

Flat Washers

Inch

Rondelles plates

Pouce



USS STANDARD WASHERS
Steel - Plain and Zinc Plated

For Bolt Size	SPAENAUR No.		I.D.	O.D.	Thickness Range	PKG QTY.
	Plain	Zinc Plated				
3/16"	656-B58-1X	656-B46-1X	1/4"	9/16"	.036-.065"	100
1/4"	90-SN	656-B01-1Y	5/16"	3/4"	.051-.080"	100
5/16"	91-SN	656-B72-1X	3/8"	7/8"	.064-.104"	50
3/8"	92-SN	92-SN-ZP	7/16"	1"	.064-.104"	50
7/16"	93-SN	656-B68-1W	1/2"	1-1/4"	.064-.104"	50
1/2"	94-SN	656-B57-1M	9/16"	1-3/8"	.086-.132"	50
9/16"	656-B71-1M	B-927-ZP	5/8"	1-1/2"	.086-.132"	25
5/8"	95-SN	95-SN-ZP	11/16"	1-3/4"	.108-.160"	25
3/4"	105-SN	105-SN-ZP	13/16"	2"	.122-.177"	25
7/8"	656-024	–	15/16"	2-1/4"	.136-.192"	25
1"	106-SN	656-020	1-1/16"	2-1/2"	.136-.192"	20
1-1/8"	W-271	–	1-1/4"	2-3/4"	.136-.192"	25
1-1/4"	656-B49-1Y	–	1-3/8"	3"	.136-.192"	25
1-3/8"	656-B70-1W	656-B69-1M	1-1/2"	3-1/4"	.153-.213"	25
1-1/2"	W-274	656-069	1-5/8"	3-1/2"	.153-.213"	25
1-3/4"	656-B73-1A	–	1-7/8"	4"	.153-.213"	25
2"	W-298	–	2-1/8"	4-1/2"	.153-.213"	25



S.A.E. FLAT WASHERS
Low Carbon Steel
Plain and Zinc Plated

For Bolt Size	SPAENAUR No.		I.D.	O.D.	Thickness Range	PKG QTY.
	Plain	Zinc Plated				
#6	–	656-B48-1P	5/32"	3/8"	.036-.065"	100
#8	59-SN	656-B37-2Y	3/16"	7/16"	.036-.065"	100
#10	–	656-B07-1M	7/32"	1/2"	.036-.065"	100
1/4"	–	656-B33-1M	9/32"	5/8"	.051-.080"	100
5/16"	–	656-B47-1A	11/32"	11/16"	.051-.080"	100
3/8"	–	656-B02-1Z	13/32"	13/16"	.051-.080"	100
7/16"	–	656-B09-1A	15/32"	59/64"	.051-.080"	100
1/2"	–	656-B05-1G	17/32"	1-1/16"	.074-.121"	50
9/16"	–	656-049	19/32"	1-3/16"	.074-.121"	50
5/8"	–	656-B24-1P	21/32"	1-5/16"	.074-.121"	50
3/4"	–	656-051	13/16"	1-1/2"	.108-.160"	50
7/8"	656-023	656-052	15/16"	1-3/4"	.108-.160"	25
1"	–	656-053	1-1/16"	2"	.108-.160"	25

CATALOG 14

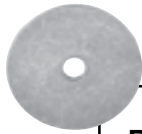
SPAENAUR

Inch

Flat Washers

Pouce

Rondelles plates



Steel Fender Washers Low Carbon Steel

Large O.D. for extra wide bearing surface

For Bolt Size	SPAENAUR No.		I.D.	O.D.	Nominal Thickness	PKG QTY.
	Plain	Zinc Plated <small>Clear or Yellow our option</small>				
#4	W-207	—	1/8"	1"	.062"	100
#7	—	W-168	11/64"	9/16"	.032"	100
#8	1183	656-B54-1T	11/64"	3/4"	.031"	100
#8	—	656-B65-1N	3/16"	1-1/8"	.056"-.064"	100
#10	—	656-B10-1X	.196"	1"	.062"	100
#10	—	656-B43-1K	7/32"	7/8"	.062"	100
#10	—	656-B12-1P	7/32"	1-1/4"	.035"	50
#14	—	W-287	.261"	1-17/64"	.017"	100
1/4"	—	2333	9/32"	1-1/4"	.065"	50
1/4"	—	656-B45-1M	9/32"	1-3/16"	.031"	50
5/16"	—	656-B34-1Y	11/32"	1-1/4"	.065"	50
5/16"	—	656-B19-1M	11/32"	1-1/2"	.083"	50
3/8"	—	656-B66-1T	25/64"	1-1/2"	.083"	50
3/8"	—	656-B56-1W	13/32"	1-1/4"	.120"	50
3/8"	656-070	—	13/32"	1-3/8"	.098"-.112"	50
3/8"	—	656-B28-1E	7/16"	1-3/4"	.078"	50
7/16"	—	W-223	15/32"	2-3/8"	.095"	25
1/2"	—	656-B03-1S	17/32"	2"	.150"	25
5/8"	—	656-B18-1W	41/64"	2-1/2"	.187"	25



Hardened Steel Structural Washers Plain Finish

conforming to ASTM F436 for use with 38 to 45 HRC
A325 and A490 Structural Bolts

For Bolt Size	SPAENAUR No.	I.D.	O.D.	Thickness Range	PKG QTY.
1/2"	W-325	17/32"	1-1/16"	.097-.177"	100
5/8"	W-326S	21/32"	1-5/16"	.134"	100
3/4"	W-327-S	13/16"	1-15/32"	.122-.177"	100
7/8"	W-328	15/16"	1-3/4"	.136-.177"	100
1"	W-329	1-1/8"	2"	.136-.177"	100
1-1/8"	W-330	1-1/4"	2-1/4"	.136-.177"	100
1-1/4"	W-331	1-3/8"	2-1/2"	.136-.177"	100



For maximum protection Hot Dipped Galvanized! STEEL PLATE WASHERS

(These are not ASTM F436)

SPAENAUR No.	Bolt Diameter	Outside Diameter	Hole Diameter	Nominal Thickness		PKG QTY.
				Gauge	Inches	
656-002	1/4"	3/4"	5/16"	16	1/16"	100
656-003	5/16"	7/8"	3/8"	14	5/64"	100
656-004	3/8"	1"	7/16"	14	5/64"	100
656-005	1/2"	1-3/8"	9/16"	12	7/64"	50
656-006	5/8"	1-3/4"	11/16"	10	9/64"	50
656-007	3/4"	2"	13/16"	10	9/64"	50
656-008	7/8"	2-1/4"	15/16"	9	5/32"	50
656-009	1"	2-1/2"	1-1/16"	9	5/32"	25
656-010	1-1/8"	2-3/4"	1-1/4"	9	5/32"	25
656-016	1-1/4"	3"	1-3/8"	9	5/32"	25

