

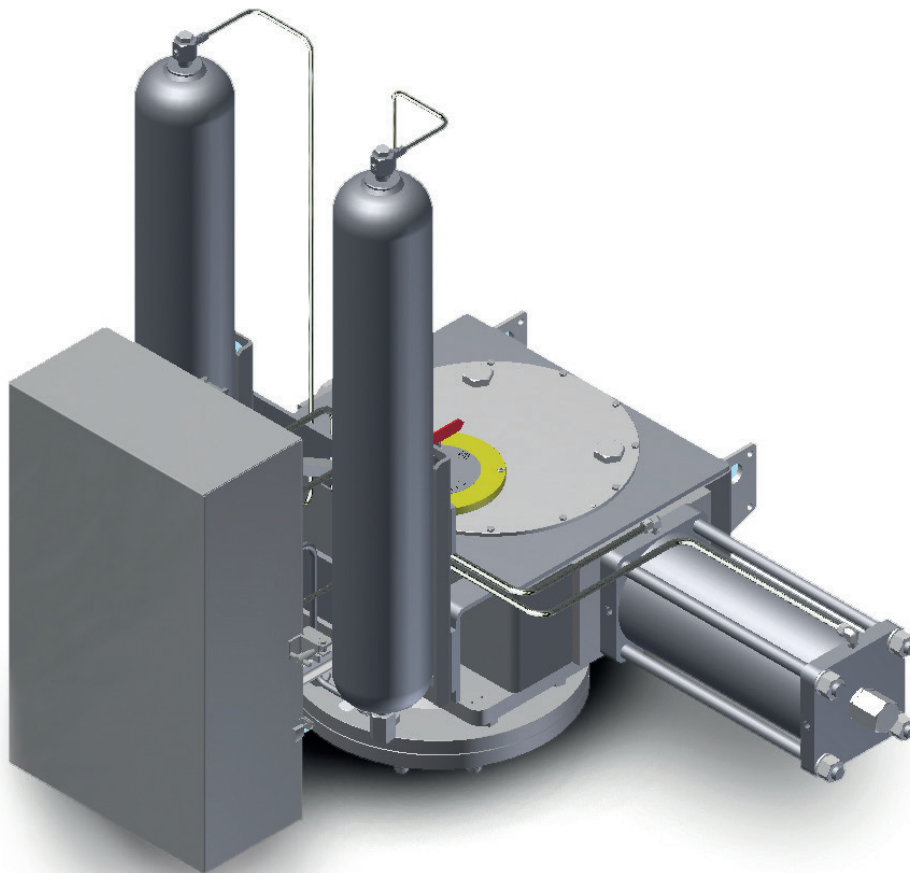
A Long Experience in Energy Equipment and One Goal:

The Customer's Satisfaction



AUTOMATION • DIVISION

RANGER



Gas Hydraulic Valve Operator

Rugged, reliable controls are at the heart of any good actuator.

In the pipeline business, dependable automated valves are the key to delivering product to your customers around the clock.

Valvitalia, a world leader in valves and valve automation, is building a new generation of Gas Hydraulic Actuators aimed at the daily needs of the North American Pipelines.

We have collaborated with pipeliners and industry experts to develop an actuator that employs many of the time tested and trusted features that pipeliners have come to expect on a daily basis.

The Valvitalia **RANGER SERIES** Gas/Hydraulic Actuator delivers the rugged, reliable and easy to operate features that pipeliners have demanded.

Frame

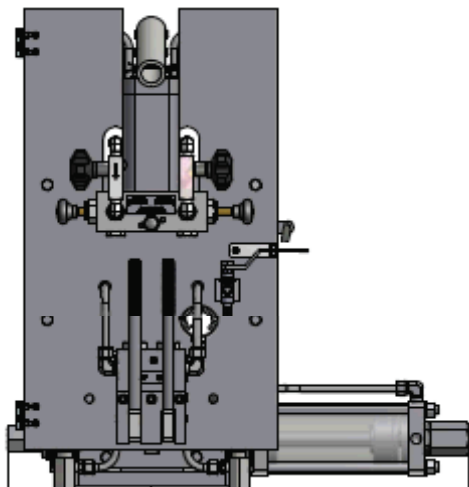
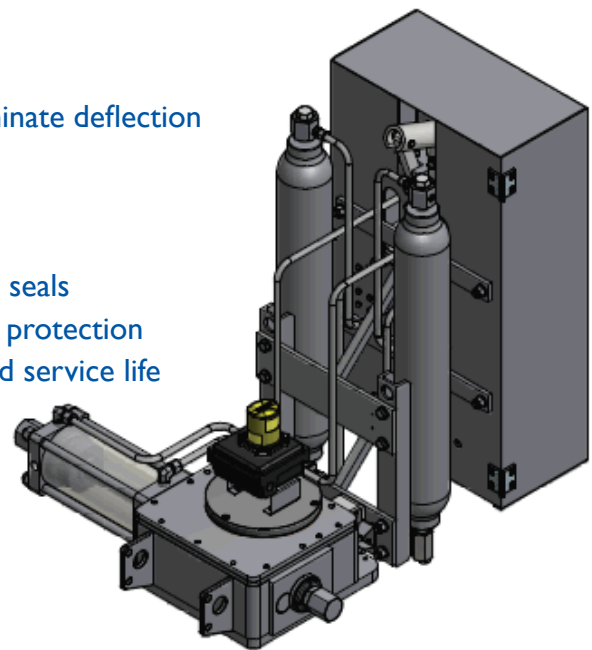
- Weatherproof carbon steel frame with relief valve
- Heavy duty carbon steel Scotch Yoke mechanism
- Oversized alloy steel hard chromed side-load bar, to eliminate deflection
- NAMUR Mounting pad for limit switch

Hydraulic Cylinder

- High Pressure cylinder and piston design with directional seals
- Seamless carbon steel for superior sealing and corrosion protection
- Self-lubricating PTFE composite guide sleeve for extended service life

Gas/Hydraulic Tanks

- ASME U-Stamped (Section VIII, Div. I)
- Dip-stick and drains for easy maintenance



Hand Pump – Manual Override

- High stroke displacement for quick response
- Self-Neutralizing for safety of personnel
- Independent, fully adjustable speed controls

Gas Control Block

- High pressure (1500 psig rated,) High Flow
- Direct acting high pressure poppet valve design
- High pressure instrument gas connections for easy addition of controls for remote operation.

