A. Nobel & Zn.
— FILTRATION & SEPARATION

Sampling Solutions

Fuel and Lube Oil sampling Equipment.

Convenient,
Representative,
Approved.

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Oil Samples are used to obtain a clear indication of the operating status of your machinery. One of the most important aspects of any oil analysis program is the sampling methods and equipment used. Often these are weak links that quickly compromise the program.

Obtaining a representative oil sample is one of the most important factors of a scheduled oil analysis program. Representative, uncontaminated oil samples are required for both regulatory and commercial purposes.

A high standard oil sample will contain an accurate representation of the contaminants, additives, oxidation, particulates and wear condition of plant and equipment. If a sample does not represent the true condition of the oil and component at the time of sampling, the reliability of both the test result and it's interpretation is affected.

Kittiwake's sampling solutions provide you with everything you need to easily gather an uncontaminated, representative sample of your fuel or lubricating oil, whenever your oil analysis program requires it.

Protect your machinery from potentially critical problems, with regular monitoring of your oil condition.

Fuel Oil Sampling

Fuel oil sampling is an essential element of any bunkering operation.

Representative fuel oil samples are required for both regulatory and commercial purposes. Crucial aspects of the sampling process include taking the sample, the sampling location and witnessing the process.

The importance of a suitably drawn and witnessed representative fuel oil sample cannot be over-emphasised. It forms the basis of all discussion, debate or dispute resolution relating to the bunkering.

Drip Type Bunker Samplers

The most common and economic means of obtaining a representative sample is by using a drip type Bunker Sampler. In back to back tests performed by a major fuel testing laboratory over an extended period, samples obtained by drip samplers were identical to those from more expensive automatic fuel samplers.

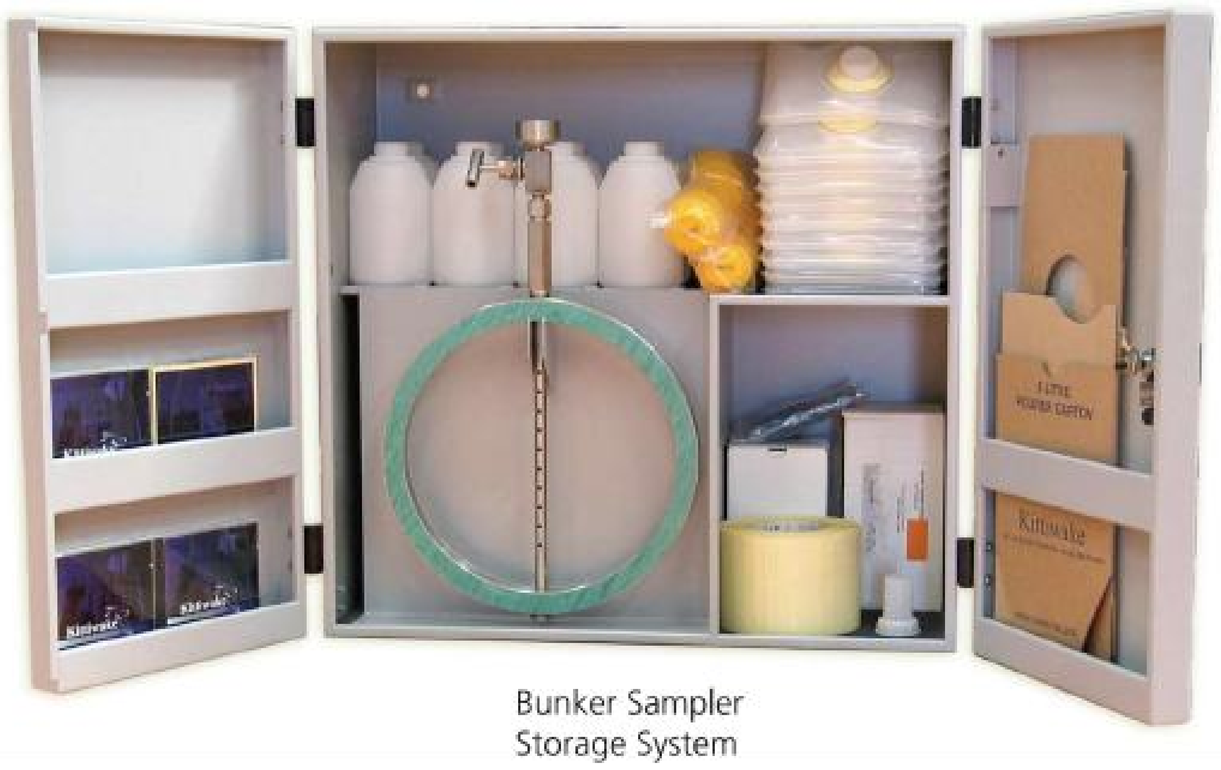
- Lloyds Register approved and manufactured under strict ISO 9001:2000 quality assurance standards.
- IMO MARPOL 73/78 Annex VI compliant - helps you stay within the legal requirements for bunker sampling.
- Lightweight and very easy to install - obtaining a representative sample is quick and easy.
- Bunker Sampler Joint Rings included - all the equipment you need for correct installation.
- Even ex-stock bunker sampler sizes available from Kittiwake's extensive range of equipment.

