Photo of Electro-Hydraulic Cylinders

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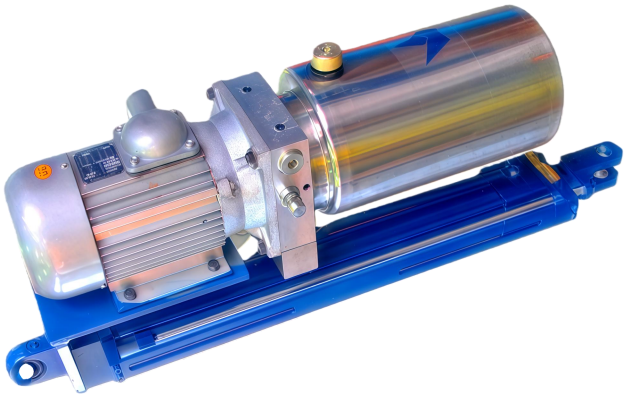

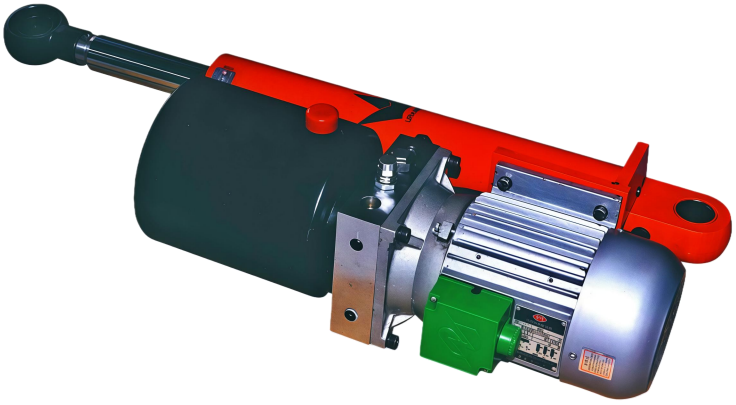

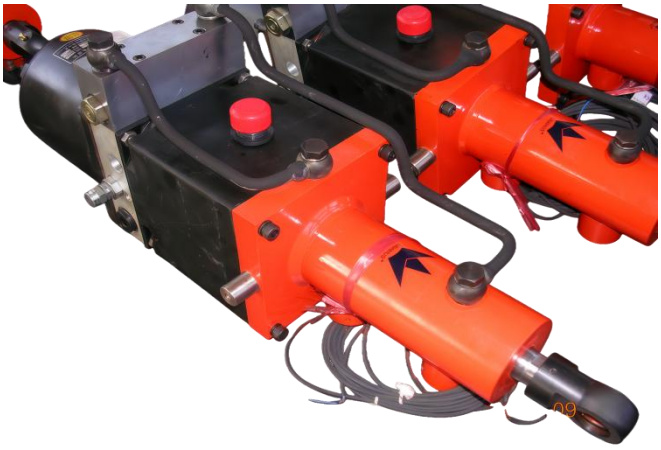

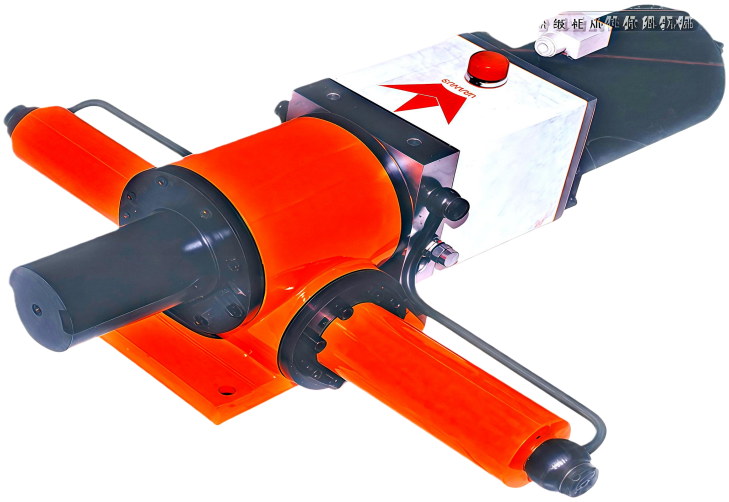

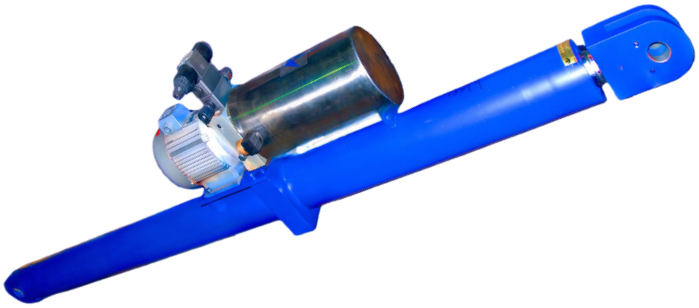

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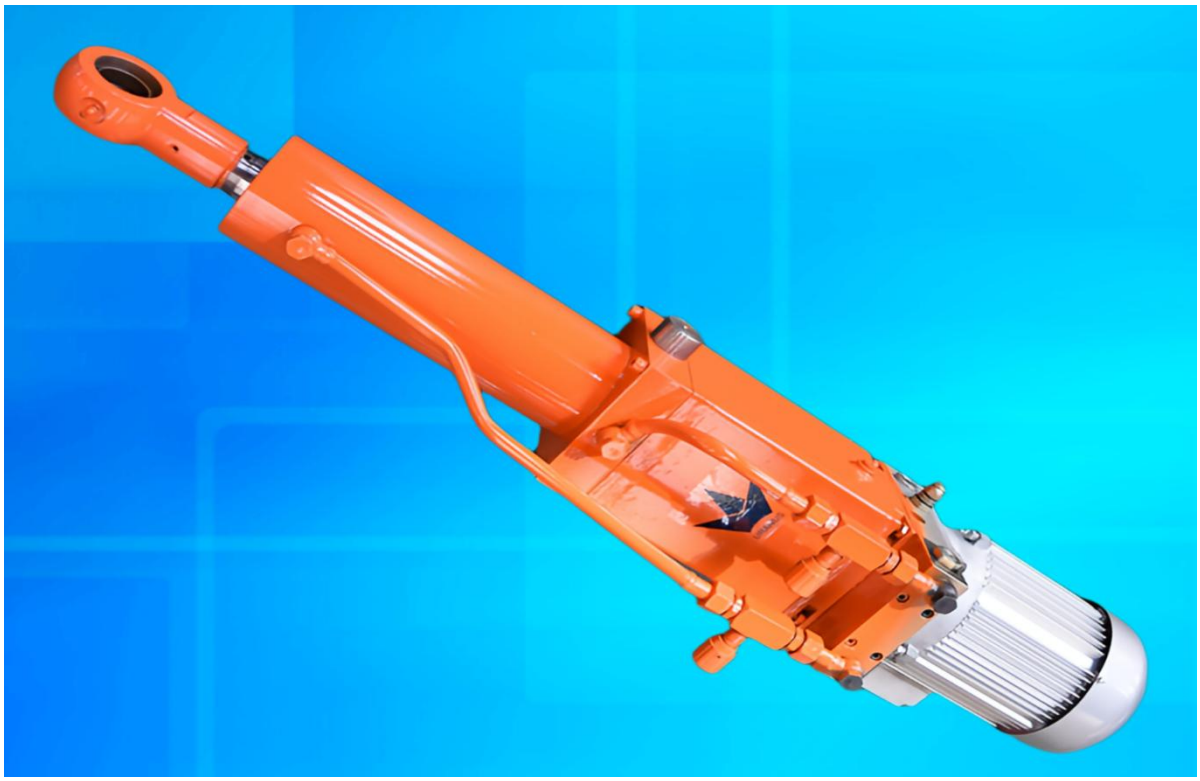

