



A complete range of high performance process chemistry equipment to meet the needs of laboratory and small scale manufacture.

PTFE used in the manufacture of COWIE® Laboratory Products is pure, virgin material, which conforms to FDA and USP Class VI requirements.

- **Chemically inert**
- **Reduce contamination and simplify cleaning**
- **Non-scratch**
- **Reduce breakages**
- **Improved safety**

We offer a complete custom manufacturing service for PTFE Reactor Lids, Fittings and Accessories to meet your exact requirements.

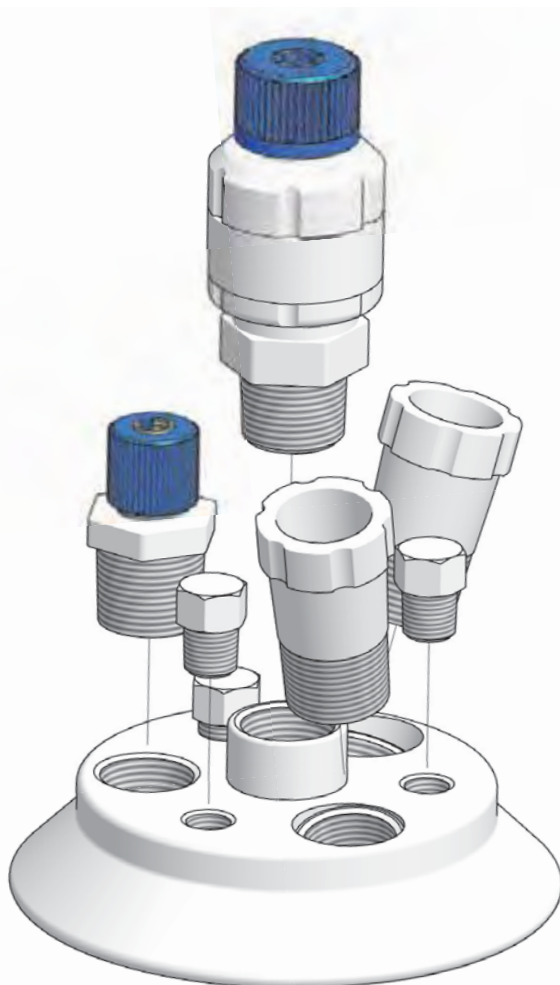
REACTOR LID SYSTEM

Many of today's process chemistry, pharmaceutical and biotech laboratories and manufacturing units face an increasing demand to use equipment which is **Pure, Chemically Resistant, Cleanable** and **Durable**.

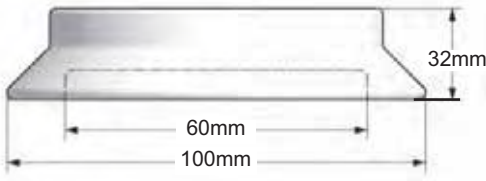
The COWIE® Reactor Lid System is designed to meet these demands and provide a **versatile** and **cost effective** means for the assembly of a whole range of equipment in flanged reactors and similar vessels and offers these unique features -

- Screw-in assembly of fittings to give flexibility, versatility and significant cost savings.
- All fittings are interchangeable for the same thread sizes.
- Can accommodate all usual ancillary equipment, condensers, probes, etc.
- Improved durability and safety compared to conventional glass lids.
- High mechanical strength to support large probes and other equipment.
- Improved thermal insulation.
- Reduced condensation.

Standard Reactor Lids fit vessels with 60, 100, 150 and 200mm Duran® type flanges. Additionally we manufacture custom lids to meet your exact requirements including lids manufactured from TFM, Glass Filled PTFE and PTFE Laminates - see page 44 for further details.



60mm PRE-ASSEMBLED REACTOR LIDS



Pre-assembled Reactor Lids to fit 60mm ID Duran® type flanges.

Taper Joints are removable and interchangeable. For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.



Ref. PC715.060.001

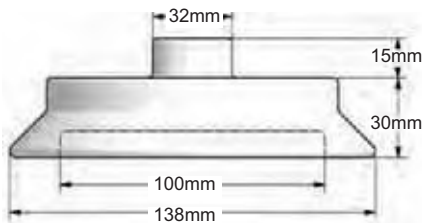
Base	Type	Taper Joint	Port Size
Centre Port	Vertical	24/-	1/2" NPT
Side Port 1	10°x10° Compound Angle	14/-	1/2" NPT
Side Port 2	10°x10° Compound Angle	14/-	1/2" NPT
Side Port 3	10°x10° Compound Angle	14/-	1/2" NPT



Ref. PC715.060.002

Base	Type	Taper Joint	Port Size
Centre Port	Vertical	24/-	1/2" NPT
Side Port 1	10°x10° Compound Angle	19/-	1/2" NPT
Side Port 2	10°x10° Compound Angle	19/-	1/2" NPT
Side Port 3	10°x10° Compound Angle	19/-	1/2" NPT

100mm PRE-ASSEMBLED REACTOR LIDS



Pre-assembled Reactor Lids to fit 100mm ID Duran® type flanges.