CATALOG 14

SPAENAUR

Flat Washers

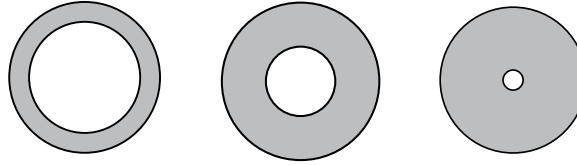
Inch

Rondelles plates

Pouce

Additional Steel Flat Washers

Plain, Zinc, Nickel or Copper Finishes



D

FOR BOLT SIZE	SPAENAUR No.	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS RANGE	FINISH	PKG QTY.
2	656-034	3/32"	7/32"	.018-.024"	Zinc	100
3	656-035	7/64"	3/8"	.033-.039"	Zinc	100
3	656-058	7/64"	7/16"	.030-.036"	Nickel	100
4	656-B08-1X	1/8"	.281"	.018-.024"	Copper	100
4	656-B04-1E	1/8"	5/16"	.030-.036"	Zinc	100
4	656-B30-1E	1/8"	3/8"	.033-.039"	Zinc	100
4	656-B64-1C	1/8"	3/8"	.038-.046"	Zinc	100
5	656-B38-1C	.130"	7/16"	.038-.046"	Zinc	100
6	656-B63-1Y	9/64"	7/16"	.044-.052"	Zinc	100
6	656-B13-2Y	.142"	5/16"	.030-.036"	Zinc	100
6	656-B27-1S	.144"	5/16"	.038-.046"	Zinc	100
6	656-060	5/32"	7/16"	.113-.127"	Nickel	100
8	W-216	.170"	3/8"	.030-.036"	Plain	100
8	656-B23-1A	.170"	3/8"	.030-.036"	Zinc	100
8	656-B55-1X	.175"	1/2"	.044-.052"	Zinc	100
8	656-062	3/16"	1/2"	.044-.052"	Plain	100
8	656-B32-1W	3/16"	1/2"	.055-.065"	Zinc	100
10	656-B59-1A	13/64"	3/8"	.044-.052"	Zinc	100
10	1183-A	13/64"	3/4"	.044-.052"	Plain	100
10	656-B06-1W	.203"	1/2"	.044-.052"	Nickel	100
10	656-B67-1K	.203"	9/16"	.033-.039"	Zinc	100
10	656-015	.216"	1/2"	.042"	Nickel	100
12	656-B60-1X	.227"	5/8"	.044-.052"	Zinc	100
12	656-B11-1A	.243"	.840"	.113-.127"	Zinc	100
14	W-203	1/4"	3/8"	.030-.036"	Plain	100
14	W-203NP	.260"	.375"	.033-.039"	Nickel	100
14	656-B35-1A	1/4"	5/8"	.044-.052"	Zinc	100
14	2008	1/4"	5/8"	.044-.052"	Plain	100
1/4"	656-B53-1N	17/64"	1/2"	.030-.036"	Nickel	100
1/4"	656-B52-1C	17/64"	5/8"	.055-.065"	Zinc	100
1/4"	656-B17-1G	17/64"	3/4"	.055-.065"	Zinc	100
1/4"	656-063	.312"	.750"	.068-.082"	Zinc	100
5/16"	656-B31-1G	21/64"	19/32"	.055-.065"	Zinc	100
5/16"	W-165	21/64"	5/8"	.113-.127"	Zinc	100
5/16"	656-B26-1Z	21/64"	7/8"	.055-.065"	Zinc	100
5/16"	656-030	11/32"	9/16"	.030-.036"	Nickel	100
5/16"	656-B29-1G	11/32"	7/8"	.113-.127"	Zinc	100
5/16"	656-B21-1M	11/32"	1-1/8"	.068-.082"	Zinc	100
5/16"	656-B36-1P	3/8"	3/4"	.062-.074"	Zinc	100
5/16"	656-B50-1P	3/8"	1"	.173-.187"	Plain	50
3/8"	656-032	25/64"	5/8"	.030-.036"	Nickel	100
3/8"	656-B42-1T	25/64"	11/16"	.113-.127"	Zinc	100
3/8"	656-B41-1N	25/64"	3/4"	.128-.142"	Zinc	100
3/8"	656-B14-1Z	13/32"	5/8"	.038-.046"	Zinc	100
3/8"	656-047	15/32"	15/16"	.055-.062"	Zinc	100
3/8"	656-B15-1S	7/16"	3/4"	.050-.058"	Zinc	50
3/8"	656-B25-1Y	7/16"	1"	.021-.027"	Zinc	100
3/8"	656-B44-1W	7/16"	1"	.083-.097"	Zinc	100
7/16"	656-033	31/64"	3/4"	.030-.036"	Nickel	100

Continued on next page...

Inch

Flat Washers / Flat & Helical Lockwasher Assortments

Pouce

Rondelles plates / Assortiments de lave-vaisselle plats et hélicoïdaux

...continued from previous page

Additional Steel Flat Washers

FOR BOLT SIZE	SPAENAUR No.	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS RANGE	FINISH	PKG QTY.
7/16"	656-033	31/64"	3/4"	.030-.036"	Nickel	100
7/16"	W-389	1/2"	5/8"	.044-.052"	Nickel	100
1/2"	W-318	17/32"	7/8"	.030-.036"	Zinc	100
1/2"	656-013	17/32"	1-1/16"	.113-.127"	Zinc	50
1/2"	W-177	17/32"	1-5/64"	.098-.112"	Zinc	50
1/2"	656-B16-1E	17/32"	1-1/4"	.113-.127"	Zinc	100
9/16"	656-001	37/64"	1"	.055-.065"	Plain	100
5/8"	656-B51-1Y	41/64"	1"	.062-.074"	Zinc	100
5/8"	656-B40-1C	41/64"	1-5/16"	.113-.127"	Zinc	50
5/8"	2473	21/32"	7/8"	.030-.036"	Zinc	50
11/16"	W-150	23/32"	1-3/8"	.044-.052"	Zinc	100
3/4"	W-288	51/64"	1"	.055-.062"	Zinc	100
7/8"	656-B39-1N	59/64"	1-19/64"	.029-.034"	Zinc	100
7/8"	656-027	.938"	1.47"	.098-.112"	Zinc	50
7/8"	656-121	1"	1-3/8"	.055-.062"	Zinc	100
1"	656-B20-1W	1-1/32"	1-3/8"	.055-.062"	Zinc	100
1-1/4"	656-056	1-5/16"	2-3/4"	.143-.157"	Plain	25
1-3/4"	W-285	1-7/8"	3-1/4"	.113-.127"	Plain	25
2"	W-297	2-1/16"	4-1/4"	.186-.202"	Plain	25

ASSORTMENT B-558C



STEEL FLAT WASHERS
Zinc Plated
17 SIZES
1190 PIECES

REGULAR SIZE welded Steel grey enamel
Drawer has hinged lid and "scooped" Bins.
Drawer fits the Slide Racks shown on Page A2
Shipping Weight - **8.16 kg** (18 lbs.)

Compatible Bolt Size	Spaenaur No.	Inner Diameter	Outer Diameter	Thickness	Qty.	Page
#8	656-B54-1T	11/64"	3/4"	0.031"	100	D3
	656-B37-2Y	3/16"	7/16"	0.036" - 0.065"	200	D2
	656-B32-1W		1/2"	0.055" - 0.065"	150	D4
#14	656-B35-1A	1/4"	5/8"	0.044" - 0.052"		100
3/16"	656-B46-1X	1/4"	9/16"	0.036" - 0.065"	D2	
1/4"	656-B01-1Y		5/16"	3/4"	0.051" - 0.080"	100
5/16"	656-B34-1Y	11/32"	1-1/4"	0.065"	50	D3
	656-B19-1M		1-1/2"	0.083"	40	
	656-B72-1X	3/8"	7/8"	0.064" - 0.104"	50	D2
3/8"	656-B66-1T	25/64"	1-1/2"	0.083"	40	D3
	92-SN-ZP	7/16"	1"	0.064" - 0.104"		D2
	656-B28-1E		1-3/4"	0.078"	25	D3
7/16"	656-B68-1W	1/2"	1-1/4"	0.064" - 0.104"	25	D2
1/2"	656-B57-1M	9/16"	1-3/8"	0.086" - 0.132"		
9/16"	B-927-ZP	5/8"	1-1/2"	0.108" - 0.160"		
5/8"	95-SN-ZP	11/16"	1-3/4"	0.108" - 0.160"	10	D2
3/4"	105-SN-ZP	13/16"	2"	0.122" - 0.177"		

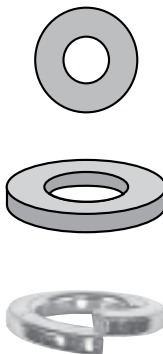
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FLAT AND HELICAL LOCKWASHERS
STEEL, Zinc Plated

Put up in a clear durable plastic container with hinged lid.
Size: 1" x 2-3/4" x 4-1/2"



14 SIZES
270 PIECES



Name	Spaenaur No.	Compatible Bolt Size	Thickness	Qty.	Page
Steel Flat Washer Zinc Plated	656-B48-1P	#6	0.036" - 0.065"	20	D2
	656-B55-1X	#8	0.044" - 0.052"		D4
	656-B07-1M	#10	0.036" - 0.065"		E33
	656-B33-1M	1/4"	0.051" - 0.080"	10	D2
	656-B47-1A	5/16"			
	656-B02-1Z	3/8"	0.098" - 0.112"	D5	
Helical Lockwasher Zinc Plated	W-177	1/2"	0.031"	20	D22
	W-311	#6	0.040"		
	663-W03-1M	#8	0.047"		
	663-W05-1A	#10	0.062"		
	16-SN	1/4"	0.078"		
	17-SN	5/16"	0.094"		
663-W06-1P	3/8"	0.125"			
	20-SN	1/2"			

For L9 Fastening System Hardened Washers, see page B149 - B150

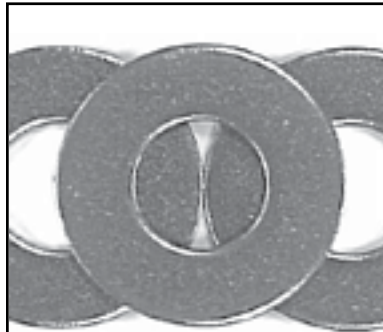
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Flat Washers / Flat Washers Assortment

