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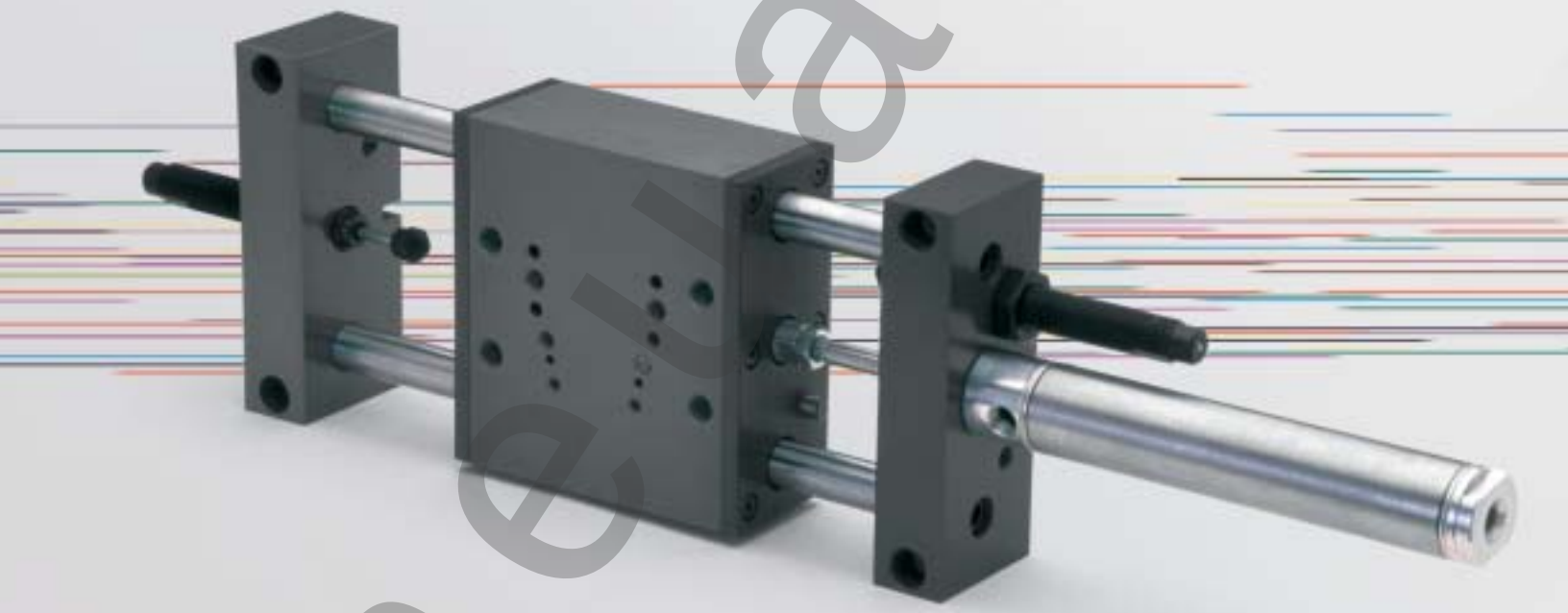
Gantries



GS Series

Gantry Slide

We're everywhere you need us to be!

GS Series Gantry Slides

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Rev. 2/04

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GS Series
Gantry Slides

Designed to handle heavier loads and travel greater distances.

The design centers around a moving carriage between two fixed tool bars. The carriage is supported and guided by four bearings and two hardened guide shafts.

A. Carriage:

Hardcoat Anodized Aluminum .....lightweight, high durability.
NuMate™ Direct Mounting Pattern Numate is a patented mounting system eliminating the need for adaptor/transition plates.
Slide, gantries and grippers mount directly to the GS gantry.

B. Air Cylinder:

Standard Stainless Steel Body and Rod.....corrosion resistant.
Standard Magnetic Piston .....sensing options Reed, Hall, Prox sensors, able to be added in field.

C. Alignment Coupler:

360 Degrees of Float.....isolates cylinder, eliminates destructive side load, maximizes life.

D. Tool Bars:

Standard Dowel Locating Hole and Slot.....accurate mounting and positioning.

Standard Tapped Holes for Shock Absorbers .....accepts industry standard shocks.

