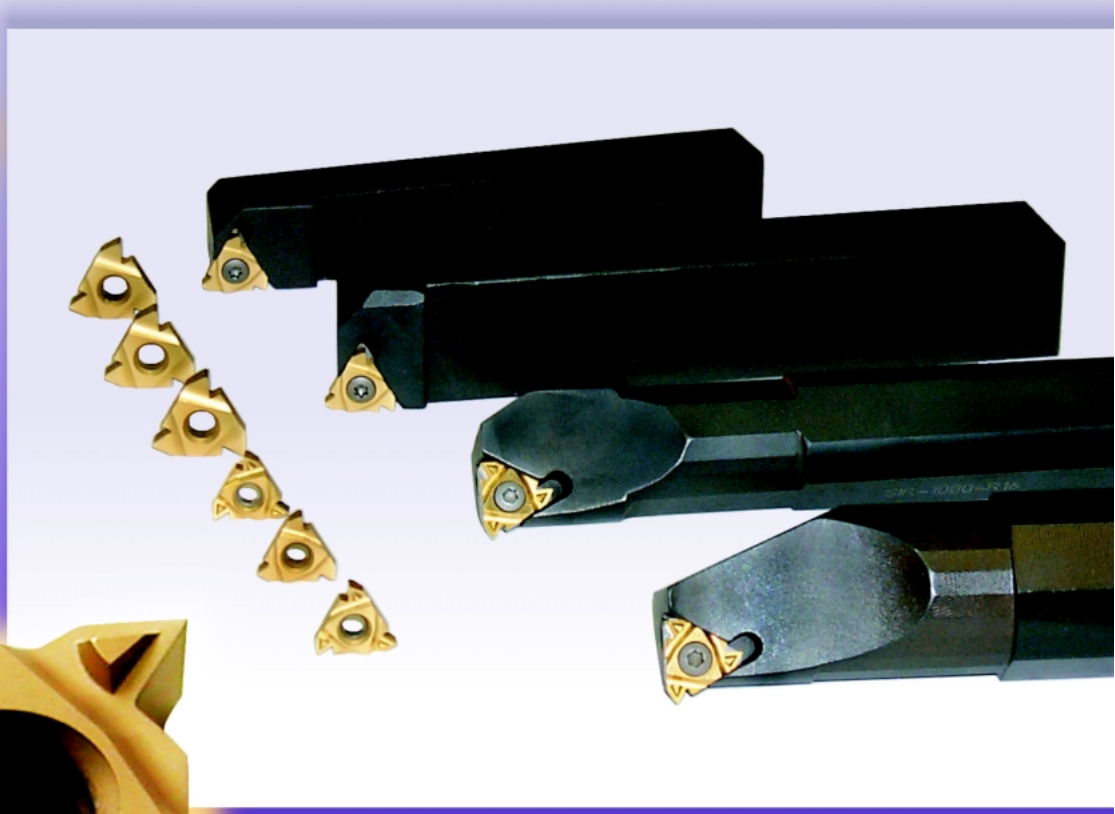
Tyson infoTECH™

Issue 14

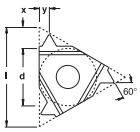
Laydown Thread Turning System



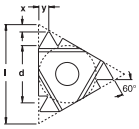
- **Tear Drop chipbreaker for improved chip control, saving time and increasing both tool life and productivity**
- **FULL PROFILE inserts for a complete thread form**
- **PARTIAL PROFILE inserts to cover a variety of threads**
- **PVD coatings for increased tool life over a wide range of speeds, while resisting edge build-up**

