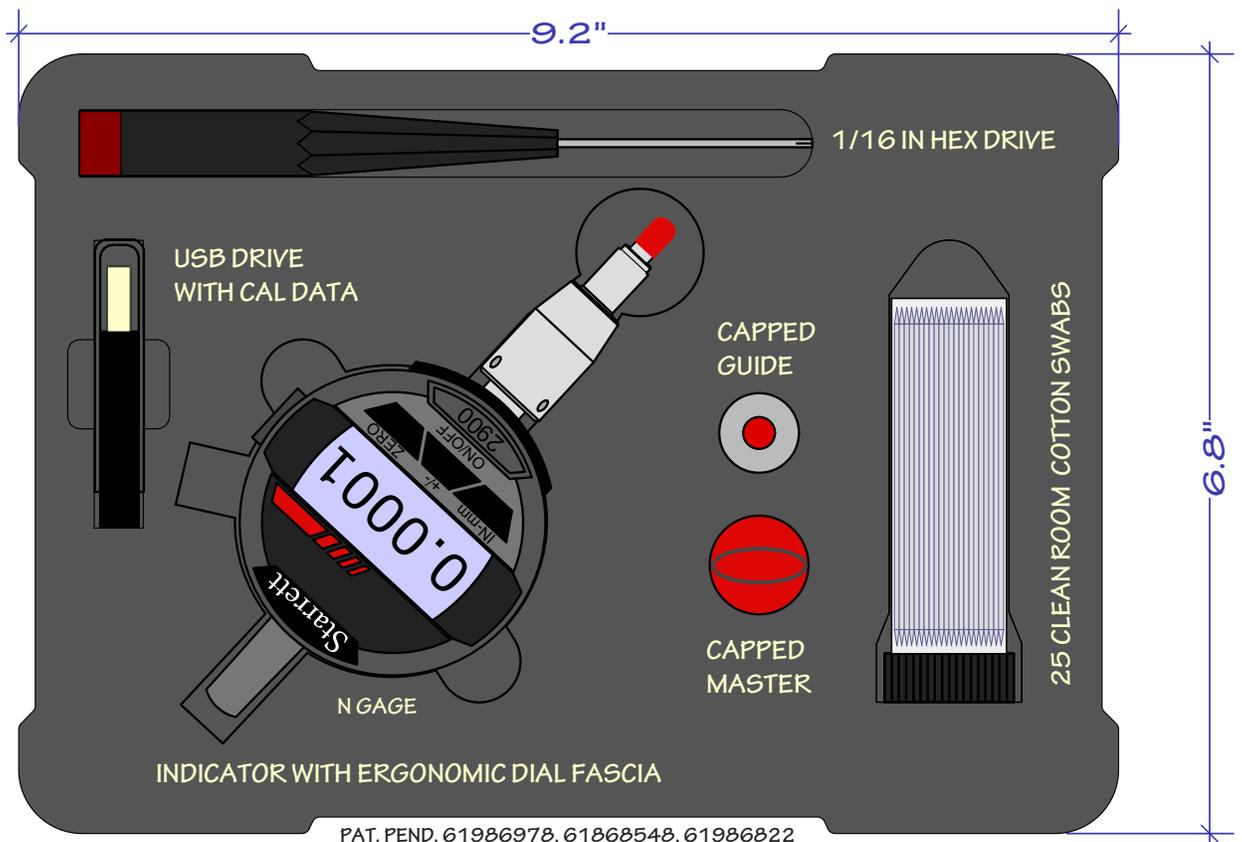


<b>N</b>	<b>X</b>
<b>SMA</b>	
<b>3.5</b>	
<b>K</b>	
<b>2.4</b>	
<b>1.85</b>	

N DATUM GAGES:  
RESOLUTION  
0.00005  
ACCURACY  
+/-0.00012



**OVERVIEW:** PRECISION GAGE KIT FOR THE DIMENSIONAL GAGING OF MALE AND FEMALE MICROWAVE COMPONENTS. THE INSTRUMENT'S DESIGN ELIMINATES THE REQUIREMENT FOR A SECOND GAGE AND/OR BUSHING ORDER TO ACCOMMODATE THE OPPOSITE GENDER. ADVANTAGEOUSLY, ONE MASTER GAGE IS USED FOR ALL STANDARDS INCLUDING MIL-STD-348, MIL-C-39012 AND IEEE287, THEREBY ELIMINATING THE PROCUREMENT REQUIREMENT OF MULTIPLE MASTERS.

