

# Off Mains Drainage & Separators

Keyline offers a comprehensive range of pollution control solutions supplied by acknowledged market leaders in the field of waste water treatment both at home and overseas.



## Off Mains Drainage: choosing the solution

If the property is not near to a mains sewer and cannot be easily connected, you have four choices:

### 1) Treat It! - Sewage Treatment Plant

Increasingly this is the solution of choice. The treated effluent discharged from a Klargester BioDisc® Sewage Treatment Plant will not cause blockage of a soakaway, if one is required.

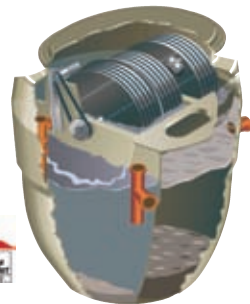
A Klargester BioDisc® Sewage Treatment Plant fully treats the sewage. The treated effluent is of such a high standard that it is odour free and the Environment Agency - the regulator - may permit discharge directly into a watercourse.

A correctly installed Klargester BioDisc® Sewage Treatment Plant is robustly constructed from corrosion-proof GRP and will only require de-sludging every 12 months. A Klargester BioDisc® Sewage Treatment Plant is a more adaptable solution than a septic tank, allowing a more flexible installation to suit individual situations.

## BioDisc

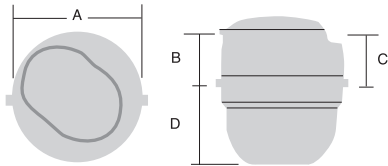
With over 200,000 successful installations over the past 30 years, BioDisc remains the number one choice for sewage treatment plants. Based on RBC (Rotating Biological Contactor) technology BioDisc offers consistent effluent discharge quality allied to low maintenance and running costs.

- Complete system
- Invert depths and pumping options to suit site conditions
- BBA Certificate 86/1700
- Quiet and odour free
- Low running costs
- Certified to European performance standard BS EN 12566



## BioDisc

Supplier Codes	BA	BB	BC
Unit Size/Population Equivalent	1 House, Max 6	2 House, Max 12	3-4 House, Max 18
OA Diameter (A) mm	1995	1995	2450
Standard Drain Invert Inlet (B) mm	750	750	600
Standard Outlet (C) mm	820	820	820
Depth from Invert to Base (D) mm	1400	1400	1820
Pipework Diameter mm	110	110	110
Sludge Storage (approx)	12 months	6 months	7 months
Standard Power Supply	Single phase	Single phase	Single phase
Motor Rating w	50	50	55
Weight Std Units kg	325	350	600



## Sample Chambers

Model Ref	Suitable for the Following Plant	Overall Height mm	Invert from the Top Chamber mm	Treatment Plant Outlet Depth from Ground Level mm	Invert from Ground Level mm	Distance from Treatment Plant mm
SC3	BA & BB Biodisc @ 450 invert	810	620	535	570	1000
SC4A	BF, BG, BH, BJ	930	795	700	745	1000
SC4C	BC, BD, BE @ 600 invert	930	770	685	720	1000
SC5A	BA & BB @ 750 invert	1100	920	835	870	1000
SC5B	BK, BL	1100	850	750	800	1000
SC6	BC, BD, BE @ 1100 invert	1390	1270	1185	1220	1000
SC8	BA & BB @ 1250 invert	1560	1420	1335	1370	1000

Note: This table lists the sample chambers suitable for standard BioDisc Treatment Plants. Other models are available.

## Airflow

Klargester also offers the AirFlow range of sewage treatment plants in a range from a single house to a domestic population equivalent of 375 persons. AirFlow is suited to a variety of applications including small housing estates, camping sites, construction camps, public houses and hotels.

- Complete system
- Below ground installation - low visual impact
- Low running costs
- Quiet in operation



## AirFlow

Supplier Codes	AF1	AF2	AF3	AF4
Unit Size/Population Equivalent	6	12	18	25
Outside Diameter m	1.9	1.9	2.6	2.6
Inlet Invert m	1.0	1.0	1.0	1.0
Inlet Invert to Base m	1.2	1.7	1.6	1.6
Outlet Invert m	1.1	1.1	1.15	1.15
Motor Rating w	60	60	150	150
Drainage Fitting mm	110	110	110	110
Weight Empty kg	200	250	300	320

## 2) Settle It! - Septic Tank

Septic tanks are the most common solution. However septic tanks do not treat the sewage, they only settle it, and require a specially constructed drainage field to actually break down the biological matter.