Standard features

- Torque output up to 5,000,000 lb-ins
- ASME U-stamped gas/hydraulic pressure vessels built to Section VIII, Div. I
- Heavy Duty stainless steel backed lockable control cabinet
- Centrally mounted Gas Control Block with high pressure, high flow, direct acting poppets (Rated for 1500 psig)
- Power-gas pressure gauge to monitor supply pressures
- Easy access and independently adjustable speed controls for open / close
- Easy to maintain stainless steel power-gas and instrument gas filters
- High displacement self-neutralizing hand pump for manual operation
- Controls rated up to 1500 psig reducing the need for regulators
- Travel stroke adjustment (+/-) 5 degrees up to Frame 16, (+/-) 3 degrees from Frame 20 and larger
- Weather proof housing rated to IP65 according to IEC 60529
- NAMUR limitswitch mounting pad and drive

Optional features

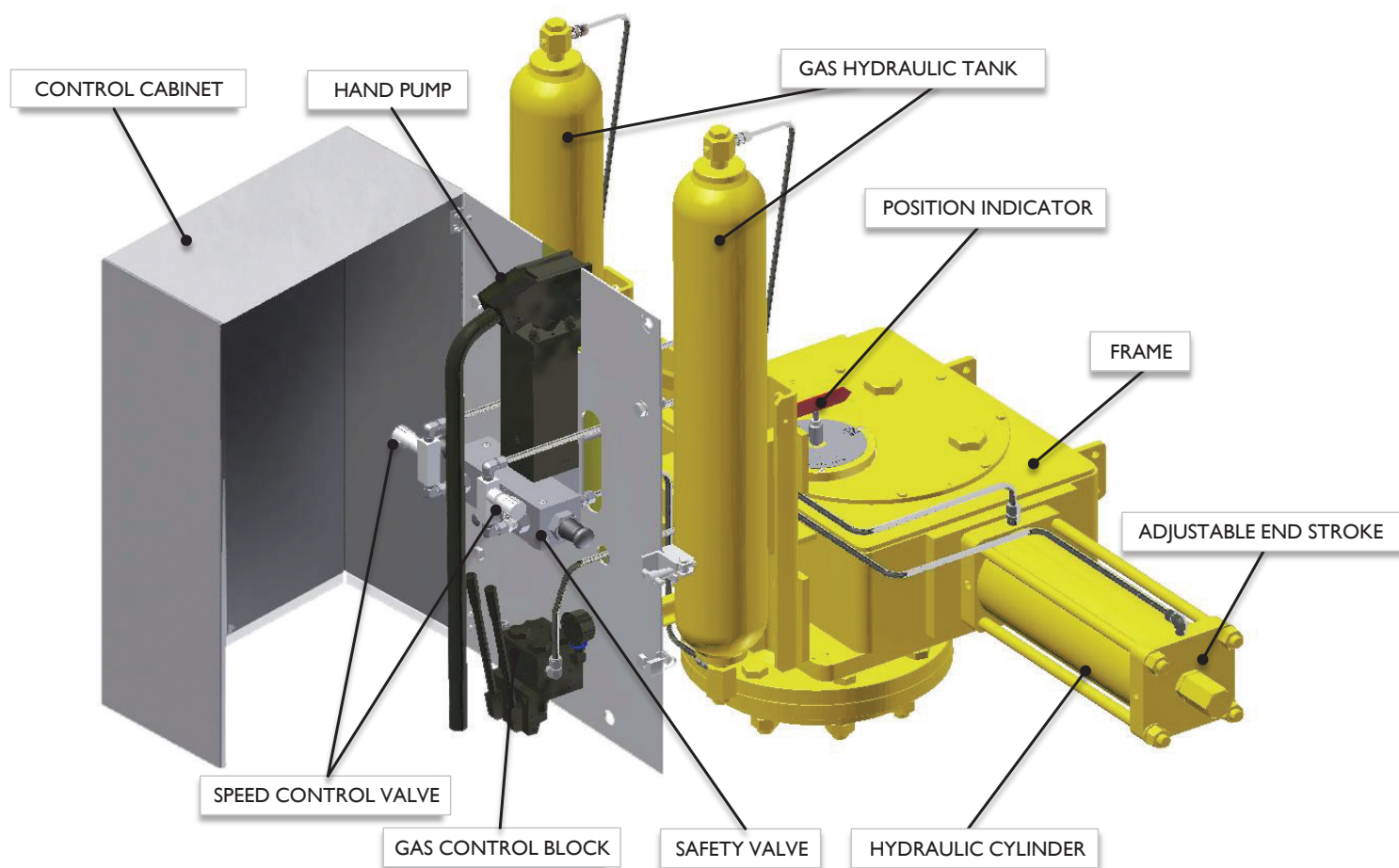
- Local / Remote selector valve for operator safety during maintenance
- Reserve Gas volume tank U-stamped to ASME VIII Div. I
- Torque limiting devices independently adjustable
- Filter dehydrators, condensate separator, and molecular sieve for severe service
- Pneumatic line break system