Overview of Electro-Hydraulic Cylinders (EHC)

Electro-hydraulic cylinders (EHCs) are highly integrated hydraulic units that compactly combine motors, pumps, valves, cylinder bodies, and oil tanks. By switching the phase of a three-phase power supply, the extension and retraction of the hydraulic cylinder can be controlled. Compared to mechanically driven electric cylinders (e.g., ball screw or lead screw cylinders), EHCs offer the following advantages:

- **Compact and lightweight**: 30% smaller volume and 25% lighter weight than mechanical-driven electric cylinders at the same power output.
- **Energy-efficient**: 40% lower energy consumption, supporting load-starting and overload protection.
- **Intelligent adjustment**: Thrust, speed, and stroke can be infinitely adjusted.
- **High reliability**: Built-in positioning lock mechanism, strong shock resistance, and smooth operation.

UE Series Technical Features

1. Core Architecture

The UE series integrates a **dedicated hydraulic power pack** with the cylinder body, available in two configurations:

- **UEC inline configuration**: Power pack and cylinder aligned along a single axis, ideal for space-constrained applications.
- **UEG parallel configuration**: Power pack and cylinder arranged on parallel dual axes, enabling flexible installation.

2. Power System

- **Power supply**: Three-phase 380V/50Hz.
- **Motor power**:
  - UEC series: 0.55kW–4kW (8 specifications).
  - UEG series: 0.55kW–15kW (12 specifications).
- **Hydraulic circuit**: Equipped with high-quality pumps, valves, and seals. Components are precision-machined and rigorously tested per ISO standards.

3. Performance Parameters

Series	Cylinder Diameter Range	Max Thrust/Max Pull	Mounting Options
UEC	7 types	200kN/134kN	3 rod diameters + 3 mounting styles
UEG	15 types	1,227kN/920kN	7 differential cylinders / 4 constant-speed cylinders

4. Customization Services

Supports non-standard customization, including:

- Special functions (e.g., explosion-proof, high-temperature resistance).
- Higher thrust specifications.
- Compatibility with diverse hydraulic valve control systems.

Selection Guide for UE Series Electric Hydraulic Cylinders

1. Structure: The UE series electric hydraulic cylinders (EHCs) consist of two main components: the hydraulic cylinder and the hydraulic power pack. In the UEC series, the hydraulic cylinder and power pack are assembled along a single axis, whereas in the UEG series, they are arranged in a parallel, dual-axis configuration. The hydraulic power pack comprises a motor, hydraulic pump, threaded cartridge valve, and oil tank. There are two series of hydraulic pumps, Series 1 and Series 2. Generally, Series 1 pumps are preferred for the UEC series, and Series 2 pumps for the UEG series.However, for special requirements, UEC cylinders can also use Series 2 pumps, and UEG cylinders can use Series 1 pumps.

2. Hydraulic Pumps: The Series 1 hydraulic pumps include 11 specifications, numbered 01 – 11. The Series 2 pumps include 10 specifications, numbered 20 – 29. Since fixed-displacement pumps are used, the push/pull speed of each cylinder-pump combination is constant and can be referenced in Tables 1 and 2.

3. Hydraulic Cylinders: The UEC series offers 7 cylinder diameters, while the UEG series provides 15 cylinder diameters. Each cylinder diameter is available with three standard piston rod diameters, and non-standard piston rod diameters can also be custom-made according to requirements.

4. Selection Conditions: When selecting an electric hydraulic cylinder, you should first provide the following parameters and conditions as the basis for selection:

4.1 Push force, pull force, and stroke 4.2 Push speed and pull speed 4.3 Mounting type 4.4 Additional functional requirements

4.1 Push force, pull force, and stroke These parameters are determined by the working conditions. For example, when an EHC is used to horizontally push or pull a trolley or gate, the required push/pull force equals the sum of the resistance and acceleration forces of the trolley or gate. In this case, both push and pull forces are positive. When a hydraulic cylinder is used to lift and lower a heavy object, the push force is positive, and the pull force is negative. Conversely, if the cylinder lifts a heavy object and then lowers it, the pull force is positive, and the push force is negative. When the cylinder extends or retracts under no-load conditions, the push or pull force is zero. If the required push or pull force varies, the maximum value should be taken as the rated value.

If only one of the push or pull forces is positive, the cylinder diameter and rod diameter can be determined based on that value. For example, when a UEC EHC is required to lift a 5,000 kg object, referring to Table 1 for the maximum push force shows that cylinders with a diameter of Φ63 mm or larger are suitable. To reduce cost, Φ63 mm can be selected. Among the three piston rod diameters, thin rods are generally used for short strokes, and thick rods for long strokes. When a UEG EHC is used to lift a 5,000 kg object, referring to Table 2 for the maximum pull force allows the selection of either Φ63/32 or Φ63/36.

If both push and pull forces are positive, the largest cylinder diameter must be selected. For instance, if a UEC cylinder is required to provide a push force of 50 kN and a pull force of 60 kN, Table 1 shows that a Φ63 mm cylinder is needed for 50 kN push, and a Φ80 mm cylinder is needed for 60 kN pull. Therefore, the final selection should be a Φ80 mm cylinder.

The push and pull forces listed in Tables 1 and 2 are maximum allowable values. Within this range, you should determine the rated push and pull forces according to your requirements. Each EHC is strictly and accurately adjusted to the rated push/pull force before leaving the factory, and the relief valve is locked—please do not adjust it arbitrarily.

