

690/700 Volt

SEMICONDUCTOR PROTECTION FUSES



Ferraz Shawmut 690/700V PSC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. These square body fuse-links are available in four different body sizes, each size having seven worldwide acceptable mounting styles. The different mounting styles and body sizes along with a broad range of ampere ratings allow greatest flexibility in equipment design.

The Ferraz Shawmut PSC fuses have been engineered to provide state-of-the-art protection for SCR's, diodes, thyristors, GTO's and IGBT devices. They have pure silver, die-cut elements embedded in solidified sand, which helps control arcing characteristics for low I^2t and high interrupting rating. All contact surfaces are silver plated and all hardware is non-magnetic.

All fuse links are equipped with a low voltage trip-indicator. This trip-indicator can operate a field mountable microswitch which is easily mounted directly onto the fuse even while in service.

HIGHLIGHTS:

- Extremely Fast Acting
- Current Limiting
- Very Low I^2t
- Worldwide Acceptability
- Superior Cycling Ability

APPLICATIONS:

- Protection of rectifiers, inverters, DC drives,
- UPS Systems, reduced voltage motor starters, and other equipment in globally accepted applications

Features/Benefits

- **Choice of mounting styles** gives wide choice for equipment design
- **Broad range of ampere ratings** in a given body size for design flexibility
- **IEC 269-4 compliance** for worldwide semiconductor applications

* For Microswitch information see page J8

Ratings

- **AC:** 40-2500A
500-700 VAC
200 kA IR
- **DC:** Consult Factory

Approvals

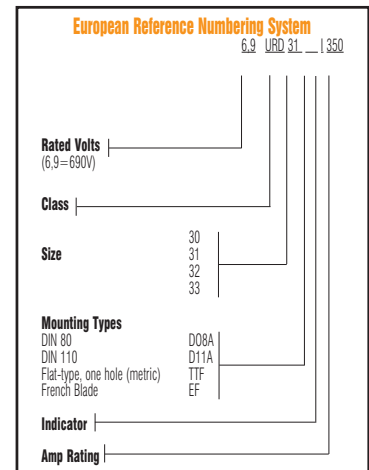
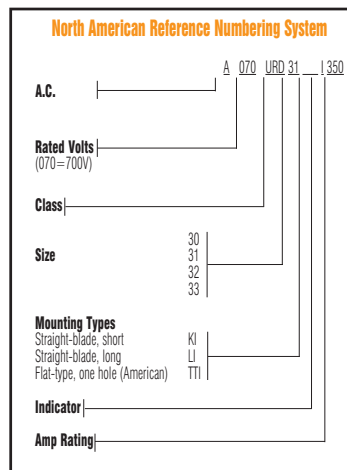
- UL Recognized
Component File E76491
- Sizes 30, 31, 32, 33
tested to IEC 269.4



Part Number Designation:

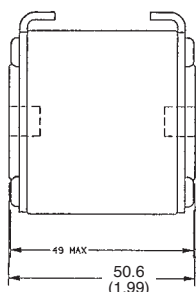
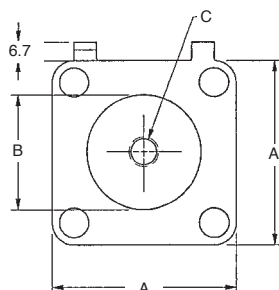
- 6,9 URD:** European/IEC
Mounting Style/Approval
Tested @ 1.1 V_n
- A070 URD:** North American
Mounting Style/Approval
Tested @ V_n

* V_n = rated voltage



Outline Dimensions

Types TTI and TTF



North American Flat Single Hole, Type TTI

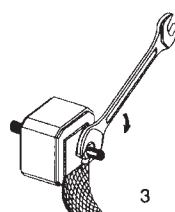
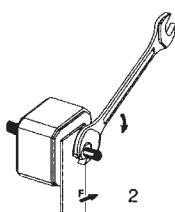
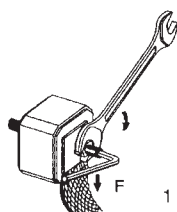
BODY SIZE	TYPE	DIMENSIONS - In/(mm)		
		A	B	C
30	TTI	1.57 (40)	1.00 (25)	5/16-18 X .35
31		2.00 (50.8)	1.19 (30.2)	5/16-18 X .35
32		2.37 (60.3)	1.50 (38.1)	3/8-16 X .35
33		2.94 (74.6)	1.81 (46)	1/2-13 X .35