Inch

Rondelles plates / assortiment de rondelles plates

Pouce



D

**“STANDARD”
18-8
Stainless
Steel**

SPAENAUR No.	BOLT SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS RANGE	PKG QTY.
W-2009	2	.0937"	1/4"	.012-.022"	100
658-014	2	.0937"	1/4"	.022-.041"	100
658-B06-2T	4	.125"	5/16"	.022-.041"	100
658-059	4	.125"	3/8"	.022-.041"	100
658-B05-1N	6	.147"	3/8"	.022-.041"	100
658-B08-2W	6	.156"	5/16"	.022-.041"	100
658-061	6	.156"	1/2"	.022-.041"	100
658-B04-1C	8	.171"	3/8"	.022-.041"	100
658-063	8	.171"	5/8"	.034-.061"	100
658-B02-2P	10	.200"	7/16"	.022-.041"	100
658-012	10	.200"	5/8"	.034-.068"	100
658-064	10	.203"	1/2"	.034-.068"	100
658-C01-1E	10	.203"	3/4"	.040-.075"	100
658-065	10	.203"	7/8"	.040-.075"	100
W-2037	12	.243"	1/2"	.045-.075"	100
658-B03-2Y	1/4"	.265"	1/2"	.045-.075"	100
658-066	1/4"	.265"	1"	.050-.084"	100
658-067	1/4"	.265"	1-1/4"	.050-.084"	100
W-2000	1/4"	.281"	11/16"	.034-.068"	100
658-015	1/4"	.281"	5/8"	.034-.068"	100
658-B17-1N	1/4"	.281"	1"	.034-.068"	50
658-B26-1P	5/16"	.343"	3/4"	.034-.068"	100
658-B30-1C	5/16"	.343"	1-1/4"	.045-.075"	100
658-072	5/16"	.343"	1-1/2"	.109-.140"	50
W-2038	5/16"	.375"	7/8"	.045-.075"	100
658-B32-1T	3/8"	.391"	1"	.034-.061"	100
W-2039	3/8"	.391"	1"	.040-.075"	100
658-069	3/8"	.391"	1-1/4"	.050-.084"	100
658-070	3/8"	.391"	1-1/2"	.056-.112"	100
658-073	-	.437"	1-1/2"	.109-.140"	50
658-B22-1W	7/16"	.500"	1-1/8"	.045-.075"	100
658-B21-1K	1/2"	.562"	1-1/4"	.056-.112"	100
658-071	1/2"	.562"	1-1/2"	.056-.112"	100
658-B16-1C	5/8"	.687"	1-1/2"	.056-.112"	100
658-002	3/4"	.813"	1.3/4"	.095-.115"	50
658-B20-1T	3/4"	.812"	1-7/8"	.075-.155"	50
658-008	7/8"	.937"	2"	.085-.115"	25
658-B29-1N	7/8"	.937"	2-1/4"	.075-.155"	50
658-074	1"	1.0625"	2"	.075-.131"	25
658-B25-1A	1"	1.0625"	2-1/2"	.109-.140"	50
W-2072	1-1/4"	1.312"	2-3/4"	.109-.140"	50

ASSORTMENT 805-520

FLAT WASHERS

18-8 Stainless Steel

16 SIZES - 967 PIECES



REGULAR SIZE Steel, grey enamel Drawer will fit Slide Racks shown on page A2.

Shipping Weight: **4.31 kg (9-1/2 lbs.)**

Spenaaur No.	Compatible Bolt Size	Inner Diameter	Outer Diameter	Thickness	Qty.
W-2009	#2	0.0937"	1/4"	0.012" - 0.022"	100
658-B06-2T	#4	0.1250"	5/16"	0.022" - 0.041"	
658-B05-1N	#6	0.1470"	3/8"		
658-B04-1C	#8	0.1710"	7/16"	0.045" - 0.075"	
658-B02-2P	#10	0.2000"			
W-2037	#12	0.2430"	1/2"	0.034" - 0.068"	
658-015	1/4"	0.2810"	5/8"		
658-B26-1P	5/16"	0.3430"	3/4"	0.040" - 0.075"	
W-2039	3/8"	0.3910"	1"		
658-B22-1W	7/16"	0.5000"	1-1/8"	0.045" - 0.075"	
658-B21-1K	1/2"	0.5620"	1-1/4"	0.056" - 0.112"	25
658-B16-1C	5/8"	0.6870"	1-1/2"		20
658-B20-1T	3/4"	0.8120"	1-7/8"	0.075" - 0.155"	10
658-B29-1N	7/8"	0.9370"	2-1/4"		5
658-B25-1A	1"	1.0625"	2-1/2"	0.109" - 0.140"	2
W-2072	1-1/4"	1.3120"	2-3/4"		

CATALOG 14

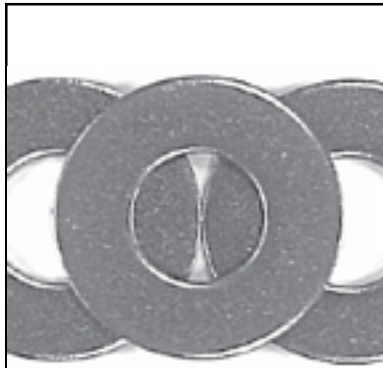
SPAENAUR

Inch

Flat Washers

Pouce

Rondelles plates



“STANDARD”
**316
Stainless
Steel**

SPAENAUR No.	BOLT SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS RANGE	PKG QTY.
658-B01-1A	4	.125"	5/16"	.022-.041"	100
W-2302	6	.156"	3/8"	.022-.041"	100
W-2303	8	.171"	3/8"	.022-.041"	100
658-B24-1X	10	.203"	.430"	.022-.041"	100
W-2305	1/4"	.281"	11/16"	.034-.068"	100
658-013	1/4"	.281"	5/8"	.034-.068"	100
658-023	1/4"	.281"	.734"	.045-.075"	100
658-024	5/16"	.343"	5/8"	.045-.075"	100
658-B19-1K	5/16"	.337"	3/4"	.034-.068"	100
W-2306	5/16"	.337"	7/8"	.045-.075"	100
658-018	3/8"	.391"	1"	.034-.060"	100
658-B31-1N	3/8"	.391"	1"	.045-.075"	100
658-020	7/16"	.468"	7/8"	.045-.075"	100
658-B28-1C	7/16"	.500"	1-1/8"	.045-.075"	100
658-B07-1K	1/2"	.531"	1"	.045-.075"	100
658-B23-1M	1/2"	.531"	1-1/4"	.055-.069"	100
W-2309	1/2"	.562"	1-1/4"	.056-.112"	100
658-021	5/8"	.656"	1-1/4"	.076-.131"	100
658-B18-1T	5/8"	.687"	1-1/2"	.056-.112"	100
658-022	3/4"	.812"	1-3/8"	.062-.131"	100
W-2311	3/4"	.812"	1-7/8"	.075-.155"	50
658-027	7/8"	.937"	2"	.102-.116"	50
W-2312	7/8"	.937"	2-1/4"	.075-.155"	50
658-028	1"	1.0625"	2"	.118-.132"	50
658-B27-1Y	1"	1.0625"	2-1/2"	.109-.140"	50
658-017	1-1/2"	1.625"	3-1/4"	.109-.140"	25

D

High Strength 17-7 (PH) Stainless Steel Flat Washers

These washers are made of 17-7 precipitation hardened (PH) stainless steel, heat treated to Rockwell **40-48° C** hardness. They provide the strength of heat-treated steel and corrosion resistance of a stainless steel. They can be used in atmospheres where plain steel, no matter how well plated, cannot survive.



SPAENAUR No.	BOLT SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	NOMINAL THICKNESS	PKG QTY.
658-B15-1Y	1/4"	.312"	3/4"	.063"	100
658-B14-1P	5/16"	.375"	7/8"	.078"	100
658-B13-1A	3/8"	.437"	1"	.078"	100
658-B12-2X	7/16"	.500"	1-1/4"	.078"	50
658-054	1/2"	.562"	1-3/8"	.078"	50
658-055	9/16"	.625"	1-1/2"	.090"	50
658-056	5/8"	.687"	1-3/4"	.125"	25
658-057	3/4"	.812"	2"	.122"	25
658-B10-1W	1"	1.0625"	2"	.131"	10

