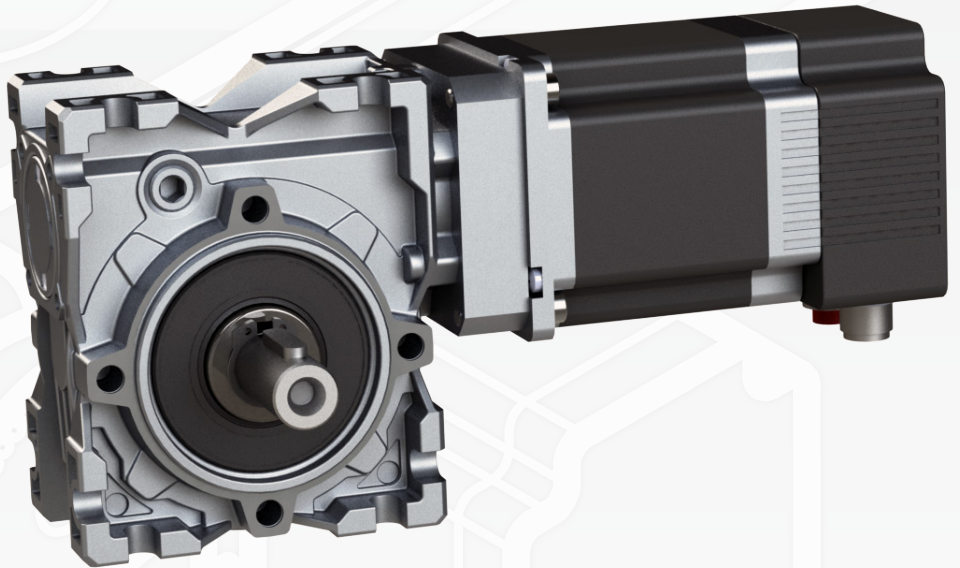
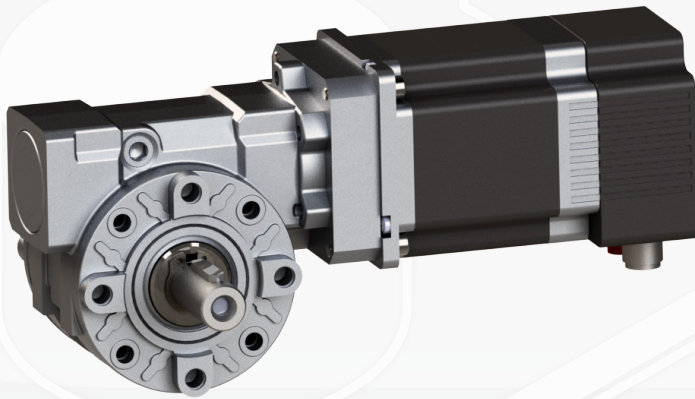


