

Humphrey Guided Actuators have a simple, rugged design that provides:

- Superb accuracy
 - Long cycle life
 - Outstanding reliability

Two different types are available:

GC

An economical performer for simple push applications.

GS

An enhanced version with superior rigidity and accuracy, especially designed for pick-and-place applications. Supplied with shock absorbers and infinite stroke adjustment.

Each model is available in the following bore sizes and stroke lengths:

- Model 7 3/4-inch bore 8-inch maximum stroke
- Model 6 1-1/16-inch bore 12-inch maximum stroke
- Model 5 1-1/2-inch bore 16-inch maximum stroke

Humphrey Guided Actuators are easy to work with.

Easy to specify

- Three dimensional CAD drawings available.
- Units come in standard lengths and have full stroke adjustment.
- GS models have proximity switches and shock absorbers integrated into the actuator body for a clean, compact design.

Easy to order

- Simple part numbering system.
- Bumpers, collars, and piston magnets are standard on all models. Shock absorbers standard on GS Series.

Easy to install

- Precision-machined body and tool plates have key slots and a universal mounting hole pattern that allows easy, precise mounting to secondary actuators and equipment.
- A series of adapter plates is available to provide direct mounting with other Humphrey actuators.
- Can be mounted directly to many extruded framing systems.

Easy stroke adjustment

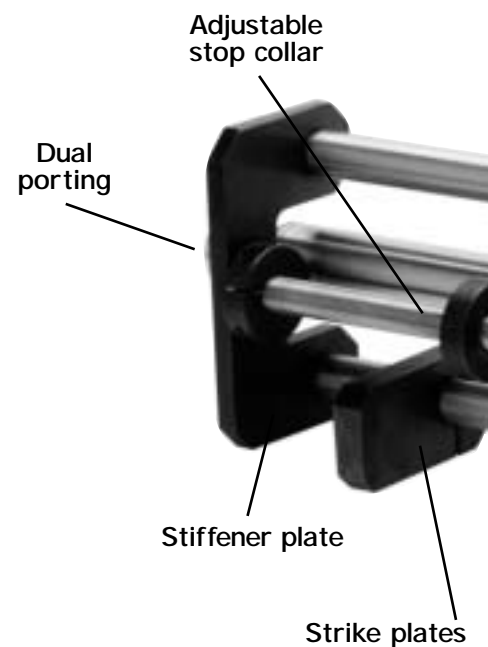
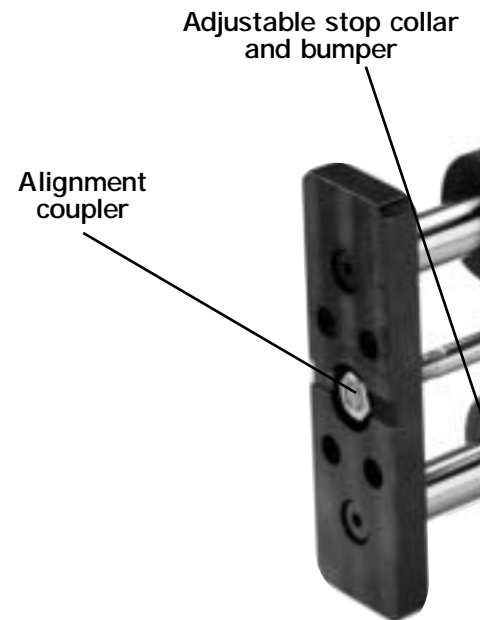
- Simply set front and rear stop collars.

Easy to mount and position sensor switches

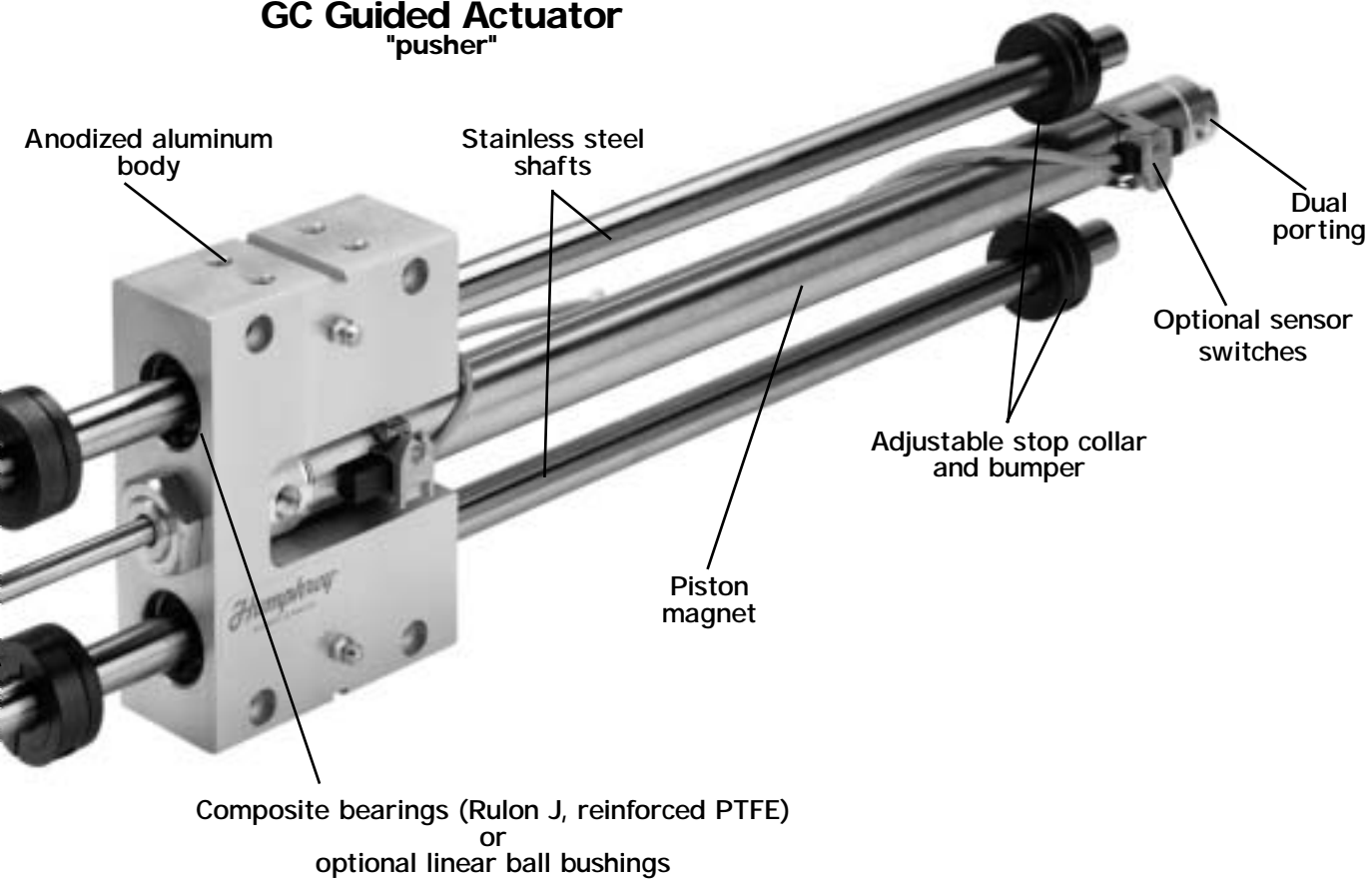
- PS2 and PS3 proximity sensor switches for GS models need not be repositioned when stroke is adjusted. This saves time during machine set up.