STANDARD INSERTS:
for use in most laydown threading applications

Partial Profile 60°

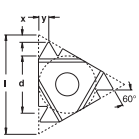
Insert	Designation	Pitch		Dimensions				Coated				Uncoated			
		t.p.i.	mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	11ERA60	48-16	0.5-1.5	1/4	.43	.028	.031	●				●	●		
	16ERA60	48-16	0.5-1.5	3/8	.63	.028	.031	●				●	●		
	16ERAG60	48-8	0.5-3.0			.051	.059	●	●			●	●		●
	16ERMR60	24-11	1.0-2.5			.051	.059	●	●			●	●		
	16ERG60	14-8	1.75-3.0			.051	.059	●	●			●	●		
	22ERN60	7-5	3.5-5.0	1/2	.87	.071	.098	●	●			●	●		
	27ERS60	4.5-4	5.5-8.0	5/8	1.06	.098	.157	●				●	●		

Full Profile UN 60°

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		t.p.i.	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16ER24UN	24	3/8	.63	.028	.031	●	●			●	●		
	16ER20UN	20			.028	.031	●	●			●	●		
	16ER18UN	18			.028	.031	●	●			●	●		
	16ER14UN	14			.051	.059	●				●	●		
	16ER12UN	12			.051	.059	●	●			●	●		
	16ER10UN	10			.051	.059	●				●	●		
	16ER8UN	8			.051	.063	●	●			●	●		

Complete range of full profile inserts are available, please call for further information.

Full Profile ISO 60°

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16ER1.0ISO	1.00	3/8	.63	.028	.031	●	●			●	●		
	16ER1.25ISO	1.25			.028	.031	●	●			●	●		
	16ER1.5ISO	1.50			.028	.031	●	●			●	●		
	16ER2.0ISO	2.00			.051	.059	●	●			●	●		
	16ER2.5ISO	2.50			.051	.059	●	●			●	●		
	16ER3.0ISO	3.00			.051	.063	●	●			●	●		

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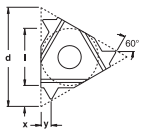
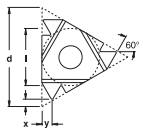
STANDARD INSERTS:
for use in most laydown threading applications

Partial Profile 60°

Insert	Designation	Pitch		Dimensions				Coated				Uncoated			
		t.p.i.	mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	11NRA60	48-16	0.5-1.5	1/4	.43	.028	.031	●	●			●	●		
	16NRA60	48-16	0.5-1.5	3/8	.63	.028	.031	●				●	●		
	16NRAG60	48-8	0.5-3.0			.051	.059	●	●			●	●		●
	16NRMR60	24-11	1.0-2.5			.051	.059					●	●		
	16NRG60	14-8	1.75-3.0			.051	.059	●	●			●	●		●
	22NRN60	7-5	3.5-5.0	1/2	.87	.071	.098	●				●	●		
	27NRS60	4.5-4	5.50-8.0	5/8	1.06	.098	.157	●				●	●		

Full Profile UN 60°

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		t.p.i.	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16NR24UN	24	3/8	.63	.028	.031	●				●	●		
	16NR20UN	20			.028	.031	●	●			●	●		
	16NR18UN	18			.028	.031	●				●	●		
	16NR14UN	14			.051	.059	●	●			●	●		
	16NR12UN	12			.051	.059	●	●			●	●		
	16NR10UN	10			.051	.059	●				●	●		

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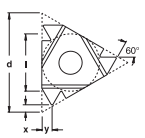
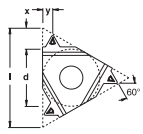
Full Profile ISO 60°

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16NR1.0ISO	1.00	3/8	.63	.031	.031	●	●			●	●		
	16NR1.25ISO	1.25			.028	.031	●				●	●		
	16NR1.5ISO	1.50			.028	.031	●	●			●	●		
	16NR2.0ISO	2.00			.051	.059	●	●			●	●		
	16NR2.5ISO	2.50			.051	.059	●	●			●	●		
	16NR3.0ISO	3.00			.051	.063	●	●			●	●		

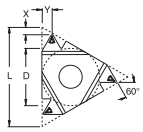
Complete range of full profile inserts are available, please call for further information.