European Flat Single Hole, Type TTF

BODY SIZE	TYPE	DIMENSIONS - In/(mm)		
		A	B	C
30	TTF	40	26	M8 X 1.25 X 6 DP
31		51	30	M8 X 1.25 X 9 DP
32		60	38	M10 X 1.50 X 9 DP
33		74.5	46	M12 X 1.75 X 9 DP

Standard Threaded Studs

SIZE	REF. AND DIMENSION PER PAIR OF STUDS	WEIGHT (g)	MAX STUD MOUNTING TORQUE (Nm)	MAX NUT TIGHTENING TORQUE (Nm)		
				FIG1	FIG 2	FIG 3
30 & 31	S 98 801 (HC M8 X 30 & M 8 X 35)	23	10	13.5	13.5	13.5
32	T 98 802 (HC M 10 X 30 & M 10 X 50)	40	15	26	26	26
33	V 98 803 (HC M 12 X 35 & M 12 X 50)	60		46	46	46
2X32	W 98 804 (HC M 10 X 50)	50		26	26	26
2X33	X 98 805 (HC M 12 X 50)	70		46	46	46



690/700 Volt

SEMICONDUCTOR PROTECTION FUSES

690 Volt European/IEC Style Ratings and Application Data

Body Size	Amp Rating	Rated Voltage	Melting I ² t (A ² s x 10 ³)	Total I ² t @ 660VAC (A ² s x 10 ³)	**Watts Loss @ Rated Current (W)	DIN 110 Catalog No. Type D11A	DIN 80 Catalog No. Type D08A	French Blade Catalog No. Type EF	Tapped Single Catalog No. Type TTF
30	50	690	0.116	0.68	9	6,9URD30D11A0050	6,9URD30D08A0050	6,6URD30EF0050	6,9URD30TTF0050
	63	690	0.2	1.09	14	6,9URD30D11A0063	6,9URD30D08A0063	6,9URD30EF0063	6,9URD30TTF0063
	80	690	0.33	1.75	19	6,9URD30D11A0080	6,9URD30D08A0080	6,9URD30EF0080	6,9URD30TTF0080
	100	690	0.47	2.5	26	6,9URD30D11A0100	6,9URD30D08A0100	6,9URD30EF0100	6,9URD30TTF0100
	125	690	0.85	4.5	30	6,9URD30D11A0125	6,9URD30D08A0125	6,9URD30EF0125	6,9URD30TTF0125
	160	690	1.6	8.5	37	6,9URD30D11A0160	6,9URD30D08A0160	6,9URD30EF0160	6,9URD30TTF0160
	200	690	3	15.5	42/43	6,9URD30D11A0200	6,9URD30D08A0200	6,9URD30EF0200	6,9URD30TTF0200
	250	690	5.8	30	48/50	6,9URD30D11A0250	6,9URD30D08A0250	6,9URD30EF0250	6,9URD30TTF0250
	315	690	12	62	53/55	6,9URD30D11A0315	6,9URD30D08A0315	6,9URD30EF0315	6,9URD30TTF0315
	350	690	15.5	80	57/60	6,9URD30D11A0350	6,9URD30D08A0350	6,9URD30EF0350	6,9URD30TTF0350
	400	690	23	120	60/65	6,9URD30D11A0400	6,9URD30D08A0400	6,9URD30EF0400	6,9URD30TTF0400
	450	660	26	153	80/88	6,6URD30D11A0450	6,6URD30D08A0450	-	6,6URD30TTF0450
	500	660	41	245	80/88	6,6URD30D11A0500	6,6URD30D08A0500	-	6,6URD30TTF0500
	550	660	52	305	80/90	6,6URD30D11A0550	6,6URD30D08A0550	-	6,6URD30TTF0550
31	200	690	2.6	14	45	6,9URD31D11A0200	6,9URD31D08A0200	6,9URD31EF0200	6,9URD31TTF0200
	250	690	4.7	25	52	6,9URD31D11A0250	6,9URD31D08A0250	6,9URD31EF0250	6,9URD31TTF0250
	315	690	7.5	40	65	6,9URD31D11A0315	6,9URD31D08A0315	6,9URD31EF0315	6,9URD31TTF0315
	350	690	10.5	55	67	6,9URD31D11A0350	6,9URD31D08A0350	6,9URD31EF0350	6,9URD31TTF0350
	400	690	19	100	68	6,9URD31D11A0400	6,9URD31D08A0400	6,9URD31EF0400	6,9URD31TTF0400
	450	690	26.5	140	70	6,9URD31D11A0450	6,9URD31D08A0450	6,9URD31EF0450	6,9URD31TTF0450
