# BARDEN Precision Bearing Closures

Flexeal, Barseal, Shield





# **BEARING CLOSURES**

The two basic types of bearing closures are shields and seals, both of which may be ordered as integral components of deep groove bearings and certain angular contact bearings.

All closures serve the same purposes with varying effectiveness. They exclude contamination, contain lubricants and protect the bearing from internal damage during handling.

Cl osures are attached to the outer ring. If they contact the inner ring, they are seals. If they clear the inner ring, they are shields. Seals and shields in Barden bearings are designed so that the stringent precision tolerances are not affected by the closures. They are available in large precision spindle and turbine bearings as well as in Barden miniature and instrument bearings.

### SELECTION OF CLOSURES

Determining the proper closure for an application involves a tradeoff, usually balancing sealing efficiency against speed capability and bearing torque.

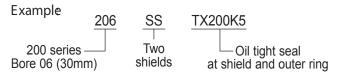
Shields do not raise bearing torque or limit speeds, but they have low sealing efficiency. Seals are more efficient, but they may restrict operating speed and increase torque and temperature.

Another consideration in closure selection is air flow through the bearing, which is detrimental because it carries contamination into the bearing and dries out the lubricant. Seals should be used if air flow is present.

### **NOMENCLATURE**

In the Barden nomenclature, closures are designated by the letters: F (Flexeal), S (Shield), Y, V, P (Barseal).

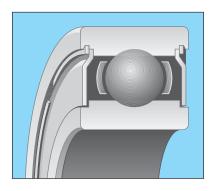
Usually two closures are used in a bearing, so the callout is a double letter e.g. "FF," "SS" etc. If there is only one closure, the callout is a single letter e.g. "F," "S" etc. The closure callout follows the series-size and bearing type.



Refer to Barden C-20 or C-8 catalogs for more information regarding Barden nomenclature.



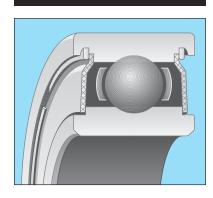
## SHIELD



- D esignated by SS or S suffix in nomenclature
- Bearing torque and performance not affected because shield does not contact inner ring
- Precision stamped disk shaped 302 stainless steel provides rigidity, resistance to vibration and maximum lubricant space
- Good contamination protection and lubricant retention

- Speed not limited by shields
- Temperature limit of shield material 600°F
- Available with oil tight seal between outer ring and shield where there is outer ring rotation. Specify X200 for this feature
- Available in practically all sizes of deep groove bearings and certain angular contact bearings such as the ZSB series

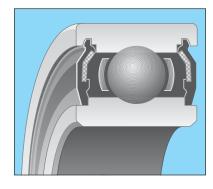
### **FLEXEAL**



- D esignated by FF or F suffix in nomenclature
- Light rubbing contact on inner ring precision ground notch
- D esign provides excellent exclusion of contaminants with minimum torque but does not provide a positive seal to the flow of air or liquids
- Fiber is prelubricated to produce low friction at the precision ground sealing notch and minimize seal wear at the contact area

- Precision stamped from an aluminum/fiber laminate
- R esistant to aircraft hydraulic fluids
- R ecommended limiting speed 650,000 dN\*
- Temperature limit 300°F continuous or 350°F for short periods
- W ide availability in a variety of deep groove sizes

### BARSEAL



- M olded rubber seal with metal stiffener
- A vailable in three different compounds providing a range of high temperature limits
- Provides best sealing from contamination more positive than Flexeal
- Sealing remains positive on both inner ring precision ground sealing notches even with high thrust loads
- Also provides a seal to lube migration at outer ring where there is outer ring rotation
- R ecommended limiting speed 180.000 dN\*
- Available in most 200 and 9200 series

