

Material

The 280 Series piston seal features PTFE compounds which provide low friction performance, eliminate stick-slip effects, and have high wear resistance. Standard compounds are PTFE/Bz and PTFE/Glass-Moly.

The temperature range of the 280 Series can be increased by selecting a FPM profile ring in place of the standard NBR profile ring.

Material	Code
PTFE-Bronze compound + NBR o-ring	T23
PTFE-Bronze compound + FPM o-ring	T26
PTFE-Glass/MoS2 compound + NBR o-ring	T83
PTFE-Glass/MoS2 compound + FPM o-ring	T86

Operating Parameters

Temperature	T23		T83	
	°C	°F	°C	°F
hydraulic oil	-30... +100	-22... +212	-30... +100	-22... +212
water oil emulsions (HFA)	-	-	+5... +60	+40... +140
water-glycol fluids (HFC)	-	-	-30... +60	-22... +140
polyol esters (HFD)	-	-	-	-
water	-	-	-5... +100	+40... +212

Speed	5 m/s (16.4 ft/sec)
Pressure	400 bar (6000psi)

Note: for other materials or fluids please contact our engineering department

Description

The 280 Series piston seal is composed of a PTFE compound seal ring energised by an elastomeric profile ring. It is designed for large-diameter double-acting cylinders and demanding applications where high pressures and large extrusion gaps are common.

Product Benefits

- Maximum extrusion resistance
- High pressure resistance
- Low friction
- Robust design
- Ease of installation

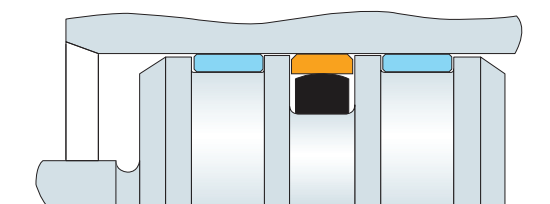
Applications

The 280 Series piston seal is designed for heavy duty applications requiring low friction.

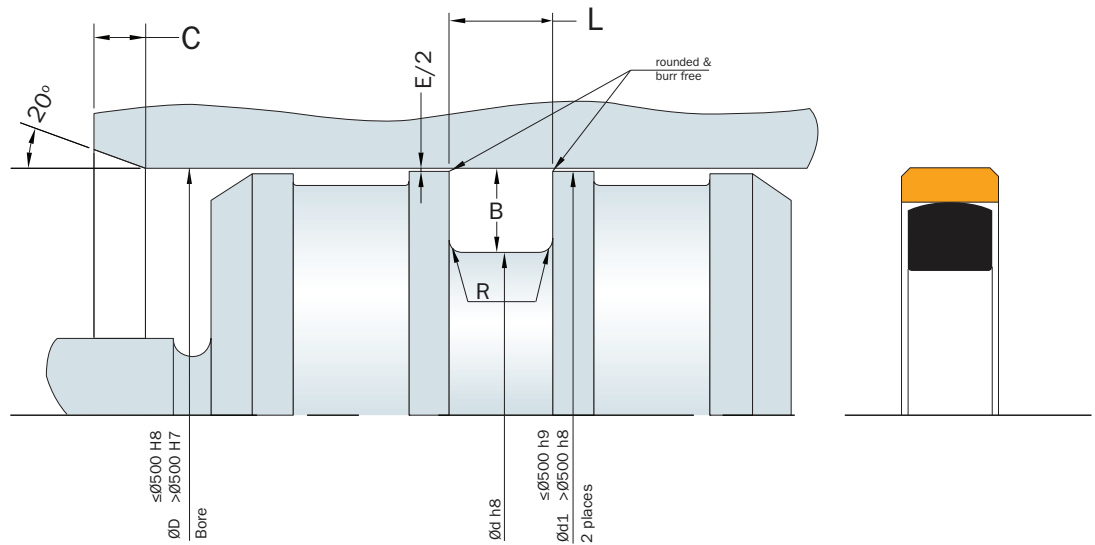
Typical applications include:

- HAGC cylinders in rolling mills
- Presses
- Injection moulding machines
- Marine hydraulics

Installation Drawing



Design Guidelines



Metric Series

	Piston Bore Diameter D	B	d	d1	L ^{+0.2}	E	C	R
Series 1	Up to 200 mm	10.0	D - 20.0	D - 0.5	10.0	0.5	7.5	0.4
Series 2	Up to 300 mm	12.5	D - 25.0	D - 0.6	12.5	0.6	10.0	0.4
Series 3	Up to 450 mm	15.0	D - 30.0	D - 0.6	15.0	0.6	12.0	0.8
Series 4	Up to 685 mm	17.5	D - 35.0	D - 0.6	17.5	0.6	12.0	1.2
Series 5	Up to 1270 mm	20.0	D - 40.0	D - 0.6	20.0	0.6	12.0	1.2

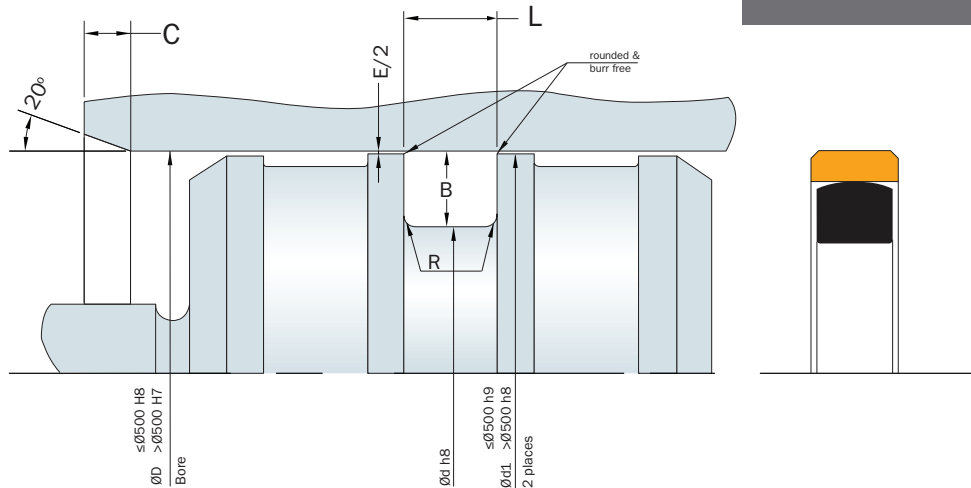
Inch Series

	Piston Bore Diameter D	B	d	d1	L ^{+0.008}	E	C	R
Series 1	Up to 8 inches	0.394	D - 0.787	D - 0.20	0.394	0.020	0.30	0.016
Series 2	Up to 12 inches	0.492	D - 0.984	D - 0.024	0.492	0.024	0.39	0.016
Series 3	Up to 18 inches	0.591	D - 1.181	D - 0.024	0.591	0.024	0.47	0.032
Series 4	Up to 27 inches	0.689	D - 1.378	D - 0.024	0.689	0.024	0.47	0.050
Series 5	Up to 50 inches	0.787	D - 1.575	D - 0.024	0.787	0.024	0.47	0.050

The extrusion gap "E" is suitable for pressure up to 400 bar (6000 psi) and temperatures up to 80° C (176° F). For higher pressures or temperatures, please consult our engineering department for guidance.