	500	690	37	195	70/72	6,9URD31D11A0500	6,9URD31D08A0500	6,9URD31EF0500	6,9URD31TTF0500
	550	690	52	280	70/75	6,9URD31D11A0550	6,9URD31D08A0550	6,9URD31EF0550	6,9URD31TTF0550
	630	690	75	390	75/85	6,6URD31D11A0630	6,6URD31D08A0630	6,9URD31EF0630	6,9URD31TTF0630
	700	690	95	490	85/95	6,9URD31D11A0700	6,9URD31D08A0700	6,9URD31EF0700	6,9URD31TTF0700
	800	660	140	815	105/120	6,6URD31D11A0800	6,6URD31D08A0800	-	6,6URD31TTF0800
32	400	690	15	80	72/75	6,9URD32D11A0400	6,9URD32D08A0400	6,9URD32EF0400	6,9URD32TTF0400
	450	690	22	115	77/80	6,9URD32D11A0450	6,9URD32D08A0450	6,9URD32EF0450	6,9URD32TTF0450
	500	690	28	145	85/90	6,9URD32D11A0500	6,9URD32D08A0500	6,9URD32EF0500	6,9URD32TTF0500
	550	690	37	195	90/95	6,9URD32D11A0550	6,9URD32D08A0550	6,9URD32EF0550	6,9URD32TTF0550
	630	690	54	280	95/105	6,9URD32D11A0630	6,9URD32D08A0630	6,9URD32EF0630	6,9URD32TTF0630
	700	690	76	400	100/110	6,9URD32D11A0700	6,9URD32D08A0700	6,9URD32EF0700	6,9URD32TTF0700
	800	690	115	600	110/120	6,9URD32D11A0800	6,9URD32D08A0800	6,9URD32EF0800	6,9URD32TTF0800
	900	660	170	900	110/125	6,6URD32D11A0900	6,6URD32D08A0900	6,6URD32EF0900	6,6URD32TTF0900
	1000	660	240	1250	115/135	6,6URD32D11A1000	6,6URD32D08A1000	6,6URD32EF1000	6,6URD32TTF1000
	1100	600	270	1620	140/165	-	6URD32D08A1100	-	6URD32TTF1100
	1250	500	410	1940	150/180	-	5URD32D08A1250	-	5URD32TTF1250
33	500	690	19	100	105	6,9URD33D11A0500	6,9URD33D08A0500	6,9URD33EF0500	6,9URD33TTF0500
	550	690	27	140	105/110	6,9URD33D11A0550	6,9URD33D08A0550	6,9URD33EF0550	6,9URD33TTF0550
	630	690	40	130	110/120	6,9URD33D11A0630	6,9URD33D08A0630	6,9URD33EF0630	6,9URD33TTF0630
	700	690	55	300	115/125	6,9URD33D11A0700	6,9URD33D08A0700	6,9URD33EF0700	6,9URD33TTF0700
	800	690	95	490	120/130	6,9URD33D11A0800	6,9URD33D08A0800	6,9URD33EF0800	6,9URD33TTF0800
	900	690	135	700	120/135	6,9URD33D11A0900	6,9URD33D08A0900	6,9URD33EF0900	6,9URD33TTF0900
	1000	690	170	900	135/155	6,9URD33D11A1000	6,9URD33D08A1000	6,9URD33EF1000	6,9URD33TTF1000
	1100	690	240	1260	135/160	6,9URD33D11A1100	6,9URD33D08A1100	6,9URD33EF1100	6,9URD33TTF1100
	1250	660	350	1850	150/180	6,6URD33D11A1250	6,6URD33D08A1250	6,6URD33EF1250	6,6URD33TTF1250
	1400	660	480	2500	160/200	6,6URD33D11A1400	6,6URD33D08A1400	6,6URD33EF1400	6,6URD33TTF1400
	1500	600	500		220	6URD33D11A1500	6,6URD33D08A1500	-	6URD33TTF1500
	1600	600	555		210/240	6URD33D11A1600	6URD33D08A1600	-	6URD33TTF1600
	1800	600	720		225/260	6URD33D11A1800	6URD33D08A1800	-	6URD33TTF1800
	2000	550	950		250/290	-	-	-	5,5URD33TTF2000
	2250	500	1250		280/330	-	-	-	5URD33TTF2250
	2500	450	1870		280/330	-	-	-	4,5URD33TTF2500