E. Guide Shafts: (Two Choices)

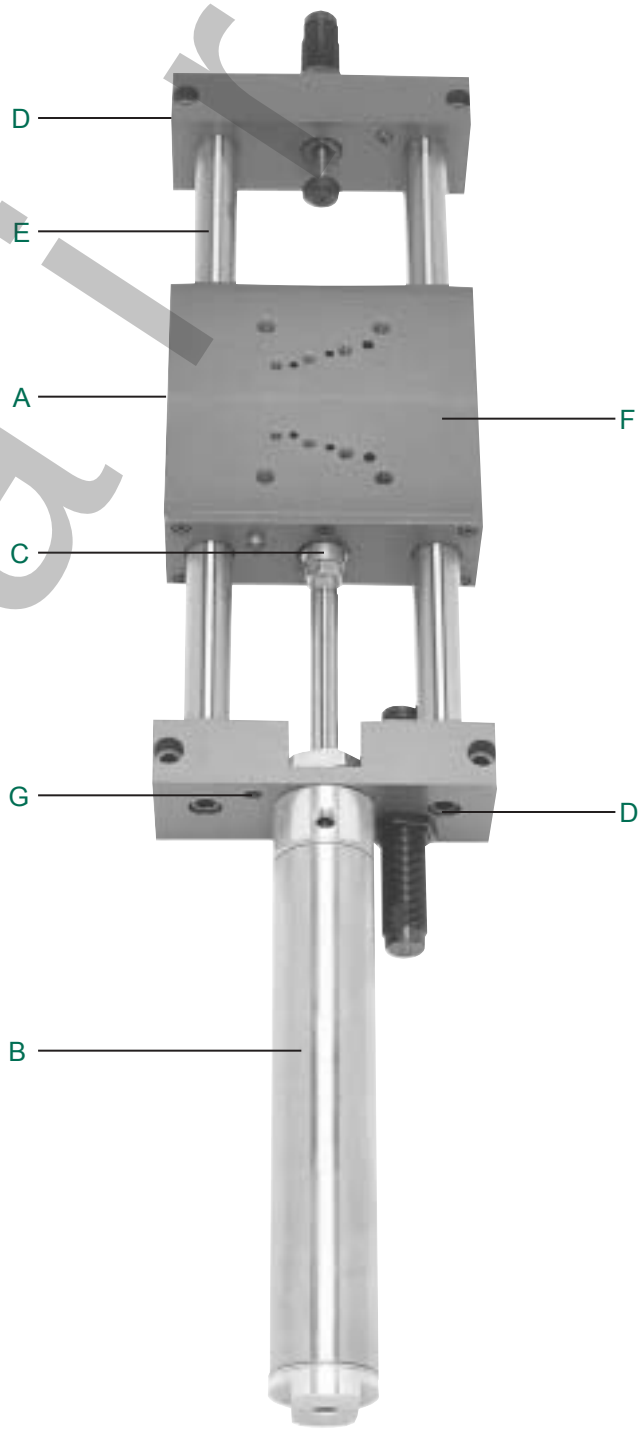
Hardened Steel .....hardness Rc 60-65, long life.
Hardened Stainless Steel .....hardness Rc 50-55, corrosion resistant.
Precision Ground and Polished 15u RMS .....smooth cycling, low breakaway.
Large Diameter .....increased load capacity.
Pilot Mounted to Tool Bar .....maximum rigidity, increased strength.

F. Bearings: (Two Choices)

Four Linear Ball Bearings .....greatest load capacity, self-lubricating, built-in seals and wipers, self-aligning.
Four Frelon® Compounded Teflon® .....self-lubricating, self-aligning, long service life, ideal for cleanroom.

G. Stroke Adjustment Screws:

Standard Extend and Retract.....fine adjustment for carriage travel.



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How to Order

GS 075 03 LB 1 H 3 C R 4

Bore Sizes
075 = 3/4 Inch
106 = 1-1/16 Inches
150 = 1-1/2 Inches
200 = 2 Inches

Standard Stroke

01	= 1"	13	= 13"	24	= 24"
02	= 2"	14	= 14"	25	= 25"
03	= 3"	15	= 15"	26	= 26"
04	= 4"	16	= 16"	27	= 27"
05	= 5"	17	= 17"	28	= 28"
06	= 6"	18	= 18"	29	= 29"
07	= 7"	19	= 19"	30	= 30"
08	= 8"	20	= 20"	31	= 31"
09	= 9"	21	= 21"	32	= 32"
10	= 10"	22	= 22"	33	= 33"
11	= 11"	23	= 23"	34	= 34"
12	= 12"				

Bearing Option
LB = Linear Ball
TB = Teflon®

Cylinder Type
1 – Buna-N Seals
2 – Viton Seals (no magnet)
3 – Buna-N Seals w/Cushions
4 – Viton Seal with Magnet

Guide Shaft Material
H = Hardened Steel
S = Stainless Steel (includes all stainless hardware)

Shock Absorbers
1 = Extend
2 = Retract
3 = Extend and Retract
4 = No Shocks
Reference page 7.

Cylinder Orientation
R = Right
L = Left
Reference page 7.

Sensing Position
A = Single Position Extend
B = Single Position Retract
C = Two Position Sensing
D = No Sensing

Sensing Type
Standard Cord Set
1 = Hall Effect - PNP (sourcing)
2 = Hall Effect - NPN (sinking)
3 = Reed Switch
4 = Prox Switch - PNP (sourcing)
5 = Prox Switch - NPN (sinking)
6 = No Sensing
7* = 8 mm Prox Ready
Quick Disconnect Cord Set
Z = Hall Effect - PNP (sourcing)
Y = Hall Effect - NPN (sinking)
X = Reed Switch
W = Prox Switch - PNP (sourcing) Straight
V = Prox Switch - NPN (sinking) Straight
U = Prox Switch - PNP (sourcing) 90 Deg.
T = Prox Switch - NPN (sinking) 90 Deg.
See Sensor section.
*Does not include switch.

