



KOBUS SERVICES LTD

Product Specification

KOBUS Pipe Puller KPP300



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Introduction

The Kobus Pipe Puller KPP300 is designed to replace water communication and supply pipes with a new PE pipe in a single operation. The product was pioneered by Kobus as a trenchless technique to minimise the need for open cut trenching and has since become a popular method of replacing service pipes by water companies and contractors.

The benefits of the technology are several and target some of the key Regulator performance metrics:-

Utility Strikes

Given the congestion of multiple utilities underground – gas, water, power cable, telecoms, etc – there is increasing sensitivity to damage of these utilities due to the potential safety concerns, loss of services and significant costs to rectify any strike damage. The Pipe Puller will minimise the potential of damaging other utilities in the vicinity as the new service is installed along the same bore pathway created by removing the old pipe. By contrast, moling is non-directional and increases the risk of hitting another utility if it veers off its' intended course.



Leakage



Water companies are under increasing pressure from Ofwat to manage leakage with AMP7 targets of 15% reduction in leakage creating the need for the industry to embrace alternative methods. Leaks on communication and supply pipes can be an indication that the service pipe is nearing end of life and repairs become uneconomical. The Pipe Puller can quickly and effectively replace the pipe with a new asset virtually eliminating the risk of further repairs.

Water Quality

Water Quality is strictly controlled from the water treatment processing plant, however, water quality can be degraded by the pipe distribution system. Lead contamination from lead pipes is of particular concern due to the known detrimental health risks, especially for young or vulnerable people. Water companies are mandated to take appropriate action if water quality is found to be above threshold levels. In the case of contamination from old lead pipes, water companies may have to replace the lead pipe with a new PE pipe. The Kobus Pipe Puller is the ideal trenchless solution for this replacement. Not only does it replace the old pipe with minimal disruption but it also removes the decommissioned pipe from the ground instead of leaving it as environmentally damaging contaminated waste.



Disruption



Working on service pipes is disruptive. Excavations cause local damage to property and traffic disruption is often unavoidable. Ofwat is challenging the industry to minimise this disruption and customer satisfaction is the measure being employed to monitor success. The Customer Experience Measure (C-MeX) surveys customers to gauge opinion on how the water companies are performing. The Kobus method of replacing pipes minimises excavations by requiring only two small pits, reducing potential traffic disruption and damage to homeowners' property.



The Product

Basic Machine

The KPP300 Pipe Puller is modular to allow for manual handling and ease of access in restricted areas. The basic machine (KS.01001.0300.00) as quoted comprises the following:

- 1 x hydraulic power pack
- 1 x foot section
- 1 x winch section
- 1 x top section
- 1 x spool
- 1 x spool safety cover
- 1 x pair of support legs

Accessories

Additionally, various accessories are required to operate with the Puller. These are supplied in a useful tool box to keep everything in one place and easy to transport around site. The tool box of accessories is quoted separately from the basic machine and comprises:



Item	Description	Qty
KS.03016.0300.00	Toolbox KPP300 Kit comprising: Towing Head 20mm Towing Head 25mm Towing Head 32mm Spring Loaded Head Ø7mm Spring Loaded Head Ø10mm Loop Shackles Ø5 Extended Diagonal Cutting Nippers Fixed Wrench M9 Expander 29mm ID x 45mm OD Expander 36mm ID x 45mm OD Kobite Dispensing Gun complete kit K-Line Drawstring 1.3mm (MBL 270) Yellow Electrical tape Liquid Soap	 1 2 1 3 3 25 1 1 10 10 1 1 1 1



Training

Kobus offers a comprehensive 3 day training course for operators to ensure the equipment is used safely and correctly. The training covers the risk assessment and essential health and safety issues of the system along with an introduction the component parts of the system, and basic operating method, plus up to 3 live pipe replacements. Training is quoted separately.

Training Certificates are issued to successful trainees who can demonstrate competency in operating the equipment safely.



The Method

The Kobus Pipe Puller is a powerful hydraulic winch specifically designed for the application of replacing service pipes. Excavations are kept to a minimum. Typically, the Puller requires a pit 400-



500mm square and depth just below the existing pipe. At the other end, the pit only needs to be large enough to disconnect/cut the old pipe and feed in the new PE pipe.

The system utilises a specially constructed steel pulling cable assembled with our patented pulling ferrule. The single use cable is inserted through the pipe being replaced; the pulling ferrule is engaged onto one end of the pipe and the other end of the cable is wound onto the spool of the Pipe Puller.

The new PE pipe is connected to the pulling ferrule using a towing head and shackle.

