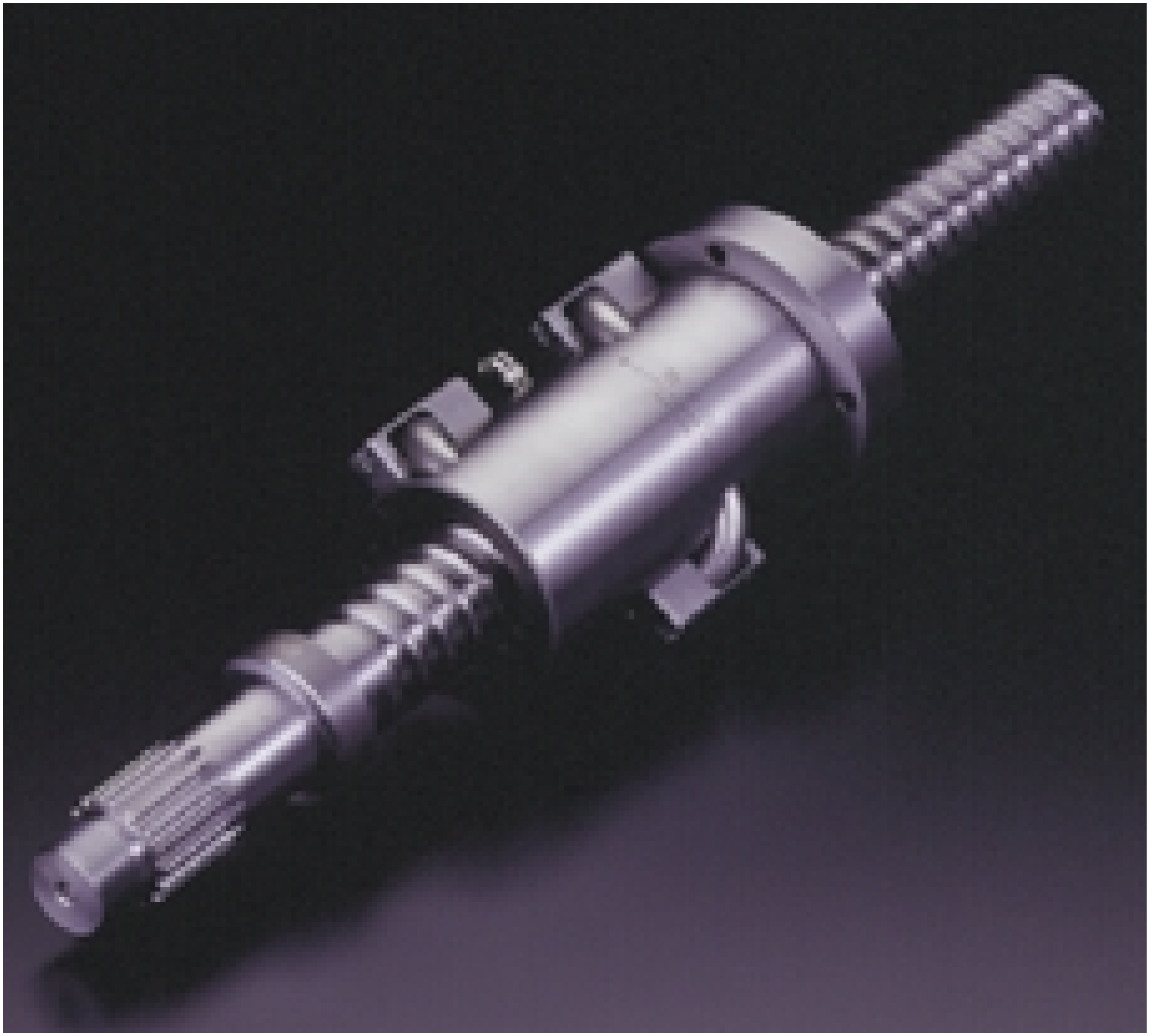
MOTION & CONTROL

NSK

Ball Screw for High-Load Drive

HTF Series

Intense development bears fruit, with optimal design for high load and even more extended load capacity. Electric drive is now available in high-load regions.



The solution for high-load drives

Significantly improved rated load and maximum allowable dynamic load

Select from a wide variety of NSK's HTF Series

Meet the HTF Series ball screws for high-load drives, the result of uncompromising development efforts by NSK's technical team.
The electric drive in high-load regions, regarded as a difficult feature by the machine, has long been the focus of NSK's technical team. It is now a reality, through an optimum high-load design for significantly improved load rating and maximum allowable dynamic load. The HTF Series also features highly accurate positioning, and compact design for situations in which driving environment is the top priority. And the technical team ensured that ease of maintenance was incorporated into the products.
The HTF Series is ideal for driving components to which high load is applied, including components in electric-driven injection molding machines, presses, and IC molding presses.
The HTF Series is the optimum choice for mechanical driving components operating under the most severe conditions.