Taper Joints are removable and interchangeable. For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.



Ref. PC715.100.001

Base	Type	Taper Joint	Port Size
Centre Port	Vertical	24/-	3/4" NPT
Side Port 1	Vertical	24/-	3/4" NPT
Side Port 2	10° Angle	24/-	3/4" NPT
Side Port 3	10° Angle	19/-	3/4" NPT
Side Port 4	10°x10° Compound Angle	24/-	3/4" NPT



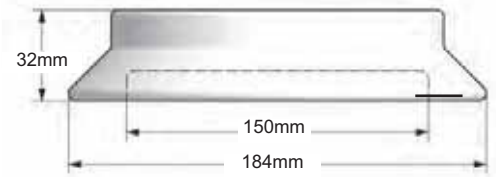
Ref. PC715.100.002

Base	Type	Taper Joint	Port Size
Centre Port	Vertical	29/-	3/4" NPT
Side Port 1	Vertical	24/-	3/4" NPT
Side Port 2	10° Angle	19/-	3/4" NPT
Side Port 3	10° Angle	24/-	3/4" NPT
Side Port 4	10°x10° Compound Angle	29/-	3/4" NPT

150mm PRE-ASSEMBLED REACTOR LIDS

Pre-assembled Reactor Lids to fit 150mm ID Duran® type flanges.

Taper Joints are removable and interchangeable. For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.



Ref. PC715.150.001

Base	Type	Taper Joint	Port Size
Centre Port	Vertical	29/-	1" NPT
Side Port 1	Vertical	24/-	1" NPT
Side Port 2	Vertical	29/-	1" NPT
Side Port 3	10° Angle	45/-	1" NPT
Side Port 4	10°x10° Compound Angle	29/-	1" NPT



Ref. PC715.150.002

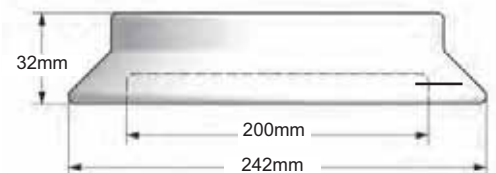
Base	Type	Taper Joint	Port Size
Centre Port	Vertical	34/-	1" NPT
Side Port 1	Vertical	29/-	1" NPT
Side Port 2	Vertical	29/-	1" NPT
Side Port 3	10° Angle	45/-	1" NPT
Side Port 4	10°x10° Compound Angle	29/-	1" NPT



200mm PRE-ASSEMBLED REACTOR LIDS

Pre-assembled Reactor Lids to fit 200mm ID Duran® type flanges.

Taper Joints are removable and interchangeable. For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.



Ref. PC715.200.001

Base	Type	Taper Joint	Port Size
Centre Port	Vertical	34/-	1" NPT
Side Port 1	Vertical	29/-	1" NPT
Side Port 2	Vertical	29/-	1" NPT
Side Port 3	10° Angle	29/-	1" NPT
Side Port 4	10°x10° Compound Angle	29/-	1" NPT
Side Port 5	10° Angle	45/-	1½" NPT



