



WITTENSTEIN

motion control

Rotary servo actuators

More flexible
More efficient
More productive



premo



**Please find below our catalogues, CAD data and
operating manuals in the download center:**

www.wittenstein-motion-control.com/download/premo

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premo – the new, powerful actuator platform

Absolute precision meets perfect motion:
premo combines **precision** with **motion** – more efficient than ever.

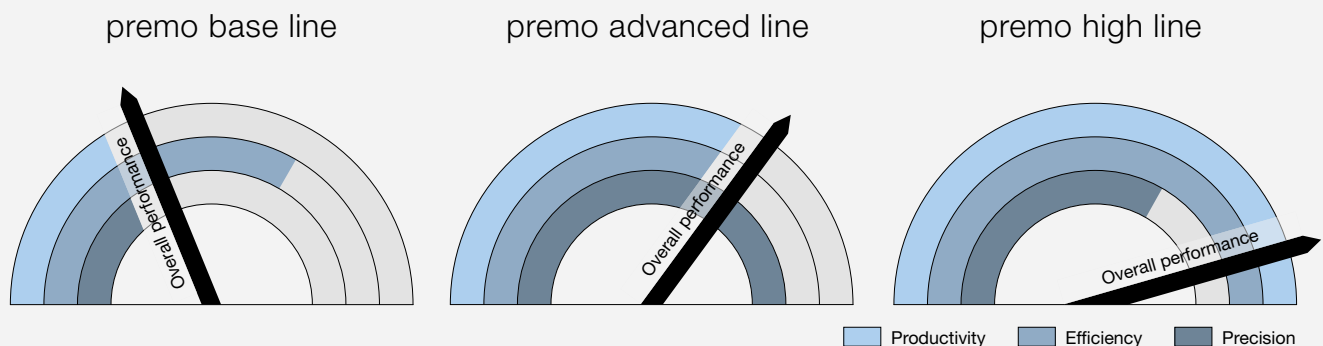
The central idea **behind the first fully scalable servo actuator platform** of WITTENSTEIN is an uncompromising flexibility from the viewpoint of the user. Motors and gearheads with application-related scalable performance characteristics can be configured modularly **to individual Actuators**. The result is a modular system that is significantly more versatile and more individual with regard to performance for the most diverse applications, that meets almost all the challenges of automation, integration and industry specification. Thanks to the **modular platform concept**, premo servo actuators can also be quickly manufactured and made available for the relevant task.

The core of the motor-gearhead unit is a **torsionally rigid precision gearhead** with low backlash and excellent torque density in combination with the equally powerful, **permanent magnet servo motor**, which guarantees low

cogging and a minimal velocity ripple through the distributed winding.

Through the intelligent design principle implemented for the first time, premo not only sets **completely new standards with regard to flexibility and sustainability**, – the premo actuator generation also opens up new dimensions in terms of performance: **doubled power density with minimal increase in size**, increased productivity and optimized energy efficiency thanks to digital, single-cable technology provide for more freedom during planning, design and storage as well as lower investment costs.

All **three lines** of this innovative actuator generation are equipped with **the latest digital encoder technology** and characterized by a particularly easy-to-clean and maintenance friendly design without exposed screws.



Flexible mechanical and electrical interfaces for high scalability

premo base line – the basic class

Optimum performance for all positioning tasks

- Short cycle times through low backlash and high rigidity
- Very good positioning accuracy
- Basic configuration with smooth output shaft and resolver

premo advanced line – the dynamic class

Precision for positioning and processing tasks

- High torsional rigidity and low backlash enable high acceleration and tight control
- Basic configuration with output flange and HIPERFACE® single-turn, absolute encoder, SIL 2

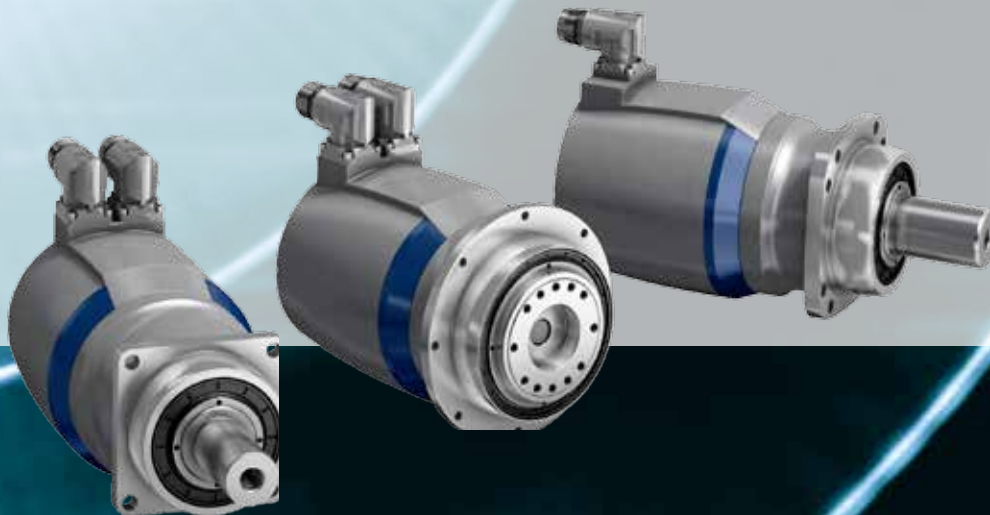
premo high line – the extra class

Versatile in almost all sectors

- Maximum power density with high torsional rigidity and radial load capacity
- Basic configuration with smooth output shaft and HIPERFACE DSL® single-turn, absolute encoder, SIL 2

Individual upgrading of all lines possible through a variety of options:

- Analog and digital feedback systems as well as safety encoder according to SIL2
- One and two-connector versions
- Permanent magnet holding brake
- Reduced backlash
- Different output designs



premo – clearly superior in performance

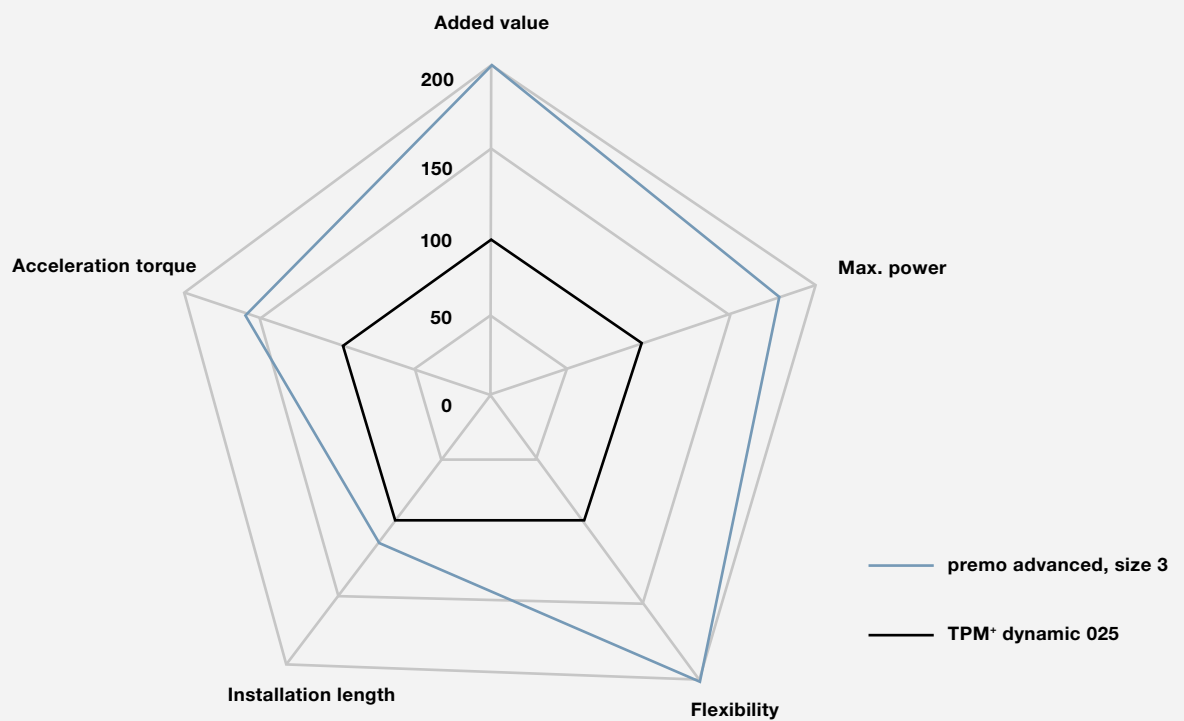
- **Higher machine performance** thanks to higher acceleration torque
- High torque density combined with a compact design allow for the realization of higher performance machines with significant space saving.
- Improved **connectivity to next generation controllers** from leading system providers through the use of digital feedback (EnDat 2.2, DSL, HIPERFACE DSL®, DRIVE-CLiQ) and compatability for high bus voltage up to 750 V DC
- **Reduced wiring requirement** through single-connector technology
- **Improved reliability and safety**, e.g. through the use of more powerful brakes (optional)
- **Use in washdown and food applications** through hygienic housing design with smooth surfaces
- **Reliable scheduling and reduced minimum inventory level** through shorter delivery times

premo – the new energy-efficiency class

Utilizing planetary gearheads with a wide range of gear ratios and an efficiency up to 97% combined with servo motors up to 92% efficient – the premo platform utilizes the entire experience of WITTENSTEIN motion control in the energy-efficient design of motor-gearhead Actuators. The power requirement during acceleration is reduced thanks to lower inertia due to the elimination of the motor shaft coupling, as well as through a design to optimized

current saturation losses. Moreover, the digital single-cable technology for the power supply and data transmission between motor and controller requires **the use of only one** connector and connection cable. This **reduces the wiring requirement by half** and also saves weight for moving motors. This also reduces the energy consumption in the integration of premo in robots or moving machine structures. Overall, top class energy efficiency is achieved.

premo – absolute flexibility in all cases



In comparison with the proven TPM series, the new premo servo actuators exhibit significantly greater flexibility and performance potential. The mechanical interface to the machine can be designed in multiple versions. The inter-

face to the servo controller offers almost unlimited connection options through the voltage range up to 750 V DC and the wide selection of analog and digital encoders.

premo – the modular system for individual requirements

Thanks to the modularity of the intelligent premo platform, motors and gearheads with a wide range application-related performance characteristics can be **configured to individual motor-gearhead units**.

