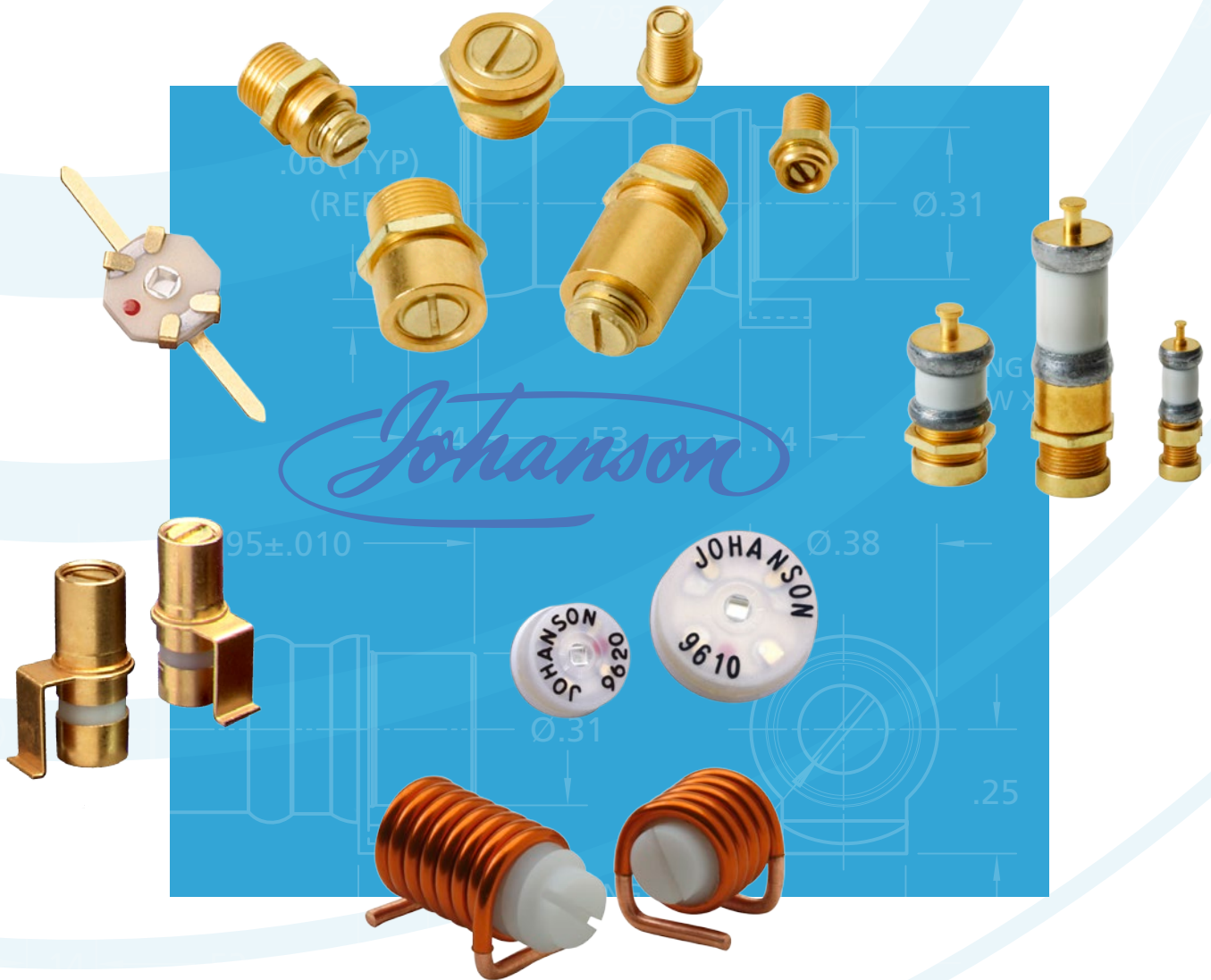


Johanson ***Capability Guide***



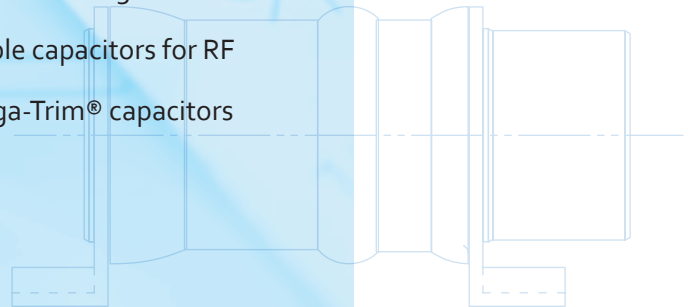
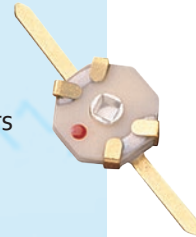
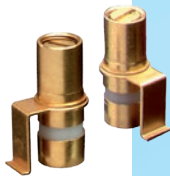
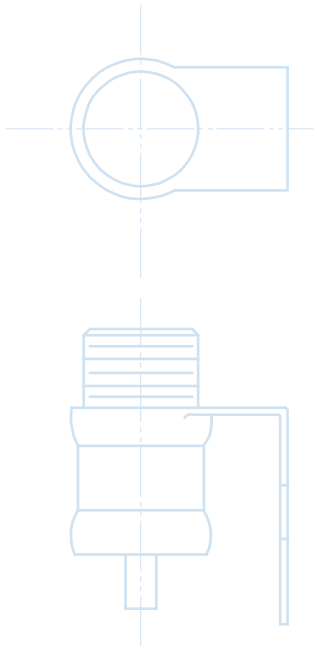
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Electronic Accuracy Through Mechanical Precision

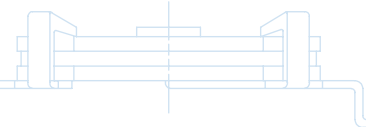
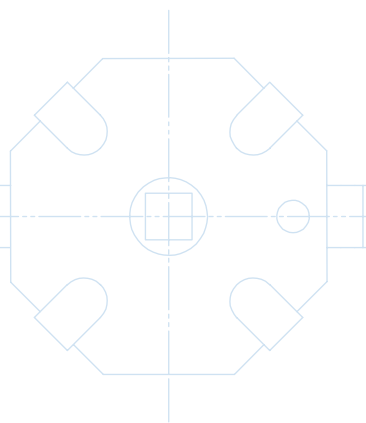
Knowles Capacitors is the result of the merging of some of the world's leading speciality capacitor manufacturers. With a combined history exceeding 175 years, Dielectric Laboratories (DLI), Johanson MFG, Novacap, Syfer and Voltronics have come together in a single organisation, with one team of great people sharing a common vision.

With facilities located worldwide, Knowles Capacitors is an outstanding, environmentally conscious global supplier. Knowles is proud to be certified to ISO 9001:2008. State-of-the-art technology and equipment in pristine facilities enable Knowles to control the product from design through manufacturing.

Knowles Capacitors is a world-class supplier of Trimmer Capacitors and microwave Tuning Elements. We offer a wide variety of variable capacitors for RF and microwave applications. Giga-Trim® capacitors



cy - anical Precision.



are miniature capacitors designed for high resolution tuning of RF power circuits. Knowles Air Capacitors are available in a variety of sizes and mounting configurations incorporating a one piece, self-locking, constant torque drive mechanism. Ceramic Trimmer Capacitors are available in surface mount, strip-line and through hole lead styles. Microwave Tuning Elements are an economical means of tuning waveguides, cavities and other microwave structures.