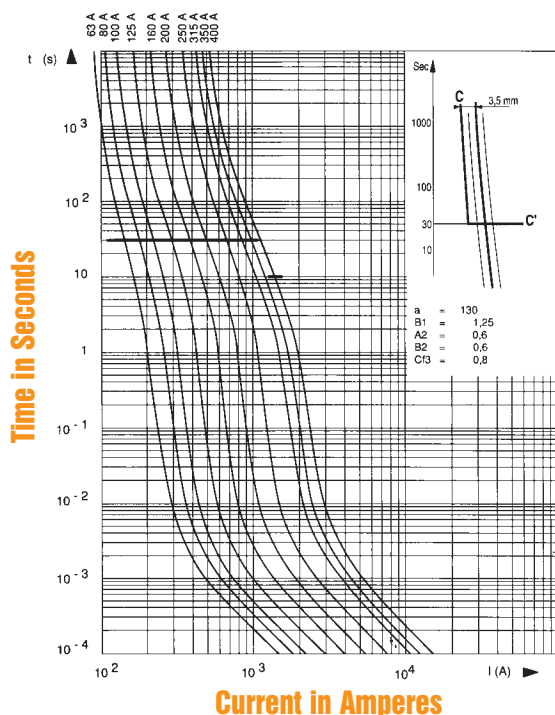
** Watts loss data is published for both blade and tapped style mounting configurations. When two watts loss values are shown this represents tapped/blade values respectively.

