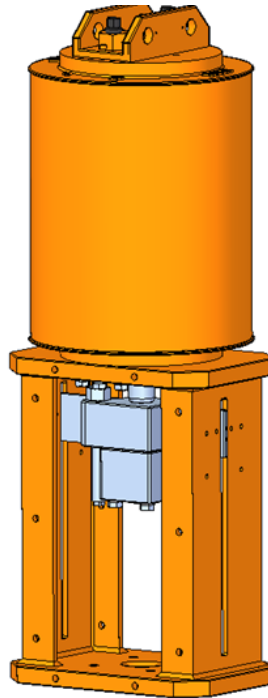


GBL Series Pneumatic Double Acting Linear Actuator

Technical Data Sheet



Introduction

GBL pneumatic double-acting linear actuator utilizes G-Series' pneumatic power module to provide the linear motion. GBL series actuator has the same reliability as G-Series actuator. It is suitable for automating most types of rising stem valves in safety shutdown and control applications. The GBL actuators are manufactured in accordance with strict-quality standards and assure reliability and safety in your specific service. Like the G-Series, the GBL actuators are backed by a five-year material and workmanship warranty, the best in the industry.

Types of applications

On-Off, Emergency Shutdown Device (ESD), and Modulating Service for: Oil and gas, LNG terminal, power generation, water distribution, water and wastewater treatment, petrochemical, mining and minerals, industrial process.

Automated Packages

Emerson offers complete valve operating systems for final valve control. At our World Area Configuration Centers (WACC), we combine the GBL linear actuator and controls into a single system. We can integrate a complete control offerings including world-class PlantWeb® digital plant architecture. We also supply BettiSystems™ pre-engineered and documented controls packages available at our WACC; reducing lead times, simplifying purchasing and easing installation.

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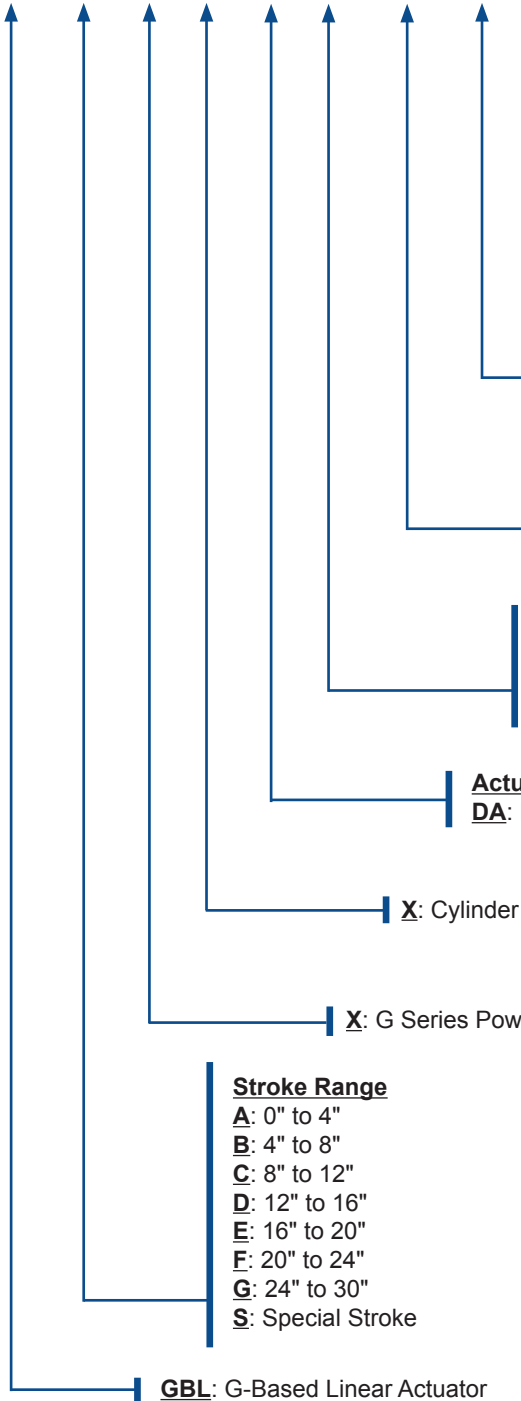
Data sheet