# Worm gearmotors

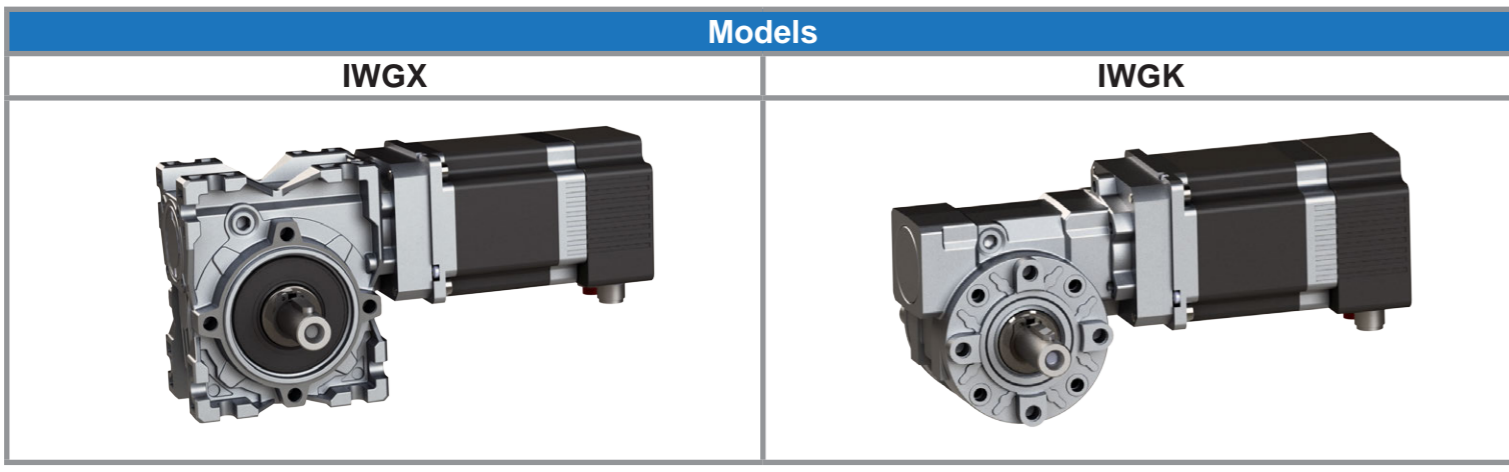


The series of worm gearmotors "IWormGearSmart" is the result of the coupling between AEC stepper servomotors and customized Varvel worm gearboxes.

The personalization of the gearboxes, that differentiates the IWormGearSmart range from the others available on the market, are the optimization of the friction of the sealing rings and the worm gear copuling. These features permit to obtain a low breakaway torque and a low friction during rotation.

These characteristics, in addition to the optimal coupling between stepper motors and gearboxes, allow these gearmotors to be suitable for numerous applications, such as conveyors, rotary tables and any servomechanism which requires good positioning.

