

### ITT Flygt Rental Guide



Engineered for life

ITT Flygt has been at the forefront of the pumping industry since the launch of its submersible pump over 50 years ago and during this time the Flygt name has become synonymous with quality and reliability.

Flygt Rental, as the name suggests, specialises in the rental of Flygt Submersible Pumps, Mixers, Aerators and Diesel Prime Assisted Pumps. Our skilled team of engineers will design bespoke pumping schemes for our customers whether it be temporary or semi-permanent; for a small amount of nuisance water or a major flow diversion scheme. By choosing Flygt Rental you automatically have access to our engineers who have a wealth of experience and technical knowledge alongside a product range that is second to none.

A comprehensive range of Electric Submersible and Diesel Pumps, Mixers, Aerators and Accessories are available from strategically located Flygt Rental Centres throughout the U.K. Our well established 24/7 culture and renowned professionalism is geared to deliver total customer satisfaction.

Thank you for choosing Flygt Rental.



Chris Graham General Manager - Rental

General Guide to Pump selection	2
Guide to Performance Data	3
Pumping Definitions	4
2000 / BS Series – Drainers	5 – 14
3000 / C Series – Sewage	15 – 22
Great and Greys - Sewage	23 – 28
Control Panels, Starters and Telemetry	29
ATEX Approved Explosion Proof Pumps	30
Electrical Equipment	31
Electrical Information	32
Flygt Diesel Pumps – Prime Assisted	33 – 39
Mixers	40 – 45
Aeration and Ejectors	46 – 48
Flyjet and Hydroejector	49
Pump Flotation Module	50
Hoses and Fittings	51 – 52
Friction Loss in Pipe Fittings Chart	53
Conversion Factors	54 – 55
Flange Sizes	56
Contact Details	57

National Call Centre 0845 707 8012

rental@flygt.com



#### Check:-

The Electrical Supply available – What Voltage, Single or 3 Phase and the Maximum Amperage. If the Power Supply is inadequate, please ask for details of Generators or consider using a Flygt Prime Assisted Diesel Pump.

**Total Head Requirement** – The most important calculation to get right! It is the sum of the Total Static Head (the vertical distance from the Suction Strainer to the point of Discharge) plus any Friction Loss allowances. When sizing a pump, the critical thing to determine is the Total Generated Head (TGH) requirement.

#### Calculation:-

**Static Suction** (strainer to the pump) + **Static Delivery** (from pump to the point of Discharge) + **Friction Loss** (resistance incurred by liquid when flowing through hoses) = **Total Generated Head**.

### **Dirty Water or Solids Handling?**

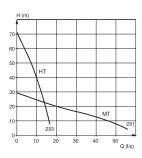
Use Drainer Submersibles (BS Series) and General Purpose Diesels for Dirty Water pumping and where particles are relatively small e.g. sand and gravel.

Use Sewage Submersibles (C/N Series) and Solids Handling Diesels for Sewage pumping and where particles are larger e.g. stones and debris.

### www.motralecroom

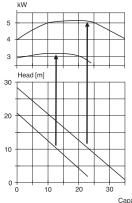
The following curves are QH charts showing the performance of the hydraulic unit at constant shaft speeds. Q is represented as litres per second, and total head, H, is in metres.

The data represented in this section is for your guidance only. Detailed information can be obtained from your local ITT Flygt Sales Engineer.



### BS and D Pumps

The curve is the specified performance of the impeller selected. The values shown are for a BS 2125 pump. Impeller characteristics are coded as follows: LT=Low head. MT=Medium head. HT=High head. SH=Super High Head.



### C, D, H and N Pumps

The power consumption is shown on the chart. The power consumption values for two selected performance duty points are shown by plotted straight lines from the lower to the upper chart. The lower chart and corresponding table provide performance data for different impellers used in a high head 3102 pump. Additional charts for LT, MT and SH models are shown for each respective pump type.

Capacit	v [I/s]

Impeller Code	No. of vanes	Outlet dia. mm CP vers		Motor rating kW	Available versions
252 254	1	80 80	Ø52 Ø46	4.4 4.4	CP/CS CP/CS



Pumping is the addition of energy to a fluid, which is used mainly for the purpose of moving the fluid from one point to another.

### **Centrifugal Pumps**

One which transfers energy to the liquid by means of an impeller; i.e. "a rotating device equipped with suitable vanes". (The liquid is therefore delivered in a continuous and uninterrupted flow).

### **Positive Displacement Pumps**

One which transfers energy to a liquid by means of a reciprocating piston, or similar device, giving an intermittent or "pulsed flow".

### **Ejector or Jet Pumps**

By mixing a high speed drive medium with a low velocity pumped medium, an energy exchange is achieved converting velocity energy into pressure, giving a continuous flow.

Q= Capacity or Volume

H= Total Head

Total Head = Static Head + Friction loss head.

### Static Head

The head against which the pump must work when the liquid is stationary.

### Friction loss head

The head generated by friction of moving liquid, against the walls of the discharge pipes.

P= Pump total pressure in metres.

### **Net Positive Suction Head (npsh)**

Energy from an outside source i.e. static head or atmosphere pressure required to ensure liquid enters the pump volute.

### Cavitation

Cavitation occurs when there is insufficient n.p.s.h. i.e., too low a suction pressure induces cavitation. This causes erosion to the metal surfaces due to the vapour bubble collapsing, allowing the liquid to rush into the subsequent spaces at high velocity, thus creating a water hammer effect.

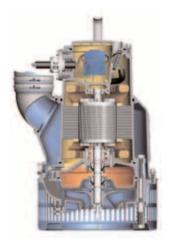
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#### Introduction

Flygt Type BS - Pumps are suitable for a very broad field of application. They are used for dewatering on construction sites for houses, streets and roads, tunnels and rock caverns, harbours and dams, for drainage and ballast pumping in shipyards, for drainage in the event of flooding in mines and industrial plants, for cooling, clean water and raw water supply, water spraying, etc.

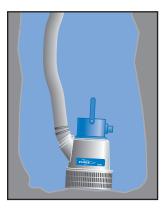
The Type BS - Pump is of transportable design and requires no installation. All you need to do is to lower it into water and start it. There is a type BS pump suitable for all applications - be it for high capacities, high heads, confined spaces or explosive environments.

The Type BS - Impeller is an open or semi-open channel impeller, made of abrasion resistant high chromium steel and designed specifically for handling media containing highly abrasive materials, such as clay, sand and drilling fines etc.





### Can be installed anywhere



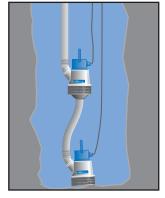
The Type BS - Pump can stand directly on the sump floor



or can be suspended from a rope or chain



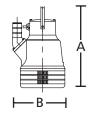
The compact design enables Type BS - Pumps to be used in confined spaces - a 200mm diameter pipe is sufficient for the slimmest pump

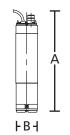


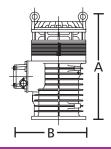
The head generated can be increased by connecting two or more Type BS - Pumps in series.