Easy to service

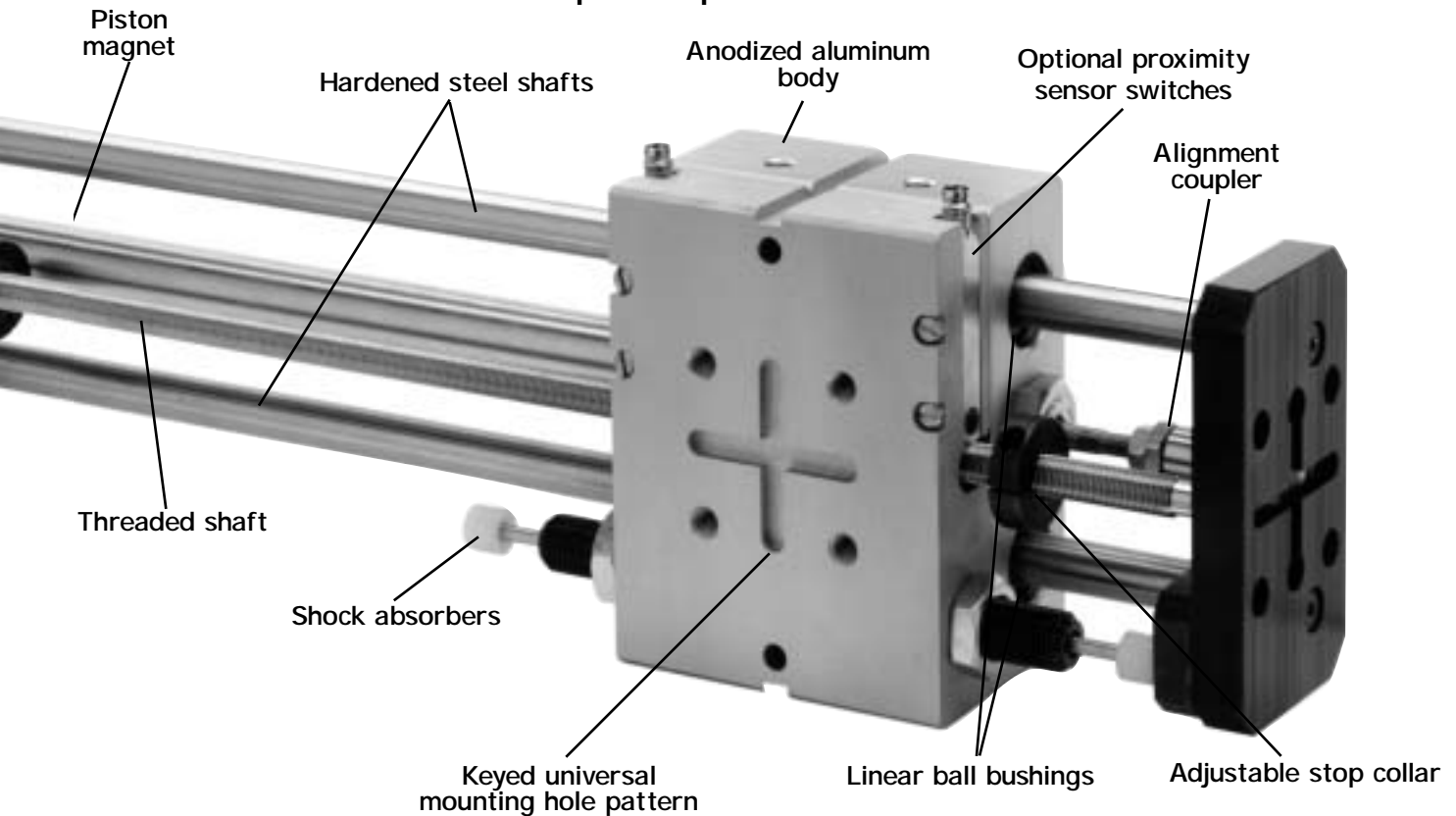
- Bearings, shock absorbers and proximity switches are standard industrial components and are widely available for fast actuator service or repair.