Ref. PC715.200.002

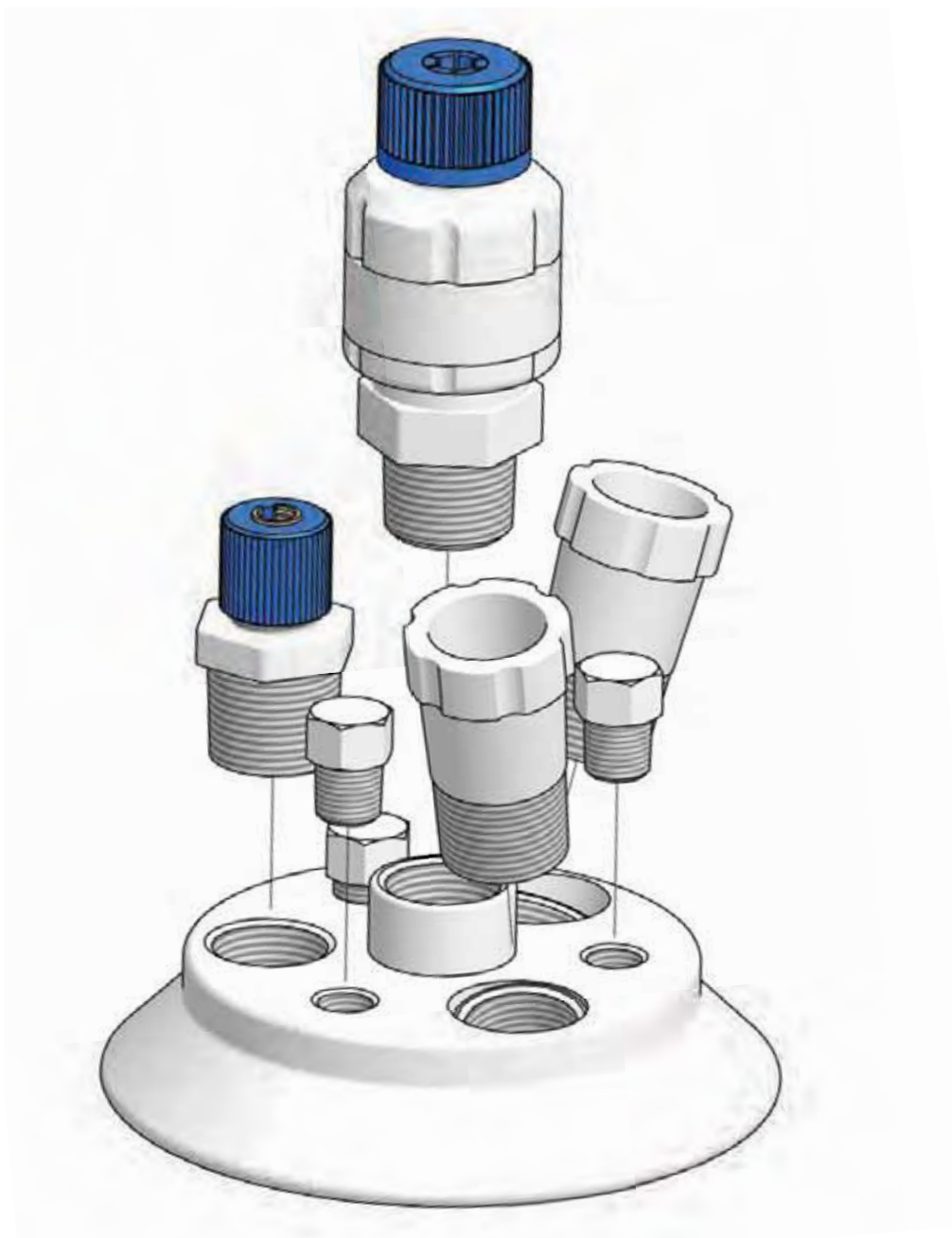
Base	Type	Taper Joint	Port Size
Centre Port	Vertical	45/-	1" NPT
Side Port 1	Vertical	34/-	1" NPT
Side Port 2	Vertical	45/-	1" NPT
Side Port 3	10° Angle	24/-	1" NPT
Side Port 4	10°x10° Compound Angle	29/-	1" NPT
Side Port 5	10° Angle	45/-	1½" NPT



PTFE REACTOR LIDS SELF ASSEMBLY

LID ASSEMBLY

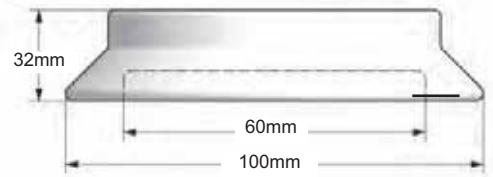
1. Select the basic lid according to the flange size and number of ports required - pages 47 & 48.
2. Select the fittings required from the various options on pages 49 to 52.
3. Screw the fittings into the ports to complete the assembly.
4. Fitting exchange - Unscrew the existing fitting and screw in its place the new fitting. Fittings can be purchased separately.



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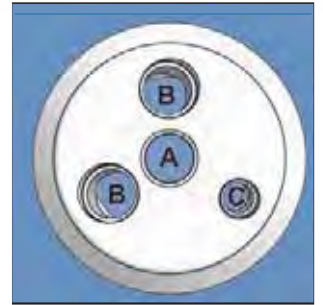
60mm LIDS FOR SELF ASSEMBLY

Reactor Lids in Pure PTFE to fit 60mm ID Schott® type flanges, **supplied without fittings**.
 For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.
 The use of an extension adapter will provide extra space when using multiple ports - see page 52.