### **BS - Pumps**

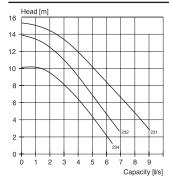
	А	В	Strainer Opening
Pump type	mm	mm	mm
BS2052	530	200	5x18
BS2066	520	385/405/288	7x21
BS2071			
LT	700	184	8x50
MT	665	184	8x50
BS2084			
LT	650	244	8x50
MT	750	244	8x50
BS2102			
MT	505	390/430	7x40
HT	505	375/390/335	7x40
BS2125	740	405/545/525	6.50
MT	710	485/515/535	6x50
HT BS2151	710	465/390	6x50
LT	745	C40/CEE	10x42
MT	745 745	640/655 640/655	10x42 10x42
HT	745 745	570/590	10x42 10x42
BS2201	743	370/330	10,42
Cast Iron			
MT	1200	620	15x45
HT	1050	430	10x10
Aluminium		.50	
MT	1253	500	15x45
нт	1050	430	10x10
BS2250			
MT	1144	885/912	15x45
нт	1144	830	15x45
BS2400			
MT	1250	780	10x10
HT	1250	680	10x10







#### **BS 2052**

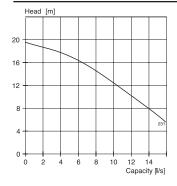


Motor 1 kW, 2700 rpm Max. power input 1.4 kW Weight 18kg



Dimensions: A=530mm B=200mm Hose Size: 50mm

### **BS 2066**



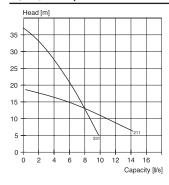
Motor 2.2 kW, 2800rpm Max. power input 2.8 kW Weight 30kg



Dimensions: A=520mm B=362/375mm Hose Size: 75mm

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#### **BS 2071 LT/MT**

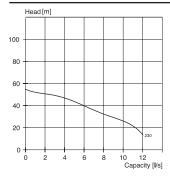


Motor 3 kW, 2850 rpm Max. power input 3.6 kW Weight LT 28kg MT 30.5kg



Dimensions: A=MT 705mm HT 685mm B=184mm Hose Size: LT 50mm MT 75mm

#### **BS 2084**



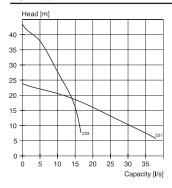
Motor MT 7.5 kW, 2870 rpm Max. power input MT 8.9 kW Weight 70kg



Dimensions: A=LT 650mm MT 750mm B=LT 244mm 244mm Hose Size: 75mm



#### **BS 2102**



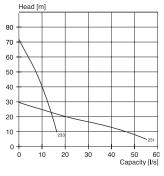
Motor 3.7 kW/ 5.2 kW, 2850 rpm Max. power input 4.5 kW/6.3kW Weight 48kg



Dimensions: A=505mm B=MT=395/430mm HT=375/390mm

Hose Size: HT 75mm MT 100mm

### <u>BS 2125</u>



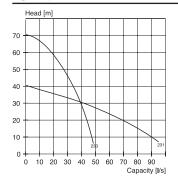
Motor MT 8.0 kW, 2800 rpm Max. power input 9.5 kW Weight MT 83kg HT 92kg



Dimensions: A=710mm B=MT 485/515/535mm HT 465mm Hose Size: HT 75mm MT 150mm

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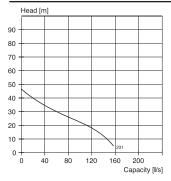
#### **BS 2151**



A A L B—I

Motor 20 kW, 2900 rpm Max. power input 23 kW Weight 165kg Dimensions: A=745mm B=MT 640/655mm MT=570/590mm Hose Size: HT 100mm LT 150mm

#### **BS 2201 MT**

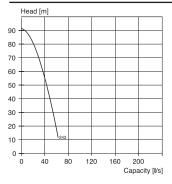




Motor 37 kW, 2920 rpm Max.Power input 41 kW Weight MT Aluminium - 280 kg, Cast Iron - 445kg Dimensions: A=1253mm B=500mm Hose Size: 200mm



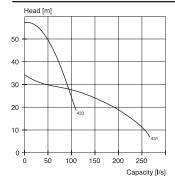
#### **BS 2201 HT**



A A B—B

Motor 37 kW, 2920 rpm Max. power input 41 kW Weight HT Aluminium 240 kg Cast Iron 350kg Dimensions: A=1050mm B=430mm Hose Size: 100mm

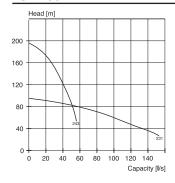
#### **BS 2250**



A A B

Motor 54 kW, 1470 rpm Max. power input 58 kW Weight 540kg Dimensions: A=1100mm B=950mm Hose Size: HT 150mm MT 200mm MT 250mm

#### **BS 2400**



Motor 90 kW, 2970 rpm Max. power input 97 kW Over temperature protection in stator windings Weight MT 900kg HT 985 kg



Dimensions: A=MT 1250mm HT 1251mm B=MT 778mm HT 680mm Hose size: HT=100mm MT=150mm

## ewww.motralesinoomp

Pump Model (50Hz)	kW	Voltage	Phase	Full Load Current (Amps)	Starting Current	Normal Starter Provided	Minimum generator Kva Required for Start/Run
BS 2052	1	110	1	14	46	D.O.L	10 Kva
BS 2052	1	230	1	3.8	17	D.O.L	10 Kva
BS 2052	1	400	3	2.2	9.9	D.O.L	10 Kva
BS 2066	2.2	400	3	4.5	26	D.O.L	20 Kva
BS 2071	3	400	3	6.6	43	D.O.L	30 Kva
BS 2084	7.5	400	3	10	80	D.O.L	60 Kva
BS 2102	5.2	400	3	10	71	D.O.L	50 Kva
BS 2125	8	400	3	15	120	D.O.L	85 Kva
BS 2151	20	400	3	35	281	Auto-trans	100 Kva
BS 2201	37	400	3	65	430	Auto-trans	150 Kva
BS 2250	54	400	3	101	585	Auto-trans	200 Kva
BS 2400	90	400	3	149	1255	Auto-trans	290 Kva

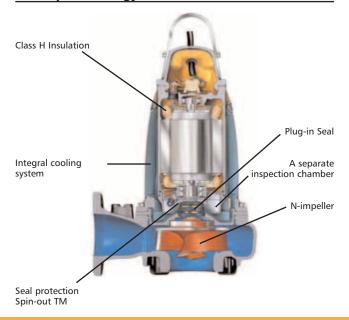
#### Introduction

This series of pumps covers an extensive performance range and can be used in a variety of applications: from pumping sewage in treatment plants and municipal applications to irrigation, industrial effluent, process water and raw water handling to applications in aquaculture and agriculture.

An extensive range of hydraulic sections, i.e. impellers and volutes, are available to handle the different types of media.

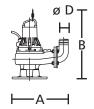
Built-in cooling system on all pumps rated above 9kW. Vanes are at the top of the pump impeller circulate cooling water through a narrow slot around the stator housing.