Typical Control System Applications

- Station Unit Valves
- Over pressure Protection (OPP) Valves
- Main Line Valves
- Station and Unit Blow Down Valves
- Fuel Gas Valves
- Station By-Pass Valves
- Launcher / Receiver Valves
- Automatic and Remote Shut-off Valves (ASV's & RSV's)

Torque Range	Pressure Range	Temperature rating
Output up to 5,000,000 lb-ins	145 psig to 1500 psig 10 bar to 103 bar	-50 °F to 176 °F -46 °C to 80 °C

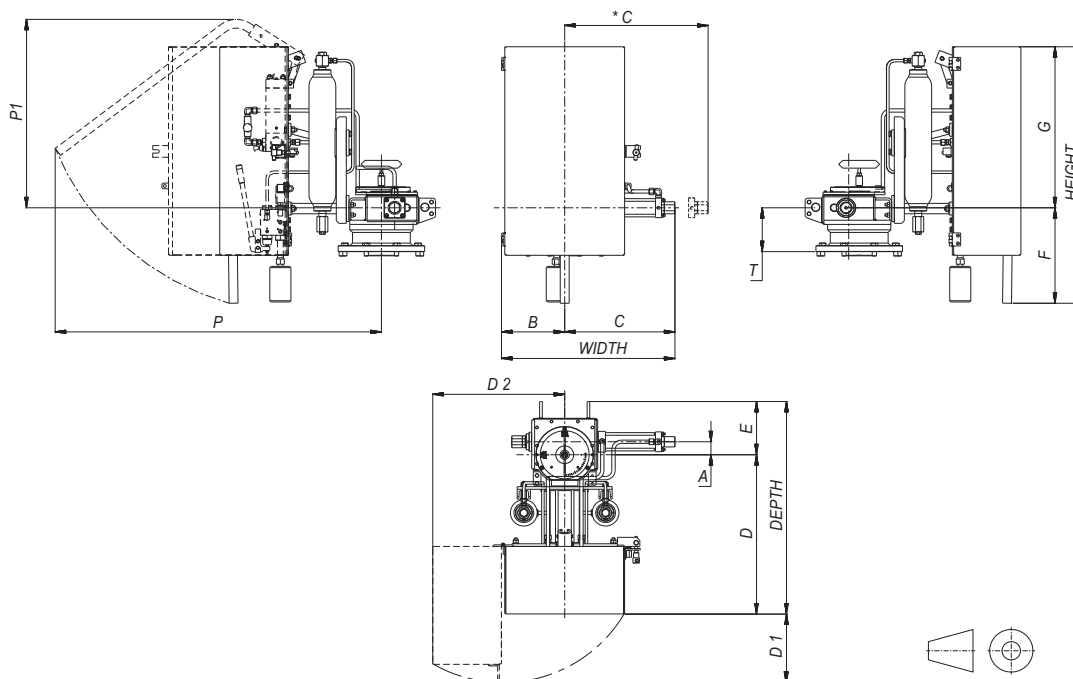
GAS OVER OIL ASSEMBLY



GAS HYDRAULIC ACTUATOR RANGER TECHNICAL FEATURES AND PERFORMANCE

Frame Size	Actuator Model	Torque [lb.in/psig]			Max Stem Acceptance [in]	Structural Torque [lb.in]	Oil Volume for Each Displacement [in ³]	Pump Strokes
		$\alpha=0^\circ$	$\alpha=45^\circ$	$\alpha=90^\circ$				
05	GOM - 05 - 050 - I	8	4	7	1.57	15930	18.3	6
07	GOM - 07 - 050 - I	11	6	9	2.50	51330	18.3	6
07	GOM - 07 - 075 - I	24	13	21	2.50	51330	48.8	16
07	GOM - 07 - 100 - I	43	23	38	2.50	51330	79.3	25
10	GOM - 10 - 100 - I	68	35	61	3.50	103545	115.9	37
10	GOM - 10 - 120 - I	98	50	87	3.50	103545	164.7	53
10	GOM - 10 - 135 - I	124	64	111	3.50	103545	207.4	67
10	GOM - 10 - 160 - I	175	90	155	3.50	103545	282.8	94
13	GOM - 13 - 120 - I	138	72	120	4.50	154875	213.5	69
13	GOM - 13 - 135 - I	174	91	152	4.50	154875	268.4	86
13	GOM - 13 - 160 - I	245	128	213	4.50	154875	378.2	122
13	GOM - 13 - 175 - I	293	153	255	4.50	154875	457.5	147
13	GOM - 13 - 200 - I	382	199	333	4.50	154875	591.7	190
16	GOM - 16 - 135 - I	214	115	190	4.75	450000	335.5	29
16	GOM - 16 - 160 - I	301	161	266	4.75	450000	469.7	41
16	GOM - 16 - 175 - I	360	193	318	4.75	450000	567.3	49
16	GOM - 16 - 200 - I	471	252	416	4.75	450000	738.1	64
16	GOM - 16 - 235 - I	650	347	574	4.75	450000	1018.7	89
20	GOM - 20 - 160 - I	376	204	337	6.25	1260000	542.9	47
20	GOM - 20 - 175 - I	450	244	403	6.25	1260000	652.7	57
20	GOM - 20 - 200 - I	588	318	527	6.25	1260000	854.0	74
20	GOM - 20 - 235 - I	812	439	727	6.25	1260000	1177.3	102
20	GOM - 20 - 255 - I	956	517	857	6.25	1260000	1384.7	120
20	GOM - 20 - 275 - I	1112	602	996	6.25	1260000	1610.4	140
20	GOM - 20 - 300 - I	1324	716	1186	6.25	1260000	1921.5	167
24	GOM - 24 - 275 - I	1354	722	1211	8.07	1858500	1939.8	169
24	GOM - 24 - 300 - I	1611	859	1441	8.07	1858500	2305.8	200
24	GOM - 24 - 330 - I	1949	1040	1744	8.07	1858500	2793.8	243