Material:	Stainless Steel 304/316
Nominal Flange Thickness:	25 / 26 mm
Total Thickness: (including gaskets)	31 / 32 mm

Bunker Sampler Storage System (FG-K16091-KW)

Certified by Germanischer Lloyd, the Kittiwake Bunker Sample Storage System is a completely self-contained unit providing everything needed to comply with the collection, retention and storage of bunker fuel oil samples in accordance with IMO MARPOL regulations.

- All equipment is contained in a robust, metal case that is fully lockable for safe and secure sample storage.
- Certified by Germanischer Lloyd, providing everything you need to ensure that your fuel samples are compliant with IMO MARPOL 73/78 Annex VI regulations.
- Complete with log book to record your sample details, plus training CDs and full instructions on bunker sampling and the latest regulations.
- Replacement consumables and a full range of bunker samples are easily available at short notice from Kittiwake and can be shipped to the destination of your choice.



Bunker Sampler
Storage System

Sampling Accessories

Fuel Sampler - The fuel sampler is designed to fit into an existing fuel supply line and can be removed with the line full. Supplied in a single size, it can be modified to fit fuel delivery lines. between 3 and 12 Inches.

Cubitainers - Drip samplers use disposable 'cubitainers'. These hold the oil sample before mixing and transfer to the sample bottles and keep out all external contamination.

Valve Lock - Some authorities, for example the Port of Singapore, require that the sample flow rate is fixed throughout the bunkering period. The Valve Lock device can be fitted to the sampler to ensure the setting remains stable.

Converter Bobbin - The Converter Bobbin is a low cost device designed to allow DNVPS Samplers to use Kittiwake Cubitainers.

Sampler Gauge - Rapid flow of fuel in bunker lines can result in unusual pressure conditions. A gauge is available for monitoring this to prevent the sample being drawn back into the line.

Elbow Kits For Alternative Positions - It is possible to position the sampler tube at an angle to the vertical. Elbow kits are designed to keep the cubitainer bag hanging vertically as either a 45 or 90 degree Elbow.

Ordering Information

Part Number	Description
FG-K11079-WA	Fuel Sampler (x 1 off)
FG-K3-201-KW	Cubitainers (x 24 off)
FG-K1-139-KW	Valve Lock (x 1 off)
FG-K3-021-KW	Convertor Bobbin (x 1 off)
FG-K11168-KW	Sampler Gauge (x 1 off)
FG-K13588-KW	Elbow Kit for 45 degree Elbow
FG-K13589-KW	Elbow Kit for 90 degree Elbow
FG-K16692-KW	Bunker Sampler Plug and Lanyard

Fuel Oil Sample Bottles and Labels

Kittiwake produce 750ml HDPE fuel oil sample bottle packs and mailer kits complete with numbered tamper evident caps, labels and mailing cartons*.

Kittiwake sample bottles have been tested and approved for transportation of fuel oil samples by air freight or courier service. All consumables are available either as convenient individual packs, or supplied in bulk to refineries and bunker barge operations.