In addition, **Industry specific packages** enable the adaptation of the servo actuators to the application environment. For example, applications in the food-processing, filling and packaging industries profit from the washdown option: high-pressure wash-down using cleaning and disinfection chemicals

requires particularly robust servo actuators, e.g. through a corrosion-resistant housing without edges and corners or the maximum IP protection class. For automated guided vehicle (AGV), yet another industry specific package is available, on which the Plug&Play drive unit is characterized by an extremely flat design and direct integration in the driven wheels. Industry specific packages can also be appropriately configured for further applications, such as for robotic and handling technology, for machine tools and packaging machines as well as many other requirements.

Typical fields of application and industry solutions

- Delta robot (axes 1–3, swivel axis)
- Handling portal (Z-axis, swivel/rotating axis)
- Tooling machine (rotating axes A–C, tool changer)
- Form, fill and seal machines (incl. jaw stroke, sealing jaw, blade)
- Folding carton packaging (incl. assembly/folding, filling valve)
- Plastic thermoform (tool axis)
- Intralogistics (AGV)

premo – industry-specific high performance



The short installation lengths of the premo servo actuators allow for integration in tight mounting situations of increasingly compact robots, handling machines, machine tools as well as filling and packaging lines.

Combination with the now available intermediate circuit voltage of 750 V DC results in an additional increase in performance, and therefore greater productivity with low space requirements.

Flexible gearhead interface
suitable for any application

B

All external surfaces with smooth,
hygienic design

A

Quick-fastening connector
for fast installation

A

Conical cover
without screws

A C

Reduced wiring requirement
through single-cable technology
with digital encoder

B C D

Robust bearing with
long service life

A C

Brake with
increased
holding torque

C D



Your requirement	Our solution
Resistant and easy-to-clean actuator surface	High-quality design without screw heads for optimum cleaning conditions and high value stability
High bus voltage and absolute connectivity to system providers	Enhanced performance through intermediate circuit voltage up to 750 V DC, interfaces for EnDat 2.2, HIPERFACE DSL®, DRIVE-CLiQ partially in single-cable technology for the greatest flexibility in adapting to external controllers and maximum productivity
Maximum individual freedom in design	The forward thinking modular premo design offers all available mechanical output interfaces. To aid in the case of restricted floor space on low profile machines the premo offers optimized construction designs to minimize overall length. High efficiency and single cable solutions offer savings in the drive system with maximum compatibility of position feedback for any application. And best of all, the new modular premo design offers the ability for best in class delivery of product.
Maximum machine reliability and investment protection	Intelligent, energy efficient product concept: higher reliability through the elimination of the shaft coupling, minimized electrical component size due to low current requirements allowing reduction in size of the servo drive, cabling, fusing and electrical contacts. The single cable solution offers less wiring and smaller cable tracks while higher braking torques offer faster stopping and improved reliability for vertical axes. Greater reliability thanks to the functional safety in the mechanical connection of the encoder.

A Increased productivity / higher OEE*

B Simplified machine design

C Reliability / service life

D Safety

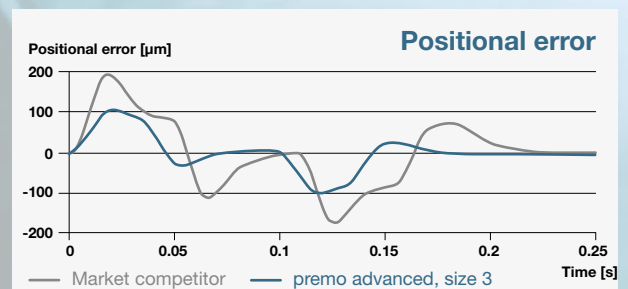
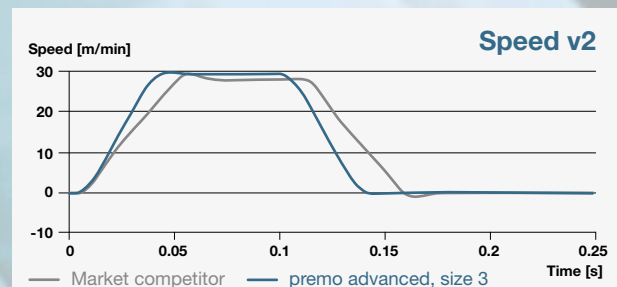
* Overall Equipment Effectiveness

Due to the high power density, the low moment of inertia, the high rigidity and the low backlash of each premo actuator, two important objectives can be achieved:

1. Increased productivity with comparable energy requirement

In order to increase productivity of a system, the most critical factor is reducing the cycle time of the most time critical movements, the so-called “bottle necks”. This is achieved through increased acceleration torques allowing for a reduction in the dynamic time components as well as through increased torsional rigidity for improved response times and tighter control loops.

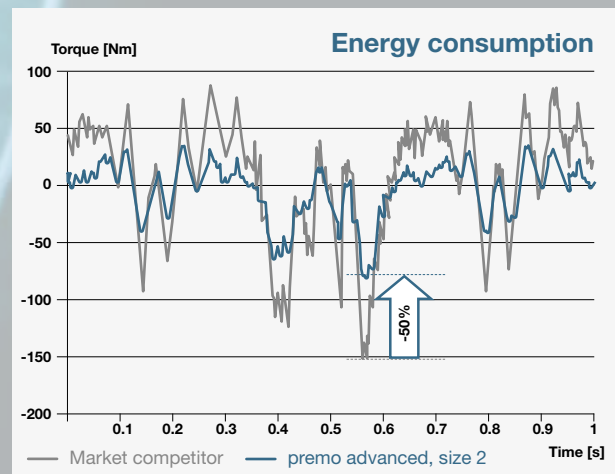
The following example of a packaging machine shows that a premo advanced line, size 3, with 20% higher acceleration torque and 30% more torsional rigidity with comparable energy requirement achieves a significant increase in productivity. The movement path of 50 mm in the time-critical axis is completed 50 ms faster, which corresponds to a production increase of 29%.



2. Reduced energy consumption with the same productivity

In using a smaller more efficient actuator with lower inertia and higher rigidity, a smaller servo controller can also be used, thus saving upfront cost as well as operating costs in the form of lower energy consumption all while achieving the same productivity.

Example: Delta robot Using a premo advanced line, size 2, the same result is achieved as with the significantly larger motor of a market competitor. The high rigidity of the actuator together with the lower moment of inertia enables the use of a smaller motor. At 6.5 A, the current consumption of the premo, size 2, is approx. 50% below that of a comparable product. This enables the selection of servo controller and supply module that are one level smaller, which involves significant savings potential in the 3-axis application.

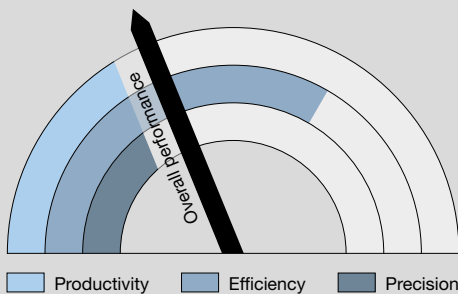


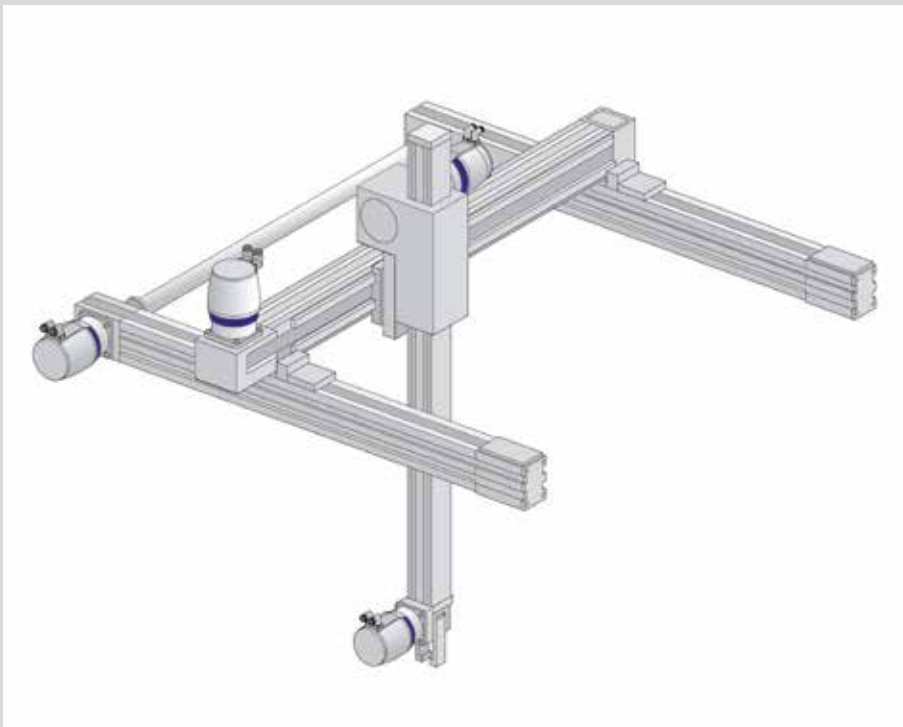
premo base line

The basic class:

- Especially suitable for positioning tasks
- Short cycle times
- Special benefits with auxiliary axes: low weight and short installation length
- Mechanical interface with output shaft
- Ideal for connecting couplings, toothed belt pulleys and pinions

- In addition to the smooth shaft version, key and involute versions are also available
- Standard electric interface with resolver
- Precision adequate for most applications
- Optionally extendable with all available encoder and connector versions





Application example

Gantry systems are useful aids if pallets, crates, trays or similar are transported from A to B – the faster, the better.

premo base line copes with this task thanks to its high power-to-weight ratio and excellent dynamics.