Example order:

Part Number: GS07503LB1H3CR4*
Part Description: 3/4 bore by 3 inch stroke with linear ball bearings, standard seals, hardened steel guide shafts, reed 2 position sensing, cylinder to right, no shocks.

*When entering an order, DO NOT use spaces or dashes.

For Multi-Position Gantry ordering *see page 9.*

When 0rdering Additional Sensors and Shocks

SWITCH DESCRIPTION	STANDARD PART NO.	QUICK DISCONNECT PART NO.
Hall Effect - PNP (Sourcing)	HPNPS31	HPNPQ31
Hall Effect - NPN (Sinking)	HNPNS32	HNPNQ32
Reed Switch	RSS02	RSQ02
Prox Switch - PNP (Sourcing)	SWPP - 0001	SWPP - QS01
Prox Switch - NPN (Sinking)	SWPN - 0001	SWPN - QS01
Prox Switch - PNP 90˚	-	SWPP - QL01
Prox Switch - NPN 90˚	-	SWPN - QL01
90˚ 5 meter cable	-	PXC 90
Straight 5 meter cable	-	PXC ST

*Bands and tracks required for mounting.
Reference bracket in the Switch Application Chart in the Sensor section.

SLIDE SERIES	SHOCK ABSORBER
GS075	SK106
GS106	SK106
GS150	SK150
GS200	SK200

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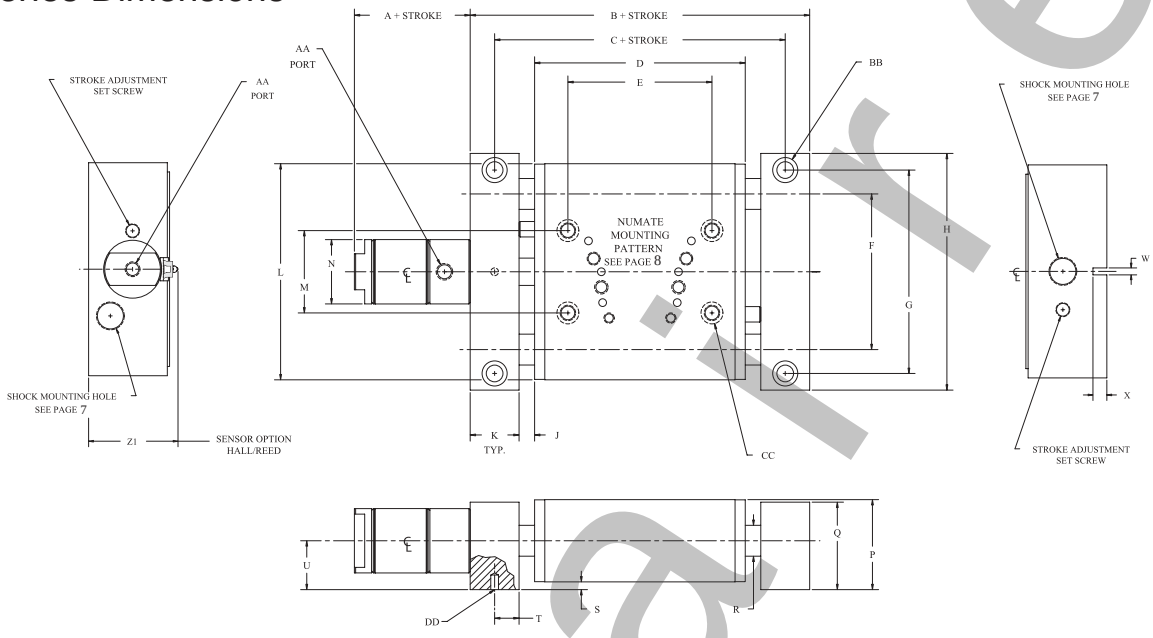
GS Series
Gantry Slides

