



BY TIMKEN

Reconfigured as the longest lasting and best performing sleeve type coupling product available in the marketplace today



# S-Flex Endurance™



**IMPROVED!**



*New EPDM Sleeve lasts at least 3X longer*

**The new EPDM Sleeve:**

- Lasts at least 3X as long as the previous design, saving you valuable downtime opportunity costs and maintenance labor costs
- Provides at least 30% increased torque rating
- Allows for product downsize in 50% of applications creating an average cost savings of 23-33% for sleeve replacement

Reliable Performance. Easier Assembly.



# S-Flex Endurance™

**Extensive testing performed by our engineering department compared the new and improved EPDM S-Flex sleeve material to Lovejoy's previous design and to the competition. Ultimately, Lovejoy's new EPDM S-Flex material met or exceeded performance in every testing category.**

**Continue to enjoy the S-Flex benefits, just enjoy them at least 3X longer\*!**

## Improved EPDM's S-Flex Endurance Sleeve material key features:

**Durability** – Lovejoy estimates the new and improved material will be able to last at least three times longer than before. A longer service life is provided even at the higher torque ratings. A noticeable abrasion resistance improvement gives the ability to withstand mechanical wear during coupling use.

**Resilience** – The rebound characteristics are significantly improved. The new Lovejoy sleeve material absorbs less frictional heat than the current competition. This heat build-up advantage leads to less wear and minimizes the possibility of coupling failure.

**Strength** – The higher torsional stiffness corresponds with the elastomer's overall toughness (tensile strength and tear strength)

increase. This allows many applications to use a smaller, less expensive coupling and still achieve the same torque rating. The material's resilience also contributes to the performance upgrade by enhancing the element's resistance to deformation.

**Heat Resistance** – The sleeve's temperature rises during operation due to the hysteretic behavior of rubber. The new sleeves exhibited fast heat dissipation and maintained a lower temperature than the competition at the same dynamic cyclic test conditions. The decrease in heat generation leads to a longer service life.

**Recovery** – Resistance to permanent deformation as well as its elastic recovery has improved.

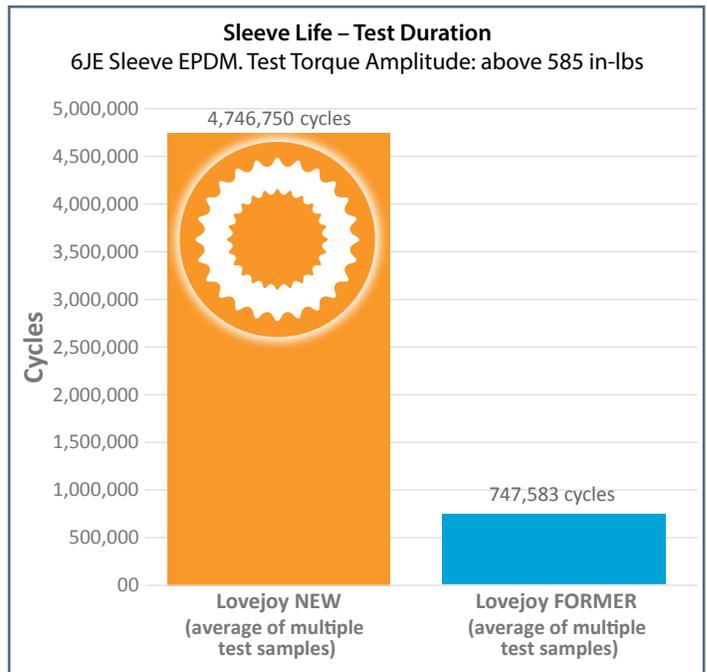
## Testing S-Flex Endurance

S-Flex Endurance sleeve's **static and dynamic torsional stiffness** tested at least 30% greater than the former Lovejoy material and outperformed the current competition. The Lovejoy product operated with more resilience and consequently less heat build-up than the previous material as well as the competitive products. Furthermore, post-test inspections showed the new sleeves are very durable under these extreme test conditions, as they maintained their tooth shape and displayed minimal wear.

**The Sleeve Life – Test Duration** graph shows that the former Lovejoy EPDM sleeves lasted an average of 747k cycles before reaching torque overload failure where the sleeves failed and could no longer transmit the set torque. The new Lovejoy EPDM material was tested for a week up to about 4.75 million cycles and no signs of failure were present at which point testing was ended. Accelerated fatigue testing is performed at severe high-torque and high-frequency conditions. Typical operation cycle life will greatly exceed the test cycles in the graph. The cyclic fatigue test conditions demonstrate the new Lovejoy EPDM material has at least a 3X longer life expectancy, if not more, than the former material.