CATALOG 14

SPAENAUR

Flat Washers / Flat Washers Assortment

Inch

Rondelles plates / assortiment de rondelles plates

Pouce



D

**“STANDARD”
BRASS
Flat
Washers**

*Nickel Plated

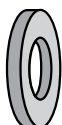
SPAENAUR No.	SCREW SIZE	BOLT SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS	PKG QTY.
W-527	00	-	.050"	7/64"	.015"	200
649-003	0	-	.065"	5/32"	.018"	200
W-525	1	-	.078"	3/16"	.018"	200
649-B01-2C	2	-	.092"	3/16"	.018"	500
W-501	3	-	.105"	1/4"	.020"	500
649-B20-1M	4	-	.119"	9/32"	.025"	500
*W-502NP	4	-	.119"	9/32"	.025"	500
649-002	5	1/8"	.125"	3/4"	.060"	100
W-528	5	1/8"	.133"	9/32"	.025"	250
649-B21-1X	6	-	.147"	5/16"	.028"	250
W-503	6	-	.147"	3/8"	.032"	250
649-B14-1N	8	5/32"	.172"	3/8"	.032"	250
W-504	8	5/32"	.172"	7/16"	.036"	250
649-B13-1C	10	3/16"	.200"	7/16"	.036"	100
*W-531NP	10	3/16"	.200"	7/16"	.036"	100
W-505	10	3/16"	.200"	1/2"	.040"	100
649-B19-1X	12	7/32"	.227"	1/2"	.040"	100
W-506	12	7/32"	.227"	9/16"	.040"	100
W-523	-	-	1/4"	1/2"	.016"	100
649-B09-1P	14	1/4"	.260"	9/16"	.040"	100
W-508	14	1/4"	.260"	11/16"	.051"	100
649-001	-	-	17/64"	15/32"	.032"	100
W-509	16	-	.282"	5/8"	.040"	100
W-510	16	-	.282"	3/4"	.064"	100
649-B15-1T	18	-	.310"	11/16"	.051"	100
W-512	18	-	.310"	7/8"	.064"	100
649-B18-1M	20	5/16"	.337"	3/4"	.064"	100
W-514	20	5/16"	.337"	7/8"	.064"	100
W-540	-	3/8"	.390"	.682"	.050"	100
649-B22-1A	24	3/8"	.391"	7/8"	.064"	50
W-516	24	3/8"	.391"	1"	.081"	50
649-B17-1W	30	7/16"	1/2"	1-1/8"	.081"	50
649-B12-1Y	34	1/2"	9/16"	1-1/4"	.091"	50
649-B02-1N	34	1/2"	9/16"	1-3/8"	.091"	50
W-519	-	5/8"	11/16"	1-1/2"	.102"	50
649-B03-1M	-	3/4"	13/16"	1-7/8"	.114"	50
649-B08-1A	-	7/8"	15/16"	2-1/4"	.128"	25
W-522	-	1"	1-1/16"	2-1/2"	.144"	25
W-580	-	1-1/8"	1-3/16"	2-3/4"	.156"	25

ASSORTMENT 805-519

**BRASS FLAT WASHERS
16 SIZES - 1315 PIECES**

REGULAR SIZE Steel, grey enamel Drawer will fit Slide Racks shown on page A2

Shipping Weight: **3.18 kg** (7 lbs.)



Spaenaur No.	Compatible Screw Size	Compatible Bolt Size	Inner Diameter	Outer Diameter	Thickness	Qty.	Page
649-B01-2C	#2		0.092"	3/16"	0.018"	200	D8
W-501	#3		0.105"	1/4"	0.020"		
649-B20-1M	#4		0.119"	9/32"	0.025"		
W-528	#5	1/8"	0.133"				
649-B21-1X	#6		0.147"	5/16"	0.028"	100	
649-B14-1N	#8	5/32"	0.172"	3/8"	0.032"		
649-B13-1C	#10	3/16"	0.200"	7/16"	0.036"	25	
649-B19-1X	#12	7/32"	0.227"	1/2"	0.040"		
649-B09-1P	#14	1/4"	0.260"	9/16"		0.051"	
649-B15-1T	#18		0.310"	11/16"	0.064"		
649-B18-1M	#20	5/16"	0.337"	3/4"		0.050"	
W-540		3/8"	0.390"	0.682"	0.081"		
649-B17-1W	#30	7/16"	1/2"	1-1/8"		0.091"	
649-B12-1Y	#34	1/2"	9/16"	1-1/4"	0.102"		
W-519		5/8"	11/16"	1-1/2"		0.114"	
649-B03-1M		3/4"	13/16"	1-7/8"	0.128"		


D8

Inch

Flat Washers / Copper Burrs

Pouce

Rondelles plates / rondelles d'appui en cuivre

 "STANDARD"		SPAENAUR No.	BOLT SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS	PKG QTY.
		<p>Aluminum</p>					
<p>Copper</p>		647-013	3	.108"	.400"	.031"	100
		647-012	4	.125"	3/8"	.031"	100
		647-D01-1E	6	.147"	3/8"	.032"	100
		656-B22-1X	8	.172"	3/8"	.032"	100
		W-189	10	.196"	7/8"	.064"	100
		647-W01-1A	10	.203"	7/16"	.037"	100
		W-3001	1/4"	.260"	11/16"	.047"	100
		647-014	5/16"	.343"	7/8"	.064"	100
		647-011	5/16"	.344"	9/16"	.064"	100
		W-3005	5/16"	.375"	7/8"	.064"	100
<p>Silicon Bronze</p>		647-W03-1Y	3/8"	.406"	7/8"	.062"	100
		W-3007	1/2"	.563"	1-1/4"	.091"	100
		W-3008	5/8"	.687"	1-1/2"	.095"	100
		647-W02-1P	3/4"	.812"	1-7/8"	.095"	50
		647-016	3/8"	.406-.416"	3"	.097-.112"	25
		W-4007	3/16"	.189"	1/2"	.040"	100
		W-4008	1/4"	.253"	11/16"	.047"	100
<p>Lead</p>		W-4009	5/16"	.337"	7/8"	.064"	100
		W-4010	3/8"	.391"	1"	.062"	100
		651-A02-1C	1/2"	.563"	1-1/4"	.093"	50
		W-4012	5/8"	.687"	1-1/2"	.095"	50
		W-4013	3/4"	.812"	1-7/8"	.095"	50
		SPAENAUR No.	BOLT SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS	PKG QTY.
<p>Copper Burrs - for Rivets -</p>		649-B05-1W	1/4"	.260"	11/16"	.041"	100
		649-B07-1X	5/16"	21/64"	3/4"	.065"	100
		W-553	5/16"	.337"	7/8"	.064"	100
		649-B11-1P	3/8"	.391"	7/8"	.064"	100
		649-B06-1M	3/8"	25/64"	1"	.065"	100
		649-B10-1A	1/2"	9/16"	1-1/4"	.095"	100
		649-B16-1K	5/8"	11/16"	1-1/2"	.092"	25
		W-559	3/4"	13/16"	1-7/8"	.102"	25
		W-560	7/8"	15/16"	2-1/4"	.109"	10
		W-561	1"	1-1/16"	2-1/2"	.125"	10
<p>Copper Burrs - for Rivets -</p>		653-W01-1A	10	7/32"	1/2"	.062"	100
		653-W02-1T	12	1/4"	1/2"	.062"	100
		W-5901	1/4"	17/64"	11/16"	.062"	100
		W-5903	5/16"	11/32"	7/8"	.062"	100
		653-002	-	5/8"	1-1/8"	.188"	100
<p>Copper Burrs - for Rivets -</p>		SPAENAUR No.	B.W. Gauge (or inches)	INSIDE DIAMETER	OUTSIDE DIAMETER	THICKNESS	PKG QTY.
		W-4000	12	.101-.104"	.375-.385"	.042"	500
		W-4001	10	.128-.131"	.375-.385"	.042"	500
		651-A01-1Y	8	.157-.160"	.500-.510"	.042"	250
		W-4003	3/16"	.192-.195"	.500-.510"	.042"	250
		W-4004	4	.236-.239"	.625-.635"	.050"	250
		W-4005	1/4"	.257-.260"	.625-.635"	.050"	100
W-4006	5/16"	.320-.323"	.625-.635"	.050"	100		

D

CATALOG 14 SPAENAUR

Teflon PTFE Flat Washers / Nylon Flat Washers

Inch

Rondelles plates en téflon PTFE / rondelles plates en nylon

Pouce



TEFLON - PTFE Flat Washers

- the lowest static and dynamic coefficient of friction of any solid material. The most slippery substance known.
 Continuous temperature range **-100°F to +400°F (-73°C to 204°C)**
 Teflon is unaffected by outdoor weathering. Inert to almost all chemicals. No moisture absorption. Can be cemented only after special treatment.

SPAENAUR No.	BOLT SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	NOMINAL THICKNESS	PKG QTY.
654-100	#4	.120"	9/32"	.030"	50
654-G04-1Y	#6	.150"	5/16"	.045"	50
654-102	#8	.170"	3/8"	.045"	50
654-103	#10	.195"	7/16"	.060"	50
654-G10-1K	1/4"	.265"	9/16"	.060"	25
654-105	5/16"	.340"	11/16"	.060"	25
654-106	3/8"	.405"	13/16"	.060"	25
654-107	1/2"	.531"	1"	.060"	25

D

NYLON SHOULDER WASHERS 6/6



See pages D72 & D73 for Nylon 6/6 Insulators and Shoulder Washers

also page C102 for Nylon Retaining Washers.