GS Series Dimensions



	GS075		GS106		GS150		GS200	
A	2.47	(62.7)	2.62	(66.5)	2.81	(71.4)	3.50	(88.9)
B	5.78	(146.8)	6.90	(175.3)	8.25	(209.6)	9.91	(251.7)
C	5.15	(130.8)	5.90	(149.9)	7.06	(179.3)	8.41	(213.6)
D	4.28	(108.7)	4.40	(111.8)	5.12	(130.0)	6.40	(162.6)
E	3.00	(76.2)	3.25	(82.6)	3.50	(88.9)	4.00	(101.6)
F	2.75	(69.8)	3.25	(82.6)	3.78	(96.0)	4.81	(122.2)
G	3.70	(94.0)	4.31	(109.5)	4.94	(125.5)	6.28	(159.5)
H	4.25	(108.0)	4.95	(125.7)	5.75	(146.1)	7.00	(177.8)
J	0.13	(3.3)	0.25	(6.4)	0.38	(9.7)	0.25	(6.4)
K	0.63	(16.0)	1.00	(25.4)	1.19	(30.2)	1.50	(38.1)
L	4.00	(101.6)	4.63	(117.6)	5.25	(133.4)	6.80	(172.7)
M	1.40	(35.6)	1.50	(38.1)	2.00	(50.8)	2.50	(63.5)
N	0.88	(22.4)	1.13	(28.7)	1.56	(39.6)	2.07	(52.6)
P	1.62	(41.1)	2.12	(53.8)	2.19	(55.6)	2.75	(69.8)
Q	1.50	(38.1)	2.00	(50.8)	2.13	(54.1)	2.56	(65.0)
R	0.50	(12.7)	0.63	(16.0)	0.75	(19.1)	1.00	(25.4)
S	0.38	(9.7)	0.13	(3.3)	0.19	(4.8)	0.25	(6.4)
T	0.311/0.313	(7.90/7.95)	0.499/0.501	(12.67/12.72)	0.593/0.595	(15.06/15.11)	0.749/0.751	(19.02/19.08)
U	1.00	(25.4)	1.13	(28.7)	1.19	(30.2)	1.50	(38.1)
W	0.1870/0.1880	(4.75/4.78)	0.1870/0.1880	(4.75/4.78)	0.1870/0.1880	(4.75/4.78)	0.2500/0.2510	(6.35/6.38)
X	0.30	(7.6)	0.30	(7.6)	0.30	(7.6)	0.40	(10.2)
AA	1/8 NPTF		1/8 NPTF		1/8 NPTF		1/4 NPTF	
BB	C'bored for 1/4 SHCS, Tapped 5/16-24 x 0.62 DP From Opposite Side.		C'bore for 5/16 SHCS Tapped 3/8-24 x 0.59 DP From Opposite Side.		C;bore for 5/16 SHCS, Tapped 3/8-24 x 0.59 DP From Opposite Side.		C'bore for 3/8 SHCS, Tapped 7/16-20 x 0.88 DP From Opposite Side.	
CC	Tapped 5/16-24 x .62 DP, C'bored for 1/4 SHCS, From Opposite Side.		Tapped 3/8-24 x 0.59 DP, C'bore for 5/16 SHCS From Opposite Side.		Tapped 3/8-24 x 0.59 DP, C;bore for 5/16 SHCS, From Opposite Side.		Tapped 7/16-20 x 0.88 DP, C'bore for 3/8 SHCS, From Opposite Side.	
DD	0.1870/0.1880	(4.75/4.78)	0.1870/0.1880	(4.75/4.78)	0.1870/0.1880	(4.75/4.78)	0.2500/0.2510	(6.35/6.38)
Z1	1.91	(49.0)	2.16	(55.0)	2.44	(62.0)	3.01	(76.0)

(mm)

Unit Weight Table

	GS075	GS106	GS150	GS200
Base Unit Weight (lbs.)	3.81	6.46	9.18	16.75
Adder/inch of stroke (lbs.)	0.15	0.22	0.34	0.59

Add base weight to inch adder X stroke. Sample weight calculation: Model GS075 W/6" stroke, 3.81 + (0.15 x 6) = 4.71 lbs.

Unit Output Force Table

	GS075	GS106	GS150	GS200
Extend Force (lbs.)	0.44	0.88	1.76	3.14
Retract Force (lbs.)	0.39	0.81	1.61	2.83

Multiply force factor X input pressure in PSI Sample output force calculation: Model GS150 extend force@ 70PSI 1.76 x 70 = 123.2 lbs

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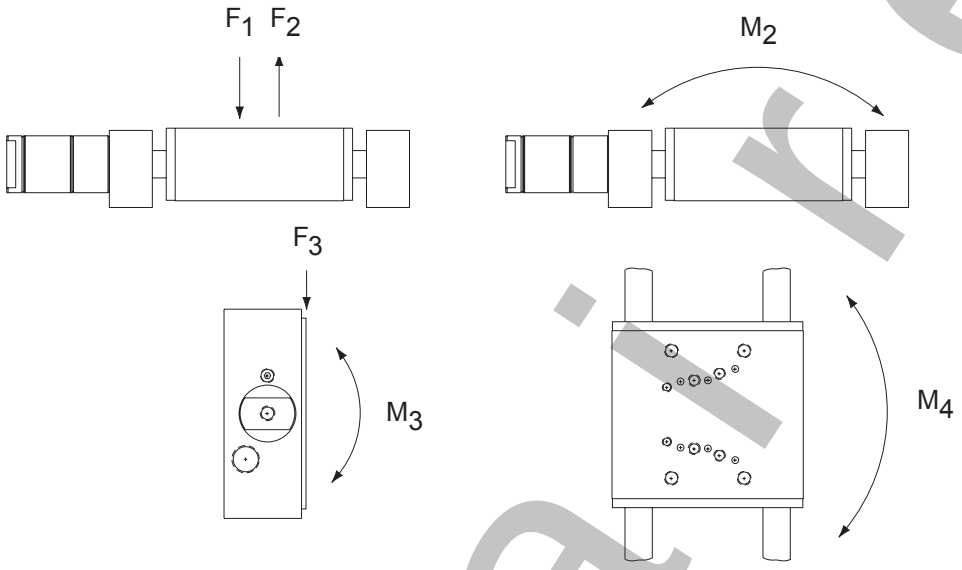
Technical Specifications

