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FEATURES:

Long life under continuous slip conditions.
Unidirectional or bidirectional operation.
Same or different clockwise and counterclockwise torques.
Precise and stable limit torque calibration (range: 1.0 to 480 ozf in.).
Same torque at breakaway as at high slip velocities.
Mounting provisions for gear, sprocket or pulley.
Corrosion-resistant materials.

APPLICATIONS:

Tension control of film or tape drives
Transmission overload protection

SPECIAL DESIGNS:

The standard line of slip elements provides a wide selection of limit torques, sizes and coupling arrangements. In addition, our engineers will modify designs to meet your specific requirements in such areas as:

Configuration
Driving arrangement
Limit torques from a fraction of an ozf in. to several lbf ft.
Calibration of torque to a tolerance of ± 5%
Different limit torques for the two directions of rotation
Spring windup and limit torque combination. The spring action of the slip element is useful for tensioning of tape and prevention of slack loops.

***** Stock units are calibrated with equal clockwise and counterclockwise slip torques corresponding to the tabulated Upper Limit Torques. Other torques are readily available from full, down to 1/8 of the Upper Limit Torque for each model. Torque values are independent of each other for clockwise and counterclockwise rotation, and may be specified the same or different for the two directions.

****** All clutches in this series have a pilot diameter "K" and three tapped holes "N" for mounting a gear, sprocket or pulley on the input hub. Screw penetration into the clutch housing must not exceed the depth specified in column "N". Concentricity of pilot diameter "K" to bore "C" is .001 T.I.R. max.

All slip clutches are designed for long life under continuous slip conditions. The useful life of these elements is a function of the transmitted torque and slip speed.

The life of the slip couplings & clutches is defined as the number of hours of continuous slip required to cause a deviation of 10% from the initial calibrated torque value. Extensive life tests have been performed on a number of standard units. The "Life Expectancy Curves" are designed for approximating the life span of standard slip clutches and couplings.

Continued on the next page

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EXAMPLE:

If a slip clutch is to provide a torque limit of 50 ozf in. at a continuous slip speed of 100 rpm for 500 hours, the smallest item which can be calibrated is from the S9940Y–SWC15A.. series.

The upper limit torque for this unit is 80 ozf in.

$$\text{Limit Torque Ratio} = \frac{\text{Required Torque}}{\text{Upper Limit Torque}} = 50/80 = 0.63$$

From "Life Expectancy Curves" 100 rpm & 0.63 ratio:

$$\text{Life} = 2{,}800{,}000\ \text{Rev} = \frac{2{,}800{,}000\ \text{Rev}}{100\ \text{Rev / Min. x 60 Min. / Hour}} = 466.7\ \text{Hrs.}$$

The 466.7 hours life value is less than desired 500 hours.
The next larger slip clutch belongs to the S9940Y–SWC18A series.
The upper limit torque for this unit is 120 ozf in.

Limit Torque Ratio = 50/120 = 0.42

From "Life Expectancy Curves" for 100 rpm & 0.42 ratio:

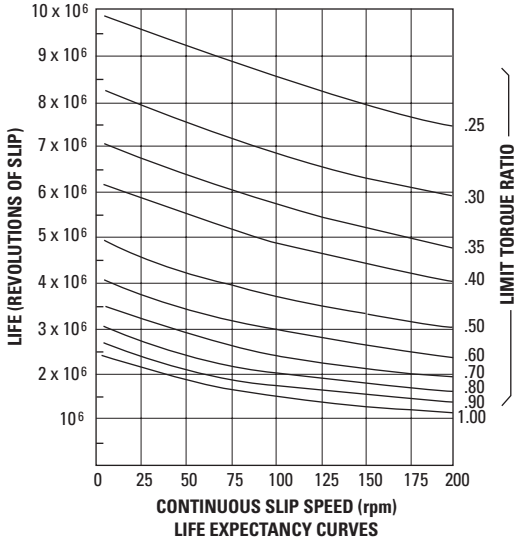
$$\text{Life} = 4{,}800{,}000\ \text{Rev} = \frac{4{,}800{,}000\ \text{Rev}}{100\ \text{Rev / Min. x 60 Min. / Hour}} = 800\ \text{Hrs.}$$

A S9940Y–SWC18A.. series clutch will provide the desired life.