GC Guided Actuator "pusher"



GS Guided Actuator "pick-and-place"



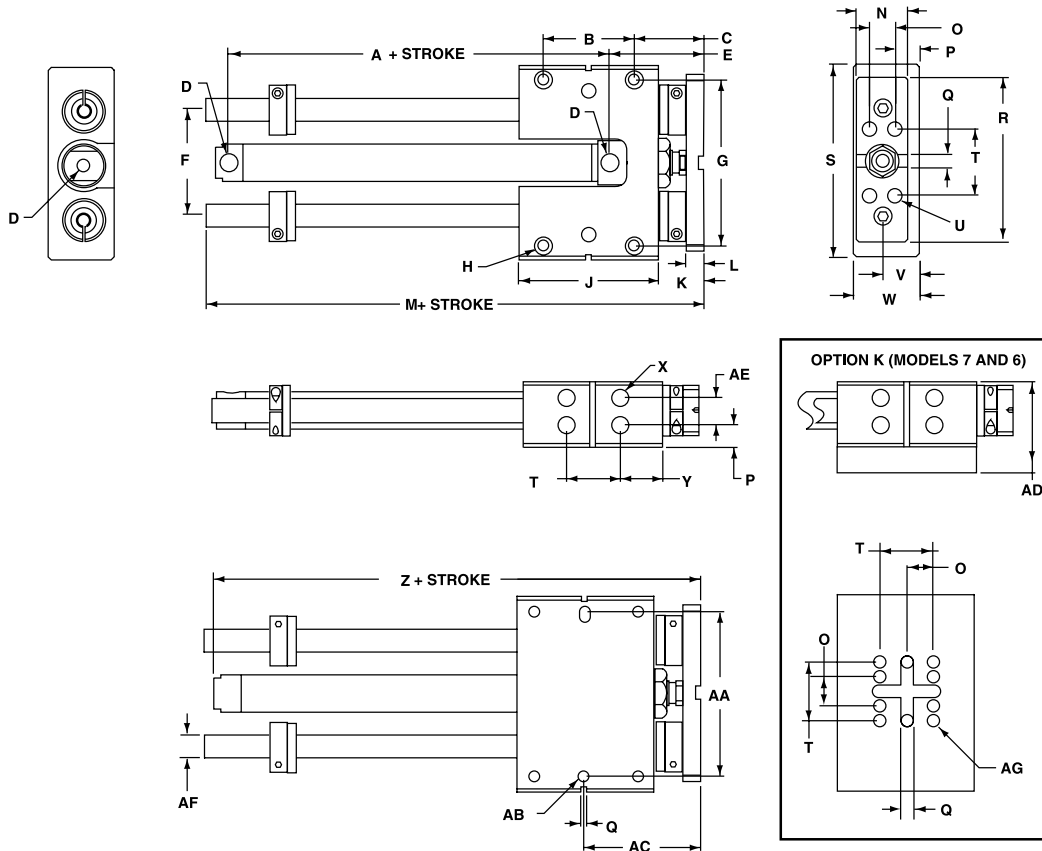
GC Guided Actuator

dimensions

GC General Specifications

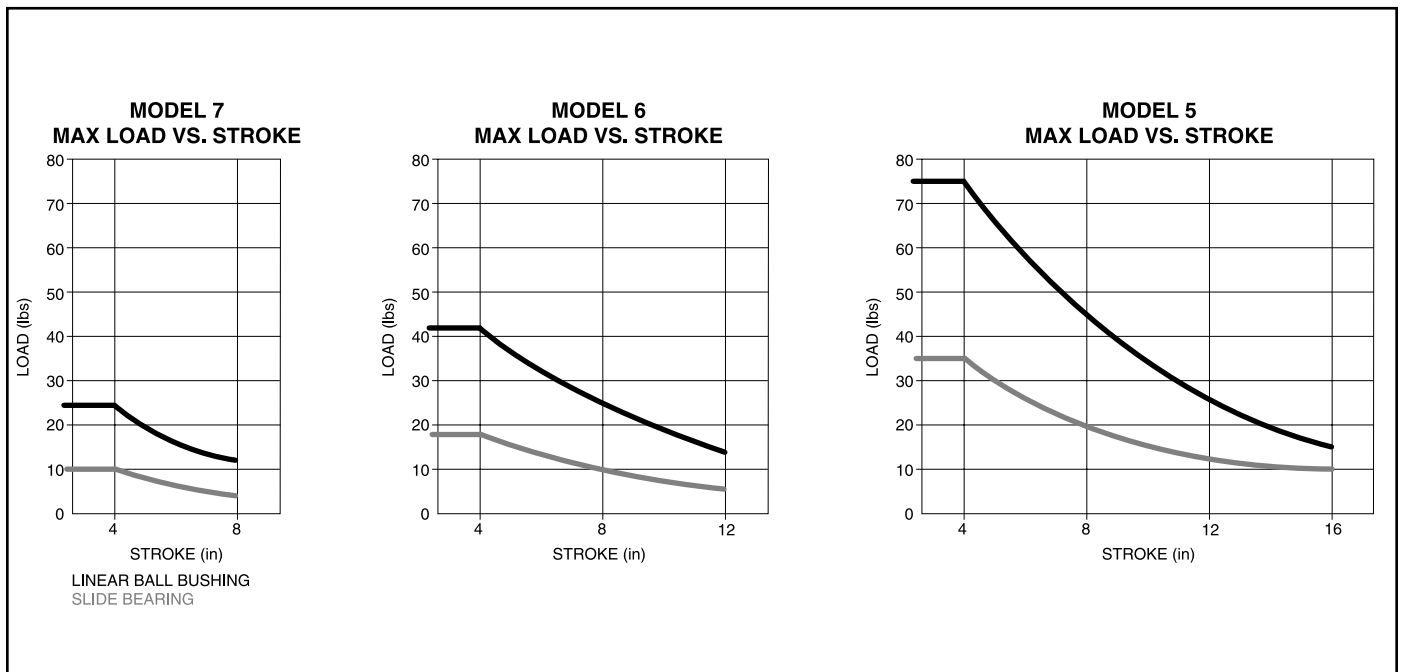
Model Number	Cylinder Bore in.	Available Stroke in.	Unit Weight lbs.	Add lbs. For Each 4 in. Of Stroke
7	3/4	4, 8	4.8	0.4
6	1 1/16	4, 8, 12	7.8	0.7
5	1 1/2	4, 8, 12, 16	13.0	1.0

- Air Operated • Double Acting • Temperature Range, -10° F to 160° F
- Operating Pressure, 30 to 120 psi. • Velocity, 4 to 20 in./sec.