GAS OVER OIL ACTUATOR GOM TYPE: OVERALL DIMENSIONS - IMPERIAL/METRIC UNITS



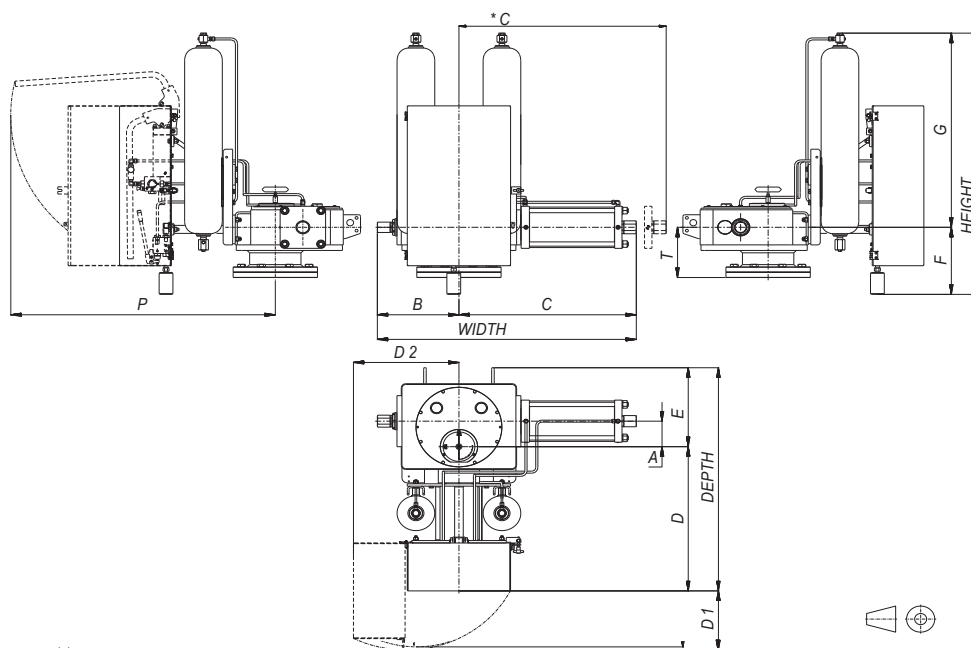
Tolerance $\pm 10\%$

*Space Required For Disassembly

IMPERIAL
METRIC

Frame	Actuator Model	Width in/mm	Height in/mm	Depth in/mm	Weight lb/kg	A in/mm	B in/mm	C in/mm	*C in/mm	D in/mm	D1 in/mm	D2 in/mm	E in/mm	F in/mm	G in/mm	P in/mm	PI in/mm	T in/mm
5	GOM - 05 - 050 - I	25.9	38.9	32.2	352.7	2.0	9.4	16.5	25.6	24.2	10.4	19.7	8.1	14.5	24.4	48.7	28.6	6.7
		658	988	819	160	50	240	418	650	614	264	500	205	368	620	1238	726	169
7	GOM - 07 - 050 - I	31.0	38.9	36.4	418.9	2.8	10.1	20.9	32.7	25.7	10.4	19.7	10.6	14.5	24.4	50.3	28.6	6.7
		788	988	924	190	70	256	532	831	654	264	500	270	368	620	1278	726	169
	GOM - 07 - 075 - I	31.4	38.9	36.4	429.9	2.8	10.1	21.3	32.7	25.7	10.4	19.7	10.6	14.5	24.4	50.3	28.6	6.7
		797	988	924	195	70	256	541	831	654	264	500	270	368	620	1278	726	169
	GOM - 07 - 100 - I	32.2	45.4	36.4	463.0	2.8	10.1	22.2	33.1	25.7	10.4	19.7	10.6	14.5	30.9	50.3	-	6.7
10	GOM - 10 - 100 - I	81.9	115.3	92.4	210	70	256	563	840	654	264	500	270	368	785	1278	-	169
		39.7	38.9	41.2	672.4	3.9	12.8	26.9	41.3	27.6	10.4	19.7	13.6	14.7	24.2	52.1	-	9.3
	GOM - 10 - 120 - I	100.9	98.8	104.6	305	100	325	684	1050	700	264	500	346	374	614	1324	-	236
		40.4	41.2	41.2	716.5	3.9	12.8	27.6	42.7	27.6	10.4	19.7	13.6	14.8	26.4	52.1	-	9.3
	GOM - 10 - 135 - I	102.6	104.7	104.6	325	100	325	701	1085	700	264	500	346	376	671	1324	-	236
		40.7	49.6	41.2	782.6	3.9	12.8	27.9	42.7	27.6	10.4	19.7	13.6	14.8	34.8	52.1	-	9.3
	GOM - 10 - 160 - I	103.4	126.0	104.6	355	100	325	709	1085	700	264	500	346	376	884	1324	-	236
		41.2	54.3	41.2	837.8	3.9	12.8	28.4	42.7	27.6	10.4	19.7	13.6	14.8	39.5	52.1	-	9.3
	GOM - 10 - 160 - I	104.7	137.9	104.6	380	100	325	722	1085	700	264	500	346	376	1003	1324	-	236
		47.5	48.7	46.3	1036.2	5.1	15.3	32.2	50.0	29.2	10.4	19.7	17.1	14.8	33.9	53.7	-	11
13	GOM - 13 - 120 - I	120.7	123.7	117.6	470	130	389	818	1270	741	264	500	435	375	862	1365	-	279
		47.8	54.3	46.3	1179.5	5.1	15.3	32.4	50.0	29.2	10.4	19.7	17.1	14.8	39.5	53.7	-	11
	GOM - 13 - 135 - I	121.3	137.8	117.6	535	130	389	824	1270	741	264	500	435	375	1003	1365	-	279
		48.3	61.0	48.1	1289.7	5.1	15.3	33.0	50.0	30.9	17.1	19.7	17.1	14.8	46.3	55.6	-	11
	GOM - 13 - 160 - I	122.8	155.0	122.1	585	130	389	839	1270	786	435	500	435	375	1175	1411	-	279
		49.4	61.0	48.1	1311.7	5.1	15.3	34.1	51.6	30.9	10.4	19.7	17.1	14.8	46.3	55.6	-	11
	GOM - 13 - 175 - I	125.4	155.0	122.1	595	130	389	865	1310	786	264	500	435	375	1175	1411	-	279
		49.8	50.7	50.1	1366.9	5.1	15.3	34.5	52.6	33.0	10.4	19.7	17.1	14.8	35.9	57.5	-	11
	GOM - 13 - 200 - I	126.6	128.7	127.2	620	130	389	877	1335	837	264	500	435	375	912	1461	-	279