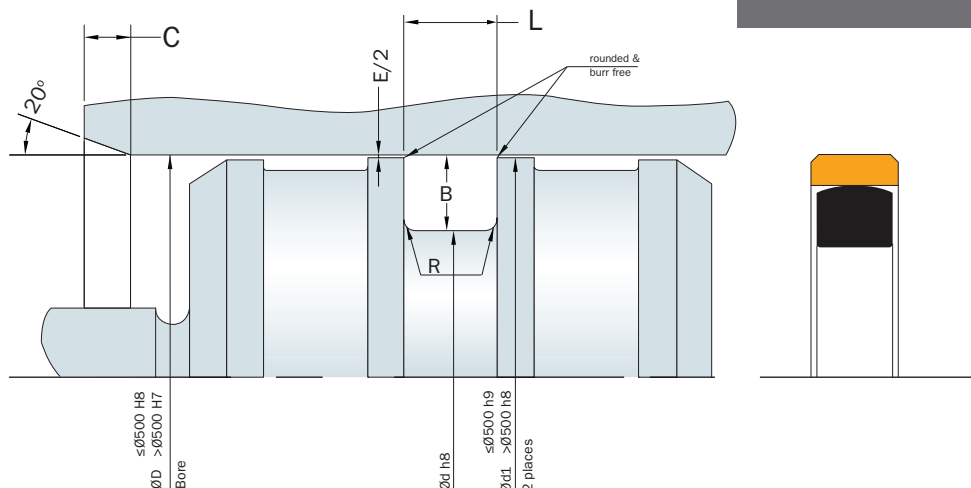
Surface Finish

Surface roughness	Ra	Rt	RMS
Sliding surface	≤0.3 µm	≤3 µm	8 RMS
Surface of groove I.D.	≤1.8 µm	≤10 µm	64 RMS
Sides of groove	≤3 µm	≤16 µm	125 RMS