premo base line, size 1

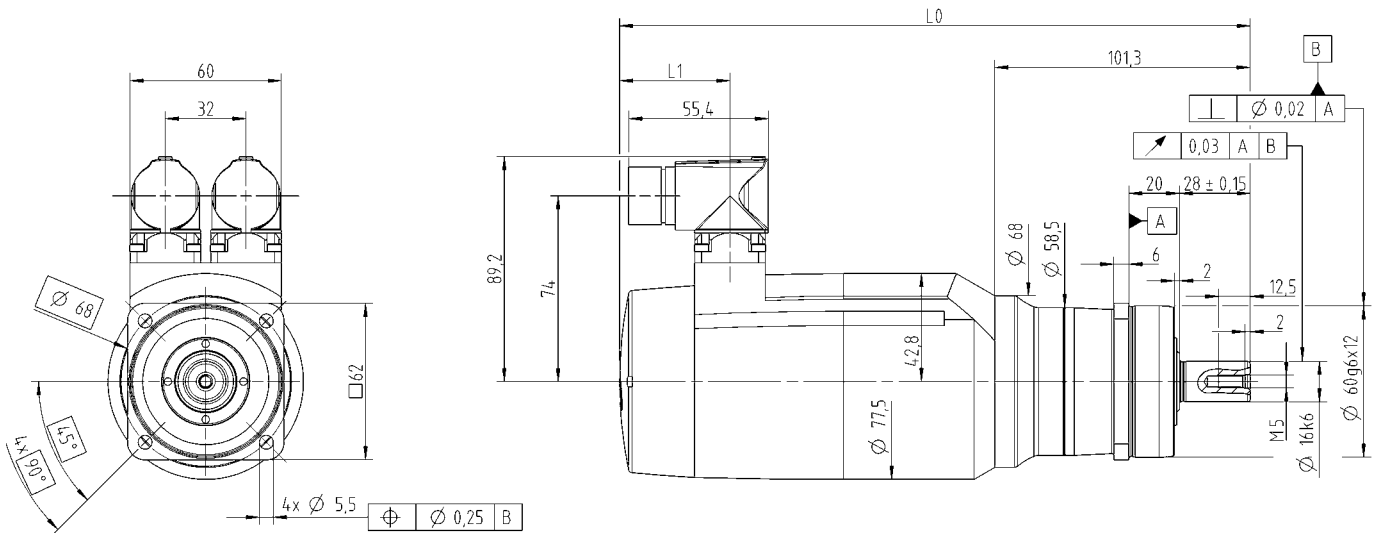
Ratio	i		16	20	25	28	35	40	50	70	100
Intermediate circuit voltage	U_D	V DC	560								
Max. acceleration torque at output	T_{2B}	Nm	41.4	42	42	42	42	42	42	42	32
Static output torque	T_{20}	Nm	12	16	20	23.8	26	13.6	17	23.8	17
Brake holding torque at output (100°C)	T_{2Br}	Nm	32	40	50	56	70	32	40	56	80
Max. speed	n_{2max}	rpm	375	300	240	214	171	150	120	85.7	60
Speed limit for T_{2B}	n_{2B}	rpm	375	300	240	214	171	150	120	85.7	60
Max. motor acceleration torque	T_{1Mmax}	Nm	2.84					1.4			
Max. motor acceleration current	I_{maxdyn}	A	4					2.2			
Static motor current	I_0	A	1.33					0.72			
Actuator moment of inertia (at motor shaft, without brake)	J_1	kgcm ²	0.41	0.41	0.4	0.4	0.4	0.2	0.2	0.2	0.2
Actuator moment of inertia (at motor shaft, with brake)	J_1	kgcm ²	0.48	0.47	0.47	0.47	0.47	0.22	0.22	0.22	0.22
Torsional backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity	C_{t21}	Nm/arcmin	4.5								
Max. axial force ¹⁾	F_{2Amax}	N	2,400								
Max. radial force ¹⁾	F_{2Rmax}	N	2,800								
Max. tilting moment	M_{2Kmax}	Nm	152								
Bearing lifespan	L_h	h	> 20,000								
Weight (with resolver, without brake)	m	kg	-								
Operating noise (at $n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 58								
Insulating material class			F								
Ambient temperature		°C	+40								
Protection class			IP 65								
Lubrication			Tribol 800/220 oil								
Mount. pos.			Any								

¹⁾ Refers to center of output shaft and flange



WITTENSTEIN

motion control



Without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	226.5	22.5
	HIPERFACE®, HIPERFACE DSL®	248.6	44.6
	EnDat		
	DRIVE-CLiQ	280.1	76.1
i = 40 – 100	Resolver	211.5	22.5
	HIPERFACE®, HIPERFACE DSL®	233.6	44.6
	EnDat		
	DRIVE-CLiQ	265.1	76.1

With brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	262.2	22.5
	HIPERFACE®, HIPERFACE DSL®	284.3	44.6
	EnDat		
	DRIVE-CLiQ	315.8	76.1
i = 40 – 100	Resolver	235.3	22.5
	HIPERFACE®, HIPERFACE DSL®	257.4	44.6
	EnDat		
	DRIVE-CLiQ	288.9	76.1

premo base line, size 2

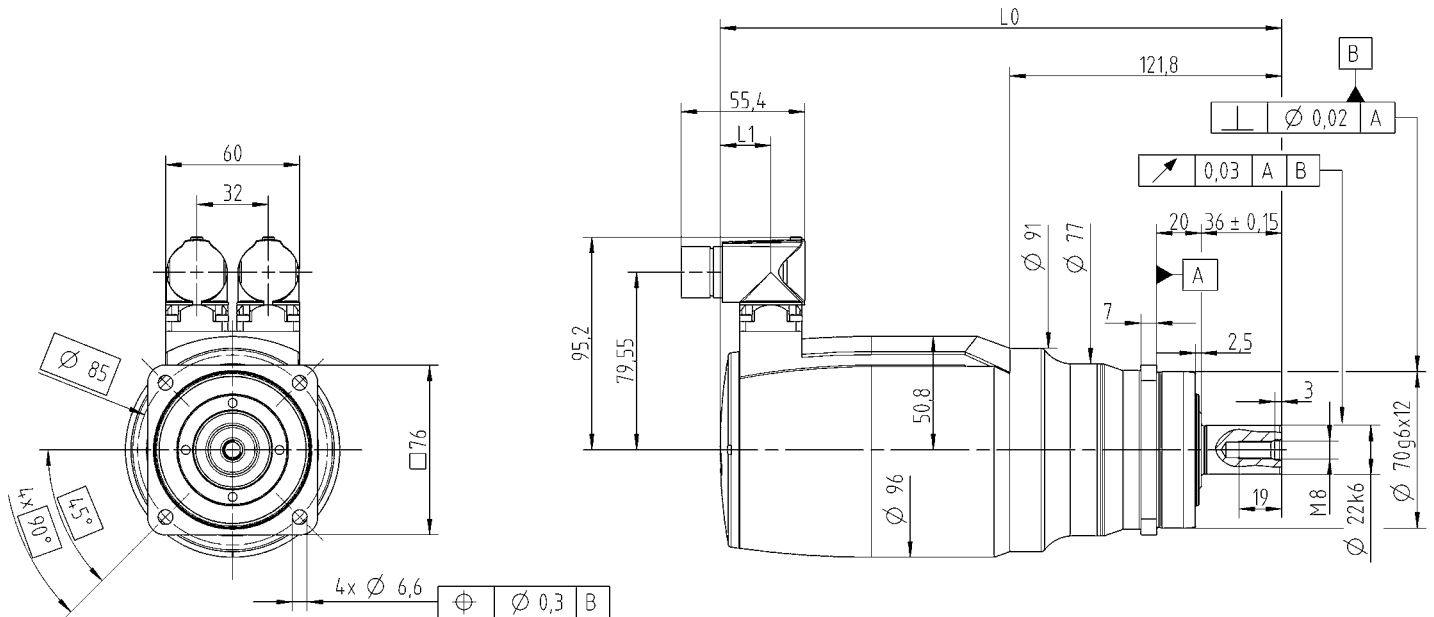
Ratio	i		16	20	25	28	35	40	50	70	100
Intermediate circuit voltage	U_D	V DC	560								
Max. acceleration torque at output	T_{2B}	Nm	82.1	105	110	110	110	102	110	110	90
Static output torque	T_{20}	Nm	20.5	27.6	34.5	40	51.8	27.2	36.5	51.1	52
Brake holding torque at output (100°C)	T_{2Br}	Nm	72	90	113	126	158	80	100	140	200
Max. speed	n_{2max}	rpm	375	300	240	214	171	150	120	85.7	60
Speed limit for T_{2B}	n_{2B}	rpm	269	215	188	177	153	125	110	85.7	60
Max. motor acceleration torque	T_{1Mmax}	Nm	5.53					2.76			
Max. motor acceleration current	I_{maxdyn}	A	6.5					4			
Static motor current	I_0	A	1.71					1.1			
Actuator moment of inertia (at motor shaft, without brake)	J_1	kgcm ²	0.99	0.96	0.96	0.94	0.94	0.57	0.57	0.57	0.57
Actuator moment of inertia (at motor shaft, with brake)	J_1	kgcm ²	1.2	1.17	1.17	1.15	1.15	0.59	0.59	0.59	0.59
Torsional backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity	C_{t21}	Nm/arcmin	10								
Max. axial force ¹⁾	F_{2Amax}	N	3,350								
Max. radial force ¹⁾	F_{2Rmax}	N	4,200								
Max. tilting moment	M_{2Kmax}	Nm	236								
Bearing lifespan	L_h	h	> 20,000								
Weight (with resolver, without brake)	m	kg	-								
Operating noise (at $n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 59								
Insulating material class			F								
Ambient temperature		°C	+40								
Protection class			IP 65								
Lubrication			Tribol 800/220 oil								
Mount. pos.			Any								

¹⁾ Refers to center of output shaft and flange



WITTENSTEIN

motion control



Without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	252.5	20.5
	HIPERFACE®, HIPERFACE DSL®	274.8	42.8
	EnDat		
	DRIVE-CLiQ	305	73
i = 40 – 100	Resolver	237.5	20.5
	HIPERFACE®, HIPERFACE DSL®	259.8	42.8
	EnDat		
	DRIVE-CLiQ	290	73

With brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	289.5	20.5
	HIPERFACE®, HIPERFACE DSL®	311.8	42.8
	EnDat		
	DRIVE-CLiQ	342	73
i = 40 – 100	Resolver	248.5	20.5
	HIPERFACE®, HIPERFACE DSL®	270.8	42.8
	EnDat		
	DRIVE-CLiQ	301	73

premo base line, size 3

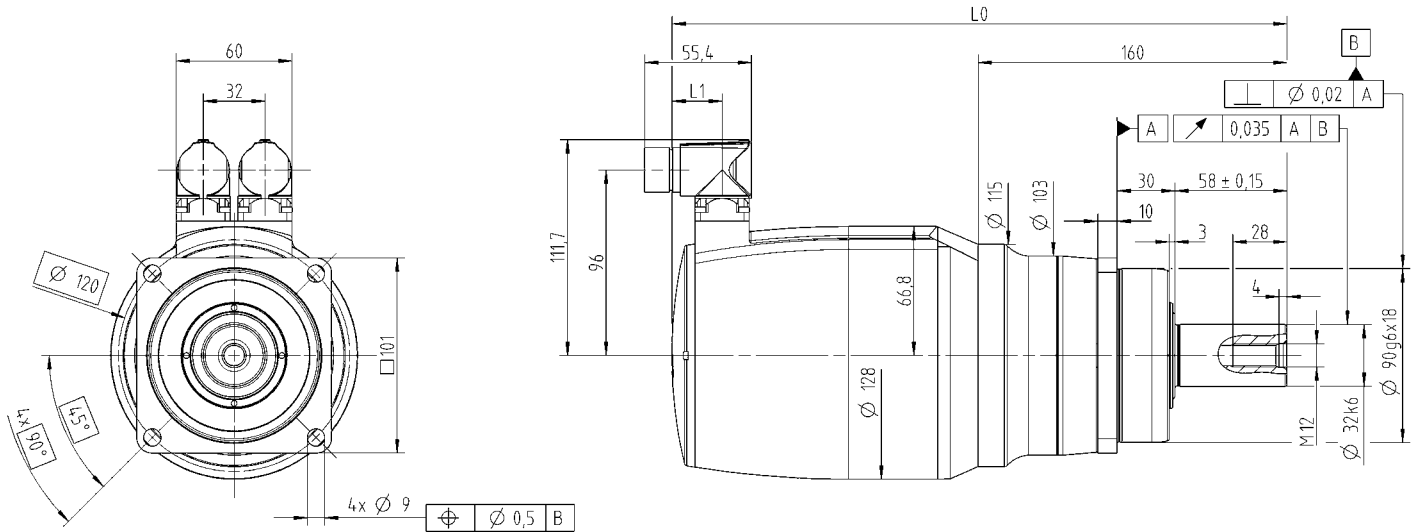
Ratio	i		16	20	25	28	35	40	50	70	100
Intermediate circuit voltage	U_D	V DC	560								
Max. acceleration torque at output	T_{2B}	Nm	255	315	315	315	315	230	290	315	235
Static output torque	T_{20}	Nm	91	118	148	169	175	69	89	128	120
Brake holding torque at output (100°C)	T_{2Br}	Nm	208	260	325	364	455	180	225	315	450
Max. speed	n_{2max}	rpm	375	300	240	214	171	150	120	85.7	60
Speed limit for T_{2B}	n_{2B}	rpm	313	252	218	202	170	109	87	71	59
Max. motor acceleration torque	T_{1Mmax}	Nm	16.7					6.09			
Max. motor acceleration current	I_{maxdyn}	A	19.7					7.5			
Static motor current	I_0	A	6.71					2.21			
Actuator moment of inertia (at motor shaft, without brake)	J_1	kgcm ²	4.61	4.51	4.5	4.42	4.41	1.72	1.71	1.71	1.71
Actuator moment of inertia (at motor shaft, with brake)	J_1	kgcm ²	5.71	5.61	5.6	5.52	5.51	2.59	2.59	2.59	2.58
Torsional backlash	j_t	arcmin	Standard ≤ 6 / Reduced ≤ 4								
Torsional rigidity	C_{t21}	Nm/arcmin	31								
Max. axial force ¹⁾	F_{2Amax}	N	5650								
Max. radial force ¹⁾	F_{2Rmax}	N	6,600								
Max. tilting moment	M_{2Kmax}	Nm	487								
Bearing lifespan	L_h	h	> 20,000								
Weight (with resolver, without brake)	m	kg	-								
Operating noise (at $n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 60								
Insulating material class			F								
Ambient temperature		°C	+40								
Protection class			IP 65								
Lubrication			Tribol 800/220 oil								
Mount. pos.			Any								

¹⁾ Refers to center of output shaft and flange



WITTENSTEIN

motion control



Without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	318.9	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	350.9	58
	DRIVE-CLiQ		
i = 40 – 100	Resolver	294.8	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	326.8	58
	DRIVE-CLiQ		

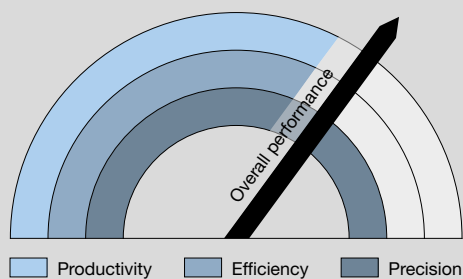
With brake

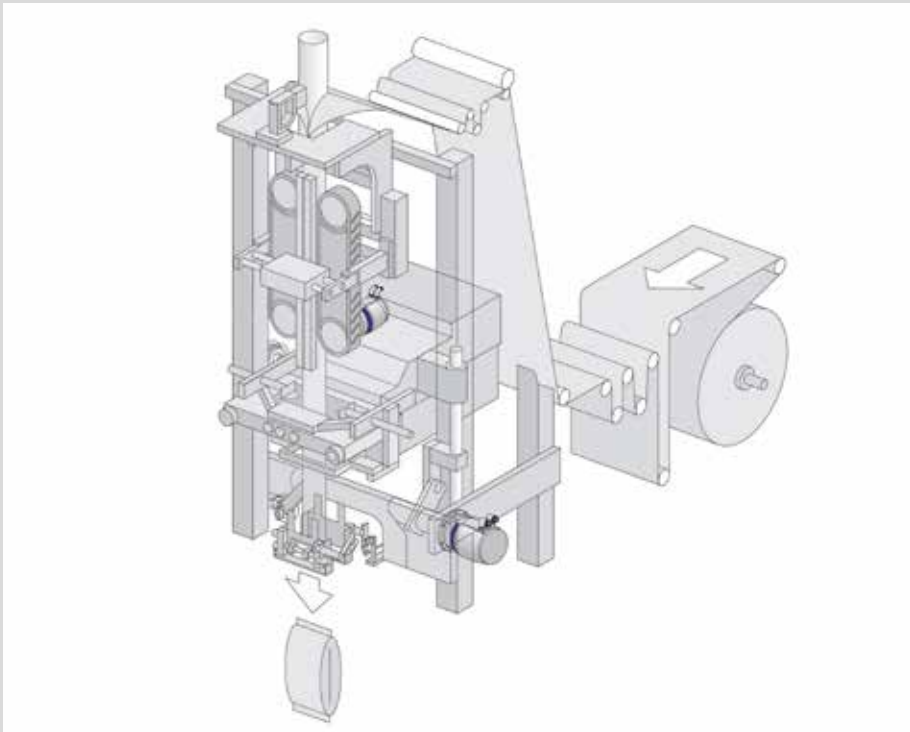
Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	359.4	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	391.4	58
	DRIVE-CLiQ		
i = 40 – 100	Resolver	318.8	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	350.8	58
	DRIVE-CLiQ		

premo advanced line

The dynamic class:

- Optimal for challenging positioning and processing tasks
- Minimal backlash and maximum torsional rigidity enable the shortest cycle times
- Excellent surface finish
- Mechanical interface with output flange
- Ideal for connecting lever arms or pinions
- Standard electric interface with absolute encoder HIPERFACE® Single-turn for high positioning accuracy
- optionally extendable with all available encoder and connector versions





Application example

Form, fill and seal machines continuously package bulk material of all types – including foods, like chips and gummy bear. A high throughput and especially a clean and tight sealing are especially important.

premo advanced line provides the solution with its exceptional precision and power density.

premo advanced line, size 1

Ratio	i		16	20	25	28	35	40	50	70	100
Intermediate circuit voltage	U_D	V DC	560								
Max. acceleration torque at output	T_{2B}	Nm	41	52.3	55	55	55	51	55	55	35
Static output torque	T_{20}	Nm	11.6	15.5	19.4	23.1	29.8	14.6	18.3	27.3	18
Brake holding torque at output (100°C)	T_{2Br}	Nm	32	40	50	56	70	32	40	56	80
Max. speed	n_{2max}	rpm	375	300	240	214	171	150	120	85.7	60
Speed limit for T_{2B}	n_{2B}	rpm	375	300	240	214	171	150	120	85.7	60
Max. motor acceleration torque	T_{1Mmax}	Nm	2.84					1.4			
Max. motor acceleration current	I_{maxdyn}	A	4					2.2			
Static motor current	I_0	A	1.33					0.72			
Actuator moment of inertia (at motor shaft, without brake)	J_1	kgcm ²	0.41	0.41	0.4	0.4	0.4	0.2	0.2	0.2	0.2
Actuator moment of inertia (at motor shaft, with brake)	J_1	kgcm ²	0.48	0.47	0.47	0.47	0.47	0.22	0.22	0.22	0.22
Torsional backlash	j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2								
Torsional rigidity	C_{t21}	Nm/arcmin	12	12	12	12	12	11	10	11	8
Tilting rigidity	C_{2K}	Nm/arcmin	-								
Max. axial force ¹⁾	F_{2Amax}	N	1,630								
Max. tilting moment	M_{2Kmax}	Nm	110								
Bearing lifespan	L_h	h	> 20,000								
Weight (with resolver, without brake)	m	kg	-								
Operating noise (at $n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 58								
Insulating material class			F								
Ambient temperature		°C	+40								
Protection class			IP 65								
Lubrication			Tribol 800/220 oil								
Mount. pos.			Any								

