

A Glossary of Concrete Pumping Terms

agitator

A remixer in the hopper that keeps the concrete in a homogeneous state and feeds it towards the pumping cylinders.

bagging

A term used for a ground line or sometimes just for the placing hoses.

ball catcher

A device, fitted to the end of a concrete delivery pipeline when cleaning it with compressed air, designed to catch the sponge ball and prevent it from being fired across the site. Note: the ball catcher should be fitted to steel pipeline – all hoses must be removed before attaching the ball catcher.



Ball catcher, sponge ball and blow out adapter

banksman

This term is now deprecated in favour of traffic marshaller but is understood to mean a site operative responsible for controlling traffic on a building site including backing the ready-mixed concrete truck onto the hopper of the pump.

bend

A bent or cast steel pipe that allows a concrete delivery pipeline to deviate from a straight line. Bends are available in a number of different radii typically up to 1 metre. Different angle bends are used, the most common of which are 90 and 45 degrees.



Bend – cast delivery bend

blockage

When the concrete blocks in the pipeline and cannot be pumped. The common causes of a blockage are 1. insufficient grout used to grout up, 2. too thin a grout used to grout up and 3. the concrete mix is not suitable for pumping due to insufficient cement and / or fines and / or poorly graded aggregates.

blow out adapter

A stub pipe with an air inlet port and an air vent port used to introduce compressed air into a concrete pumping pipeline to force a sponge ball through the line to clean it. The adapter should also include a stop to prevent the sponge ball being forced back under pressure and thus sealing the vent port. Also known as a wash out adapter.

blow out cannon / blow out gun

Slang terms for a blow out adapter.

boom

The hydraulically controlled arm of a concrete pump used to distribute and place the concrete.

boom and rubber job

A contract where the concrete is placed directly from the end placing hose of the boom. No ground line is used.

boom certificate

A certificate confirming that the boom is structurally sound and in full working order. A boom should be tested and confirmed as sound on an annual basis.

boom pump

A truck mounted concrete pump with a hydraulic boom that is used to place the concrete. A boom pump consists of three major components – 1. truck cab/chassis, 2. concrete pumping unit and 3. boom.

bottom bend

A long radius bend with a bracket to support the bend at the bottom of a vertical pipe.

Cam-mats

Oversized outrigger support pads supplied by Camfaud. Cam-mats can be set as pads up to 1740 x 1740 mm ie over 3 m².



Cam-mats - outrigger support pads

Camfaud

Camfaud Concrete Pumps Ltd – the leading concrete pump hire company in England supplying boom pumps, static pumps, stationary placing booms, grout mixer pumps, flowing floor screed pumps, pipelines and concrete pumping accessories.

CITB

The Construction Industry Training Board.

clamp

A coupling that connects together two sections of pipeline and / or end placing hose.

clip

A coupling that connects together two sections of pipeline and / or end placing hose.



Clip and safety pin

concrete

A construction material consisting of cement, fine aggregate, coarse aggregate and water. Other materials may be added to the mix to alter its properties. Concrete is a plastic material in its fresh wet state and hardens over time due to a chemical reaction between the cement and water.

concrete delivery pipe

A steel pipe used to deliver concrete. The length of a standard pipe is 3 metres. Other sizes can be made but are not generally shorter than 250mm or longer than 6 metres. They have a flange at both ends to allow them to be coupled together using coupling sets.

concrete pump

A piece of construction equipment designed to pump concrete from one position on a construction site to another. Concrete pumps can be categorised as static pumps or mobile pumps.

concrete pump primer

A non cementitious material which is mixed with water and used to grout up the pump. Pump primers are often used instead of the more traditional cement grout – they are promoted as being better from a health and safety perspective as they are lighter and less dusty. Best practice suggests that the pump primer should be pumped to a suitable waste receptacle and not into the structure.

coupling

The fitting that connects together two sections of pipeline and / or end placing hose.

coupling set

The items needed to couple one pipe to another – typically a coupling, seal and safety pin.