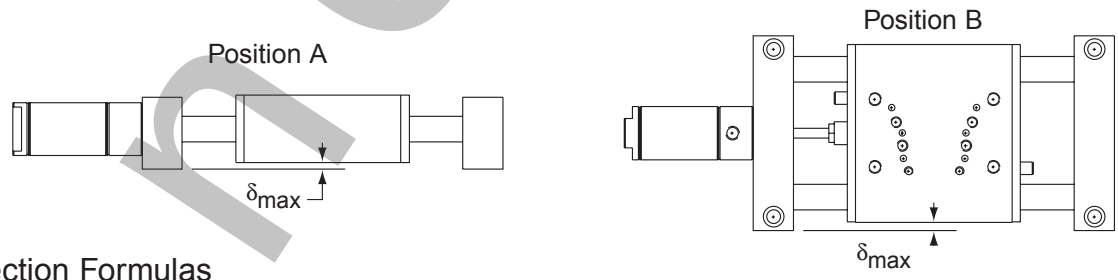


Linear Ball Bearing Dynamic Loads

SLIDE SERIES	F_1 / F_2 / F_3		M2		M3		M4	
GS075	90 lb.	(40.8) kg.	110 in. lb.	(12.4) N.m.	222 in. lb.	(25.1) N.m.	222 in. lb.	(25.1) N.m.
GS106	160 lb.	(72.6) kg.	178 in. lb.	(20.1) N.m.	455 in. lb.	(51.4) N.m.	455 in. lb.	(51.4) N.m.
GS150	275 lb.	(124.7) kg.	262 in. lb.	(29.6) N.m.	790 in. lb.	(89.3) N.m.	790 in. lb.	(89.3) N.m.
GS200	520 lb.	(235.9) kg.	435 in. lb.	(49.1) N.m.	1657 in. lb.	(187.2) N.m.	1657 in. lb.	(187.2) N.m.

Teflon Dynamic Loads

SLIDE SERIES	F_1 / F_2 / F_3		M2		M3		M4	
GS075	63 lb.	(28.6) kg.	77 in. lb.	(8.7) N.m.	155 in. lb.	(17.5) N.m.	155 in. lb.	(17.5) N.m.
GS106	112 lb.	(50.8) kg.	124 in. lb.	(14.0) N.m.	318 in. lb.	(35.9) N.m.	318 in. lb.	(35.9) N.m.
GS150	193 lb.	(87.5) kg.	183 in. lb.	(20.7) N.m.	553 in. lb.	(62.5) N.m.	553 in. lb.	(62.5) N.m.
GS200	364 lb.	(165.1) kg.	304 in. lb.	(34.3) N.m.	1159 in. lb.	(130.9) N.m.	1159 in. lb.	(130.9) N.m.



Deflection Formulas

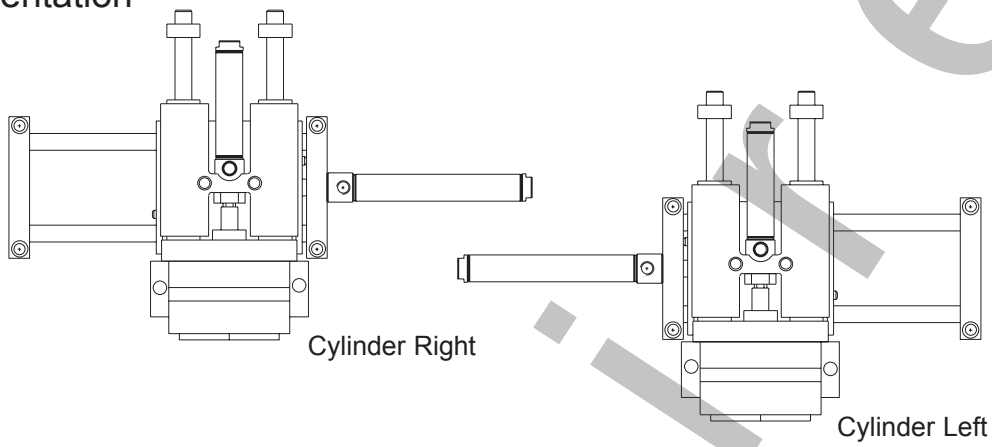
	POSITION A	POSITION B
GS075	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.325\right)^3\left(2+\frac{15.9}{STROKE-2.65}\right)1.1331x10^{-7}$	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.325\right)^3\left(2+\frac{15.9}{STROKE-2.65}\right)7.9317x10^{-8}$
GS106	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.200\right)^3\left(2+\frac{19.5}{STROKE-2.40}\right)4.6491x10^{-8}$	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.200\right)^3\left(2+\frac{19.5}{STROKE-2.40}\right)3.2544x10^{-8}$
GS150	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.500\right)^3\left(2+\frac{18.0}{STROKE-3.00}\right)2.2515x10^{-8}$	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.500\right)^3\left(2+\frac{18.0}{STROKE-3.00}\right)1.5761x10^{-8}$
GS200	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.828\right)^3\left(2+\frac{21.9}{STROKE-3.66}\right)7.1055x10^{-9}$	$\delta max = (LOAD)\left(\left(\frac{STROKE}{2}\right)-1.828\right)^3\left(2+\frac{21.9}{STROKE-3.66}\right)4.9739x10^{-9}$

LOAD and STROKE values input by customer.