*Mailer cartons only included in FG-K3-210-KW

Sample Bottle Packs and Extra Security Seals

Part Number	Description	Quantity
FG-K3-210-KW	750ml Sample Bottle and Mailer Kit	40
FG-K3-211-KW	750ml Sample Bottle Pack	70
FG-K17111-KW	Bottle Shoulder and Valve Lock Seals	100

Labels

Part Number	Description	Quantity
FG-K26280-KW	IMO MARPOL Approved Fuel Sample Label	1000
FG-K26783-KW	Standard Fuel Sample Label	1000
FG-K17103-KW	Clear Adhesive Marpol Over Label	1000

Sampling Lubricating Oil

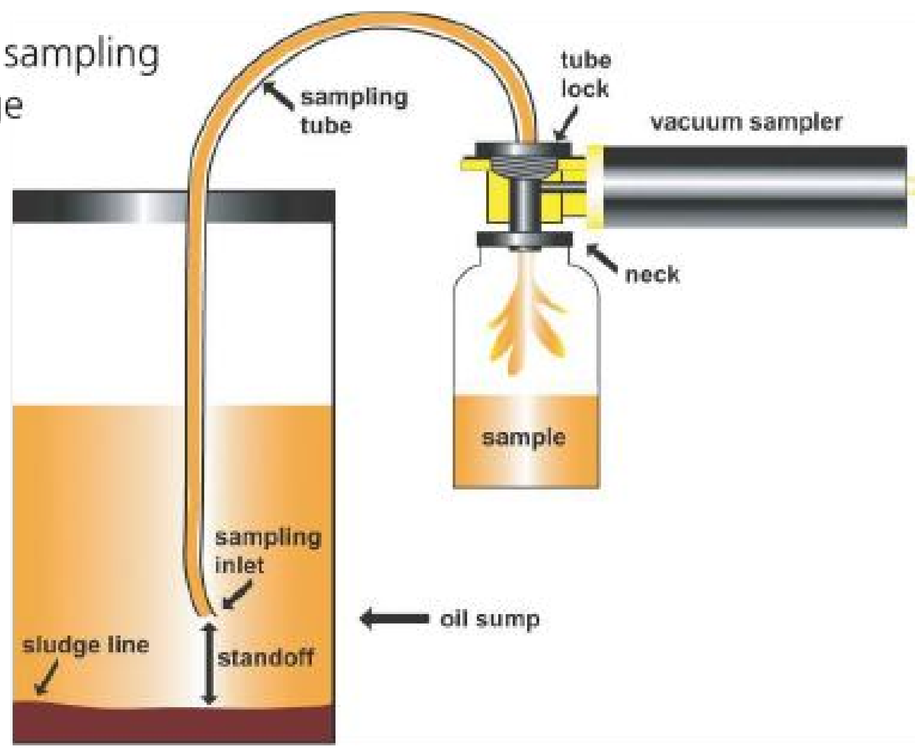
Effective predictive and preventative maintenance programs rely on scheduled oil sampling and analysis programs to provide an accurate indication of equipment and lubricant condition.

Monitoring, control and management of the operating condition of lubricating oils in equipment such as marine diesel engines, generators, turbines and gearboxes is an essential part of the day to day maintenance routines employed by Plant and Facilities Managers around the world.

Sample Extraction Pumps

For simple and effective lube oil sampling from machine sumps and storage tanks, Kittiwake supply durable, easy to use and versatile extraction pumps.

These hand operated vacuum pumps can be used for 28 mm and 32 mm screw neck sample bottles. The 28 mm sample pump is designed to fit Kittiwake 60 ml sample bottles and the 32 mm plastic pump is designed to fit 100 ml bottle and the 32 mm metal pump is designed to fit the 750 ml sample bottles.



Ordering Information

Part Number	Description
FG-K11290	28 mm Neck Extraction Pump
FG-K11289	32 mm Neck Extraction Pump (Plastic)
FG-K16991	32 mm Neck Extraction Pump (Metal)

Sample Bottles, Labels and Spares

Sample Bottles - Kittiwake produce a range of HDPE and PET lubricating oil sample bottles. Designed to withstand hot oil under vacuum conditions, supplied in sizes from 60 ml to 750 ml.

Part Number	Volume	Material	Neck (mm)	Quantity
FG-K17123-KW	60 ml	HDPE	28	360
FG-K3-207-KW	100 ml	PET	32	288
FG-K3-211-KW	750 ml	HDPE	32	70

Sample Extraction Tube (LPDE) - Clean LDPE tubing to fit sample extraction pump which can be used with most oil systems. Supplied in 15 meter rolls.

