

# G-O-Motor

## Spring or Springless Type

### Piston Cylinder Actuator

#### Introduction

G-O-Motor is an air operated actuator more compact in size but more powerful in output and stroke as compared with an Air-O-Motor. G-O-Motors have wide range of application such as actuators for butterfly valves and adjustable port valves, vane control of blowers, variable resistors or any other mechanical controls requiring a proportional position control. There are spring type and springless type G-O-Motors.

#### Standard specifications

##### Spring type

**Type :** Vertical type, with positioner and top mounted handwheel

**Action :** Direct acting

**Material :** Cylinder; Cast iron (FC 200)  
Piston; Cast iron (FC 200)  
Piston rod; Stainless steel (SUS 403)  
"O"ring; Nitril butadiene rubber

**Input :** With model HTP pneumatic positioner;  
0.2~1.0 kgf/cm<sup>2</sup> (standard),  
0.2~0.6, 0.6~1.0 kgf/cm<sup>2</sup> are available.  
With model HEP electric positioner;  
4~20mA DC (standard), 4~12 and 12~20mA  
DC are available.

**Spring range :** 0.2~1.0 kgf/cm<sup>2</sup> (20~98kPa)

**Air supply pressure :** 1.4 kgf/cm<sup>2</sup> (140kPa)

##### Air consumption (normal state) :

With model HTP pneumatic positioner; 7 Nℓ/min. or less

With model HEP electric positioner; 5 Nℓ/min. or less

**Air connection :** Rc $\frac{1}{4}$  internal thread

**Ambient temperature :** 0~70°C

**Optional accessories :** Pressure regulator with filter, limit switch, motion transmitter, volume booster, air lock relay and others.

##### Performance :

Output power, Refer to Table 1, Page 2

Hysteresis error; Within 1% FS

Linearity; Within  $\pm 1\%$  FS

##### Springless type

**Type :** Vertical or horizontal, with G-O-Pilot and with or without handwheel.

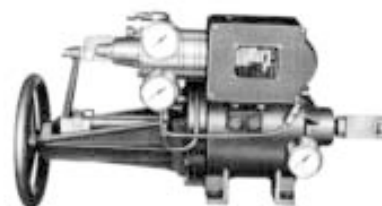
**Action :** Direct or reverse

**Material :** Cylinder; Cast iron (FC 200)  
Piston; Cast iron (FC 200)  
Piston rod; Stainless steel (SUS 403)  
"O"ring; Nitrile-butadiene rubber  
G-O-Pilot;  
Body...Aluminium alloy  
Rebalancing mechanism case...  
Cast iron(FC 200)

**Input :** 0.2~1.0 kgf/cm<sup>2</sup> (standard),  
0.2~0.6, 0.6~1.0 kgf/cm<sup>2</sup> are available.



Spring type

Springless type  
(Vertical type)

Springless type (Horizontal type)

**Supply air pressure :** 2.0 kgf/cm<sup>2</sup> (200kPa)

##### Air consumption (normal state) :

G-O-Pilot...10 Nℓ/min. or less

**Air connection :** Rc $\frac{1}{4}$  internal thread

**Ambient temperature :** 0~70°C

**Optional accessories :** Pressure regulator with filter, limit switch, motion transmitter, volume booster, air lock relay, and others

##### Performance :

Output power; Refer to Table 1.

Hysteresis error; Within 2%FS

Linearity; Within  $\pm 2\%$ FS

**External dimensions :** Refer to Fig.1, 2 and Table 2, 3.

**Weight :** Refer to Fig. 1, 2 and Table 2, 3.

**Finish :** Grayish green (Munsell 5B4/1) or silver, or other specified colors.

**Table 1. Output power**

**Table 1-1. Spring type**

Basic Model No.	Cylinder dia.x Travel (mm)	Power kgf (N)	
		Downward	Upward
GOM 83 S	φ 200×75	280~95.0 (2740~930)	45.0~235 (440~2300)
GOM 84 S	φ 200×100	280~95.0 (2740~930)	45.0~235 (440~2300)
GOM 103 S	φ 250×75	440~145 (4310~1420)	75.0~370 (740~3630)
GOM 124 S	φ 300×100	640~210 (6280~2060)	105~530 (1030~5200)

Note : The power are shown for the strokes at upper and lower limits.