### BENEFITS:

- ~ GUIDED BUSHING DESIGN ELIMINATES TORQUE REQUIREMENT AND ASSOCIATED TORQUE UNCERTAINTY;
- ~ HIGH PERFORMANCE ANALOG AND DIGITAL STARRETT METERS WITH 0.00005 INCH RESOLUTION;
- ~ CERTIFIED ACCURACY OF 0.00012 INCHES (DIGITAL) AND 0.0001 (ANALOG);
- ~ SINGLE FLAT SURFACE MASTER GAGE FOR THE ELIMINATION OF FEATURE SIZE UNCERTAINTY;
- ~ EXPEDITED GAGING OF BOTH 2.92mm AND 3.5mm MALE AND FEMALE CONNECTORS;
- ~ INCLUDED ISO-17025 TRACEABLE STARRETT CALIBRATION AND CERTIFICATION ;
- ~ INCLUDED USB DRIVE WITH GAGE APPLICATION FOR COMPARING GAGED VALUE TO COMMON STANDARDS;
- ~ INCLUDED 25 SHARP & DENSE POINT, SMALL SIZE, EXTREMELY LOW LINTING, STATIC FREE SWABS;
- ~ INCLUDED CRM72 TOOL STEEL HEX DRIVER WITH ROCKWELL 50-61 HARDNESS & CORROSION FREE FINISH.
- ~ INCLUDED ONE STAINLESS HANDI WRENCH MATCHING COMMON MICROWAVE ADAPTER AF DIMENSIONS;
- ~ INSTRUMENT BACKS AND FASCIA WITH STANDARDS REQUIREMENTS AND INTERFACE METRICS.
- ~ INCLUDED ONE WATER PROOF AND CRUSH PROOF NK-7 RESIN CASE WITH STAINLESS STEEL POWER CLAW LATCHING SYSTEM AND VAPOR RELEASE VALVE , 10.2LX7.8WX4.5H INCHES EXTERIOR DIMENSIONS.

### GENERAL SPECIFICATION

- ~SURFACE FINISH OF Ra4 - Ra16 ON WORKING SLIDABLE SURFACE; BETTER THAN Ra32 IN REGIONS OF NON-CONTACT.
- ~MASTER GAGE FINISH OF Ra 8 OR BETTER.
- ~PRECISION SWISS TURNED AND MILLED STAINLESS STEEL.
- ~CRITICAL TOLERANCES OF 0.0005.
- ~CERTIFIED DIAL ACCURACY OF +/- 0.0001 ANALOG & DIGITAL
- ~ALL STAINLESS COMPONENTS PASSIVATED PER ASTM-A967.
- ~STAINLESS 6-32 SET SCREWS [X3] WITH ASME B18.3 ROCKWELL C28 HARDNESS.
- ~DIAL FASCIA AND DIAL BACKS WITH STANDARDS DELINATION.

### WARRANTY

ALL VM MICROWAVE GAGES COME WITH A ONE YEAR WARRANTY AND WITH A TEN YEAR WARRANTY ON STAINLESS COMPONENTS.