Two hydraulic motors on the winch section of the Puller are driven by a separate hydraulic power pack (provided as part of the Pipe Puller package). The motors in turn drive the gears and pinions which engage onto the spool. The hydraulic power pack is supplied with a forward and reverse direction and a manual control lever.

As the spool rotates it winds up the pulling cable and pulls the old pipe out of the ground. At the same time as the old pipe is removed, the new PE pipe is towed through the bore hole created by the old pipe.



Applications

The Kobus Pipe Puller is capable of replacing lead, black poly, copper and PE pipes up to 1¹/₄" internal bore or 32mm outside diameter. 20, 25 and 32mm PE pipe can be installed and upsizing of pipe diameter is possible using different sized expanders. Lengths of up to 20-25 metres can be replaced depending on ground and existing pipe condition.

Previous repairs or connectors can be pulled out as part of the process.

The KPP300 model Pipe Puller is suitable for most types of service pipe replacement such as road crossings and supply pipes on homeowners' side. The modular system allows manual handling and ease of access in restricted areas (such as on the homeowners' property). The Puller is particularly



beneficial when traditional moling is impractical due to the presence of other utilities in the vicinity or poor ground conditions. In these situations, the Puller offers an alternative to open cut trenching.



Maintenance

The KPP300 is designed to be very low maintenance. Regular cleaning is recommended and servicing every 24 months or 500 pulls.

Warranty

All our new Kobus Pipe Pullers are offered with a 12 month manufacturers' warranty covering faulty parts and/or workmanship. Full warranty details are available on request.



FAQs

Do I need to use a 'resin'?

When replacing lead pipe, particularly ½" internal bore, the Pipe Puller system uses a specially formulated bonding compound/resin called 'Kobite'. The Kobite is a 2-pack system which is fed into the annulus between the pipe inner wall and the pulling cable. The bonding compound hardens with the catalyst in about 20 minutes, and creates a composite rope of pulling cable and pipe. This reduces the risk of the soft lead pipe 'balling up' as the pull starts and spreads the pulling load along more of the length of pipe, increasing the success rate. Kobite is only required on lead pipe replacements.

What ground conditions can the Pipe Puller work in?

The Pipe Puller works in most ground conditions such as clay, sandstone, loam, chalk, rocky. Individual site specific ground conditions and pipe condition will have an effect on the success of replacing the pipe.

What is the maximum length of pipe that can be pulled?

The Pipe Puller has replaced service pipes up to 25 metres in length. For lengths greater than 25m, intermediate pits can be used to split the total length into two or more shorter pulls. The length is dictated by ground conditions and pipe condition.

Can galvanised steel be pulled?

The Kobus Pipe Puller KPP300 was not designed for galvanised steel pipes. However, our KPP400 Pipe Puller which mounts on compact excavators was specifically designed for galvanised steel pipe up to 1 1/4" diameter. Contact Kobus for more information.

Is it difficult to insert the pulling cable through the pipe?

Depending on the pipe condition, some pipes are harder to insert the pulling cable through. Kobus has developed some techniques to assist this process, such as using our low friction leader cable with a spring loaded head. This allows the operator to quickly identify restrictions within the pipe that may be problematic before inserting the pulling cable. Also, there is our K-Line drawstring which is attached to the front end of the pulling cable to 'pull' the cable through the pipe at the same time it is pushed from the other end.

Can the Puller deal with bends in the pipe?



Small bends do not affect the operation of the Puller. Sharp bends and 90° bends or more cannot be pulled. Check general location of the pipe with a CAT & Genny before starting work to identify any potential large changes in direction. Any elbows or tees must be removed before attempting a pull.

What if there is a connector, old stoptap or other restriction in the pipe?

The Puller will pull out old connectors with the pipe provided the pulling cable can still be inserted past the connector. Old stoptaps and other restrictions can be identified (using the leader cable method described above) and removed by spot digging on the area. The pulling cable is then fed through the pipe, bridges the gap created by removing the restriction and the pull can be done in one operation.

Can the Puller be used on pipes going under tree roots?