Sheet No.: GBL 1.01 Rev. A
Date: June 2014

GBL-Series

Model Identification

GBL **B** **X** **X** **DA** **PD** **11** **DMP**



Options

- DMP:** Hydraulic Power
- M11:** Hydraulic Manual Override
- ENP:** Electroless Nickel-Plated Cylinder Bore
- SST:** Stainless Steel Drive Rod
- SSC:** Stainless Steel Cylinder
- NACE:** In Accordance with NACE MR 0175 per ES 38
- PED:** PED Certificate
- 33:** High-Speed Operation
- 43:** Anti-Corrosion Trim
- FKM:** Fluorocarbon Seal
- NDT:** Non-Destructive Testing per ES 31

Temperature Trim

- 00:** Standard Temperature
- 10:** High Temperature
- 11:** Low Temperature

Pedestal

- PX:** Without Pedestal and Connector
- PD:** With Pedestal and Connector
- PS:** Special Pedestal

Actuator Type

- DA:** Double Acting

X: Cylinder Size (Per Applicable Size Range)

X: G Series Power Module

Stroke Range

- A:** 0" to 4"
- B:** 4" to 8"
- C:** 8" to 12"
- D:** 12" to 16"
- E:** 16" to 20"
- F:** 20" to 24"
- G:** 24" to 30"
- S:** Special Stroke

GBL: G-Based Linear Actuator

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Date: June 2014

GBL-Series

Basic Features

Design:

- Designed to operate on most types of valves: wedge-gate, slab-gate, knife-gate, globe, tank, and rising-stem ball and plug
- PED 97/23/EC compliant to meet the stringent requirements of pressure mounting vessels
- Meet both IP66 and IP67M specifications for submergence and high-pressure water deluge test, this offers superior water ingress and corrosion protection
- SIL3 Suitability
- ATEX Certified
- Other applications include dampers and louvers

Construction:

- **Dual Internal Tie Bars:**
GBL pneumatic cylinder features internal high-strength alloy-steel tie bars. The internal tie bars are protected from corrosion and physical damage while also centering the piston in the cylinder bore, thus preventing metal to metal contact.
- **Corrosion Resistance:**
GBL linear actuator incorporates protective internal and external coatings, assuring the actuator's reliable operation in the harshest of environments. The actuator exhibits excellent corrosion resistance, confirmed by Salt Spray Testing per ASTM B117 criteria.
- Available in double-acting configurations only
- Xylan-coated cylinder
- Two-way travel stop adjustment

Cylinder Size:

- 5 to 52 inch

Thrust Output:

- 738 to 241,386 lbs / 3,282 to 1,073,738 N

Operating Pressure:

- 40 to 200 psig / 3 to 13.8 bar

Trim:

- Standard Temperature Trim: -20°F to +200°F / -29°C to +93°C (Non-PED and PED)
- High Temperature Trim: 0°F to +350°F / -18°C to +177°C (Non-PED and PED)
- Low Temperature Trim: -40°F to +150°F / -40°C to +66°C (Non-PED)
- Please consult factory for PED

Control Accessories:

- Power supply filter and/or pressure regulator and relief valve
- Solenoid switching valve, AC or DC coil, with CSA, UL or ATEX electrical certification
- 3, 4, or 5-way local auto/manual selector valve
- High or low-static pressure pilot, single or dual setpoint
- Pneumatic positioner or controller; analog or digital
- Pneumatic switching relay, volume booster and/or flow control valve
- Mechanical or proximity type electric position switch for discrete (SPDT, DPDT) position indication

Standards and Certification:

- Conformité Européenne (CE)
- ISO 9001 Certification by Lloyd's Register Quality Assurance (LRQA) and ANSI-ASQ National Accreditation Board (ANAB)
- American Bureau of Shipping (ABS)
- Pressure Equipment Directive PED/97/23/EC
- This product is only intended for use in large-scale fixed installations excluded from the scope of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2).

