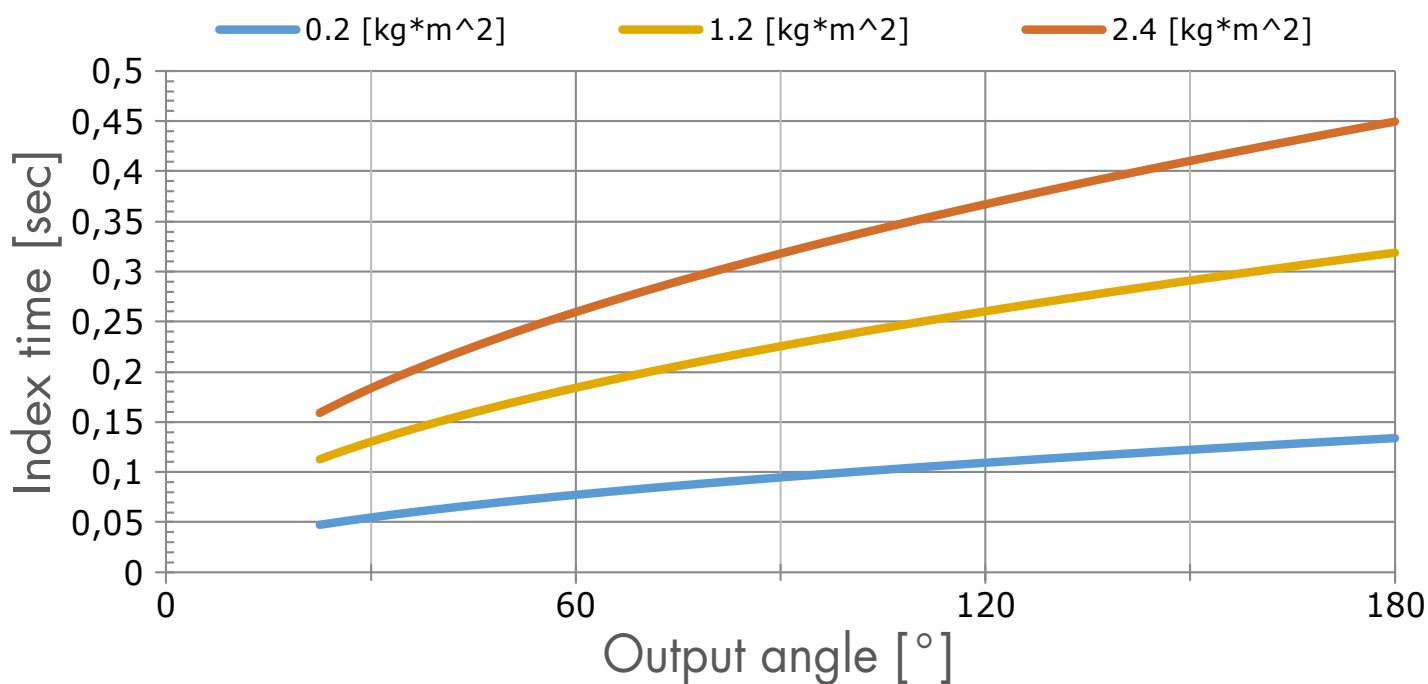
SRI80

Selection

SRI80 - $i=1:5$ - Index Time



SRI80 - $i=1:10$ - Index Time



Note

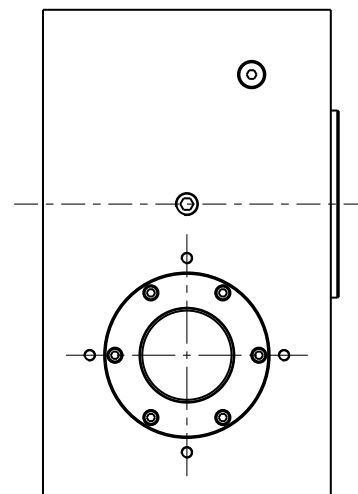
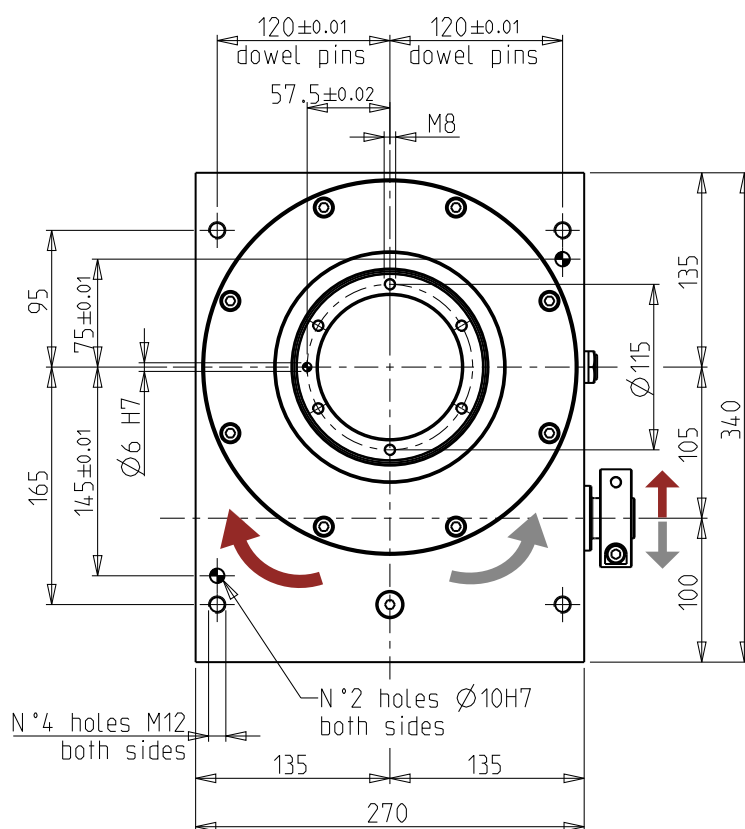
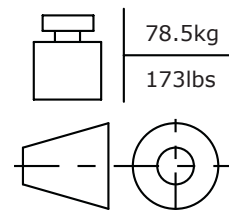
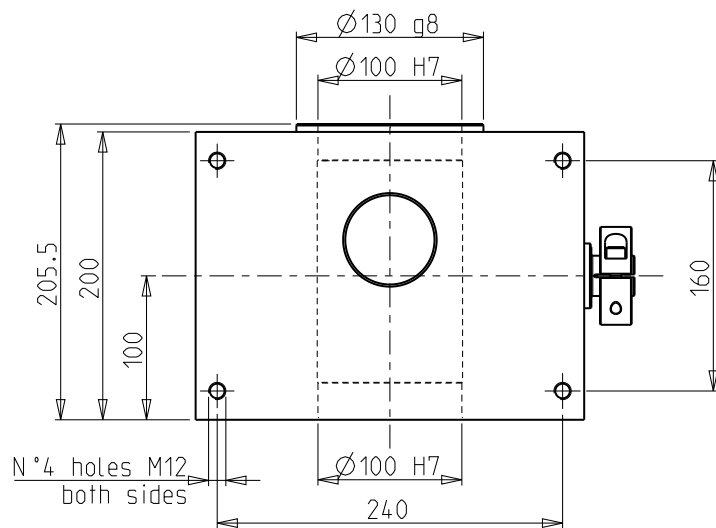
The curves shown in the selection chart refer to theoretical operating conditions of the mechanism and do not take into account the dynamics of the system and the installed motorization. The curves above are calculated based on a trapezoidal motion law with 33% constant velocity.





SRI105

Overall dimensions



Notes

- Reversing the direction of rotation of the input shaft reverses the direction of rotation of the output disc.
- Direction of rotation as indicated by the arrows in the drawing.
- The two H7 dowel pin holes in the top and bottom housing surfaces are referenced to the through-hole of the output disc.
- Motor shaft without feather key.

Features

Centre distance	105 mm	105 mm
Internal ratio	1:5	1:10
Vmax	2000 rpm	2500 rpm
Mtu_Max	780 Nm	830 Nm
Inertia at the input shaft x10 ⁻³ kgm ²	3.5	1.71
Maximum motor shaft diameter	38 mm	

