GX
GEARBOXES

Characterised by a low backlash, GX gearboxes are ideal for applications needing high torque and optimum motion quality.

In combination with NX servo motors, they offer a compact geared servo motor solution optimised to provide the best dynamic performances.

GX gearboxes - NX servo motors
Mechanical associations

	GX geabox size						
Motor Torque ; Inertia	**01**	**02**	**04**	**06**	**07**	**09**	**10**
NX110 0.45 ; 1.3	GX1….R01 r = 3 to 35	GX1….R02 r = 40 to 80					
NX210 1 ; 3.8	GX2….R01 r= 3 to 15	GX2….R02 r = 20 to 35	GX2….R04 r= 40 to 80				
NX310 2 ; 7.9	GX3….R01 r= 3 to 8	GX3….R02 r = 9 to 20	GX3….R04 r= 25 to 60				
NX420 4 ; 29			GX4….R04 r = 3 to 10	GX4….R06 r = 15 to 60	GX4….R07 r = 70 to 90		
NX430 5.5 ; 42.6			GX4….R04 r = 3 to 10	GX4….R06 r = 15 to 35	GX4….R07 r = 40 to 70		
NX620 8 ; 98				GX6….R06 r = 3 to 10	GX6….R07 r = 15 to 60		
NX630 12 ; 147				GX6….R06 r = 3 to 10	GX6….R07 r = 15 to 50		
NX820 16 ; 320				GX8….R06 r = 3 to 10	GX8….R07 r = 15 to 30	GX8….R09 r = 35 to 50	GX8….R10 r = 60 to 80
NX840 28 ; 620				GX8….R06 r = 3 to 9	GX8….R07 r = 10 to 15	GX8….R09 r = 20 to 30	GX8….R10 r = 35 to 50
NX860 41 ; 920				GX8….R06 r = 3 to 7	GX8….R07 r = 8 to 10	GX8….R09 r = 15 to 20	GX8….R10 r = 25 and 35
NX860V 64 ; 920				GX8….R06 r = 3 to 5	GX8….R07 r = 6 and 8	GX8….R09 r = 9 to 15	GX8….R10 r = 20 to 25

r = gearbox ratio, torque (N.m) and Inertia (10^{-5}.kgm²)

Geared servo motor selection example

Targeted output speed (Ns) : 115 rpm
Targeted output torque (Cs) : 445 N.m
Load inertia (Jch) : 3 kgm²

Calculation of the gearbox ratio r

Motor maximum speed (NmaxM) : 4000 rpm
r = NmaxM / Ns
=> 4000 / 115 = 34,78

By choosing the existing ratio immediately above : R=35

Calculation of the motor torque

Torque at low speed = Cs / r / 0.85*
=> 445 / 35 / 0.85 = 14.9 N.m

Geared servo motor selection

Motor: NX820 (Torque : 16 N.m, Inertia (Jmot) : 320 kgm².10^{-5})
Gearbox : GX8N035R0900 (size 9 ; speed ratio 35)

Calculation of the inertia ratio**

Inertia ratio = Jch / (Jmot x r²)
=> 3 / (320.10^{-5} x 35²) = 0.77

IMPORTANT : please confirm the operating limit of the association selected above with our technical service centre.

- HIGH PERFORMANCE GEARED SERVO MOTORS
- LARGE CHOICE OF SPEED RATIO
- LOW BACKLASH, SMOOTH AND QUIET FUNCTIONING
- HIGH STIFFNESS
- LIFE LUBRICATED
- TOP QUALITY FINISHING
- UP TO IP65 PROTECTION

GX 3 N 025 R 03 00

- **Type** — GL : economical; GX : low backlash
- **Associated motor size** — 1 to 8
- **Backlash** — N : normal; R : reduced
- **Speed ratio** — 003 to 100
- **Gearbox size** — 01 to 10
- **Options** — 00 : smooth shaft; 01 : shaft with key

Example : GX3N025R0300
GX gearbox, size 3, ratio 25 , normal backlash, smooth shaft, NX310 associated motor