CPCS Competent Operator (Blue) Card

The industry standard qualification that demonstrates that an operator is competent to operate a given piece of construction plant. Currently, there are three categories of plant catered for: A06 Concrete Pump – Truck Mounted Boom, A44 Concrete Pump Trailer Mounted, A72 Static Concrete Placing Boom.

CPCS Trained Operator (Red) Card

This card confirms a level of core skills, knowledge and understanding prior to being tested and assessed as competent. The three concrete pumping categories currently offered are A06 Concrete Pump – Truck Mounted Boom, A44 Concrete Pump Trailer Mounted, A72 Static Concrete Placing Boom.

EASy mode

The Schwing system for restricting the slew of the boom that allows the pump to be short-rigged safely and thus fit into a smaller space. DO NOT SHORT-RIG WITHOUT AN OSS OR SIMILAR SYSTEM.

electric pump

A static concrete pump powered by an electric motor. Electric pumps are preferred in tunnels as they do not emit fumes.

end placing hose

A steel reinforced hose used to distribute concrete at the end of a boom or static line.

fibres

An addition to the concrete mix to improve the properties of the hardened concrete. Both steel and polypropylene fibres can be used.

flat line

A term used for a concrete delivery pipeline laid on the ground / reinforcing steel.

flexi

Abbreviation for flexible end placing hose.

gasket

A seal used in a coupling set to prevent the loss of grout.

gate valve

A type of shut off valve. There are two types of gate valves – manual and hydraulic. The best gate valves have a sealing arrangement to prevent grout loss from the valve.

ground line

A term used for a concrete delivery pipeline that is laid on the ground / reinforcing steel.

grout

1. A mix of cement and water pumped ahead of the concrete to line the pipeline. This grout lining forms a lubricating layer ahead of the first load of concrete ensuring that the concrete does not block in the line. Best practice suggests that the grout should be pumped to a suitable waste receptacle and not into the structure. 2. A cementitious material used in the construction industry.

grout pump

A small pump used to pump grout. Grout pumps cannot be used to pump concrete containing 10 or 20 mm aggregate.



Putzmeister SP11 grout pump

grouting up

Pumping grout ahead of the first load of concrete to prevent the concrete blocking in the line. Best practice suggests that the grout should be pumped to a suitable waste receptacle and not into the structure.

heavy weight concrete

A concrete mix using heavy weight aggregates often a natural iron oxide – Magnetite. It is used for radiation shielding structures and contracts where an increased mass is required. It is possible to pump heavy weight concrete but the mix has to be a good pump mix and care should be taken not to overload the boom and / or any supported pipeline. (Normal weight concrete has a typical

density of 2300 kgs/m³. Heavy weight concrete can have a density of up to 4200 kgs/m³).

high density concrete

A synonym for heavy weight concrete.

hopper

The part of the pumping mechanism that receives the concrete from the ready mixed concrete truck and feeds it into the pumping mechanism.

hose

A concrete delivery hose, used at the end of a boom or as part of a ground line.

iron fist

A type of hydraulic shut off valve.

lazy bend

A synonym for long radius bend.

legs

A slang term for the pumps outriggers

light weight concrete

A concrete mix that uses light weight aggregate to reduce the weight of any given volume of concrete. Normal weight concrete has a typical density of 2300 kgs/m³. Light weight concrete will typically have a density of 1910 – 2000 kgs/m³. The most common lightweight aggregate used is Lytag and so is often called Lytag concrete or simply Lytag. It is possible to pump lightweight concrete but attention has to be paid the the consistency of the mix as the aggregates absorbs water under pressure so the mix has a tendency to stiffen when being pumped.

line pump

A mobile concrete pump without a boom – the concrete being pumped through a ground line.

linesman

A man employed to work with a concrete delivery pipeline. A linesman might be expected to help build the pipeline, strip it back during the pour and strip it out and clean it at the end of the day.

long radius bend

A large bend typically with a 1 metre radius.