TYPICAL ELEMENT LIFE (STANDARD CATALOG MODELS)

rpm	Torque	Hours of Continuous Slip in Each Direction	Hours of Operation Duty Cycle: 1 Sec. Slip, 1 Sec. Rest
25	1/2 Upper Limit	3,070	6,500
	Upper Limit	1,420	3,040
50	1/2 Upper Limit	1,420	3,040
	Upper Limit	620	1,420
100	1/2 Upper Limit	620	1,420
	Upper Limit	250	620
200	1/2 Upper Limit	250	620
	Upper Limit	100	250

The table entitled "Typical Element Life" provides life in hours of operation for some typical slip speeds and torques of standard slip elements. The torque is presented in terms of 1/2 and full upper limit torque rating of a given slip element.



LIFE EXPECTANCY CURVES

AVERAGE POWER DISSIPATION (P)

Continuous Slip **P = .00074 TN**

Cycle Slip **P = .00074 TNC**

where:

T = Slip Torque [ozf in.]
N = Average Slip Speed [rpm]
C = Duration of Slip / Cycle / Duration of Cycle

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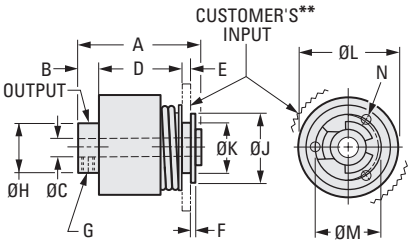