TEAR DROP (TD):
chipbreaker for improved chip control

Partial Profile 60° TD

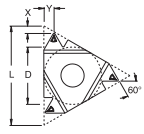
Insert	Designation	Pitch		Dimensions				Coated				Uncoated			
		t.p.i.	mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16ERA60TD	48-16	0.5-1.5	3/8	.63	.028	.031	●							
	16ERAG60TD	48-8	0.5-3.0			.051	.059	●	●						
	16ERG60TD	14-8	1.75-3.0			.051	.059	●							

Full Profile UN 60° TD

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		t.p.i.	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16ER24UNTD	24	3/8	.63	.028	.031	●							
	16ER20UNTD	20			.028	.031	●							
	16ER18UNTD	18			.028	.031	●							
	16ER14UNTD	14			.051	.059	●							
	16ER12UNTD	12			.051	.059	●							
	16ER10UNTD	10			.051	.059	●							

Complete range of full profile inserts are available, please call for further information.

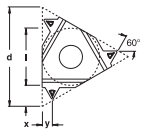
Full Profile ISO 60° TD

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16ER1.0ISOTD	1.00	3/8	.63	.028	.031	●							
	16ER1.25ISOTD	1.25			.028	.031		●						
	16ER1.5ISOTD	1.50			.028	.031	●	●						
	16ER2.0ISOTD	2.00			.051	.059	●	●						
	16ER2.5ISOTD	2.50			.051	.059	●	●						
	16ER3.0ISOTD	3.00			.051	.059	●	●						

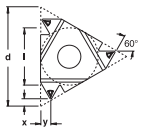
Complete range of full profile inserts are available, please call for further information.

TEAR DROP (TD): chipbreaker for improved chip control

Partial Profile 60° TD

Insert	Designation	Pitch		Dimensions				Coated				Uncoated			
		t.p.i.	mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16NRA60TD	48-16	0.5-1.5	3/8	.63	.028	.031	●							
	16NRAG60TD	48-8	0.5-3.0			.051	.059	●	●						
	16NRG60TD	14-8	1.75-3.0			.051	.059	●							

Full Profile UN 60° TD

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		t.p.i.	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16NR24UNTD	24	3/8	.63	.028	.031	●							
	16NR20UNTD	20			.028	.031	●							
	16NR18UNTD	18			.028	.031	●							
	16NR14UNTD	14			.051	.059	●							
	16NR12UNTD	12			.051	.059	●							
	16NR10UNTD	10			.051	.059	●							

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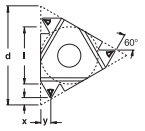
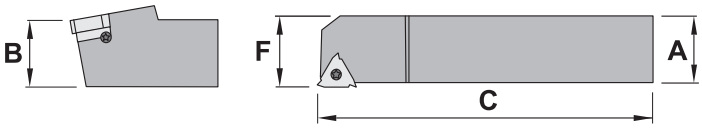
Full Profile ISO 60° TD

Insert	Designation	Pitch	Dimensions				Coated				Uncoated			
		mm	d	l	x	y	PTC2	STC2E			K20	P30		HSS
	16NR1.0ISOTD	1.00	3/8	.63	.028	.031	●							
	16NR1.25ISOTD	1.25			.028	.031	●							
	16NR1.5ISOTD	1.50			.028	.031	●	●						
	16NR2.0ISOTD	2.00			.051	.059	●	●						
	16NR2.5ISOTD	2.50			.051	.059	●					●		
	16NR3.0ISOTD	3.00			.051	.059	●	●						

Complete range of full profile inserts are available, please call for further information.