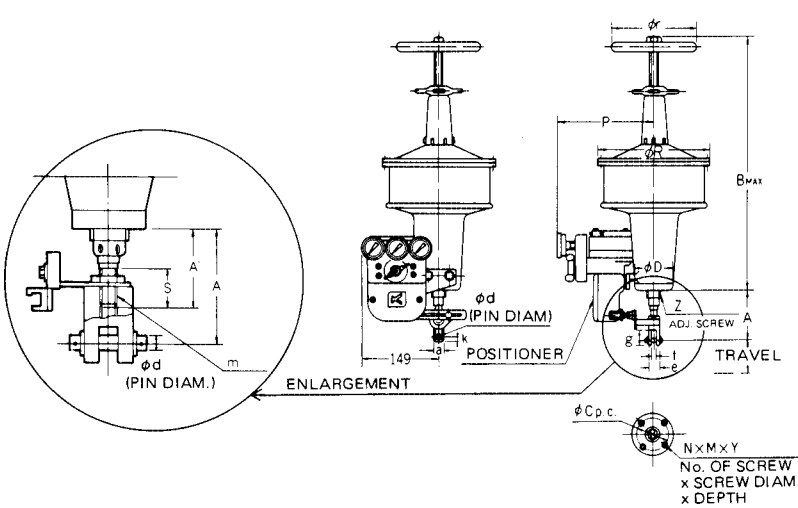
**Table 1-2. Springless type (Vertical type, with manual handwheel)**

Basic Model No.	Cylinder dia.x Travel (mm)	Power		Rebalancing mechanism
		Thrust kgf (N)	Torque kgf·cm (N·m) Rotating angle 60°	
GOM 64LM	φ 150×100	270 (2650)	2330 (228)	Plate cam type
GOM 84LM	φ 200×100	470 (4610)	4070 (399)	Plate cam type
GOM 124LM	φ 300×100	1100 (10800)	9520 (934)	Plate cam type
GOM 154LM	φ 380×100	1700 (16700)	14720 (1444)	Plate cam type

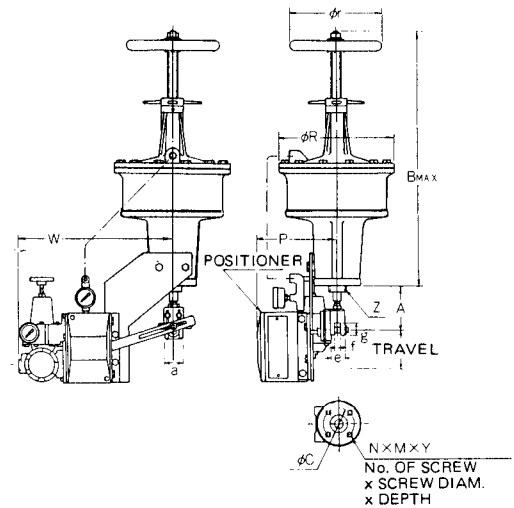
**Table 1-3. Springless type (Horizontal type)**

Basic Model No.	Cylinder dia.x Travel (mm)	Power kgf (N)	Rebalancing mechanism
GOM 44L	φ 100×100	120 (1180)	Plate cam type
GOM 410L	φ 100×250	120 (1180)	Plate cam type
GOM 64L	φ 150×100	270 (2650)	Plate cam type
GOM 66L	φ 150×150	270 (2650)	Plate cam type
GOM 610L	φ 150×250	270 (2650)	Plate cam type
GOM 84L	φ 200×100	470 (4610)	Plate cam type
GOM 86L	φ 200×150	470 (4610)	Plate cam type
GOM 810L	φ 200×250	470 (4610)	Plate cam type
GOM 1210L	φ 300×250	1100 (10800)	Plate cam type
GOM 1510L	φ 380×250	1700 (16700)	Plate cam type

Notes. 1) Suffix letter "M" is added to the model no. for springless type (horizontal or vertical) with manual handwheel.  
2) A safety factor of 0.5 ~ 0.7 to the output power is preferable to be taken for springless type when the control element is subjected to severe operating conditions (Poor stability or large inertia)