### **N Pump Technology**

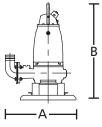


### C - Pumps

Pump type	Α	В	С	øD
CS3085 MT	480	603	350	75
CS3085 HT	450	512	320	75
CS3085 LT 1	638	660	380	100
CS3085 LT 2 CS3102 LT/150	638 720	655 718	400 400	100 150
CS3102 LT/100	640	718	400	100
MT	640	703	383	100
HT	640	698	340	100
CS3127 LT	870	776	439	200
MT/150	780	761	430	150
MT/100	700	761	406	100
HT (curve 480-485)	700	722	407	100
HT (curve 250-259)	700	714	380	80
HS	550	741	403	100
CS3152 LT	1150	1327	576	250
CS3152 MT	900	1228	530	200
CS3152 HT/100	773	1190	530	100
CS3152 HT/150	845 845	1190	530	150
HS3152 CS3201 LT	1417	1190 1598	490 1000	150 250
CS3201 LT	1150	1442	576	200
CS3201 HT	1050	1453	576	150
HS3201	1050	1453	576	150
CS3300 LT	1675	1920	1000	250
CS3300 MT	1624	1915	1000	200
CS3300 HT/200	1494	1827	1000	200
CS3300 HT/150	1443	1827	1000	150
FS3085	605	535	317	100
FS3102	660	619	315	100
FS3127	750	693	415	100
FS3152 LT	735	1055	465	100
FS3152 HT	710	1035	440	100
NS3301	1438	1680	1000	250
CS 3312 CS 3356	1650 1400	2500 2875	1200	300 300
CS 3356 CS 3231	1390	2875	1200 1000	300
C3 3231	1390	2400	1000	300



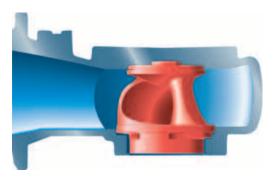






### **Channel Impeller**

C - Pumps are equipped with a shrouded, single or multi-vane impeller that runs in a volute. The shape and size of the impeller is designed to minimise clogging, which makes this pump ideal for wastewater applications.



### Nevaclog

The Nevaclog impeller is designed specially for smaller C - Pumps. Nevaclog has excellent flow passing properties, because all the parts that might cause clogging when water is flowing at low speed through the impeller channel have been eliminated. This, coupled with the volute's design is what enables wastewater to flow freely.



### N Pump

### Sustained high efficiency for waste water handling

With its unique semi-open, self-cleaning impeller, the N-pump series can handle fluids with high concentrations of fibrous material, whilst still maintaining a high level of pumping efficiency over long duty periods. The special relief groove in the volute reduces the risk of clogging by creating a self-cleaning flow path through the pump.



### **N Series Pumps**

N series pumps are available, contact your local Flygt Rental Centre for curve details: N 3085, N 3102, N 3127, N3152, N 3153, N 3202, N3231, N 3301, N3312, N3356

ITT Flygt's big centrifugal pumps are designed to pump waste water containing solids and fibres in suspension. The pump can also be used for pumping raw water.

Liquid temperature: max 40°C (105°F) Liquid density: max 1100 kg/m3

The pH of the pumped liquid:

6 - 11

Depth of immersion: max 20 m (65 ft)

For pumping in an explosive or flammable environment the pump can be equipped with the Ex-version of the drive unit.

The pump is fully submersible, compact and easy to install. It is available in four versions, depending of the type of installation:

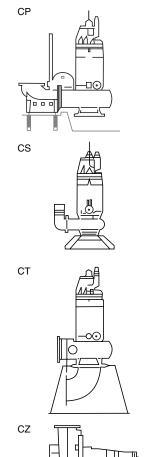
C/NP: This system with guide bars and discharge connection permits automatic connection of the pump to the discharge line. The pump can be lifted up for inspection without anyone having to enter the sump. The pump works completely or partially submerged under water.

C/NS: A transportable pump designed for operating completely or partially submerged in the pump liquid. It is equipped with base stand and hose connection.

Only available with certain hydraulic ends.

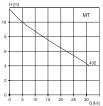
C/NT: The pump is installed vertically dry on a base stand and connected directly to the inlet and outlet lines. The submersible design of the pump prevents damage in the event of flooding.

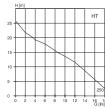
For other applications, contact your local Flygt Rental Centre for information.





#### C 3085 MT





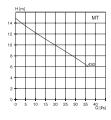


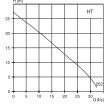
Discharge size 75mm Height 655 mm Motor rating 2.0 kW

Weight 71 kg Maximum width 638 mm

Impeller Code		Outlet dia. mm CP vers		Motor rating kW	 Available versions
432 252	1	100 80	Ø76 Ø40	2.0 2.4	CP/CS CP/CS

### C 3102 MT/HT





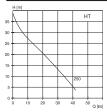


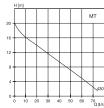
Discharge size 75 mm/100 mm Height 718 mm Motor rating 3.1 kW

Weight 116 kg Maximum width 640 mm

Impeller Code		Outlet dia. mm CP vers		Motor rating kW	Available versions
430 252	1	100 80	Ø76 Ø52	3.1 4.4	CP/CS/MT CP/CS/MT

#### C 3127





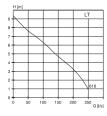


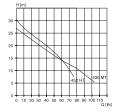
Discharge size 100/150 mm Height 761 mm Motor rating 5.9/7.4 kW

Weight 175 kg Maximum width 780 mm

Impeller Code		Outlet dia. mm CP vers		Motor rating kW	Available versions
430	1	100/150	100x110	5.9	CP/CS
250 HT	1	80	Ø58	7.4	CP/CS

#### C 3152





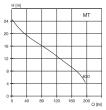


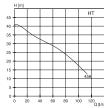
Discharge size 150/200 mm Height 1228 mm Motor rating 13.5 kW

Weight 323 kg Maximum width 900 mm

	versions
452 HT 1 150 76x76 13.5 1450	CP/CT/CS CP/CT/CS CP/CT/CS CP/CT/CS

#### C 3201





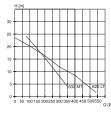


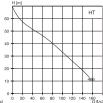
Discharge size 200/250 mm Height 1442 mm Motor rating 30/22 kW

Weight 588 kg Maximum width 1150 mm

		Outlet dia. mm			
Code	vanes	CP vers	let, mm	rating kW	versions
630 456	1 1	200 150	144x120 Ø100	22 30	CP/CT/CS CP/CT/CS

### C 3300







Discharge size 200/250 mm Height 1915 mm Motor rating 54/44 kW

Weight 1218 kg Maximum width 1624 mm

Impeller Code	No. of vanes	Outlet dia. mm CP vers		Motor rating kW	rpm	Available versions
632	1	250	Ø190	44	1450	CP/CT/CS
452	1	150	90x96	54		CP/CT/CS
620	3	300	Ø102	44		CP/CT/CS

#### Introduction

After revolutionizing the market for small and midrange wastewater pumps, the Flygt "N" Pumps are now available in the larger units.