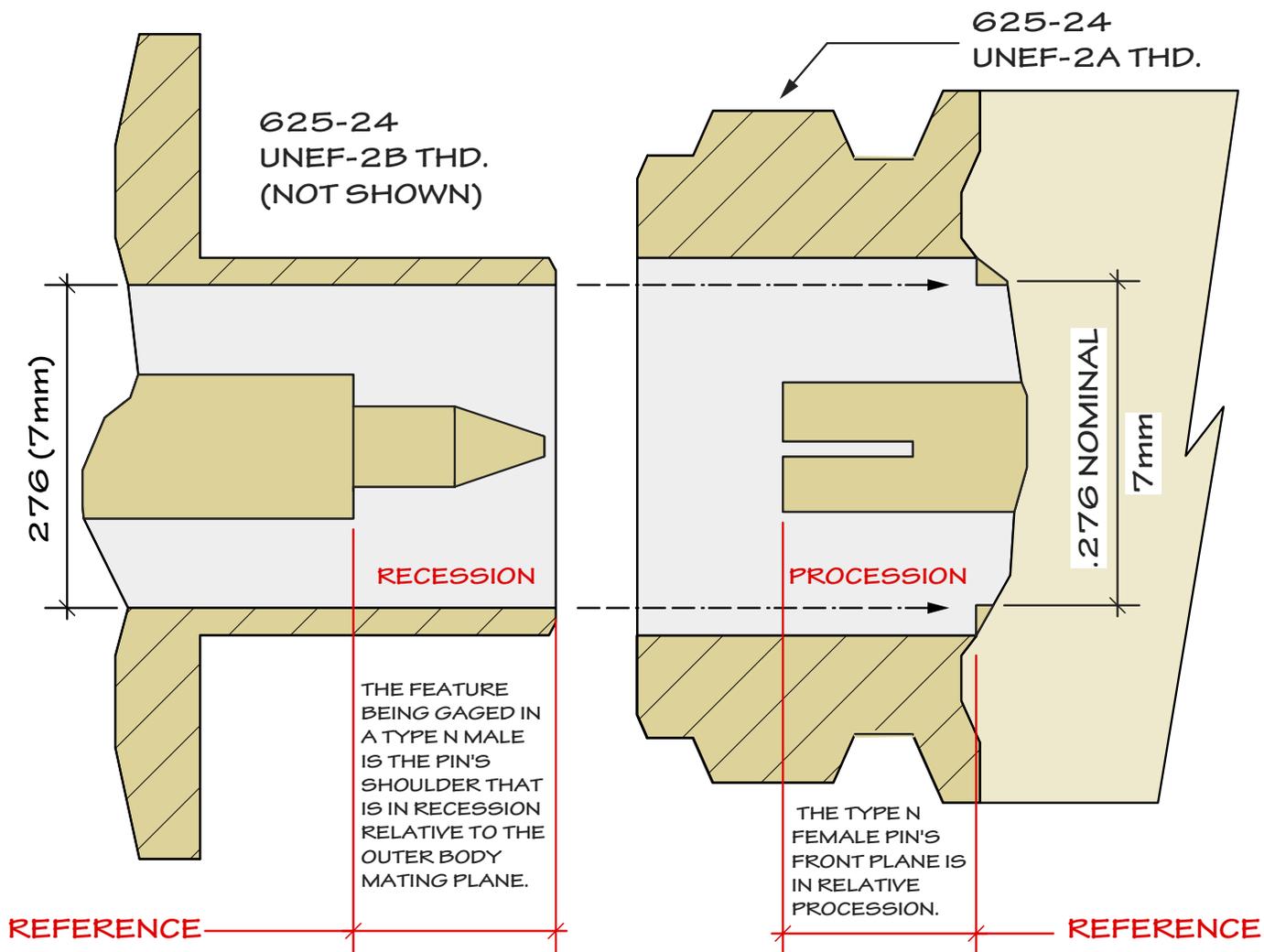
## PRECISION GAGE KITS

**TYPE N**

DATUM SERIES

**MALE & FEMALE**

Mfg: Velocity Microwave ~ div. ATX Labs  
www.velocitymicrowave.com



## N MALE

IEEE287GPC: <b>207-211*</b>
MIL-STD-348B TEST: <b>208-211</b>
MIL-STD-348B GENERAL: <b>210-230</b>
MIL-C-39012 CROSSES TO 348B**

\* DIMENSION GIVEN IN MILS

## N FEMALE

IEEE287GPC: <b>207-204*</b>
MIL-STD-348B TEST: <b>207-204</b>
MIL-STD-348B GENERAL: <b>207-187</b>
MIL-C-39012 CROSSES TO 348B