### Buna-N Barseal

- D esignated by YY or Y suffix in nomenclature
- Temperature limit 225°F

### Polyacrylic Barseal

- D esignated by PP or P suffix in nomenclature
- •Temperature limit 265°F

### Viton<sup>®</sup> Barseal

- D esignated by VV or V suffix in nomenclature
- •Temperature limit 400°F

\*dN = Bearing bore in mmx rpm

# **AVAILABILITY OF SHIELDS**

### AVAILABLE SHIELDS ARE LISTED BY BARDEN BEARING NUMBER AND BEARING DIMENSIONS

Bearing	SS	FF	Bore	O.D.	Width
S(F)R2	Х	Χ	.1250	.3750	.1562
SR2A	Х		.1250	.5000	.1719
S(F)R3	Х	Х	.1875	.5000	.1960
S(F)R4	Х	Х	.2500	.6250	.1960
SR4A	Χ	Χ	.2500	.7500	.2812
S(F)R6	Χ	Χ	.3750	.8750	.2812
SR8	Х	Х	.5000	1.1250	.3125
SR10	Х	Х	.6250	1.3750	.3438
34-5	Х		.1969	.6299	.1969
34	Χ	Χ	.1575	.6299	.1969
35	Χ		.1969	.7480	.2362
36	Х		.2362	.7480	.2362
37	Х	Х	.2756	.8661	.2756
38	Х	Х	.3150	.8661	.2756
39	Χ		.3543	1.0236	.3150
37X2	Χ	Χ	.2756	.8661	.4060
38X2	Х	Х	.3150	.8661	.4060
VS538	Х		.6250	1.0625	.2500
VS540	Х		.8750	1.3125	.2500
100	Χ	Χ	.3937	1.0236	.3150
102	Χ	Χ	.5906	1.2598	.3543
103	Х	Х	.6693	1.3780	.3937
104	Х	Х	.7874	1.6535	.4724
105	Χ	Χ	.9843	1.8504	.4724
106	Х	Х	1.1811	2.1654	.5118
107	Χ	Χ	.13780	2.4409	.5512
109	Χ		1.7717	2.9526	.6299
110	Χ		1.9685	3.1419	.6299
111	Х		2.1654	3.5433	.7087

