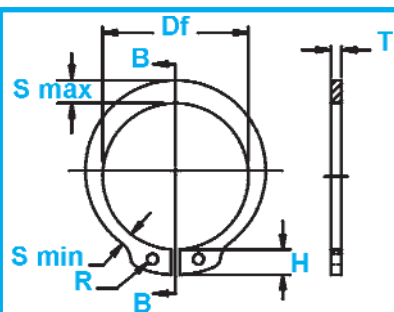
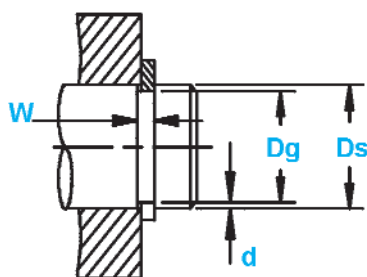




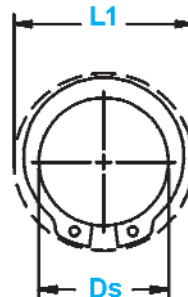
# Anillos MSR



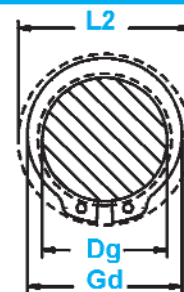
Diámetro libre y medidas del anillo con la sección B-B