**Figure 1-1. Spring type (With HTP positioner)**



**Figure 1-2. Spring type (With HEP positioner)**

**Table 2. Dimensions & weights for spring type**

**Table 2-1. Spring type (With HTP positioner)**

Basic Model No.	Dimension (mm) Weight (kg)	B <sub>MAX</sub>	P	φ <sub>r</sub>	φ <sub>R</sub>	φ <sub>D</sub>	Z	φ <sub>C<sub>pc</sub></sub>	N x M x Y	A	k	g	e	f	a	φ <sub>d</sub>	w/o Fork-end			Travel	Weight
																	A'	m	S		
GOM 83S		532	200	200	250	100	M42×1.5	70	4×M10×15	100	13	29	30	12	40	10 <sup>f7</sup>	78	M14	41	75	30
GOM 84S		655	200	200	250	102	M42×1.5	70	4×M10×15	105	14	30	34	12	45	10 <sup>f7</sup>	80	M16	44	100	35
GOM 103S		633	205	250	302	116	M45×1.5	80	4×M12×18	123	14	30	34	12	45	10 <sup>f7</sup>	100	M16	56	75	45
GOM 124S		779	220	280	363	134	M48×1.5	90	4×M16×20	136	15	33	34	15	45	12 <sup>f7</sup>	110	M16	50	100	69

Note) Numbers in "weight" is for G · O · Motor with HTP positioner.

**Table 2-2. Spring type (With HEP positioner)**

Basic Model No.	Dimension (mm) Weight (kg)	B <sub>MAX</sub>	P	W	φ <sub>r</sub>	φ <sub>R</sub>	φ <sub>D</sub>	Z	φ <sub>C<sub>pc</sub></sub>	N x M x Y	A	k	g	e	f	a	φ <sub>d</sub>	w/o Fork-end			Travel	Weight	E
																		A'	m	S			
GOM 83S		532	191	344	200	250	100	M42×1.5	70	4×M10×15	100	13	29	30	12	40	10 <sup>f7</sup>	78	M14	41	75	30	202
GOM 84S		655	191	344	200	250	102	M42×1.5	70	4×M10×15	105	14	30	34	12	45	10 <sup>f7</sup>	80	M16	44	100	35	210
GOM 103S		633	196	344	250	302	116	M45×1.5	80	4×M12×18	123	14	30	34	12	45	10 <sup>f7</sup>	100	M16	56	75	45	192
GOM 124S		779	211	354	280	363	134	M48×1.5	90	4×M16×20	136	15	33	34	15	45	12 <sup>f7</sup>	110	M16	50	100	69	236

Note) Numbers in "weight" is for G · O · Motor with HEP positioner.

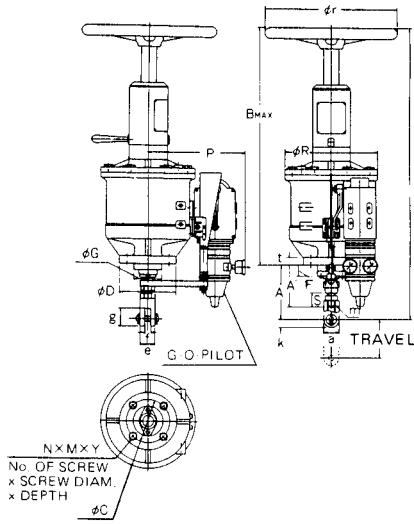


Figure 2-1. Springless type (Vertical type, with manual handwheel)  
(GOM64LM, 84LM type)

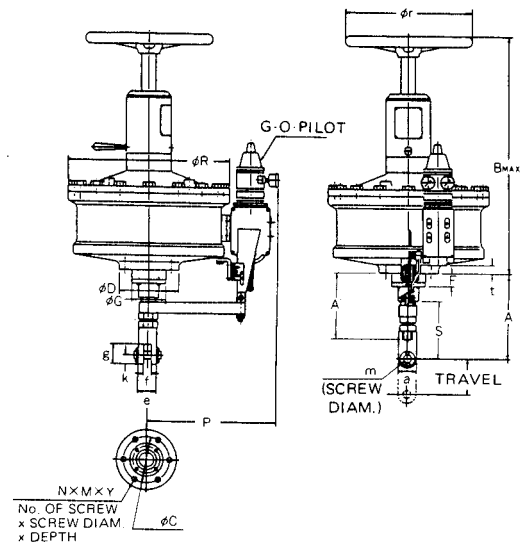


Figure 2-2. Springless type (Vertical type, with manual handwheel)  
(GOM124LM, 154LM type)

Table 3. Springless type dimensions and weights

Table 3-1. Springless type (Vertical type, with manual handwheel)