\* DIMENSION GIVEN IN MILS

\*\* MIL-C-39012 AND MIL-STD-348A/B SPECIFY SIMILAR RECESSION AND PROCESSION STANDARDS FOR TYPE N. BOTH IDENTIFY A "TEST" STANDARD AND A GENERAL STANDARD WHERE THE FORMER CARRIES TIGHTER TOLERANCES THAN THE LATTER. VM GAGES HAVE A BACK PLATE THAT IDENTIFIES THESE DIFFERENT REQUIREMENTS WITH ILLUSTRATIVE GEOMETRY.

### GENERAL SPECIFICATION

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### WARRANTY

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## PRECISION GAGE KITS

**TYPE N**

DATUM SERIES

**MALE & FEMALE**

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THE ACT OF "GAGING" A MICROWAVE CONNECTOR IS SIMPLY THE ACT OF DETERMINING THE DIFFERENCE IN GRADE BETWEEN TWO POINTS INSIDE THE CONECTOR: TYPICALLY THE OUTER COAXIAL BODY'S FRONT (MATING) PLANE AND A GEOMETRIC FEATURE ON THE MALE PIN (TYPICALLY SHOULDER) OR FEMALE PIN (TYPICALLY FRONT PLANE). GAGING IS SIMPLE IN BOTH CONCEPT AND EXECUTION.

THE CONVENTIONAL METHOD FOR DETERMINING A GRADE DIFFERENCE IS TO USE A DIAL INDICATOR THAT HAS A FIXED STEM AND A MOVABLE RACK OR SPINDLE. THE SPINDLE COMMUNICATES ITS MOTION TO THE HAND ON THE INDICATOR'S DIAL FACE. THE TRADITIONAL APPROACH IN MICROWAVE GAGING IS TO ATTACH A FIXED BUSHING TO A CONVENTIONAL DIAL INDICATOR'S STEM AND A CONTACT POINT TO THE DIAL INDICATOR'S MOVABLE SPINDLE. WHEN THE BUSHING IS MADE TO REST ON THE OUTER BODY'S MATING PLANE AND THE CONTACT POINT IS MADE TO REST ON THE FEATURE OF INTEREST, LIKE A PIN'S SHOULDER, THE HAND OF THE DIAL SHOWS THE GRADE DIFFERENCE. WHILE THIS APPROACH ADDS A BUSHING AND CONTACT POINT, NO CHANGE IS MADE TO THE DIAL INDICATOR'S INDICIA OR FASCIA. IN THIS MANNER, THE "RECESSION" OF THE TYPE N MALE PIN'S SHOULDER RELATIVE TO THE OUTER COAXIAL BODY'S MATING PLANE WOULD BE DETERMINED IN RELATION TO STANDARD, OR THE "PROCESSION" OF THE FEMALE PIN'S FRONT PLANE RELATIVE TO THE OUTER BODY'S COAXIAL MATING PLANE WOULD BE DETERMINED IN RELATION TO SOME STANDARD.

VM'S PATENTED APPROACH

THUS, IN THE SIMPLIFIED SECTIONAL IMAGES OF TYPE N CONNECTORS SHOWN TO THE RIGHT, R-S WOULD BE COMPARED TO A STANDARD THAT REPRESENTS THE INTERFACE SPECIFICATION THAT THE CONNECTOR IS REQUIRED TO BE IN COMPLIANCE WITH.

TO THIS END, FOR THE LAST HALF CENTURY MICROWAVE GAGING HAS TYPICALLY EMPLOYED EITHER A GAGE FOR EACH CONNECTOR GENDER, OR A CHANGE IN BUSHINGS FOR EACH CONNECTOR GENDER. MOREOVER, IT HAS EMPLOYED MASTER GAGES (A MASTER GAGE BEING A DEVICE THAT PROVIDES A MEANS TO ZERO THE INDICATOR) THAT ARE SPECIFIC TO INDIVIDUAL STANDARDS. THE LATTER CONDITION IMPLYING THAT EACH STANDARD REQUIRES EITHER A DIFFERENT GAGE KIT OR A DIFFERENT MASTER GAGE - THEREBY INCREASING THE COST OF OWNERSHIP.