4.2 Push Speed and Pull Speed: After the cylinder diameter and piston rod diameter of the hydraulic cylinder are determined, the hydraulic pump is selected based on the required push and pull speeds. Push and pull speeds are determined by the stroke and cycle time. Push and pull speeds are determined by the stroke and cycle time. For example, consider a UEC cylinder with a push/pull force of 50 kN, a stroke of 500 mm, and a cylinder diameter of Φ80 mm:

A. If only the extension time is required as Tc=30s, the push speed is calculated as Vc=500÷30=16.7 mm/s. In this case, Pump No. 06 or 07 can be selected, and the rod diameter is optional. B. If only the retraction time is required as Th=30s, the pull speed is Vh=500÷30=16.7 mm/s. In this case, a piston rod diameter of Φ56 mm and Pump No. 03 should be selected. C. If the total push-pull cycle time is required to be 1 minute, a piston rod diameter of Φ56 mm and Pump No. 05 should be selected. Then, the push speed Vc=13 mm/s, extension time Tc=38.5 s; the pull speed Vh=26 mm/s, retraction time T_h=19.2s; and the total push-pull cycle time is Tc+T_h=57.7 s.

4.3 Mounting Types: The UEC series offers three standard mounting types, with diagrams and dimensions provided on pages 8 and 9. The UEG series provides ten mounting types, as shown on page 11. The UEG series assembles the hydraulic power pack with the company’s UG medium-to-high-pressure hydraulic cylinders for engineering and general machinery applications (see product catalog) in a parallel dual-axis configuration. The diagrams and dimensions of the hydraulic power pack are shown in Figure 2 and Table 4 on page 11. The diagrams and dimensions of the hydraulic cylinders are provided in the UG series cylinder catalog; except for the cylinder port, all mounting and connection dimensions remain identical to the catalog. Special mounting types and non-standard dimension EHCs requested by customers are designated with the letter T.

4.4 Optional Additional Functions

4.4.1 Constant-Speed Push/Pull Function: When equal push and pull speeds are required, the constant-speed function can be selected. Since this function is achieved through a differential hydraulic circuit, it can only provide approximately equal speeds. Moreover, for each cylinder diameter, only one specific piston rod diameter can achieve this function (see Table 3). For example, a Φ80/56- 500 UEC cylinder equipped with the constant-speed function, when using Pump No. 03, has a pull speed Vh=17 mm/s (see Table 1), giving a retraction time Th=29.4 s. The push speed is calculated as Vc=Vh÷ ψ=17÷0.96=17.7 mm/s (see Table 3), resulting in an extension time Tc=500÷Vc≈ 28.2 s. The total push-pull cycle time is Th+Tc=57.6s. The maximum pull force is Fh=53 kN, and the maximum push force is Fc= ψFh=0.96× 53=50.88 kN.

For UEG series constant-speed cylinders (see Figure 2), since the effective areas of the two cylinder chambers are equal, the reciprocating speeds are inherently equal. In addition, the constant-speed function can be achieved with all available piston rod diameters in this series.

4.4.2 Bi-Directional Position Lock. This function is achieved by adding pilot-operated check valves to the return lines of both chambers of the hydraulic cylinder within the system circuit. As a result, when the electric hydraulic cylinder stops operating, the piston will remain stationary at any position and will not move under external forces. Since the company’s EHCs use high-quality imported seals and valves, combined with precision manufacturing processes, the hydraulic cylinder and valves are guaranteed to be leak-free. Even under prolonged external forces or impacts, there will be no leakage or unintended movement.

4.4.3 Rod-Side Chamber One-Way Position Lock: A pilot-operated check valve is installed only in the rod-side chamber return line. This function is generally used when the piston rod end is required to suspend a heavy load for a long period or under similar conditions where the piston rod is subjected to external pulling forces.

4.4.4 Rod-Side Chamber Fixed or Adjustable Flow Deceleration. When it is necessary to lower a lifted heavy load slowly, a throttle valve is installed in the rod-side chamber return line to reduce the descending speed caused by gravity. A fixed throttle uses a check plate with a small orifice. Its advantage is low cost, while its disadvantage is that the descending speed cannot be adjusted. This is commonly used in mass-produced products. An adjustable flow uses a pilot-operated adjustable flow screw-in cartridge valve, allowing the user to freely set the descending speed. , allowing the user to freely set the descending speed. For special operating conditions, products with a constant-speed down valve or a downward balancing valve can also be provided.

4.4.5 Rodless-Side Chamber One-Way Position Lock. A pilot-operated check valve is installed only in the rodless-side chamber return line. This function is generally used when the piston rod is required to support a heavy load for a long period or under similar conditions where the piston rod is subjected to external pushing forces.

4.4.6 Rodless-Side Chamber Fixed or Adjustable Flow Deceleration. When the piston rod lowers a lifted heavy load slowly, a fixed or adjustable flow valve should be installed in the rodless-side chamber to reduce the descending speed. For this type of application, it is recommended to use the company's electro-hydraulic plunger cylinders, which can reduce cost, simplify operation control, and save energy.

Electric hydraulic cylinders equipped with flow control check valves in both chambers can achieve stepless speed regulation. However, since throttling generates heat and the cylinder's oil tank is relatively small, this configuration is not suitable for applications requiring frequent directional changes or continuous operation.

5. The company can also provide electric hydraulic cylinders with the following special functions.

5.1 Electric hydraulic cylinders with terminal position proximity switches. These cylinders not only send an electrical signal when the piston reaches the end of its stroke, but can also automatically reverse direction.

5.2 Electric hydraulic cylinders with external travel switches. These allow stepless adjustment of the cylinder stroke and reversal at any desired stroke position.

5.3 Electric hydraulic cylinders with automatic pressure-operated directional valves. The cylinder automatically reverses direction when it reaches the end of its stroke or encounters an overload condition during operation.

5.4 Servo electric hydraulic cylinders with external or internal displacement sensors. These cylinders can accurately display and record the cylinder stroke (maximum precision 2 μm), and allow variable-speed motion, oscillation, dwell, and random operation at any position.

5.5 Electric hydraulic cylinders can be configured with the company's UP series hydraulic power packs and UG series hydraulic cylinders to provide a wide variety of functional options. For details, please refer to the company's hydraulic power pack catalog.

6. Motor: The UE series electric hydraulic cylinders use a 380 V, 50 Hz three-phase asynchronous motor.

The required motor power NNN is determined by the following calculation:

$N_c=1.3F_cV_c$ $N_h=1.3F_hV_h$ The larger of Nc and Nh is taken as the required motor power N, and it must not exceed the motor's rated power.

Nc is the hydraulic cylinder extension power, and N_h is the hydraulic cylinder retraction power, both in watts (W).

Fc is the cylinder push force, and F_h is the cylinder pull force, both in kilonewtons (kN).

V_c is the cylinder push speed, and V_h is the cylinder pull speed, both in millimeters per second (mm/s).

7. Installation Position: When the operating position of the electric hydraulic cylinder is with the piston rod end vertical or inclined upwards (more than 10° from the horizontal), it should be marked as S. In this case, the cylinder requires modification of the oil tank filler port and the internal suction tube position.