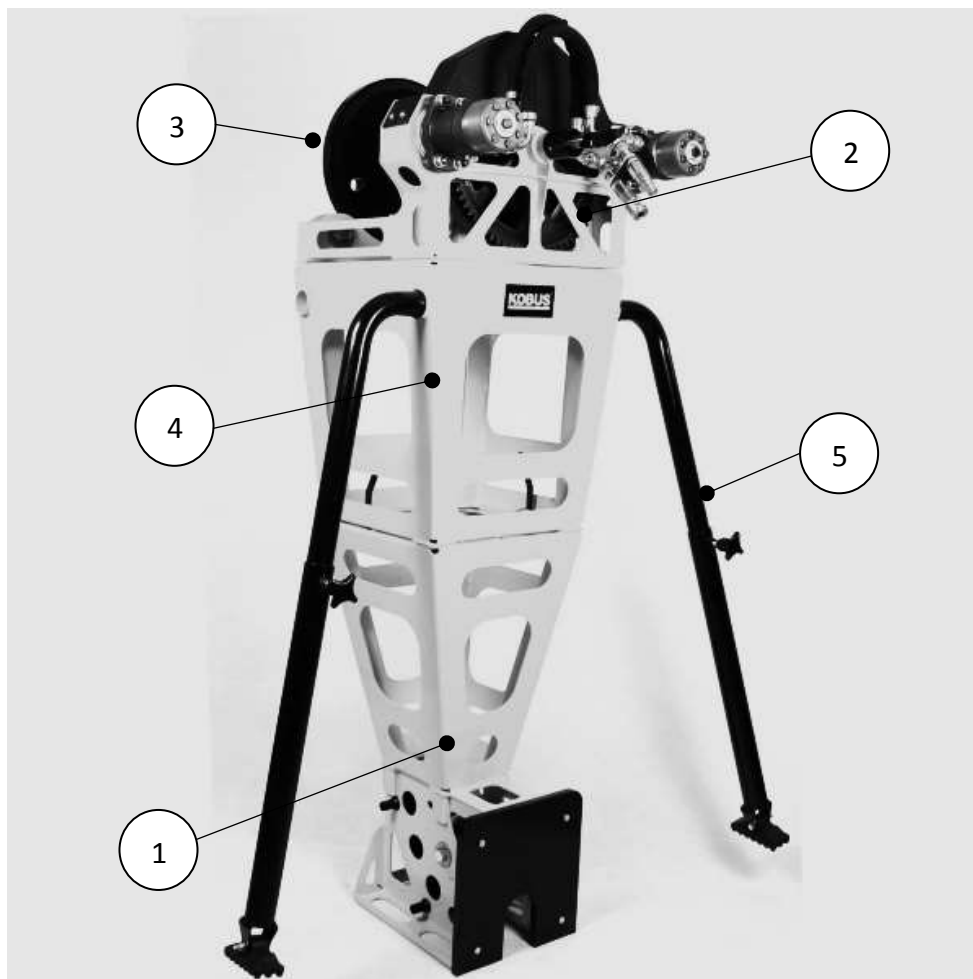
In most cases, the Puller is an excellent method to avoid damaging the roots when replacing a pipe that goes directly under a tree. Some pipes can be sufficiently embedded in the root structure, particularly of older more dense roots, that pulling is not possible.

Can the old pipe be recovered for scrap value?

One of the benefits of the Pipe Puller is that it removes the old decommissioned pipe from the ground instead of leaving in situ as environmental waste which could contaminate the surrounding ground or water table over a period of time. If the old pipe is copper or lead then it has a scrap value which can be recovered.



Key Components



Item No.	Description	Quantity
1	Bottom Pylon Section	1
2	Winch Assembly	1
3	Spool	1
4	Pylon Upper Section	1
5	Support Leg Assembly	2
6	Safety Cover (not shown)	1
7	Hydraulic Power Pack (not shown)	1

Technical Specifications

Kobus Pipe Puller KPP300

Dimensions and Weights

Item	Length (mm)	Width (mm)	Height (mm)	Qty Supplied	Weight (kg)	Lifting
Bottom Section inc Roller Assembly	440	380	800	1	42	min 2 man
Top Section	460	460	560	1	20	
Winch Section exc Safety Cover & Spool	700	570	420	1	52	min 2 man
Legs (each)	830	280	80	1	4.5	
One Piece Spool (exc pipe/cable)*	355	355	350	1	18	
Spool Safety Cover (Steel version)	360	460	460	1	6.7	
Hydraulic Power Pack	820	540	620	1	66	min 2 man

Dimensions are for guidance only

* Note: Fully loaded spool with extracted pipe and pulling cable may require 2 man handling

Pipe Sizes

Pipe Material	Size	Max Length*	Recommended Pulling Cable
Lead	$\frac{3}{8}$ " internal bore	-	-
	$\frac{1}{2}$ " internal bore	15m	8mm
	$\frac{3}{4}$ " internal bore	25m	10mm
	1" internal bore	25m	10mm
	1 $\frac{1}{4}$ " internal bore	25m	10mm
Copper	15mm	15m	8mm
	22mm	25m	10mm

* Max length may vary depending on old pipe condition and ground conditions

New Replacement Pipe

New Pipe Material	Size	Recommended Expander*
Polyethylene (PE)	20mm	36mm OD
	25mm	36mm OD
	32mm	45mm OD

* Note: Internal Diameter (ID) of expander will depend on external diameter of pipe being removed



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