654-001	2	.090"	.250"	.032"	100
654-G09-1W	2	.104"	.220"	.031"	100
654-G02-1A	4	.115"	.250"	.032"	100
W-5000	4	.115"	.290"	.047"	100
76961	4	.124"	.500"	.100"	100
W-5001	6	.140"	.312"	.047"	100
654-003	6	.140"	.312"	.062"	100
654-030	6	.156"	.320"	.031"	100
654-G06-1N	8	.170"	.375"	.062"	100
654-029	10	.187"	.750"	.156"	100
654-004	10	.194"	.375"	.062"	100
W-5003	10	.200"	.437"	.062"	100
654-028	1/4"	.250"	.625"	.032"	100
654-G07-1T	1/4"	.257"	.500"	.062"	100
654-013	1/4"	.257"	.875"	.031"	100
654-010	1/4"	.257"	.875"	.062"	100
W-5004	1/4"	.260"	.562"	.062"	100
654-014	5/16"	.317"	.500"	.031"	100
654-006	5/16"	.317"	.500"	.062"	100
654-011	5/16"	.336"	.709"	.079"	100
654-G01-1X	5/16"	.344"	.687"	.062"	100
654-G08-1K	5/16"	.343"	.885"	.062"	100
654-007	3/8"	.380"	.625"	.062"	100
W-5007	3/8"	.402"	.807"	.065"	100
654-008	7/16"	.443"	.750"	.093"	100
654-023	—	.500"	1.500"	.125"	100
654-016	1/2"	.503"	1.120"	.033"	100
654-009	1/2"	.505"	.750"	.093"	100
654-017	1/2"	.540"	1.120"	.125"	100
W-5012	1/2"	.563"	.812"	.093"	100
654-019	—	.625"	.812"	.032"	100
654-012	5/8"	.630"	.812"	.100"	100
654-031	5/8"	.630"	.812"	.220"	100
654-018	3/4"	.768"	1.425"	.100"	100
654-022	7/8"	1.015"	1.5"	.080"	100

CATALOG 14

SPAENAUR


Inch

Flat Washers / Insulating Washers / Fibre Sheets

Pouce


Rondelles plates / Rondelles isolantes / Feuilles de fibres

FLAT FIBRE WASHERS				
Vulcanized Red Fibre. A hard, dense, bone-like material. Tough yet pliable.				
SPAENAUR No.		Diameter		PKG QTY.
1/32" Thick	1/16" Thick	Inside	Outside	
W-20F	W-21F	3/32"	3/16"	100
W-64F	W-65F	3/32"	1/4"	100
638-C01-1C	W-23F	1/8"	1/4"	100
W-24F	638-C04-1K	1/8"	5/16"	100
W-251F	-	1/8"	3/8"	100
638-C02-1N	-	.130"	3/8"	100
-	W-250F	5/32"	3/8"	100
W-26F	638-C11-1P	3/16"	5/16"	100
W-28F	W-29F	3/16"	3/8"	100
-	638-098	.191"	11/16"	100
W-30F	638-C05-1W	1/4"	3/8"	100
638-C03-1T	638-C09-1P	1/4"	1/2"	100
W-32F	W-33F	5/16"	7/16"	100
W-38F	W-39F	5/16"	9/16"	100
W-36F	W-37F	3/8"	1/2"	100
W-40F	W-41F	3/8"	5/8"	100
W-44F	W-45F	7/16"	11/16"	100
W-42F	W-43F	1/2"	5/8"	100
638-100	-	1/2"	11/16"	100
W-46F	W-47F	1/2"	3/4"	100
W-50F	W-51F	9/16"	13/16"	50
W-48F	W-49F	5/8"	3/4"	100
W-52F	W-53F	5/8"	7/8"	50
W-54F	W-55F	11/16"	15/16"	50
W-56F	W-57F	3/4"	1"	50
W-58F	W-59F	3/4"	1-1/16"	50
-	638-087	3/4"	1-1/4"	100
W-60F	638-C07-1X	13/16"	1-1/8"	50
W-62F	W-63F	7/8"	1-3/16"	25
-	W-67F	15/16"	1-1/4"	25
W-68F	W-69F	1"	1-5/16"	25
-	W-84F	1-1/4"	1-7/16"	25
638-002(.017" Thick - Grey Colour)		1/8"	1/4"	100
638-003(.037" Thick - Grey Colour)		1/8"	1/4"	100
638-004(.067" Thick - Grey Colour)		1/8"	1/4"	100
W-85F(3/32" Thick)		5/16"	15/32"	100
W-275F (1/8" Thick)		1/4"	3/4"	100
638-088 (1/8" Thick)		3/16"	1-1/8"	100



FLAT FIBROUS WASHERS
Light Grey Colour
Made of
ELECTRICAL INSULATING
TRANSFORMER BOARD

SPAENAUR No.	Nominal Thickness	I.D.	O.D.	PKG QTY.
638-C10-1A	1/32"	.130"	3/8"	100
W-86F	1/16"	.219"	1/2"	100
UH-11	1/16"	1/4"	3/4"	100



FLAT FIBRE WASHERS
BLACK COLOUR (Hard)

SPAENAUR No.	Nominal Thickness	I.D.	O.D.	PKG QTY.
638-001	1/32"	5/32"	5/16"	100
638-C08-1A	1/16"	3/16"	7/8"	100
UH-10	1/16"	3/16"	1-3/8"	100



FLAT PHENOLIC WASHERS
Fabric Base - Natural Colour

SPAENAUR No.	Nominal Thickness	I.D.	O.D.	PKG QTY.
W-257F	1/16"	3/8"	7/8"	100
W-334F	.025"	11/16"	1-1/16"	100
W-333F	.010"	1-1/16"	1-5/16"	100



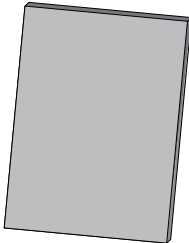
LEATHER WASHERS
639-001 5/16" I.D., 1" O.D., 1/8" thick
639-002 1/4" I.D., 1" O.D., 1/8" thick
PKG QTY. 100



EXTRUDED FIBRE WASHERS
STANDARD SIZES
Shoulder Washers to fit metal panels.
Used wherever a metal panel has to be insulated.



SPAENAUR No.	Inside Dia. A	Shoulder B	O.D. C	Base D	Height E	PKG QTY.
638-C06-1M	#4 (1/8")	13/64"	5/16"	3/64"	5/64"	100
W-75F	#6 (9/64")	7/32"	3/8"	3/64"	5/64"	100
W-76F	#8 (11/64")	1/4"	7/16"	1/16"	3/32"	100
W-77F	#10 (13/64")	9/32"	1/2"	1/16"	3/32"	100
W-78F	1/4"	3/8"	1/2"	1/16"	3/32"	100
W-79F	5/16"	7/16"	9/16"	1/16"	3/32"	100
W-80F	3/8"	1/2"	5/8"	1/16"	3/32"	100
W-81F	3/8"	1/2"	3/4"	1/16"	3/32"	100



VULCANIZED RED FIBRE SHEETS

SPAENAUR No.	Size	PKG QTY.
W-70FS	1/32" x 2" x 3"	25
W-71FS	1/16" x 2" x 3"	25

Useful for cutting into special shapes- Washers, Gaskets, etc.

ASSORTMENT B-584A

FIBRE WASHERS
of Red, Vulcanized Fibre
24 SIZES - 1000 PIECES



REGULAR SIZE Steel, grey enamel Drawer will fit Slide Racks shown on page A2

Shipping Weight:
2.49 kg (5-1/2 lbs.)

Page A73



CATALOG 14 SPAENAUR

Flat Washers

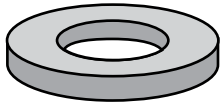
Metric

Rondelles plates

Métrique

~DIN 125

This Standard has been replaced. Please see Catalog Page R21 for more information.



Metric STEEL FLAT WASHERS

Available finishes:

Plain, Zinc and Yellow Zinc Plated.

Regular Style

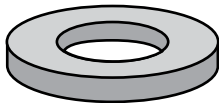
Hardness: ISO 7089 HV 200-300. (HRB 90-105)

(All Dimensions in Millimetres.)