Ball Screw for High-Load Drive: HTF Series

1. Features

1 Design dedicated to extremely high load

Optimized design for high load provides improvement in load rating and maximum allowable dynamic load* compared to the company's standard series, extending the available variety of high load capacity types.
* Standard maximum allowable dynamic load is approximately 14% of static load rating (Coa). For details, such as estimated operating life, please consult NSK.

2 Wide variety of variations

Twenty-five variations in shaft diameter (45 to 140 mm) and lead (10 to 25 mm) combinations are available.

3 Allowable revolutions

Can be used with d·N value (shaft diameter d × revolutions N) set to 70000 or less. For types with even more increased speed, please consult NSK.

4 Adaptable to versatile shaft end forms

The HTF Series is readily adaptable to versatile shaft end forms to transmit high torque.
Examples of supported forms:

- Keyways
- Straight sided splines (JIS B 1601)
- Involute splines (JIS B 1603)
- Spur gears (JIS B 1702)

Ball Screw for High-Load Drive: HTF Series

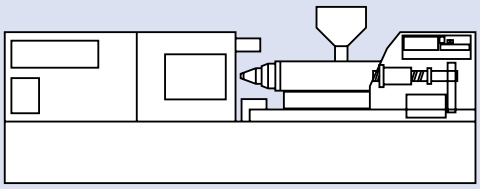
2. Application

The HTF Series supports increased use of electric drives in high-load regions where ball screw usage had previously been difficult. Increased use of electric drives facilitates high accuracy positioning, more compact equipment, and improved ease of maintenance.

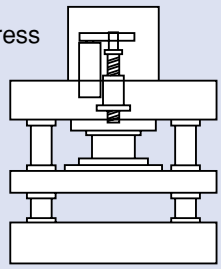
Examples of applications:

- Electric-driven injection molding machine (injection axis, clamping axis)
- Presses
- Die casting machines
- Friction welding
- IC mold presses
- Power cylinders

Injection molding machine



General press



3. Accuracy grade and axial play

Standard accuracy grades are JIS B1192 (1997) C5 and C7.
Standard axial play is 0.020 mm or less, or 0.050 mm or less.

4. Specification number

Specification numbers indicate major specifications with numbers and symbols and are used until final specifications are confirmed between customers and NSK.

Example: HTF 63 20 – 7.5 C5 S – 500 / 700

- HTF: Nut type code
- 63: Shaft diameter (mm)
- 20: Lead (mm)
- 7.5: Effective turns (turns × columns)
- C5: Accuracy grade code (C5, C7)
- S: Axial play code (S: 0.020 mm or less N: 0.050 mm or less)
- 500: Effective threaded length (mm)
- 700: Overall length of shaft (mm)

5. Reference number

Reference numbers are indicated in specification drawings and quotations provided to customers. Be sure to refer to reference numbers when placing orders. The reference numbers are also indicated on product packing.