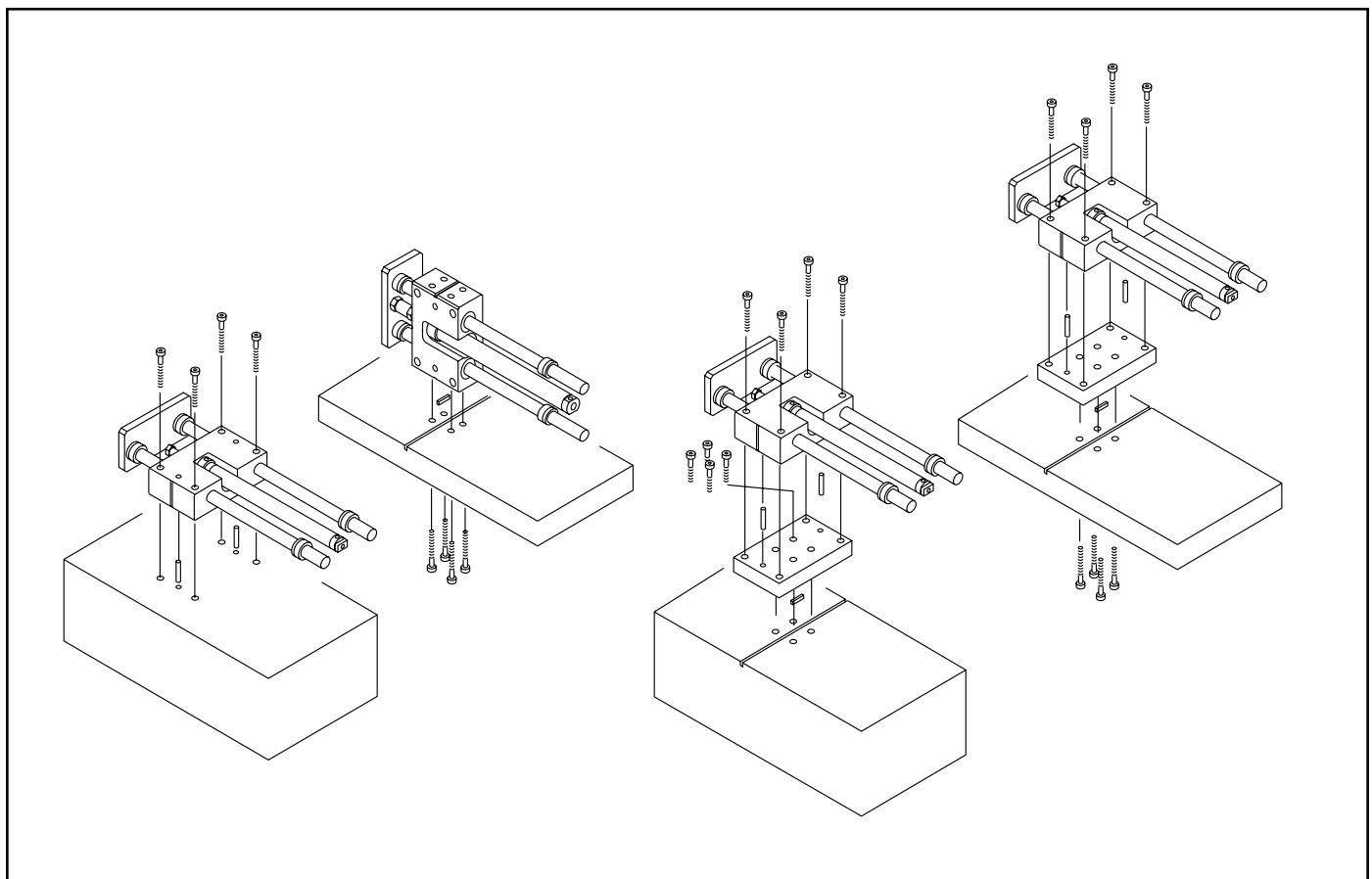
	A	B	C	D	E	F	G	H	
Model 7	2.697	2.250	1.640	1/8 - 27 NPSF	2.321	2.438	3.812	1/4 cap screw thru	
Model 6	2.518	2.500	1.812	1/8 - 27 NPSF	2.525	2.938	4.625	1/4 cap screw thru	
Model 5	2.478	4.000	2.313	1/8 - 27 NPSF	2.843	3.562	5.500	1/4 cap screw thru	
	J	K	L	M	N	O	P	Q	R
Model 7	3.344	1.093	0.500	5.562	1.375	0.750	0.437	0.250	4.000
Model 6	3.750	1.187	0.500	6.188	1.500	0.750	0.625	0.250	4.875
Model 5	5.875	1.375	0.625	8.675	2.000	0.750	0.875	0.250	5.750
	T	U			V	W	X		
Model 7	1.500	5/16 low head cap screw thru			0.812	1.500	5/16 - 18 UNC X 0.406		
Model 6	1.500	5/16 low head cap screw thru			1.000	1.812	5/16 - 18 UNC X 0.375		
Model 5	1.500	5/16 cap screw thru			1.250	2.312	5/16 - 18 UNC X 0.500		
	Y	Z	AA	AB	AC	AD	AE	AF	AG
Model 7	0.922	5.549	3.812	0.255	2.765	2.000	N/A	0.500	5/16 - 18 UNC X 0.500
Model 6	1.125	5.460	4.625	0.255	3.062	2.312	0.750	0.625	5/16 - 18 UNC X 0.500
Model 5	2.188	5.789	5.500	0.255	4.313	N/A	0.750	0.750	N/A

GC Guided Actuator load and stroke charts



NOTE: Charts are for guided actuator in horizontal position.