Due to this requirement, ground conditions are critical to the performance of a septic tank and some areas are actually unsuitable for their use. Effluent from a septic tank cannot be discharged direct to a watercourse.

Klargester manufactures a complete range of septic tanks, please refer to the chart below for further information.



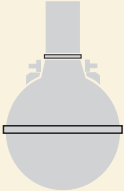
## Alpha Septic Tanks

The Klargester Alpha Septic Tank range has been developed over many years and offers the most popular and cost effective method for handling waste water, provided that the subsoil is capable of effectively dispersing the discharge effluent. This can be determined by a simple percolation test based on the recommendations of BS 6297, but attention should also be paid to site conditions such as water table, contours and soil type.

- BBA Certificate 86/1700
- Light and easy to install
- Effective settlement of solids



## Septic Tanks



Capacity ltr	Diameter mm	Outlet Invert mm	Overall Height mm	Weight kg
2800	1905	1025	2565	105
3800	2070	1025	2795	134
4600	2080	1025	3035	169

The Scottish Building Regulation Part M requires that all septic tanks be followed by a suitable sampling chamber with a diameter of 300mm and a minimum drop of 150mm below inlet. Sample Chamber SCA10AS is built to Klargester's normal high specification in grp.

## Sample Chambers

Model Ref	Suitable for the Following Plant	Overall Height mm	Invert from the Top Chamber mm	Treatment Plant Outlet Depth from Ground Level mm	Invert from Ground Level mm	Distance from Treatment Plant mm
SCA10AS	Septic Tanks	1300	1050	1025	1050	1000

Note: This table lists the sample chambers suitable for Septic Tanks. Other models are available.

### 3) Store It! - Cesspool

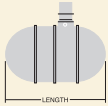
On some sites this may be the only solution, where no discharge to either a soakaway or watercourse is permitted.

However, it is the most basic solution, is very costly to install and requires regular emptying. A cesspool should only be considered when no other solution is available.

Keyline offers a range of cesspools from 18,000 to 55,000 litres with a single property with 2 residents requiring a capacity of 18,200 litres and a further 6,800 litres for each additional full time resident.


Klargester cesspools can be supplied with an alarm to warn when emptying is required.

### Cesspool

	Nominal Capacity ltr/gal	Length mm	Approx Concrete Requirements m <sup>3</sup>	Weight kg
	18,180/4,000	4,320	9.0	887
	22,500/5,000	5,090	11.0	1041
	27,000/6,000	6,190	13.0	1291
	36,000/8,000	7,740	16.0	1601
	45,000/10,000	9,460	19.5	1970
	55,000/12,000	11,180	23.0	2280

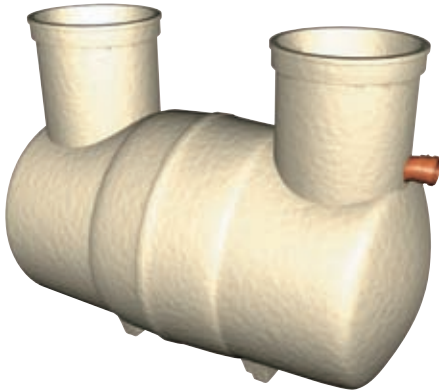
All Cesspools share a common diameter of 2,600mm

18,180 Ltr Cesspool shown



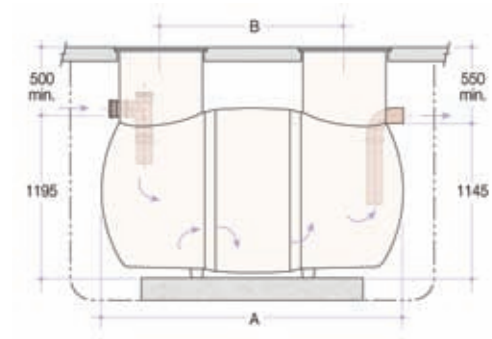
## Grease Separators

For applications such as larger restaurants, hotels, etc. where a grease separator should be considered to ensure effective removal of fats and grease from waste water.