Diámetro del eje y dimensiones de la ranura



Diámetro límite Expandido sobre el eje



Diámetro límite y diámetro de calibración liberados en la ranura

| NO. DE ANILLO | DIÁMETRO DEL EJE |       | TAMAÑO DE RANURA |       |      |         |       |      | TAMAÑO Y PESO DEL ANILLO |                |      |       |            |                      | DIÁM. LÍMITE            |                        |                            | i CARGA DE EMPUJE (kN) |    |
|---------------|------------------|-------|------------------|-------|------|---------|-------|------|--------------------------|----------------|------|-------|------------|----------------------|-------------------------|------------------------|----------------------------|------------------------|----|
|               |                  |       | DIAMETRO         |       |      | ANCHURA |       |      | PROFUNDIDAD              | DIAMETRO LIBRE |      |       | ESPESOR*** | Peso por 1000 piezas | Ex-pandido sobre el eje | Li-berado en la Ranura | Límites de esquinas rectas |                        |    |
|               | Dg               | tol   | F.I.M.*          | W     | tol  | d       | Df    | tol  |                          | T              | tol  | kg    |            |                      |                         |                        | L1                         | L2                     | Pr |
| MSR-10        | 10               | 0.393 | 9.40             | -0.08 | 0.05 | 1.00    | +0.15 | 0.30 | 9.20                     | +0.08          | 0.9  | ±0.06 | 0.32       | 15.6                 | 14.8                    | 9.3                    | 2.9                        |                        |    |
| MSR-11        | 11               | 0.433 | 10.30            |       | 0.05 | 1.00    |       | 0.35 | 10.00                    | -0.20          | 0.9  |       | 0.39       | 16.6                 | 15.8                    | 10.8                   | 3.8                        |                        |    |
| MSR-12        | 12               | 0.472 | 11.30            |       | 0.05 | 1.20    |       | 0.35 | 11.05                    | 1.1            | 0.63 |       | 17.6       | 16.8                 | 13.7                    | 4.0                    |                            |                        |    |
| MSR-13        | 13               | 0.512 | 12.20            |       | 0.05 | 1.40    |       | 0.40 | 11.80                    | 1.3            | 0.72 |       | 19.5       | 18.5                 | 17.6                    | 5.0                    |                            |                        |    |
| MSR-14        | 14               | 0.551 | 13.15            | -0.10 | 0.05 | 1.40    | +0.15 | 0.43 | 12.80                    | +0.13          | 1.3  | ±0.06 | 0.80       | 20.5                 | 19.5                    | 18.9                   | 5.8                        |                        |    |
| MSR-15        | 15               | 0.591 | 14.10            |       | 0.05 | 1.40    |       | 0.45 | 13.80                    |                | 1.3  |       | 1.00       | 22.1                 | 21.1                    | 20.3                   | 6.5                        |                        |    |
| MSR-16        | 16               | 0.630 | 15.00            |       | 0.08 | 1.40    |       | 0.50 | 14.70                    |                | 1.3  |       | 1.04       | 23.2                 | 22.0                    | 21.6                   | 7.7                        |                        |    |
| MSR-17        | 17               | 0.669 | 15.95            |       | 0.08 | 1.40    |       | 0.53 | 15.65                    |                | 1.3  |       | 1.2        | 24.2                 | 22.9                    | 23.0                   | 8.7                        |                        |    |
| MSR-18        | 18               | 0.708 | 16.85            | -0.15 | 0.08 | 1.75    | +0.20 | 0.58 | 16.55                    | +0.25          | 1.6  | ±0.08 | 1.9        | 26.8                 | 25.5                    | 30.0                   | 10.0                       |                        |    |
| MSR-19        | 19               | 0.748 | 17.80            |       | 0.08 | 2.15    |       | 0.60 | 17.50                    |                | 2.0  |       | 2.5        | 28.8                 | 27.4                    | 40.0                   | 11.0                       |                        |    |
| MSR-20        | 20               | 0.787 | 18.75            |       | 0.08 | 2.15    |       | 0.63 | 18.45                    |                | 2.0  |       | 2.8        | 29.8                 | 28.4                    | 42.0                   | 13.1                       |                        |    |
| MSR-22        | 22               | 0.866 | 20.70            |       | 0.08 | 2.15    |       | 0.65 | 20.40                    |                | 2.0  |       | 3.4        | 31.9                 | 30.4                    | 46.0                   | 13.7                       |                        |    |
| MSR-25        | 25               | 0.984 | 23.50            | -0.20 | 0.08 | 2.15    | +0.25 | 0.75 | 23.10                    | +0.35          | 2.0  | ±0.10 | 3.5        | 34.9                 | 33.1                    | 52.0                   | 18.0                       |                        |    |
| MSR-27        | 27               | 1.063 | 25.40            |       | 0.10 | 2.55    |       | 0.80 | 24.85                    |                | 2.4  |       | 5.2        | 39.0                 | 37.1                    | 67.0                   | 20.8                       |                        |    |
| MSR-28        | 28               | 1.102 | 26.30            |       | 0.10 | 2.55    |       | 0.85 | 25.70                    |                | 2.4  |       | 5.6        | 40.0                 | 38.0                    | 69.0                   | 22.8                       |                        |    |
| MSR-30        | 30               | 1.181 | 28.20            |       | 0.10 | 2.55    |       | 0.90 | 27.60                    |                | 2.4  |       | 6.1        | 42.0                 | 40.0                    | 74.0                   | 26.0                       |                        |    |
| MSR-32        | 32               | 1.260 | 30.00            | -0.20 | 0.10 | 2.55    | +0.25 | 1.00 | 29.35                    | -0.40          | 2.4  | ±0.10 | 6.8        | 44.1                 | 41.8                    | 79.0                   | 30.8                       |                        |    |
| MSR-35        | 35               | 1.378 | 32.80            |       | 0.10 | 2.55    |       | 1.10 | 32.20                    |                | 2.4  |       | 8.1        | 47.1                 | 44.6                    | 87.0                   | 38.0                       |                        |    |
| MSR-38        | 38               | 1.496 | 35.60            |       | 0.10 | 2.95    |       | 1.20 | 35.05                    |                | 2.8  |       | 12.2       | 53.2                 | 50.5                    | 111.0                  | 44.0                       |                        |    |
| MSR-40        | 40               | 1.575 | 37.50            |       | 0.15 | 2.95    |       | 1.25 | 36.70                    |                | 2.8  |       | 14.1       | 55.2                 | 52.4                    | 116.0                  | 48.0                       |                        |    |
| MSR-45        | 45               | 1.772 | 42.20            | -0.20 | 0.15 | 2.95    | +0.25 | 1.40 | 41.10                    | -0.50          | 2.8  | ±0.10 | 15.1       | 60.9                 | 57.7                    | 130.0                  | 61.0                       |                        |    |
| MSR-50        | 50               | 1.969 | 47.00            |       | 0.15 | 3.40    |       | 1.50 | 45.50                    |                | 3.2  |       | 21.8       | 67.1                 | 63.8                    | 165.0                  | 72.0                       |                        |    |