- Incorporating the "Never Clog" technology the potential for blockage is substantially reduced
- Due to sustained efficiency, energy costs can be cut by up to 50%
- Static Heads of up to 90mts achieved
- Flows in excess of 600l/s

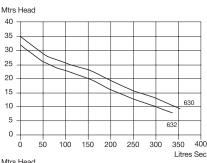
### **Applications**

- General by-pass over-pumping
- Pump replacement
- Application proving
- Storm water handling
- Industrial effluent handling
- Irrigation

Pumps from 55 to 250kW available to rent in NP/NS/NT and NZ build (see Page 19). Ex units available on request.



#### N 3301 55kW





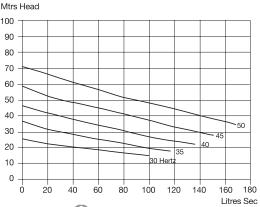
Mtrs Head 80 -70 -60 -50 -40 30 -454 456 20 -458 10 0 -20 40 60 80 100 120 140 160 Litres Sec

Discharge size: 150/250 mm Height NS: 1680 mm Motor rating: 55 kW Weight: 1030 kg

Maximum width NS: 1286 mm

Impeller Code	No. of vanes	Outlet dia. mm NS vers	Motor rating kW	rpm	Available versions
630	2	250	55	985	NP/NT NS/NZ
632	2	250	55	985	NP/NT
454	2	150	55	1400	NS/NZ NP/NT
456	2	150	55	1400	NS/NZ NP/NT
458	2	150	55	1400	NS/NZ NP/NT NS/NZ

#### N 3301 70 kW





Discharge size: 150 mm Height NS: 1680 mm Motor rating: 70 kW

Weight: 1030 kg

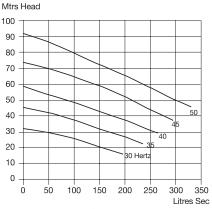
Maximum width NS: 1455 mm

Impeller Code	No. of vanes	Outlet dia. mm NS vers	Motor rating kW	rpm	Available versions
452	2	150	70	1475	NP/NT

A Selection of impellers are available on request; also Variable Frequency Drive Starters



### N 3231 85 kW to 170 kW





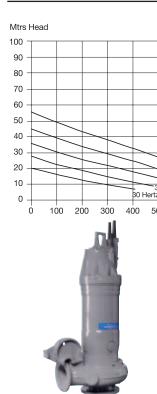
Discharge size: 200 mm Height NS: 2185 mm Motor rating: 170 kW Weight: 1760 kg

Maximum width NS: 1390 mm

Impeller Code	No. of vanes	Outlet dia. mm NS vers	Motor rating kW	rpm	Available versions
470	3	200	170	1480	NP/NT NS/NZ

A Selection of impellers are available on request; also Variable Frequency Drive Starters

#### N 3312 180 kW to 250 kW



Discharge size: 300 mm Height NS: 2500 mm Motor rating: 180 kW Weight: 2275 kg

700

600 Litres Sec

Maximum width NS: 1650 mm

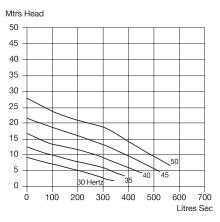
Impeller Code	No. of vanes	Outlet dia. mm NS vers	Motor rating kW	rpm	Available versions
670	3	300	180	990	NP/NT NS/NZ

500

A Selection of impellers are available on request; also Variable Frequency Drive Starters



### N 3356 55 kW to 140 kW





Discharge size: 350 mm Height NS: 2400 mm Motor rating: 90 kW Weight: 2200 kg

Maximum width NS: 1875 mm

Impeller Code	No. of vanes	Outlet dia. mm NS vers	Motor rating kW	rpm	Available versions
670	3	300	90	985	NP/NT NS/NZ

A Selection of impellers are available on request; also Variable Frequency Drive Starters

### **Variable Frequency Drives and Soft Start Units**

Variable frequency drives are available to drive pump units from 55kW up to 180kW pumps, these drive units are available for indoor use or housed in a lockable mobile Motor Control Centre complete with heating and ventilation, a distribution board is also fitted along with lighting. The 180kW VFD units are 12 pulse units complying with the most stringent harmonic interference requirements, although 180kW is not the ceiling for supply of VFD control panels, ITT Flygt Rental have supplied up to 400kW in its own mobile MCC. Soft start units are available as above.

### **Mobile Telemetry Alarms**

ITT Flygt Rental have many ways of monitoring the overpumping installation, we have simple "pay as you go" alarm systems with the ability of sending texts messages to nominated numbers, the Dynamic Logic D716x series telemetry outstation with A/C or battery powered.





### AWWWemotraceoreommps

Many of the Flygt range of pumps can be provided certified for use in Zone 1 and Zone 2 hazardous areas.

Pumps are certified: EEx d IIB T4 or EEx d IIB T3

According to the pump model:

ATEX category II 2G

The pumps are constructed and approved in accordance with:

BS EN 50018, BS EN 50019, BS EN 13463-1, BS EN 60079-1, BS EN 60079-7

As appropriate according to the pump model.

For availability of 'Ex' units and any other technical assistance contact your nearest Flygt Rental Centre.

- Copies of the relevant 'Ex' certification can be made available on request.
  - The pumps are maintained in accordance with BS EN 60079 Part 19.
  - Before any Flygt 'Ex' pump is made available for Rental all parts, flame paths etc; are checked and recorded using regularly calibrated instruments and procedures in accordance with BS EN 60079-19

#### Explosion Pumps Available:

B Pumps	C & N Pumps (ring for confirmation)	Mixers
2201 2400	3067 3085 3102 3127 3152 3140 3170 3201 3301 3356 3231 3312	4620 4630 4640 4650 4660

### www.motradesegoment

ITT Flygt Rental specialises in electrical submersible pumps, therefore, it is logical that we are experts when it comes to the electrical end of the pump business. From a simple 13 amp plug to a complex multipump control panel, ITT Flygt engineers are available to give advice on all aspects of the electromotive power.

ITT Flygt Rental carries a comprehensive stock of starters, Isolators, control equipment, earth leakage trips, alarm and monitoring devices. Also sufficient cable to suit day to day usage, is held both at Nottingham and all Service Centre locations.

FPC 100 Automatic Pump Control - effective drainage without level sensors

Flygt's FPC 100 allows automatic pump operation without the use of floats or level sensors. It closely monitors pump operating power, shutting off when water is not being pumped.

Saving service costs, spare parts and high electricity bills.



FPC 100 automatic pump control

#### Features include:

- Automatic pump control without external floats or sensors
- Monitors and protects the pump from over heating, unbalance phase, incorrect rotation and displays key operating information.

# Elw:\w.\monathradesing.org.pp

Pump Model (50Hz)	kW	Voltage	Phase	Full Load Current (Amps)	Starting Current	Normal Starter Provided	Minimum generator Kva Required for Start/Run
3085	2	400	3	4.6	22	D.O.L	20 Kva
C 3102	3.1	400	3	6.6	36	D.O.L	25 Kva
C 3127	5.9	400	3	12	77	D.O.L	55 Kva
C 3127	7.4	400	3	14	114	D.O.L	80 Kva
C 3152	13.5	400	3	27	162	A.S.D	40 Kva
C 3153	13.5	400	3	28	150	A.S.D	40 Kva
C 3201	30	400	3	56	365	A.S.D	85 Kva
C 3300	44	400	3	82	515	Auto-trans	175 Kva
C 3300	54	400	3	100	535	Auto-trans	185 Kva
NS 3202	45	400	3	82	605	Auto-trans	210 Kva
NS 3301	55	400	3	113	660	Auto-trans	225 Kva

When two pumps are driven from the same generator, the rating required is 1.5 times that indicated for a single pump.