## Grease Separators

Separator Model	Dimensions mm		Working Capacity ltr	Approx. Weight Kg		Fall Across Unit mm
	A	B		Empty	Full	
G2B020	2210	1340	2000	100	2200	50
G2B030	3060	2190	3000	130	3180	50
G2B040	3910	3040	4000	160	4160	50



## 4) Pump It - Pumping Station

There may be occasions where it is possible to connect to a mains sewer some distance away, or the topography does not allow gravity to provide effective drainage. A solution could be to pump the sewage to the main drain or drainage field.

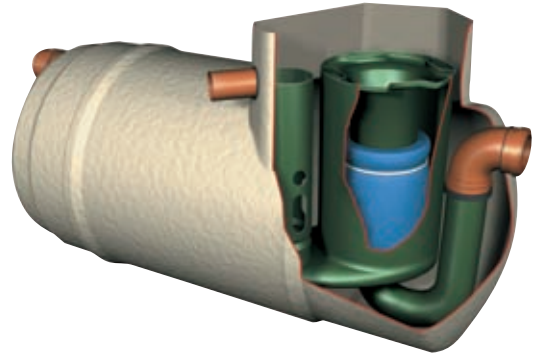
Keyline offers a full range of pumping stations to suit most applications.



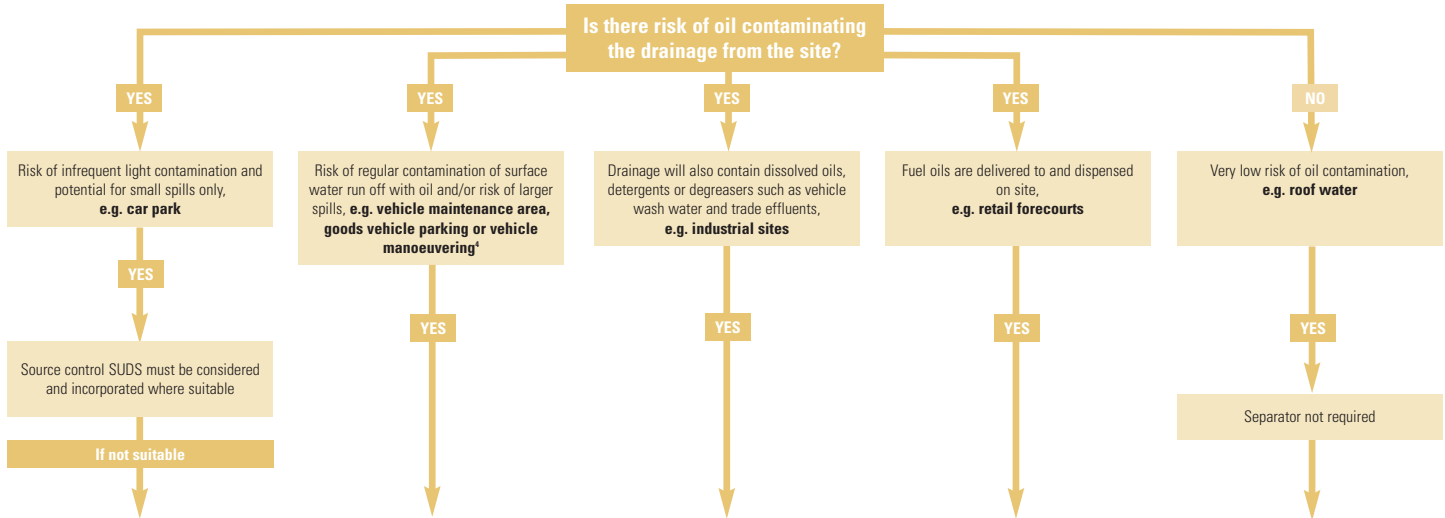
## Surface Water Drainage Oil Separators