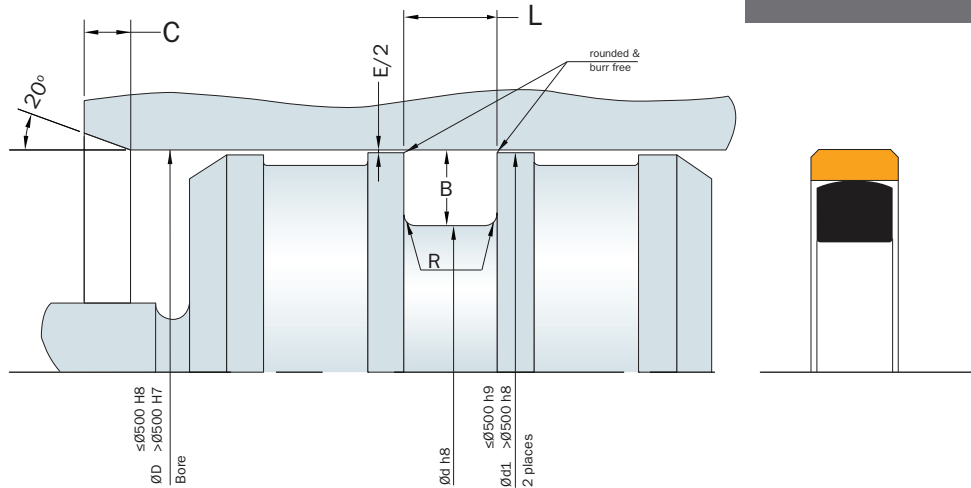
Parts List

$\varnothing D$	$\varnothing d$	B	L	C	R	T23 PTFE-Bronze	T83 PTFE-Glass/MoS2
50.00	35.00	7.50	7.50	7.50	0.40	280.90894	280.90999
55.00	40.00	7.50	7.50	7.50	0.40	280.90977	280.90982
56.00	41.00	7.50	7.50	7.50	0.40	280.90762	280.90870
60.00	45.00	7.50	7.50	7.50	0.40	280.90768	280.90896
63.00	48.00	7.50	7.50	7.50	0.40	280.90848	280.90783
65.00	50.00	7.50	7.50	7.50	0.40	280.90785	280.90937
70.00	55.00	7.50	7.50	7.50	0.40	280.49714	280.90893
80.00	60.00	10.00	10.00	7.50	0.40	280.90978	280.48763
90.00	70.00	10.00	10.00	7.50	0.40	280.90860	280.90832
100.00	80.00	10.00	10.00	7.50	0.40	280.90992	280.90981
110.00	90.00	10.00	10.00	7.50	0.40	280.90910	280.90971
115.00	95.00	10.00	10.00	7.50	0.40	280.90834	280.43306
120.00	100.00	10.00	10.00	7.50	0.40	280.90816	280.90886
125.00	105.00	10.00	10.00	7.50	0.40	280.09549	280.43299
130.00	110.00	10.00	10.00	7.50	0.40	280.90766	280.51344
140.00	120.00	10.00	10.00	7.50	0.40	280.90769	280.43297
150.00	125.00	12.50	12.50	10.00	0.40	280.90878	280.90833
160.00	135.00	12.50	12.50	10.00	0.40	280.90857	280.43279
163.60	138.60	12.50	12.50	10.00	0.40	280.90976	280.90916
165.00	140.00	12.50	12.50	10.00	0.40	280.90774	280.90963
170.00	145.00	12.50	12.50	10.00	0.40	280.90936	280.90979
180.00	155.00	12.50	12.50	10.00	0.40	280.90943	280.90959
185.00	160.00	12.50	12.50	10.00	0.40	280.90861	280.90795
185.50	160.50	12.50	12.50	10.00	0.40	280.90901	280.90930
187.00	162.00	12.50	12.50	10.00	0.40	280.90907	280.90922
190.00	165.00	12.50	12.50	10.00	0.40	280.90934	280.42712
200.00	175.00	12.50	12.50	10.00	0.40	280.90925	280.41061
205.00	180.00	12.50	12.50	10.00	0.40	280.90811	280.90950
210.00	185.00	12.50	12.50	10.00	0.40	280.36331	280.36332
212.00	187.00	12.50	12.50	10.00	0.40	280.90859	280.90798
215.00	190.00	12.50	12.50	10.00	0.40	280.90904	280.90803
218.00	193.00	12.50	12.50	10.00	0.40	280.90957	280.90887