Some form of time lag should be connected to prevent both pumps from starting simultaneously, unless the generator has been selected for that number of pumps to start simultaneously.

### WWW pieseotings Concosted

### **Automatic Self Priming**

To complement their long established range of Electric Submersibles, Flygt have introduced a superior range of diesel driven, Prime Assisted pumps.

All Flygt Diesels are of the supersilent type. Designed with the environment in mind, the pumps average noise levels of just 63 dBa @ 7 Metres and have fully bunded Fuel tanks to contain any spillages. All models feature full automatic Self Priming, by way of an integral Vacuum Pump.

The versatility and robustness of Flygt Diesels make them particularly suited to the Construction and Water Company sectors.

#### Typical applications:

- Construction site dewatering
- Sewage by-pass and overpumping
- Wellpoint dewatering
- River diversion
- Sludge and slurry pumping
- Bulk water transfer

#### Why are we Unique?

- Our Diesel Pump holding is 100% of the Silenced type
- Our Diesel Pump Fleet is new, the oldest pump being from 2005
- We only rent pumps manufactured by ourselves
- All Flyat trucks are fitted with cranes

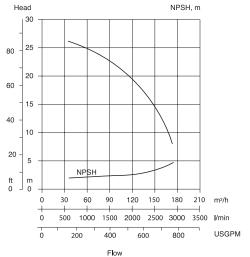




### Flygt 100GP

Silenced, Medium Head & Flow general purpose pump for dirty water applications containing fine solids. Ideal for water transfer and general site dewatering duties. Features fully automatic Self Priming, for continuous prime and rapid re-prime.





#### 100GP

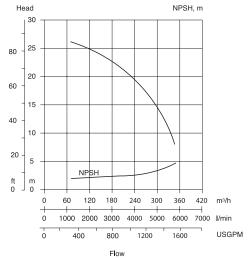
Port Size	100mm	Air Handling	25 m3/h
Max Flow	175 m3/h	Run Speed	1,900 rpm
Max Head	27 Metres	Wet Weight	1,400 Kg
Suction Lift	9 Metres	Fuel Tank	87 Lts
Max Solids	35mm	Engine	F2M2011

# www.motraleercome

### Flygt 150GP

Silenced, Medium Head & Flow general purpose pump, for dirty water applications containing fine solids. Ideal for water transfer and general site dewatering duties. Features fully automatic Self Priming, for continuous prime and rapid re-prime.





### 150GP

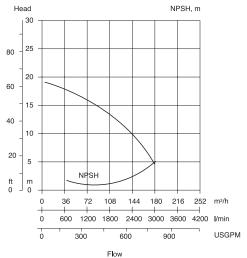
Port Size	150mm	Air Handling	50 m3/h
Max Flow	350 m3/h	Run Speed	1,500 rpm
Max Head	26 Metres	Wet Weight	1,620 Kg
Suction Lift	9 Metres	Fuel Tank	142 Lts
Max Solids	60mm	Engine	F3L2011



## Flygt 100VX

Silenced, Heavy duty pump, for pumping raw sewage and slurries. The Vortex Flow design allows solids of up to 80mm to pass through. Ideal for sewer by-pass work and where large solids are in suspension. A lubricated mechanical seal is fitted to facilitate extended dry running.





### 100VX

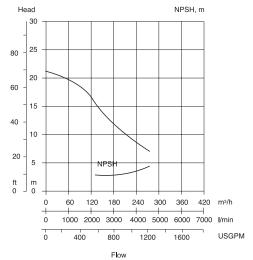
Port Size	100mm	Air Handling	50 m3/h
Max Flow	180 m3/h	Run Speed	1,500 rpm
Max Head	19 Metres	Wet Weight	1,445 Kg
Suction Lift	9 Metres	Fuel Tank	150 Lts
Max Solids	80mm	Engine	F2M2011

## www.motraleoscome

### Flygt 150VX

Silenced, Heavy Duty pump, for pumping Raw Sewage and Slurries. The Vortex Flow design allows solids of up to 125mm to pass through. Ideal for Sewer by-pass work and where large solids are in suspension. A lubricated Mechanical Seal is fitted to facilitate extended Dry Running.





### 150VX

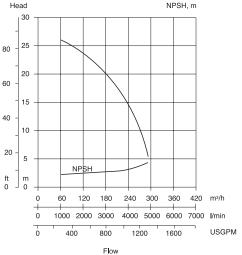
Port Size	150mm	Air Handling	50 m3/h
Max Flow	285 m3/h	Run Speed	1,500 rpm
Max Head	21 Metres	Wet Weight	1,620 Kg
Suction Lift	9 Metres	Fuel Tank	150 Lts
Max Solids	125mm	Engine	F4M2011



## Flygt 150WP

Silenced Wellpointing and general purpose pump, featuring a high capacity Vacuum Priming pump. Ideal for use with Wellpoints sunk in the ground, to achieve ' Water Table drawdown', to a maximum of 6 Metres.





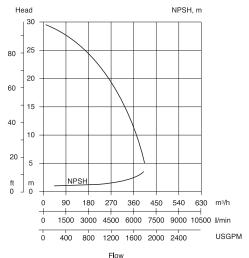
### 150WP

Port Size	150mm	Air Handling	140 m3/h
Max Flow	300 m3/h	Run Speed	1,500 rpm
Max Head	26 Metres	Wet Weight	1,820 Kg
Suction Lift	9 Metres	Fuel Tank	142 Lts
Max Solids	40mm	Engine	FM42011

### Flygt 200GP

Silenced, High Volume, Medium Head pump. Ideal for bulk water transfer duties but also used for general purpose applications. It has a solids handling capability of up to 60mm, so large solids in suspension, can pass through e.g. screened sewage.





### 200GP

Port Size	200mm	Air Handling	50 m3/h
Max Flow	400 m3/h	Run Speed	1,500 rpm
Max Head	29 Metres	Wet Weight	1,750 Kg
Suction Lift	9 Metres	Fuel Tank	142 Lts
Max Solids	60mm	Engine	F4L2011



Flygt Submersible Mixers consist of a drive unit and propeller, integrated into a compact unit. The mixer is mounted on a guide bar, to enable it to be raised and lowered, to operate at different depths. It can also be angled upwards or downward and can be swivelled to the sides. Its mixing action can therefore be directed to any point in a lagoon or tank.

This flexibility aided by the large blade propeller, running at relatively low speeds, sets in motion large volumes of sludge and water. The Flygt submersible mixer is at least three times as efficient as a conventional mixer. This is due to the high efficiency hydraulic design and the fact that the motor and propeller are integrated into a lightweight, compact unit. No energy is lost in complicated gearing, support bearings and heavy shafts. Also, the mixer can be run intermittently, thus providing further energy savings.