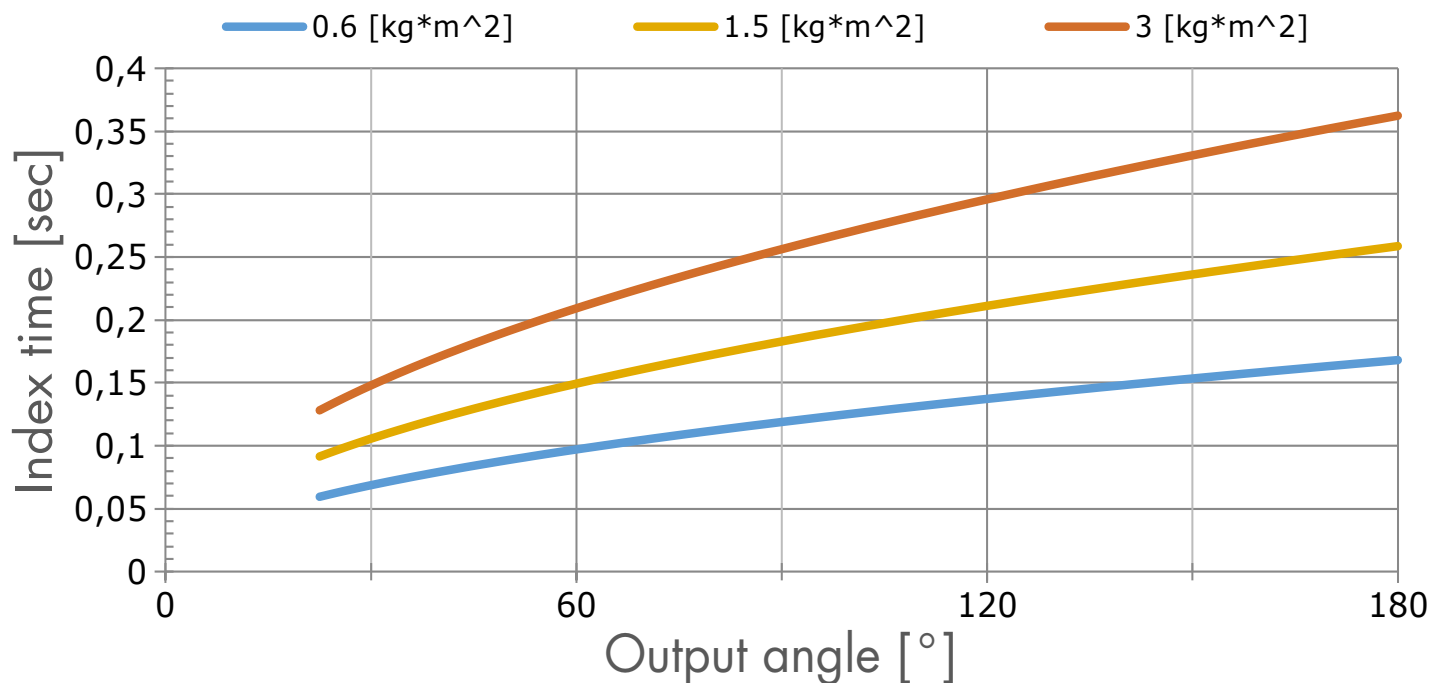




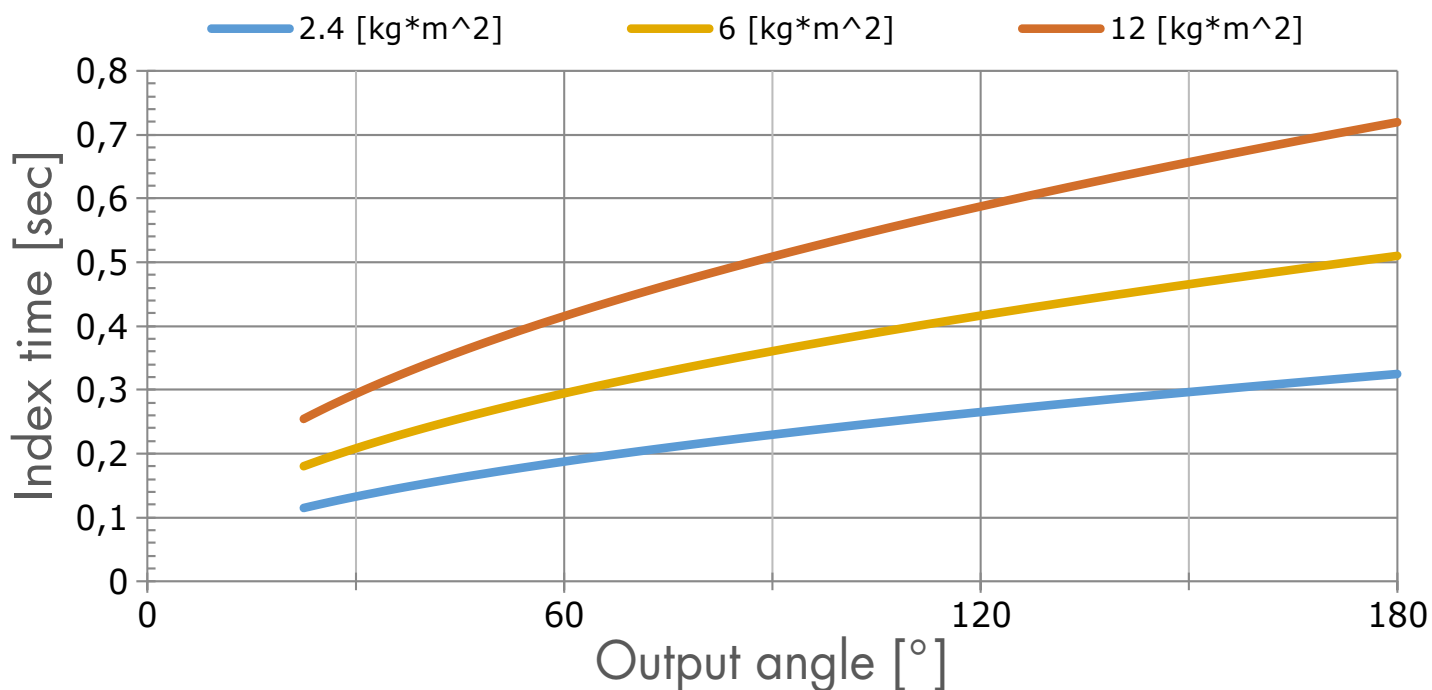
SRI105

Selection

SRI105 - i=1:5 - Index Time



SRI105 - i=1:10 - Index Time



Note

The curves shown in the selection chart refer to theoretical operating conditions of the mechanism and do not take into account the dynamics of the system and the installed motorization. The curves above are calculated based on a trapezoidal motion law with 33% constant velocity.