690/700 Volt

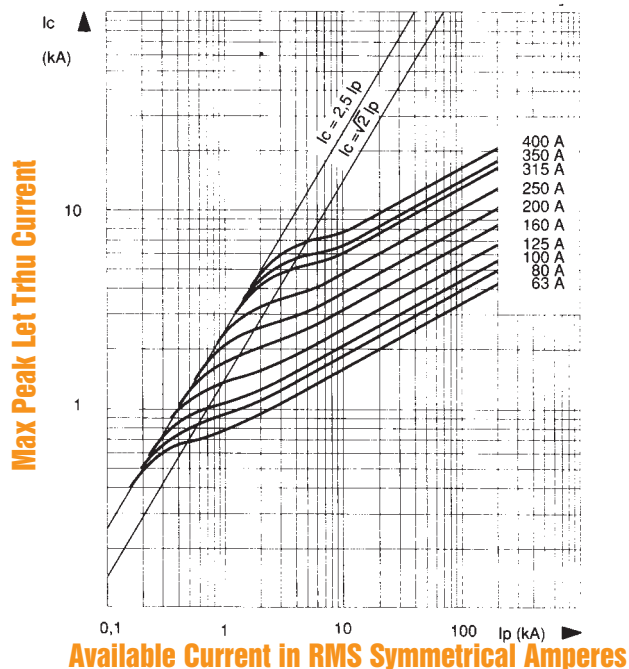
SEMICONDUCTOR PROTECTION FUSES

A070 URD 30 & 6,9 URD 30 63 to 400A

Melting Time – Current Data

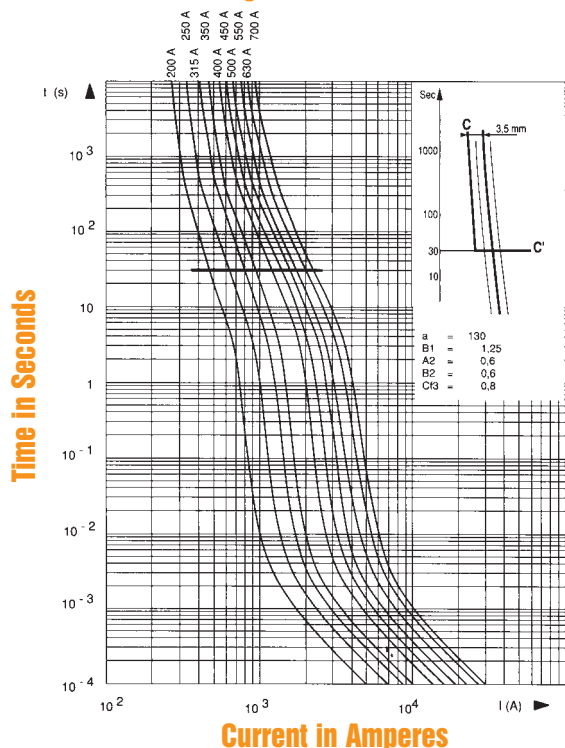


Peak Let-Thru Current Data

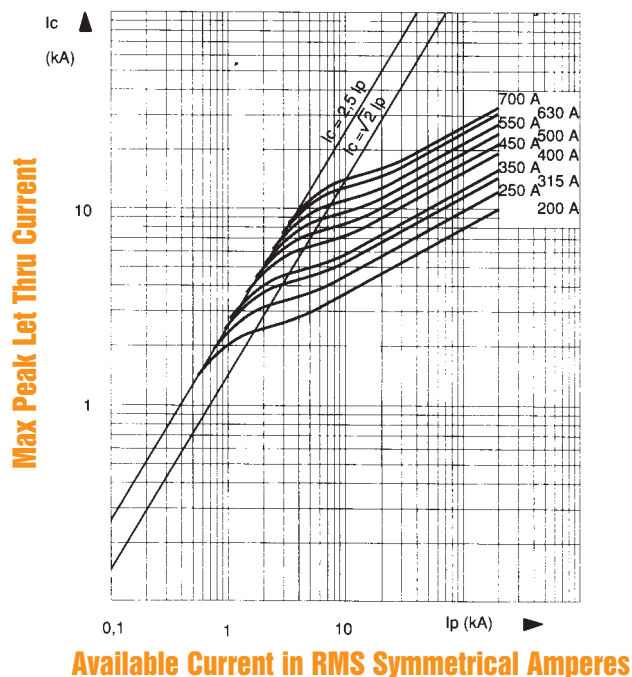


A070 URD 31 & 6,9 URD 31 200 to 700A

Melting Time – Current Data



Peak Let-Thru Current Data

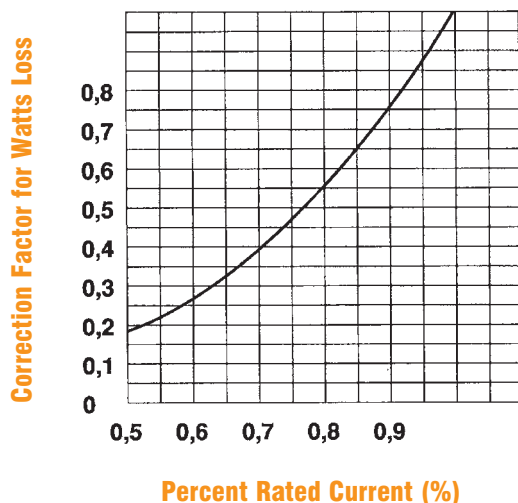


690/700 Volt

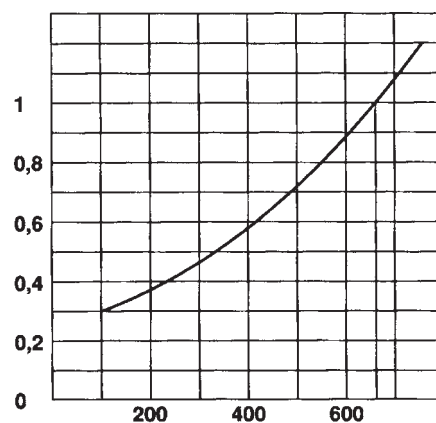
SEMICONDUCTOR PROTECTION FUSES

Application Information-All Sizes

Watts Loss vs. % Rated Current

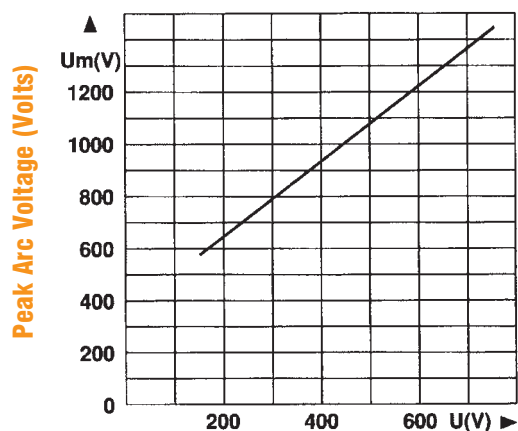


Correction factor to determine the watts loss value of a fuse operating below its rated current

Clearing I²t vs. Operating Voltage

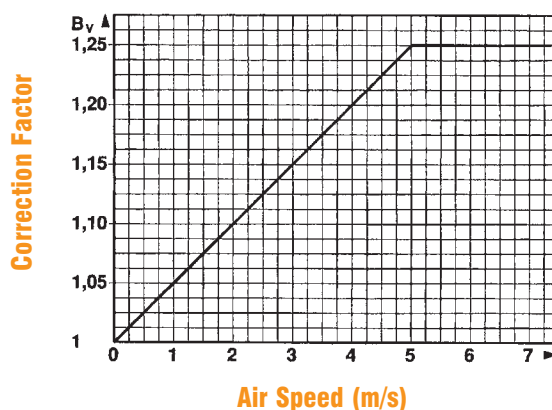
Correction factor to determine the clearing I²t value for a fuse operating below its rated voltage