GC Guided Actuator mounting options



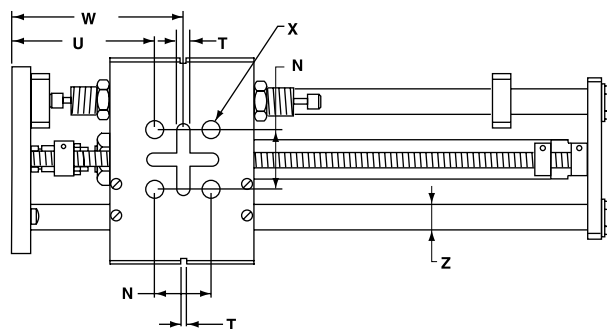
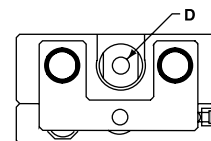
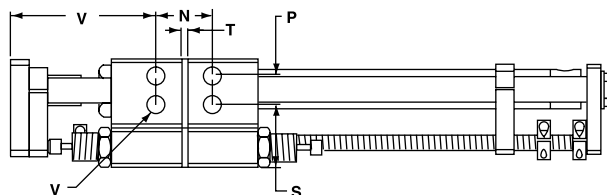
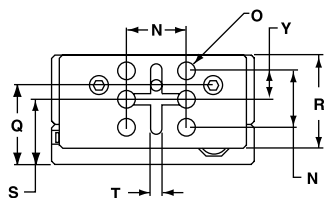
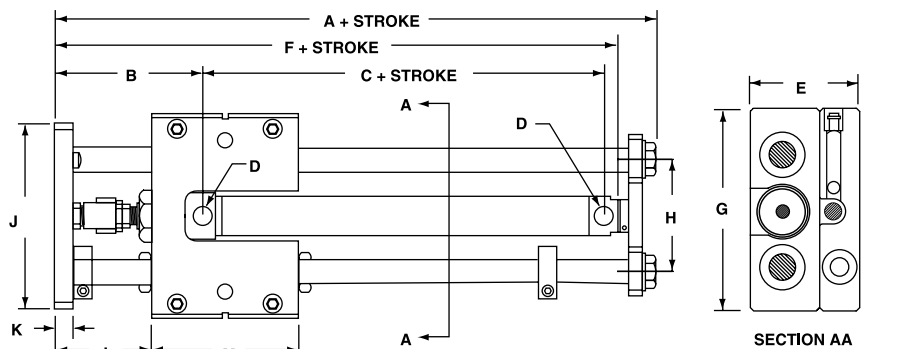
GS Guided Actuator

dimensions

GS General Specifications

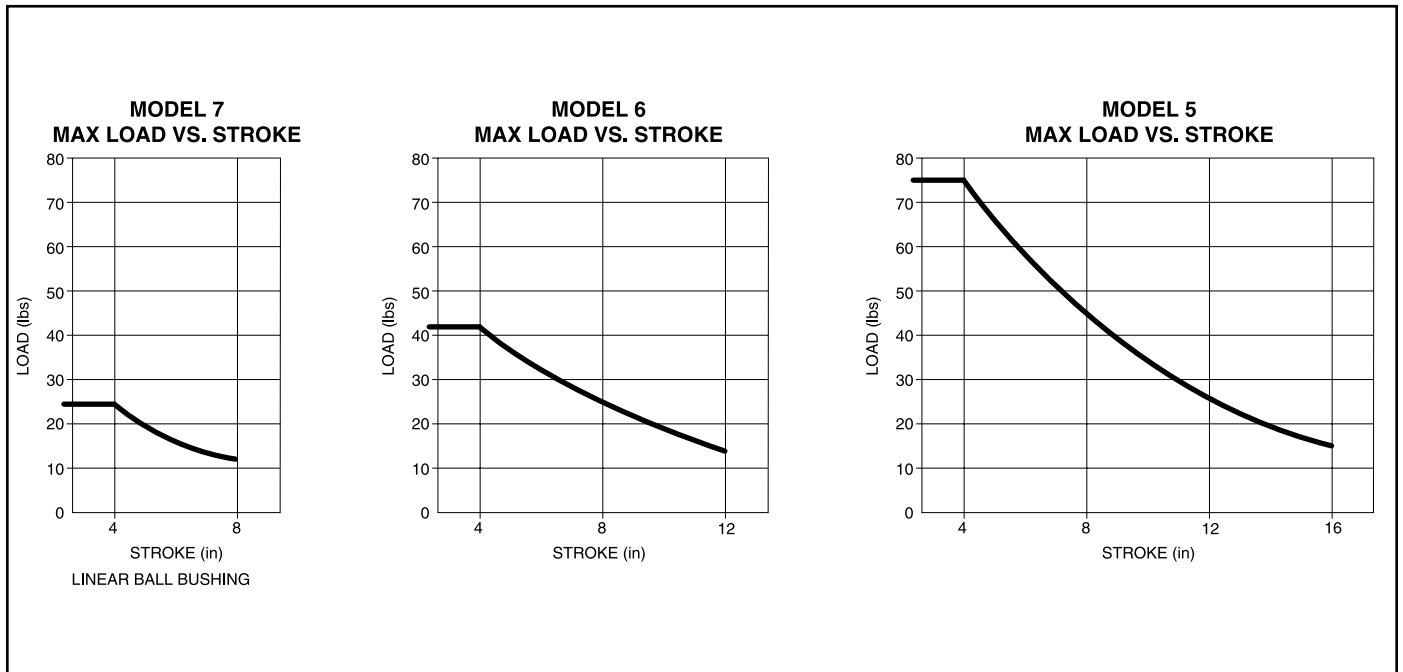
Model Number	Cylinder Bore in.	Available Stroke in.	Unit Weight lbs.	Add lbs. For Each 4 in. Of Stroke
7	3/4	4, 8	7.2	0.4
6	1 1/16	4, 8, 12	10.6	0.7
5	1 1/2	4, 8, 12, 16	20.0	1.0

- Air Operated • Double Acting • Temperature Range, -10° F to 160° F
- Operating Pressure, 30 to 120 psi. • Velocity, 4 to 20 in./sec.