Warranty:

- 5 Years

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Sheet No.: GBL 2.01 Rev. A
Date: June 2014

GBL-Series

Size Range

GBL MODEL	CYLINDER SIZE [INCH]	AVAILABLE STROKE LENGTH [INCH]							MAXIMUM OPERATING PRESSURE [PSI]
		A 0 to 4	B 4 to 8	C 8 to 12	D 12 to 16	E 16 to 20	F 20 to 24	G 24 to 30	
GBLx01	05	•	•	•	---	---	---	---	200
	07	•	•	•	---	---	---	---	185
	08	•	•	•	---	---	---	---	192
	09	•	•	•	---	---	---	---	151
GBLx03	10	•	•	•	•	---	---	---	150
GBLx04	12	•	•	•	•	•	---	---	200
	14	•	•	•	•	•	---	---	194
	16	•	•	•	•	•	---	---	148
GBLx05	20	•	•	•	•	•	•	•	123
GBLx07	24	•	•	•	•	•	•	•	159
	28	•	•	•	•	•	•	•	129
GBLx08	32	•	•	•	•	•	•	•	144
	36	•	•	•	•	•	•	•	120
	40	•	•	•	•	•	•	•	102
GBLx10	T32	---	•	•	•	•	•	•	107
	T36	---	•	•	•	•	•	•	91
GBLx13	44	---	---	---	•	•	•	•	122
	52	---	---	---	•	•	•	•	81
	T40	---	---	---	•	•	•	•	99
	T44	---	---	---	•	•	•	•	86
	T52	---	---	---	•	•	•	•	65

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Data sheet

Sheet No.: GBL 3.01 Rev. A

Date: June 2014

GBL-Series

Double Acting Thrust Output Data

GBL MODEL	CYLINDER SIZE [INCH]		PRESSURE [PSI]									MOP
			50	60	70	80	100	120	150	175	200	
GBLx01	05	Extend	868	1,041	1,215	1,388	1,735	2,082	2,603	3,037	3,471	200
		Retract	832	999	1,165	1,332	1,665	1,998	2,497	2,914	3,330	
	07	Extend	1,717	2,060	2,403	2,747	3,433	4,120	5,150	6,008		185
		Retract	1,681	2,018	2,354	2,690	3,363	4,035	5,044	5,885		
	08	Extend	2,222	2,667	3,111	3,555	4,444	5,333	6,666	7,778		192
		Retract	2,187	2,624	3,062	3,499	4,374	5,248	6,560	7,654		
	09	Extend	2,823	3,388	3,952	4,517	5,646	6,775	8,469			151
		Retract	2,788	3,345	3,903	4,460	5,575	6,690	8,363			
GBLx03	10	Extend	3,717	4,461	5,204	5,948	7,435	8,921	11,152			150
		Retract	3,662	4,394	5,127	5,859	7,324	8,789	10,986			
GBLx04	12	Extend	5,302	6,363	7,423	8,484	10,605	12,726	15,907	18,559	21,210	200
		Retract	5,223	6,268	7,312	8,357	10,446	12,535	15,669	18,280	20,892	
	14	Extend	6,447	7,737	9,026	10,315	12,894	15,473	19,341	22,565		194
		Retract	6,368	7,641	8,915	10,188	12,735	15,282	19,103	22,287		
	16	Extend	8,508	10,210	11,912	13,613	17,017	20,420				148
		Retract	8,429	10,115	11,800	13,486	16,858	20,229				
GBLx05	20	Extend	13,439	16,127	18,815	21,503	26,878	32,254				123
		Retract	13,298	15,957	18,617	21,277	26,596	31,915				
GBLx07	24	Extend	19,492	23,391	27,289	31,188	38,984	46,781	58,477			159
		Retract	19,313	23,176	27,039	30,901	38,627	46,352	57,940			
	28	Extend	27,550	33,060	38,570	44,080	55,100	66,120				129
		Retract	27,371	32,845	38,319	43,793	54,742	65,690				
GBLx08	32	Extend	35,977	43,173	50,368	57,564	71,955	86,346				144
		Retract	35,707	42,849	49,990	57,132	71,415	85,698				
	36	Extend	45,588	54,706	63,823	72,941	91,176	109,411				120
		Retract	45,321	54,385	63,449	72,513	90,641	108,770				
	40	Extend	56,332	67,599	78,865	90,131	112,664					102
		Retract	56,065	67,278	78,491	89,704	112,130					
GBLx10	T32	Extend	56,191	67,429	78,667	89,905	112,382					107
		Retract	55,818	66,981	78,145	89,308	111,635					
	T36	Extend	71,293	85,552	99,811	114,069						91
		Retract	70,920	85,104	99,288	113,472						
GBLx13	44	Extend	90,520	108,624	126,728	144,832	181,040	217,248				122
		Retract	90,147	108,176	126,205	144,234	180,293	216,352				
	52	Extend	67,889	81,467	95,045	108,623						81
		Retract	67,324	80,789	94,253	107,718						
	T40	Extend	95,033	114,039	133,046	152,052						99
		Retract	94,467	113,361	132,254	151,148						
	T44	Extend	111,463	133,755	156,048	178,340						86
		Retract	110,897	133,077	155,256	177,436						
	T52	Extend	135,213	162,256								65
		Retract	134,648	161,577								