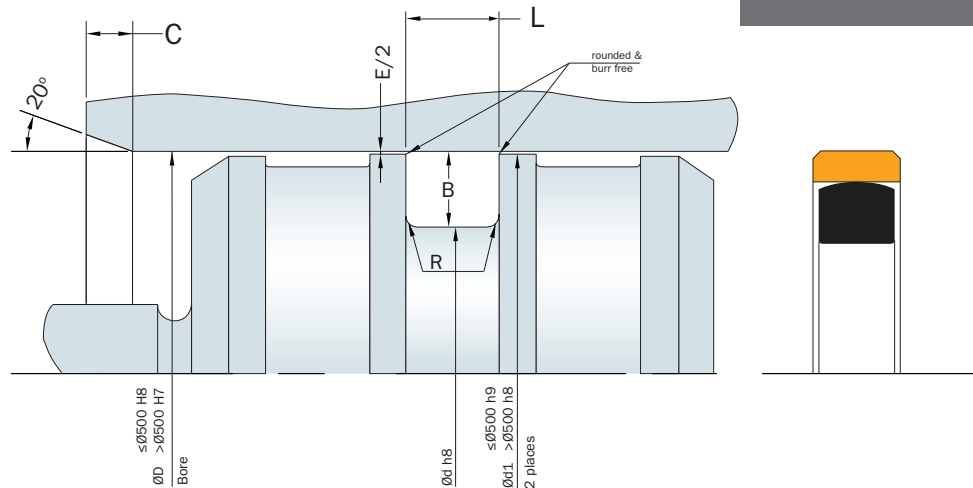
Parts List

ØD	Ød	B	L	C	R	T23 PTFE-Bronze	T83 PTFE-Glass/MoS2
220.00	195.00	12.50	12.50	10.00	0.40	280.14776	280.42718
225.00	200.00	12.50	12.50	10.00	0.40	280.90873	280.90771
230.00	205.00	12.50	12.50	10.00	0.40	280.90797	280.42776
235.00	210.00	12.50	12.50	10.00	0.40	280.90942	280.90899
240.00	215.00	12.50	12.50	10.00	0.40	280.90824	280.42792
125.00	95.00	15.00	15.00	12.00	0.80	280.90962	280.90986
145.00	115.00	15.00	15.00	12.00	0.80	280.90996	280.90961
146.00	116.00	15.00	15.00	12.00	0.80	280.90850	280.90838
200.00	170.00	15.00	15.00	12.00	0.80	280.90933	280.90891
225.00	195.00	15.00	15.00	12.00	0.80	280.90890	280.90836
240.00	210.00	15.00	15.00	12.00	0.80	280.90799	280.42793
245.00	215.00	15.00	15.00	12.00	0.80	280.90928	280.90990
250.00	220.00	15.00	15.00	12.00	0.80	280.90903	280.42726
253.00	223.00	15.00	15.00	12.00	0.80	280.90994	280.90777
255.00	225.00	15.00	15.00	12.00	0.80	280.90789	280.90973
260.00	230.00	15.00	15.00	12.00	0.80	280.90889	280.90968
265.00	235.00	15.00	15.00	12.00	0.80	280.90773	280.90879
270.00	240.00	15.00	15.00	12.00	0.80	280.90830	280.90856
275.00	245.00	15.00	15.00	12.00	0.80	280.90954	280.90985
280.00	250.00	15.00	15.00	12.00	0.80	280.43348	280.90951
282.00	252.00	15.00	15.00	12.00	0.80	280.90955	280.90767
285.00	255.00	15.00	15.00	12.00	0.80	280.90829	280.90847
290.00	260.00	15.00	15.00	12.00	0.80	280.90898	280.90909
300.00	270.00	15.00	15.00	12.00	0.80	280.90929	280.90787
305.00	275.00	15.00	15.00	12.00	0.80	280.90784	280.90941
310.00	280.00	15.00	15.00	12.00	0.80	280.90918	280.90919
316.20	286.20	15.00	15.00	12.00	0.80	280.90938	280.90975
320.00	290.00	15.00	15.00	12.00	0.80	280.46869	280.90810
325.00	295.00	15.00	15.00	12.00	0.80	280.40327	280.90991
327.50	297.50	15.00	15.00	12.00	0.80	280.90842	280.90804
330.00	300.00	15.00	15.00	12.00	0.80	280.90809	280.90794
335.00	305.00	15.00	15.00	12.00	0.80	280.90871	280.90995