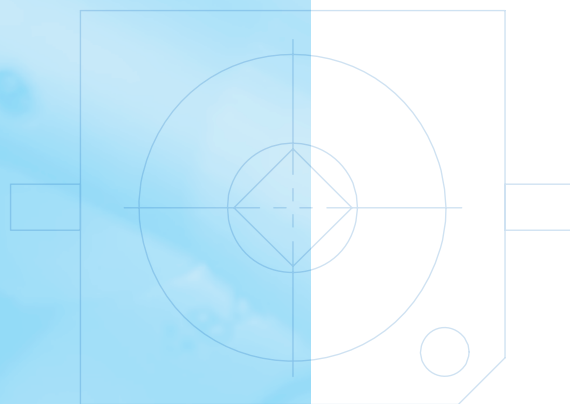


Please see our website at www.johansonmfg.com



Johanson components

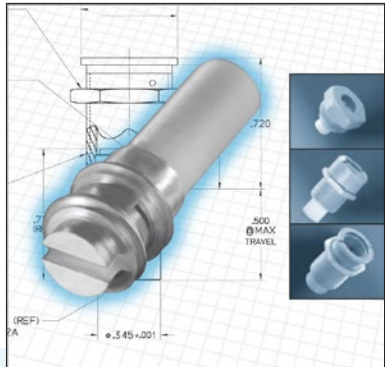
- Tuning Elements
- Non-magnetic Trimmer Caps
- Thin-Trim
- Cera-Trim
- Seal-Trim
- Giga-Trim
- Air Trimmer Capacitors
- Non-magnetic Variable Inductors



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Tuning Elements



Typical Applications

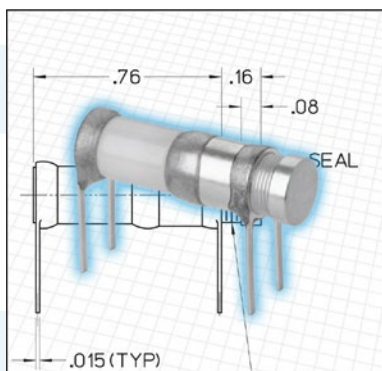
- Microwave Filter Positioning
- Fiber Optic Alignment
- Metering Valve Adjustment
- X Y Z Stage Positioning
- Self Locking Fastener
- Limit Switch/Sensor Positioning

Other Products Available

- Posi-Torque®
- Taps
- Tuning Rotors
- DynaTrim / Tuners
- Comb Line Filters

Features

- One handed adjusting/tuning
- Self-Locking/Constant torque mechanism
- Eliminates need for "jam" nuts
- Produced with fine-pitched threads for high resolution zero back lash positioning from 24 TPI to 108 TPI
- Basic thread diameters available from 0.060" to 1.00", SI and US customary threads
- Excellent electrical conduction (Contact resistance <0.01 Ω)
- Capable of re-tuning/re-positioning
- Available with Gold, Silver, Nickel Plating and Chromate Finish
- Can be assembled with other materials, (Ceramic, Ferrites, Sapphire, Glass, etc.)
- Available as a set, to provide a positive stop or extended travel range
- Available in copper or ferrous alloys
- Custom torque designs available



Non-magnetic trimmer Caps

Characteristics

- Working Voltage: From 250 VDC to 5000 VDC
- Long Rotational life
- Insulation Resistance: > 10⁶ MΩ
- Temperature range: -65°C to +125°C
- RoHS Compliant parts available

Specifications (53H18NM)

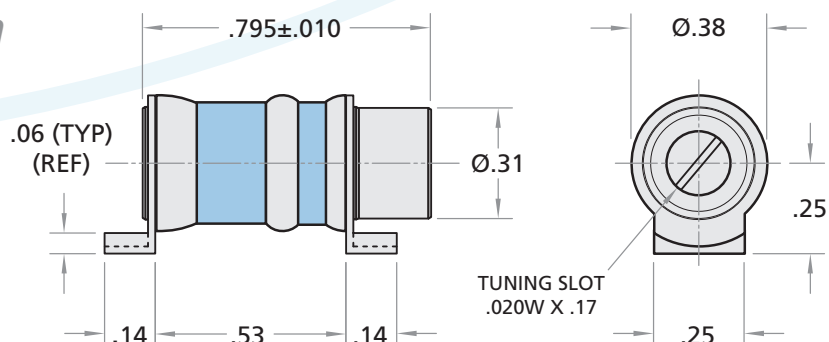
- Capacity Range: 3.0pF to 55pF (>17 Turns)
- Working Voltage: 1000 VDC (Test Volt. 2000 VDC)
- Q @ 175 MHz - >800
- Insulation Resistance: >10⁶ MEGOHMS
- Temperature Range: -65°C to +125°C
- Tuning Torque: 1.0 to 6.0 OZ. IN