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Data sheet

Sheet No.: GBL 4.01 Rev. A

Date: June 2014

GBL-Series

Maximum Volume Displacement

GBL MODEL	CYLINDER SIZE [INCH]	STROKE LENGTH [INCH]						
		A	B	C	D	E	F	G
		0 to 4	4 to 8	8 to 12	12 to 16	16 to 20	20 to 24	24 to 30
GBLx01	5	89	167	246	---	---	---	---
	7	174	328	482	---	---	---	---
	8	227	428	629	---	---	---	---
	9	287	541	796	---	---	---	---
GBLx03	10	354	668	982	1,296	---	---	---
GBLx04	12	509	962	1,414	1,867	2,319	---	---
	14	693	1,309	1,925	2,540	3,156	---	---
	16	905	1,710	2,514	3,318	4,122	---	---
GBLx05	20	1,414	2,671	3,927	5,184	6,441	7,697	9,582
GBLx07	24	2,036	3,846	5,655	7,465	9,274	11,084	13,798
	28	2,771	5,234	7,697	10,160	12,623	15,086	18,781
GBLx08	32	3,620	6,837	10,054	13,271	16,488	19,705	24,530
	36	4,581	8,652	12,724	16,795	20,867	24,938	31,046
	40	5,655	10,682	15,708	20,735	25,762	30,788	38,328
GBLx10	T32	---	13,673	20,107	26,541	32,975	39,409	49,060
	T36	---	17,304	25,447	33,590	41,733	49,876	62,091
GBLx13	44	---	---	19,007	25,089	31,171	37,254	46,377
	52	---	---	26,547	35,042	43,537	52,032	64,774
	T40	---	---	31,416	41,470	51,523	61,576	76,655
	T44	---	---	38,014	50,178	62,342	74,507	92,753
	T52	---	---	53,093	70,083	87,073	104,063	129,547

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Sheet No.: GBL 5.01 Rev. A

Date: June 2014

GBL-Series

Estimated Weight [lbs]