ORDER BY SPAENAUR NUMBER LISTED BELOW			BOLT SIZE (mm)	INSIDE DIA. (MIN.)	OUTSIDE DIA. (MAX.)	THICKNESS (NOM.)	PKG QTY.
PLAIN	ZINC PLATED	YELLOW ZINC PLTD.					
657-067	657-067ZP		1.6	1.7	4.0	.3	250
657-001	657-001ZP		1.7	1.8	4.5	.3	250
657-002	657-002ZP	657-002YZ	2	2.2	5.0	.3	250
657-068	657-003ZP	657-003YZ	2.3	2.5	6.0	.5	100
657-W19-1Y	657-068ZP	657-068YZ	2.5	2.7	6.0	.5	100
	657-004ZP	657-004YZ	2.6	2.8	7.0	.5	100
657-005	657-W02-1W	657-005YZ	3	3.2	7.0	.5	100
657-006	657-006ZP	657-006YZ	3.5	3.7	8.0	.5	100
657-007	657-W03-1M	657-007YZ	4	4.3	9.0	.8	100
657-008	657-008ZP	657-008YZ	5	5.3	10.0	1.0	100
657-W23-1N	657-W04-1Y	657-009YZ	6	6.4	12.0	1.6	100
657-010	657-010ZP	657-010YZ	7	7.4	14.0	1.6	100
657-011	657-011ZP	657-011YZ	8	8.4	16.0	1.6	100
657-833			10	10.5	20.0	2	100
657-012	657-012ZP	657-W17-1A	10	10.5	20.0	2.0	100
657-832			12	13.0	24.0	2.5	100
657-013	657-013ZP	657-013YZ	12	13.0	24.0	2.5	100
657-014	657-014ZP	657-W05-1A	14	15.0	28.0	2.5	100
657-015	657-015ZP	657-015YZ	16	17.0	30.0	3.0	100
657-016	657-016ZP	657-016YZ	18	19.0	34.0	3.0	100
657-017	657-W21-1Y	657-017YZ	20	21.0	37.0	3.0	50
657-018	657-018ZP	657-018YZ	22	23.0	39.0	3.0	50
657-W20-1P	657-019ZP	657-019YZ	24	25.0	44.0	4.0	50
	657-020ZP		27	28.0	50.0	4.0	25
657-069	657-W07-1Y		30	31.0	56.0	4.0	25
			33	34.0	60.0	5.0	10
657-070	657-070ZP		36	37.0	66.0	5.0	10
657-071	657-071ZP		39	42.0	72.0	6.0	10
657-072	657-072ZP		42	45.0	78.0	8.0	10
657-074			48	52.0	92.0	8.0	10

(All Dimensions in Millimetres.)

Steel Metric Flat Washers



Cold Rolled Plain Finish

Hardness: 200 Brinell (HRB 94)

SPAENAUR No.	BOLT SIZE (mm)	INSIDE DIA. (MIN.)	OUTSIDE DIA. (MAX.)	THICKNESS (AVG.)	PKG QTY.
657-170	5	5.3	10.0	1 ±0.1	100
657-171	6	6.4	12.0	1.6 ±0.2	100
657-172	8	8.4	16.0	1.6 ±0.2	100
657-173	10	10.5	20.0	2 ±0.2	100
657-174	12	13.0	24.0	2.5 ±0.3	100
*657-174ZP	12	13.0	24.0	2.5 ±0.3	100
657-175	14	15.0	28.0	2.5 ±0.3	100
657-176	16	17.0	30.0	3 ±0.3	100
657-177	18	19.0	34.0	3 ±0.3	100
657-178	20	21.0	37.0	3 ±0.3	50

*Zinc Plated

Metric

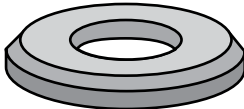
Flat Washers / Tab Lockwashers / Lockwasher Assortment

Métrique

Rondelles plates / Lave-glace / Assortiment de lave-glace

~DIN 125

This Standard has been replaced. Please see Catalog Page R21 for more information.



Metric STEEL FLAT WASHERS

**Available finishes:
Plain, Zinc and Yellow Zinc Plated.
Single Chamfer Style**

(All Dimensions in Millimetres.)

ORDER BY SPAENAUR NUMBER LISTED BELOW			BOLT SIZE (mm)	INSIDE DIA. (MIN.)	OUTSIDE DIA. (MAX.)	THICKNESS (NOM.)	PKG QTY.
PLAIN	ZINC PLATED	YELLOW ZINC PLATED					
657-056	657-053ZP 657-056ZP		3 5	3.2 5.3	7.0 10.0	.5 1.0	100 100
657-W14-1W	657-057ZP	657-057YZ	6	6.4	12.0	1.6	100
657-058	657-058ZP		7	7.4	14.0	1.6	100
657-059	657-059ZP	657-059YZ	8	8.4	16.0	1.6	100
657-060	657-060ZP	657-060YZ	10	10.5	20.0	2.0	100
657-061	657-061ZP	657-061YZ	12	13.0	24.0	2.5	100
657-062	657-062ZP	657-062YZ	14	15.0	28.0	2.5	100
657-064	657-063ZP 657-064ZP	657-063YZ	16 18	17.0 19.0	30.0 34.0	3.0 3.0	100 100
657-065	657-065ZP	657-065YZ	20	21.0	37.0	3.0	50
657-169	657-169ZP		22	23.0	39.0	3.0	50
657-066	657-066ZP	657-066YZ 657-162YZ	24 27	25.0 28.0	44.0 50.0	4.0 4.0	50 25
657-143	657-143ZP	657-143YZ	30	31.0	56.0	4.0	25
657-135			33	34.0	60.0	5.0	10
657-136	657-136ZP		36	37.0	66.0	5.0	10
657-137			39	40.0	72.0	6.0	10
657-138			42	45.0	78.0	8.0	10
657-139			45	48.0	85.0	8.0	10
657-140			48	52.0	92.0	8.0	10
657-141			52	56.0	98.0	8.0	10
*657-142	*657-142ZP		64	66.15	114.0	9.0	10

* Not to DIN Specification.

EXTERNAL TAB WASHER

Dimensions in mm.

DIN 432

Steel
Plain Finish

Bolt Size	SPAENAUR No.	I.D.	O.D.	Tab Width	Thickness
M6	657-294	6.4	19	3.5	.75
M8	657-295	8.4	22	3.5	1.0
M12	657-296	13	30	4.5	1.2



PKG QTY. 100

PLASTIKIT «PLASTIKIT» 804-082

~DIN 125

This Standard has been replaced. Please see Catalog Page R21 for more information.

Metric FLAT and HELICAL LOCKWASHERS

Steel, Zinc Plated
14 SIZES – 280 PIECES

Put up in a clear durable plastic container with hinged lid. Size: 1" x 2-3/4" x 4-1/2".



Name	Spaenaur No.	Compatible Bolt Size	Inner Diameter	Outer Diameter	Thickness	Qty.	Page
Split Lockwashers	664-C07-1P	M4	4.1mm	7.6mm	0.9mm	20	D25
	664-007ZP	M5	5.1mm	9.2mm	1.2mm		
	664-008ZP	M6	6.1mm	11.8mm	1.6mm		
	664-009ZP	M7	7.1mm	12.8mm	1.6mm		
	664-C10-1Y	M8	8.1mm	14.8mm	2.0mm		
	664-011ZP	M10	10.2mm	18.1mm	2.2mm		
Flat Washers	657-W03-1M	M4	4.3mm	9.0mm	0.8mm	20	D12
	657-008ZP	M5	5.3mm	10.0mm	1.0mm		
	657-W04-1Y	M6	6.4mm	12.0mm	1.6mm		
	657-010ZP	M7	7.4mm	14.0mm	1.6mm		
	657-011ZP	M8	8.4mm	16.0mm	1.6mm		
	657-012ZP	M10	10.5mm	20.0mm	2.0mm		
	657-013ZP	M12	13.0mm	24.0mm	2.5mm		

D

ASSORTMENT
ASSORTMENT **805-446**

~DIN 125
This Standard has been replaced. Please see Catalog Page R21 for more information.

Metric FLAT WASHERS
A2 Stainless Steel

20 Sizes
893 Pieces

Shipping Weight: **3.2 kg** (7 lb.)



ASSORTMENT
ASSORTMENT **805-447**

~DIN 125
This Standard has been replaced. Please see Catalog Page R21 for more information.

Metric FLAT WASHERS
Brass

20 Sizes
940 Pieces

Shipping Weight: **3.2 kg** (7 lb.)



ASSORTMENT
ASSORTMENT **805-448**

~DIN 125
This Standard has been replaced. Please see Catalog Page R21 for more information.

Inch & Metric FLAT WASHERS
6/6 Nylon

18 Sizes
1000 Pieces

Shipping Weight: **2.27 kg** (5 lb.)



For the complete assortment contents turn to A74

ASSORTMENT
ASSORTMENT **805-411**

~DIN 125
This Standard has been replaced. Please see Catalog Page R21 for more information.

Metric
FLAT WASHERS
Steel, Plated & Plain
21 SIZES - 943 PIECES



All drawers shown above are **REGULAR SIZE**, welded steel, have hinged lids and finished in grey enamel. Drawers will fit Slide Racks shown on A2

Shipping Weight: **3.52 kg** (7-1/4 lbs.)