Working Voltage	Cap. Range	Series	Q
5000 VDC	1 to 7.5 pF	5610	>1000 @100MHz
1250 VDC	1.5 to 10 pF	52H	>1400 @195MHz
1000 VDC	1.5 to 19 pF	55H	>1000 @175MHz
	1 to 25 pF	59H	>1000 @175MHz
	2 to 30 pF	56H	>1000 @175MHz
250 VDC	0.4 to 3.5 pF	5860	>10000 @100MHz
	0.6 to 6.0 pF	5760	>10000 @100MHz
	0.8 to 10 pF	5240	>4000 @100MHz
	1 to 30 pF	5640	>800 @100MHz

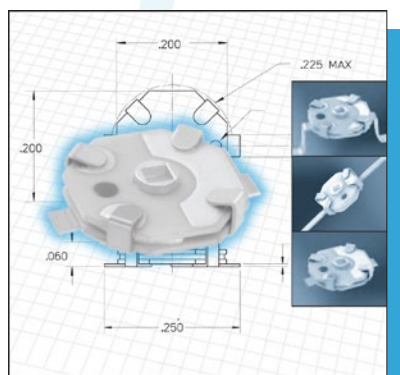
Unit Construction

Non-magnetic structure with PTFE dielectric

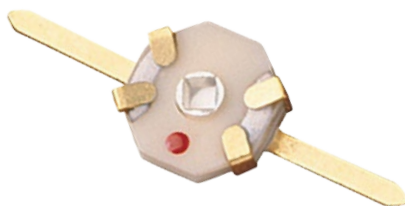
- Brass Structure
- Glazed Alumina Insulation
- 574°F Solder Used in Assembly
- Gold, Silver and Chromate Finish
- Vertical Mount Version also Available



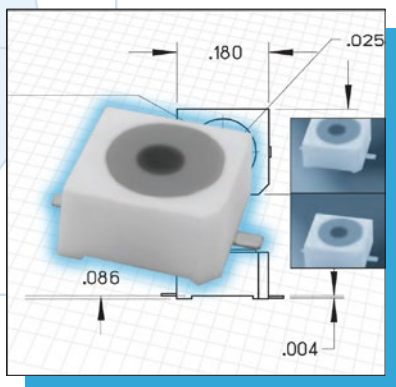
Thin-Trim



Series	Disk Size	Capacitance	Tuning Resolution
9401	0.140" (3.56 mm)	0.25 to 4.0 pF	90°
9402	0.125" (3.18 mm)	0.5 to 25 pF	180°
9410	0.200" (5.08 mm)	1 to 50 pF	180°



Cera-Trim



Characteristics

- Working Voltage: 250 VDC (500 VDC Test)
- Insulation Resistance: > 104 MΩ
- Temperature Range: -55°C to +125°C
- Tuning Tool: 4192
- RoHS Compliant parts available
- Non-Magnetic

Applications

- RF amplifier
- LC Filters and Networks
- Broadband Wireless LAN
- Medical Devices
- Cordless and Cellular phones
- DR/Crystal Oscillator
- Microstrip line filters

Seal-Trim



Series	Disk Size	Capacitance	Tuning Resolution
9610/9810	0.270" (6.86 mm)	1 to 50 pF	180°
9620/9820	0.180" (4.57 mm)	0.5 to 25 pF	180°

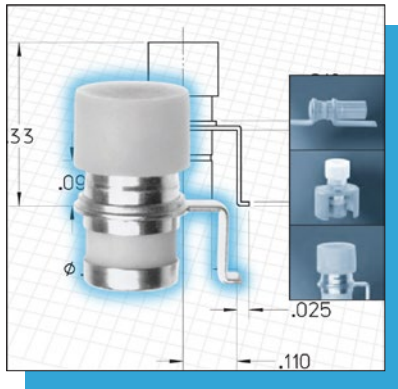
Applications

- RF amplifier
- LC Filters and Networks
- Broadband Wireless LAN
- Medical Devices
- Cordless and Cellular phones
- DR/Crystal Oscillator
- Microstrip line filters