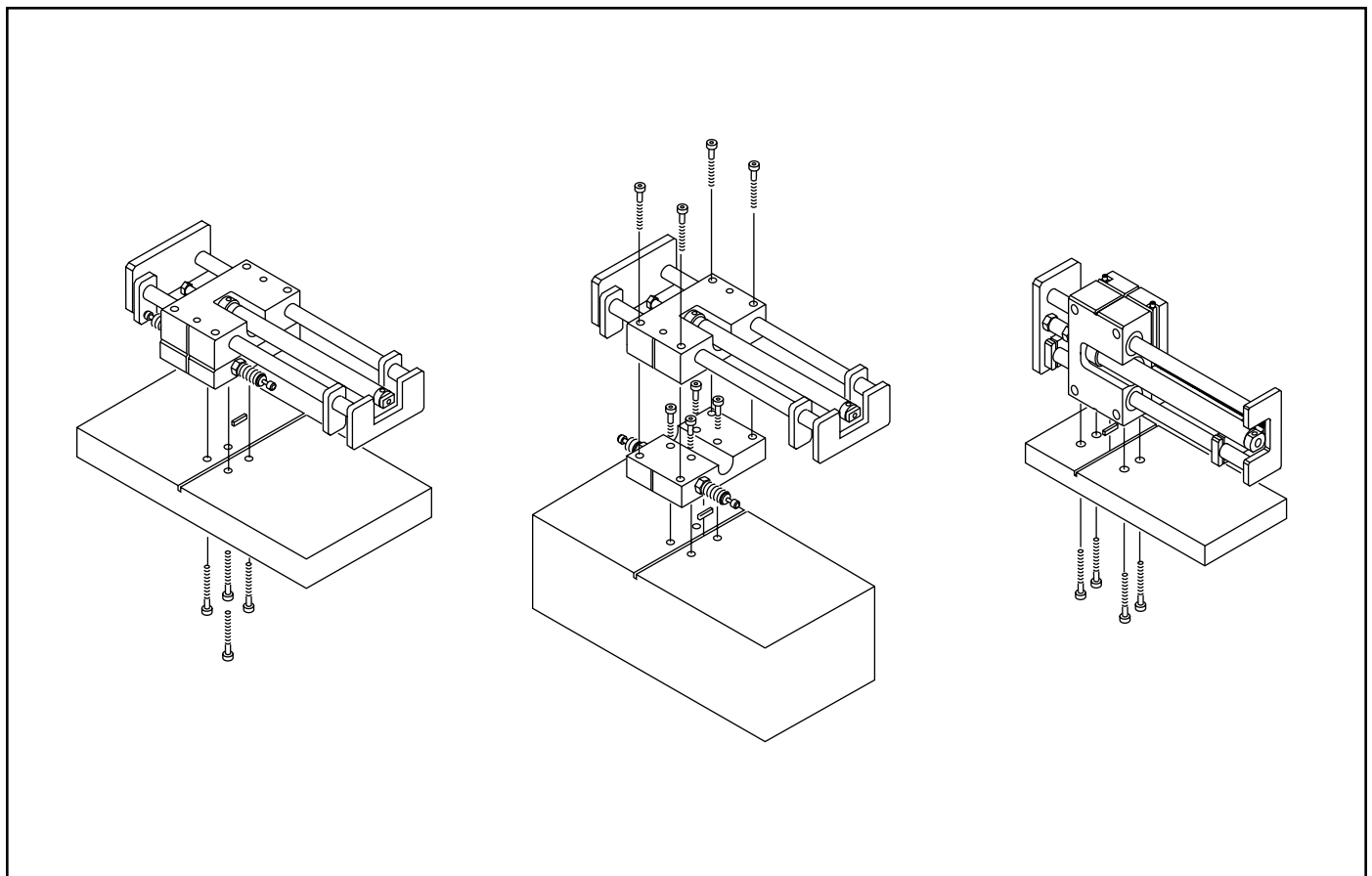
	A	B	C	D	E	F	G	H	J	K
Model 7	8.250	3.728	2.697	1/8 - 27 NPSF	2.500	5.549	4.562	2.438	4.000	0.500
Model 6	8.844	3.910	2.518	1/8 - 27 NPSF	2.812	5.460	5.375	2.938	4.875	0.500
Model 5	11.375	4.718	2.478	1/8 - 27 NPSF	3.562	5.789	6.375	3.562	5.750	0.500
	L	M	N	O	P	Q	R	S	T	
Model 7	2.500	3.344	1.500	5/16 low head cap screw thru	N/A	1.812	2.250	1.437	0.250	
Model 6	2.562	3.750	1.500	5/16 low head cap screw thru	0.750	2.000	2.500	1.625	0.250	
Model 5	3.250	5.875	1.500	5/16 low head cap screw thru	0.750	2.500	3.000	2.125	0.250	
	U	V	W	X	Y	Z				
Model 7	3.422	5/16 - 18 UNC	4.172	5/16 - 18 UNC OR 1/4 cap screw thru	0.750	0.500				
Model 6	3.687	5/16 - 18 UNC	4.437	5/16 - 18 UNC OR 1/4 cap screw thru	0.750	0.625				
Model 5	5.438	5/16 - 18 UNC	6.188	5/16 - 18 UNC OR 1/4 cap screw thru	0.750	0.750				

GS Guided Actuator load and stroke charts

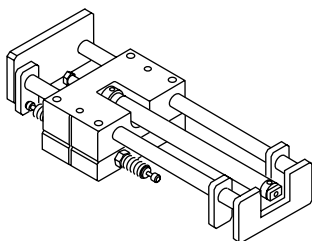


NOTE: Charts are for guided actuator in horizontal position.