GAS OVER OIL ACTUATOR GOM TYPE: OVERALL DIMENSIONS - IMPERIAL/METRIC UNITS



Tolerance ± 10%

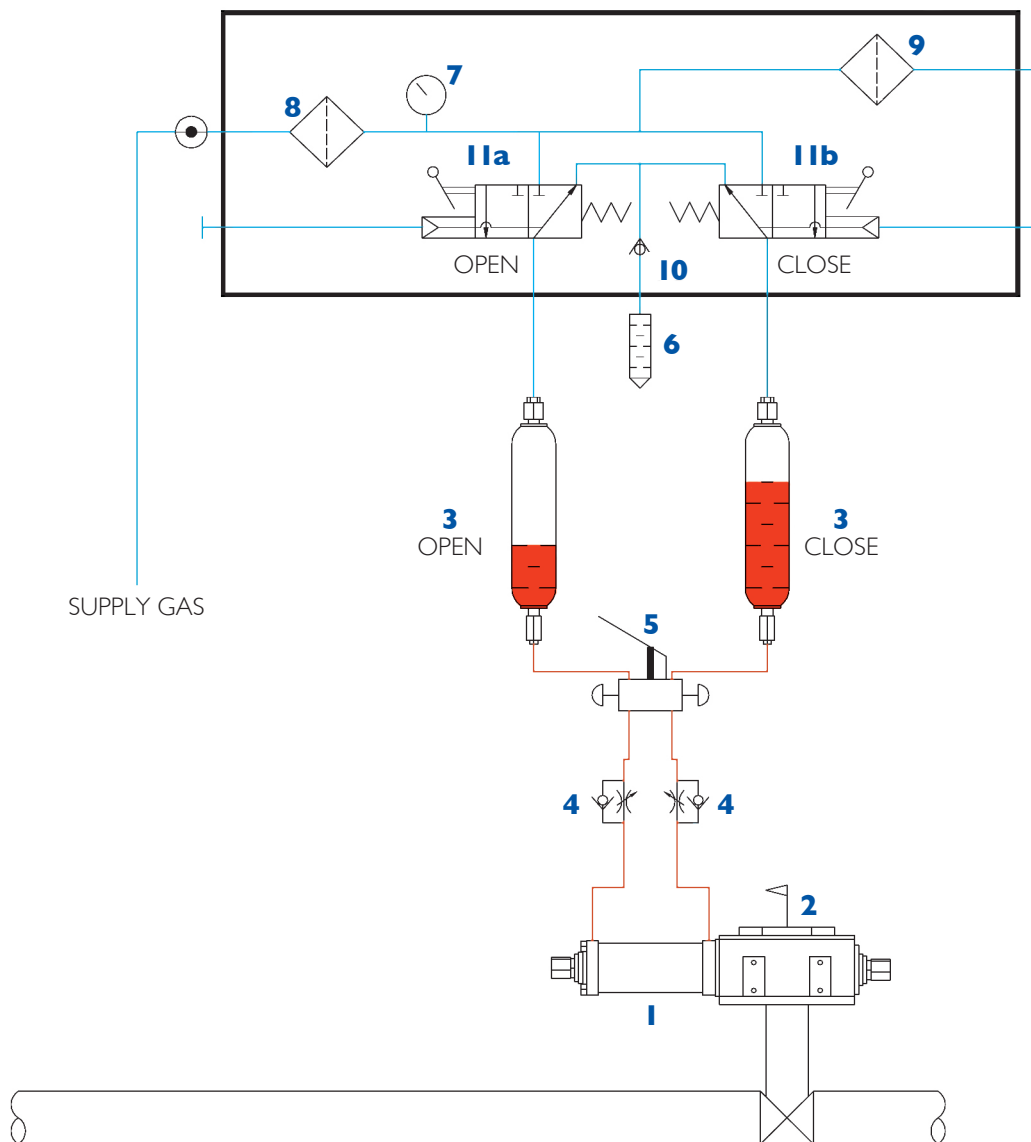
*Space Required For Disassembly

IMPERIAL

METRIC

Frame	Actuator Model	Width in/mm	Height in/mm	Depth in/mm	Weight lb/kg	A in/mm	B in/mm	C in/mm	*C in/mm	D in/mm	D1 in/mm	D2 in/mm	E in/mm	F in/mm	G in/mm	P in/mm	T in/mm
16	GOM - 16 - 135 - I	57.1 1450	59.8 1519	53.0 1346	1653.5 750	6.3 160	18.7 474	38.4 976	59.3 1505	33.5 851	14.6 371	24.1 613	19.5 495	16.6 421	43.2 1098	58.4 1483	12.4 315
	GOM - 16 - 160 - I	58.3 1482	59.8 1519	53.0 1346	1697.6 770	6.3 160	18.7 474	39.7 1008	61.0 1550	33.5 851	14.6 371	24.1 613	19.5 495	16.6 421	43.2 1098	58.4 1483	12.4 315
	GOM - 16 - 175 - I	58.3 1482	59.8 1519	53.3 1354	1719.6 780	6.3 160	18.7 474	39.7 1008	61.0 1550	33.8 859	14.6 371	24.1 613	19.5 495	16.6 421	43.2 1098	58.4 1483	12.4 315
	GOM - 16 - 200 - I	59.3 1505	51.3 1302	55.2 1401	1807.8 820	6.3 160	18.7 474	40.6 1031	61.4 1560	35.7 906	14.6 371	24.1 613	19.5 495	16.6 421	34.7 881	60.6 1538	12.4 315
	GOM - 16 - 235 - I	59.3 1505	64.6 1642	55.2 1401	1962.1 890	6.3 160	18.7 474	40.6 1031	61.8 1570	35.7 906	14.6 371	24.1 613	19.5 495	16.6 421	48.1 1221	60.6 1538	12.4 315
	GOM - 20 - 160 - I	66.1 1680	64.9 1649	64.0 1626	2392.0 1085	7.9 200	21.2 539	44.9 1141	67.5 1715	39.8 1011	15.6 397	24.1 613	24.2 615	16.7 425	48.2 1224	63.6 1616	15.3 389
	GOM - 20 - 175 - I	66.6 1691	65.0 1651	64.0 1626	2314.9 1050	7.9 200	21.2 539	45.4 1152	68.3 1735	39.8 1011	15.6 397	24.1 613	24.2 615	16.7 425	48.3 1226	63.6 1616	15.3 389