Fig. 1

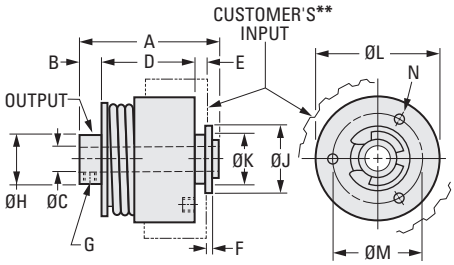

Fig. 2

INCH COMPONENT

Catalog Number	Fig. No.	C Bore +.0010 -.0000	A	B	D	E	F	G	H Dia. Max.	J Dia. Max.	K Dia. +.000 -.001	L Dia.	M Dia.	N	Upper* Limit Torque ozf in.	Max. Dissip. Power Watts
S9940Y-SWC06A02	1	.1248	1.05	.18	.72	.080	.03	#2-56	.51	.45	.374	.63	.500	#0-80 .08 DP.	9 ± 1	1.0
S9940Y-SWC06A03	1	.1873	1.05	.18	.72	.080	.03	#2-56	.51	.33	.374	.63	.500			1.0
S9940Y-SWC10A03	1	.1873	1.24	.21	.85	.095	.04	#4-40	.88	.68	.499	1.00	.650	#1-72 .10 DP.	20 ± 2	2.4
S9940Y-SWC10A04	1	.2498	1.24	.21	.85	.095	.04	#4-40	.88	.68	.499	1.00	.650			2.4
S9940Y-SWC10A05	1	.3123	1.24	.21	.85	.095	.04	#4-40	.88	.68	.499	1.00	.650			2.4
S9940Y-SWC13A04	2	.2498	1.39	.23	.94	.130	.04	#6-32	1.01	.68	.499	1.25	.925	#2-56 .11 DP.	48 ± 5	5.7
S9940Y-SWC13A05	2	.3123	1.39	.23	.94	.130	.04	#6-32	1.01	.68	.499	1.25	.925			5.7
S9940Y-SWC15A04	1	.2498	1.39	.23	.94	.130	.04	#6-32	1.26	.68	.499	1.50	.925		80 ± 8	9.5
S9940Y-SWC15A05	1	.3123	1.39	.23	.94	.130	.04	#6-32	1.26	.68	.499	1.50	.925			9.5
S9940Y-SWC18A04	1	.2498	1.67	.25	1.20	.130	.04	#6-32	1.51	.68	.499	1.87	.780	#4-40 .17 DP.	120 ± 12	14
S9940Y-SWC18A05	1	.3123	1.67	.25	1.20	.130	.04	#6-32	1.51	.68	.499	1.87	.780			14
S9940Y-SWC19A05	1	.3123	1.88	.29	1.34	.130	.04	#8-32	1.51	.74	.749	1.87	1.170		150 ± 15	18
S9940Y-SWC19A06	1	.3748	1.88	.29	1.34	.130	.04	#8-32	1.51	.74	.749	1.87	1.170			18
S9940Y-SWC19A08	1	.4998	1.88	.29	1.34	.130	.04	#8-32	1.51	.74	.749	1.87	1.170			18
S9940Y-SWC22A04	2	.2498	1.88	.29	1.34	.130	.04	#8-32	2.01	.74	.749	2.25	1.170		240 ± 24	28
S9940Y-SWC22A05	2	.3123	1.88	.29	1.34	.130	.04	#8-32	2.01	.74	.749	2.25	1.170			28
S9940Y-SWC22A06	2	.3748	1.88	.29	1.34	.130	.04	#8-32	2.01	.74	.749	2.25	1.170			28
S9940Y-SWC22A08	2	.4998	1.88	.29	1.34	.130	.04	#8-32	2.01	.74	.749	2.25	1.170			28
S9940Y-SWC26A05	1	.3123	1.88	.32	1.31	.130	.04	#10-32	2.01	.74	.749	2.62	1.170		360 ± 36	43
S9940Y-SWC26A06	1	.3748	1.88	.32	1.31	.130	.04	#10-32	2.01	.74	.749	2.62	1.170			43
S9940Y-SWC26A08	1	.4998	1.88	.32	1.31	.130	.04	#10-32	2.01	.74	.749	2.62	1.170			43
S9940Y-SWC30A10	1	.6250	2.30	—	1.975	.225	.046	1/4-20	3.01	1.10	1.124	3.00	1.480	#8-32 .210 DP.	480 ± 50	57
S9940Y-SWC30A12	1	.7500	2.30	—	1.975	.225	.046	2 @	3.01	1.10	1.124	3.00	1.480			57
S9940Y-SWC30A14	1	.8750	2.30	—	1.975	.225	.046	120°	3.01	1.10	1.124	3.00	1.480			57

* or ** See page **13**-5

SPRING-WRAPPED SLIP COUPLINGS

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Inch
0 1

FEATURES:

Long life under continuous slip conditions.
Unidirectional or bidirectional operation.
Same or different clockwise and counterclockwise torques.
Precise and stable limit torque calibration (range: 1/2 to 88 ozf in.).
Same torque at breakaway as at high slip velocities.
Corrosion-resistant materials.

APPLICATIONS:

Tension control of film or tape
Transmission overload protection
Friction loads for testing components

RECOMMENDED MOUNTING PROCEDURE:

Coupling is slipped over one shaft and applicable screws tightened.
Second shaft is inserted into other end of coupling.
Pull loose end of coupling back about .02 in. and tighten applicable screws.

The slip coupling serves as a torque limiter as well as a coupling for two colinear shafts. This coupling is equipped with hubs at both ends for pinning to the two shafts. When the load exceeds the limit torque of a slip coupling, the two shafts rotate relative to each other at the full limit torque. The standard coupling is designed to operate with 3° angular or linear misalignments of up to .010 in. between the two shafts. The mounting hole diameters of the slip couplings can differ for the two ends, so that different diameters of "in-line" shafts can be coupled together.

* Stock units are calibrated with equal clockwise and counterclockwise slip torques corresponding to the tabulated Upper Limit Torques. Other torques are readily available from full, down to 1/8 of the Upper Limit Torque for each model. Torque values are independent of each other for clockwise and counterclockwise rotation, and may be specified the same or different for the directions.

This series of slip couplings is designed for long life under continuous slip conditions. The useful life of these elements is a function of the transmitted torque and slip speed.