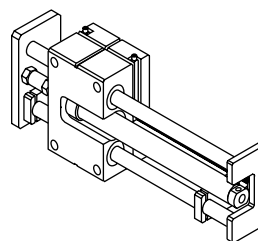
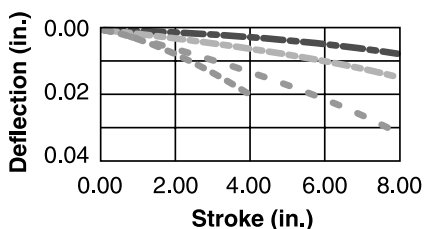
GS Guided Actuator mounting options



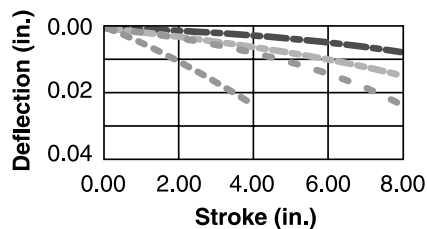
GS Guided Actuator deflection charts



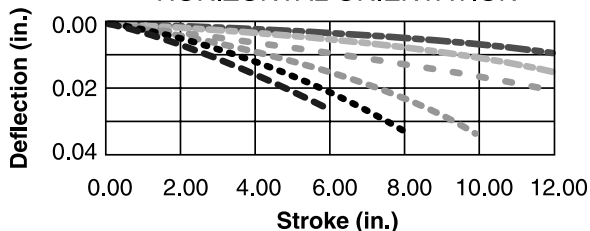
MODEL GS 7
HORIZONTAL ORIENTATION



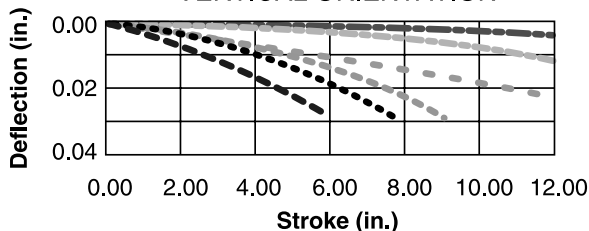
MODEL GS 7
VERTICAL ORIENTATION



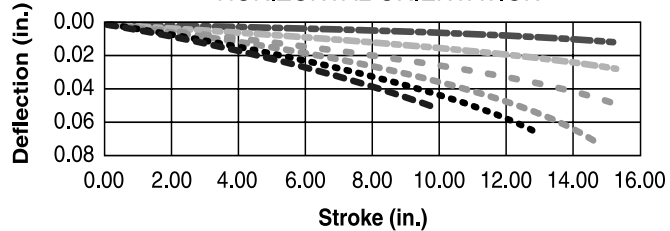
MODEL GS 6
HORIZONTAL ORIENTATION



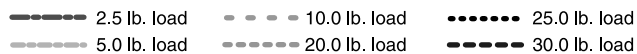
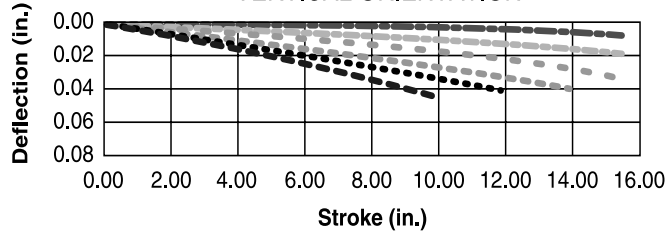
MODEL GS 6
VERTICAL ORIENTATION



MODEL GS 5
HORIZONTAL ORIENTATION



MODEL GS 5
VERTICAL ORIENTATION



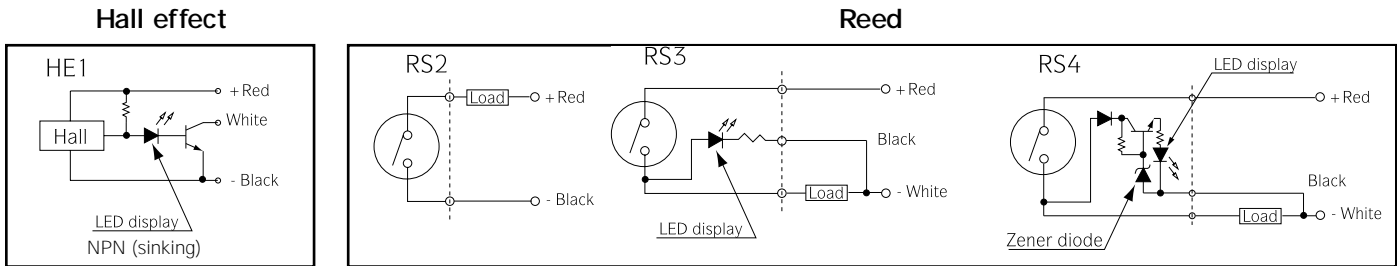
Sensor Switch Specifications

Available on all models. Switches attach to the cylinder barrel.

Hall effect switches are solid state devices that turn on when the piston magnet is within the operating range. Reed switches are mechanical devices that close when the piston magnet is within the operating range.

	HE1	RS2	RS3	RS4
Type	Hall effect	Reed	Reed	Reed
Leads	3 wire	2 wire	3 wire	3 wire
Volts DC	5-25 VDC	200 VDC max.	5-30 VDC	200 VDC max.
Load DC	25 MA	1A	1A	1A
Volts AC	-	141 VAC max.	5-30 VAC	141 VAC max.
Load AC	-	1A	1A	1A
LED	on red	none	on red	on red
Weight oz.	0.71	0.71	0.71	0.71

Sensor Switch Circuit Diagrams



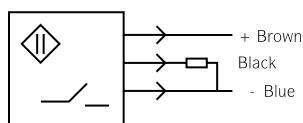
Proximity Switch Specifications

Available on GS models only. Proximity switches are solid state devices, mounted in slots on the actuator, that sense the adjustable collar (a conducting metal) when its within the operating range.