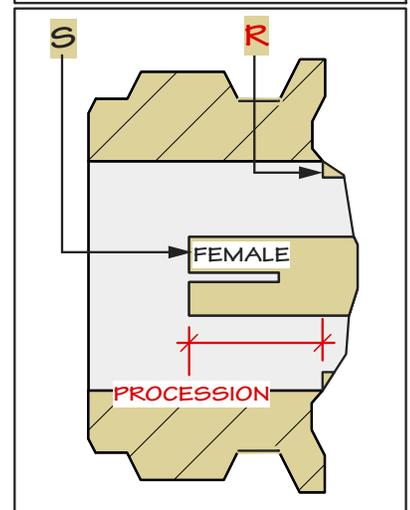
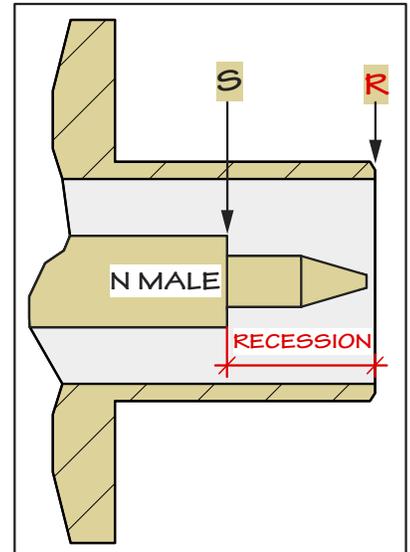
VM'S PATENTED APPROACH TO GAGING IS BASED ON SEVERAL DIFFERENT PRINCIPLES.

[1] A SINGLE GAGE/INDICATOR IS USED FOR BOTH MALE AND FEMALE GENDERS THEREBY SIMPLIFYING GAGING AND REDUCING COST, BUT WITH NO LOSS IN ACCURACY OR PRECISION;

[2] A SINGLE GAGE AND MASTER GAGE COMBINATION IS USED FOR ALL STANDARDS, THEREBY ELIMINATING CONFUSION AND ADDITIONAL COST, AND EXPEDITING THE MEASUREMENT PROCESS;

[3] THE MASTER GAGE USED CONTAINS ONLY A PRECISION GROUND, CLOSELY TOLERANCED, FLAT SURFACE - THERBY VIRTUALLY ELIMINATING MASTER GAGE ERROR. (THE TRADITIONAL APPROACH EMPLOYS STANDARD SPECIFIC PROUD FEATURES THAT INTRODUCE NON-REDUCIBLE ERRORS.)

[4] THE HUMAN INTERFACE IS ENHANCED WITH ADVANCED ERGONOMICS TO PROVIDE INSTANT FEEDBACK RELATIVE TO ALL STANDARDS, AND REAL VALUE INDICIA ARE USED TO SPECIFY TRUE RECESSION AND TRUE PROCESSION - THEREBY SPEEDING GAGING AND ELIMINATING POTENTIAL CONFUSION.