200         X         X         X         X         X         X         X         X         3.3937         1.1811         .3543           201         X         X         X         X         1.2598         .3937           202         X         X         X         X         5906         1.3780         .4331           203         X         X         X         X         9843         1.5748         .4724           204         X         X         X         1.1811         2.4409         .6299           206         X         X         X         X         1.8780         2.8346         .6693           208         X         X         X         1.5748         3.1496         .7087           209         X         X         X         1.5748         3.1496         .7087           209         X         X         X         1.5748         3.1496         .7087           209         X         X         1.5748         3.1496         .7087           209         X         X         1.5748         3.11           100X1         X         X         1.5748         3.6250 <th>Bearing</th> <th>SS</th> <th>FF</th> <th>Barseal</th> <th>Bore</th> <th>O.D.</th> <th>Width</th>	Bearing	SS	FF	Barseal	Bore	O.D.	Width
202         X         X         X         X         X         A331           203         X         X         X         X         A4724           204         X         X         X         X         A7874         1.8504         .5512           205         X         X         X         A9843         2.0472         .5906           206         X         X         X         1.1811         2.4409         .6299           207         X         X         X         1.3780         2.8346         .6693           208         X         X         X         1.5748         3.1496         .7087           209         X         X         X         1.5748         3.1496         .7087           209         X         X         X         1.5748         3.1496         .7087           209         X         X         1.5748         3.1496         .7087           209         X         X         1.5748         3.1496         .7087           209         X         X         4.724         1.1024         .4531           201x1         X         X         5906         1.378	_	Х	Х		.3937	1.1811	.3543
203         X         1.8504         .5512           206         X         X         X         X         1.1811         2.4409         .6299           207         X         X         X         1.3780         2.8346         .6693           208         X         X         X         1.5748         3.1496         .7087           209         X         X         X         1.7717         3.3465         .7480           100X1         X         X         .4724         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5906         1.3780         .5000           9201         X         X         .5906         1.3780         .6250           9202         X         X         X         .6693	201	Х	X	X	.4724	1.2598	.3937
204         X         X         X         X         2.7874         1.8504         .5512           205         X         X         X         X         9843         2.0472         .5906           206         X         X         X         1.1811         2.4409         .6299           207         X         X         X         1.3780         2.8346         .6693           208         X         X         X         1.5748         3.1496         .7087           209         X         X         1.7717         3.3465         .7480           100X1         X         X         .3937         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5906         1.3780         .5000           9202X1         X         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .13780	202	Х	X	X	.5906	1.3780	.4331
205         X         X         X         X         9843         2.0472         .5906           206         X         X         X         X         1.1811         2.4409         .6299           207         X         X         X         X         1.3780         2.8346         .6693           208         X         X         X         1.5748         3.1496         .7087           209         X         X         X         1.7717         3.3465         .7480           100X1         X         X         .3937         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5906         1.3780         .5000           202X1         X         X         .5906         1.3780         .6250           9202         X         X         .5906         1.3780         .6250           9203         X         X         .5906         1.3780         .6250           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9	203	Х	X	X	.6693	1.5748	.4724
206         X         X         X         X         X         1.1811         2.4409         .6299           207         X         X         X         X         1.3780         2.8346         .6693           208         X         X         X         1.5748         3.1496         .7087           209         X         X         X         1.7717         3.3465         .7480           100X1         X         X         .3937         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5906         1.3780         .5000           202X1         X         X         .5906         1.3780         .6250           9201         X         X         .5906         1.3780         .6250           9202         X         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         X         .9843         2.0472         .8125           9205         X         X         X	204	Х	Х	Х	.7874	1.8504	.5512
207         X         X         X         X         X         X         X         X         X         X         X         X         1.5748         3.1496         .7087           209         X         1.7717         3.3465         .7480           100X1         X         X         .3937         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5118         1.2598         .5000           202X1         X         X         .5906         1.3780         .5000           9201         X         X         .5906         1.3780         .6250           9202         X         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9207         X         X         1.3780         2.8346         1.0625           9209         X <t< td=""><td>205</td><td>Х</td><td>Х</td><td>Х</td><td>.9843</td><td>2.0472</td><td>.5906</td></t<>	205	Х	Х	Х	.9843	2.0472	.5906