### Compact design

The machines are either direct-driven or include a reduction gearbox between the motor and the propeller. However, all models are well integrated into a compact unit. So no energy is lost in long heavy shafts and support bearings.

#### Circular tanks

One mixer is normally sufficient for tank volumes up to 2,000m3.

Depending on the characteristics of the liquid and the desired degree of agitation, more than one mixer may be necessary for larger tank volumes.

## Rectangular tanks

If the length, width and depth dimensions of the tank differ considerably, several mixers may be necessary to ensure good results. Rectangular tanks are often located underground. Since Flygt Mixers are installed from the top, installation in underground tanks is easy.

For specific duties on the range of Flygt Submersible Mixers please contact your local service centre.

## www.motranges.iceactice

## Homogeneous liquid manure in a couple of hours.

Flygt Submersible Mixers have an important role to play in agriculture, for homogenising liquid manure. Even if the manure is old, with a thick dry crust and all the solids have settled at the bottom of the tank, it will be possible by mixing for the whole tank contents to become homogeneous. This is due to the fact that the mixer can operate at different depths, can be orientated in any direction and will quickly set in motion large volumes of the manure.

## Wide field of applications in industry

Flygt Submersible Mixers are used for keeping liquids of different viscosities in suspension, for mixing dry solids into liquids, for thickening after sedimenting and decanting, and for transporting liquids,

### Good environment in fish farming

Whether in netting enclosures in open water or in dammed bays, Flygt submersible mixers will maintain ideal fish farming conditions at a modest cost. The mixer will supply a briskly-flowing current of fresh water with good oxygen contents and an abundance of natural food. At the same time, fish droppings will be removed. The risk of rotting and formation of decay gases is eliminated. By establishing circulation between the bottom and the surface, the mixer also evens out the water temperature, which favours the growth of the fish.

### Improving the efficiency in sewage treatment plants

Flygt Submersible Mixers have been widely adopted in sewage treatment plants throughout the world. Particularly in thickening, sludge and storm water ponds, in buffer tanks and in the mixing of chemicals and lime into the water, the efficiency and low operating costs of the mixers can be utilised to the greatest possible extent.

### Flow creation

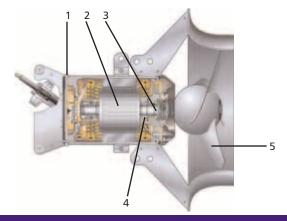
For low head, high capacity laminar flows the large propeller mixer can be used in lake reservoirs, fish farms as well as process mixing.



### **Description**

Cable entry - The cable entry has two compressible rubber bushings to seal off and relieve the cable.

- Junction Box The junction box is completely sealed off from the surrounding liquid and the stator casing.
- 2. Motor Squirrel-cage 3-phase induction motor for 50HZ or 60HZ. The motor is started by means of direct on-line start. The motor can be run continuously or intermittently with a maximum of 15 evenly spaced starts per hour. The stator is insulated in accordance with class F (115°C, 310°F). The motor is designed to supply its rated output  $\pm$  5% variation of the rated voltage. Without overheating the motor,  $\pm$ 10% variation of the rated voltage can be accepted provided that the motor does not run continuously at full load. The motor is designed to operate with a voltage inbalance of up to 2% between the phases.
- 3. Shaft seals The outer mechanical seal, seals between the surrounding liquid and the oil casing. Two types of seals are available: Flygt Seal Type S or Type T. The inner seal, a mechanical seal or a lip seal, seals between the oil casing and the stator casing.
- 4. Bearings The shaft is carried in one single-row angular contact ball bearing and single-row cylindrical roller bearing together with a single row angular contact ball bearing. The mixer's bearing are calculated for more than 100,000 hours of operation.
- Propeller The propeller is three bladed with a large width, a thin profile, a smooth surface and are back swept. This gives a highly efficient and almost clog-free operation.

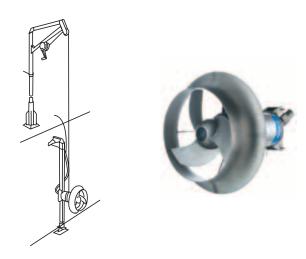


As shown:

 $4620\ 1.5\ kW$  mixer fitted on a portable, free standing steelwork - available to rent.



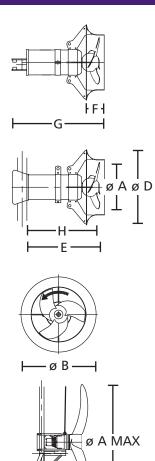
See below more installation methods





# WWW.motral@dallenipers

Max         Max         mm         mm         mm         mm         mm         mm         kg (bs)           4351         20m         220         255         610         -         -         595         38/50         21 (46)           4352         200         275         220         -         536         62         586         -         50         24 (57)           4400         220         275         643         68         678         -         50         43 (95)           4410         2500         -         -         -         -         1110         1010         100         26 (57)           4410         2500         -         -         -         -         -         50         43 (95)           4410         2500         -         -         -         -         1110         1010         100         263 (580)           4630         390         636         405         559         469         117         574         457         50         64 (141)           4650         650         1027         675         931         721         195         878         700         100         <	Type	⋖	В	O	Δ	ш	ч	ŋ	エ	_	Weights
200         -         220         255         610         -         -         595         38/50           200         275         220         -         536         62         586         -         50           220         355         236         -         -         -         -         50           2500         -         -         -         -         -         1110         1010         100           2500         -         -         -         -         1110         1010         100           2500         -         -         -         -         1110         1010         100           390         636         405         559         469         117         574         457         50           650         1027         675         931         321         195         888         700         100           650         1027         675         931         831         195         988         816         100           880         1372         908         1256         985         264         1192         966         100/150	(max)	Max Ø mm	Max	m m	E	E	шш	E	шш	mm	kg (lbs)
200         275         220         -         536         62         586         -         38/50           220         355         236         272         643         68         678         -         50           2500         -         -         -         -         1110         1010         100           2500         -         -         -         -         1110         1010         100           390         636         405         559         469         117         574         457         50           650         1027         675         931         721         195         878         700         100           650         1027         675         931         721         195         878         700         100           880         1372         908         1256         835         264         992         816         100           880         1372         908         1256         985         264         1192         966         100/150	4351	200		220	255	610			595	38/50	21 (46)
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2500         -         -         -         -         -         1110         1010         100           2500         -         -         -         -         -         1110         1010         100           390         636         405         559         469         117         574         457         50           590         636         405         559         509         117         614         497         50           650         1027         675         931         721         195         878         700         100           880         1372         908         1256         835         264         992         816         100           880         1372         908         1256         985         264         1192         966         100/150	4400	220	355	236	272	643	89	829		20	43 (95)
2500         -         -         -         -         -         1110         1010         100           390         636         405         559         469         117         574         457         50           390         636         405         559         509         117         614         497         50           650         1027         675         931         831         195         878         700         100           880         1372         908         1256         835         264         992         816         100           880         1372         908         1256         985         264         1192         966         100/150	4410	2500						1110	1010	100	230(507)
390         636         405         559         469         117         574         457         50           390         636         405         559         509         117         614         497         50           650         1027         675         931         721         195         878         700         100           650         1372         908         1256         835         264         992         816         100           880         1372         908         1256         885         264         1192         966         100/150	4430	2500						1110	1010	100	263 (580)
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650         1027         675         931         831         195         988         810         100           880         1372         908         1256         835         264         992         816         100           880         1372         908         1256         985         264         1192         966         100/150	4650	650	1027	675	931	721	195	878	700	100	177 (390)
880 1372 908 1256 835 264 992 816 100 880 1372 908 1256 985 264 1192 966 100/150	4660	650	1027	675	931	831	195	988	810	100	218 (481)
880 1372 908 1256 985 264 1192 966 100/150	4670	880	1372	806	1256	835	264	992	816	100	363 (800)
	4680	880	1372	806	1256	985	264	1192	996	100/150	482 (1063)