**GENERAL SPECIFICATION**

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**WARRANTY**

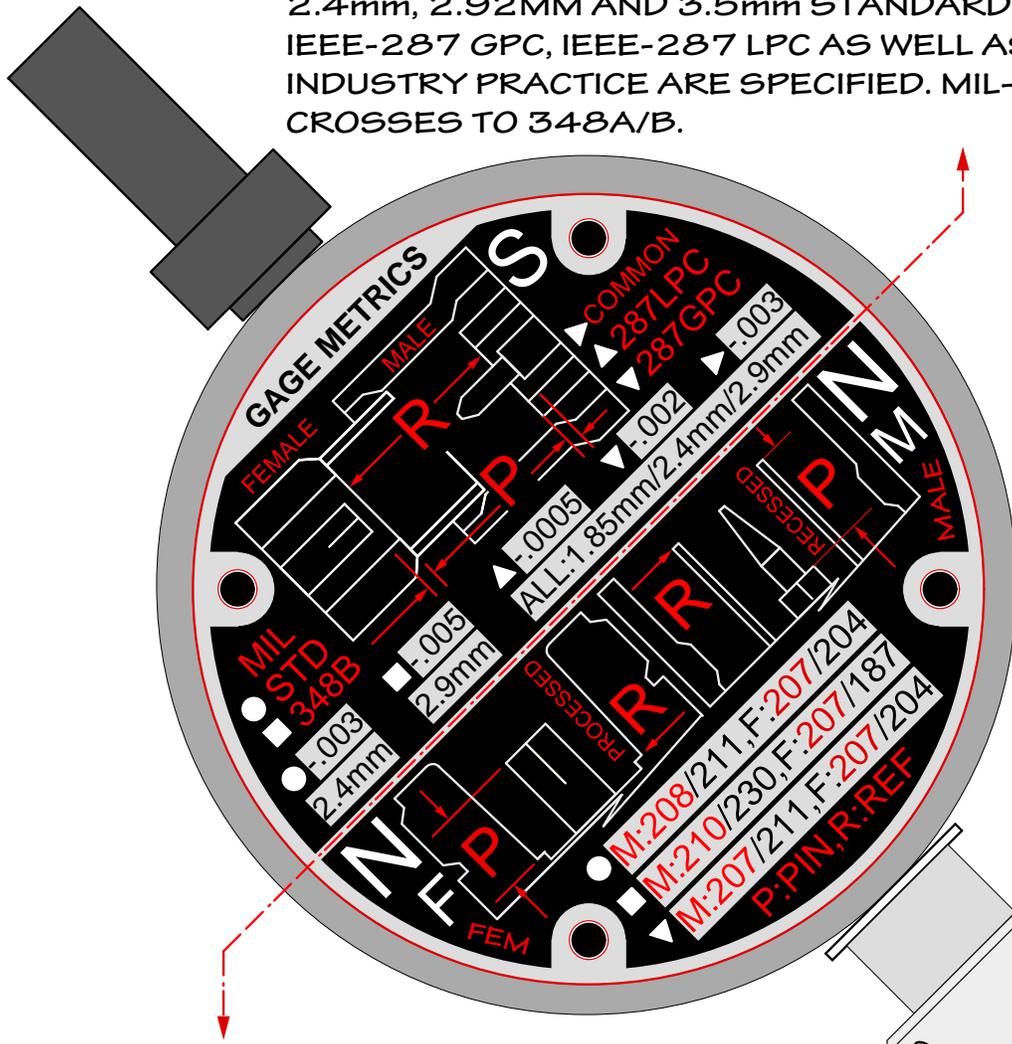
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**PRECISION GAGE KITS**  
**TYPE N** DATUM SERIES

**MALE & FEMALE**

Mfg: Velocity Microwave ~ div. ATX Labs  
[www.velocitymicrowave.com](http://www.velocitymicrowave.com)

UPPER HEMISPHERE ON GAGE BACK DENOTES 1.85mm, 2.4mm, 2.92mm AND 3.5mm STANDARDS. MIL-STD-348, IEEE-287 GPC, IEEE-287 LPC AS WELL AS COMMON INDUSTRY PRACTICE ARE SPECIFIED. MIL-C-39012 CROSSES TO 348A/B.



INTERFACE GEOMETRY FOR 1.85mm, 2.4mm, 2.92mm, 3.5mm AND TYPE N IS PROVIDED FOR BOTH GENDERS WITH REFERENCE PLANE CRITERIA CLEARLY MARKED

LOWER HEMISPHERE ON GAGE BACK DENOTES TYPE N STANDARDS FOR BOTH MALE AND FEMALE GENDERS. A SIMPLE LEGEND IS USED TO DISTINGUISH STANDARDS CRITERIA.

## TYPE N & 1.85mm/2.4mm/2.92mm 3.5mm GAGE BACK

### GENERAL SPECIFICATION

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## PRECISION GAGE KITS

TYPE N DATUM SERIES

MALE & FEMALE

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