	GOM - 20 - 200 - I	67.1 1704	65.0 1651	64.0 1626	2491.2 1130	7.9 200	21.2 539	45.9 1165	69.3 1760	39.8 1011	15.6 397	24.1 613	24.2 615	16.7 425	48.3 1226	63.6 1616	15.3 389
	GOM - 20 - 235 - I	67.1 1704	72.0 1830	64.0 1626	2601.5 1180	7.9 200	21.2 539	45.9 1165	71.7 1820	39.8 1011	15.6 397	24.1 613	24.2 615	16.7 425	55.3 1405	63.6 1616	15.3 389
	GOM - 20 - 255 - I	67.4 1712	79.1 2008	64.0 1626	2954.2 1340	7.9 200	21.2 539	46.2 1173	70.5 1790	39.8 1011	15.6 397	24.1 613	24.2 615	16.7 425	62.3 1583	63.6 1616	15.3 389
20	GOM - 20 - 275 - I	67.4 1712	74.1 1881	64.0 1626	3031.4 1375	7.9 200	21.2 539	46.2 1173	72.8 1850	39.8 1011	15.6 397	24.1 613	24.2 615	16.7 425	57.3 1456	63.6 1616	15.3 389
	GOM - 20 - 300 - I	67.8 1721	74.3 1888	64.3 1632	3408.3 1546	7.9 200	21.2 539	46.5 1182	75.4 1915	40.0 1017	15.6 397	24.1 613	24.2 615	16.7 425	57.6 1463	63.6 1616	15.3 389
	GOM - 24 - 275 - I	77.8 1977	74.3 1888	71.6 1819	4409.2 2000	9.4 240	25.3 642	52.6 1335	80.1 2035	42.6 1081	15.6 397	-	29.1 738	17.8 453	56.5 1435	66.0 1677	17.8 453
	GOM - 24 - 300 - I	80.2 2037	80.9 2055	71.6 1819	4629.7 2100	9.4 240	25.3 642	54.9 1395	82.7 2100	42.6 1081	15.6 397	-	29.1 738	17.8 453	63.1 1602	66.0 1677	17.8 453
	GOM - 24 - 330 - I	80.7 2049	75.6 1919	74.6 1896	5180.9 2350	9.4 240	25.3 642	55.4 1407	83.5 2120	45.6 1158	15.6 397	-	29.1 738	17.8 453	57.7 1466	68.0 1728	17.8 453

GAS HYDRAULIC ACTUATORS



- 1. Actuator
- 2. Position Indicator
- 3. Gas/Hydraulic Tank
- 4. Adjustable Speed Control
- 5. Hand Pump
- 6. Exhaust Muffler
- 7. Pressure Gauge
- 8. Power Gas Filter
- 9. Instrument Gas Filter
- 10. 5 psi Check Valve
- 11. Manual/Pilot Directional Valve