Characteristics

- Working Voltage: 250 VDC (500 VDC Test)
- Long Rotational life
- Insulation Resistance: > 104 MΩ
- Temperature Range: -55°C to +125°C
- RoHS Compliant parts available
- Non-Magnetic

Giga-Trim



Capacitance	Series	Q @ 250 MHz
0.3 to 1.2 pF	27260	> 5000
0.4 to 2.5 pF	27280	> 4000
	47280	> 4000
0.3 to 2.3 pF	47480	> 2000
0.6 to 4.5 pF	17270	> 2000
	27270	> 3000
	47270	> 3000
	57280	> 1000
0.8 to 8.0 pF	27290	> 3000
	57270	> 1000
2.0 to 6.0 pF	47470	> 1500

Applications

- RF amplifier
- Impedance matching
- Crystal trimming
- Interstage coupling
- Filter tuning

Characteristics

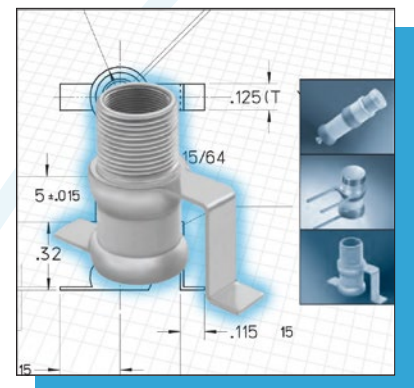
- Working Voltage: 500 VDC (1000 VDC Test)
- Long rotational life
- Insulation resistance: > 10⁶ MΩ
- Temperature range: -65°C to +125°C
- RoHS Compliant parts available

Air Trimmer Capacitors

Applications

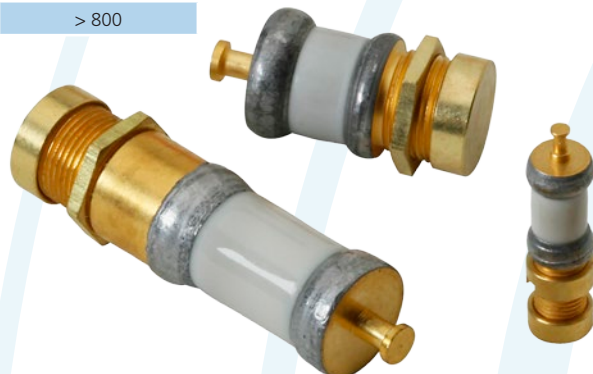
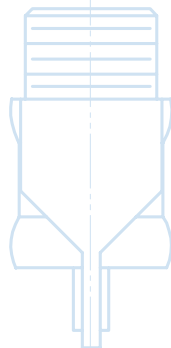
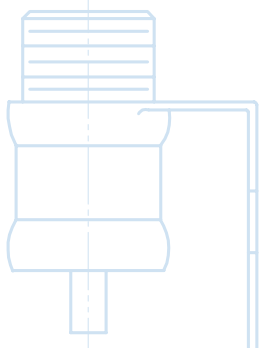
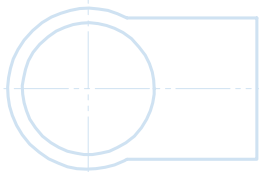
- RF amplifier and oscillators
- Impedance matching
- Interstage coupling
- Filter tuning
- Crystal trimming

Capacitance	Series	Q @ 250 MHz
0.35 to 3.5 pF	5800	> 10000
0.5 to 5 pF	5850	> 7500
0.6 to 6 pF	5700	> 10000
1.0 to 10 pF	1500	> 4000 @195MHz
0.8 to 10 pF	5200	> 5000
0.8 to 10 pF	5750	> 7500
1 to 10 pF	5300	> 2000
1 to 14 pF	5400	> 3000
1 to 16 pF	5450	> 3000
1 to 20 pF	5500	> 1500
1 to 30 pF	5600	> 800