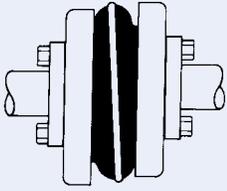


Test articles were installed between the torque actuator's driving S-Flex flange and a driven torque transducer flange



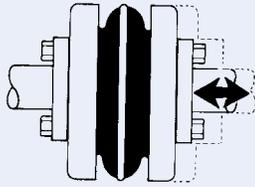
\*Performance improvements apply only to the EPDM sleeve type. Neoprene and Hytrel® sleeve type performance has remained unchanged.

## Protection from misalignment, shock and vibration:



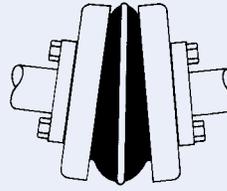
### PARALLEL

Accepts up to .062 in of parallel misalignment without wear. The flexible coupling sleeve minimizes the radial loads imposed on equipment bearings, a problem commonly associated with parallel misalignment.



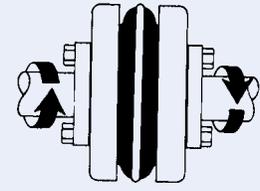
### AXIAL

The S-Flex Endurance couplings can be used in applications which require a limited amount of shaft end-float without transferring thrust loads to equipment bearings. Axial movement of approximately 1/8 inch accepted.



### ANGULAR

The flexing action of the elastomeric sleeve and the locking feature of the mating teeth allows the S-Flex Endurance coupling to effectively handle angular misalignment up to 1°.



### TORSIONAL

Effectively dampens torsional shock and vibration to protect connected equipment. The EPDM and Neoprene sleeves have torsional wind-up flexibility of approximately 15° at their rated torque. Hytrel provides about 7° wind-up.

## Elastomer Sleeve Features:

- Lovejoy offers flexible sleeves for S-Flex Endurance couplings in three designs: one-piece solid, one-piece split, and two-piece with retaining ring
- The one-piece split design provides solutions for applications with unique requirements where small shaft separations inhibit the installation of a one-piece solid sleeve
- Pre-molded teeth along the diameter of the sleeve engage with teeth of the coupling flanges
- No clamps or screws are needed to connect the flanges with the flexible sleeve which securely lock together under torque for smooth transmission of power
- Torque is transmitted through shear loading of the sleeve
- All three sleeve materials are highly elastic which permits the S-Flex Endurance coupling to protect connected equipment from harmful shock loading, vibration, and shaft misalignment



**JE Type**  
One Piece

**JES Type**  
One Piece Split



**E Type**  
Two piece with retaining ring

### JE, JN, JES, JNS Sleeve Types

These sleeves feature a one-piece design molded in EPDM & Neoprene rubber. In the case of JES & JNS Types, the one-piece design is split to provide for ease of installation and removal.

### E, N Sleeve Types

These sleeves feature a two-piece design with retaining ring. The E Type is molded in EPDM rubber and the N Type is molded in Neoprene. The two-piece design is ideal for applications where there is difficulty in separating the shafts of the driver and driven.

## Sleeve Performance Data

Characteristics	Temperature Range		Misalignment Capabilities			Torsional Wind-Up
	F°	C°	Angular (in)	Parallel (in)	Axial (in)	in
EPDM – Unless otherwise specified, S-Flex Endurance couplings are supplied with EPDM flexible sleeves. EPDM has good resistance to commonly used chemicals and is generally not affected by dirt or moisture. Color is black.	-30° to 275° F	-34° to 135° C	1°	up to .062	.125	up to 15°