Basic Model No.	Dimension (mm) Weight (kg)	B <sub>MAX</sub>	P	φ <sub>r</sub>	φ <sub>R</sub>	φ <sub>D</sub>	t	φ <sub>G</sub>	F	φ <sub>C</sub>	N x M x Y	A	k	g	e	f	a	φ <sub>d</sub>	w/o fork-end			Travel	Weight
																			A'	m	S		
GOM 64LM		630	250	200	202	150	20	74	27	110	4 x M20 x 20	145	20	45	40	15	40	14 <sup>f7</sup>	115	M20	46	100	45
GOM 84LM		640	275	360	250	150	20	74	27	110	4 x M20 x 20	145	20	45	40	15	40	14 <sup>f7</sup>	115	M20	46	100	60
GOM124LM		600	335	360	356	130	—	74	32	104	4 x M14 x 17	220	22	47	40	18	44	18 <sup>f7</sup>	185	M24	64	100	80
GOM154LM		665	380	360	455	166	—	94	40	130	6 x M16 x 22	240	25	55	50	21	50	22 <sup>f6</sup>	200	M30 x 2	80	100	105

Note) Numbers in "weight" is for G · O · Motor with G · O · Pilot.

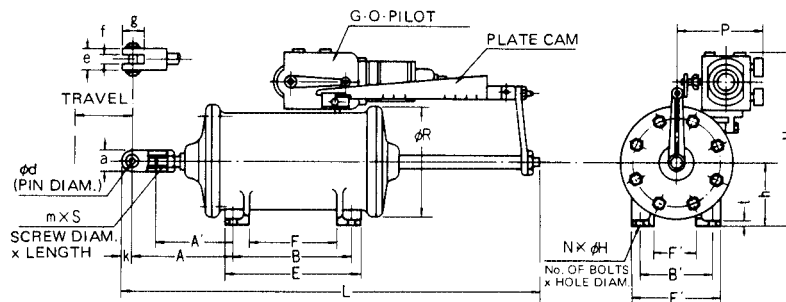


Figure 2-3. Springless type (Horizontal type)

Table 3-2. Springless type (Horizontal type)

Basic Model No.	Dimension (mm) Weight (kg)	L	P	φ <sub>R</sub>	H	h	t	E	E'	F	F'	B	B'	N x φ <sub>H</sub>	A	k	g	e	f	a	φ <sub>d</sub>	w/o fork-end			Stroke	Weight
																						A'	m	S		
GOM 44L		541	165	144	265	80	10	99	144	25	70	75	120	4 x 11	165	15	33	35	15	30	12 <sup>f7</sup>	136	M16	45	100	22
GOM410L		835	175	144	275	90	10	236	150	160	70	210	120	4 x 11	175	15	33	35	15	30	12 <sup>f7</sup>	145	M16	45	250	30
GOM 64L		561	185	202	317	105	10	146	166	76	92	120	140	4 x 14	170	19	39	38	15	38	15 <sup>f7</sup>	143	M20	50	100	25
GOM 66L		663	183	202	315	110	10	150	170	60	80	120	140	4 x 14	195	19	39	38	15	38	15 <sup>f7</sup>	167	M20	50	150	37
GOM610L		886	175	202	327	115	10	250	170	160	70	220	140	4 x 14	200	19	39	38	15	38	15 <sup>f7</sup>	170	M20	50	250	41
GOM 84L		529	200	250	372	140	9	116	226	64	148	90	200	4 x 14	180	19	39	38	15	38	15 <sup>f7</sup>	150	M20	50	100	45
GOM 86L		635	180	250	367	135	9	146	226	94	148	120	200	4 x 14	195	19	39	38	15	38	15 <sup>f7</sup>	163	M20	50	150	50
GOM810L		833	175	250	397	155	12	255	260	175	164	215	220	4 x 18	195	19	39	38	15	38	15 <sup>f7</sup>	165	M20	50	250	60
GOM1210L		1080	175	352	505	210	12.7	240	310	140	194	190	260	4 x 21	335	30	65	60	26	60	25 <sup>f7</sup>	277	M38 x 1.5	76	250	80
GOM1510L		1120	175	455	595	250	16	240	460	120	310	180	400	4 x 28	345	30	65	60	26	60	25 <sup>f7</sup>	290	M38 x 1.5	77	250	130

Note) Numbers in "weight" is for G · O · Motor with G · O · Pilot.