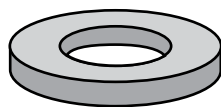
For the complete assortment contents turn to A75

Metric

Flat Washers

Métrique

Rondelles plates

MATERIAL	SPAENAUR No.		BOLT SIZE (mm)	INSIDE DIAMETER (MIN.)	OUTSIDE DIAMETER (MAX.)	THICKNESS (NOM.)	PKG QTY.
	STAINLESS STEEL A2	STAINLESS STEEL A4					
<p>Metric FLAT WASHERS</p> <p>~DIN 125</p> <p><small>This Standard has been replaced. Please see Catalog Page R21 for more information.</small></p>  <p>Property Classes</p> <p>A2 & A4</p> <p>STAINLESS STEEL</p> <p><small>* May not be to DIN Specification</small></p>	*659-022		1	1.1	3.2	.3	250
	*659-023		1.2	1.3	3.8	.3	250
	*659-024		1.4	1.5	3.8	.3	250
	659-F12-1M		1.6	1.7	4	.3	250
	659-F06-1N	659-F08-1K	2	2.2	5.0	.3	250
	659-003		2.3	2.5	6.0	.5	100
	659-F05-1C	659-031	2.5	2.7	6.0	.5	100
	659-004		2.6	2.8	7.0	.5	100
	659-F03-1P	659-032	3	3.2	7.0	.5	100
	659-006	659-F13-1X	3.5	3.7	8.0	.5	100
	659-F04-2Y	659-033	4	4.3	9.0	.8	100
	659-008	659-F09-1W	5	5.3	10.0	1.0	100
	659-F01-1X	659-035	6	6.4	12.0	1.6	100
	659-F10-1K	659-036	8	8.4	16.0	1.6	100
	659-F02-1A	659-037	10	10.5	20.0	2.0	100
	659-013	659-038	12	13.0	24.0	2.5	100
	659-014	659-039	14	15.0	28.0	2.5	100
	659-015	659-040	16	17.0	30.0	3.0	100
	659-016	659-041	18	19.0	34.0	3.0	100
	659-F11-1W	659-042	20	21.0	37.0	3.0	50
	659-018	659-043	22	23.0	39.0	3.0	50
659-019	659-044	24	25.0	44.0	4.0	50	
659-020	659-045	27	28.0	50.0	4.0	25	
659-021	659-046	30	31.0	56.0	4.0	25	
<p>Metric FLAT WASHERS</p> <p>~DIN 125</p> <p><small>This Standard has been replaced. Please see Catalog Page R21 for more information.</small></p>  <p>BRASS</p>	PLAIN BRASS	NICKEL PLATED					
	650-001	650-001NP	1.7	1.8	4.5	.3	250
	650-002		2	2.2	5.0	.3	250
	650-003		2.3	2.5	6.0	.5	100
	650-022		2.5	2.7	6.0	.5	100
	650-004	650-004NP	2.6	2.8	7.0	.5	100
	650-005		3	3.2	7.0	.5	100
	650-006		3.5	3.7	8.0	.5	100
	650-007	650-007NP	4	4.3	9.0	.8	100
	650-008		5	5.3	10.0	1.0	100
	650-009		6	6.4	12.0	1.6	100
	650-026		7	7.4	14.0	1.6	100
	650-K01-1C		8	8.4	16.0	1.6	100
	650-012		10	10.5	20.0	2.0	100
	650-013		12	13.0	24.0	2.5	100
	650-014		14	15.0	28.0	2.5	100
	650-015		16	17.0	30.0	3.0	100
	650-K02-1N		18	19.0	34.0	3.0	100
	650-017		20	21.0	37.0	3.0	50
	650-018		22	23.0	39.0	3.0	50
	650-019		24	25.0	44.0	4.0	50
650-021		30	31.0	56.0	4.0	25	
<p>Metric FLAT WASHERS</p>  <p>Type 6/6 UL 94V2 NYLON</p> <p>See pages D72 and D73 for Nylon 6/6 Insulators and Shoulder Washers.</p>	655-020		2	2.15	5.00	0.80	100
	655-021		2.5	2.65	5.60	0.80	100
	655-010		3	3.20	7.00	0.50	100
	655-001		3	3.20	8.00	0.80	100
	655-022		3.5	3.70	8.00	0.80	100
	655-011		4	4.30	9.00	0.80	100
	655-012		5	5.30	11.00	1.00	100
	655-013		6	6.40	12.00	1.50	100
	655-015		8	8.40	16.00	1.60	100
	655-002		8	8.40	18.00	2.00	100
	655-023		8	8.50	25.00	2.00	100
	655-016		10	10.50	22.00	2.50	100
	655-017		12	13.00	24.00	2.50	100
	655-018		16	17.00	30.00	3.00	100
	655-019		20	21.00	37.00	3.00	50

All Dimensions in millimetres

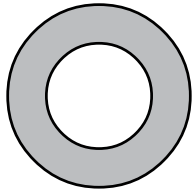


Flat Washers

Metric

Rondelles plates

Métrique

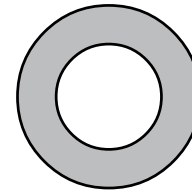


Round Flat Washers

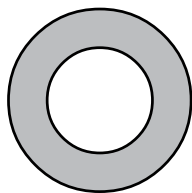
DIN 126

This Standard has been replaced. Please see Catalog Page R21 for more information.

Coarse Steel Washers for **Metric** Hexagon Bolts and **Metric** Nuts, (not chamfered)



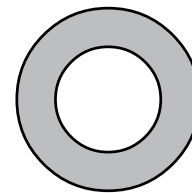
For Bolt Size	Plain Steel	Zinc Plated	Yellow Zinc Plated	All Dimensions in Millimetres			PKG QTY.
				I.D. (Min.)	O.D. (Max.)	Thick. (Nom.)	
M5	657-032			5.5	10	1	100
M6	657-033			6.6	12	1.6	100
M7	657-034			7.6	14	1.6	100
M8	657-035	657-035ZP		9	16	1.6	100
M10	657-036	657-036ZP	657-036YZ	11	20	2	100
M12	657-037	657-037ZP		13.5	24	2.5	100
M14	657-038		657-038YZ	15.5	28	2.5	100
M16	657-W22-1C	657-039ZP		17.5	30	3	100
M18	—	657-054ZP		20	34	3	50
M20	657-040	657-040ZP		22	37	3	50
M22	657-077	657-077ZP		23	39	3	50
M24	657-041			26	44	4	50
M27	657-042	657-042ZP		30	50	4	25
M30	657-043	657-043ZP		33	56	4	25
M33	657-044	657-044ZP		36	60	5	10
M36	657-045	657-045ZP		39	66	5	10
M39	657-046			42	72	6	10
M42	657-047			45	78	8	10
M45	657-076			48	85	8	10
M48	657-048			52	92	8	10
M52	657-049			56	98	8	10



Round Flat Washers

DIN 7349

For use with **Metric** Bolts with HEAVY Clamping Sleeves and for close tolerance use with DIN 1481.



For Bolt Size	Plain Steel	Zinc Plated	All Dimensions in Millimetres			PKG QTY.
			I.D.	O.D.	Thickness	
M3	657-183	657-183ZP	3.2	9	1	100
M4	657-184	657-184ZP	4.3	12	1.6	100
M5	657-185		5.3	15	2	100
M6	657-186	657-186ZP	6.4	17	3	100
M8	657-187	657-187ZP	8.4	21	4	100
M10	657-188		10.5	25	4	100
M12	657-189	657-189ZP	13	30	6	100
M14	657-191	657-191ZP	15	36	6	100
M16	657-192	657-192ZP	17	40	6	100
M18	657-194		19	44	8	100
M20	657-195		21	44	8	100
M22	657-196		23	50	8	50
M24	657-197	657-197ZP	25	50	10	50
M27	657-198		28	60	10	25
M30	657-199	657-199ZP	31	68	10	25

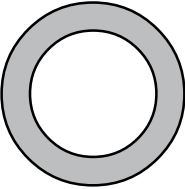
D16

Metric

Flat Washers

Métrique

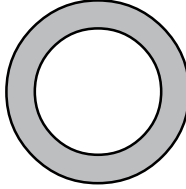
Rondelles plates



Metric Flat Washers with reduced O.D.

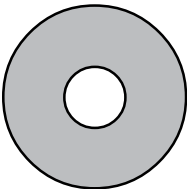
DIN 433

For use with Machine Screws.



For Bolt Size	Plain Steel	Zinc Plated	A4 Stainless Steel	All Dimensions in Millimetres			PKG QTY.
				I.D. (Min.)	O.D. (Max.)	Thick. (Nom.)	
M1		657-078ZP		1.1	2.5	0.3	100
M1.2	657-079	657-079ZP		1.3	3	0.3	100
M1.4		657-080ZP		1.5	3	0.3	100
M1.6		657-081ZP		1.7	3.5	0.3	100
M2	657-083	657-W29-1A		2.2	4.5	0.3	100
M2.5	657-084	657-W01-1K		2.7	5	0.5	100
M3		657-W06-1P		3.2	6	0.5	100
M3.5	657-144			3.7	7	0.5	100
M4	657-086	657-086ZP	657-W25-1K	4.3	8	0.5	100
M5	657-087	657-087ZP	657-815	5.3	9	1	100
M6	657-088	657-088ZP	657-W11-1N	6.4	11	1.6	100
M8	657-089	657-089ZP	657-802	8.4	15	1.6	100
M10	657-090	657-090ZP	657-W18-1P	10.5	18	1.6	100
M12	657-091	657-091ZP		13	20	2	100
M14	657-092	657-092ZP		15	24	2.5	100
M16	657-093	657-093ZP		17	28	2.5	100
M18	657-094	657-094ZP		19	30	3.0	100
M20	657-095	657-095ZP		21	34	3.0	50

■657-502NP Brass - Nickel Plated



Metric Fender Washers

~DIN 9021

This Standard has been replaced. Please see Catalog Page R21 for more information.