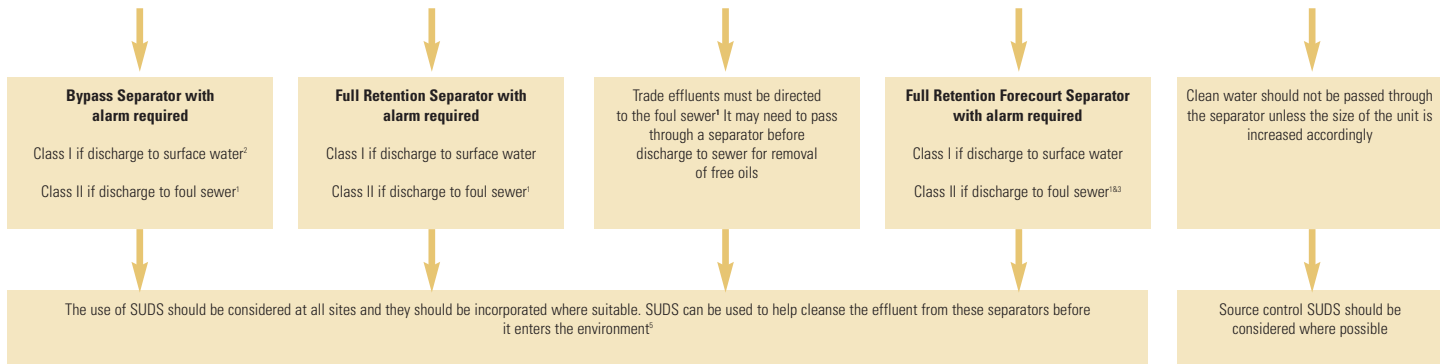
Klargester offers a range of separators designed to meet the requirements of Environment Agency Pollution Prevention Guideline No. 3 (PPG3) = “Use and design of oil separators in surface water drainage systems.”

The chart overleaf gives guidance to aid selection of the appropriate type of oil separator for use in surface water drainage systems which discharge into rivers and soakaways.



## Flow Chart Indicator





- 1 You must seek prior permission from your local sewer provider before you decide which separator to install and before you make any discharge.
- 2 In this case, if it is considered that there is a low risk of pollution a source control SUDS scheme may be appropriate.
- 3 In certain circumstances, the sewer provider may require a class 1 separator for discharges to sewer to prevent explosive atmospheres from being generated.
- 4 Drainage from higher risk areas such as vehicle maintenance yards and goods vehicle parking areas should be connected to foul sewer in preference to surface water.
- 5 In certain circumstances, a separator may be one of the devices used in the SUDS scheme. Ask for advice.

## Bypass Separators

Bypass Separators are designed for areas of low pollution risk such as car parks, roadways and lightly contaminated commercial areas where it is unlikely that a large spillage and heavy rainfall will occur at the same time.

Available in Class I and Class II designs:

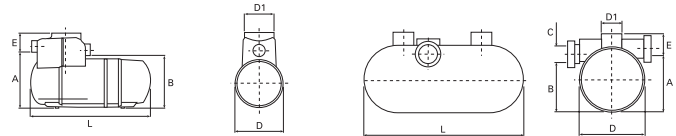
**Class I** incorporating a coalescer and closure device treating 10% of flow to achieve a concentration of 5mg/ltr of oil.

**Class II** to achieve a concentration of 100mg/ltr of oil.

The design incorporates silt storage capacity and units are available with optional oil level alarm systems as recommended by PPG3.

## Features

- Comprehensive range of sizes
- Independently tested and performance sampled, certified by BSI. BS EN 858 - 1 and BS EN 858 - 2
- Class I and Class II designs
- Light and easy to install
- Inclusive of silt storage volume
- Alarm systems available



## Sizes & Specifications

Nominal Size	Flow ltr/s	Peak Flow Rate ltr/s	Drainage Area (m <sup>2</sup> ) PPG3 (0.0018)	Silt Storage Capacity ltr	Oil Storage Capacity ltr	Length (L) mm	Diameter (D) mm	Access Shaft Diameter (D1) mm	Base to Inlet (A) mm	Base to Outlet Invert (B) mm	Standard Fall Across Unit mm	Min Inlet Invert (E) mm	Standard Pipework Diameter (C) mm
NSBD3	3	30	1670	300	45	1765	1225	750	1450	1350	100	500	160
NSBD4	4.5	45	2500	450	68	1765	1225	750	1450	1350	100	500	200
NSBD6	6	60	3335	600	90	1765	1225	750	1450	1350	100	500	200
NSBD8	8	80	4445	800	120	3065	1225	750	1450	1350	100	500	250
NSBD10	10	100	5560	1000	150	3915	1225	750	1450	1350	100	500	315
NSBD12	12	120	6670	1200	180	3915	1225	750	1450	1350	100	500	315
NSBD15	15	150	8335	1500	225	3915	1225	750	1450	1350	100	500	315
NSBD18	18	180	10000	1800	270	3200	2012	600	2110	2010	100	1000	375
NSBD24	24	240	13340	2400	360	3200	2012	600	2110	2010	100	1000	375
NSBD30	30	300	16670	3000	450	3915	2012	600	2110	2010	100	1000	450
NSBD36	36	360	20000	3600	540	3915	2012	600	2110	2010	100	1000	525
NSBD55	55	550	30560	5500	825	5085	2820	600	2310	2060	250	1000	600
NSBD72	72	720	40000	7200	1080	5820	2820	600	2310	2060	250	1000	675
NSBD84	84	840	46670	8400	1260	6200	2820	600	2310	2010	300	1000	750
NSBD96	96	960	53340	9600	1440	7375	2820	600	2310	2010	300	1000	825
NSBD110	110	1100	61110	11000	1650	7925	2820	600	2360	2010	350	1000	825
NSBD130	130	1300	72225	13000	1950	8725	2820	600	2360	2010	350	1000	825