8. Selection Recommendations: The cost of a UE series electric hydraulic cylinder is proportional to its push and pull forces, stroke, speed, and the number of additional functions. To save costs, please select the most appropriate model whenever possible. If any details in our selection guide are unclear, or if you have special requirements, please contact us. We will be pleased to assist you in selecting, designing, and manufacturing the electric hydraulic cylinder that best suits your application.

9. Operating and Maintenance Precautions for Electric Hydraulic Cylinders:

9.1 Do not place or operate the electric hydraulic cylinder in conditions of direct water exposure, excessive humidity, high temperature, low temperature, or other adverse environments.

9.2 At the factory, the cylinder's oil port is sealed with an O-ring to block the breather. During use, this O-ring should be removed to allow the oil tank to breathe. For constant-speed circuits and constant-speed cylinders, the O-ring may remain in place.

9.3 The recommended working fluid is anti-wear hydraulic oil with a viscosity of 25~40cts (generally #46), turbine oil, or mineral-based lubricating oils. The fluid must be filtered, with a cleanliness level of NAS 1638 grade 9 or ISO 4406 19/15 or better. The operating temperature should be maintained between 15~60 °C.

9.4 During the first use, ensure that all air is purged from the hydraulic cylinder. When retracting the piston rod, both the rod-side chamber and the oil tank must be completely filled with working fluid. Since the cylinder's oil tank is small, any external leakage must be repaired immediately and the fluid level restored. Insufficient working fluid can cause pump cavitation, leading to rapid pump damage and cylinder cavitation. If crawling or vibration occurs during operation, first check for low fluid level, pump cavitation, or air in the hydraulic cylinder.

9.5 The relief valve is factory-set and should not be arbitrarily adjusted. Overloading can damage the pump, motor, and other components.

9.6 Due to the small size of the oil tank, these cylinders are not suitable for continuous long-duration operation or frequent directional changes. If high oil temperature occurs during continuous operation, allow the system to cool before resuming use. For cylinders requiring continuous long-duration operation or frequent reversal, this must be specified when ordering so that design measures can be taken to prevent excessive or rapid temperature rise.

9.7 The working fluid should be replaced once a year.

Technical Specifications Table for Series 1 Hydraulic Pumps of UE Series Electric Hydraulic Cylinders

Table 1

Series 1 Hydraulic Pumps / Hydraulic Cylinders		01		02		03	
Cylinder diameter	40mm	20mm/s (push speed)	26KN (maximum push force)	27mm/s (push speed)	26KN (maximum push force)	36mm/s (push speed)	
Rod diameter	20 mm	27mm/s (pull speed)	19KN (maximum pull force)	36mm/s (pull speed)	19KN (maximum pull force)	47mm/s (pull speed)	
	22mm	29mm/s (pull speed)	18KN (maximum pull force)	38mm/s (pull speed)	18KN (maximum pull force)	51mm/s (pull speed)	
	28mm	39mm/s (pull speed)	13KN (maximum pull force)	52mm/s (pull speed)	13KN (maximum pull force)	70mm/s (pull speed)	

Table 1: For ease of reference, the units of the values in Tables 1 and 2 are omitted.
Note: The UEC series in-line electric hydraulic cylinders preferentially use this series.

Series 1 Hydraulic Pumps / Hydraulic Cylinders		01		02		03		04		05		06		07		08		09		10		11	
Cylinder diameter	40	20	26	27	26	36	26	44	26	53	25	62	25	71	22	84	22	100	21	129	20	169	18
Rod diameter	20	27	19	36	19	47	19	59	19	71	18	83	18	95	17	113	17	133	16	172	15	225	14
	22	29	18	38	18	51	18	64	18	76	17	89	17	102	15	121	15	143	15	185	14	242	13
	28	39	13	52	13	70	13	87	13	105	13	122	13	139	11	165	11	196	10	253	10	331	9
Cylinder diameter	50	13	41	17	41	23	41	28	41	34	39	40	39	45	35	54	35	64	33	82	31	108	28
Rod diameter	25	17	31	23	31	30	31	40	31	45	29	53	29	61	26	72	26	85	25	110	23	144	22
	28	19	28	25	28	33	28	41	28	50	27	58	27	66	24	79	24	93	23	120	21	157	20
	36	27	20	35	20	47	20	59	20	71	19	83	19	94	17	112	17	133	16	171	15	224	14
Cylinder diameter	63	8.1	65	11	65	14	65	18	65	21	62	25	62	29	56	34	56	40	53	52	50	68	44
Rod diameter	32	11	48	14	48	19	48	24	48	29	46	34	46	39	41	46	41	54	39	70	37	92	34
	36	12	44	16	44	21	44	27	44	32	42	37	42	43	37	51	37	60	35	77	33	101	31
	45	16	32	22	32	29	32	37	32	44	30	51	30	58	27	69	27	82	26	106	24	139	22
Cylinder diameter	80	5	105	6.7	105	8.9	105	11	105	13	100	16	100	18	90	21	90	25	85	32	80	42	75
Rod diameter	40	6.7	79	8.9	79	12	79	15	79	18	75	21	75	24	67	28	67	33	64	43	60	56	56
	45	7.3	72	9.7	72	13	72	16	72	19	68	23	68	26	61	31	61	37	58	47	55	62	51
	56	9.8	53	13	53	17	53	22	53	26	51	30	51	35	46	41	46	49	43	63	41	83	38
Cylinder diameter	90	3.9	133	5.3	133	7	133	8.8	133	11	127	12	127	14	114	17	114	20	108	25	101	33	95
Rod diameter	45	5.3	100	7	100	9.4	100	12	100	14	95	16	95	19	85	22	85	26	81	34	76	44	71
	50	5.7	92	7.6	92	10	92	13	92	15	88	18	88	20	79	24	79	29	74	37	70	48	65
	63	7.7	68	10	68	14	68	17	68	21	64	24	64	28	58	33	58	39	55	50	51	65	48
Cylinder diameter	100	3.2	165	4.3	165	5.7	165	7.1	165	8.5	157	9.9	157	11	141	14	141	16	133	21	125	27	117
Rod diameter	50	4.3	123	5.7	123	7.6	123	9.5	123	11	117	13	117	15	106	18	106	21	100	27	94	36	88
	56	4.7	113	6.2	113	8.3	113	10	113	12	107	14	107	17	97	20	97	23	91	30	86	39	80
	70	6.3	84	8.4	84	11	84	14	84	17	80	20	80	22	72	26	72	31	68	40	64	53	60
Cylinder diameter	110	2.6	200	3.5	200	4.7	200	5.9	200	7	190	8.2	190	9.4	171	11	171	13	161	17	152	22	142
Rod diameter	56	3.6	148	4.8	148	6.3	148	7.9	148	9.5	140	11	140	13	126	15	126	18	119	23	112	30	105
	63	3.9	134	5.2	134	7	134	8.7	134	10	127	12	127	14	115	17	115	20	108	25	102	33	95
	80	5.6	94	7.5	94	10	94	12	94	15	89	17	89	20	80	24	80	28	76	36	71	47	67