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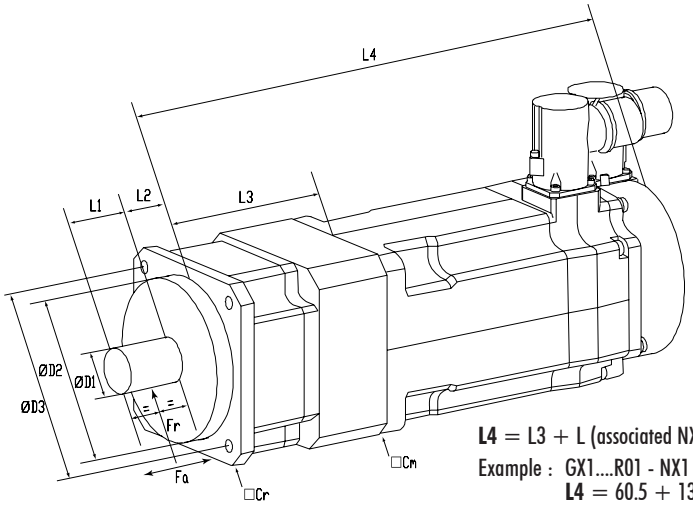
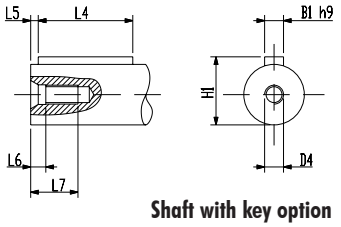




Shaft with key option

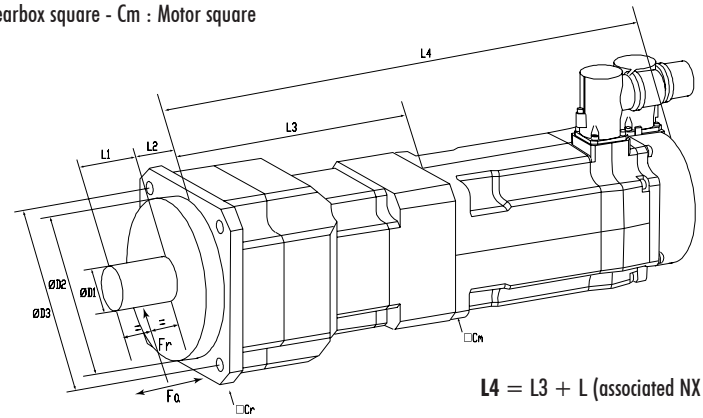
L4 = L3 + L (associated NX length, drawing on page 15)

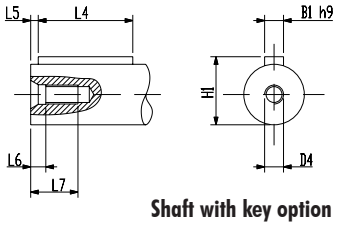
Example : GX1....R01 - NX1 motor : L = 133 mm
L4 = 60.5 + 133 = 193.5 mm

Geared servo motors characteristics and dimensions - 1 stage GX
Ratio 3, 4, 5, 6, 7, 8, 9 and 10

Type	Backlash* (min)	Stiffness (N.m/rad)	Fr** (daN)	Fa** (daN)	L1 (mm)	L2 (mm)	L3 (mm)	D1 (mm)	D2 (mm)	D3 (mm)	Cr (mm)	Cm (mm)	L4 (mm)	L5 (mm)	B1 (mm)	H1 (mm)	L6 (mm)	L7 (mm)	D4 (mm)
GX1....R01	5	10000	78	39	20.5	5.5	60.5	13j6	35g6	46	42	42	16	2	5	15	3.2	10	M4x0.7
GX2....R01	5	10000	78	39	20.5	5.5	60.5	13j6	35g6	46	42	56	16	2	5	15	3.2	10	M4x0.7
GX3....R01	5	10000	78	39	20.5	5.5	60.5	13j6	35g6	46	42	71	16	2	5	15	3.2	10	M4x0.7
GX3....R02	5 or 3	24000	153	76	30	7	76.5	16j6	50g6	70	60	71	25	2	5	18	4	12.5	M5x0.8
GX4....R04	5 or 3	48000	325	162	38	10	96	22j6	80g6	100	90	91.5	32	3	6	24.5	6	19	M8x1.25
GX4....R06	5 or 3	80000	670	335	53	12	122	32j6	110g6	130	115	91.5	40	5	10	35	9.5	28	M12x1.75
GX6....R06	5 or 3	80000	670	335	53	12	122	32j6	110g6	130	115	121	40	5	10	35	9.5	28	M12x1.75
GX8....R06	5 or 3	80000	670	335	53	12	122	32j6	110g6	130	115	155	40	5	10	35	9.5	28	M12x1.75
GX8....R07	5 or 3	170000	940	470	82	15	142.5	40j6	130g6	165	142	155	63	5	12	43	12	36	M16x2
GX8....R09	5 or 3	500000	1450	725	85	20	180.5	55j6	160g6	215	180	155	70	6	16	59	15	42	M20x2.5