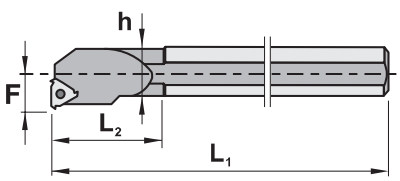
SER External Toolholders



DESIGNATION	A	B	C	F	INSERT	INSERT SCREW	ANVIL	SIDE SCREW	TORX KEY
SER-0310-H11	.310	.310	4.00	.430	11ER__ (1/4" I.C.)	SA11	---	---	SF8
SER-0375-H11	.375	.375	4.00	.430					
SER-0375-D16	.375	.375	2.50	.630	16ER__ (3/8" I.C.)	SA16	---	---	SF10
SER-0500-F16	.500	.500	3.25	.630					
SER-0625-H16	.630	.630	4.00	.630		SA16L	SE16	SY16	
SER-0750-K16	.750	.750	5.00	.750					
SER-1000-M16	1.000	1.000	6.00	1.000					
SER-1250-P16	1.250	1.250	7.00	1.250					
SER-1000-M22	1.000	1.000	6.00	1.000	22ER__ (1/2" I.C.)	SA22	SE22	SY22	SF20
SER-1250-P22	1.250	1.250	7.00	1.250					
SER-1500-R22	1.500	1.500	8.00	1.500					
SER-1000-M27	1.000	1.000	6.00	1.250	27ER__ (5/8" I.C.)	SA27	SE27	SY27	SF25
SER-1250-P27	1.250	1.250	7.00	1.250					
SER-1500-R27	1.500	1.500	8.00	1.500					

Left handed toolholders available upon request

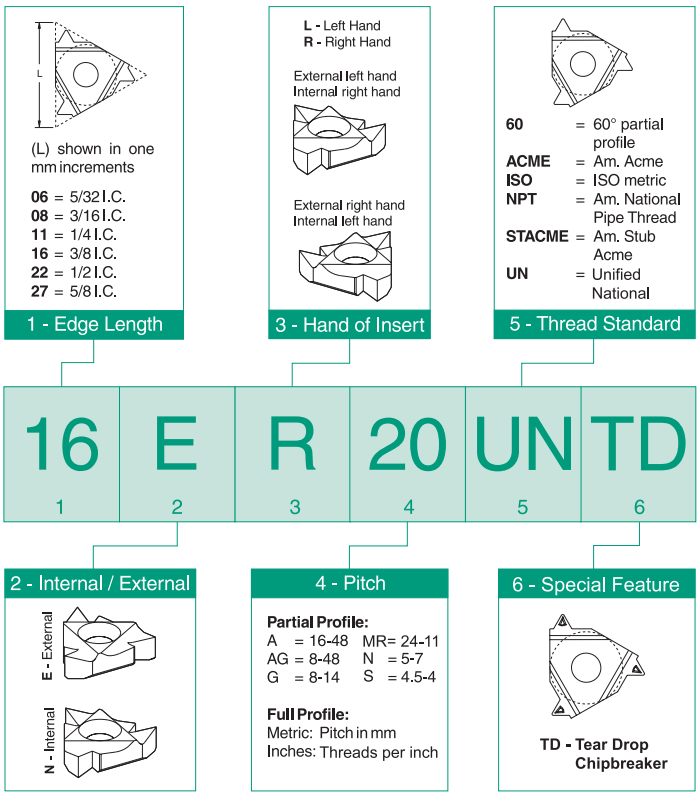
SIR Internal Boring Bars



DESIGNATION	Min. Bore	D	L_1	L_2	h	F	INSERT	INSERT SCREW	ANVIL	SIDE SCREW	TORX KEY
SIR-0375-H11	.470	.375	4.00	1.00	.38	.290	11NR__ (1/4" I.C.)	SA11	---	---	SF8
SIR-0375-K11	.470	.375	5.00	1.25	.38	.260					
SIR-0500-L11	.630	.625	5.50	1.25	.50	.320					
SIR-0500-M16	.640	.625	6.00	1.25	.50	.390	16NR__ (3/8" I.C.)	SA16	---	---	SF10
SIR-0625-P16	.750	.750	7.00	1.50	.62	.450					
SIR-0750-P16	1.000	.750	7.00	1.50	.75	.510		SA16L	SN16	SY16	
SIR-1000-R16	1.200	1.000	8.00	1.50	1.00	.650					
SIR-1250-S16	1.420	1.250	10.00	1.50	1.25	.770					
SIR-1500-T16	1.650	1.500	12.00	1.50	1.50	.090					
SIR-0750-P22	.950	.750	7.00	1.50	.75	.510	22NR__ (1/2" I.C.)	SA22	SN22	SY22	SF20
SIR-1000-R22	1.200	1.000	8.00	1.50	1.00	.710					
SIR-1250-S22	1.500	1.250	10.00	1.50	1.25	.850					
SIR-1500-T22	1.750	1.500	12.00	1.50	1.50	.098					
SIR-1250-S27	1.560	1.250	10.00	1.50	1.25	.880	27NR__ (5/8" I.C.)	SA27	SN27	SY27	SF25
SIR-1500-T27	1.800	1.500	12.00	1.50	1.50	1.000					
SIR-2000-U27	2.300	2.000	14.00	1.50	2.00	1.250					
SIR-2500-V27	2.700	2.500	16.00	1.50	2.50	1.500					