Available sizes			
28	40	50	60



**Ordering code**

I	W	G	X	T	T	R	R	R	M	M	M	A
I	W	G	X	2	8	R	1	0	M	0	2	S

X	Version
X	Square
K	Round

TT	Size
28	28
40	40
50	50
60	60

Rxx	Reduction ratio
R05	l = 5
---	---
R80	l = 80

A	Output options
-	Hollow shaft
S	Single output shaf
D	Double output shaft

MMM	Motor code
Mxx	See motors codes on page 7

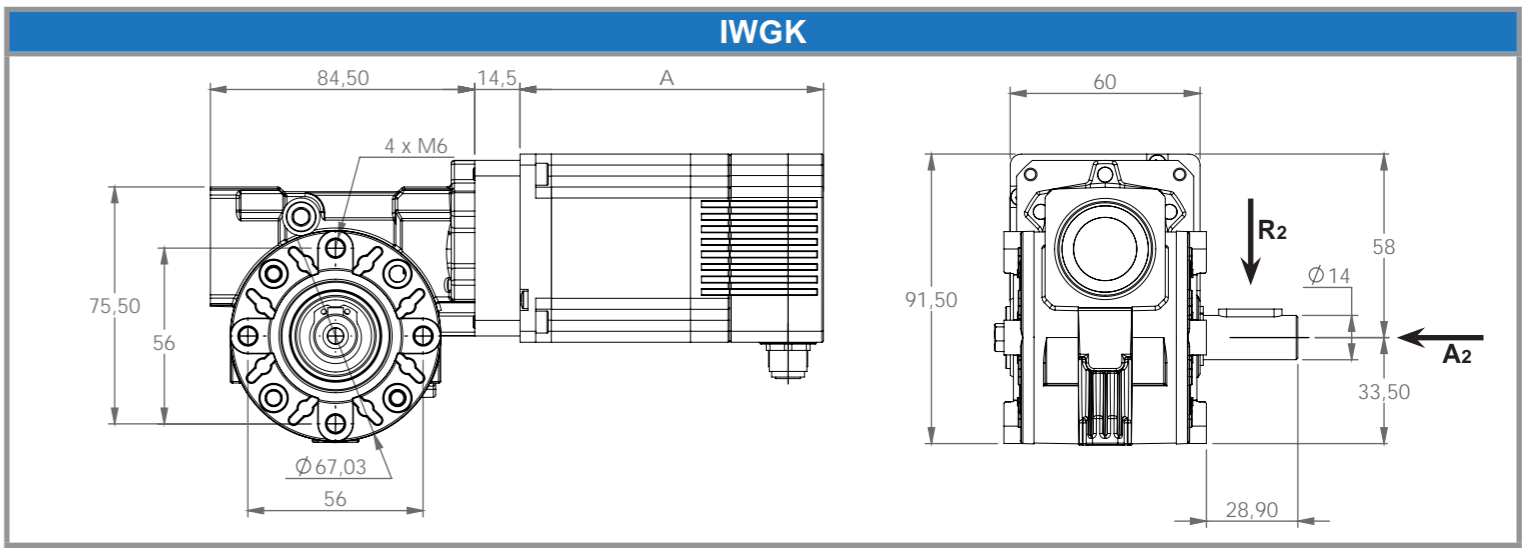
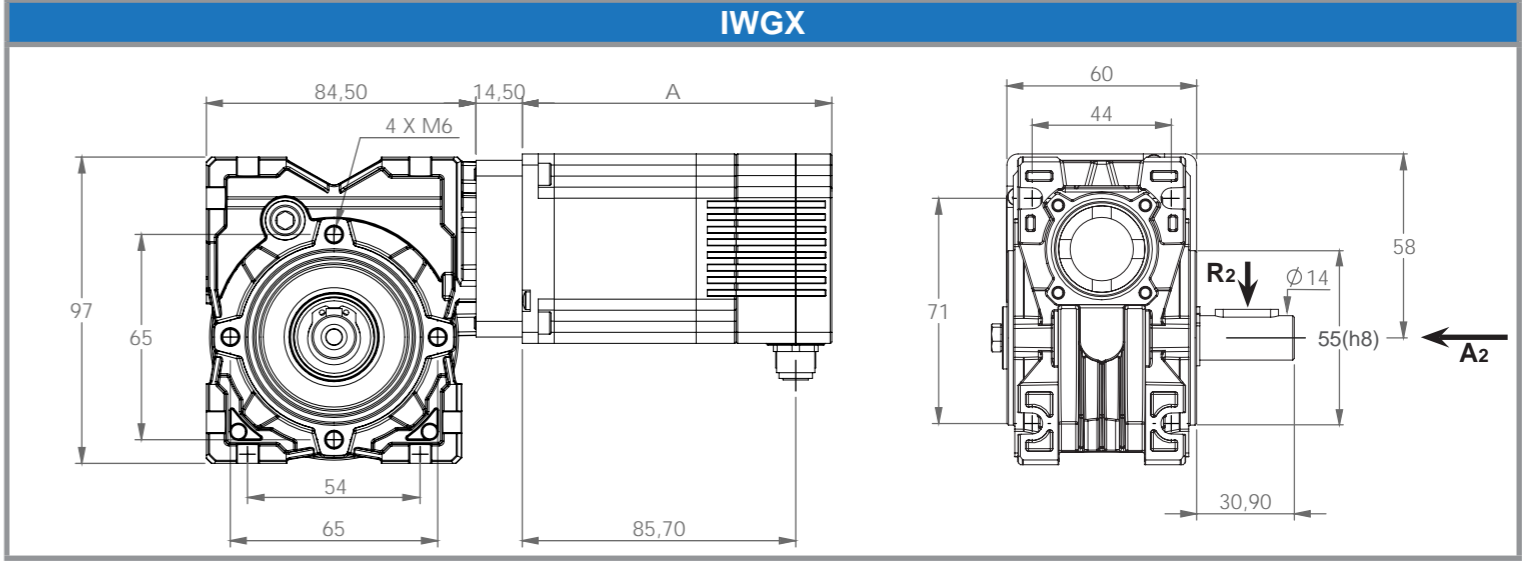
### Technical specifications

Reduction ratio	5	7	10	15	20	28	40	49	56	70	80	100
Efficiency (%)	0,82	0,81	0,77	0,71	0,69	0,60	0,55	0,51	0,44	0,40	0,39	0,36
Maximum output torque (Nm) *	23	23	23	22	21	24	21	20	17	13	11	8
Reversibility	Full		High			Good		Low		Irreversible		

\* Maximum output torque applicable to the gearbox, independently by the torque that may be generated bt the motor.

### Loads

rpm	14	18	20	25	29	35	50	70	93	140	200
Radial load R <sub>2</sub> (N)	1000	950	900	800	750	700	620	600	550	500	450
Axial load A <sub>2</sub> (N)	200	190	180	160	150	140	120	120	110	100	90



Combinable motors*	A	Gearmotor weight
M57SH56-Txx	86	1,8 Kg
M57SH76-Txx	106	2,3Kg
M60SH65-Txx	97	2,3Kg
M60SH86-Txx	118	2,5Kg