Power Module

GBL MODEL	CYLINDER SIZE [INCH]	AVAILABLE STROKE [INCH]						
		A 0 to 4	B 4 to 8	C 8 to 12	D 12 to 16	E 16 to 20	F 20 to 24	G 24 to 30
GBLx01	05	34	39	44	49	54	59	67
	07	59	68	77	87	96	105	119
	08	52	62	72	82	92	102	117
	09	63	73	84	95	106	117	134
GBLx03	10	79	91	102	114	126	138	156
GBLx04	12	101	116	131	146	161	176	199
	14	151	167	183	199	215	231	255
	16	141	158	176	193	211	228	254
GBLx05	20	254	278	303	327	352	376	413
GBLx07	24	508	538	569	600	630	661	707
	28	641	688	736	783	830	878	949
GBLx08	32	1,032	1,090	1,148	1,206	1,264	1,322	1,410
	36	1,375	1,459	1,543	1,627	1,711	1,795	1,921
	40	1,542	1,633	1,724	1,815	1,906	1,997	2,134
GBLx10	T32	1,985	2,110	2,235	2,359	2,484	2,608	2,791
	T36	2,563	2,740	2,916	3,092	3,269	3,445	3,705
GBLx13	44	2,141	2,270	2,398	2,527	2,655	2,783	2,976
	52	2,993	3,129	3,264	3,400	3,535	3,671	3,874
	T40	3,525	3,754	3,982	4,210	4,439	4,667	5,002
	T44	3,906	4,148	4,391	4,633	4,876	5,118	5,475
	T52	5,430	5,687	5,944	6,201	6,458	6,714	7,092

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Sheet No.: GBL 5.02 Rev. A

Date: June 2014

GBL-Series

Estimated Weight [lbs] (*continuation*)

Pedestal Module

GBL MODEL	CYLINDER SIZE [INCH]	AVAILABLE STROKE [INCH]						
		A 0 to 4	B 4 to 8	C 8 to 12	D 12 to 16	E 16 to 20	F 20 to 24	G 24 to 30
GBLx01	05	38	43	47	---	---	---	---
	07	38	43	47	---	---	---	---
	08	38	43	47	---	---	---	---
	09	38	43	47	---	---	---	---
GBLx03	10	116	121	126	---	---	---	---
GBLx04	12	136	136	136	136	136	---	---
	14	136	136	136	136	136	---	---
	16	136	136	136	136	136	---	---
GBLx05	20	338	358	378	398	418	438	468
GBLx07	24	438	458	478	498	518	538	568
	28	438	458	478	498	518	538	568
GBLx08	32	738	771	805	838	871	905	955
	36	738	771	805	838	871	905	955
	40	738	771	805	838	871	905	955
GBLx10	T32	---	1,263	1,296	1,329	1,363	1,396	1,446
	T36	---	1,263	1,296	1,329	1,363	1,396	1,446
GBLx13	44	---	---	1,912	1,946	1,979	2,012	2,062
	52	---	---	1,912	1,946	1,979	2,012	2,062
	T40	---	---	1,912	1,946	1,979	2,012	2,062
	T44	---	---	1,912	1,946	1,979	2,012	2,062
	T52	---	---	1,912	1,946	1,979	2,012	2,062

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Sheet No.: GBL 5.03 Rev. A

Date: June 2014

GBL-Series**Estimated Weight [lbs] (continuation)****Total**

GBL MODEL	CYLINDER SIZE [INCH]	AVAILABLE STROKE [INCH]						
		A 0 to 4	B 4 to 8	C 8 to 12	D 12 to 16	E 16 to 20	F 20 to 24	G 24 to 30
GBLx01	05	73	82	92	---	---	---	---
	07	97	111	125	---	---	---	---
	08	90	105	120	---	---	---	---
	09	101	117	132	---	---	---	---
GBLx03	10	195	212	229	246	---	---	---
GBLx04	12	238	253	268	283	298	---	---
	14	288	304	320	336	351	---	---
	16	263	279	294	310	326	---	---
GBLx05	20	593	637	682	726	771	815	882
GBLx07	24	947	997	1,048	1,098	1,149	1,200	1,276
	28	1,080	1,147	1,215	1,282	1,349	1,417	1,518
GBLx08	32	1,771	1,862	1,953	2,045	2,136	2,228	2,365
	36	2,114	2,231	2,348	2,466	2,583	2,700	2,876
	40	2,280	2,405	2,529	2,654	2,778	2,903	3,089
GBLx10	T32	---	3,373	3,531	3,689	3,847	4,005	4,237
	T36	---	3,924	4,118	4,313	4,507	4,702	4,990
GBLx13	44	---	---	4,311	4,473	4,634	4,796	5,039
	52	---	---	5,177	5,346	5,515	5,684	5,937
	T40	---	---	5,895	6,156	6,418	6,680	7,065
	T44	---	---	6,303	6,579	6,855	7,131	7,538
	T52	---	---	7,857	8,147	8,437	8,727	9,155