* Low backlash option : 3 min; ** at 100 rpm
Cr : Gearbox square - Cm : Motor square





Shaft with key option

L4 = L3 + L (associated NX length, drawing on page 15)

Geared servo motors characteristics and dimensions - 2 stages GX
Ratio 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90 and 100

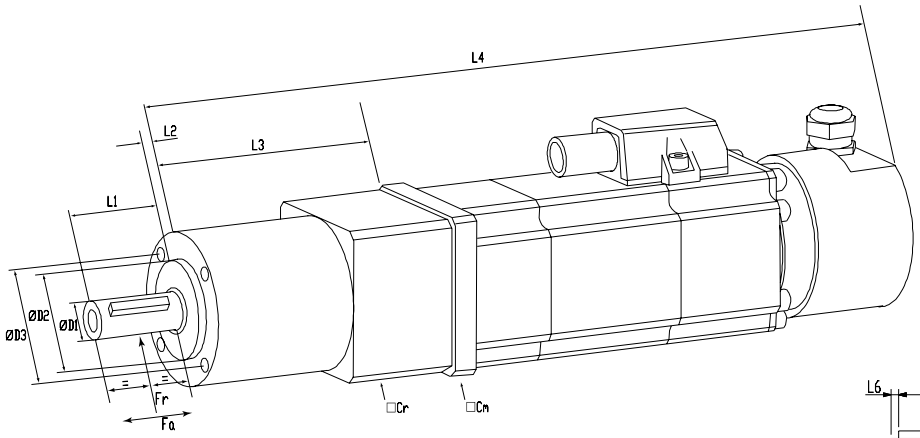
Type	Backlash* (min)	Stiffness (N.m/rad)	Fr** (daN)	Fa** (daN)	L1 (mm)	L2 (mm)	L3 (mm)	D1 (mm)	D2 (mm)	D3 (mm)	Cr (mm)	Cm (mm)	L4 (mm)	L5 (mm)	B1 (mm)	H1 (mm)	L6 (mm)	L7 (mm)	D4 (mm)
GX1....R01	8	10000	78	39	20.5	5.5	88	13j6	35g6	46	42	42	16	2	5	15	3.2	10	M4x0.7
GX1....R02	8 or 6	24000	153	76	30	7	101.5	16j6	50g6	70	60	42	25	2	5	18	4	12.5	M5x0.8
GX2....R01	8	10000	78	39	20.5	5.5	88	13j6	35g6	46	42	56	16	2	5	15	3.2	10	M4x0.7
GX2....R02	8 or 6	24000	153	76	30	7	101.5	16j6	50g6	70	60	56	25	2	5	18	4	12.5	M5x0.8
GX2....R04	8 or 6	48000	325	162	38	10	127	22j6	80g6	100	90	56	32	3	6	24,5	6	19	M8x1.25
GX3....R02	8 or 6	24000	153	76	30	7	101.5	16j6	50g6	70	60	71	25	2	5	18	4	12.5	M5x0.8
GX3....R04	8 or 6	48000	325	162	38	10	127	22j6	80g6	100	90	71	32	3	6	24,5	6	19	M8x1.25
GX4....R06	8 or 6	80000	670	335	53	12	161	32j6	110g6	130	115	91.5	40	5	10	35	9.5	28	M12x1.75
GX4....R07	8 or 6	170000	940	470	82	15	196	40j6	130g6	165	142	91.5	63	5	12	43	12	36	M16x2
GX6....R07	8 or 6	170000	940	470	82	15	196	40j6	130g6	165	142	121	63	5	12	43	12	36	M16x2
GX8....R07	8 or 6	170000	940	470	82	15	196	40j6	130g6	165	142	155	63	5	12	43	12	36	M16x2
GX8....R09	8 or 6	500000	1450	725	85	20	232.5	55j6	160g6	215	180	155	70	6	16	59	15	42	M20x2.5
GX8....R10	8 or 6	770000	5000	2500	108	30	274.5	75j6	180g6	235	220	155	90	7	20	79,5	15	42	M20x2.5