208         X         X         X         1.5748         3.1496         .7087           209         X         1.7717         3.3465         .7480           100X1         X         X         .3937         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5118         1.2598         .5000           202X1         X         X         .5906         1.3780         .5000           9201         X         .5906         1.3780         .6250           9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.3780         2.8346         1.0625           9207         X         1.3780         2.8346         1.0625           9209         X         1.3780         2.8346         1.0625 </td <td>206</td> <td>Х</td> <td>Х</td> <td>Х</td> <td>1.1811</td> <td>2.4409</td> <td>.6299</td>	206	Х	Х	Х	1.1811	2.4409	.6299
209         X         1.7717         3.3465         .7480           100X1         X         X         .3937         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5118         1.2598         .5000           202X1         X         X         .5906         1.3780         .5000           9201         X         .5906         1.3780         .6250           9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.3780         2.8346         1.0625           9207         X         X         1.3780         2.8346         1.0625           9209         X         1.3780         2.8346         1.0625           9209         X         1.5906         1.6535         .5118	207	Х	Х	Х	1.3780	2.8346	.6693
100X1         X         X         3937         1.0236         .4531           101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5118         1.2598         .5000           202X1         X         X         .5906         1.3780         .5000           9201         X         .5906         1.3780         .6250           9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .5906         1.6535         .5118           303<	208	Х	Х	Х	1.5748	3.1496	.7087
101X1         X         X         .4724         1.1024         .4531           201X1         X         X         .5118         1.2598         .5000           202X1         X         X         .5906         1.3780         .5000           9201         X         .5906         1.3780         .6250           9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .7874         2.0472         .5906           305         X	209		Х		1.7717	3.3465	.7480
201X1         X         X         X         5906         1.3780         .5000           9201         X         .5906         1.3780         .5000           9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.3780         2.8346         1.0625           9209         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .5906         1.6535         .5118           303         X         .6693         1.8504         .5512           304         X         .7874         2.0472         .5906           305         X         X <td>100X1</td> <td>Х</td> <td>Х</td> <td></td> <td>.3937</td> <td>1.0236</td> <td>.4531</td>	100X1	Х	Х		.3937	1.0236	.4531
202X1         X         X         .5906         1.3780         .5000           9201         X         .4724         1.2598         .6250           9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.3780         2.8346         1.0625           9207         X         1.3780         2.8346         1.0625           9209         X         1.3780         2.8346         1.0625           9209         X         1.3780         2.8346         1.0625           9209         X         .5906         1.6535         .5118           301         X         .5906         1.6535         .5118           303         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         X <td>101X1</td> <td>Х</td> <td>Х</td> <td></td> <td>.4724</td> <td>1.1024</td> <td>.4531</td>	101X1	Х	Х		.4724	1.1024	.4531
9201         X         .4724         1.2598         .6250           9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .5906         1.6535         .5118           303         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         X         1.3780         3.1496         .8268           308         X         X	201X1	Х	Х		.5118	1.2598	.5000
9202         X         .5906         1.3780         .6250           9203         X         X         .6693         1.5748         .6875           9204         X         X         .9843         2.0472         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .6693         1.8504         .5512           304         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         X         .9843         2.4409         .6693           306         X         X         1.3780         3.1496         .8268           308	202X1	Х	Х		.5906	1.3780	.5000
9203         X         X         X         6693         1.5748         .6875           9204         X         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .5906         1.6535         .5118           303         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         X         1.3780         3.1496         .8268           308         X         X         1.5748         3.5433         .9055           309         X         X         1.7717         3.9370         .9843 <td>9201</td> <td></td> <td>Х</td> <td></td> <td>.4724</td> <td>1.2598</td> <td>.6250</td>	9201		Х		.4724	1.2598	.6250
9204         X         X         X         .7874         1.8504         .8125           9205         X         X         X         .9843         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .6693         1.8504         .5512           304         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         X         1.3780         3.1496         .8268           308         X         X         1.5748         3.5433         .9055           309         X         X         1.7717         3.9370         .9843           310         X         1.9685         4.3307         1.0630           311	9202		Х		.5906	1.3780	.6250
9205         X         X         X         X         X         X         X         1.1811         2.0472         .8125           9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .6693         1.8504         .5512           304         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         X         1.3780         3.1496         .8268           308         X         X         1.5748         3.5433         .9055           309         X         X         1.7717         3.9370         .9843           310         X         1.9685         4.3307         1.0630           311         X         X         2.1654         4.7244	9203		Х	Х	.6693	1.5748	.6875