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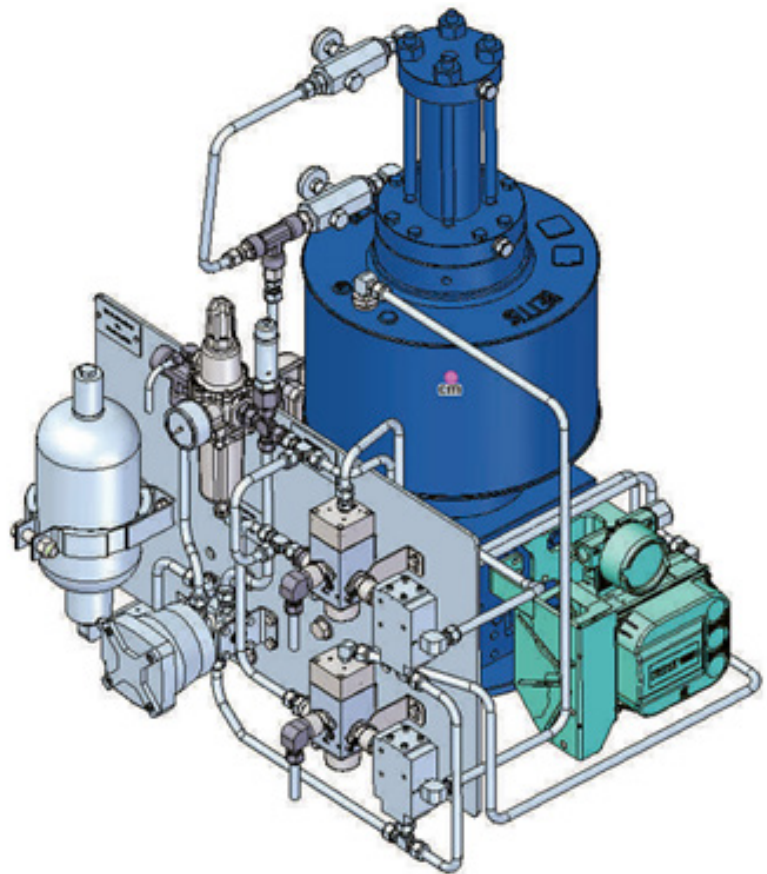
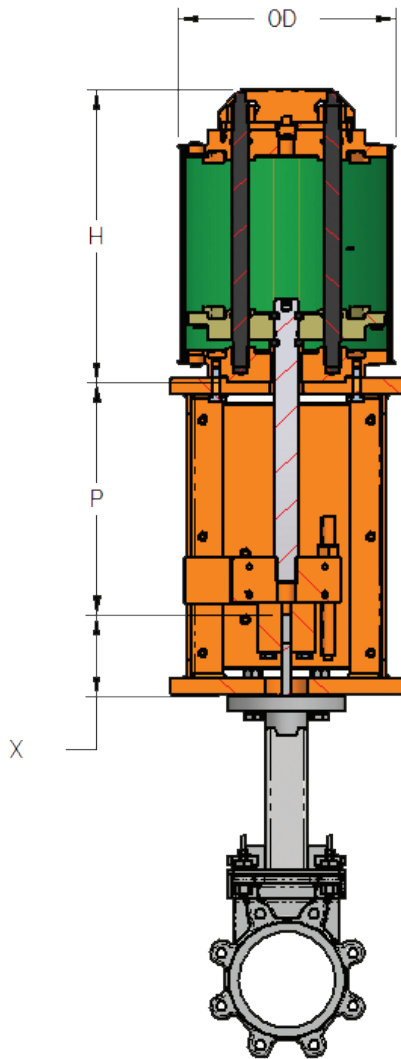
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Date: June 2014