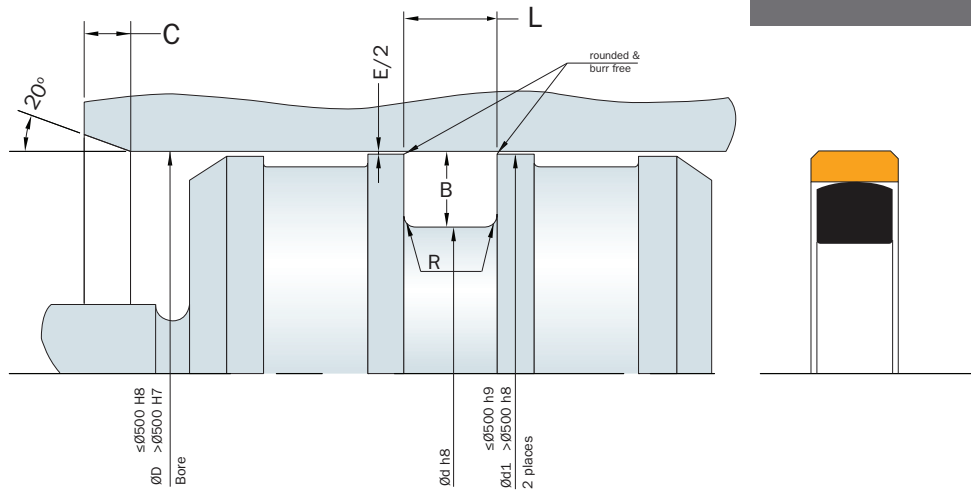
Parts List

ØD	Ød	B	L	C	R	T23 PTFE-Bronze	T83 PTFE-Glass/MoS2
340.00	310.00	15.00	15.00	12.00	0.80	280.90935	280.90912
350.00	320.00	15.00	15.00	12.00	0.80	280.90791	280.90868
355.00	325.00	15.00	15.00	12.00	0.80	280.90987	280.90796
360.00	330.00	15.00	15.00	12.00	0.80	280.90905	280.90867
370.00	340.00	15.00	15.00	12.00	0.80	280.90839	280.90817
380.00	350.00	15.00	15.00	12.00	0.80	280.90765	280.90917
382.60	352.60	15.00	15.00	12.00	0.80	280.90945	280.90801
390.00	360.00	15.00	15.00	12.00	0.80	280.90863	280.02113
400.00	370.00	15.00	15.00	12.00	0.80	280.90790	280.42727
420.00	390.00	15.00	15.00	12.00	0.80	280.51180	280.90969
460.00	430.00	15.00	15.00	12.00	0.80	280.42845	280.90876
335.00	300.00	17.50	17.50	12.00	1.20	280.90983	280.90763
405.60	370.60	17.50	17.50	12.00	1.20	280.90812	280.90853
420.00	385.00	17.50	17.50	12.00	1.20	280.90988	280.42731
440.00	405.00	17.50	17.50	12.00	1.20	280.90862	280.90849
450.00	415.00	17.50	17.50	12.00	1.20	280.90852	280.02014
455.00	420.00	17.50	17.50	12.00	1.20	280.90782	280.90885
460.00	425.00	17.50	17.50	12.00	1.20	280.90906	280.43334
470.00	435.00	17.50	17.50	12.00	1.20	280.90875	280.90946
480.00	445.00	17.50	17.50	12.00	1.20	280.90819	280.90806
500.00	465.00	17.50	17.50	12.00	1.20	280.51922	280.90828
510.00	475.00	17.50	17.50	12.00	1.20	280.90932	280.90884
520.00	485.00	17.50	17.50	12.00	1.20	280.90989	280.90947
530.00	495.00	17.50	17.50	12.00	1.20	280.90846	280.90924
540.00	505.00	17.50	17.50	12.00	1.20	280.90770	280.43307
550.00	515.00	17.50	17.50	12.00	1.20	280.90931	280.90757
560.00	525.00	17.50	17.50	12.00	1.20	280.90944	280.90970
565.00	530.00	17.50	17.50	12.00	1.20	280.90914	280.90920
570.00	535.00	17.50	17.50	12.00	1.20	280.90964	280.41522
580.00	545.00	17.50	17.50	12.00	1.20	280.43338	280.03494
583.00	548.00	17.50	17.50	12.00	1.20	280.90892	280.90949
590.00	555.00	17.50	17.50	12.00	1.20	280.05768	280.90948