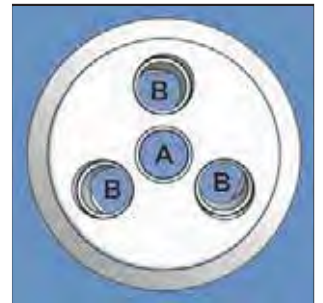
Ref. PC705.060.003

Port	Qty	NPT Thread
A	1	1/2" Vertical Centre Port
B	2	1/2" 10° x 10° Compound Angle
C	1	1/4" Vertical



Ref. PC705.060.004

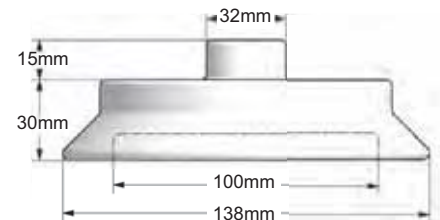
Port	Qty	NPT Thread
A	1	1/2" Vertical Centre Port
B	3	1/2" 10° x 10° Compound Angle



100mm LIDS FOR SELF ASSEMBLY

Reactor Lids in Pure PTFE to fit 100mm ID Schott® type flanges, **supplied without fittings**.

For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.



Ref. PC705.100.002

Port	Qty	NPT Thread
A	1	3/4" Vertical Raised Centre Port
B	2	3/4" Vertical
C	1	1" 10° x 10° Compound Angle
D	3	1/4" Vertical

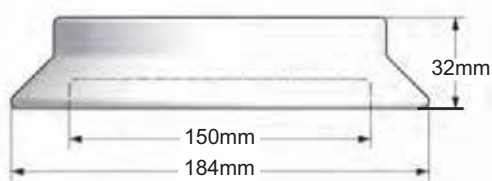


Ref. PC705.100.003

Port	Qty	NPT Thread
A	1	3/4" Vertical Raised Centre Port
B	2	3/4" Vertical
C	2	3/4" 10° Angle
D	2	1/4" Vertical



150mm LIDS FOR SELF ASSEMBLY



Reactor Lids in Pure PTFE to fit 150mm ID Duran® type flanges, **supplied without fittings.**

For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.



Ref. PC705.150.002

Port	Qty	NPT Thread
A	1	1" Vertical Centre Port
B	2	1" Vertical
C	1	1" 10° x 10° Compound Angle
D	3	½" Vertical



Ref. PC705.150.003

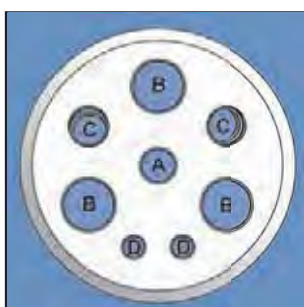
Port	Qty	NPT Thread
A	1	1" Vertical Centre Port
B	3	1" Vertical
C	1	1" 10° x 10° Compound Angle
D	4	½" Vertical

200mm LIDS FOR SELF ASSEMBLY



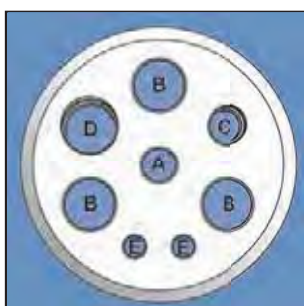
Reactor Lids in Pure PTFE to fit 200mm ID Duran® type flanges, **supplied without fittings.**

For a complete range of Reactor Lid NPT Fittings and Accessories, please see pages 49 - 57.



Ref. PC705.200.002

Port	Qty	NPT Thread
A	1	1" Vertical Centre Port
B	3	1½" Vertical
C	2	1" 10° x 10° Compound Angle
D	2	½" Vertical



Ref. PC705.200.003

Port	Qty	NPT Thread
A	1	1" Vertical Centre Port
B	3	1½" Vertical
C	1	1" 10° Angle
D	1	1½" 10° x 10° Compound Angle
E	2	½" Vertical

STANDARD TAPER JOINTS FOR NPT PORTS

Standard Taper Joint Fittings for use with COWIE® PTFE Reactor Lids.

Suitable for 'A' and 'B' length jointware.

To assemble simply screw the tapered NPT joint into a corresponding NPT port of the reactor lid.