GBL-Series

Dimensions



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Sheet No.: GBL 6.02 Rev. A

Date: June 2014

GBL-Series

Dimensions *(continuation)*

GBL MODEL	CYLINDER SIZE [INCH]	DIMENSIONS [INCH]														OD
		H							P							
		STROKE							STROKE							
		A	B	C	D	E	F	G	A	B	C	D	E	F	G	
GBLx01	05	11	15	19	23	27	31	37	15	19	23	27	31	35	41	10
	07	11	15	19	23	27	31	37	15	19	23	27	31	35	41	10
	08	13	17	21	25	29	33	39	15	19	23	27	31	35	41	10
	09	13	17	21	25	29	33	39	15	19	23	27	31	35	41	10
GBLx03	10	13	17	21	25	29	33	39	16	20	24	28	32	36	42	11
GBLx04	12	14	18	22	26	30	34	40	16	20	24	28	32	36	42	14
	14	13	17	21	25	29	33	39	16	20	24	28	32	36	42	14
	16	14	18	22	26	30	34	40	16	20	24	28	32	36	42	16
GBLx05	20	16	20	24	28	32	36	42	17	21	25	29	33	37	43	20
GBLx07	24	18	22	26	30	34	38	44	18	22	26	30	34	38	44	24
	28	18	22	26	30	34	38	44	18	22	26	30	34	38	44	28
GBLx08	32	19	23	27	31	35	39	45	19	23	27	31	35	39	45	32
	36	18	22	26	30	34	38	44	19	23	27	31	35	39	45	36
	40	18	22	26	30	34	38	44	19	23	27	31	35	39	45	40
GBLx10	T32	33	41	49	57	65	73	85	20	24	28	32	36	40	46	32
	T36	33	41	49	57	65	73	85	20	24	28	32	36	40	46	36
GBLx13	44	23	27	31	35	39	43	49	22	26	30	34	38	42	48	44
	52	24	28	32	36	40	44	50	22	26	30	34	38	42	48	52
	T40	36	44	52	60	68	76	88	22	26	30	34	38	42	48	40
	T44	35	43	51	59	67	75	87	22	26	30	34	38	42	48	44
	T52	40	48	56	64	72	80	92	22	26	30	34	38	42	48	52

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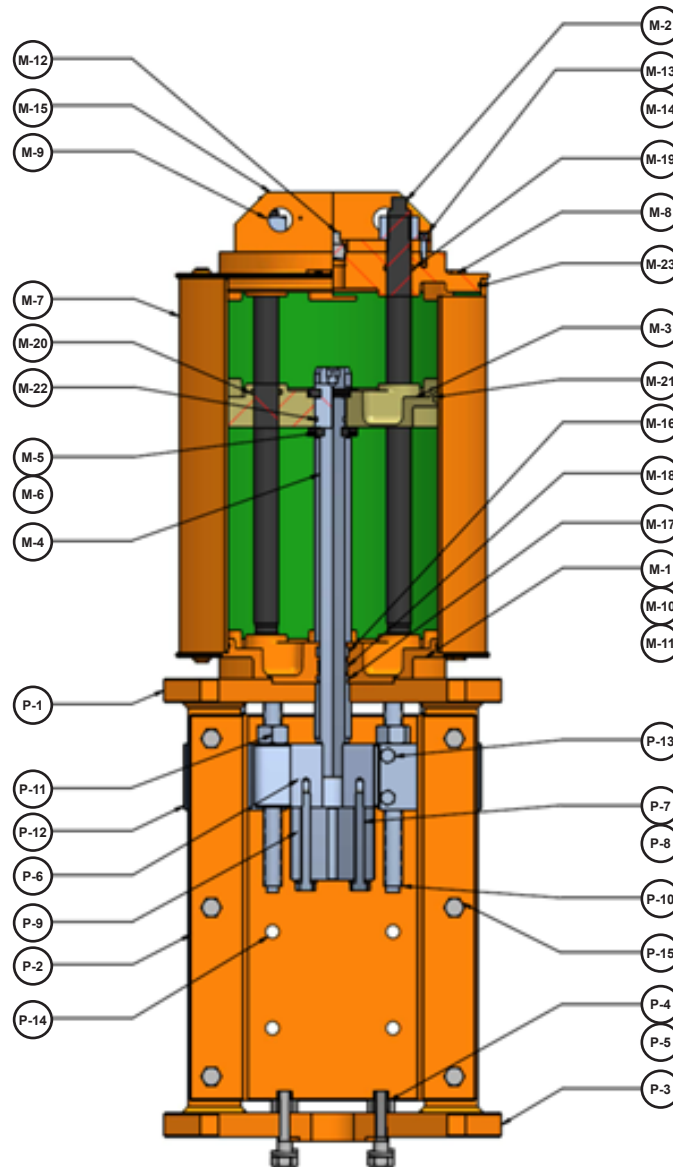
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Data sheet