Legend

Field Connection

Pneumatic 

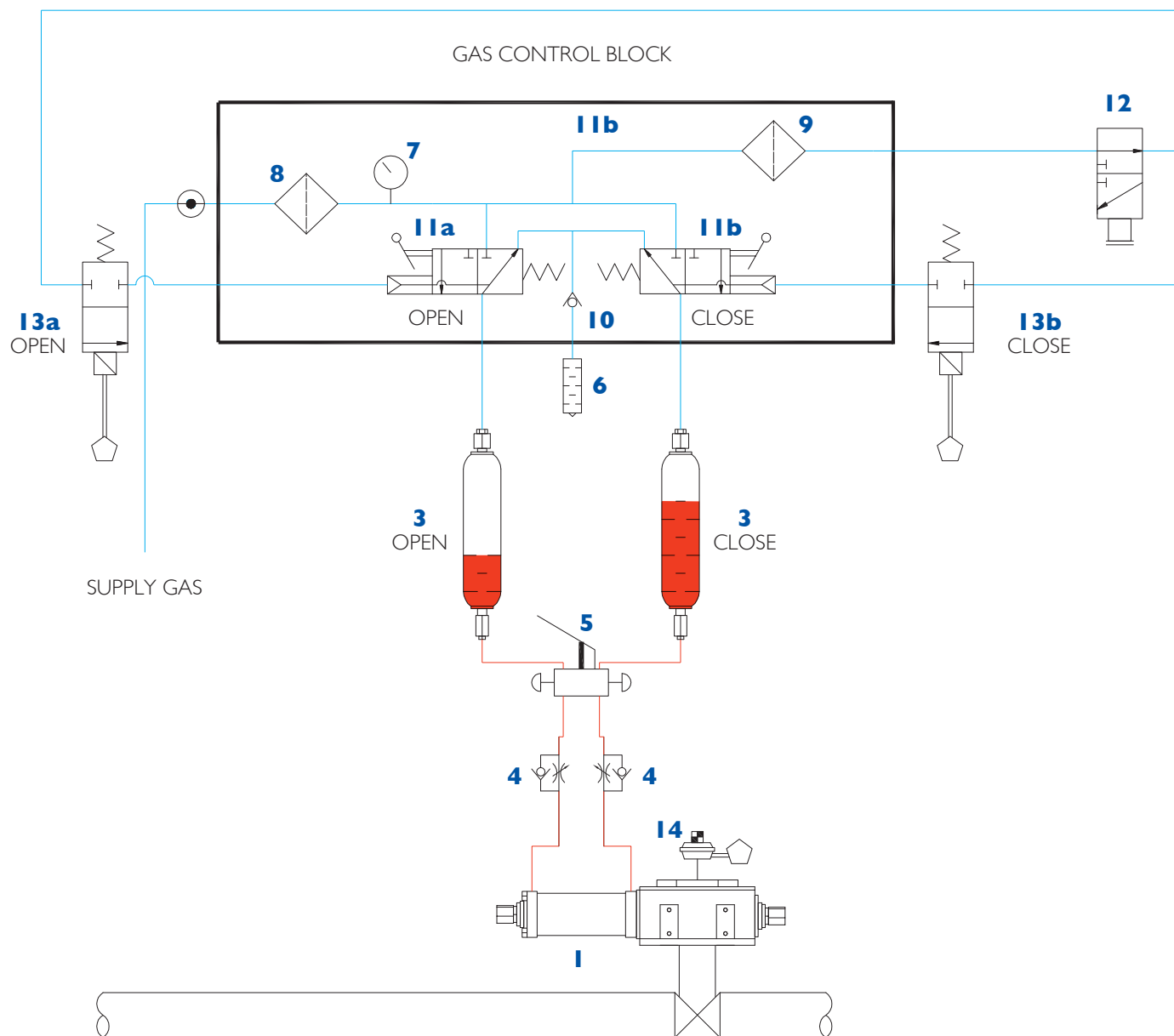
Hydraulic 

Manual Operation

Pull And Hold Lever 11A To Open

Pull And Hold Lever 11B To Close

GAS HYDRAULIC ACTUATORS



- 1.** Actuator
- 3.** Gas/Hydraulic Tank
- 4.** Adjustable Speed Control
- 5.** Hand Pump
- 6.** Exhaust Muffler
- 7.** Pressure Gauge
- 8.** Power Gas Filter
- 9.** Instrument Gas Filter
- 10.** 5 psi Check Valve
- 11.** Manual/Pilot Directional Valve
- 12.** Auto/Manual Selector Valve
- 13.** Two-Way N.C. Solenoid Valve
- 14.** Limit Switch

Legend

Field Connection

Pneumatic ———●———

Hydraulic ———●———

Electric ———●———

Manual Operation

Pull And Hold Lever 11A To Open

Pull And Hold Lever 11B To Close

Two-Way Electric Operation

Energize Solenoid 13A To Open

Energize Solenoid 13B To Close

Signal To Solenoids Must Be Removed At The End Of Stroke

Typical Control System Applications

- Station Unit Valves
- Over pressure Protection (OPP) Valves
- Main Line Valves
- Station and Unit Blow Down Valves
- Fuel Gas Valves
- Station By-Pass Valves
- Launcher / Receiver Valves
- Automatic and Remote Shut-off Valves (ASV's & RSV's)