\* Torque curves on page 7

# Size 40

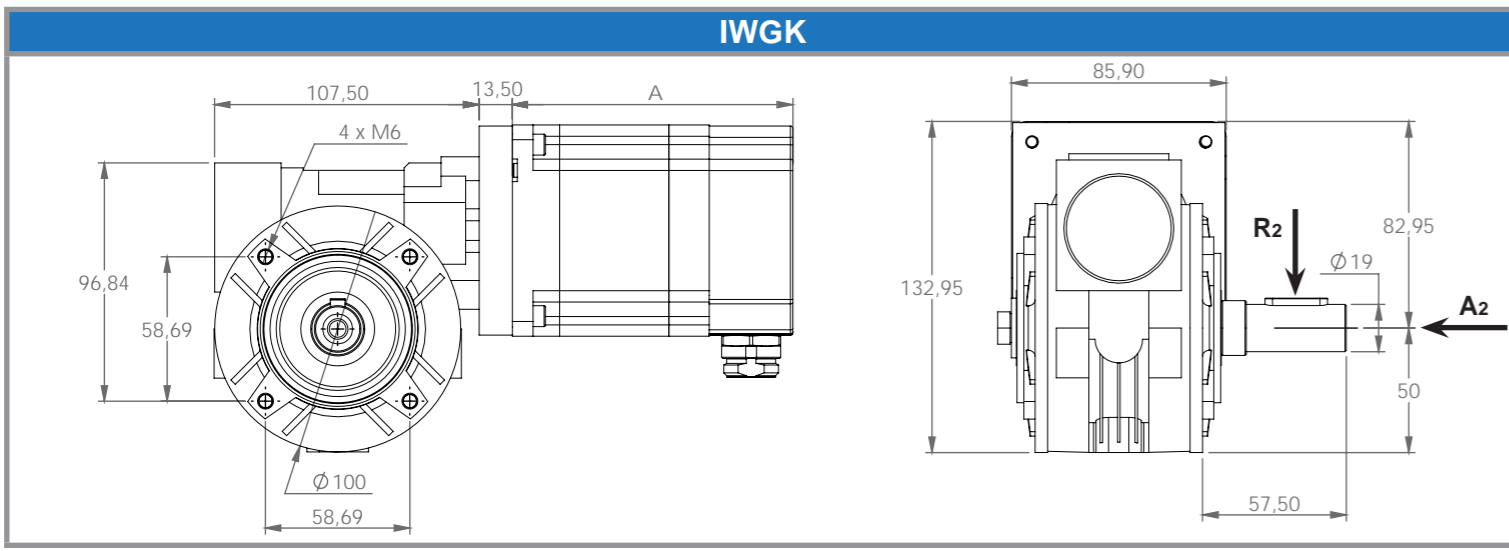
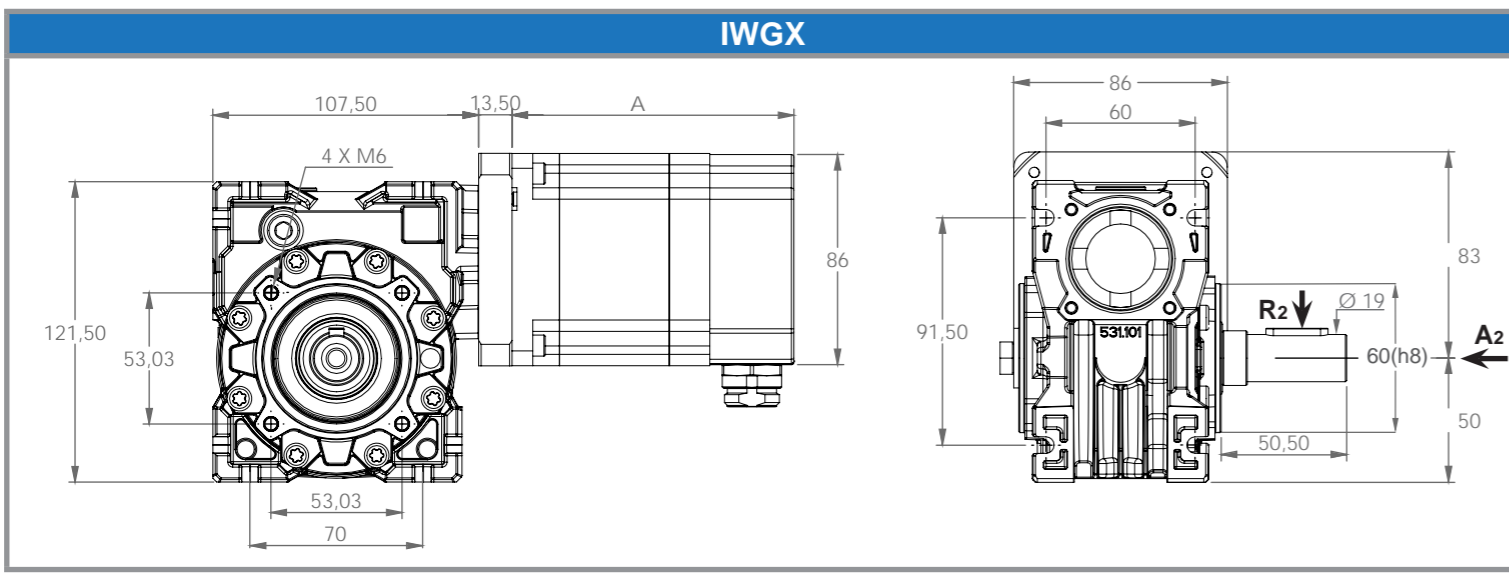
## Technical specifications