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Technical Specifications Table for Series 2 Hydraulic Pumps of UE Series Electric Hydraulic Cylinders

Table 2

Series 2 Hydraulic Pumps / Hydraulic Cylinders		20		21		22		23		24		25		26		27		28		29	
Cylinder diameter	40	55	31	79	31	111	31	140	31	196	31	236	31	284	31	331	27	391	25	440	22
Rod diameter	20	73	23	105	23	148	23	187	23	262	23	314	23	378	23	442	20	522	18	588	17
	22	78	22	113	22	159	22	201	22	282	22	338	22	407	22	475	19	561	17	632	15
	28	107	16	154	16	218	16	275	16	385	16	462	16	556	16	650	14	767	12	864	11
Cylinder diameter	50	35	49	50	49	71	49	90	49	126	49	151	49	181	49	212	43	250	39	282	35
Rod diameter	25	47	36	67	36	95	36	120	36	168	36	201	36	242	36	283	32	334	29	376	26
	28	51	33	73	33	104	33	131	33	183	33	220	33	264	33	309	29	365	27	411	24
	36	73	23	104	23	148	23	186	23	261	23	313	23	377	23	440	20	520	18	586	17
Cylinder diameter	63	22	78	32	78	45	78	56	78	79	78	95	78	114	78	134	68	158	62	178	56
Rod diameter	32	30	57	43	57	60	57	76	57	107	57	128	57	154	57	180	50	213	46	239	41
	36	33	52	47	52	66	52	84	52	118	52	141	52	170	52	198	46	234	42	264	37
	45	45	38	65	38	91	38	115	38	162	38	194	38	233	38	273	33	322	30	363	27
Cylinder diameter	80	14	125	20	125	28	125	35	125	49	125	59	125	71	125	83	110	98	100	110	90
Rod diameter	40	18	94	26	94	37	94	47	94	65	94	79	94	95	94	110	83	130	75	147	67
	45	20	86	29	86	41	86	51	86	72	86	86	86	104	86	121	75	143	68	161	61
	56	27	64	39	64	54	64	69	64	96	64	116	64	139	64	162	56	192	51	216	46
Cylinder diameter	90	11	159	16	159	22	159	28	159	39	159	47	159	56	159	65	140	77	127	87	114
Rod diameter	45	14	119	21	119	29	119	37	119	52	119	62	119	75	119	87	105	103	95	116	85
	50	16	110	22	110	32	110	40	110	56	110	67	110	81	110	95	96	112	88	126	79
	63	21	81	30	81	43	81	54	81	76	81	91	81	110	81	128	71	152	64	171	58
Cylinder diameter	100	8.7	196	13	196	18	196	22	196	31	196	38	196	45	196	53	172	63	157	71	141
Rod diameter	50	12	147	17	147	24	147	30	147	42	147	50	147	60	147	71	129	83	117	94	106
	56	13	134	18	134	26	124	33	134	46	134	55	134	66	134	77	118	91	107	103	97
	70	17	100	25	100	35	100	44	100	62	100	74	100	89	100	104	88	123	80	138	72
Cylinder diameter	110	7.2	237	10	237	15	237	19	237	26	237	31	237	37	237	44	209	52	190	58	171
Rod diameter	56	9.8	176	14	176	20	176	25	176	35	176	42	176	51	176	59	154	70	140	79	126
	63	11	159	15	159	22	159	28	159	39	159	46	159	56	159	65	140	78	127	87	115
	80	15	112	22	112	31	112	39	112	55	112	66	112	81	112	93	98	110	89	124	80
Cylinder diameter	125	5.6	306	8	306	11	306	14	306	20	306	24	306	29	306	34	270	40	245	45	220
Rod diameter	63	7.5	228	11	228	15	228	19	228	27	228	32	228	39	228	45	201	54	183	60	164
	70	8.2	210	12	210	17	210	21	210	29	210	35	210	42	210	49	185	58	168	66	151
	90	12	147	17	147	24	147	30	147	42	147	50	147	60	147	70	130	83	118	94	106

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Technical Specifications Table for Series 2 Hydraulic Pumps of UE Series Electric Hydraulic Cylinders

Table 2(Cont'd)

Series 2 Hydraulic Pumps / Hydraulic Cylinders		20		21		22		23		24		25		26		27		28		29	
Cylinder diameter	140	4.5	384	6.4	384	9.1	384	11	384	16	384	19	384	23	384	27	338	32	307	36	277
Rod diameter	70	6	288	8.6	288	12	288	15	288	21	288	26	288	31	288	36	254	43	231	48	207
	80	6.6	259	9.5	259	13	259	17	259	24	259	29	259	34	259	40	228	47	207	53	186
	100	9.1	188	13	188	19	188	23	188	33	188	39	188	47	188	55	165	65	150	73	135
Cylinder diameter	150	3.9	441	5.6	441	7.9	441	10	441	14	441	17	441	20	441	24	388	28	353	31	318
Rod diameter	75	5.2	331	7.5	331	11	331	13	331	19	331	22	331	27	331	31	291	37	265	42	238
	85	5.7	300	8.2	300	12	300	15	300	21	300	25	300	30	300	35	264	41	240	46	216
	105	7.6	225	11	225	15	225	20	225	27	225	33	225	40	225	46	198	55	180	61	162
Cylinder diameter	160	3.4	502	4.9	502	6.9	502	8.8	502	12	502	15	502	18	502	21	442	24	402	28	362
Rod diameter	80	4.6	377	6.5	377	9.3	377	12	377	16	377	20	377	24	377	28	331	33	301	37	271
	90	5	343	7.2	343	10	343	13	343	18	343	22	343	26	343	30	302	36	274	40	247
	110	6.5	265	9.3	265	13	265	17	265	23	265	28	265	34	265	39	233	46	212	52	190
Cylinder diameter	180	2.7	636	3.9	636	5.5	636	6.9	636	9.7	636	12	636	14	636	16	560	19	509	22	458
Rod diameter	90	3.6	477	5.2	477	7.3	477	9.2	477	13	477	16	477	19	477	22	419	26	381	29	343
	100	3.9	439	5.6	439	7.9	439	10	439	14	439	17	439	20	439	24	387	28	351	31	316
	125	5.2	329	7.5	329	11	329	13	329	19	329	22	329	27	329	32	289	37	263	42	237
Cylinder diameter	200	2.2	785	3.1	785	4.4	785	5.6	785	7.9	785	9.4	785	11	785	13	691	16	628	18	565
Rod diameter	100	2.9	589	4.2	589	5.9	589	7.5	589	10	589	13	589	15	589	18	518	21	471	24	424
	110	3.1	547	4.5	547	6.4	547	8	547	11	547	14	547	16	547	19	482	22	438	25	394
	140	4.3	400	6.2	400	8.7	400	11	400	15	400	18	400	22	400	26	352	31	320	35	288
Cylinder diameter	220	1.8	950	2.6	950	3.7	950	4.6	950	6.5	950	7.8	950	9.4	950	11	836	13	760	15	684
Rod diameter	110	2.4	712	3.5	712	4.9	712	6.2	712	8.7	712	10	712	12	712	15	627	17	570	19	513
	125	2.7	643	3.8	643	5.4	643	6.8	643	9.6	643	12	643	14	643	16	566	19	514	22	463
	160	3.8	447	5.5	447	7.8	447	9.8	447	14	447	17	447	20	447	23	394	27	358	31	322
Cylinder diameter	250	1.4	1227	2	1227	2.8	1227	3.6	1227	5	1227	6	1227	7.3	1227	8.5	1080	10	981	11	883
Rod diameter	125	1.9	920	2.7	920	3.8	920	4.8	920	6.7	920	8	920	9.7	920	11	810	13	736	15	662
	140	2	842	2.9	842	4.1	842	5.2	842	7.3	842	8.8	842	11	842	12	741	15	673	16	606
	180	2.9	591	4.2	591	5.9	591	7.4	591	10	591	13	591	15	590	18	520	21	472	23	425