## Fields of application

The efficient mixing characteristics and the simple design of our Ejectors and Aerators make them suitable for aerating biological ponds, fishfarm ponds, lakes and waterways.

## The function of the ejectors

The principle on which the Ejector operates is simple and well-known. A drive jet from a Flygt Submersible pump is led into the Ejector. The drive jet flows through a nozzle into the ejector housing, which has a delivery pipe for the medium, e.g. air, which is to be pumped (the secondary flow). A drop in pressure occurs when the drive jet passes through the mixing tube. This partial vacuum automatically entrains the pump medium with the drive jet and the contents of the primary and secondary flows are mixed intensively with each other.

### The function of the Radial Aerator

Aeration by means of high efficiency mixing.

Air dispersion by the same method as the Ejector is distributed radially within a tank, basin or lagoon, via the series of diffusers mounted around a central turbine impeller. As with the Ejectors, being totally submerged significant advantages arise over other forms of aeration.

#### Low noise levels.

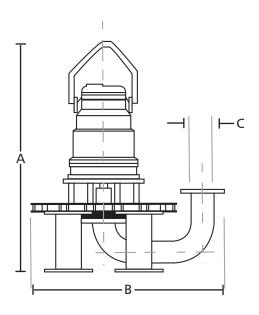
No sprays or liquid dispersion in the atmosphere.

#### Installation

Installation of these aeration products is straightforward either by bolting to the tank floor or they even will be suspended by their own weight in certain circumstances.

## **Applications**

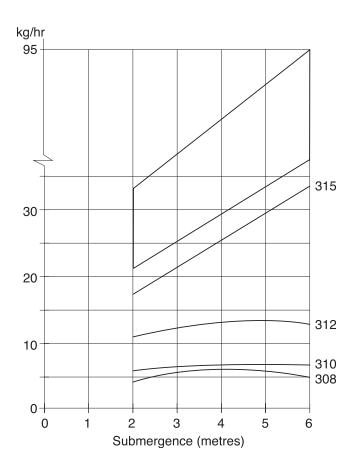
Subject to the tank configuration the ejector or aerator can be selected to: Replace existing aeration equipment during breakdown or maintenance periods. Upgrade existing treatment capacity without major investment. Increase oxygen levels. Reduce ammonia levels.



Туре	Power	Current	Dime		(mm)	Weight
			a	b	С	Kgs*
308	2.4	4.5	610	660	50	75
310	4.4	8.5	700	660	50	105
312	5.9	11.0	800	950	80	180
315	13.5	25.0	1130	995	100	295
320	22	42.0	1320	1150	150	500

<sup>\*</sup> Weight includes 10m of cable





Utilising the principles of an Ejector; the Flyjet and Hydroejector can be used to resuspend solids which have settled in storage tanks.

They can be used in storm water retention tanks at sewage works; for example. 4" and 6" jet pipes are available.





#### The concept

Flygt's range of pump flotation modules has been developed to provide a light-weight and cost-effective alternative to the traditional steel pontoon. The flotation modules are prefabricated from light-weight, foam-filled, GRP (Glass fibre Reinforced Polymer) and are available in four sizes.

### General applications

Pump Flotation Modules can be supplied to suit Flygt 2000 Series / BS dewatering pumps, C/N-series wastewater pumps and slurry pumps. Applications include:

- Mine dewatering
- Tailing dams
- Underground dams
- Sewage treatment
- Quarries
- Aeration ponds
- Construction site dewatering
- Flooding control

#### Installation

The pump and integral module can be simply installed by use of a central lifting attachment. Once in the water, the module can be towed by boat, if required, and secured in position by anchor or guy ropes. The float module remains visible above the water surface for easy recovery.

### Design features:

- Compact and lightweight
- Stainless steel metal parts
- Easily mounted to pumps on site
- Lifting points for easy installation
- Easy to transport as an integral unit
- Foam filled to prevent sinking

By having the pump floating close to the surface, it increases service life through reduced maintenance since it is no longer working within high solids environment.



PFM550

PFM550	0
PFM 550 2201 3140 3152/3153 3170/3171 5100 (<52kW) 5150 (<52kW)	Part Number 691 69 00 * * * *
* On request	
1400 x 1400 x 540mm 120 kg	

To complement our comprehensive range of pumps, extensive stocks of pipework and hoses are held. ITT Flygt Rental can supply all your needs from 2" hose increasing in size to steel pipes in excess of 450mm.

Also BSP pipe and cast iron fittings to suit most applications including valve, taper, hose spigot, flexible couplings and hose clamps, specialised hoses for high pressure applications are also stocked.



A pump relies on a secure link between the source and the discharge point. Poor hoses will leak, collapse and cause unwanted problems. So, at Flygt we only sell those hoses we use ourselves – "Cheap hose is expensive hose in the long run".



#### Wire-armoured Suction Hose

	Specification									
Bore	Outside	Working	Weight per							
dia.	dia.	Pressure	6m incl. cpgs							
mm	mm	bars	kg							
51	63	8	12							
76	89	8	26							
102	116	8	35							
150	169	5	60							

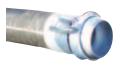
A tough hose developed for the construction industry, with a tube of smooth synthetic rubber, covered with weather resistant synthetic rubber, reinforced with cords of synthetic textile and an embedded helix of hightensile steel wire. It is flexible and heavy, yet easy enough to manoeuvre. It seals well onto the pipe fittings, withstands high pressure and is also tough. It is ideal for suctions and for discharge where the bend must not collapse.



#### PVC Suction and Discharge Hose

	Specification										
Bore dia. mm	in.	Outside dia. mm	dia. Pressure								
50 75 100 150	2 3 4 6	58 87 115 167	5 5.5 4.5 3	6 10 25 40							

PVC is a high grade hose, flexible, lightweight, with exceptional resistance to abrasion and weathering. The smooth bore offers minimum resistance to flow. The strengthened PVC helix is embedded in the hose wall for extra strength.