Reduction ratio	5	7	10	15	20	28	40	49	56	70	80	100
Efficiency (%)	0,85	0,82	0,79	0,73	0,68	0,59	0,53	0,50	0,48	0,44	0,42	0,39
Maximum output torque (Nm) *	59	58	58	58	49	55	49	46	45	43	41	38
Reversibility	Full		High		Good		Low		Irreversible			

\* Maximum output torque applicable to the gearbox, independently by the torque that may be generated by the motor.

## Loads

rpm	14	18	20	25	29	35	50	70	93	140	200
Radial load R <sub>2</sub> (N)	2300	2000	1900	1800	1700	1600	1500	1350	1200	1100	1000
Axial load A <sub>2</sub> (N)	460	400	380	360	340	320	300	270	240	220	200



Combinable motors*	A	Gearmotor weight
M86SH80-Txx	115	4,8Kg
M86SH96-Txx	133	5,4Kg
M86SH118-Txx	152	6,3Kg
M86SH156-Txx	191	7,9Kg

\* Torque curves on page 7

# Size 50

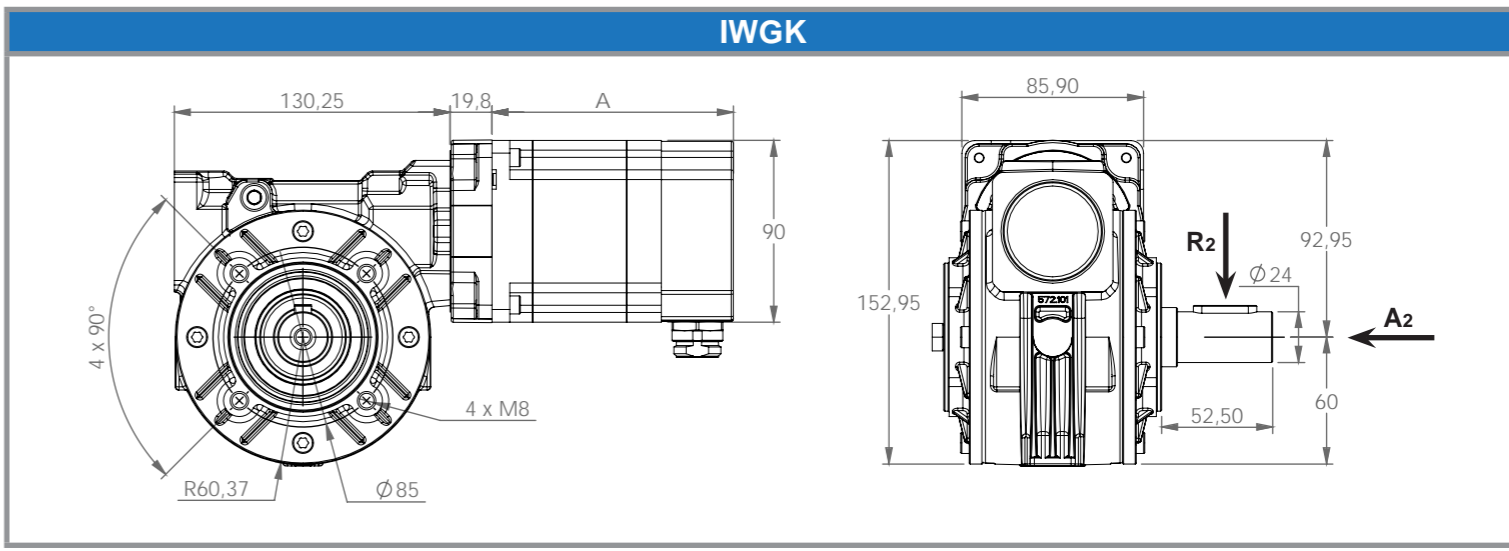