Left handed boring bars available upon request

INSERT NOMENCLATURE



GRADE DESCRIPTION

PTC2 (P10 - P35; M20; K10 - K20)

General purpose PVD coated grade for a wide application range offering good wear resistance at higher surface speeds, while reducing build-up on the cutting edge. Particularly successful in stainless steel.

STC2E (P05 - P25; M10; K05 - K20)

Multilayer coated grade with extra wear resistance, which enables higher cutting speeds under good conditions. Suitable for difficult high tensile steels and aerospace type materials.

K20 (K15 - K25)

Standard uncoated grade for threading cast iron. Combines good abrasive wear resistance and toughness. Suitable for brass, aluminum, plastics and non-ferrous metals, but also for stainless steel and aerospace materials at slower cutting speeds.

P30 (P25 - P35)

General purpose uncoated grade for steel. A well balanced grade for a wide range of materials and medium conditions.

HSS

General purpose high speed steel for difficult applications, slow speeds or poor conditions. Suitable for all materials.

PROFILE TYPE

Partial Profile

- Thread profile with universal profile shape of 55° or 60° without cutting edges for the thread crest.
- Reduced inventory.
- For various pitches within a specified range.
- Preferably one-off production.
- Outside/core diameters must be accurately pre-turned.

Full Profile

- Thread profile with full profile shape including thread height.
- For burr-free, precise threads for a specific thread dimension.
- General application.
- Machining allowance for outside/core diameter around .004" - .006" or 0.1 - 0.15 mm/per surface.

INFEED METHOD

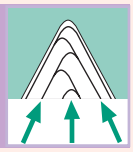
Radial Infeed

- General, straightforward infeed in radial direction with metal removal on both tooth flanks.
- Even wear.
- Primarily for small pitches of up to approx. 8 tpi or 3 mm.
- Cast iron workpiece materials and work-hardening materials, particularly austenitic stainless steel.