¹⁾ Refers to center of output shaft and flange

premo

advanced line, size 2

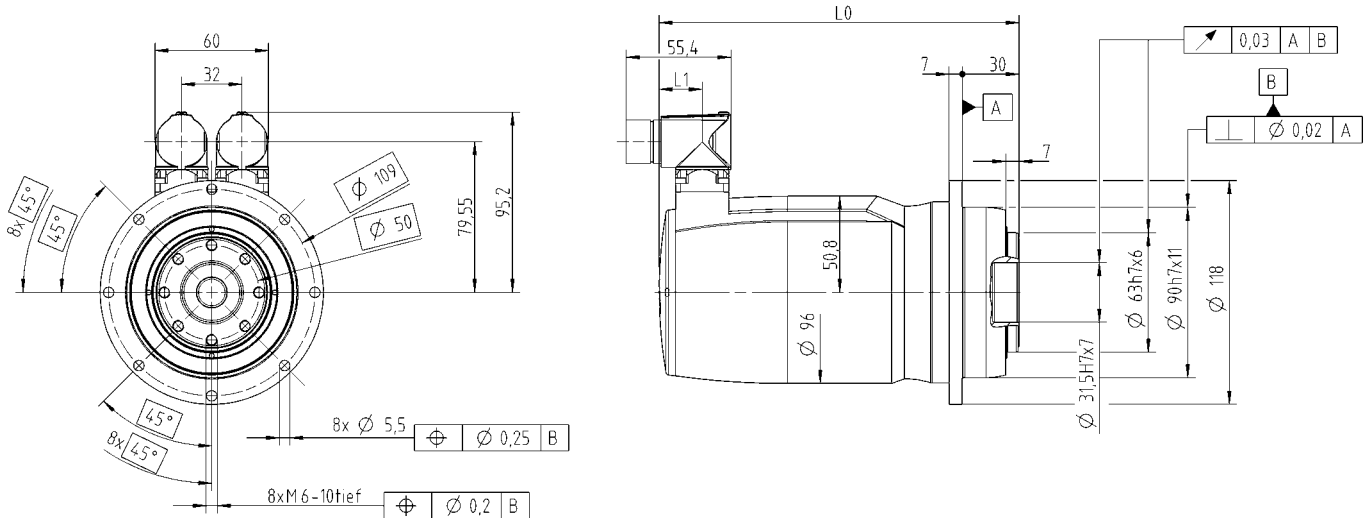
Ratio	i		16	20	25	28	35	40	50	70	100
Intermediate circuit voltage	U_D	V DC	560								
Max. acceleration torque at output	T_{2B}	Nm	81.3	103	130	143	143	102	129	143	105
Static output torque	T_{20}	Nm	19.7	26.1	33.9	39.3	50.1	27.2	35.3	49.4	60
Brake holding torque at output (100°C)	T_{2Br}	Nm	72	90	113	126	158	80	100	140	200
Max. speed	n_{2max}	rpm	375	300	240	214	171	150	120	85.7	60
Speed limit for T_{2B}	n_{2B}	rpm	269	215	172	154	139	125	100	81	60
Max. motor acceleration torque	T_{1Mmax}	Nm	5.53					2.76			
Max. motor acceleration current	I_{maxdyn}	A	6.5					4			
Static motor current	I_0	A	1.71					1.1			
Actuator moment of inertia (at motor shaft, without brake)	J_1	kgcm ²	1	0.97	0.96	0.94	0.94	0.57	0.57	0.57	0.57
Actuator moment of inertia (at motor shaft, with brake)	J_1	kgcm ²	1.21	1.18	1.17	1.15	1.15	0.59	0.59	0.59	0.59
Torsional backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1								
Torsional rigidity	C_{t21}	Nm/arcmin	32	32	32	31	32	30	30	28	22
Tilting rigidity	C_{2K}	Nm/arcmin	225								
Max. axial force ¹⁾	F_{2Amax}	N	2,150								
Max. tilting moment	M_{2Kmax}	Nm	270								
Bearing lifespan	L_h	h	> 20,000								
Weight (with resolver, without brake)	m	kg	-								
Operating noise (at $n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 59								
Insulating material class			F								
Ambient temperature		°C	+40								
Protection class			IP 65								
Lubrication			Tribol 800/220 oil								
Mount. pos.			Any								

¹⁾ Refers to center of output shaft and flange



WITTENSTEIN

motion control



Without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	191.2	20.5
	HIPERFACE®, HIPERFACE DSL®	213.5	42.8
	EnDat		
	DRIVE-CLiQ	243.7	73
i = 40 – 100	Resolver	176.2	20.5
	HIPERFACE®, HIPERFACE DSL®	198.5	42.8
	EnDat		
	DRIVE-CLiQ	228.7	73

With brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	228.2	20.5
	HIPERFACE®, HIPERFACE DSL®	250.5	42.8
	EnDat		
	DRIVE-CLiQ	280.7	73
i = 40 – 100	Resolver	187.2	20.5
	HIPERFACE®, HIPERFACE DSL®	209.5	42.8
	EnDat		
	DRIVE-CLiQ	239.7	73

premo advanced line, size 3

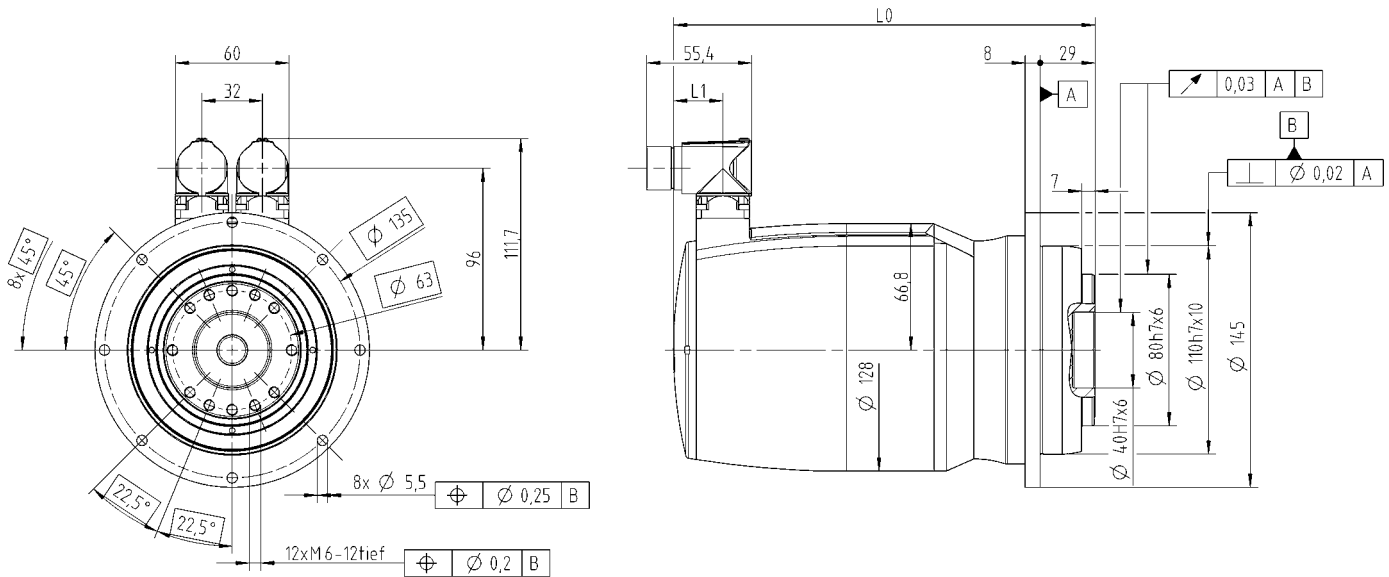
Ratio	i		16	20	25	28	35	40	50	70	100
Intermediate circuit voltage	U_D	V DC	560								
Max. acceleration torque at output	T_{2B}	Nm	252	318	380	350	380	228	285	330	265
Static output torque	T_{20}	Nm	89.3	115	145	166	209	67.2	84	121	120
Brake holding torque at output (100°C)	T_{2Br}	Nm	208	260	325	364	455	180	225	315	450
Max. speed	n_{2max}	rpm	375	300	240	214	171	150	120	85.7	60
Speed limit for T_{2B}	n_{2B}	rpm	313	250	204	195	163	109	87	69	58
Max. motor acceleration torque	T_{1Mmax}	Nm	16.7					6.09			
Max. motor acceleration current	I_{maxdyn}	A	19.7					7.5			
Static motor current	I_0	A	6.71					2.21			
Actuator moment of inertia (at motor shaft, without brake)	J_1	kgcm ²	4.65	4.54	4.52	4.43	4.42	1.72	1.72	1.71	1.71
Actuator moment of inertia (at motor shaft, with brake)	J_1	kgcm ²	5.75	5.64	5.62	5.53	5.52	2.6	2.59	2.59	2.59
Torsional backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1								
Torsional rigidity	C_{t21}	Nm/arcmin	81	81	83	80	82	76	80	71	60
Tilting rigidity	C_{2K}	Nm/arcmin	550								
Max. axial force ¹⁾	F_{2Amax}	N	4,150								
Max. tilting moment	M_{2Kmax}	Nm	440								
Bearing lifespan	L_h	h	> 20,000								
Weight (with resolver, without brake)	m	kg	-								
Operating noise (at $n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 58								
Insulating material class			F								
Ambient temperature		°C	+40								
Protection class			IP 65								
Lubrication			Tribol 800/220 oil								
Mount. pos.			Any								

¹⁾ Refers to center of output shaft and flange



WITTENSTEIN

motion control



Without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	222.9	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	254.9	58
	DRIVE-CLiQ		
i = 40 – 100	Resolver	198.8	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	230.8	58
	DRIVE-CLiQ		