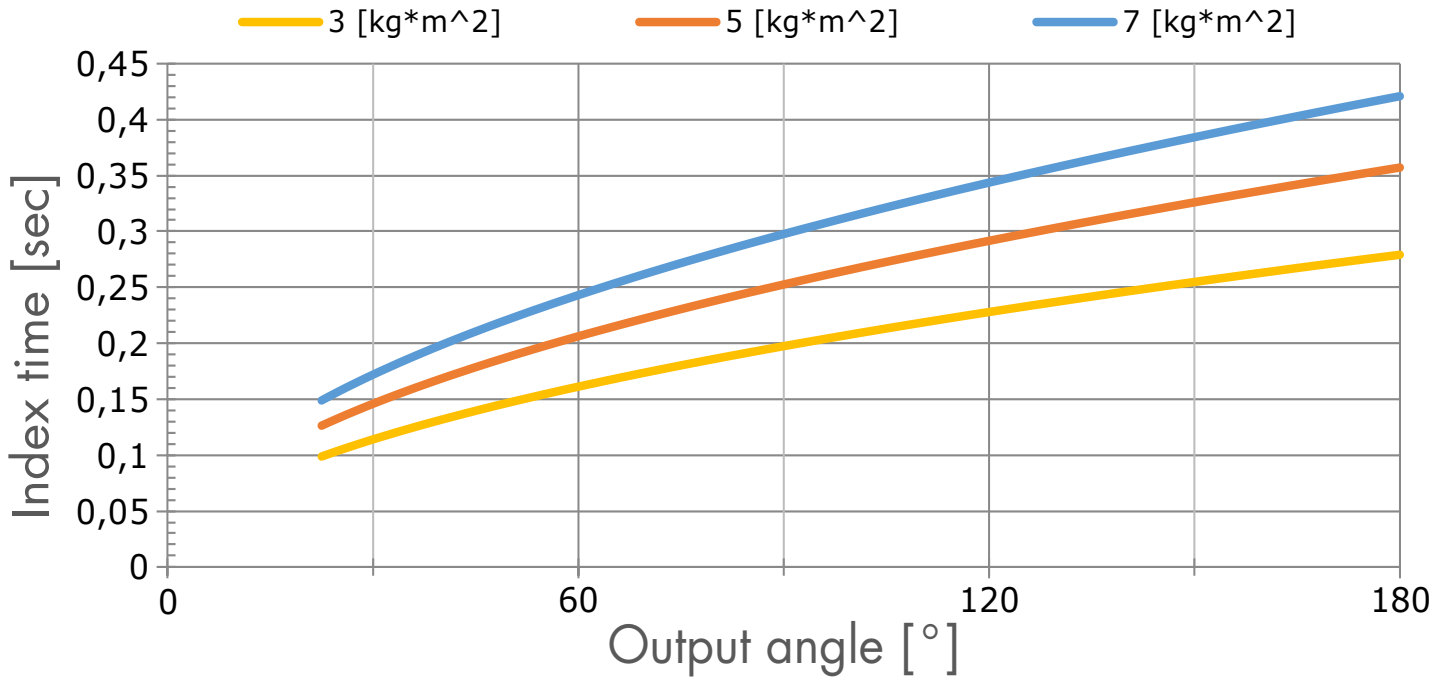




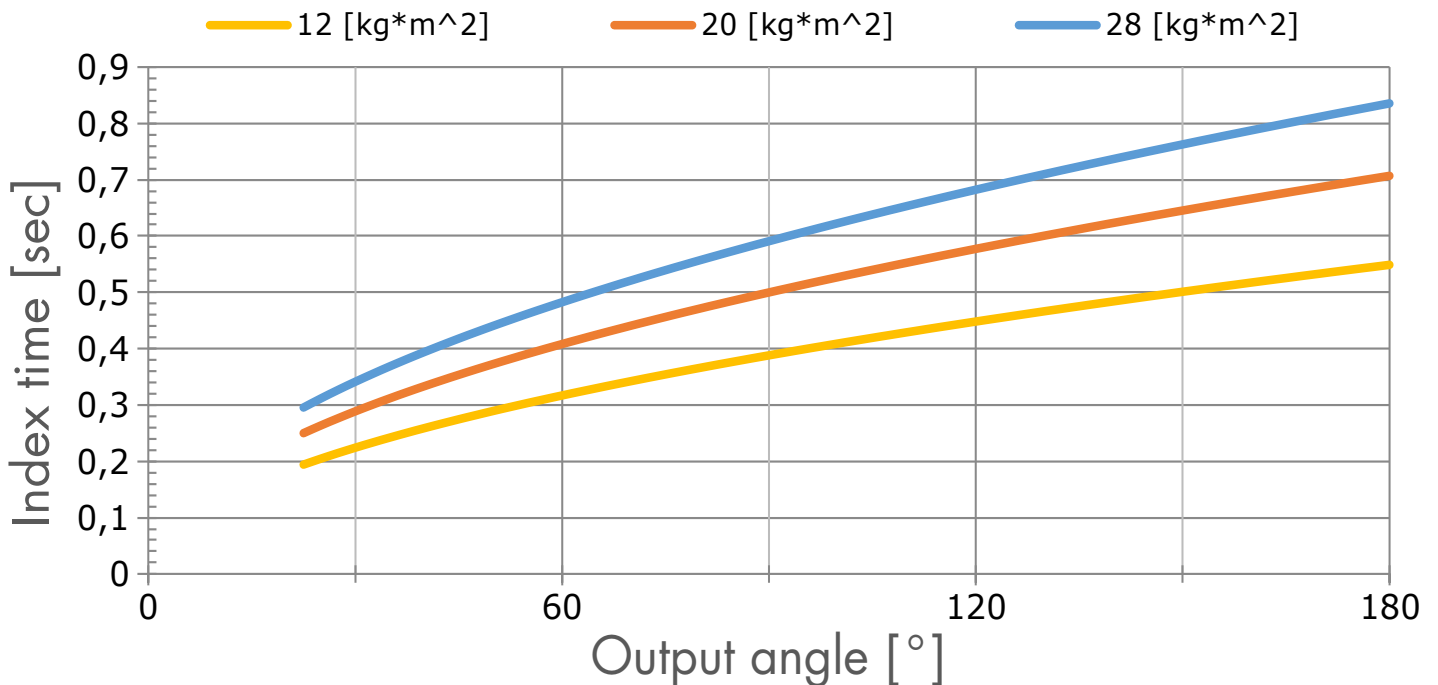
SRI130

Selection

SRI130 - i=1:5 - Index Time



SRI130 - i=1:10 - Index Time



Note

The curves shown in the selection chart refer to theoretical operating conditions of the mechanism and do not take into account the dynamics of the system and the installed motorization.

The curves above are calculated based on a trapezoidal motion law with 33% constant velocity.