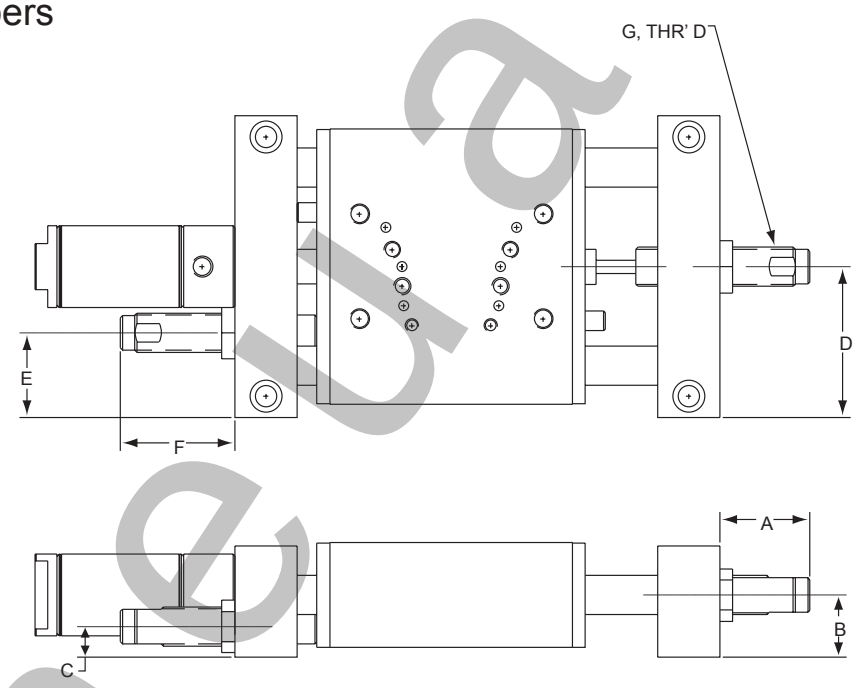
Sample Deflection Calculation: GS10605 with 110# load in Position A

$\delta max = (110)\left(\left(\frac{5}{2}\right)-1.200\right)^3\left(2+\frac{19.5}{5-2.40}\right)4.6491x10^{-8}$: $\delta max = (110)(1.300)^3(2+7.5)4.6491x10^{-8} = 0.00011$ inch at mid travel

Cylinder Orientation



Shock Absorbers



Dimensions

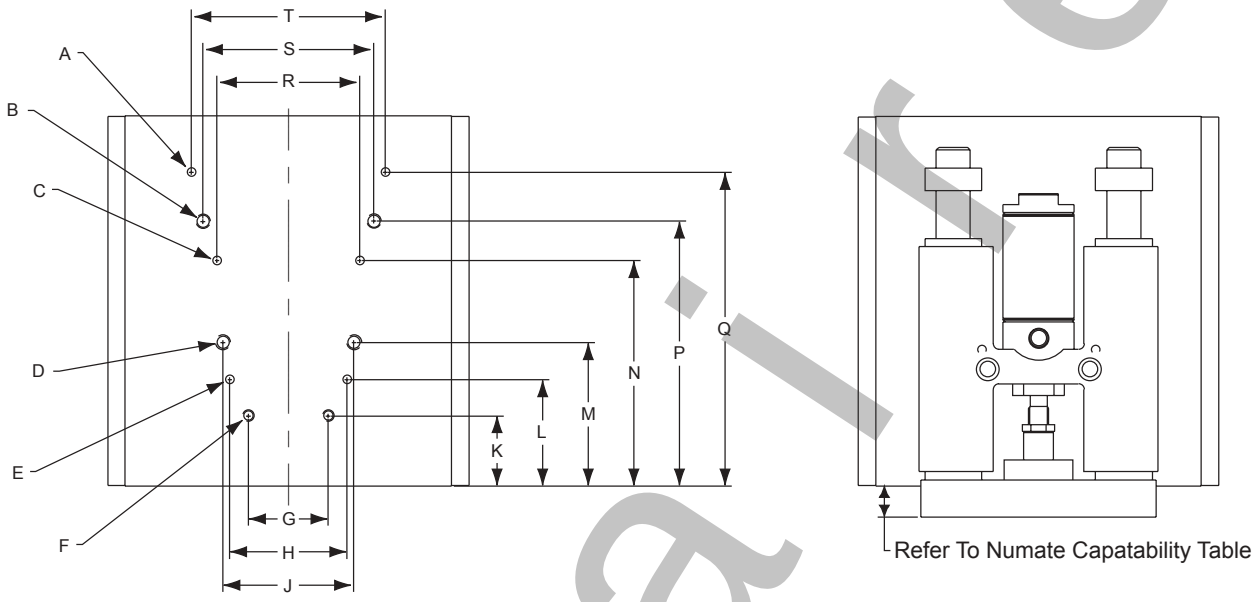
	GS075		GS106		GS150		GS200	
A	2.78	(70.6)	2.21	(56.1)	1.72	(43.7)	2.34	(59.4)
B	1.00	(25.4)	1.13	(28.7)	1.19	(30.2)	1.50	(38.1)
C	0.61	(15.5)	0.63	(16.0)	0.59	(15.0)	0.74	(18.8)
D	2.13	(54.1)	2.48	(63.0)	2.88	(73.2)	3.50	(88.9)
E	1.20	(30.5)	1.48	(37.6)	1.62	(41.1)	1.85	(47.0)
F	3.12	(79.2)	2.62	(66.5)	2.19	(55.6)	2.87	(72.9)
G	9/16 - 18		9/16 - 18		3/4 - 16		1 - 12	