lytag

Lytag is a brand of lightweight aggregate used to make light weight concrete. It is made from fly ash, a waste product created at coal-fired power stations. The fly ash is pelletised and heated to around 1100°C resulting in a hard, honeycombed structure of interconnecting voids within the aggregate.

manual boom

A small stationary placing boom used to distribute and place concrete into a slab.

mobile pump

A concrete pump that is mounted on a truck. The vast majority of mobile pumps are equipped with a placing boom to distribute and place the concrete. Mobile pumps without booms are called line pumps.

normal weight concrete

Concrete made with normal weight aggregates: gravels, crushed rocks, marine aggregates etc and having a typical density of 2300 kgs/m³.

off-the-back

A pump job where the boom is not used, rather a pipeline is taken from the pump outlet at the back of the hopper.

OSS

The Putzmeister system for restricting the slew of the boom that allows the pump to be short-rigged safely and thus fit into a smaller space. DO NOT SHORT-RIG WITHOUT AN OSS OR SIMILAR SYTEM.

outrigger pads

Pads that are placed under the foot of the outriggers to spread the load exerted by the pump onto the ground. Each pump comes equipped with outrigger pads but, if the ground is poor, oversized pads may need to be deployed.

outriggers

Support structures for the pump that are generally extended and lowered to give stability to the pump when using the boom. The outriggers should be deployed as per the manufacturer's guidelines. This usually means being fully extended but some pumps, those fitted with a boom interlock that limits the slew of the boom, can work the boom on one side of the pump and short rig on the other side.

pig

A moulded rubber device used for cleaning out long pipelines especially when cleaning out with water.

pipeline

A run of concrete delivery pipes, usually ending with end placing hoses, to distribute concrete from the pump to the structure being built.

pipeline job

A contract where it is not possible to place directly from the end placing hose at the end of the boom. The concrete is placed via ground line. The ground line may be connected to the pump at the hopper outlet or may be connected at the end of the boom. PLEASE NOTE: if the pipeline is connected to the end of the boom it MUST be fully supported and should not add to the loading on the boom.



An off the back job with 200m of pipeline

placing hose

A steel reinforced hose used to distribute concrete at the end of a boom or static line.

polypropylene fibres

A type of fibre added to fresh wet concrete to modify the properties of the hardened concrete.

pump mix

A mix of concrete designed to be pumped. It generally has more cementitious material and more fines than a standard mix.

Putzmeister

A major concrete pump manufacturer, based in Germany but now Chinese owned.

radio remote control

A remote control device that does not require the control box to be connected via a cable. There is a radio transmitter in the control box and a receiver on the pump.

reducer

A pipe used to reduce from one size pipeline to another. The most common reducer is a 5-4 reducer that allows a reduction from 125mm to 100mm pipeline.



1m long 125 – 100mm reducer

remixer

A synonym for agitator.

remote control

A control for the pump and boom that can be operated away from the machine. Modern pumps are fitted with radio remote controls and a cable remote control for occasions when the radio remote control cannot be used.

riser

A vertical pipeline built to pump concrete to a higher level.

rubber

A slang term for an end placing hose.

safety grille

A grille on the hopper that catches oversized material and prevents it from entering the pumping mechanism. It has an interlock that shuts off the pump when it is opened to prevent the possibility of the re-mixer or pump valve causing injury whilst the pump is being cleaned / being repaired.

safety pin

A pin used to lock a coupling closed to stop it from springing open accidentally.

Schwing

A major concrete pump manufacturer, based in Germany but now Chinese owned.

screed pump

A piece of construction equipment used to pump floor screed from one position on a construction site to another. There are two main types of screed pumps – a pneumatic conveyor for semi-dry, sand and cement screed and a worm and stator pump used to pump flowing floor screed.

seal

The part that is used in a coupling to seal the joint. It is important to use a seal in at every joint to prevent grout leaking at the joint.

short-rig

Deploy the pump outriggers not fully extended. This must not be done except in accordance with the manufacturer's recommendations when deploying the boom interlock to limit the range of slew.