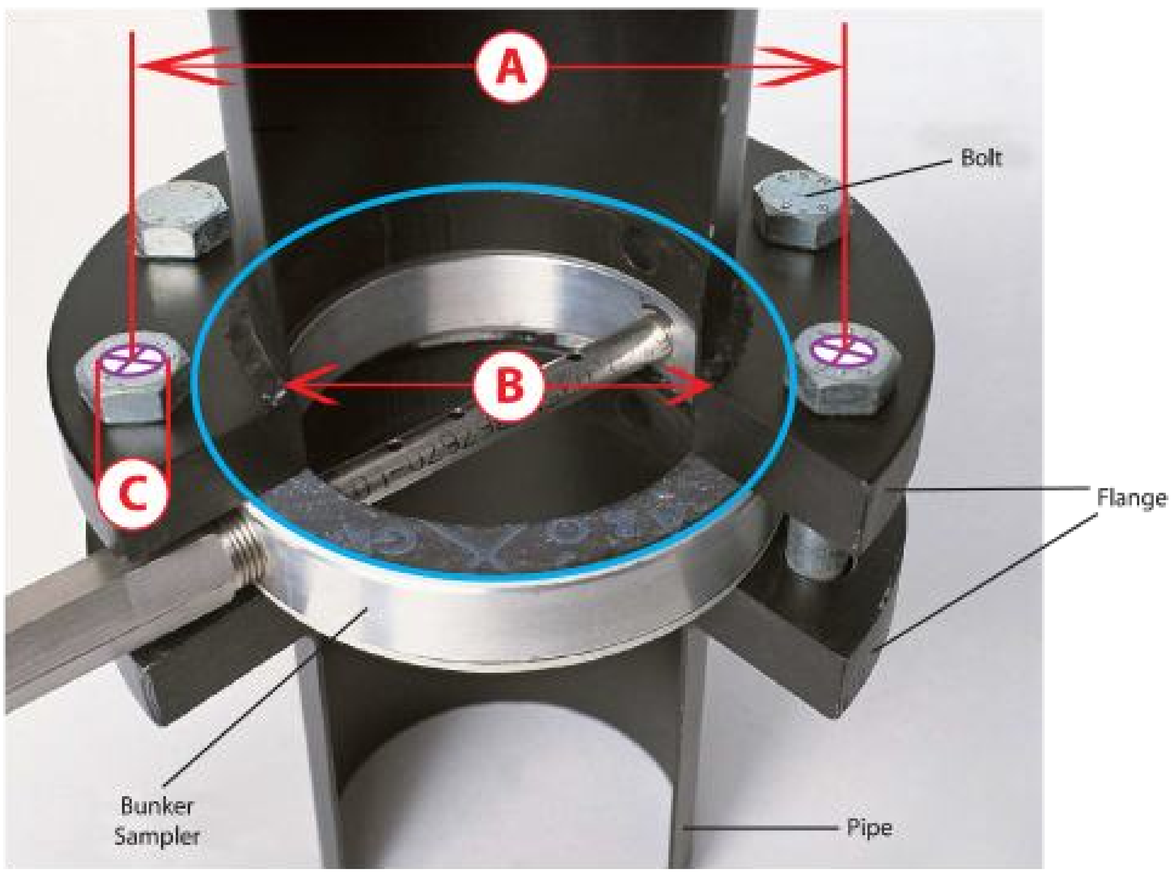
Sample Bottle Labels - Self adhesive, pre-printed labels for fuel or lube oil samples, supplied with custom artwork and text. 1000 per roll.

Clear Over Labels - Clear self adhesive, over labels to protect label and user annotations.

Ordering Information

PL-K10215-KW	Sample Extraction Tube
FG-K14297-KW	Sample Bottle Labels
BI-K26522	Clear Over Labels