(mm)

Shock Absorbers

	GS075	GS106	GS150	GS200
PART NO.	SK106	SK106	SK150	SK200

NuMate Mounting System



NuMate™ Pattern Dimensional Data

	GS075		GS106		GS150		GS200	
A	0.187/0.188 x 0.37 DP		0.187/0.188 x 0.37 DP		0.187/0.188 x 0.37 DP		0.250/0.251 x 0.50 DP	
B	1/4-20 x 0.37 DP		5/16-18 x 0.50 DP		5/16-18 x 0.50 DP		3/8-16 x 0.60 DP	
C	0.125/0.126 x 0.25 DP		0.187/0.188 x 0.37 DP		0.187/0.188 x 0.37 DP		0.187/0.188 x 0.37 DP	
D	#10-32 x 0.33 DP		1/4-20 x 0.37 DP		5/16-18 x 0.50 DP		5/16-18 x 0.50 DP	
E	.0937/.0947 x 0.18 DP		0.125/0.126 x 0.25 DP		0.187/0.188 x 0.37 DP		0.187/0.188 x 0.37 DP	
F	#6-32 x 0.22 DP		#10-32 x 0.33 DP		1/4-20 x 0.37 DP		5/16-18 x 0.50 DP	
G	1.00	(25.4)	1.25	(31.8)	1.50	(38.1)	1.87	(47.5)
H	1.00	(25.4)	1.38	(35.1)	1.81	(46.0)	1.87	(47.5)
J	1.25	(31.8)	1.50	(38.1)	1.87	(47.5)	2.25	(57.2)
K	1.12	(28.4)	1.38	(35.1)	1.50	(38.1)	2.38	(60.5)
L	1.33	(33.8)	1.69	(42.9)	1.87	(47.5)	2.76	(70.1)
M	1.52	(38.6)	1.94	(49.3)	2.25	(57.2)	3.08	(78.2)
N	1.83	(46.5)	2.31	(58.7)	2.63	(66.8)	3.52	(89.4)
P	2.13	(54.1)	2.69	(68.3)	2.95	(74.9)	3.87	(98.3)
Q	2.50	(63.5)	3.06	(77.7)	3.38	(85.9)	4.37	(111.0)
R	1.38	(35.1)	1.81	(46.0)	1.87	(47.5)	2.50	(63.5)
S	1.50	(38.1)	1.87	(47.5)	2.25	(57.2)	2.75	(69.8)
T	1.81	(46.0)	1.87	(47.5)	2.50	(63.5)	3.00	(76.2)

(mm)

NuMate™ Compatibility Table & Edge Reference

	GS075		GS106		GS150		GS200	
SH031	0.15	(3.8)						
SH056	0.36	(9.1)	0.50	(12.7)				
SH075	0.21	(5.3)	0.40	(10.2)	0.84	(21.3)		
SH106			0.22	(5.6)	0.65	(16.5)	0.52	(13.2)
SH150					0.30	(7.6)	0.16	(4.1)
SH200							0.13	(3.3)
LC056	-0.28	(-7.1)	-0.14	(-3.6)				
LC075	-0.54	(-13.7)	-0.35	(-8.9)	0.09	(2.3)		
LC106			-0.85	(-21.6)	-0.41	(-10.4)	-0.54	(-13.7)
LC150					-0.89	(-22.6)	-1.02	(-25.9)
B04	0.09	(2.3)	0.24	(6.1)				
B06	0.26	(6.6)	0.40	(10.2)				
B08	0.84	(21.3)	0.99	(25.2)				

How to Order

3 Position Gantry Slide

GM C 02 __ 01 A 1 1 6 D R 4

Bore Sizes
C = 3/4 Inch
F = 1-1/16 Inches
K = 1-1/2 Inches
L = 2 Inches

Front Cylinder (Total Stroke)
01 - 18 Inches

Fractional Stroke for Front Cylinder
* = 0 Inch
C = 1/4 Inch
E = 1/2 Inch
G = 3/4 Inch
*Leave blank if factional stroke = 0.