9206         X         X         X         1.1811         2.4409         .9375           9207         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .6693         1.8504         .5512           304         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         X         1.3780         3.1496         .8268           308         X         X         1.5748         3.5433         .9055           309         X         X         1.7717         3.9370         .9843           310         X         1.9685         4.3307         1.0630           311         X         X         2.1654         4.7244         1.1417           312         X         2.3622         5.1181         1.2205	9204		Х	Х	.7874	1.8504	.8125
9207         X         1.3780         2.8346         1.0625           9209         X         1.7717         3.3465         1.1875           301         X         .4724         1.4567         .4724           302         X         .5906         1.6535         .5118           303         X         .6693         1.8504         .5512           304         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         1.1811         2.8310         .7480           307         X         X         1.3780         3.1496         .8268           308         X         X         1.5748         3.5433         .9055           309         X         X         1.7717         3.9370         .9843           310         X         1.9685         4.3307         1.0630           311         X         X         2.1654         4.7244         1.1417           312         X         2.3622         5.1181         1.2205	9205	Х	Х	Х	.9843	2.0472	.8125
9209       X       1.7717       3.3465       1.1875         301       X       .4724       1.4567       .4724         302       X       .5906       1.6535       .5118         303       X       .6693       1.8504       .5512         304       X       .7874       2.0472       .5906         305       X       X       .9843       2.4409       .6693         306       X       1.1811       2.8310       .7480         307       X       X       1.3780       3.1496       .8268         308       X       X       1.5748       3.5433       .9055         309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	9206	Х	Х	Х	1.1811	2.4409	.9375
301       X       .4724       1.4567       .4724         302       X       .5906       1.6535       .5118         303       X       .6693       1.8504       .5512         304       X       .7874       2.0472       .5906         305       X       X       .9843       2.4409       .6693         306       X       1.1811       2.8310       .7480         307       X       X       1.3780       3.1496       .8268         308       X       X       1.5748       3.5433       .9055         309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	9207		Х		1.3780	2.8346	1.0625
302       X       .5906       1.6535       .5118         303       X       .6693       1.8504       .5512         304       X       .7874       2.0472       .5906         305       X       X       .9843       2.4409       .6693         306       X       1.1811       2.8310       .7480         307       X       X       1.3780       3.1496       .8268         308       X       X       1.5748       3.5433       .9055         309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	9209	Х			1.7717	3.3465	1.1875
303         X         .6693         1.8504         .5512           304         X         .7874         2.0472         .5906           305         X         X         .9843         2.4409         .6693           306         X         1.1811         2.8310         .7480           307         X         X         1.3780         3.1496         .8268           308         X         X         1.5748         3.5433         .9055           309         X         X         1.7717         3.9370         .9843           310         X         1.9685         4.3307         1.0630           311         X         X         2.1654         4.7244         1.1417           312         X         2.3622         5.1181         1.2205	301	Х			.4724	1.4567	.4724
304       X       .7874       2.0472       .5906         305       X       X       .9843       2.4409       .6693         306       X       1.1811       2.8310       .7480         307       X       X       1.3780       3.1496       .8268         308       X       X       1.5748       3.5433       .9055         309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	302	Х			.5906	1.6535	.5118
305       X       X       X       .9843       2.4409       .6693         306       X       1.1811       2.8310       .7480         307       X       X       1.3780       3.1496       .8268         308       X       X       1.5748       3.5433       .9055         309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	303	Х			.6693	1.8504	.5512
306       X       1.1811       2.8310       .7480         307       X       X       1.3780       3.1496       .8268         308       X       X       1.5748       3.5433       .9055         309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	304	Χ			.7874	2.0472	.5906
307     X     X     X     1.3780     3.1496     .8268       308     X     X     1.5748     3.5433     .9055       309     X     X     1.7717     3.9370     .9843       310     X     1.9685     4.3307     1.0630       311     X     X     2.1654     4.7244     1.1417       312     X     2.3622     5.1181     1.2205	305	Х	Х		.9843	2.4409	.6693
308       X       X       1.5748       3.5433       .9055         309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	306	Х			1.1811	2.8310	.7480
309       X       X       1.7717       3.9370       .9843         310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	307	Х	Х			3.1496	.8268
310       X       1.9685       4.3307       1.0630         311       X       X       2.1654       4.7244       1.1417         312       X       2.3622       5.1181       1.2205	308	Х	Х		1.5748	3.5433	.9055
311     X     X     2.1654     4.7244     1.1417       312     X     2.3622     5.1181     1.2205	309	Х	Х		1.7717	3.9370	.9843
312 X 2.3622 5.1181 1.2205	310	Χ			1.9685	4.3307	1.0630
	311	Х	Х		2.1654	4.7244	1.1417
313 X 2.5591 5.5118 1.2992	312	Х			2.3622	5.1181	1.2205
	313		Х		2.5591	5.5118	1.2992



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