Sheet No.: GBL 7.01 Rev. A
Date: June 2014

GBL-Series

Standard Materials



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Data sheet

Sheet No.: GBL 7.02 Rev. A

Date: June 2014

GBL-Series**Standard Materials (continuation)**

ITEM	DESCRIPTION	MATERIAL	QUANTITY	NOTE
MODULE				
M-1	Inner End Cap	ASTM A-395	1	
M-2	Tie Bar	AISI 4140/4150	2	
M-3	Piston	ASTM A-395	1	
M-4	Piston Rod	ASTM A564, 17-4PH	1	
M-5	Split Ring	AISI 4140/4150	4	
M-6	Retainer Ring	Stainless Steel	2	
M-7	Cylinder	ASTM A -53 Grade B	1	
M-8	Outer End Cap	ASTM A-395	1	
M-9	Heavy Hex Nut	ASTM A-194 Grade 2H	2	
M-10	Hex Cap Screw	ASTM A-354 Grade BD	TBD	(S)
M-11	Lock Washer	Standard Steel Product	TBD	(S)
M-12	Pipe Plug	ASTM A-105	1	
M-13	Socket Cap Screw	ASTM A-574	2	
M-14	Lock Washer	Standard Steel Product	2	
M-15	Lifting Lug	ASTM A-588 Grade A	1	
M-16	Rod Wiper	Thermoplastic Elastomer	1	
M-17	Rod Bushing	Acetal	1	
M-18	Polypak Seal	Thermoplastic Elastomer	1	
M-19	O-ring Seal	Nitrile	2	
M-20	T-Seal	Nitrile	2	
M-21	D-Seal	Nitrile	1	
M-22	O-ring Seal	Nitrile	1	
M-23	O-ring Seal	Nitrile	2	
PEDESTAL				
P-1	Top Plate	ASTM A-516 Grade 70	1	
P-2	C-Channel	ASTM A-588 Grade A	2	
P-3	Bot Plate	ASTM A-516 Grade 70	1	
P-4	Hex Cap Screw	ASTM A-354 Grade BD	TBD	(V)
P-5	Lock Washer	Standard Steel Product	TBD	(V)
P-6	Connector Body	AISI 4140/4150	1	
P-7	Hex Cap Screw	ASTM A-193 Grade B7	4	
P-8	Lock Washer	Standard Steel Product	4	
P-9	Stem Connector	AISI 4140/4150	1	
P-10	Stop Screw	ASTM A-193 Grade B7	4	
P-11	Heavy Hex Nut	ASTM A-194 Grade 2H	4	
P-12	Indicator Plate	AISI 4140/4150	2	
P-13	Hex Cap Screw	ASTM A-449 Type 1	4	
P-14	Cover Plate	ASTM A-36	2	
P-15	Hex Cap Screw	ASTM A-449 Type 1	12	
Notes:				
(S) - Quantity is dependent on size of module				
(V) - Quantity is dependent on valve				

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