Back Cylinder (First Stroke)
01 - 18 Inches

Fractional Stroke for Back Cylinder
A = 0 Inch
C = 1/4 Inch
E = 1/2 Inch
G = 3/4 Inch

Bearing and Guide Shaft Type
1 = Linear Ball Hardened Steel Shafts
2 = Linear Ball Stainless Steel Shafts
3 = Teflon® Hardened Steel Shafts
4 = Teflon® Stainless Steel Shafts

Cylinder Type
1 = Buna-N Seals
2 = Viton Seals (no magnet)
3 = Buna-N Seals w/Cushions Full Ext. and Ret. only

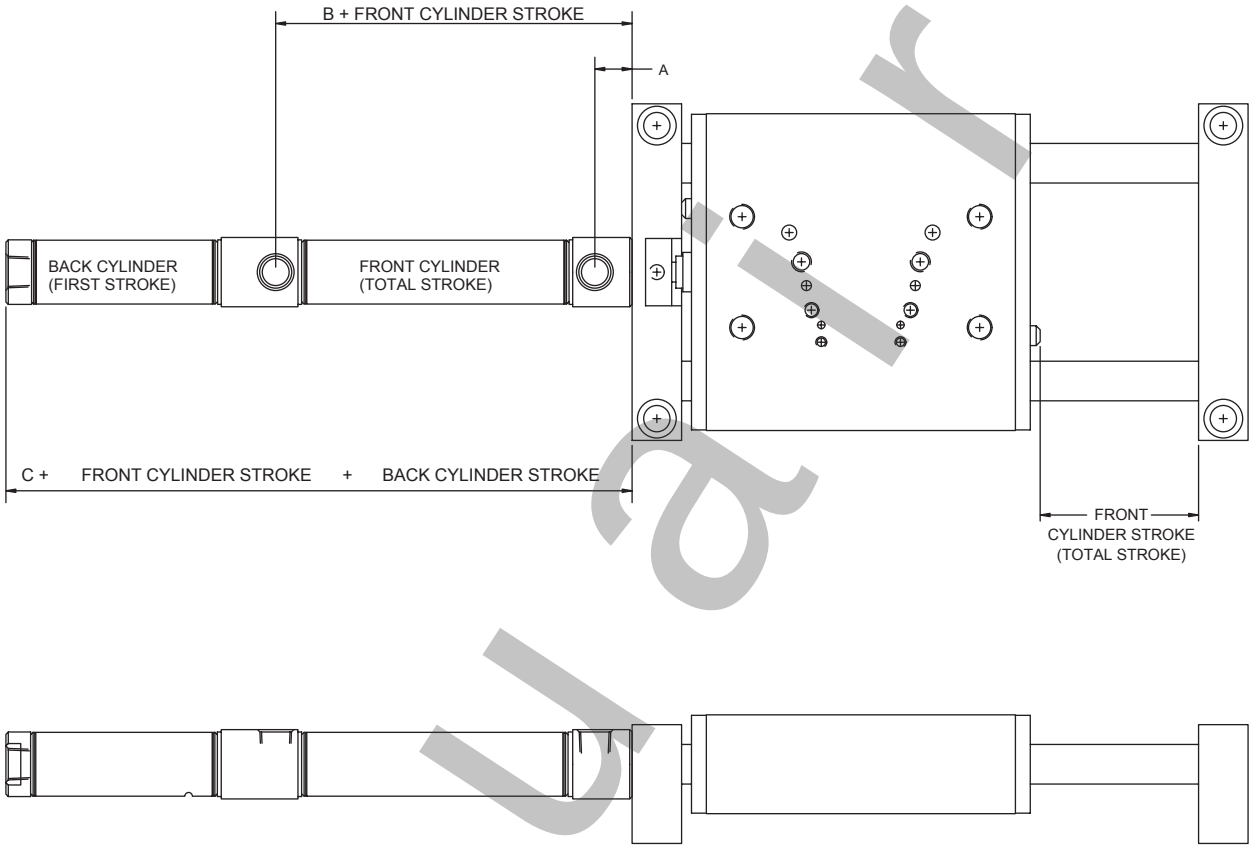
Shock Absorbers
1 = Full Extend
2 = Full Retract
3 = Full Extend and Retract
4 = No Shocks

Cylinder Orientation
R = Right
L = Left

Sensing Position
A = Single Position Extend
B = Single Position Retract
C = Two Position Sensing
D = No Sensing
E = 3 Position (Extend, Retract & Mid Stroke)
F = 4 Position
G = 5 Position

Sensing Type
Standard Cord Set
1 = Hall Effect - PNP (sourcing)
2 = Hall Effect - NPN (sinking)
3 = Reed Switch
4 = Prox Switch on Cylinder - PNP (sourcing)
5 = Prox Switch on Cylinder - NPN (sinking)
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Effect - PNP (sourcing)
Y = Hall Effect - NPN (sinking)
X = Reed Switch
W = Prox Switch on Cylinder - PNP (sourcing) Straight
V = Prox Switch on Cylinder - NPN (sinking) Straight
U = Prox Switch on Cylinder - PNP (sourcing) 90 Deg.
T = Prox Switch on Cylinder - NPN (sinking) 90 Deg.
See Sersor section.
*Does not include switch.

3 Position Gantry Slide



Dimensions - Inches

GS SERIES	A	B	C
GS075	0.47	2.50	4.91
GS106	0.56	2.59	5.16
GS150	0.63	2.75	5.56
GS200	0.74	3.45	6.93