Maximum Arc Volts vs. System Voltage



Determines the peak arc voltage across the fuse terminals as a function of the applied voltage

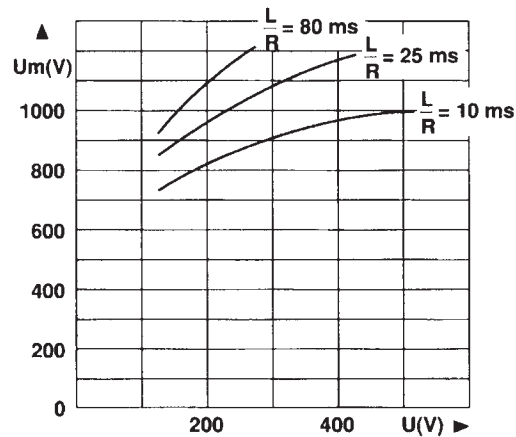
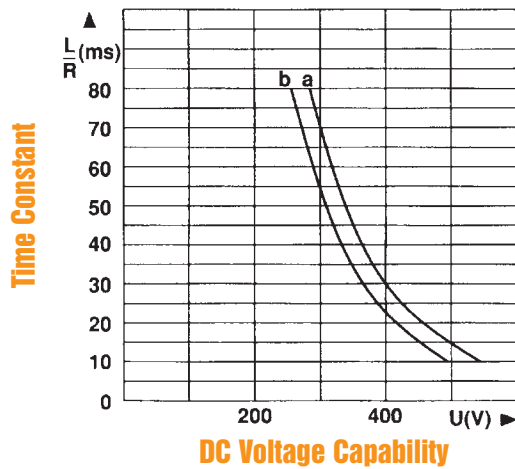
Ampere Rating Correction Factor vs. Air Flow Speed



Determines the current carrying correction factor based on the cooling air speed across the fuse

Application Information Cont.-All Sizes

DC Voltage Capability vs. Time Constant



Provides the DC Voltage capability of the fuse as a function of circuit time constant (L/R ratio).

*Consult Factory for DC capabilities on ampere ratings not shown.

Rated current I_N (A)	Curves (*) and I_{pm} (†) corresponding to the rating					
	30 * I_{pm} (A)	31 * I_{pm} (A)	32 * I_{pm} (A)	33 * I_{pm} (A)	2x32 * I_{pm} (A)	2x33 * I_{pm} (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

D