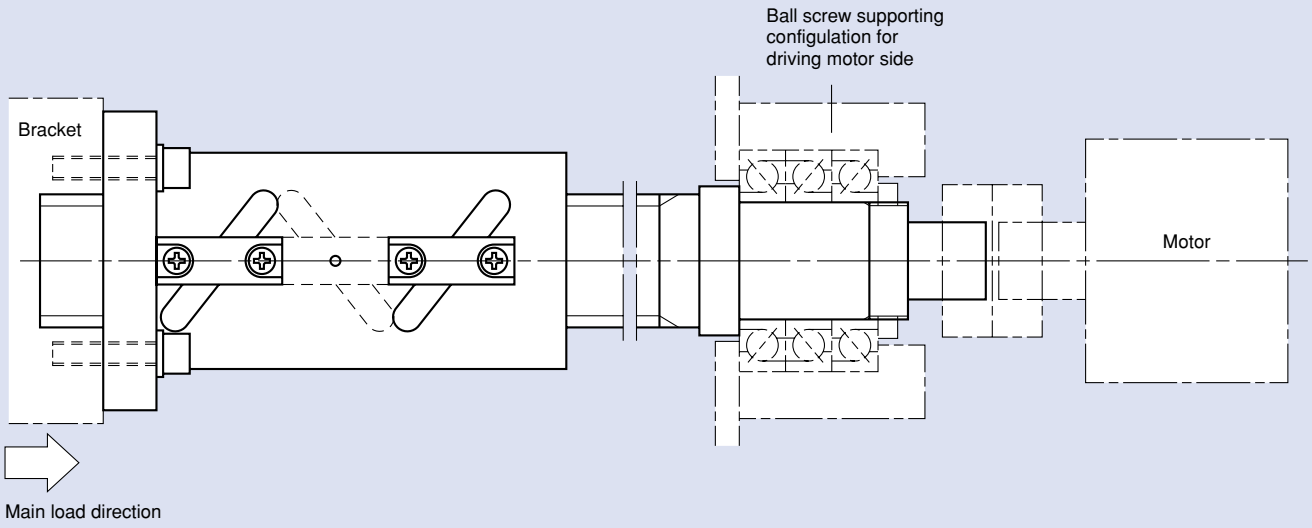
Example: W 63 05 - ※ L X - C5 S 20

- Ball screw code
- Shaft diameter (mm)
- Effective threaded length (Unit: 100 mm)
- Serial No. of design
- Direction of turn No code: right, L: left
- Form code (X: with gear processed)
- Accuracy grade code (C5, C7)
- Axial play code (S: 0.020 mm or less N: 0.050 mm or less)
- Lead (mm)

6. Selecting ball screws for high-load drive

For ball screw usage under severe conditions, such as high load and shorter stroke, NSK proposes the following based on endurance tests, experience and other factors: an optimized calculation method that determines operating life instead of common calculation method that determines rated fatigue life, ball screw installation method, lubrication oil and so on. Please consult NSK for selection of ball screws.

Example of mounting ball screw



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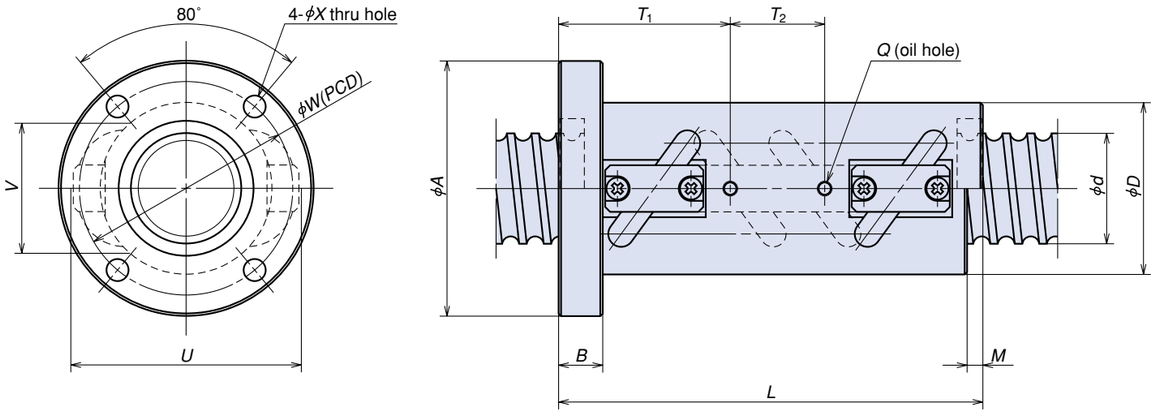
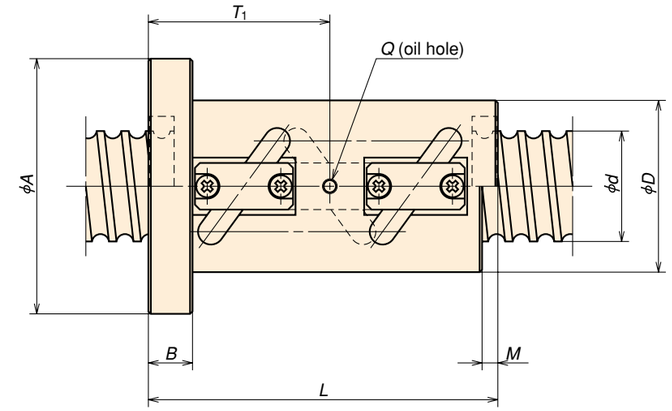
Outline drawing of ball screw