#### Polythene Delivery Hose

Specification									
Bore dia. mm	in.	Out di mm		Wor Pres bars	sure	Weight per 6m incl. cpgs kg			
, ,	2 3 4 6	65 90 115 170	2.5 3.5 4.5 6.75	4	90 60 50 50	8 14 18 43			

This is a proven semi-rigid delivery hose, which is well known throughout the industry. It is damage resistant, but also lightweight and simple to handle. Friction loss is kept to a minimum in this smooth bore hose.

## **Friction Loss In Smooth Bore Pipe**

Losses in m/100 or ft./100ft								
I.G.P.M.	2"	3"	4"	6"	8"	10"	12"	m³/h
50	10	1.4	0.3					10
75	20	3	0.7					15
100	35	5	1	0.1				20
150		12	2.5	0.35				30
200		18	4.5	0.6				50
300		40	10	1.2	0.4			75
400			18	2.2	0.7			100
500			28	3.5	1.1	0.35		125
600			38	4.5	1.5	0.5		150
700				6.5	2	0.7		175
800				8	2.7	8.0		200
900				10	3.4	1	0.4	225
1000				13	4	1.4	0.5	250
1200				18	6	2	8.0	300
1400				26	8	3	1	350
1600				32	11	4	1.5	400
1800				36	14	4.5	2	450
2000				38	17	5	2.5	500
2500					25	9	4	650
3000					38	12	5	750
4000						21	8	1000
5000						32	13	1250
		m	3/h x 4 :	a.p.n	n. appro	X		

The table refers to new pipes and moderate corrosion could increase resistance by 30%. To calculate resistance of Bends and Fittings, an 'equivalent length' for each accessory needs to be added to the actual length of pipe. The equivalent length in feet can be estimated by multiplying the factors in the adjacent table by the pipe diameter in inches

Example :- A 6" Gate Valve is equivalent to 12 ft of extra pipe

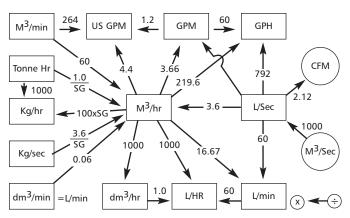
Mitre elbow or tee	5
Round elbow	3
Slowbend	2
Square edged entrance	3
Gate valve fully open	2
Globe valve fully open	10
Non-return valve (flap type)	3
Foot-valve and strainer (clean)	5



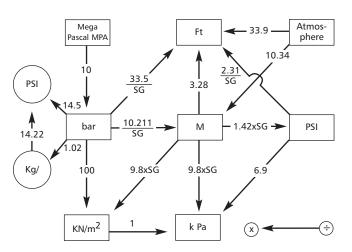
Inches	.,	25.4	=	100 100	.,	0.0394	=	Inches
inches	Х	25.4	=	mm	Х	0.0394	=	inches
Feet	Х	03048	=	m	х	3.281	=	Feet
Yards	х	0.9144	=	m	х	1.0936	=	Yards
Miles	х	1.609	=	km	х	0.6214	=	Miles
Ft <sup>2</sup>	х	0.0929	=	m <sup>2</sup>	х	10.764	=	Ft <sup>2</sup>
Miles <sup>2</sup>	х	2.59	=	km <sup>2</sup>	х	0.3861	=	Miles <sup>2</sup>
In3	х	16387	=	mm3	х	0.000061	=	In3
Ft3	х	0.02832	=	m3	х	35.31	=	Ft3
Gals (Imp)	х	4.546	=	L	х	0.22	=	Gals (Imp)
Gals (Imp)	х	0.004546	=	m3	х	220	=	Gals (Imp)
Gals (US)	х	3.785	=	L	х	0.2642	=	Gals (US)
LBS	х	0.4536	=	kg	х	2.2046	=	LBS
Tons	х	1016	=	kg	х	0.000984	=	Tons
Gal/Min (Imp)	х	0.2727	=	m3/h	х	3.6667	=	Gal/Min (Imp)
Gal/Min (Imp)	х	0.0757	=	L/Sec	х	13.21	=	Gal/Min (Imp)
L/Sec	х	3.6	=	m3/h	х	0.277	=	L/Sec
Gal/Min (Imp)	х	1.2	=	USGPM	х	0.833	=	Gal/Min (Imp)
PSI	х	0.06895	=	Bar	Х	14.504	=	PSI
PSI	х	0.703 S.G	=	M Liquid	х	1.422xS.G	=	PSI
Ft Liquid	х	0.02989xS.G	=	Bar	х	33.456 SG	=	Ft Liquid
STD. ATM	х	1.01225	=	Bar	х	0.9879	=	STD. ATM
НР	х	0.7457	=	kW	х	1.341	=	НР

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#### **Flow Conversions**



#### **Head/Pressure Conversions**



Normal Bore	Table	Dia. Flange	P.C.D	Bolt Dia.	No. of Bolts	Flange Thickness Grey Cast Iron
1" 1.25" 1.5" 2" 50mm 2.5"	D&E D&E D E NP16 D	4.50" 4.75" 6.00" 6.00" 165mm 6.50"	3.25" 3.44" 4.50" 4.50" 125mm 5.00"	.50" .50" .625" .625" M16 .625"	4 4 4 4 4	.50" .625" .688" .750 20mm .688"
3" 80mm 4"	E D&E NP10 NP16 D	6.50" 7.25" 200 (7.87) 200 (7.87) 8.50" 8.50"	5.00" 5.75" 160 (6.30) 160 (6.30) 7.00" 7.00"	.625" .625" M16 M16 .625"	4 4 8 8 4 8	.750" .750" 21 (.83) 21 (.83) .750" 8.75"
100mm 5" 6"	NP10 NP16 D E D	220 (8.66) 220 (8.66) 10.00" 10.00" 11.00"	180 (7.09) 180 (7.09) 8.25" 8.25" 9.25" 9.25"	M16 M16 .625" .625" .625"	8 8 8 8 8	22 (.87) 22 (.87) .813" .875" .813" 8.75"
150mm 7" 8"	NP10 N16 D E D	285 (11.22) 285 (11.22) 12.00" 12.00" 13.25" 13.25"	240 (9.49) 240 (9.49) 10.25" 10.25" 11.50"	M20 M20 .625" .750" .675" .750"	8 8 8 8 8	23 (.91) 23 (.91) .875" 1.00" .875" 1.00"
200mm 9" 10"	NP10 NP16 D E D	340 (12.38) 340 (12.38) 14.50" 14.50" 16.00"	295(11.61) 295(11.61) 12.75" 12.75" 14.00" 14.00"	M20 M20 .625" .750" .750"	8 12 8 12 8 12	245 (.96) 245 (.96) .875" 1.00" 1.00"
250mm 12" 300mm	NP10 NP16 D E NP10 NP16	400 (15.75) 400 (15.75) 18.00" 18.00" 455 (17.91) 455 (17.91)	355 (13.98) 16.00" 1.00" 400 (15.75)	M20 M25 .750" .875" M20 M25	12 12 12 12 12 12	26 (1.02) 26 (1.02) 1.00" 1.125" 27.5 (1.08) 27.5 (1.08)

NP10 and NP16 are for cold water pressure of 10 bar and 16 bar and are the current British Standard. They are unnecessarily heavy for most contractors' pumps.

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