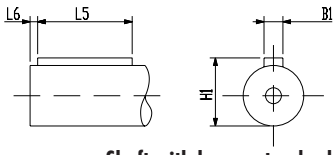
* Low backlash option : 6 min; ** at 100 rpm - Cr : Gearbox square - Cm : Motor square

GL

GEARBOXES

GL gearboxes are an economical alternative perfectly adapted to usual applications where a low backlash is not requested.
They are associated to NX servo motors of size 1 to 3.





Shaft with key as standard

Geared servo motors characteristics and dimensions - 1 stage GL
Ratio 5 and 8

Type	Backlash (min)	Stiffness (N.m/rad)	Fr* (daN)	Fa* (daN)	L1 (mm)	L2 (mm)	L3 (mm)	D1 (mm)	D2 (mm)	D3 (mm)	Cr (mm)	Cm (mm)	L4 no brake (mm)	L4 with brake (mm)	L5 (mm)	L6 (mm)	B1 (mm)	H1 (mm)
GL1....R01	30	1500	20	20	23	2	67.5	10h7	26h7	34	40	42	200.5	231.5	18	2.5	3	11.2
GL2....R02	20	5000	50	60	30	3	71.5	14h7	40h7	52	60	56	208.5	250.5	25	2.5	5	16
GL3....R02	20	5000	50	60	30	3	71.5	14h7	40h7	52	70	71	217.5	265.5	25	2.5	5	16

Geared servo motors characteristics and dimensions - 2 stages GL
Ratio 9, 12, 15, 16, 20, and 25

Type	Backlash (min)	Stiffness (N.m/rad)	Fr* (daN)	Fa* (daN)	L1 (mm)	L2 (mm)	L3 (mm)	D1 (mm)	D2 (mm)	D3 (mm)	Cr (mm)	Cm (mm)	L4 no brake (mm)	L4 with brake (mm)	L5 (mm)	L6 (mm)	B1 (mm)	H1 (mm)
GL1....R01	35	1600	20	20	23	2	80.5	10h7	26h7	34	40	42	213.5	244.5	18	2.5	3	11.2
GL2....R02	25	5000	50	60	30	3	83.5	14h7	40h7	52	60	56	220.5	262.5	25	2.5	5	16
GL3....R02	25	5000	50	60	30	3	83.5	14h7	40h7	52	70	71	229.5	277.5	25	2.5	5	16

* at 100 rpm - Cr : Gearbox square - Cm : Motor square

- ECONOMICAL GEARED SERVO MOTORS
- HIGH COMPACITY
- ROBUST DESIGN
- LIFE LUBRICATED
- UP TO IP54 PROTECTION

Mechanical associations
GL gearboxes - NX servo motors

Motor Torque ; Inertia	GL gearbox size 01	GL gearbox size 02
NX110 0.45 ; 1.3	GL1....R01 r = 5 to 64	
NX210 1 ; 3.8		GL2....R02 r = 5 to 64
NX310 2 ; 7.9		GL3....R02 r = 5 to 64

r = speed ratio, Torque (N.m) and Inertia (10^{-5}.kgm²)

IMPORTANT : please confirm the operating limit of the association selected above with our technical service centre.

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