Technical Specifications Table for UE Series Electric Hydraulic Cylinders with Constant-Speed Differential Circuit

Table 3

Cylinder diameter mm	40	50	63	80	90	100	110	125	140	150	180	200	220	250
Rod diameter mm	28	36	45	56	63	70	80	90	100	105	125	140	160	180
Speed Ratio (ψ)	0.96	1.08	1.04	0.96	0.96	0.96	1.12	1.08	1.04	0.96	0.93	0.96	1.12	1.08

Calculation Formula $V_c = \frac{V_h}{\varphi} F_c max = \varphi F_h max$

Vc Push Speed, Vh Pull Speed, Unit: mm/s

ψ -Speed Ratio

Fc_{max} – Maximum Push Force, Fh_{max} – Maximum Pull Force, Unit: kN

Vh_{and} Fh_{max} — Refer to Table 1 or Table 2

UEC Series Inline Electro-Hydraulic Cylinder Selection Method

UEC ____ ____ ____ ____ ____ ____ ____ ____ ____

Uranus Inline Electric Hydraulic Cylinder				
Series 1 Hydraulic Pumps	01,02,03,04,05,06,07,08,09,10,11			See Table 1
Hydraulic Cylinders	Φ Cylinder Diameter × Rod Diameter × Stroke (mm)			See Table 1 Maximum Cylinder Diameter: Φ 110
Mounting Type	Clevis Type		Z	See Figure 1
	Flange Type		F	
	Foot Mount Type		D	
	Customer-Specified Mounting Type		T	
Rated Thrust (Rod Extended)	Force Exerted by Load on Piston Rod (Push)		⋯KN	Within the range of Table 1, to be specified by the user as required
	Force Exerted by Load on Piston Rod (Pull)		-⋯KN	
Rated Pull (Rod Retracted)	Force Exerted by Load on Piston Rod (Pull)		+⋯KN	Within the range of Table 1, to be specified by the user as required
	Force Exerted by Load on Piston Rod (Push)		-⋯KN	
Optional Additional Functions	Double-Chamber	Constant-Speed Push/Pull (Note 3)	D	No Additional Functions – No Marking
		Bi-Directional Position Lock	L	
	Rod-Side Chamber	When the Load Pulls the Piston Rod Out	One-Way Position Lock	a
			Fixed Flow Deceleration	b
			Adjustable Flow Deceleration	f
	Rodless-Side Chamber	When the Load Pushes the Piston Rod In	One-Way Position Lock	A
			Fixed Flow Deceleration	B
			Adjustable Flow Deceleration	F
When the Piston Rod Extension Axis is Inclined More Than 10° from the Horizontal			S	All Others – No Marking

Note 1: When the piston rod is extended, external pulling forces on the piston rod are marked as negative. For example, if the piston rod is pointing downward and a 1,000 kg load is being lowered slowly from the rod end, the pulling force exerted by the load on the piston rod is 10 kN, and it should be marked as – 10 kN.

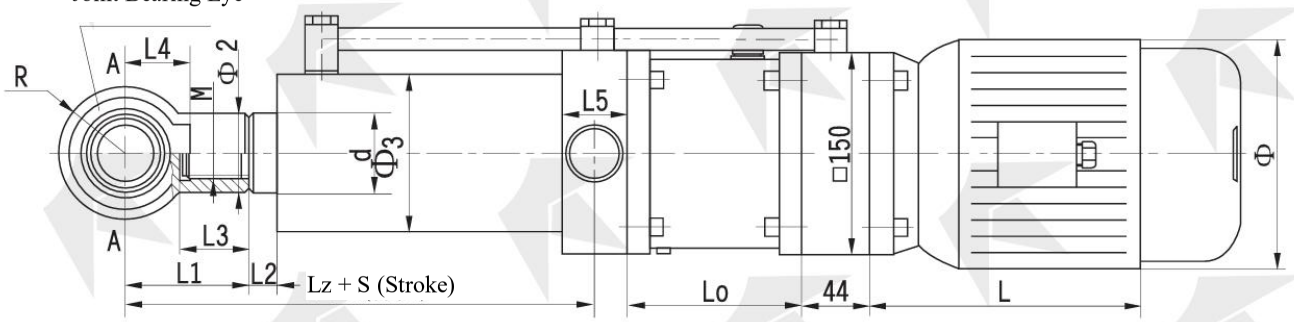
Note 2: When the piston rod is retracted, external pushing forces on the piston rod are marked as negative. For example, if the extended piston rod is pointing upward, supporting a 1,000 kg load that is being lowered slowly, the pushing force exerted by the load on the piston rod is 10 kN, and it should be marked as -10 kN.

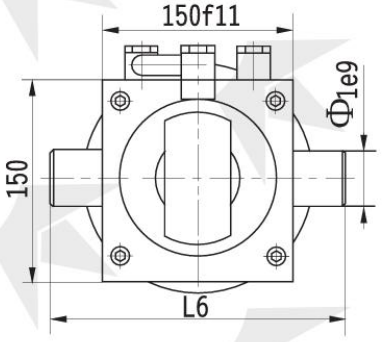
Note 3: The constant-speed push/pull function is achieved using a differential circuit. Both the push/pull speed and the maximum push/pull force are approximate; please refer to Table 3.