Selecting the Correct Size of Drip Type Bunker Sampler



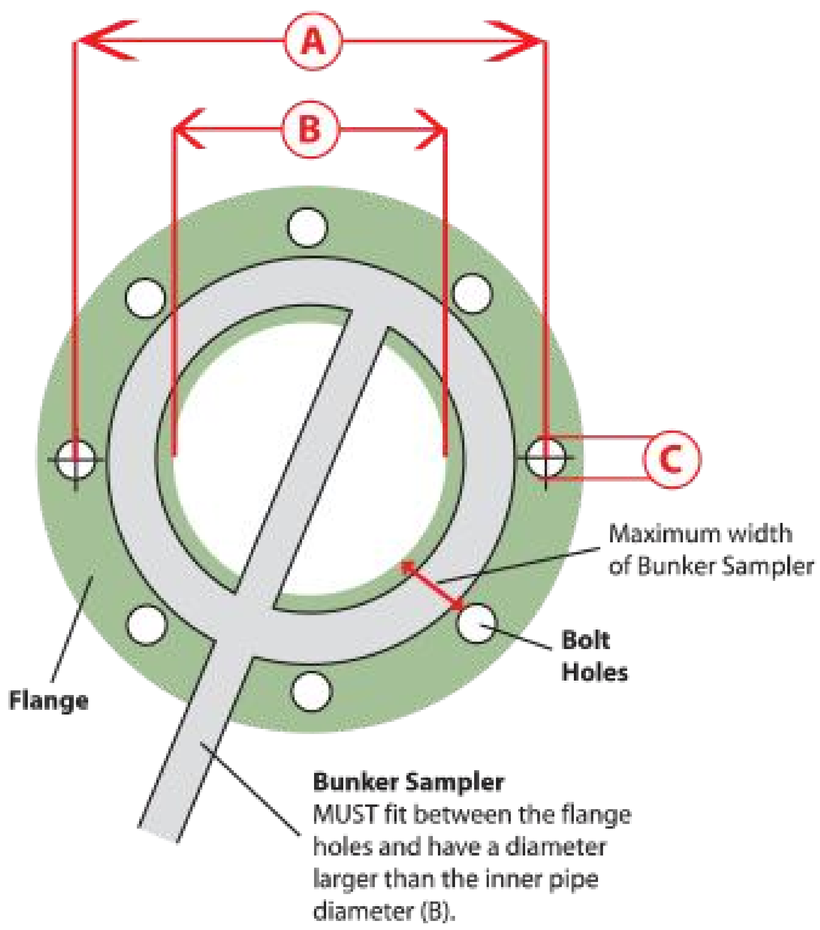
A = Pitch Circle Diameter

B = Nominal Pipe Size

C = Bolt Hole Diameter

Calculation

Pitch Circle Diameter (A) - Bolt Hole Diameter (C) = X
Select the nearest size Bunker Sampler with an outer diameter smaller than X and an inner diameter larger than the Nominal Pipe Size (B).



Example

Pitch Circle Diameter (A) = 290 mm

Bolt Hole Diameter (C) = 23 mm

Nominal Pipe Size (B) = 200 mm

290 (A) - 23 (C) = 267 (X)

Therefore the correct Bunker Sampler would be FG-K1-128-KW (8" Bunker Sampler), which has an outer diameter of 266 mm and an inner diameter of 221 mm. The outer diameter is smaller than X (the space between the flange bolts), yet the inner diameter is larger than the nominal pipe size (B), so that fuel flow is not impeded.

Sampler Sizes

Part Number	Nominal Pipe Size (B)	Inner Diameter	Outer Diameter	Weight	Flange Standard Correlations
FG-K1-122-KW	50 mm / 2"	63 mm	95 mm	3.40 kg	JISB2210 5K, 10K, 16K, BS 4504 PN10, PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-123-KW	75 mm / 3"	86 mm	127 mm	3.90 kg	JISB2210 5K, 10K, 16K, BS 4504 PN16,BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-124-KW	100 mm / 4"	116 mm	157 mm	4.28 kg	BS 4504 PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-125-KW	125 mm / 5"	144 mm	188 mm	4.84 kg	JISB2210 5K, 10K, 16K, BS 4504 PN16, BS10 D, E, ANSI B16.5 150
FG-K1-126-KW	150 mm / 6"	171 mm	216 mm	5.46 kg	JISB2210 5K, 10K, 16K, BS 4504 PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-127-KW	175 mm / 7"	194 mm	241 mm	6.16 kg	JISB2210 5K, 10K
FG-K1-128-KW	200 mm / 8"	221 mm	266 mm	6.48 kg	JISB2210 5K, 10K, 16K, BS 4504 PN10, PN16, BS10 D, E, F, ANSI B16.5 150
FG-K1-129-KW	225 mm / 9"	260 mm	307 mm	6.64 kg	ANSI B16.5 300
FG-K1-130-KW	250 mm / 10"	281 mm	328 mm	7.08 kg	JISB2210 10K, 16K, BS 4504 PN10, PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-131-KW	275 mm / 11"	319 mm	361mm	7.2 kg	JISB2210 10K, BS 4504 PN10, PN16, BS10 D, E
FG-K1-132-KW	300 mm / 12"	340 mm	401 mm	7.5 kg	JISB2210 16K, BS10 F, ANSI B16.5 150, 300 BS 4504 PN10, PN16, BS10 D, E, F,
FG-K1-133-KW	350 mm / 14"	375 mm	420 mm	7.96 kg	ANSI B16.5 150, 300