## S-Flex Endurance Standard Sleeve UPC Number Selection Table

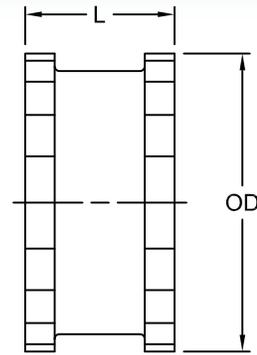
Size	JE	Bulk Pack	JES	Bulk Pack	JN	JNS	E	Bulk Pack	N	H	HS
		JE <sup>1</sup>		JES <sup>1</sup>				E <sup>1</sup>			
3	36384	52712	36692	52713	35356	36866	—	—	—	—	—
4	35359	52714	36695	52715	35360	36869	—	—	—	—	—
5	35350	52716	36698	52717	35366	36872	35368	52718	35369	—	—
6	35569	52719	36701	52720	36394	36875	35600	52721	36411	40738	40741
7	35570	52722	36704	52723	36398	36878	36414	52724	36416	36848	41704
8	35572	52725	36707	52726	36402	36881	36419	52727	36421	36514	40072
9	36405	—	36864	—	—	—	36424	—	36426	40744	40747
10	35450	—	35451	—	—	—	36429	—	35453	35454	35455
11	—	—	—	—	—	—	36433	—	35457	35458	35459
12	—	—	—	—	—	—	36437	—	35461	35462	35463
13	—	—	—	—	—	—	35464	—	35465	—	35466
14	—	—	—	—	—	—	35467	—	35468	—	35469
16	—	—	—	—	—	—	35470	—	—	—	—

Note: ■ 1 indicates: Bulk pack sizes 3-6 contain ten pieces, sizes 7-8 contain five pieces.

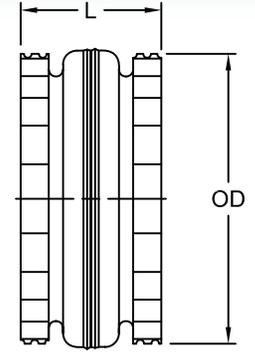


## Sleeve Dimensional Data

Size	Types JE, JES, JN & JNS			Types E & N		
	EPDM & Neoprene			EPDM & Neoprene		
	L	OD	Weight	L	OD	Weight
	in	in	lbs	in	in	lbs
3	1.00	1.88	0.06	—	—	—
4	1.25	2.31	0.10	—	—	—
5	1.56	2.94	0.20	1.56	2.94	0.25
6	1.88	3.75	0.40	1.88	3.75	0.49
7	2.19	4.34	0.62	2.19	4.34	0.77
8	2.50	5.06	1.13	2.50	5.06	1.40
9	3.00	6.00	1.46	3.00	6.00	2.00
10	3.44	7.06	2.32	3.44	7.06	3.20
11	—	—	—	4.00	8.19	5.10
12	—	—	—	4.69	9.56	8.10
13	—	—	—	5.50	11.19	13.00
14	—	—	—	6.50	13.09	21.10
16	—	—	—	8.75	17.91	45.30



JE, JN, JES and JNS Types



E and N Types

## S-Flex Endurance EPDM Performance Ratings

Size	Basic HP Ratings @ Varying RPM				Torque Rating		Torsional <sup>1</sup> Stiffness in-lb/rad	ID1 - ID2				Max RPM
	100	1200	1800	3600	in-lbs	Nm		Min Bore in	mm	Max Bore in	mm	
3	0.1	1.4	2.2	4.4	78	8.81	298	0.375		0.875	22	9,200
4	0.2	3.0	4.4	9.0	156	17.63	595	0.500		1.000	25	7,600
5	0.5	6.0	9.0	17.8	312	35.26	1,191	0.500		1.188	30	7,600
6	0.9	11.2	16.8	33.4	585	66.09	2,233	0.625		1.438	38	6,000
7	1.6	18.2	27.3	53.3	940	106.20	3,600	0.625		1.625	42	5,250
8	2.3	28.6	41.6	84.5	1,475	166.66	5,636	0.750		1.938	49	4,500
9	3.8	44.2	66.3	133.9	2,340	264.38	8,938	0.875		2.375	60	3,750
10	6.0	71.5	106.6	213.2	3,735	422.00	14,274	1.125		2.750	70	3,600
11	9.4	111.8	167.7	336.7	5,889	665.37	22,490	1.250		3.375	86	3,600
12	14.8	178.1	267.8	—	9,360	1057.54	35,750	1.500		3.875	99	2,800
13	18.0	216.0	324.0	—	11,350	1 282.38	43,350	2.000		4.500	114	2,400
14	28.6	343.0	514.0	—	18,000	2 033.73	68,755	2.000		5.000	127	2,200
16	75.0	900.0	—	—	47,250	5 338.54	180,480	3.000		5.500	140	1,500

Notes: ■ 1 indicates: Values shown are for an ambient temperature of 75° F (24° C).

■ Coupling ratings are based on sleeve material regardless of flange design.



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