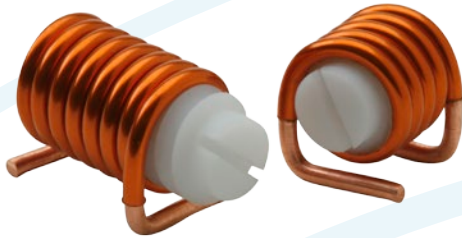


Characteristics

- Working Voltage: 250 VDC (500 VDC Test)
- Long Rotational life
- Insulation resistance: > 10⁶ MΩ
- Temperature range: -65°C to +125°C
- RoHS Compliant parts available

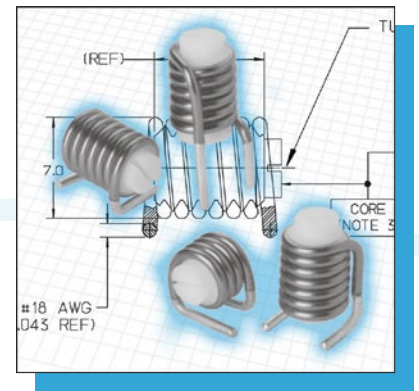


Non-magnetic variable inductors



Applications

- MRI / NMR Systems
- Radios / Jammers
- Power Amplifiers
- Radar
- Avionics Instrumentation
- Test Equipment



Characteristics

- Patent pending, precision machined design
- 7mm high in SMD, Vertical SMD and thru-hole versions
- Nominal values of 32 to 118nH, 2 to 7 turns
- Q as high as 121 @ 100MHz, SRF 0.7 – 1.5 GHz
- Superb shock, vibration and thermal tolerances
- -40°C to +85°C
- Customized version requests welcomed

	Part No.	L(nH) Q				(@ 100MHz)	SRF (GHz)	Turns	Thread (mm)
		Min	Nom	Max	No Core				
Surface Mount - Horizontal	JLC02E030TRSM	32	33	34	39	90	1.2	2	6
	JLC03E048TRSM	46	49	52	59	95	1	3	6
	JLC04E065TRSM	60	64	68	78	101	0.9	4	6
	JLC05E088TRSM	74	81	87	99	114	0.9	5	8
	JLC06E110TRSM	94	107	119	123	119	0.7	6	8
	JLC07E130TRSM	104	118	133	142	121	0.7	7	10
	JLC09E160TRSM	122	130	170	191	162	0.58	9	13
	JLC13E250TRSM	185	219	270	294	199	0.43	13	18
	JLC19E375TRSM	281	345	436	457	171	0.31	19	25
	Part No.	L(nH) Q				(@ 100MHz)	SRF (GHz)	Turns	Thread (mm)
		Min	Nom	Max	No Core				
Surface Mount - Vertical	JLC02E030TRSM	32	33	34	39	90	1.2	2	6
	JLC03E048TRSM	46	49	52	59	95	1	3	6
	JLC04E065TRSM	60	64	68	78	101	0.9	4	6
	JLC05E088TRSM	74	81	87	99	114	0.9	5	8
	JLC06E110TRSM	94	107	119	123	119	0.7	6	8
	JLC07E130TRSM	104	118	133	142	121	0.7	7	10
	Part No.	L(nH) Q				(@ 100MHz)	SRF (GHz)	Turns	Thread (mm)
		Min	Nom	Max	No Core				
Thru Hole Mount - Vertical	JLC02E030TRSM	32	33	34	39	90	1.2	2	6
	JLC03E048TRSM	46	49	52	59	95	1	3	6
	JLC04E065TRSM	60	64	68	78	101	0.9	4	6
	JLC05E088TRSM	74	81	87	99	114	0.9	5	8
	JLC06E110TRSM	94	107	119	123	119	0.7	6	8
	JLC07E130TRSM	104	118	133	142	121	0.7	7	10



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Knowles Capacitors designs, manufactures and sells special electronic components. Our products are used in military, space, telecom infrastructure, medical and industrial applications where function and reliability are crucial.



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