## Full Retention Separators

Full retention separators are designed for use in high risk spillage areas such as fuel distribution depots, vehicle workshops and scrapyards where it is required to treat the complete flow.

Available in Class I and II designs:

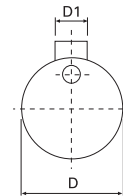
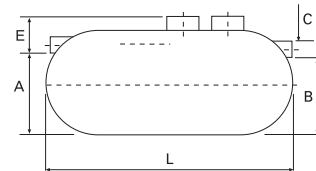
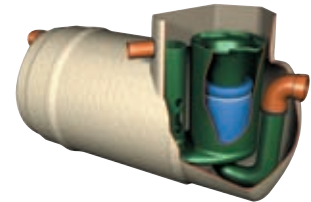
**Class I** includes coalescer and closure device to treat complete flow to achieve a concentration of 5mg/ltr of oil.

**Class II** treats complete flow to complete flow to achieve a concentration of 100mg/ltr of oil.

The design incorporates silt storage capacity and units are available with optional oil level alarm systems as recommended by PPG3.

## Features

- Comprehensive range of sizes
- Independently tested and performance sampled, certified by BSI
- Class I and Class II Designs
- Light and easy to install
- Inclusive of silt storage volume
- Alarm systems available



## Sizes & Specifications

Unit Nominal Size	Flow ltr/s	Drainage Area (m <sup>2</sup> ) PPG-3 (0.018)	Silt Storage Capacity ltr	Oil Storage Capacity ltr	Length (L) mm	Unit Diameter (D) mm	Manhole Cover Dimensions (D1) mm	Base to Inlet Invert (A) mm	Base to Outlet Invert (B) mm	Min Inlet Invert (E) mm	Standard Pipework Diameter (C) mm
NS 3	3	170	300	30	1760	1225	600 x 900	1050	1000	500	200
NS 6	6	335	600	60	1760	1225	600 x 900	1050	1000	500	200
NS 10	10	555	1000	100	2610	1225	600 x 900	1050	1000	500	200
NS 15	15	835	1500	150	3910	1225	600 x 900	1050	1000	500	200
NS 20	20	1115	2000	200	3200	2010	600	1850	1800	1000	200
NS 30	30	1670	3000	300	3915	2010	600	1850	1800	1000	315
NS 40	40	2225	4000	400	4360	2010	600	1850	1800	1000	315
NS 50	50	2780	5000	500	5425	2010	600	1810	1760	1000	315
NS 65	65	3610	6500	650	6850	2010	600	1810	1760	1000	315
NS 80	80	4445	8000	800	5700	2820	600	2500	2450	1000	315
NS 100	100	5560	10000	1000	6200	2820	600	2500	2450	1000	315
NS 125	125	6945	12500	1250	7365	2820	600	2500	2450	1000	450
NS 150	150	8335	15000	1500	8675	2820	600	2550	2450	1000	450
NS 175	175	9725	17500	1750	9975	2820	600	2550	2450	1000	450
NS 200	200	11110	20000	2000	11280	2820	600	2550	2450	1000	450

## Enviroceptor Forecourt Separators

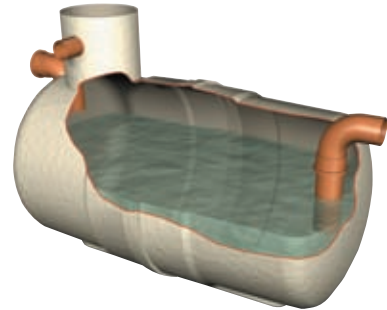
The Enviroceptor Forecourt Separator has been designed specifically for petrol station forecourts which are high risk areas where there is potential for petrol or oil spillage. Forecourt separator design must allow for a minimum capacity such that it can contain the contents of a spillage from a standard compartment of a fuel delivery tanker (7600ltr).