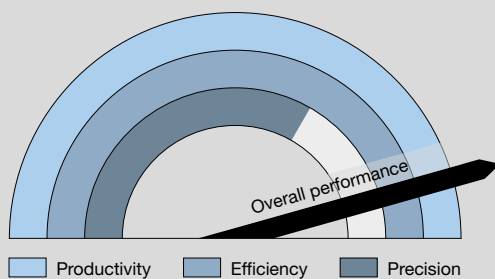
With brake

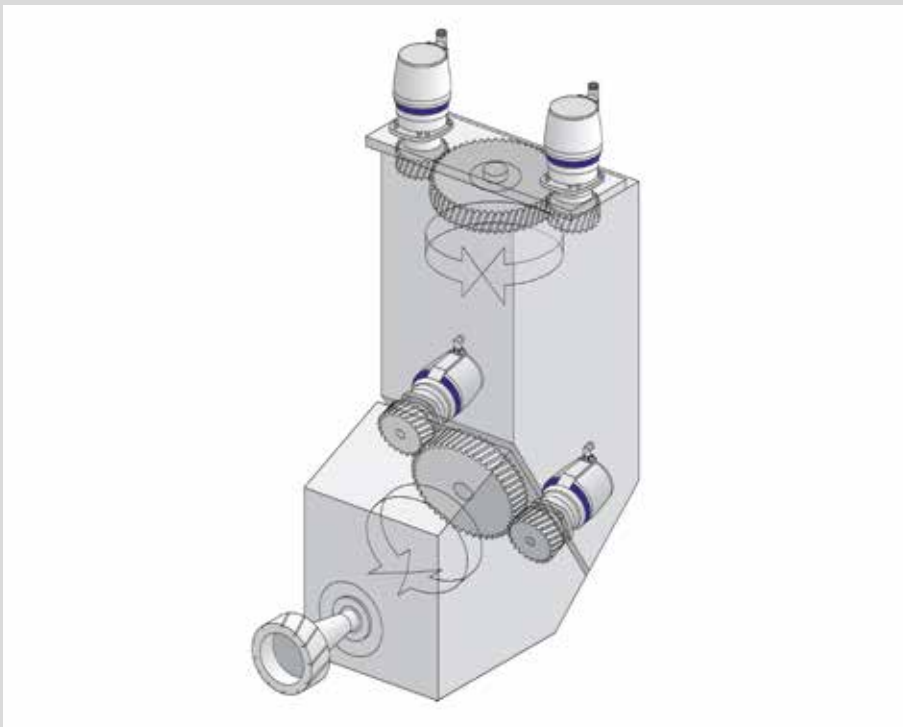
Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16 – 35	Resolver	263.4	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	295.4	58
	DRIVE-CLiQ		
i = 40 – 100	Resolver	222.8	26
	HIPERFACE®, HIPERFACE DSL®		
	EnDat	254.8	58
	DRIVE-CLiQ		

premo high line

The extra class:

- Particularly high power density and load capacity
- Extremely low backlash, high torsional rigidity and maximum load capacity of the output bearing enable a highly compact actuator platform for enhanced machine performance
- Mechanical interface with output shaft, ideal for connecting couplings or pinions
- In addition to the smooth shaft version, an involute version is also available
- Electric interface with absolute encoder HIPERFACE® DSL single-turn incl. functional safety and single-cable connection
- Safety requirements are united with the latest connection technology
- Optionally extendable with all available encoder and connector versions





Application example

Especially in the milling head of a machining center, high disturbing forces occur due to the material processing.

Due to the restricted installation space, actuators with the highest power density and load capacity are required here. premo high line offers the ideal solution.

premo

high line, size 1–3

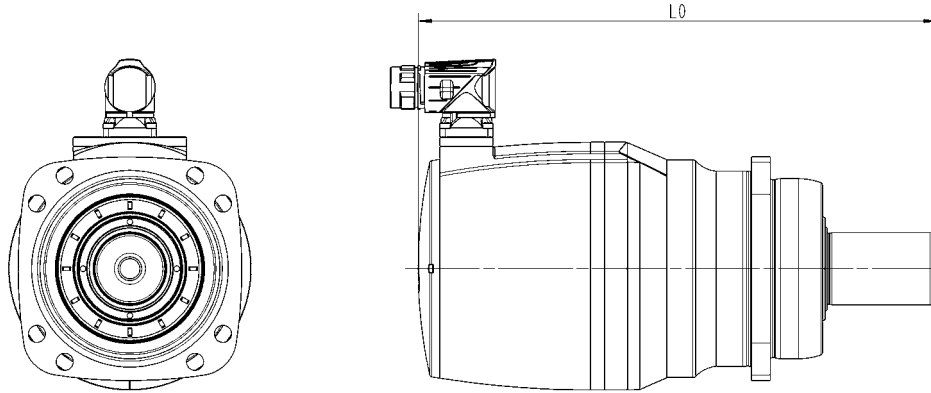
Size		1	2	3
Ratio	i	16 – 100		
Intermediate circuit voltage	U _D V DC	560		
Max. acceleration torque at output	T _{2B} Nm	up to 80	up to 190	up to 455
Static output torque	T ₂₀ Nm	up to 32	up to 60	up to 215
Brake holding torque at output (100°C)	T _{2Br} Nm	up to 80	up to 158	up to 450
Max. speed	n _{2max} rpm	60 to 375		
Speed limit for T _{2B}	n _{2B} rpm	on request	on request	on request
Max. motor acceleration torque	T _{1Mmax} Nm	up to 2.84	up to 5.53	up to 16.7
Max. motor acceleration current	I _{1maxdyn} A	up to 4	up to 6.5	up to 19.7
Static motor current	I ₀ A	up to 1.33	up to 1.71	up to 6.71
Actuator moment of inertia (at motor shaft, without brake)	J ₁ kgcm ²	on request	on request	on request
Actuator moment of inertia (at motor shaft, with brake)	J ₁ kgcm ²	on request	on request	on request
Torsional backlash	j _t arcmin	up to ≤ 2		
Torsional rigidity	C ₁₂₁ Nm/arcmin	on request		
Tilting rigidity	C _{2K} Nm/arcmin	on request		
Max. axial force ¹⁾	F _{2Amax} N	on request		
Max. tilting moment	M _{2Kmax} Nm	on request		
Bearing lifespan	L _n h	on request		
Weight (with resolver, without brake)	m kg	–		
Operating noise (at n ₁ = 3000 rpm)	L _{PA} dB(A)	on request		
Insulating material class		F		
Ambient temperature	°C	+40		
Protection class		IP 65		
Lubrication		on request		
Mount. pos.		Any		

¹⁾ Refers to center of output shaft and flange



WITTENSTEIN

motion control



Without brake

Size		1	2	3
Ratio	Motor feedback	Length L0 in mm	Length L0 in mm	Length L0 in mm
i = 16 – 35	Resolver	210.2	243.2	301.4
	HIPERFACE®, HIPERFACE DSL®	232.3	265.5	
	EnDat			
	DRIVE-CLiQ	263.8	295.7	333.4
i = 40 – 100	Resolver	195.2	228.2	277.3
	HIPERFACE®, HIPERFACE DSL®	217.3	250.5	
	EnDat			
	DRIVE-CLiQ	248.8	280.7	309.3

premo high line is designed for very special requirements and can be adapted to the most diverse tasks with absolute flexibility. With high line, you can achieve an innovative competitive edge that is not possible with any other solution.

Benefit from our expertise and talk to us about your individual requirements. We would be pleased to give you further details on high line in a personal discussion.

With brake

Size		1	2	3
Ratio	Motor feedback	Length L0 in mm	Length L0 in mm	Length L0 in mm
i = 16 – 35	Resolver	245.9	280.2	341.9
	HIPERFACE®, HIPERFACE DSL®	268	302.5	
	EnDat			
	DRIVE-CLiQ	299.5	332.7	373.9
i = 40 – 100	Resolver	219	239.2	301.3
	HIPERFACE®, HIPERFACE DSL®	241.1	261.5	
	EnDat			
	DRIVE-CLiQ	272.6	291.7	333.3





WITTENSTEIN

motion control

Electrical connection:

Straight or right-angled version, alignment of outlets to gearhead flange (high line) and single-cable connection for DSL protocol.

Feedback systems

In addition to the standard version in the relevant line, optional encoder systems with the protocols EnDAT 2.1, EnDAT 2.2, HIPERFACE®, HIPERFACE DSL® and DRIVE-CLiQ are available.

Pin assignment

For easy compatibility with any number of servo controllers, we offer special pin assignments for power and signal.

Temperature sensor

Choose from PTC for temperature switch functionality or PTC1000 for a linear reading of operating temperature.

Operating voltage

Depending on the application and servo regulator, windings for 24, 48, 320 and 560 V DC are available.

Holding brake

A suitable permanent-magnet holding brake adapted to the motor power is available.

Lubrication

Select from the standard lubrication with oil or grease as well as food grade grease and oil.

Minimal backlash

In order to improve precision, the gearhead backlash can be optionally reduced.

Gearhead model

Within the relevant line, there are different versions of output and housing flange.



Options

Electrical connection:

In addition to the classic connection via two integral sockets for power and signal, a version for a single-cable connection in conjunction with HIPERFACE DSL® is available.

	Connector sizes premo 1 to 3		
	Single-cable connection	2-cable connection	
		Power	Signal
Pin assignment 1	Receptacle Intercontec M23, speedtec-ready 9-pin	Receptacle, Intercontec M23, speedtec-ready 6-pin	Receptacle, Intercontec M23, speedtec-ready 12-pin (Resolver, HIPERFACE®) 17-pin (EnDAT2.1, EnDAT 2.2) 9-pin (DRIVE-CLiQ)
Pin assignment 4	–	Receptacle Intercontec M23, speedtec-ready 9-pin	Receptacle Intercontec M23, speedtec-ready 12-pin (Resolver, HIPERFACE®) 17-pin (EnDAT 2.1, EnDAT 2.2)

The great flexibility of the new premo actuator platform is also demonstrated through the pin assignments. In addition to two standard WITTENSTEIN pin assignments, a number of compatible connections are available for various servo controller suppliers.

- Pin assignment 1: WITTENSTEIN Standard 1, temperature sensor in signal line
Resolver, HIPERFACE®, DRIVE-CLiQ
- Pin assignment 2: Siemens compatible (except DRIVE-CLiQ, temperature sensor in signal line)
Resolver, EnDAT 2.1
- Pin assignment 4: WITTENSTEIN Standard 2, temperature sensor in power line
Resolver, HIPERFACE®, EnDAT 2.1
- Pin assignment 5: Rockwell-compatible
HIPERFACE®, HIPERFACE DSL® (single-cable)
- Pin assignment 6: B&R-compatible
Resolver, EnDAT 2.1, EnDAT 2.2 (single-cable)
- Pin assignment 8: Schneider compatible
HIPERFACE®
- Pin assignment 9: Beckhoff compatible
Resolver, EnDAT 2.1, HIPERFACE DSL® (single-cable)

A wider selection of cables is available for both WITTENSTEIN standard assignments. You will find these in the chapter System expansions.

Operating voltage

Different applications and servo controllers require different intermediate circuit voltages. The data specified in the catalog relates to an intermediate circuit voltage of 560 V DC – assuming a supply voltage of 3 x 400 V AC. Moreover, the motors can be wound for the following operating voltages: **24, 48, 320 V DC**

In applications with feed modules for a regulated intermediate circuit with raised voltage level, operation up to 750 V DC is possible.