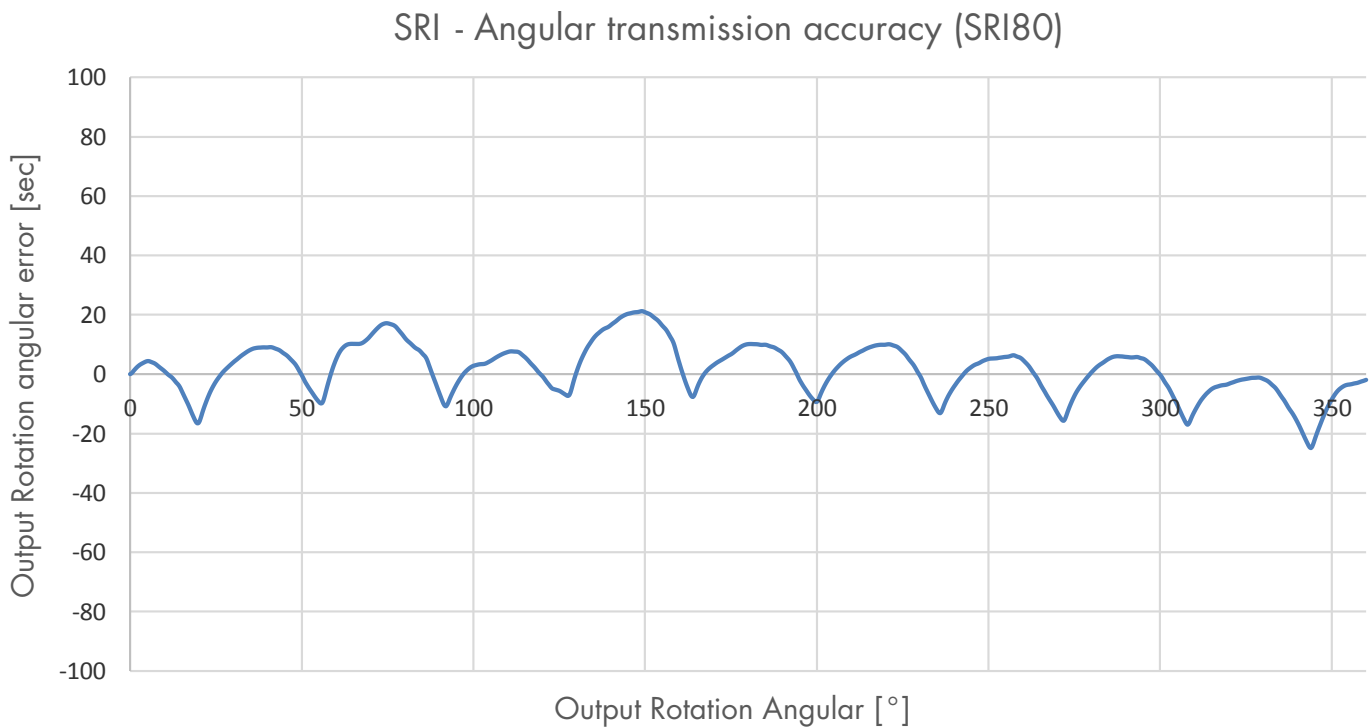




SRI80 - SRI105 - SRI130

Angular accuracy

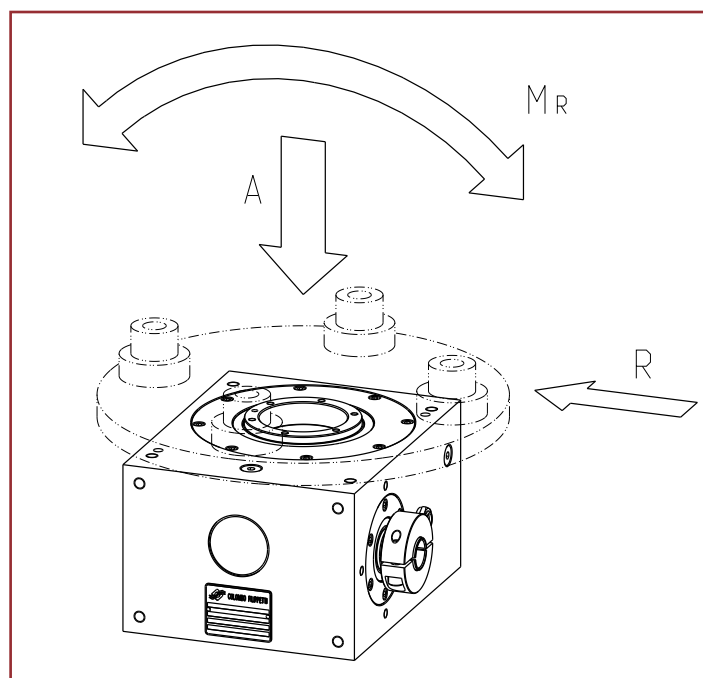
Angular accuracy, defined as the maximum deviation between the expected rotation value of the output disc and the value actually obtained is less than ± 30 arcsec. This deviation is constant over time and does not depend on the dynamics of the system.