Nut type I



Nut type II



Dimensions

Model No.	Shaft diameter [mm]	Lead [mm]	Effective turns	Nut type	Basic load rating [N]		Nut dimension [mm]											
					Dynamic	Static												
	d	*ℓ*	Turns × Circuits		C_a	C_{oa}	*D*	*A*	*B*	*L*	*M*	*W*	*X*	*U*	*V*	*Q*	T_1	T_2
HTF4510-10	45	10	2.5 × 4	I	174000	567000	70	104	18	173	7	87	9	94	52	M6 × 1	84	——
HTF5010-10	50	10	2.5 × 4	I	181000	633000	75	109	18	173	7	92	9	98	56	M6 × 1	84	——
HTF5012-10		12	2.5 × 4	I	210000	700000	77	111	22	207	8	94	9	104	57	M6 × 1	77	60
HTF5014-7.5	50	14	2.5 × 3	II	211000	623000	80	114	28	200	10	97	9	110	60	M6 × 1	105	——
HTF5016-7.5		16	2.5 × 3	II	306000	844000	95	129	28	223	10	112	9	136	66	PT1/8	117	——
HTF5510-10	55	10	2.5 × 4	I	188000	699000	80	114	18	173	7	97	9	103	60	M6 × 1	84	——
HTF5512-10		12	2.5 × 4	I	220000	781000	82	116	22	207	8	99	9	109	61	M6 × 1	77	60
HTF5514-7.5	55	14	2.5 × 3	II	216000	696000	85	119	28	200	10	102	9	115	64	M6 × 1	105	——
HTF5516-7.5		16	2.5 × 3	II	319000	923000	99	133	28	223	10	116	9	140	70	PT1/8	117	——
HTF6312-10	63	12	2.5 × 4	I	232000	891000	92	126	22	207	8	109	9	117	68	M6 × 1	77	60
HTF6314-10		14	2.5 × 4	I	298000	1070000	94	128	28	242	10	111	9	123	70	M6 × 1	91	70
HTF6316-7.5	63	16	2.5 × 3	II	342000	1080000	105	139	28	223	10	122	9	145	76	PT1/8	117	——
HTF6316-10	63	16	2.5 × 4	I	438000	1440000	105	139	28	271	10	122	9	145	76	PT1/8	101	80
HTF6320-7.5	63	20	2.5 × 3	II	457000	1320000	117	157	32	273	12	137	11	167	81	PT1/8	143	——
HTF8014-10	80	14	2.5 × 4	I	335000	1360000	116	150	28	242	10	133	9	144	84	M6 × 1	91	70
HTF8016-7.5	80	16	2.5 × 3	II	381000	1370000	120	154	32	227	10	137	9	160	90	PT1/8	121	——
HTF8016-10	80	16	2.5 × 4	I	488000	1830000	120	154	32	275	10	137	9	160	90	PT1/8	105	80
HTF8020-7.5	80	20	2.5 × 3	II	511000	1690000	130	170	32	273	12	150	11	179	94	PT1/8	143	——
HTF8020-10	80	20	2.5 × 4	I	655000	2250000	130	170	32	333	12	150	11	179	94	PT1/8	123	100
HTF8025-7.5	80	25	2.5 × 3	II	663000	2020000	145	185	40	338	17	165	11	204	98	PT1/8	178	——
HTF10016-7.5	100	16	2.5 × 3	II	422000	1710000	145	185	32	227	10	165	11	182	106	PT1/8	121	——
HTF10016-10	100	16	2.5 × 4	I	541000	2280000	145	185	32	275	10	165	11	182	106	PT1/8	105	80
HTF10020-7.5	100	20	2.5 × 3	II	571000	2140000	145	185	32	273	12	165	11	195	111	PT1/8	143	——
HTF10020-10	100	20	2.5 × 4	I	731000	2850000	145	185	32	333	12	165	11	195	111	PT1/8	123	100
HTF10025-7.5	100	25	2.5 × 3	II	734000	2550000	159	199	40	338	17	179	11	217	115	PT1/8	178	——
HTF10025-10	100	25	2.5 × 4	I	940000	3400000	159	199	40	413	17	179	11	217	115	PT1/8	153	125
HTF12016-7.5	120	16	2.5 × 3	II	456000	2080000	173	213	32	227	10	193	11	208	123	PT1/8	121	——
HTF12016-10	120	16	2.5 × 4	I	584000	2770000	173	213	32	275	10	193	11	208	123	PT1/8	105	80
HTF12020-7.5	120	20	2.5 × 3	II	620000	2550000	173	213	40	281	12	193	11	222	127	PT1/8	151	——
HTF12020-10	120	20	2.5 × 4	I	794000	3400000	173	213	40	341	12	193	11	222	127	PT1/8	131	100
HTF12025-7.5	120	25	2.5 × 3	II	792000	3080000	173	213	40	338	17	193	11	232	131	PT1/8	178	——
HTF12025-10	120	25	2.5 × 4	I	1010000	4110000	173	213	40	413	17	193	11	232	131	PT1/8	153	125
HTF14020-10	140	20	2.5 × 4	I	849000	4000000	204	250	40	341	12	226	14	245	141	PT1/8	131	100
HTF14025-10		25	2.5 × 4	I	1080000	4810000	204	250	40	413	17	226	14	255	145	PT1/8	153	125

Notes • Right-hand screws are standard.
• When there is no seal, nut length is shorter by M than that of nuts with seals.