Parts List

ØD	Ød	B	L	C	R	T23 PTFE-Bronze	T83 PTFE-Glass/MoS2
600.00	565.00	17.50	17.50	12.00	1.20	280.42829	280.36361
610.00	575.00	17.50	17.50	12.00	1.20	280.90858	280.90840
620.00	585.00	17.50	17.50	12.00	1.20	280.90772	280.90915
630.00	595.00	17.50	17.50	12.00	1.20	280.90759	280.90966
632.50	597.50	17.50	17.50	12.00	1.20	280.90793	280.90827
640.00	605.00	17.50	17.50	12.00	1.20	280.90844	280.90779
650.00	615.00	17.50	17.50	12.00	1.20	280.90813	280.90864
655.00	620.00	17.50	17.50	12.00	1.20	280.90960	280.90775
660.00	625.00	17.50	17.50	12.00	1.20	280.90814	280.90883
670.00	635.00	17.50	17.50	12.00	1.20	280.90792	280.90758
680.00	645.00	17.50	17.50	12.00	1.20	280.90927	280.90967
690.00	655.00	17.50	17.50	12.00	1.20	280.90993	280.90897
700.00	665.00	17.50	17.50	12.00	1.20	280.90802	280.90865
710.00	675.00	17.50	17.50	12.00	1.20	280.90869	280.90761
711.20	676.20	17.50	17.50	12.00	1.20	280.90837	280.90908
720.00	685.00	17.50	17.50	12.00	1.20	280.90940	280.90900
730.00	695.00	17.50	17.50	12.00	1.20	280.90845	280.90974
740.00	705.00	17.50	17.50	12.00	1.20	280.90956	280.03333
750.00	715.00	17.50	17.50	12.00	1.20	280.90807	280.90877
760.00	720.00	20.00	20.00	12.00	1.20	280.90822	280.90780
770.00	730.00	20.00	20.00	12.00	1.20	280.90882	280.90880
775.00	735.00	20.00	20.00	12.00	1.20	280.90998	280.90939
780.00	740.00	20.00	20.00	12.00	1.20	280.90888	280.90926
800.00	760.00	20.00	20.00	12.00	1.20	280.24210	280.36579
812.80	772.80	20.00	20.00	12.00	1.20	280.90958	280.02681
820.00	780.00	20.00	20.00	12.00	1.20	280.90831	280.90776
830.00	790.00	20.00	20.00	12.00	1.20	280.90984	280.90895
840.00	800.00	20.00	20.00	12.00	1.20	280.29851	280.42758
850.00	810.00	20.00	20.00	12.00	1.20	280.90911	280.90781
855.00	815.00	20.00	20.00	12.00	1.20	280.90997	280.90855
870.00	830.00	20.00	20.00	12.00	1.20	280.90921	280.24839
876.30	836.30	20.00	20.00	12.00	1.20	280.90820	280.42849



Parts List

ØD	Ød	B	L	C	R	T23 PTFE-Bronze	T83 PTFE-Glass/MoS2
880.00	840.00	20.00	20.00	12.00	1.20	280.90821	280.90843
890.00	850.00	20.00	20.00	12.00	1.20	280.90872	280.90866
900.00	860.00	20.00	20.00	12.00	1.20	280.90826	280.48200
914.40	874.40	20.00	20.00	12.00	1.20	280.90851	280.42823
915.00	875.00	20.00	20.00	12.00	1.20	280.90825	280.90823
920.00	880.00	20.00	20.00	12.00	1.20	280.90818	280.90952
930.00	890.00	20.00	20.00	12.00	1.20	280.90923	280.18140
940.00	900.00	20.00	20.00	12.00	1.20	280.90902	280.35674
950.00	910.00	20.00	20.00	12.00	1.20	280.90965	280.42821
952.50	912.50	20.00	20.00	12.00	1.20	280.90808	280.90778
964.00	924.00	20.00	20.00	12.00	1.20	280.90972	280.90760
965.00	925.00	20.00	20.00	12.00	1.20	280.36654	280.36655
980.00	940.00	20.00	20.00	12.00	1.20	280.42856	280.90854
1000.00	960.00	20.00	20.00	12.00	1.20	280.42857	280.42741
1014.00	974.00	20.00	20.00	12.00	1.20	280.90815	280.90980
1050.00	1010.00	20.00	20.00	12.00	1.20	280.36656	280.41542
1060.00	1020.00	20.00	20.00	12.00	1.20	280.90874	280.35673
1100.00	1060.00	20.00	20.00	12.00	1.20	280.90786	280.24834
1120.00	1080.00	20.00	20.00	12.00	1.20	280.40745	280.90788
1140.00	1100.00	20.00	20.00	12.00	1.20	280.36658	280.36659
1160.00	1120.00	20.00	20.00	12.00	1.20	280.90805	280.90953
1180.00	1140.00	20.00	20.00	12.00	1.20	280.90841	280.41023