SRI80 - SRI105 - SRI130

Load capacity of the output disc



The load capacities shown in the table and represented in the charts below refer to the assembly of the table in position V5 and indicate the maximum values by each type of load applied individually.

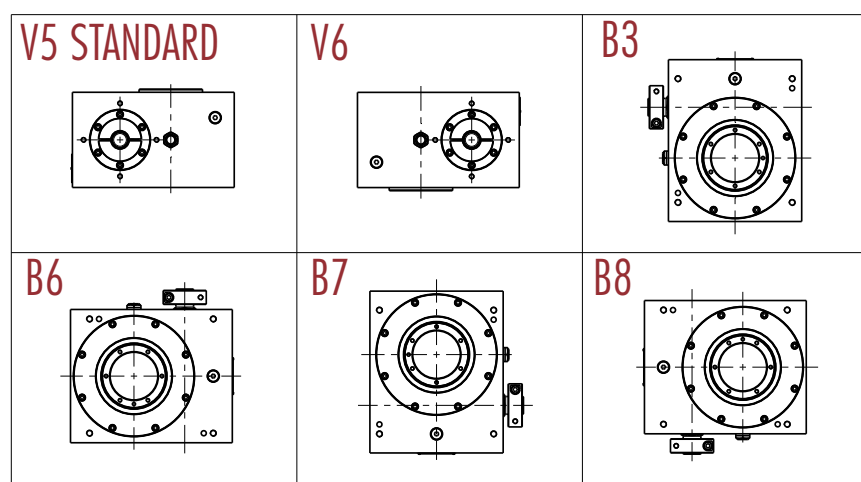
SERIES	Static load capacities		
	AXIAL A [N]	RADIAL R [N]	TILTING Mr [Nm]
SRI80	4360	7800	280
SRI105	8320	16300	750
SRI130	9950	21600	1300

Lubrication

The lubrication of the tables is foreseen for a long life with oil ISO VG150 mineral. SERVO ROLLER INDEXERS are supplied complete with lubricant in the adequate quantity. Lubrication of gear units, gearmotors, drives of speed, etc ..., is independent and the indications of the manufacturers of the individual products apply.

Mounting positions of the Servo-driven Roller Indexer

The SERVO ROLLER INDEXER can be mounted in all positions, being lubricated long-life and supplied of the appropriate quantity of oil.



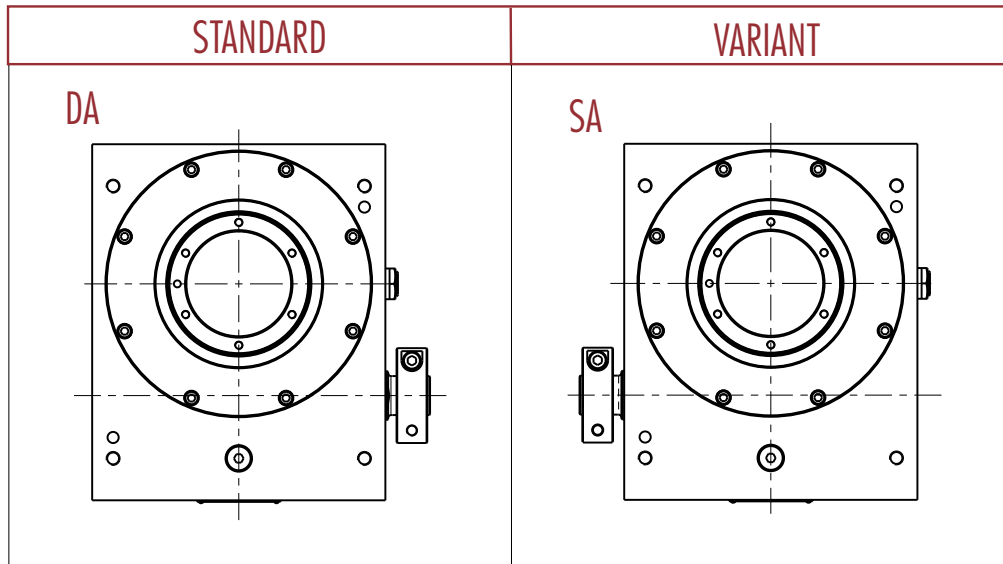
Unless otherwise indicated, the SERVO ROLLER INDEXERS are provided for the location of standard assembly V5.