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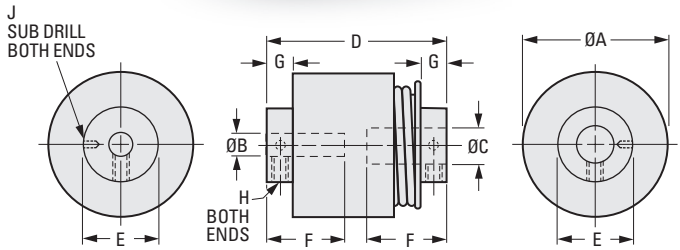

INCH COMPONENT

Catalog Number	B Bore +.0010 -.0000	C Bore +.0010 -.0000	A Dia. ± .02	D ± .03	E Max.	F	G ± .02	J Sub Drill	Upper* Limit Torque ozf in.	Max. Dissip. Power watts	Unit Weight oz.
H Set Screw #2-56											
S9941Y-SWC05A22	.1250	.1250	.50	.89	.50	.43	.17	.029	5 ± .7	.6	.6
S9941Y-SWC05A23	.1250	.1875	.50	.89	.50	.43	.17	.029	5 ± .7	.6	.6
S9941Y-SWC05A33	.1875	.1875	.50	.89	.50	.43	.17	.029	5 ± .7	.6	.6
S9941Y-SWC06A22	.1250	.1250	.62	.98	.51	.46	.17	.029	8 ± 1.0	1.0	.9
S9941Y-SWC06A23	.1250	.1875	.62	.98	.51	.46	.17	.029	8 ± 1.0	1.0	.9
S9941Y-SWC06A33	.1875	.1875	.62	.98	.51	.46	.17	.029	8 ± 1.0	1.0	.9
H Set Screw #4-40											
S9941Y-SWC08A33	.1875	.1875	.75	1.11	.63	.50	.19	.040	12 ± 1.2	1.5	1.2
S9941Y-SWC08A34	.1875	.2500	.75	1.11	.63	.50	.19	.040	12 ± 1.2	1.5	1.2
S9941Y-SWC08A44	.2500	.2500	.75	1.11	.63	.50	.19	.040	12 ± 1.2	1.5	1.2
S9941Y-SWC10A33	.1875	.1875	1.00	1.26	.76	.55	.19	.040	20 ± 2.0	2.4	2.6
S9941Y-SWC10A34	.1875	.2500	1.00	1.26	.76	.55	.19	.040	20 ± 2.0	2.4	2.6
S9941Y-SWC10A44	.2500	.2500	1.00	1.26	.76	.55	.19	.040	20 ± 2.0	2.4	2.6
H Set Screw #6-32											
S9941Y-SWC13A44	.2500	.2500	1.25	1.43	1.01	.62	.25	.055	48 ± 5.0	5.7	3.8
S9941Y-SWC13A45	.2500	.3125	1.25	1.43	1.01	.62	.25	.055	48 ± 5.0	5.7	3.8
S9941Y-SWC13A46	.2500	.3750	1.25	1.43	1.01	.62	.25	.055	48 ± 5.0	5.7	3.8
S9941Y-SWC13A55	.3125	.3125	1.25	1.43	1.01	.62	.25	.055	48 ± 5.0	5.7	3.8
S9941Y-SWC13A56	.3125	.3750	1.25	1.43	1.01	.62	.25	.055	48 ± 5.0	5.7	3.8
S9941Y-SWC13A66	.3750	.3750	1.25	1.43	1.01	.62	.25	.055	48 ± 5.0	5.7	3.8
S9941Y-SWC15A55	.3125	.3125	1.50	1.56	1.26	.73	.25	.055	88 ± 9.0	10.5	6.5
S9941Y-SWC15A56	.3125	.3750	1.50	1.56	1.26	.73	.25	.055	88 ± 9.0	10.5	6.5
S9941Y-SWC15A58	.3125	.5000	1.50	1.56	1.26	.73	.25	.055	88 ± 9.0	10.5	6.5
S9941Y-SWC15A66	.3750	.3750	1.50	1.56	1.26	.73	.25	.055	88 ± 9.0	10.5	6.5
S9941Y-SWC15A68	.3750	.5000	1.50	1.56	1.26	.73	.25	.055	88 ± 9.0	10.5	6.5
S9941Y-SWC15A88	.5000	.5000	1.50	1.56	1.26	.73	.25	.055	88 ± 9.0	10.5	6.5

***** See preceding page.