Figure 1 Outline and Connection Dimensions of UEC Series Inline Electric Hydraulic Cylinder

Clevis Type UEC…Z…

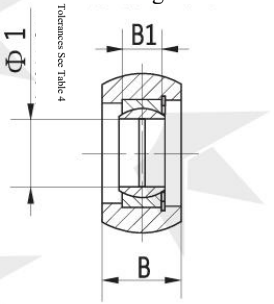
Joint Bearing Eye



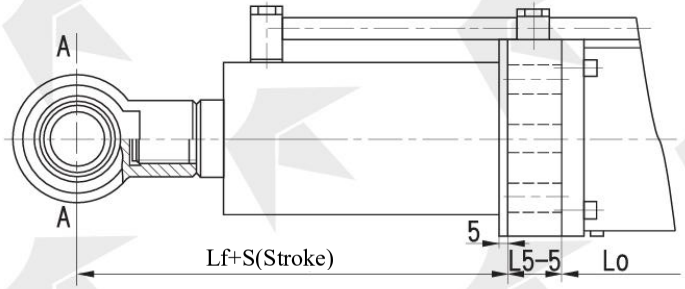


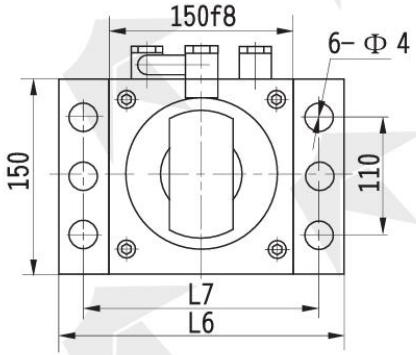
A–A

Joint Bearing Dimensions

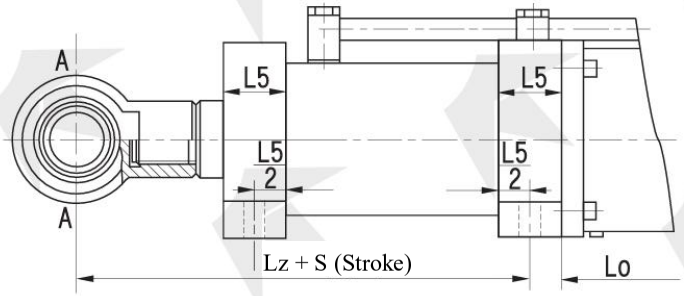


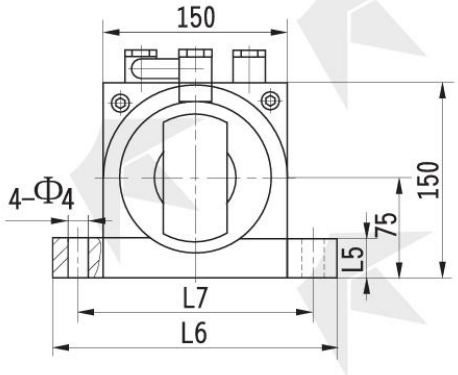
Flange Type UEC…F…





Foot Mount Type UEC…D…



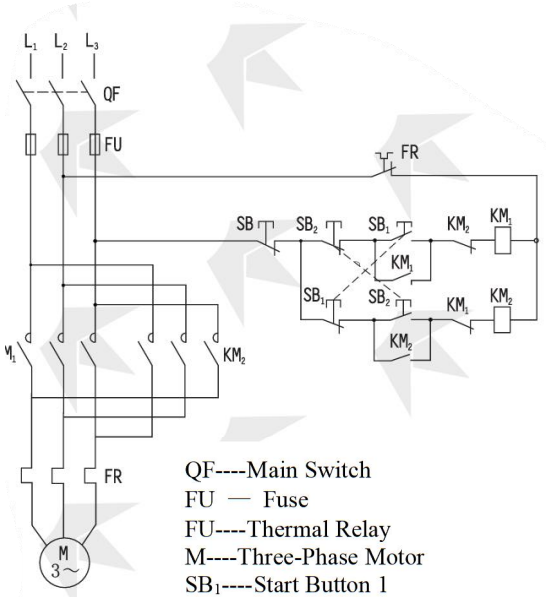


380 V AC 50 Hz Motor Outline		
Power (kW)	Φ	L
0.55	165	275
0.75	165	275
1.1	180	280
1.5	180	305
2.0	180	320
2.2	220	370
3.0	220	370
4.0	240	380

Figure 1 Outline and Connection Dimensions of UEC Series Inline Electric Hydraulic Cylinder

Table 4

Cylinder diameter	Rod diameter	M	Φ2	R	B	B1	Φ1		Φ3	Φ4	L1	L2	L3	L4	L5	L6	L7	Lz	Lf	LO≥150
							Dimensions	Bearing Tolerances												
40	20	M14*1.5	25	25		16	20	0-0.01	58	13	50	16	25	30	25	200	175	220	212	0.04S
	22	M16*1.5	28																	0.05S
	28	M22*1.5	35																	M22*1.5
50	25	M20*1.5	28	35		22	30		70	13	60	18	30	40	30	200	175	233	223	0.06S
	28	M22*1.5	35																	M22*1.5
	36	M27*2	42																	0.12S
63	32	M24*1.5	35						83	17	65	20	35	40	30	200	175	270	260	0.10S
	36	M27*2	42																	0.12S
	45	M33*2	45																	0.20S
80	40	M30*2	42	45		28	40	0-0.012	108	17	105	20	45	55	40	200	175	223	307	0.16S
	45	M33*2	48																	0.20S
	56	M42*3	60																	0.30S
90	45	M33*2	48						114	17	110	20	45	55	40	220	185	327	312	0.20S
	50	M36*2	52																	0.24S
	63	M48*2	68																	0.38S
100	50	M36*2	52	60		35	50		127	21	130	20	50	70	50	220	185	377	357	0.24S
	56	M42*2	60																	0.30S
	70	M52*2	72																	0.50S
110	56	M42*2	60						140	21	135	20	55	70	50	220	185	387	367	0.30S
	63	M48*2	68																	0.38S
	80	M60*2	80																	0.60S



QF----Main Switch
FU — Fuse
FU----Thermal Relay
M----Three-Phase Motor
SB_1----Start Button 1
SB_2----Start Button 2
SB----Main Stop Button
KM_1----AC Contactor 1
KM_2----AC Contactor 2