Available in Class I and Class II designs:

**Class I** where discharge is expected to be to sensitive water requiring an oil discharge concentration of 5mg/ltr, the design incorporates a coalescer and closure device to ensure that the separator would contain the contents of the spillage.

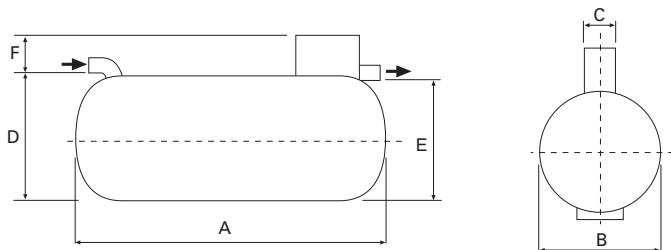
**Class II** where discharge is to a less sensitive location such as a foul sewer requiring a discharge concentration of 100mg/ltr of oil, the design incorporates a closure device to ensure that the contents of a major oil spillage are contained within the separator.

Oil level alarms are available for supply with Enviroceptor units.



## Sizes & Specifications

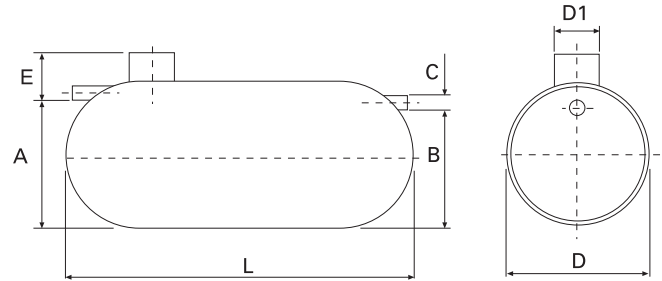
Enviroceptor Class	Backfill Type	Total Capacity ltr	Drainage Area (m <sup>2</sup> )	Max Flow Rate ltr/s	Length (A) mm	Diameter (B) mm	Access Shaft Diameter (C) mm	Base to Inlet Invert (D) mm	Base to Outlet Invert (E) mm	Std. Fall Across Unit mm	Min Inlet Invert (F) mm	Std. Pipework Diameter mm	Empty Weight kg
I	Granular	10000	720	15	3915	2020	600	2285	2235	50	600	160	780
II	Granular	10000	720	15	3915	2020	600	2285	2235	50	600	160	780
I	Concrete	10000	720	15	3915	2020	600	2180	2130	50	600	160	620
II	Concrete	10000	720	15	3915	2020	600	2180	2130	50	600	160	620



## Washdown and Silt Separators

Washdown and other cleansing facilities such as car washes, tool hire depots and construction site cleansing pools must provide separators designed for discharge to a foul sewer.

The Klargest range is available in single chamber full retention format for maximum separation efficiency.



## Sizes & Specifications

Supplier Code	Total Capacity ltr	Maximum Rec. Silt Volume	Maximum Flow Rate ltr/s	Length (L) mm	Diameter (D) mm	Access Shaft Diameter (D1) mm	Base to Inlet Invert (A) mm	Base to Outlet Invert (B) mm	Standard Fall Across Unit mm	Min. Inlet Invert (E) mm	Standard Pipework Diameter (C) mm	Approx. Empty Weight kg
W1/012	1200	600	3	1310	1225	460	1150	1100	50	500	160	60
W1/020	2000	1000	5	2210	1225	460	1150	1100	50	500	160	120
W1/030	3000	1500	8	3060	1225	460	1150	1100	50	500	160	150
W1/040	4000	2000	11	3910	1225	460	1150	1100	50	500	160	180
W1/060	6000	3000	16	4530	1440	600	1360	1310	50	500	160	320
W1/080	8000	4000	22	3200	2020	600	2005	1955	50	500	160	585
W1/100	10000	5000	27	3915	2020	600	2005	1955	50	500	160	680
W1/120	12000	6000	33	4640	2020	600	2005	1955	50	500	160	770
W1/150	15000	7500	41	5435	2075	600	1940	1890	50	500	160	965
W1/190	19000	9500	52	6865	2075	600	1940	1890	50	500	160	1200