shotcrete

A system for spraying concrete where dry material is conveyed through a pipeline and water and compressed air introduced at the nozzle. Shotcrete is less popular now due to the dust particles that are released into the atmosphere that could cause a health hazard to the nozzleman.

shut off valve

A valve installed into a concrete delivery pipeline to prevent the concrete from falling back under gravity and through a vertical line. Mostly used to isolate the pump when washing out the pipeline.

slew restrictor

A device that sets limits to the slewing angle of a boom thus preventing it from over-sailing an area of danger, for instance a railway line.

slow bend

Synonym for long radius bend.

spider boom

A manual boom; small stationary placing boom used to distribute and place concrete into a slab.

sponge ball

A ball made from a rubber compound that is forced through a pipeline to clean it out. Sponge balls come in a variety of sizes and density of material (soft, medium and hard). The sponge ball

selected will be slightly oversized to scour the pipeline clean.

sprayed concrete

Pumped concrete that is forced out of the end of the pipeline by compressed air through a nozzle and projected onto a structure. It is a technique widely used to form irregular or curved shapes for example in tunnels, skateparks etc.



Concrete spraying using M20 pump

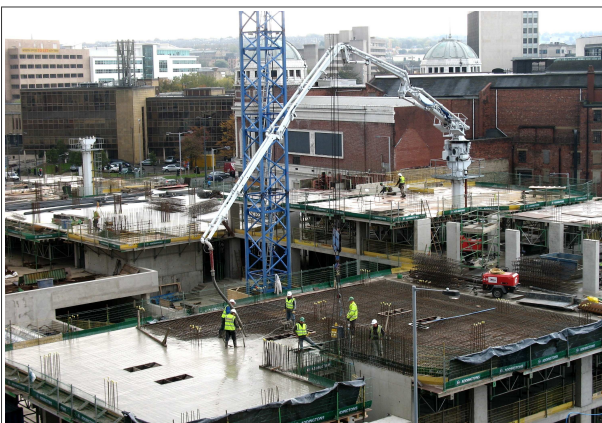
static line

A term used for a concrete delivery pipeline that is laid on the ground / reinforcing steel.

stationary placing boom

A hydraulic placing boom used in conjunction with a static concrete pump to place concrete on a high rise building and occasionally on large civil engineering structures. They are usually mounted on a steel column and can be free standing or climbed through a building as it progresses.

Stationary placing booms are popular on sites where space and crane hook time is at a premium.



Stationary placing boom SPB30

static pump

A concrete pump mounted on a skid or wheeled chassis, powered by a Diesel engine or electric motor. Static pumps are used on medium to long term contracts; they are set up in a pumping station and left in position the duration of the concreting programme. Static pumps do not have

booms but the pipeline from them can be connected to manual booms or stationary placing booms.

steel

A slang term for a rigid steel pipe used in a pipeline.

steel fibres

A type of fibre added to fresh wet concrete to modify the properties of the hardened concrete. Steel fibres come in various lengths and weights and can be onerous to pump especially in high doses. They increase the wear on the pump and often attract a surcharge from pump hire companies.

ticket

A slang term for a CPCS card.

traffic marshaller

A site operative responsible for controlling traffic on a building site including backing the ready-mixed concrete truck onto the hopper of the pump.

trailer pump

A trailer pump is a static pump mounted on a wheeled trailer so that it can be moved about on site. Note that only the very smallest, lightest trailer pumps have trailers suitable to allow the pump to be towed to and from site.



Static / trailerpump BSA2109D

wash out adapter

A stub pipe with an air inlet port and an air vent port used to introduce compressed air into a concrete pumping pipeline to force a sponge ball through the line to clean it. The adapter should also include a stop to prevent the sponge ball being forced back under pressure and thus sealing the vent port. Also known as a blow out adapter.

washout box

A box that is made to contain the waste from a concrete pump when it is washed out at the end of a pour. It is typically 4 pieces of scaffold board approx 2m long, placed on their ends and nailed together then lined with polythene sheeting.