SOUTHCORP CLEAN AIR SYSTEMS
EXTENDING YOUR CLEAN AIR OPTIONS

PISTON ROD BUCKLING/ FAILURE FORMULA

Maximum Stroke

To ensure the piston rod does not buckle during operation, the maximum stroke of a cylinder must be determined. Euler's formula for columns is used:

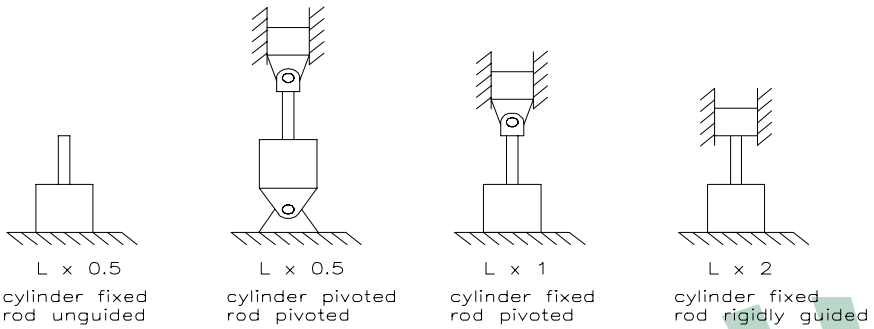
$$L = \sqrt{\frac{\pi^2 E I}{F S}}$$

L	=	column length (mm)
E	=	modulus of elasticity (N/mm2)
I	=	moment of inertia (mm4)
F	=	load (N)
S	=	safety factor

For Goyen HD Cylinders, Euler's formula translates to the following:

$$L * K = \sqrt{\frac{d^4 * 18706.474}{F}}$$

L	=	maximum stroke (mm)
K	=	mounting factor (see options below)
d	=	piston rod diameter (mm)
F	=	load (N)



The following table shows maximum strokes for cylinders at various pressures (L x 1)

Cylinder	Rod Dia.	Working Pressure (kPa) 100	200	300	400	500	600	700	800	900	1000
ISO 32	12	2196	1553	1268	1098	982	897	830	776	732	694
ISO 40	16	3123	2209	1803	1562	1397	1275	1181	1104	1041	988
ISO 50	20	3904	2761	2254	1952	1746	1594	1476	1380	1301	1235
ISO 63	20	3099	2191	1789	1549	1386	1265	1171	1096	1033	980
ISO 80	25	3813	2696	2201	1906	1705	1557	1441	1348	1271	1206
ISO 100	25	3050	2157	1761	1525	1364	1245	1153	1078	1017	965