Washers with O.D. approximate 3 times I.D.
Previously unmachined.

Washers with Large O.D.
Plain Steel Similar to DIN 9021

SPAENAUR No.	I.D. x O.D. x Thickness	PKG QTY. 100
657-W26-1X	6.4 x 25 x 1.25 mm	
657-149	8.4 x 30 x 1.25 mm	
657-319	10.5 x 38 x 1.5 mm	

For Bolt Size	Plain Steel	Zinc Plated	Yellow Zinc Plated	A2 Stainless Steel	Nylon 6/6	All Dimensions in Millimetres			PKG QTY.
						I.D. (Min.)	O.D. (Max.)	Thick. (Nom.)	
M2.5	657-253	657-253ZP		657-804		2.7	8	0.8	100
M3	657-254	657-254ZP	657-254YZ	657-805	657-400	3.2	9	0.8	100
M3.5	657-255	657-255ZP		657-806		3.7	11	0.8	100
M4	657-256	657-256ZP	657-256YZ	657-W09-1N	657-401	4.3	12	1	100
M5	657-257	657-257ZP	657-257YZ	657-808	657-402	5.3	15	1.1	100
M6	657-258	657-258ZP	657-258YZ	657-W13-1K	657-403	6.4	18	1.6	100
M7	657-259	657-259ZP				7.4	22	2	100
M8	657-260	657-260ZP		657-810	657-W16-1X	8.4	24	2	100
M10	657-261	657-W24-1T	657-261YZ	▲657-811	657-405	10.5	30	2.5	100
M12	657-262	657-262ZP	657-262YZ	657-812	657-406	13	37	3	100
M14	657-263	657-263ZP	657-263YZ			15	44	3	100
M16	657-264	657-264ZP				17	50	3	100
M18	657-265	657-265ZP				19	56	4	100
M20	657-266	657-266ZP				21	60	4	50

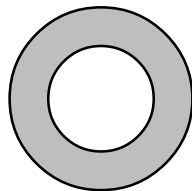
▲ 657-813 A4 Stainless Steel (same dimensions as 657-811)

Flat Washers

Metric

Rondelles plates

Métrique

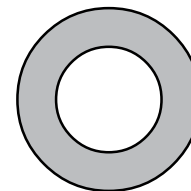


Metric Flat Washers

DIN 7989

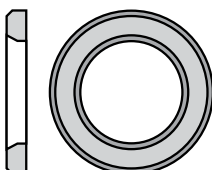
This Standard has been replaced. Please see Catalog Page R21 for more information.

For Steel Construction - Plain Steel



For Bolt Size	SPAENAUR No.	All Dimensions in Millimetres			PKG QTY.
		I.D.	O.D.	Thickness	
M10	657-050	11	20	8	100
M12	657-051	13.5	24	8	100
M16	657-096	17.5	30	8	100
M20	657-052	22	37	8	50
M24	657-097	26	44	8	50
M24	657-097ZP (Zinc Plated)	26	44	8	50
M27	657-098	30	50	8	25
M30	657-099	33	56	8	25

D



Metric Flat Washers

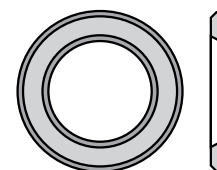
Plain Steel - Black Finish

DIN 6916

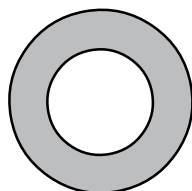
Hardened

For use with steel structures (joints with high-tensile, prestressed bolts)

and DIN 6914 High Tension Hexagon Bolts (Pg. B170) and DIN 6915 Heavy Hex Nuts (Pg. C20).



For Bolt Size	SPAENAUR No.	All Dimensions in Millimetres			PKG QTY.
		I.D.	O.D.	Thickness	
M12	657-150	13	24	3	100
M16	657-151	17	30	4	100
M20	657-152	21	37	4	50
M22	657-153	23	39	4	50
M24	657-154	25	44	4	50
M27	657-155	28	50	5	25
M30	657-156	31	56	5	25
M33	657-157	34	60	5	10

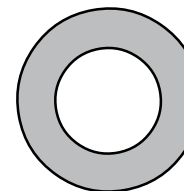


Metric Flat Washers

Plain Steel – Black Finish

DIN 6340

Hardened



For Bolt Size	SPAENAUR No.	All Dimensions in Millimetres			PKG QTY.
		I.D.	O.D.	Thickness	
M6	657-298	6.4	17	3	100
M8	657-299	8.4	23	4	100
M10	657-W27-1M	10.5	28	4	100
M12	657-301	13	35	5	100
M14	657-302	15	40	5	100
M16	657-303	17	45	6	100
M18	657-304	19	45	6	100
M20	657-305	21	50	6	50
M24	657-306	25	60	8	50

**For Spherical Seat Washer DIN 6319C
and Dished Washer DIN 6319D see page B302.**

D18

Metric

Flat Washers / Ribbed Lockwashers

Métrique

Rondelles plates / Rondelles freins nervurées



DIN 1440
~ DIN EN 28738
~ ISO 8738

Fine Tolerance – Steel

Metric Flat Washers for Clevis Pins



Bolt Size (mm)	Plain Steel	Zinc Plated	Yellow Zinc Plated	All Dimensions in Millimetres			PKG QTY.
				I.D.	O.D.	Thickness	
3	657-234	657-234ZP		3	6	0.8	100
4	657-235	657-235ZP	657-235YZ	4	8	0.8	100
5	657-236	657-236ZP	657-236YZ	5	10	1.0	100
6	657-237	657-237ZP		6	12	1.6	100
8	657-238	657-238ZP	657-W28-1X	8	15	2	100
10	657-239	657-239ZP		10	18	2.5	100
12	657-240	657-240ZP		12	20	3	100
13	657-241			13	25	3	100
14	657-242	657-242ZP		14	22	3	100
16	657-243	657-243ZP	657-243YZ	16	24	3	100
18	657-244	657-244ZP		18	28	4	100
20	657-245	657-245ZP	657-245YZ	20	32	4	50
22	657-246	657-246ZP	657-246YZ	22	34	4	50
25	657-247			25	40	4	50
28	657-248	657-W08-1C		28	42	5	25
30	657-249			30	44	5	25
36	657-250			36	50	6	10

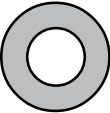



Metric Rib Washers

Spring Steel – Black Finish



For Bolt Size	SPAENAUR No.	All Dimensions in Millimetres			Overall Height	PKG QTY.
		I.D.	O.D.	Thickness		
M3	657-275	3.2	5.5	0.45	0.9	100
M4	657-276	4.3	7.0	0.50	1.0	100
M5	657-277	5.3	9.0	0.60	1.1	100
M6	657-278	6.4	10.0	0.70	1.2	100
M7	657-279	7.4	12.0	0.70	1.3	100
M8	657-280	8.4	13.0	0.80	1.4	100
M10	657-282	10.5	16.0	1.00	1.6	100
M12	657-284	13.0	18.0	1.10	1.7	100
M14	657-286	15.0	22.0	1.20	2.0	100
M16	657-293	17.0	24.0	1.30	2.1	100
M18	657-287	19.0	27.0	1.50	2.3	100
M20	657-288	21.0	30.0	1.50	2.4	50
M22	657-289	23.0	33.0	1.50	2.5	50
M24	657-290	25.6	36.0	1.80	2.7	50
M27	657-291	28.6	39.0	2.00	2.9	25
M30	657-292	31.6	45	2.00	3.2	25

	<p>SPAENAUR No. 657-407 M6 Thick Flat Washer Steel – Zinc Plated 6.4 I.D. x 16 O.D. x 0.8 mm Thick.</p>	<p>PKG QTY. 100</p>		<p>Flat Small O.D. Washers Steel – Zinc Plated</p>		<p>PKG QTY. 100</p>
				<p>SPAENAUR No. 657-408 8 I.D. x 12 O.D. x 2 mm Thick.</p>	<p>SPAENAUR No. 657-409 9 I.D. x 13 O.D. x 2 mm Thick.</p>	

CATALOG 14

SPAENAUR