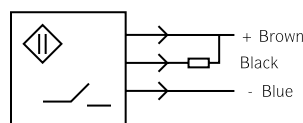
PS2 - PNP (sourcing) and PS3 - NPN (sinking)

Sensing distance	1.5 mm
Operating distance	0 - 1.2 mm
Maximum switching frequency	≤ 1000 Hz
Supply voltage	10 - 30 V DC
Supply voltage ripple	≤ 15% (Peak to Peak)
Load current capacity	≤ 200 mA
Protection against polarity reversal	yes
Short circuit protected	yes
Function display	LED
Output resistance	1.95 KΩ + 2 Diode + LED
Ambient temperature range	-10° F to 160°F
Temperature drift of switch point	≤ 10%
Parallel cap to load permitted	≤ 1μF
Residual voltage	≤ .8 V DC
Voltage drop	≤ 2.5 V DC
Switching hysteresis	15%
Repeatability	±0.1 mm
Current consumption	≤ 25 mA closed/ ≤ 12 mA open
Connection	3 pin
Protection class	IP 67, NEMA 4, 4X, 6, 12, 13

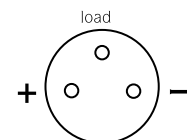
Proximity Switch Circuit Diagrams



PS2 - PNP (sourcing) Normally Open



PS3 - NPN (sinking) Normally Open



View of male connector pin

Proximity Switch Cable Specifications

Connection	3 wire (24 AWG), M8 x 1
Insulation	PVC
Length	16 ft.

Shock absorber specifications

Model	Stroke in.	Type	Damping	Body Thread
7	0.50	self-compensating	medium	9/16-18 UNF
6	0.50	self-compensating	heavy	9/16-18 UNF
5	0.87	self-compensating	medium	3/4-16 UNF

Handling Instructions

Lubrication

All models are prelubricated at the factory. GC models have composite bearings and do not require additional lubrication. GS models have linear ball bearings and should be lubricated through the fittings provided. Frequency of lubrication depends on the application. Recommended lubricant is Thompson Linear Lube.

Stroke adjustments

GC

Set the stroke by positioning both front and rear stop collars on shafts. Tighten collar screws to the specified value:

Model	Adjustable Stop Collar Screw
GC 7	50 in-lbs
GC 6	75 in-lbs
GC 5	175 in-lbs

GS

Set the stroke by positioning both front and rear knurled stop collars on the adjuster screws. Tighten collar screws to the specified value shown below. Next, position the shock absorber strike plates so they compress the shocks at each end of the stroke. Tighten screws as specified.

Model	Stop Collar Screw	Shock Strike Screw
GS 7	25 in-lbs	50 in-lbs
GS 6	25 in-lbs	75 in-lbs
GS 5	50 in-lbs	175 in-lbs

The stop collars and stroke adjuster screw are not intended to absorb the end-of-stroke impact force. Shock absorbers must be used.

Do not allow shock absorbers to bottom out. This could adversely affect positional accuracy of the actuator and shorten shock absorber life.

How To Order

GC Guided Actuator "pusher"

GC 7 x 12 FL

- Options:** F Fluoroelastomer cylinder seals
 L Linear ball bearings
 K Mounting plate (models 6 and 7 only)

Stroke

- Cylinder bore:** Model 7 3/4 inch diameter (0.442 inch²)
 Model 6 1 1/16 inch diameter (0.887 inch²)
 Model 5 1 1/2 inch diameter (1.767 inch²)

Guided Actuator: GC

GS Guided Actuator "pick-and-place"

GS 7 x 8 F

- Options:** F Fluoroelastomer cylinder seals
 X No shock absorber

Stroke

- Cylinder bore:** Model 7 3/4 inch diameter (0.442 inch²)
 Model 6 1 1/16 inch diameter (0.887 inch²)
 Model 5 1 1/2 inch diameter (1.767 inch²)

Guided Actuator: GS

Sensor Switches

Sensors for GC and GS actuators	Reed Switch	RS2-PSMK
	Reed Switch w/ 144 inch leads	RS2-L-PSMK
	Reed Switch w/ LED (5-30 VAC/VDC)	RS3-PSMK
	Reed Switch w/ LED (5-30 VAC/VDC) / 144 inch leads	RS3-L-PSMK
	Reed Switch w/ LED (MAX 114VAC/200VDC)	RS4-PSMK
	Reed Switch w/ LED (MAX 114VAC/200VDC) / 144 inch leads	RS4-L-PSMK
	Hall Effect Switch	HE1-PSMK
	Hall Effect Switch w/ 144 inch leads	HE1-L PSMK
Sensors for GS actuators only	Proximity Switch PNP (sourcing) - requires cable	PS2
	Proximity Switch NPN (sinking) - requires cable	PS3
	Cable for Proximity Switches - 5 Meter	PSC-200

How To Order

Replacement Cylinders: NOTE: Standard Humphrey cylinders will not fit Humphrey Guided Actuators

7 - GD - 8 - F

Options: F Fluoroelastomer cylinder seals

Stroke

Guided Double-Acting Cylinder: GD

Cylinder bore: Model 7 3/4 inch diameter (0.442 inch²)
Model 6 1 1/16 inch diameter (0.887 inch²)
Model 5 1 1/2 inch diameter (1.767 inch²)

Replacement Shock Absorbers:

For GS Model 7 SHA-9/16 x 1/2-B

For GS Model 6 SHA-9/16 x 1/2-C

For GS Model 5 SHA-3/4 x 7/8-B