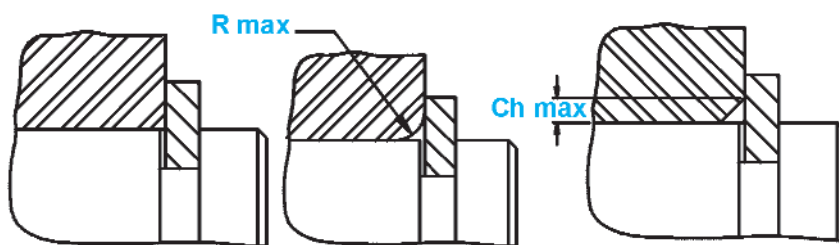
\* F.I.M. (MOVIMIENTO TOTAL DE INDICADOR)- DESVIACION MAXIMA PERMITIDA DE CONCENTRIDAD ENTRE RANURA Y EJE.

IBASADO EN LAS CARCASAS Y EJES FABRICADOS CON ACERO LAMINADO EN FRIO. PARA UNA EXPLICACION DE LAS FORMULAS APLICADAS PARA DERIVAR LAS CARGAS DE EMPUJE Y OTROS DATOS DEL RENDIMIENTO, PONGASE EN CONTACTO CON EL DEPARTAMENTO DE INGENIERIA

\*\*\* PARA LOS ANILLOS DE RETENCION CON RECUBRIMIENTO ELECTROLITICO, AÑADA 0,05 AL ESPESOR MAXIMO INDICADO. EL ESPESOR DE ANILLO MAXIMO SERA UN MINIMO DE 0,005 MENOR QUE LA ANCHURA (W) MINIMA DE RANURA INDICADA.

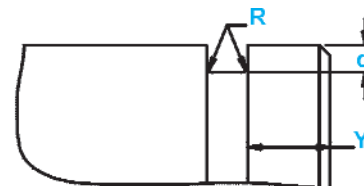
# Montados axialmente, externos, en unidades métricas ANSI

Este anillo para trabajos pesados ofrece al usuario una capacidad de carga de empuje más alta debido a su espesor adicional y a una mayor altura de sección.



Límites de esquinas rectas

Radio de esquina y bisel admisibles



Vista desarrollada del perfil de ranura y margen del borde (Y) Radio inferior máximo (R),  
0,10 para tamaños de anillo -10 a -15;  
0,15 para tamaños de anillo -16 a -20;  
0,20 para tamaños de anillos  
-22 a -30; 0,30 para tamaños -32 a -50.