Conversion Factors

Thrust	$N = lbf \times 4.448$	$lbf = N \times 0.2248$
Torque	$Nm = lb-in \times 0.1130$ $kgm = lb-in \times 0.01152$	$lb-in = Nm \times 8.85$ $lb-in = kgm \times 86.8$
Pressure	$kPa = psi \times 6.89$ $kg/cm^2 = psi \times 0.070$ $bar = psi \times 0.069$ $bar = kPa \times 0.01$	$psi = kPa \times 0.145$ $psi = kg/cm^2 \times 14.22$ $psi = bar \times 14.5$ $kPa = bar \times 100$
Mass	$kg = lb \times 0.454$	$N = lb \times 2.202$
Volume	$m^3 = ft^3 \times 0.02832$ $m^3 = in^3 \times 0.000016387$ $mm^3 = in^3 \times 16387$ $ml = in^3 \times 16.387$ $litre = U.S. Gallon \times 3.785$ $m^3 = U.S. Gallon \times 0.003785$	$ft^3 = m^3 \times 35.31 = U.S. Gallon \times 0.1337$ $in^3 = m^3 \times 61023 = U.S. Gallon \times 231$ $in^3 = m^3 \times 0.0000610$ $in^3 = ml \times 0.0610$ $U.S. Gallon = litre \times 0.2642$
Area	$m^2 = ft^2 \times 0.0929$ $cm^2 = in^2 \times 6.451$ $cm^2 = m^2 \times 10000$ $mm^2 = in^2 \times 645.16$	$ft^2 = m^2 \times 10.7639$ $in^2 = cm^2 \times 0.155$ $in^2 = mm^2 \times 0.00155$
Length	$m = ft \times 0.3048$ $mm = in \times 25.4$ $cm = m \times 100 = mm \times 0.1$	$ft = m \times 3.281$ $in = mm \times .0394$
Temperature	$^{\circ}C = \frac{(^{\circ}F - 32) \times 5}{9}$ $^{\circ}K = ^{\circ}C - 273$	$^{\circ}F = \frac{(^{\circ}C \times 9)}{5} + 32$ $^{\circ}R = ^{\circ}F + 460$



GAS HYDRAULIC ACTUATORS

RANGER

GAS HYDRAULIC SPECIFICATION SHEET

QTA QUOTE NO. _____	
CUSTOMER NAME _____	PROJECT _____
DESTINATION _____	TAG REFERENCE _____
SERVICE (ex. Mainline valve, compressor unit valve, station ESD valve, vent valve, etc.) _____	
QUANTITY _____	
VALVE INFORMATION	
VALVE SIZE _____	ANSI RATING _____
MANUFACTURER _____	MINIMUM PIPELINE PRESSURE _____
MODEL/FIGURE _____	MAXIMUM PIPELINE PRESSURE _____
VALVE TYPE ☐ BALL ☐ PLUG	MINIMUM WORKING TEMPERATURE (°F) _____
VALVE STATUS ☐ NEW ☐ EXISTING	MAXIMUM WORKING TEMPERATURE (°F) _____
STEM ORIENTATION ☐ VERTICAL ☐ HORIZONTAL	MAXIMUM DIFFERENTIAL PRESSURE _____
PIPELINE ORIENTATION ☐ HORIZONTAL ☐ VERTICAL	VALVE TORQUE SAFETY FACTOR _____
	VALVE TORQUE AT MINIMUM ΔP _____
	VALVE TORQUE AT MAXIMUM ΔP _____
ACTUATOR INFORMATION	
ACTUATOR MODEL _____	POWER GAS CONDITION =
PRIMARY POWER SOURCE ☐ PIPELINE ☐ OTHER	☐ SWEET ☐ SOUR ☐ OTHER _____
MAXIMUM SUPPLY PRESSURE _____ PSI	RESERVE POWER GAS TANK ☐ YES ☐ NO
MINIMUM SUPPLY PRESSURE _____ PSI	NUMBER OF STROKES REQUIRED _____
MINIMUM AMBIENT TEMPERATURE (°F) _____	CONTROLS/TANKS MOUNTED ☐ INTEGRAL ☐ REMOTE
ACTUATOR CONTROL & ACCESSORIES	
CONTROL FUNCTION OR SCHEMATIC _____	SPECIFY BELOW IF APPLICABLE:
☐ LOCAL/MANUAL OPERATION ONLY	SOLENOID ☐ YES SOLENOID VOLTAGE _____
☐ OPEN-CLOSE W/ SOLENOIDS-FAIL LAST	LIMITSWITCH ☐ YES MODEL _____
☐ OPEN-CLOSE W/ SOLENOIDS- FAILSAFE POSITION	NUMBER OF SWITCH ELEMENTS REQUIRED _____ FORM _____
☐ OPEN-CLOSE W/ SOLENOIDS-FAILSAFE ON PILOT LOSS	ELECTRICAL CLASS _____
☐ LOCAL MANUAL/FAILSAFE ON LOSS OF PILOT SIGNAL	LOW PRES. SHUTDOWN SETTING _____ PSIG DECREASING
☐ OPEN-CLOSE W/SOLENOIDS/FAILSAFE ON LOW PRESSURE	HIGH PRES. SHUTDOWN SETTING _____ PSIG INCREASING
☐ OPEN-CLOSE W/SOLENOIDS/FAILSAFE ON OVERPRESSURE	STATION PILOT SYSTEM PRESSURE _____ PSI
☐ TWO WAY MANUAL/FAILSAFE ON LOW PRESSURE	PILOT SETTING _____ PSI ☐ DECREASING ☐ INCREASING
☐ TWO WAY MANUAL/FAIL SAFE ON OVERPRESSURE	FAILSAFE POSITION ☐ CLOSED ☐ OPEN
☐ OTHER _____	EXTERNAL FILTER ☐ YES MODEL _____
	REGULATOR / RELIEF ☐ YES SETTING _____
	PAINT SYSTEM (if other than manu. Std.) _____
NOTES: _____	

*** SHADED AREAS INDICATE MINIMUM REQUIRED INFORMATION ***

A Long Experience in Energy Equipment and One Goal:

The Customer's Satisfaction

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