The data sheets for the specified operating voltages are available on our homepage or on request.

Lubrication

Depending on the application, the requirements regarding the lubricant in the gearhead change. The following lubricants are available for our actuators:

- Tribol 800/220 (Standard) oil lubricant
- Optimol PD1 grease lubricant
(Reduction of output torque by up to 20%)
- Foodgrade lubrication Klüber 6UH1-220 oil lubricant
(Reduction of output torque by up to 20%)
- Foodgrade lubrication Klüber UH114-115 grease lubricant
(Reduction of output torque by up to 40%)

Gearhead model

Several mechanical interface versions are available:

Model	base	advanced	high
Output	<ul style="list-style-type: none"> - Smooth shaft (standard) - Key (option) - Involute (option) 	<ul style="list-style-type: none"> - Flange (standard) 	<ul style="list-style-type: none"> - Smooth shaft (standard) - Key (option) - Involute (option)
Housing	Round through bore (standard)	Round through bore (standard)	<ul style="list-style-type: none"> - Round through bore (standard) - Slot through bore (option)

Options

Minimal backlash

If even greater precision is required, the relevant lines can be ordered with reduced torsional backlash or face clearance.

The following overview indicates the relevant values:

	size 1		size 2		size 3	
	Standard	Reduced	Standard	Reduced	Standard	Reduced
base line	≤ 6	≤ 4	≤ 6	≤ 4	≤ 5	≤ 3
advanced line	≤ 4	≤ 2	≤ 3	≤ 1	≤ 3	≤ 1
high line	≤ 5	≤ 3	≤ 4	≤ 2	≤ 4	≤ 2

Holding brake

A compact permanent magnet brake is fitted to secure the motor shaft when the actuator is disconnected from the power. Characteristics include no torsional backlash, no residual torque when the brake is released, unlimited duty cycles at zero speed and a constant torque at high operating temperatures.

		size 1		size 2		size 3	
Ratio		16 – 35	40 – 100	16 – 35	40 – 100	16 – 35	40 – 100
Static holding torque	Nm	2	0.8	4	2	13	4
Dynamic holding torque	Nm	1.3	0.5	3.5	1.3	8	3.5
Power supply	V DC	24	24	24	24	24	24



WITTENSTEIN

motion control

Feedback systems

Connectivity is the magic word. Here, WITTENSTEIN seeks to offer its customers maximum flexibility.

A large selection of encoder systems is available for positioning and speed measurement.

Resolver

- 2-pin, 1 sin/cos cycle per rotation (standard base line)

HIPERFACE® absolute encoder, safety acc. to SIL 2

- Single-turn, resolution 4096 positions per revolution, 128 sine cosine (standard advanced line)
- Multi-turn, resolution 4096 positions per revolution, 128 sine cosine, 4096 revolutions

HIPERFACE DSL® absolute encoder, safety acc. to SIL 2

- Single-turn, resolution 18/20 bits per revolution (standard high line)
- Multi-turn, resolution 18/20 bits per revolution, 4096 revolutions

EnDAT 2.1, absolute encoder

- Single-turn, resolution 8192 positions per revolution, 512 sine cosine
- Multi-turn, resolution 8192 positions per revolution, 512 sine cosine, 4096 revolutions

EnDAT 2.2, absolute encoder, safety acc. to SIL 2

- Single-turn, resolution 4096 positions per revolution
- Multi-turn, resolution 23 Bit per revolution, 4096 revolutions

DRIVE-CLiQ, absolute encoder, safety acc. to SIL 2

- Single-turn, resolution 24 bits per revolution
- Multi-turn, resolution 24 bits per revolution, 4096 revolutions

Temperature sensor

Different sensors are available to protect the motor windings from overheating.

- PTC resistor, type STM 160 according to DIN 44081/82
- PT 1000

Order code

premo

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7						
P	A	G		1	1	C	S	-	0	2	5	S	P	0	1	-	6	M	P	G	B	0	-	W	0	1						
premo			size 1 2 3						Ratio						Operating voltage 1 = 24 V 2 = 48 V 5 = 320V 6 = 560V												Pin assignment options, see opposite page					
Lines B = base A = advanced H = high			Sector package G = General			Actuator code S = Standard C = Customized R = Flange with slots (only high line)						Backlash 1 = Standard 0 = Reduced												Alignment with flange 0 = 0° 1 = 90°								
			Stator length and stator size Options, see opposite page									Output type 0 = Smooth shaft/ flange 1 = Shaft with key 2 = Involute 3 = System output 4 = Other												Electr. connection Options, see opposite page								
												Lubrication P = Oil G = Grease F = Foodstuff- compatible oil H = Foodstuff- compatible grease												Type of cooling 0 = conv. cooling								
															Gearhead model S = Standard A = HighTorque (only advanced line)												Type of brake S = Standard brake i = 40 - 100 T = Standard brake i = 16 - 35 0 = Without brake					
																											Winding code is issued by WITTENSTEIN					
																											Temperature sensor P = PTC T = PT1000					
																														Feedback system Options, see opposite page		



WITTENSTEIN

motion control

Electrical connection options

R	Angled integral socket, single-cable
W	Angled integral socket, 2-cable
S	Straight integral socket, single-cable connection
G	Straight integral socket, 2-cable connection
C	Cable gland, 1-cable connection
K	Cable gland, 2-cable connection

Pin assignment options

1	Temperature sensor via signal line
2	Siemens compatible (except DRIVE-CLiQ)
4	Temperature sensor in power cable
5	Rockwell-compatible
6	B&R-compatible
8	Schneider compatible
9	Beckhoff compatible

Feedback system options

R	Resolver, 2-pin
E	Rockwell, single-turn
V	Rockwell, multi-turn
C	Rockwell, single-turn
P	Rockwell DSL, multi-turn
S	EnDAT 2.1 absolute encoder, single-turn
M	EnDAT 2.1 absolute encoder, multi-turn
F	EnDAT 2.2 absolute encoder, single-turn
W	EnDAT 2.2 absolute encoder, multi-turn
N	HIPERFACE® absolute encoder, single-turn
K	HIPERFACE® absolute encoder, multi-turn
A	HIPERFACE DSL® safety absolute encoder, single-turn
B	HIPERFACE DSL® safety absolute encoder, multi-turn
D	DRIVE-CLiQ

Stator length and stator size options

	Ratio 16 to 35	Ratio 40 to 100
size 1	2C	1C
size 2	2D	1D
size 3	3F	1F

System expansions

simco® drive – More intelligent. More efficient. Safer.

The simco® drive servo amplifier controls sine-commutated servo motors and is available as a control cabinet version with protection class IP20 and a decentralized version with protection class IP65. With a voltage range of 24 and 48 V DC and a short-term peak output

of up to 1 kW, the simco® drive servo amplifier is suitable for high-precision applications, e.g. in the machine-tool, electronics or packaging industries.

Compact and space-saving solution

MotionGUI software for commissioning, diagnostics and optimization of the drive system

STO safety function acc. to SIL3

Use in control cabinet or directly on the machine, with protection class IP20 and IP65

Numerous communication interfaces

CANopen®
EtherCAT®

PROFINET®

RS232
TCP/IP

Numerous sensor interfaces

EnDat 2.2

BiSS
INTERFACE

RESOLVER
HALLSENSOR



User interface

Software – MotionGUI

Functions

- Diagnosis via the Scope functionality
- Loading of cycle parameters via the Motion tasks
- Read-out of errors and warnings via the Errors and Warnings function
- Monitoring: read-out of the drive parameters in operation, e.g. position, temperature
- etc.

For further information, see simco® drive catalog



WITTENSTEIN

motion control

Technical data

Rated output current	I_N	A	2.5	10
Supply voltage (power)	U _{DC}	V _{DC}	+24 ... +48 (unregulated)	
Supply voltage (logic)	U _{log}	V _{DC}	+24 (+/- 10%)	
Peak current	I _{max}	A _{eff}	5 (for 5 s)	20 (for 5 s)
Rated power	P _N	W	125	500
Peak power	P _{max}	W	250	1000
Switching frequency	f _{PWM}	kHz	8 ... 32	
Current control resolutions		Bit	14 (effective)	
Communication			<ul style="list-style-type: none"> - CANopen acc. to DS402 - EtherCAT with CoE - PROFINET RT/IRT* - RS 232 - TCP/IP** 	
Drive function acc. to DS 402 for CANopen / EtherCAT communication			<ul style="list-style-type: none"> - Profile position mode - Homing mode - Profile velocity mode - Profile torque mode - Cyclic synchronous position mode - Cyclic synchronous velocity mode 	
Supported PROFIdrive application classes for PROFINET communication			<ul style="list-style-type: none"> - Application class 1 (PROFINET RT) - Application class 3 (PROFINET RT) - Application class 4 (PROFINET IRT) 	
Sensor interfaces			<ul style="list-style-type: none"> - BiSS C - EnDat 2.2 - Hall sensors - Resolver 	
Safety function			STO (Safe Torque off) to SIL 3	
Technology functions			Disk cam, motion tasks	
Protection class			IP20 and IP65	
Digital inputs			4, opto decoupled, freely programmable function	
Digital outputs			2, opto decoupled, freely programmable function	
Event logging with real-time clock			✓	
Brake actuation			✓	
External ballast resistor			✓	
Drive program with PLC functions			✓	
Operating temperature range	θ _A	°C	0 ... 45°C without derating	
Weight	m	kg	0.3 kg (IP20) and 0.85 kg (IP65)	

* PROFINET communication for simco drive IP65 available upon request

** Only available with PROFINET version

System expansions

alpha rack & pinion system

WITTENSTEIN alpha rack and pinion systems enable the coupling of gearhead, motor, pinion and rack in the most effective manner. More than 30 years of expertise in the fields of gearhead construction, toothing technology and the design of complete drive systems

make the alpha rack and pinion systems a well thought-out, state-of-the-art system solution. Detailed information is available at www.rack-pinion.com





WITTENSTEIN

motion control

Pinion versions for the system

High-performance pinion

in conjunction with premo high line



- High-precision and optimally designed toothing geometries for best possible power transmission, superior running and precision in application
- Innovative pinion/gearhead connection ensures the highest linear rigidity, maximum flexibility in pinion selection, optionally dimensioned and rigid pinions, compact drive design
- Factory assembled with marked high point
- We offer individual options for special requirements

Premium Class RTP pinion

in conjunction with premo advanced line



- High-precision and optimally designed toothing geometries for best possible power transmission, superior running and precision in application
- Adapted to the standard gearhead series with the proven TP+ output flange
- High movement speeds with low input speeds thanks to large pitch diameter
- Compact pinion/gearhead connection
- Factory assembled with marked high point

Performance and high-performance class rack



The solution for highly dynamic mid-range and precise high-end applications (with electrically clamped drives).