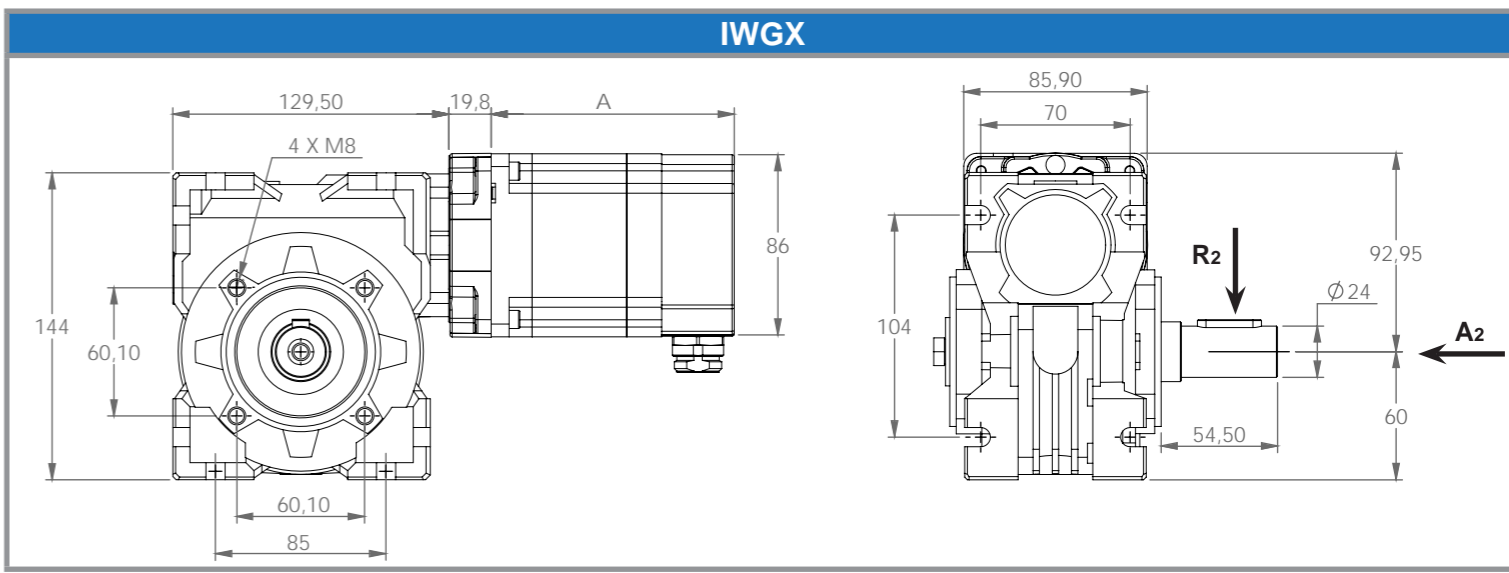
## Technical specifications

Reduction ratio	5	7	10	15	20	28	40	49	56	70	80	100
Efficiency (%)	0,86	0,83	0,80	0,75	0,71	0,64	0,57	0,54	0,52	0,45	0,44	0,39
Maximum output torque (Nm) *	106	110	100	99	86	106	91	87	83	70	72	62
Reversibility	Full		High		Good		Low		Irreversible			

\* Maximum output torque applicable to the gearbox, independently by the torque that may be generated by the motor.

## Loads

rpm	14	18	20	25	29	35	50	70	93	140	200
Radial load R <sub>2</sub> (N)	3200	2900	2800	2600	2400	2300	2000	1900	1700	1450	1250
Axial load A <sub>2</sub> (N)	640	580	560	520	480	460	400	380	340	280	250



Combinable motors*	A	Gearmotor weight
M86SH80-Txx	115	6,1Kg
M86SH96-Txx	133	6,7Kg
M86SH118-Txx	152	7,6Kg
M86SH156-Txx	191	9,2Kg