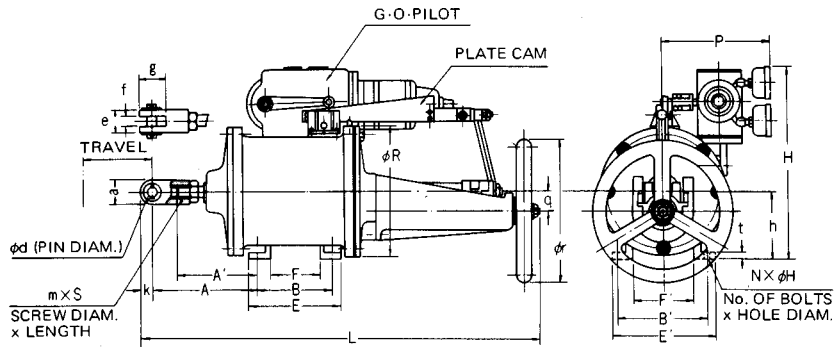


Figure 2-4. Springless type (Horizontal type, with manual handwheel)

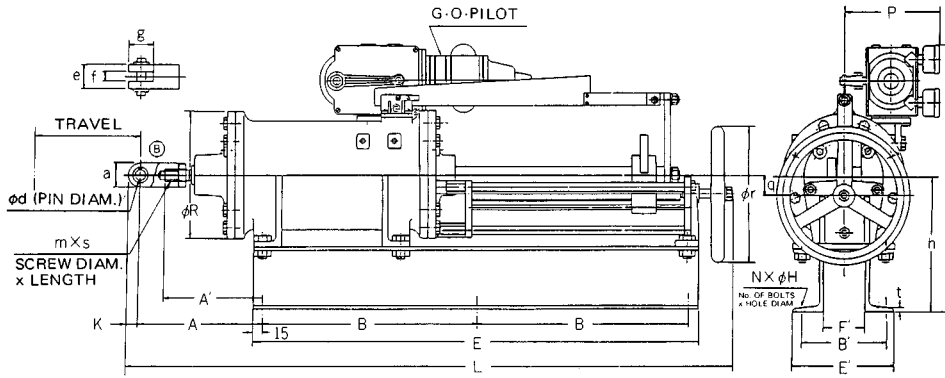


Figure 2-5. Springless type (Horizontal type, with manual handwheel and channel base)

Table 3-3. Springless type (Horizontal type, with manual handwheel)

Dimension (mm) Weight (kg)	L	P	φr	q	φR	H	h	t	E	E'	F	F'	B	B'	N x φH	A	k	g	e	f	a	φd	w/o fork-end			Stroke	Weight
																							A'	m	S		
Basic Model No.																											
GOM 44LM	624	165	140	30	144	265	80	10	99	144	25	70	75	120	4×11	165	15	33	35	15	30	12 <sup>f7</sup>	136	M16	45	100	24
GOM410LM	923	175	140	30	144	*350	*165	*5	*685	*150	—	*70	*327.5×2	*120	*6×11	*175	15	33	35	15	30	12 <sup>f7</sup>	145	M16	45	250	40
GOM 64LM	641	185	220	30	202	317	105	10	146	166	76	92	120	140	4×14	170	19	39	38	15	38	15 <sup>f7</sup>	143	M20	50	100	30
GOM 66LM	729	183	220	30	202	315	110	10	150	170	60	80	120	140	4×14	195	19	39	38	15	38	15 <sup>f7</sup>	167	M20	50	150	42
GOM610LM	978	175	220	30	202	*427	*215	*5	*715	*170	—	*70	*342.5×2	*140	*6×14	*200	19	39	38	15	38	15 <sup>f7</sup>	170	M20	50	250	65
GOM 84LM	590	200	220	30	250	372	140	9	116	226	64	148	190	200	4×14	180	19	39	38	15	38	15 <sup>f7</sup>	150	M20	50	100	50
GOM 86LM	697	180	220	30	250	367	135	9	146	226	94	148	120	200	4×14	195	19	39	38	15	38	15 <sup>f7</sup>	163	M20	50	150	55
GOM810LM	895	175	220	30	250	397	155	12	255	260	175	164	215	220	4×18	195	19	39	38	15	38	15 <sup>f7</sup>	165	M20	50	250	80
GOM1210LM	1201	175	400	55	352	505	210	12.7	240	310	140	194	190	260	4×21	335	30	65	60	26	60	25 <sup>f7</sup>	277	M38×1.5	76	250	130
GOM1510LM	1234	175	400	60	455	595	250	16	240	460	120	310	180	400	4×28	345	30	65	60	26	60	25 <sup>f7</sup>	290	M38×1.5	77	250	200

Note 1) Channel base is provided for models GOM410LM & 610LM. (\* Represents the figures with channel base.)

2) Numbers in "weight" is for G · O · Motor with G · O · Pilot.

### Ordering Information

When ordering, please specify :

- 1) Model number
- 2) For springless type
  - Direct or reverse acting.
- 3) Supply air pressure
- 4) Optional accessories

**YAMATAKE**