| NO. DE ANILLO | ALTURA DE LA OREJETA | SECCIÓN MÁXIMA | SECCIÓN MÍNIMA | DIÁMETRO DEL AGUJERO | DIÁMETRO DE CALIBRACION. | RADIOS DE ESQUINA Y BISEL ADMISIBLES |        | CARGA MÁX. c/R máx. o Ch máx. (kN) | MARGEN DEL BORDE | LÍMITES DE R.P.M. Material estándar |
|---------------|----------------------|----------------|----------------|----------------------|--------------------------|--------------------------------------|--------|------------------------------------|------------------|-------------------------------------|
|               | H nom                | S max          | S min          | R min                | Gd                       | R max                                | Ch max | P'r                                | Y                | RPM                                 |
| MSR-10        | 2.6                  | 1.7            | 1.0            | 1.0                  | 12.15                    | 1.0                                  | 0.8    | 2.7                                | 0.9              | 66000                               |
| MSR-11        | 2.6                  | 1.9            | 1.1            | 1.0                  | 13.40                    | 1.0                                  | 0.8    | 3.0                                | 1.0              | 60000                               |
| MSR-12        | 2.6                  | 2.2            | 1.3            | 1.0                  | 14.95                    | 1.6                                  | 1.3    | 3.2                                | 1.0              | 55000                               |
| MSR-13        | 3.0                  | 2.3            | 1.3            | 1.2                  | 15.80                    | 1.6                                  | 1.3    | 4.6                                | 1.2              | 52000                               |
| MSR-14        | 3.0                  | 2.4            | 1.4            | 1.2                  | 16.90                    | 1.6                                  | 1.3    | 4.8                                | 1.3              | 47000                               |
| MSR-15        | 3.3                  | 2.6            | 1.4            | 1.2                  | 18.20                    | 1.6                                  | 1.3    | 5.2                                | 1.3              | 42000                               |
| MSR-16        | 3.3                  | 2.7            | 1.5            | 1.2                  | 19.20                    | 1.6                                  | 1.3    | 5.4                                | 1.5              | 39000                               |
| MSR-17        | 3.3                  | 2.8            | 1.6            | 1.2                  | 20.45                    | 1.6                                  | 1.3    | 5.7                                | 1.6              | 36000                               |
| MSR-18        | 4.1                  | 3.0            | 1.8            | 1.9                  | 21.75                    | 1.8                                  | 1.5    | 8.0                                | 1.7              | 35000                               |
| MSR-19        | 4.6                  | 3.2            | 2.0            | 1.9                  | 23.05                    | 1.8                                  | 1.5    | 13.2                               | 1.8              | 30000                               |
| MSR-20        | 4.6                  | 3.4            | 2.0            | 1.9                  | 24.30                    | 2.0                                  | 1.6    | 13.2                               | 1.9              | 29000                               |
| MSR-22        | 4.6                  | 3.8            | 2.1            | 1.9                  | 26.60                    | 2.0                                  | 1.6    | 14.7                               | 2.0              | 27000                               |
| MSR-25        | 4.6                  | 3.8            | 2.1            | 1.9                  | 29.45                    | 2.0                                  | 1.6    | 14.7                               | 2.2              | 24000                               |
| MSR-27        | 5.6                  | 4.1            | 2.3            | 2.3                  | 32.00                    | 2.0                                  | 1.6    | 22.9                               | 2.4              | 22000                               |
| MSR-28        | 5.6                  | 4.3            | 2.4            | 2.3                  | 33.20                    | 2.0                                  | 1.6    | 24.0                               | 2.5              | 20000                               |
| MSR-30        | 5.6                  | 4.5            | 2.5            | 2.3                  | 35.40                    | 2.0                                  | 1.6    | 25.0                               | 2.7              | 19000                               |
| MSR-32        | 5.6                  | 4.7            | 2.6            | 2.3                  | 37.30                    | 2.5                                  | 2.1    | 19.0                               | 3.0              | 18000                               |
| MSR-35        | 5.6                  | 5.1            | 2.8            | 2.3                  | 40.80                    | 2.5                                  | 2.1    | 22.0                               | 3.3              | 16000                               |
| MSR-38        | 7.1                  | 5.5            | 3.1            | 2.7                  | 44.40                    | 2.5                                  | 2.1    | 32.0                               | 3.6              | 15000                               |
| MSR-40        | 7.1                  | 5.8            | 3.2            | 2.7                  | 46.70                    | 2.5                                  | 2.1    | 34.0                               | 3.7              | 13500                               |
| MSR-45        | 7.4                  | 6.5            | 3.6            | 2.7                  | 52.20                    | 2.5                                  | 2.1    | 38.0                               | 4.2              | 12500                               |
| MSR-50        | 8.0                  | 7.1            | 3.9            | 3.1                  | 58.40                    | 3.5                                  | 2.9    | 39.0                               | 4.5              | 11000                               |

PUEDEN HABER TAMAÑOS MÁS GRANDES A PETICIÓN.

GAMAS DE DUREZA: ANILLOS DE ACERO INOXIDABLE (PH 15-7MO)

| TIPO DE ANILLO | GAMA DE TAMAÑOS | ESCALA | DUREZA ROCKWELL |
|----------------|-----------------|--------|-----------------|
| MSR            | 10-16           | 30N    | 63-69.5         |
|                | 17-50           | C      | 44-51           |

GAMAS DE DUREZA: ANILLOS DE ACERO AL CARBONO (SAE 1060-1090)

| TIPO DE ANILLO | GAMA DE TAMAÑOS | ESCALA | DUREZA ROCKWELL |
|----------------|-----------------|--------|-----------------|
| MSR            | 10-16           | 30N    | 68.5-72         |
|                | 17-50           | C      | 48-52           |