\* Torque curves on page 7

Technical specifications

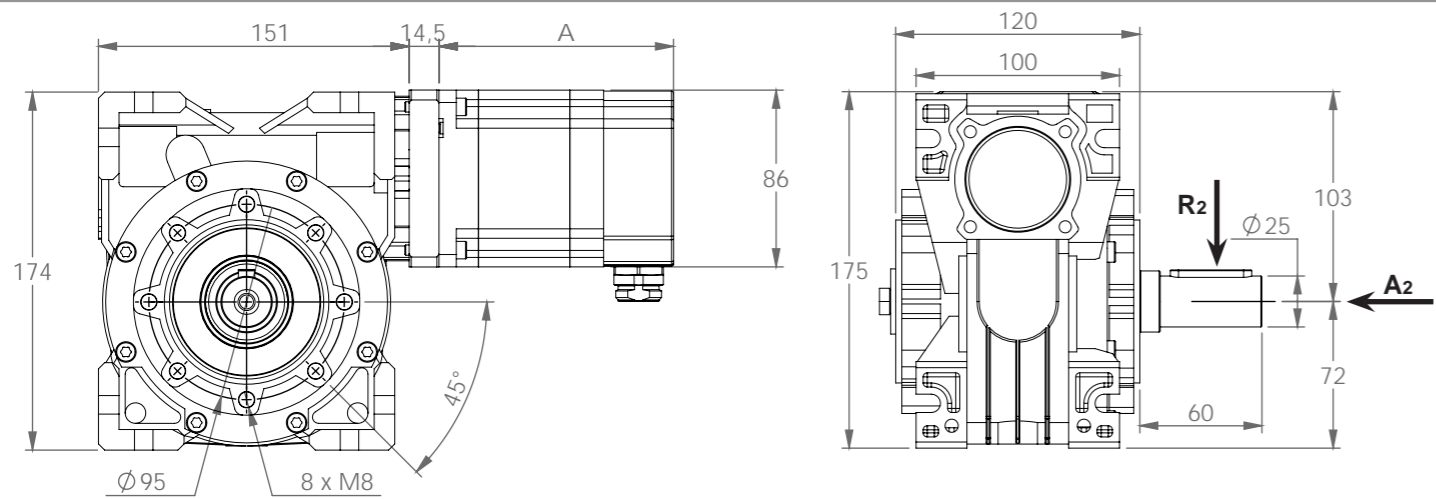
Reduction ratio	5	7	10	15	20	28	40	49	56	70	80	100
Efficiency (%)	0,87	0,84	0,81	0,77	0,74	0,67	0,62	0,59	0,54	0,51	0,46	0,44
Maximum output torque (Nm) *	165	164	177	178	175	187	165	140	139	128	120	100
Reversibility	Full		High			Good		Low		Irreversible		

\* Maximum output torque applicable to the gearbox, independently by the torque that may be generated by the motor.

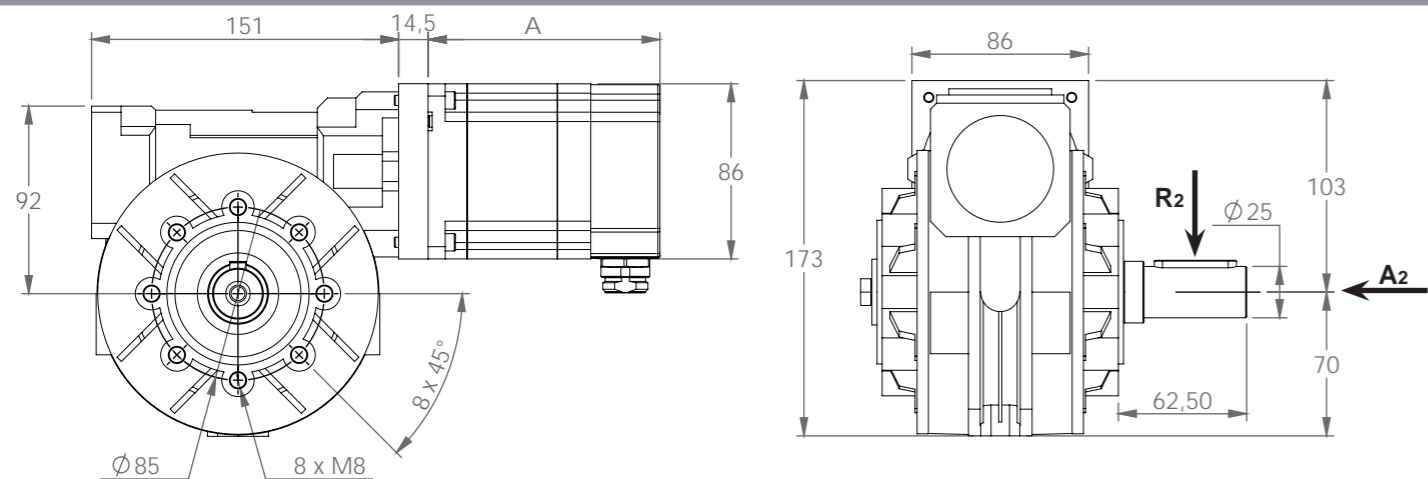
Loads

rpm	14	18	20	25	29	35	50	70	93	140	200
Radial load R <sub>2</sub> (N)	5600	5300	5000	4600	4300	3900	3600	3300	2900	2500	2400
Axial load A <sub>2</sub> (N)	1120	1060	1000	920	860	780	720	660	580	500	480