Modified Flank Infeed

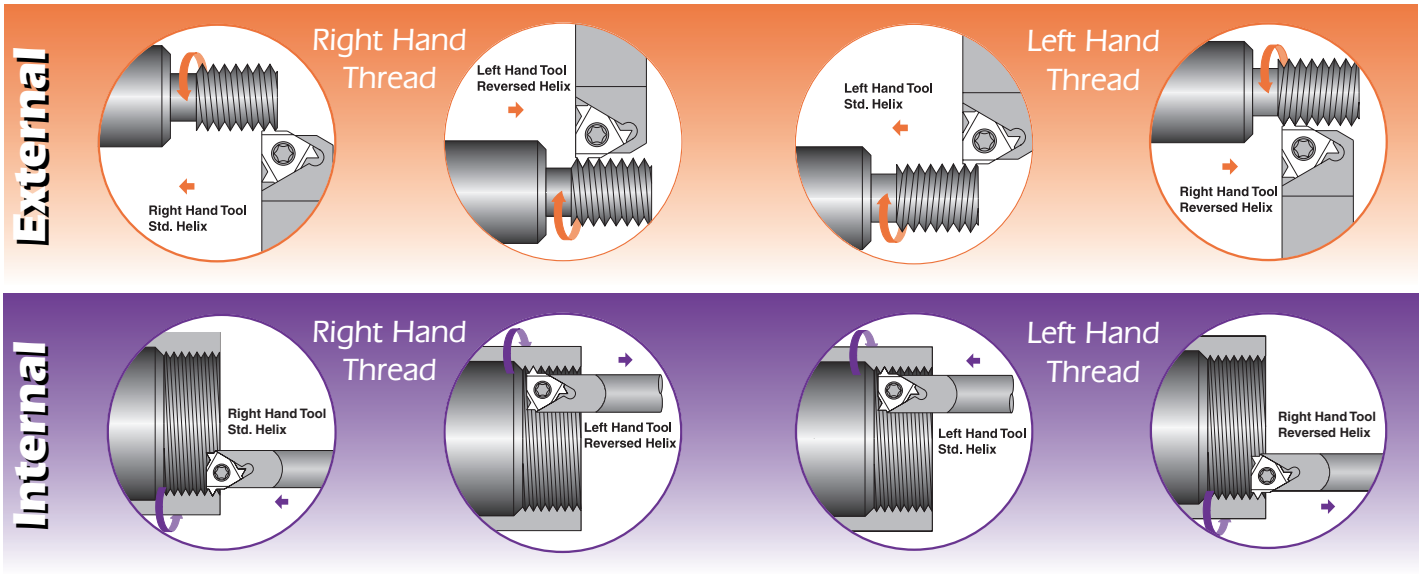
- Optimized infeed at an angle of 3-5° to the thread flank.
- Good chip flow, smoother operation.
- Preferably for larger pitches from approx. 7 tpi or 4 mm and trapezoidal threads on numerically controlled machine tools.

Alternating Flank Infeed



- Combined radial and/or alternating flank infeed.
- Results in good tool life, with wear evenly distributed over both flanks.
- Mainly for coarse threads on suitably programmed NC machine tools.

THREAD TURNING METHODS



ANVILS FOR SCREW TYPE TOOLS (Helix in Toolholder +1.5°)

	Helix Required	-1.5°	-0.5°	0°	+0.5°	Standard Toolholder +1.5°	+2.5°	+3.5°	+4.5°
Insert Size mm (I.C.)	Typical Application	Reverse Threading		Grooving	Fine Threads	Normal Threading Applications	Positive Helix due to Coarse Pitch or Small Diameters		
16 (3/8" IC)	Ext. R.H.	SE16-3N	SE16-2N	SE16-1.5N	SE16-1N	SE16	SE16-1P	SE16-2P	SE16-3P
	Int. R.H.	SN16-3N	SN16-2N	SN16-1.5N	SN16-1N	SN16	SN16-1P	SN16-2P	SN16-3P
22 (1/2" IC)	Ext. R.H.	SE22-3N	SE22-2N	SE22-1.5N	SE22-1N	SE22	SE22-1P	SE22-2P	SE22-3P
	Int. R.H.	SN22-3N	SN22-2N	SN22-1.5N	SN22-1N	SN22	SN22-1P	SN22-2P	SN22-3P
27 (5/8" IC)	Ext. R.H.	SE27-3N	SE27-2N	SE27-1.5N	SE27-1N	SE27	SE27-1P	SE27-2P	SE27-3P
	Int. R.H.	SN27-3N	SN27-2N	SN27-1.5N	SN27-1N	SN27	SN27-1P	SN27-2P	SN27-3P

RECOMMENDED NUMBER OF PASSES FOR THREADING

TPI	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
P - mm	0.5	0.75	1.0	1.25	1.5	1.75	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	8.0
No. of Passes	4-6	4-7	4-8	5-9	6-10	7-12	7-12	8-14	9-16	10-18	11-18	11-19	12-20	12-20	12-20	15-24

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75 ORMONT DRIVE, TORONTO, ONTARIO, M9L-2S3
TEL: (416) 746-3688 ~~ FAX: (416) 746-5415
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