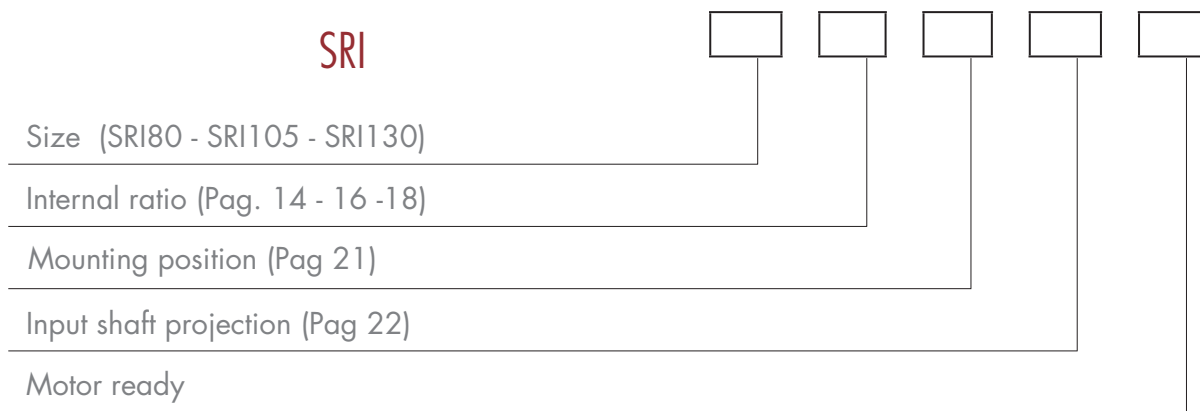
SRI80 - SRI105 - SRI130

Input shaft projection



PO description

The SERVO ROLLER INDEXER description code is created following an alphanumeric classification and composed according to the following chart.
In case of order, to avoid errors and misunderstandings, please refer to it.



Describe the additional desired features.

Coding example:

SRI80 table, transmission ratio 1: 5, mounted in position V5, input hollow shaft on the right side and prepared for the motor to be specified.

SRI80 - 5 - V5 - DA - "prepared for motor ..."





COLOMBO FILIPPETTI
COLLABORATIVE ENGINEERING

COLLABORATIVE ENGINEERING



COFIL

A COLOMBO FILIPPETTI COMPANY

ideas of automation

Colombo Filippetti has been present in the Industrial Automation market for seventy years as a supplier of cam systems for every handling requirement, guaranteeing extreme precision in very high-performance contexts.

The attention to every detail in the construction of customer relationships - context sharing, dedicated planning, mechanisms construction with focus on high quality, after sales service and assistance - constitutes an important and essential value of Colombo Filippetti's philosophy. This value finds application in every aspect of our daily action as an element of sharing and as expression of our professionalism.

Our positioning in the market gives us a role of international leadership and places us in the prestigious group of global players we constantly measure ourselves with. It is a great challenge that constantly stimulates our renewal and continuous innovation.

In order to be able to respond adequately to the requirements coming from the industrial automation mechanisms market - a global universe in impetuous transformation - the orientation of our activities changed. Therefore, the CoFil brand took shape: even with its own stylistic features, it stems from the long tradition of excellence proper of Colombo Filippetti. CoFil aims to look to the future in a new and ambitious perspective - in line with the increasingly dynamic and accelerated evolution of the industrial automation industry. A new brand whose roots go back to a long history of values and skills, guaranteeing continuity in the future of what is most precious to us: our customers trust.





A COLOMBO FILIPPETTI COMPANY



Consulting and project engineering



Smart Automation

27

Development of new projects in collaboration with the customers, attention, listening and knowledge of the markets. Our careful and continuous consultancy and ability to meet the new demands of an increasingly high-performance automation with the most remarkable technological profile. These are the distinctive traits of a business unit completely oriented towards the evolution needs of automation considering increasingly ambitious leadership goals that our customers continually arise. A team of engineers and designers always at your disposal to meet the most interesting challenges through ongoing dialogue aimed at the design and implementation of very high-performance customized mechanisms with specific and dedicated solutions. Welcome to the world of tailor-made collaboration, where technique reaches its peak of excellence.

Welcome to our business unit dedicated to speed in meeting the extremely varied automation needs of the most demanding customers. Solutions that are always ready and available, based on the wide availability of a range of standardized mechanisms in the catalogue, which combine the high quality of Colombo Filippetti products with the flexibility in mounting options together with extremely fast supply times. Indexers, oscillators, rotary tables, manipulators and tool changers in the configurations that best meet current needs for precise, reliable and long-lasting handling. The increasing demand for mechanisms that can make automation solutions reach top performance in the widest array of industrial automation. This is the meeting point between our superior production capacity and the most suitable solution provided to the customer.





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