IWGX



IWGK



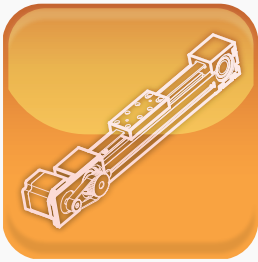
Combinable motors*	A	Gearmotor weight
M86SH80-Txx	115	8,8Kg
M86SH96-Txx	133	9,4Kg
M86SH118-Txx	152	10,3Kg
M86SH156-Txx	191	11,9Kg

\* Torque curves on page 7

M57SH56-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 2.8A
M57SH56-T-C	M79	2,8 A	1,26 Nm	-	-	
M57SH56-TO0512P24C	M98	2,8 A	1,26 Nm	Push-pull	512	
M57SH56-TO0512L05C	M99	2,8 A	1,26 Nm	Line-driver	512	
M57SH76-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 2.8A
M57SH76-T-C	M213	2,8 A	1,89 Nm	-	-	
M57SH76-TO0512P24C	M214	2,8 A	1,89 Nm	Push-pull	512	
M57SH76-TO0512L05C	M215	2,8 A	1,89 Nm	Line-driver	512	
M60SH65-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 2.8A
M60SH65-T-C	M02	2,8 A	2,1 Nm	-	-	
M60SH65-TO0512P24C	M90	2,8 A	2,1 Nm	Push-pull	512	
M60SH65-TO0512L05C	M81	2,8 A	2,1 Nm	Line-driver	512	
M60SH86-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 2.8A
M60SH86-T-C	M06	2,8 A	3,1 Nm	-	-	
M60SH86-TO0512P24C	M91	2,8 A	3,1 Nm	Push-pull	512	
M60SH86-TO0512L05C	M82	2,8 A	3,1 Nm	Line-driver	512	
M86SH80-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 5.5A
M86SH80-T-C	M15	5,5 A	4,6 Nm	-	-	
M86SH80-TO0512P24C	M92	5,5 A	4,6 Nm	Push-pull	512	
M86SH80-TO0512L05C	M83	5,5 A	4,6 Nm	Line-driver	512	
M86SH96-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 5.5A
M86SH96-T-C	M216	5,6 A	6,5 Nm	-	-	
M86SH96-TO0512P24C	M217	5,6 A	6,5 Nm	Push-pull	512	
M86SH96-TO0512L05C	M218	5,6 A	6,5 Nm	Line-driver	512	
M86SH118-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 5.5A
M86SH118-T-C	M18	6,0 A	8,7 Nm	-	-	
M86SH118-TO0512P24C	M93	6,0 A	8,7 Nm	Push-pull	512	
M86SH118-TO0512L05C	M84	6,0 A	8,7 Nm	Line-driver	512	
M86SH156-Tx	Codice motore	Corrente di fase	Coppia di mantenimento	Encoder	Impulsi/giro encoder	Drive: SMD1204 - Nominal current: 6.2A
M86SH156-T-C	M22	6,2 A	12,8 Nm	-	-	
M86SH156-TO0512P24C	M94	6,2 A	12,8 Nm	Push-pull	512	
M86SH156-TO0512L05C	M85	6,2 A	12,8 Nm	Line-driver	512	

The torque curves contained in this document are made with AEP torque transducer mod. MRT250NM

# Applicative examples



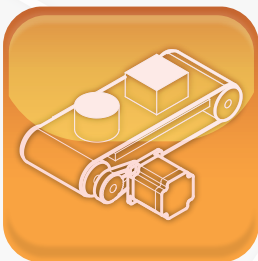
## Linear actuators

- *Ball-screw linear axes*
- *Belt linear axes*
- *ISO electric cylinders*
- *Pick and Place*



## Rotary actuators

- *Self-supporting programmable rotary tables*
- *Format changeover*
- *Parts orientation*



## Transport systems

- *Variable pitch conveyors*
- *Controlled speed roller tables*
- *Reduced backlash motorgearboxes*



## Unwinding systems

- *Label applicators*
- *Variable or constant pitch unwinding machines*
- *Sheeter machines*

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