Your benefits:

- Significantly higher strength in the surface layer and in the core structure
- Higher permissible bending loads
- Maximum fatigue strength against vibration loads
- Maximum wear resistance

The right rack for all requirements

The correct rack is an essential component in realizing your machine concepts. WITTENSTEIN alpha offers various rack classes in order to find the right solution for your application requirements in conjunction with a matched gearhead and pinion.

Meeting your requirements without limits!

System expansions

Cables

The WITTENSTEIN range of high-performance servo actuators is completed through the appropriate connection technology: The special system cables support the high performance of the machine most effectively and therefore represent the optimal system expansion „directly from the manufacturer“.

All the cables are characterized by excellent quality and are compatible with drag chains using highly flexible lines according to DIN V DE 0295, class 6. They are also oil and flame-resistance as well as halogen, silicone and CFC-free.

Power cable for premo

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
C	A	B	-	P	O	W	-	E	-	S	T	D	0	0	1	-	D	0	1	5	0	-	S	-	L	0	5	0	0
Model			Controller manufacturer			Motor manufacturer			Length			Power connector assignment			Cable cross section														
C A B			P O W			S T D 0 0 1			D 0 1 5 0			E			D 0 1 5 0			S			L 0 5 0 0								
Model			Motor phases and brake on wire end sleeves			S = Connector, size 1			L0500 = 5 m			Connector, size 1			D0150 = 1.5 mm ²			C = Connector, size 1.5			L1000 = 10 m			R = Resolver, 2-pin			L1500 = 15 m		
POW = Power cable			STD000 = PE on wire end sleeve			see table at bottom of next page			L2000 = 20 m			E = Encoder			D0250 = 2.5 mm ²			see table at bottom of next page			L2500 = 25 m			Connector, size 1.5			L3000 = 30 m		
			STD001 = PE on cable ring shoe						L4000 = 40 m			U = Universal for all motor feedback			D0400 = 4 mm ²						L5000 = 50 m								
			etc... see top of next page												D0600 = 6 mm ²														

Signal cable for premo

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
C	A	B	-	S	I	G	-	M	-	S	I	E	M	E	N	-	D	0	0	0	0	-	S	-	L	0	5	0	0
Model			Controller manufacturer			Motor manufacturer			Length			Return system			Cable cross section														
C A B			S I G			S I E M E N			S = Connector, size 1			R = Resolver, 2-pin			Standard for all signal cable sizes			S = Connector, size 1			L0500 = 5 m								
SIG = Signal cable			SIEMEN = Siemens SIMODRIVE 611			etc... see top of next page			L1000 = 10 m			M = EnDat absolute encoder*			D0000						L1500 = 15 m								
									L2000 = 20 m			K = HIPERFACE® absolute encoder*									L2500 = 25 m								
									L3000 = 30 m			D = DRIVE-CLiQ									L4000 = 40 m								
									L5000 = 50 m																				

* Multi-turn and single-turn cables are identical



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Standard cable lengths: 5, 10, 15, 20, 25, 30, 40 and 50 meters.

Cables are available for the following manufacturers and servo controllers:

Pin assignment 1 (Resolver, Hiperface®, DRIVE-CLiQ)	Pin assignment 2 (EnDAT 2.1)	Pin assignment 4
B&R, Acopos	B&R, Acopos	Schneider Electric, PacDrive MC4
Schneider Electric, PacDrive MC4	Bosch Rexroth, IndraDrive	Bosch Rexroth, IndraDrive
Bosch Rexroth, IndraDrive	Control technique, UniDrive SP	Beckhoff, AX5000
Control techniques, UniDrive SP	Siemens, Sinamics S120	–
Siemens, Sinamics S120 (DRIVE-CLiQ)	–	–

Controller manufacturer

Cable for pin assignment 1 (temperature sensor in signal cable)

Manufacturer	Controller	Signal cable manufacturer	Power cable manufacturer
B&R	Acopos	BURACO	STD000
Schneider Electric	PacDrive MC4	ELAMC4	ELAMC4
Bosch Rexroth	IndraDrive	BRCIND	STD000
Control techniques	UniDrive SP	CT_SP_	STD001
Siemens	Sinamics S120	SIEMEN*	STD001

Cable for pin assignment 2 (temperature sensor in signal cable)

Manufacturer	Controller	Signal cable manufacturer	Power cable manufacturer
B&R	Acopos	BURACO	STD000
Siemens	Sinamics S120	SIEMEN	STD001
Bosch Rexroth	IndraDrive	BRCIND	STD000
Control techniques	UniDrive SP	CT_SP_	STD001

Cable for pin assignment 4 (temperature sensor in power cable)

Manufacturer	Controller	Signal cable manufacturer	Power cable manufacturer
Schneider Electric	PacDrive MC4	ELAUP4	ELAUP4
Bosch Rexroth	IndraDrive	BRC_I4	STD_P4
Beckhoff	AX5000	BHAX54	STD_P4

Other cable versions available on request

Motor manufacturer and cable cross sections

Stator	Cable cross section mm²	Power plug connection
1C	1,5	Größe 1 M23
2C	1,5	Größe 1 M23
1D	1,5	Größe 1 M23
2D	1,5	Größe 1 M23
1F	1,5	Größe 1 M23
3F	1,5	Größe 1 M23

Recommended cable cross sections according to EN 60204-1, ambient temperature 40°C, laying system C.

The selection of cable cross section depends on the motor size and stator length.

Project planning

Servo controllers

The premo actuator can be operated using many different servo controllers. The table below provides information to assist in selecting the correct options. Please observe the current consumption of the actuator during selection of the servo controller used.

Please note that not all available options are listed in the table below. Contact your local WITTENSTEIN office for assistance with other available Controller options.

Manufacturer	Version/Type	Motor feedback						Temperature sensor		DC bus voltage		
		Resolver	EnDat 2.1	EnDat 2.2	HIPER-FACE®	HIPER-FACE® DSL	Drive-CLiQ	PTC	PT 1000	48 V DC	320 V DC	560 V DC
Bosch Rexroth	IndraDrive	x	x	–	x	–	–	x	x ⁵	–	x	x
Beckhoff	AX5000	x	x	x ³	x ³	x	–	x	x ⁵	–	x	x
B & R	AcoPos	x	x	x ⁴	x	–	–	x	–	–	x	x
Control techniques	UniDrive SP	x	x	x	x	–	–	x	–	–	x	x
	UniDrive M	x	x	x	x	–	–	x	x	–	x	x
Kollmorgen	Servostar 300	x	x	x	x	–	–	x	–	–	x	x
	Servostar 700	x	x	x	x	–	–	x	–	–	x	x
	AKD	x	x	x	x	–	–	x	–	–	x	x
Lenze	Global Drive 94xx	x	x	–	x	–	–	x	–	–	x	x
	TopLine 8400	x	–	–	x	–	–	x	x ⁵	–	–	–
	ECS Servosystem	x	–	–	x	–	–	x	x ⁵	–	x	x
Rockwell	Kinetix 5500	–	–	–	x ¹	x	–	–	–	–	–	–
	Kinetix 6000	–	–	–	x	–	–	x	–	–	x	x
	Kinetix 6200	–	–	–	x	–	–	x	–	–	x	x
	Kinetix 6500	–	–	–	x	–	–	x	–	–	x	x
Siemens	Sinamics S120	x	x	x ²	–	–	x	–	x ⁶	–	–	x
Schneider Electric	PacDrive MC-4	–	–	–	x	–	–	x	–	–	x	x
	PacDrive 3	–	–	–	x	–	–	x	–	–	x	x
WITTENSTEIN motion control	simco® drive	x	–	x	–	–	–	–	–	x	–	–

¹ Hiperface DSL® converter kit required

² SMC 40 options module required

³ EnDat 2.2 requires options card AX5721 / 5722

⁴ EnDat 2.2 requires options module AC126

⁵ Parametrization of temperature sensor via char. curve / parametrizable evaluation via sampling points

⁶ PT1000 only from software 4.7HF xx or software 4.8 from 2016 at the earliest



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Project planning note on brakes

The holding brakes installed in the actuators are subject to various influencing factors, e.g. the oxidation of abrasion particles, the flattening of friction surfaces in the case of frequent brake action at the same position, or the wear-dependent changes to the air gap. This can result in a reduction of the available holding torques. All the holding torques indicated therefore apply for the ideal state under optimal conditions, without damaging influences.

Such influences can be countered by means of a regular brake refresh cycle. For detailed information on the recommended refresh cycles, please refer to our Instructions for Use. For critical applications, it is recommended to ensure sufficient design safeguards with regard to holding torque in order to take into account the above-mentioned uncertainty factors. Our in-house engineering department will be pleased to assist you with the application sizing.

Technical information

All information regarding premo

- Technical data sheets and dimension sheets (CAD data)
- Engineering manual
- Manuals for servo amplifier
- Commissioning instruction (Operation manual with mounting and installation instruction)

are available for you in our download centre under **www.wittenstein-motion-control.com/download/premo**

For individual solutions please contact us.

The **cymex®** engineering tool is the first choice for sizing our actuators. We will be pleased to provide assistance.

The programm is available for download free-of-charge under **www.wittenstein-cymex.com**.



Our services at a glance

Our service concept continues to raise the bar for service quality. We are there for you, from the initial concept and throughout the entire life cycle of your application.

PRE-SALES		AFTER-SALES	
Planning	Investment	Application	Re-investment
Consultation & design Info & CAD-Finder customer training	cymex® sizing software Engineering Sensors cymex® Statistics	Instructions for use Commissioning Pick-up & return service Repair service Preventive maintenance	Modernization service

Contact data

PRE-SALES	AFTER-SALES
Support hotline	Service hotline

For reliable and expert sizing.

For fast and unbureaucratic assistance with repairs and questions on supplied products.

Please contact your local WITTENSTEIN office.
Address: See backside of catalogue.



For detailed information, please visit www.wittenstein-motion-control.com



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