UEC Series Parallel Electric Hydraulic Cylinder Selection Method

UEG ____ ____ ____ ____ ____ ____ ____ ____ ____ ____

Uranus Parallel Electric Hydraulic Cylinder			
Hydraulic pump	2 Series	20,21,22,23,24,25,26,27,28,29	See Table 2
	1 Series	01,02,03,04,05,06,07,08,09,10,11	See Table 1
Hydraulic Cylinders	Φ Cylinder Diameter × Rod Diameter × Stroke (mm)		See UG Catalog
Working Type	Standard Cylinder		No Marking
	Constant-Speed Cylinder		D
Mounting Type	Joint Bearing (GE…ES Type) Eye		G
	Oil-Free Lubricated Bushing Eye		C
	Front Flange		Q
	Rear Flange		H
	Front Clevis		J
	Middle Clevis		Z
	Foot Mount		D
	Customer-Specified Mounting Type		T
Piston Rod End Type	External Thread + Rod-End Joint Bearing Eye		No Marking
	Other rod-end types marked according to the UG catalog		
Rated Thrust (Rod Extended)	Force Exerted by Load on Piston Rod (Push)	…KN	Within the range of Tables 1 and 2, to be specified by the user as required
	Force Exerted by Load on Piston Rod (Pull)	-…KN	
Rated Pull (Rod Retracted)	Force Exerted by Load on Piston Rod (Pull)	+…KN	Within the range of Tables 1 and 2, to be specified by the user as required
	Force Exerted by Load on Piston Rod (Push)	-…KN	

See Figure 2 and UG Catalog

Optional Additional Functions	Double-Chamber	Constant-Speed Push/Pull (Note 3)		D
		Bi-Directional Position Lock		L
	Rod-Side Chamber	When the Load Pulls the Piston Rod Out	One-Way Position Lock	a
			Fixed Flow Deceleration	b
			Adjustable Flow Deceleration	f
	Rodless-Side Chamber	When the Load Pushes the Piston Rod In	One-Way Position Lock	A
			Fixed Flow Deceleration	B
			Adjustable Flow Deceleration	F

No Additional Functions – No Marking

When the Piston Rod Extension Axis is Inclined More Than 10° from the Horizontal	S	All Others – No Marking

Note 1: When the piston rod is extended, external pulling forces on the piston rod are marked as negative. For example, if the piston rod is pointing downward and a 1,000 kg load is being lowered slowly from the rod end, the pulling force exerted by the load on the piston rod is 10 kN, and it should be marked as -10 kN.

Note 2: When the piston rod is retracted, external pushing forces on the piston rod are marked as negative. For example, if the extended piston rod is pointing upward, supporting a 1,000 kg load that is being lowered slowly, the pushing force exerted by the load on the piston rod is 10 kN, and it should be marked as -10 kN.

Note 3: The constant-speed push/pull function is achieved using a differential circuit. Both the push/pull speed and the maximum push/pull force are approximate; please refer to Table 3.

Outline and Connection Dimensions of UEC Series Parallel Electric Hydraulic Cylinder

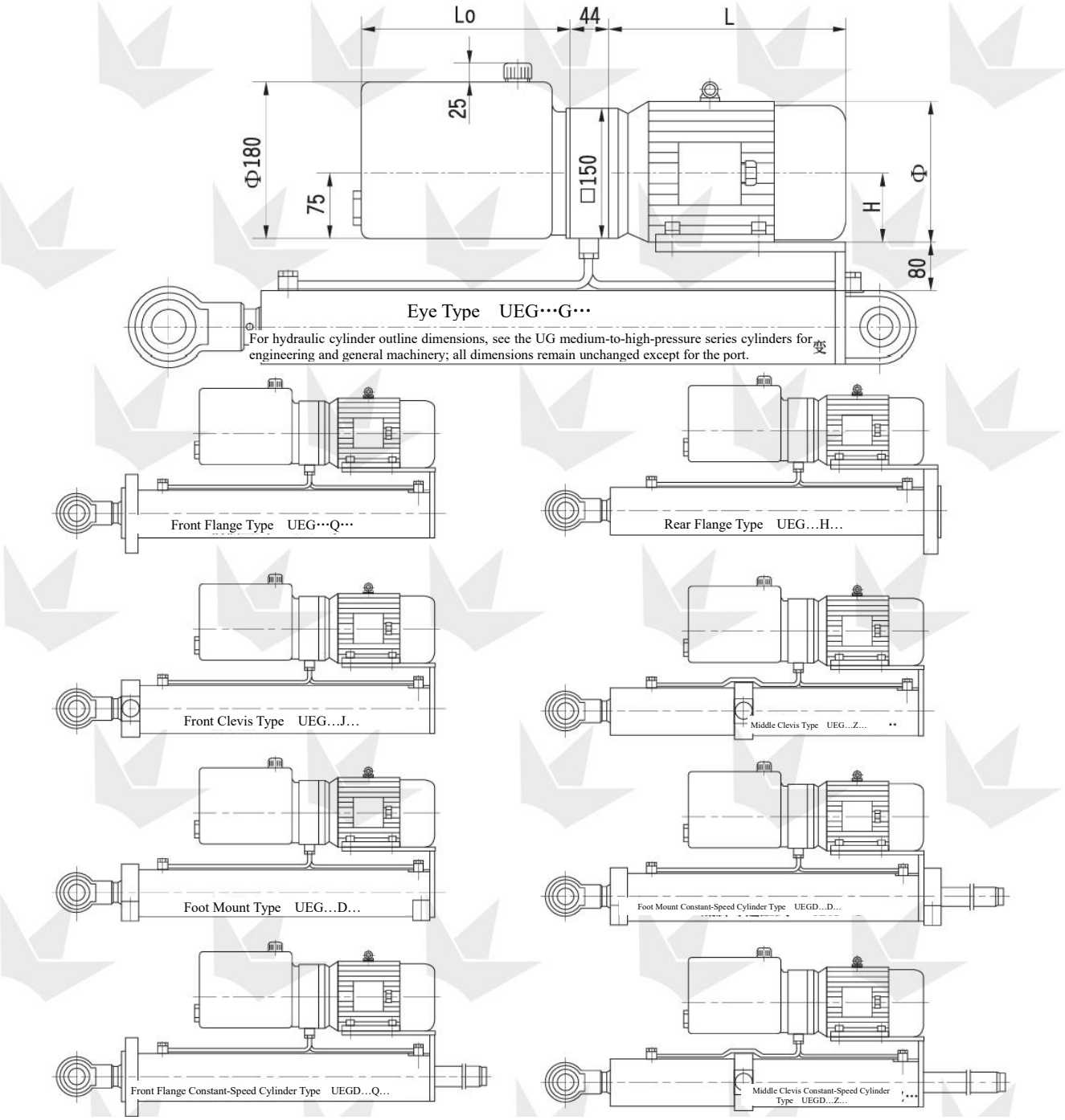


Table 5

Motor power: kW	0.55	0.75	1.1	1.5	2.0	2.2	3.0	4.0	5.5	7.5	11	15
Φ	175	175	195	195	195	215	215	240	275	275	335	335
H	80	80	90	90	90	100	100	112	132	132	160	160
L	275	275	280	305	320	370	370	380	475	515	605	650
Lo = 0.00005 × d² × s Lo – Oil Tank Length (mm), d – Piston Rod Diameter (mm), s – Stroke (mm) The minimum value of Lo is 220 mm. For each subsequent size, add 100 mm, resulting in 220, 320, 420, 520, …												