Ref No.	NPT Thread	Cone Taper	Dimensions H x Ø (mm)
PC711.1413	½"	14/-	45 x 21.5
.1913	½"	19/-	50 x 27
.2413	½"	24/-	67 x 34
.2913	½"	29/-	68 x 40
.1919	¾"	19/-	55 x 27
.2419	¾"	24/-	55 x 34
.2919	¾"	29/-	68 x 40
.3419	¾"	34/-	75 x 47
.4519	¾"	45/-	89 x 58
.2425	1"	24/-	60 x 34
.2925	1"	29/-	60 x 40
.3425	1"	34/-	75 x 47
.4525	1"	45/-	90 x 58
.2438	1½"	24/-	55 x 48
.2938	1½"	29/-	55 x 48
.3438	1½"	34/-	55 x 48
.4538	1½"	45/-	80 x 61



BLANKING NUTS FOR NPT PORTS

NPT Blanking Nuts/Plugs are used to seal unused ports.

To assemble simply screw the NPT Blanking Nut into a corresponding NPT port of the reactor lid.

Ref No.	To fit Port Size
PC702.025	¼" NPT
.050	½" NPT
.075	¾" NPT
.100	1" NPT
.150	1½" NPT



Male/Female NPT Extension Adapters optimise the use of NPT entry ports by the provision of additional port sizes and raising the height of the entry port from the lid. This gives even more flexibility of assembly and enables a greater range of fittings to be used - this is especially the case for 60mm lids with multiple ports where the use of an extension adapter allows the use of a central stirrer guide.

NPT Extension Adapters are manufactured in Glass Filled PTFE for improved mechanical strength.

EXTENSION ADAPTERS



Ref No.	Male NPT	Female NPT	Nominal Height (mm)	Fits Max Shaft Ø (mm)
PC713.025050.GF	¼"	½"	40	8.5
.050050.GF	½"	½"	36	14
.050075.GF	½"	¾"	46	14
.075075.GF	¾"	¾"	46	18
.075100.GF	¾"	1"	46	18
.100100.GF	1"	1"	43	24
.100150.GF	1"	1½"	43	24

NPT - COMPRESSION SCREW FITTINGS



Compression Fittings are used with PTFE Reactor Lids to hold items such as temperature probes and sampling tubes securely in place. Compression fittings are manufactured from pure PTFE and include a PEEK olive to give a secure grip.

Compression fittings for standard taper ground glass joints are also available, see page 11 for details.

To define the Reference Number of the required part add the bore size suffix to the required reference.

Example:

A fitting with a 1/4" NPT and 6mm bore is - PC701.025.06

METRIC

Ref No.	NPT Size	Bore Size (mm)									
		3	6	7	8	9	12	14	16	19	25
PC701.025.XX	1/4"	.03	.06								
.050.XX	1/2"		.06	.07	.08	.09	.12	.14			
.075.XX	3/4"				.08		.12	.14	.16	.19	
.100.XX	1"				.08		.12	.14	.16	.19	.25

IMPERIAL

Ref No.	NPT Size	Bore Size (in)								
		1/8"	1/4"	5/16"	1/2"	9/16"	5/8"	3/4"	1"	
PC701.025.XXX	1/4"	.125	.250							
.050.XXX	1/2"		.250	.312	.500	.560				
.075.XXX	3/4"			.312	.500	.560	.625	.750		
.100.XXX	1"				.500	.560	.625	.750	.1000	

REPLACEMENT PARTS



Seal pack includes 1 clamp nut, 1 nut and 1 olive. Olive pack includes 5 replacement olives.

METRIC

Ref No.	Description	Bore Size (mm)									
		3	6	7	8	9	12	14	16	19	25
PC701.XXX	Seal Pack	.003	.006	.007	.008	.009	.012	.014	.016	.019	.025
.XX	Olive (5/pk)	.03	.06	.07	.08	.09	.12	.14	.16	.19	.25

IMPERIAL

Ref No.	Description	Bore Size (in)								
		1/8"	1/4"	5/16"	1/2"	9/16"	5/8"	3/4"	1"	
PC701.XXXX	Seal Pack	.0125	.0250	.0312	.0500	.0560	.0625	.0750	.10100	
.XXX	Olive (5/pk)	.125	.250	.312	.500	.560	.625	.750	.1000	

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PTFE PLUGS

Plugs are used to seal a compression fitting without the need to remove the compression fitting from the reactor lid.



METRIC

Ref No.	Bore Size (mm)										
	3	6	7	8	9	12	14	16	19	25	
PC703.XX	.03	.06	.07	.08	.09	.12	.14	.16	.19	.25	

IMPERIAL

Ref No.	Bore Size (in)								
	1/8"	1/4"	5/16"	1/2"	9/16"	5/8"	3/4"	1"	
PC703.XX	.125	.250	.312	.500	.560	.625	.750	.1000	

BLANKING LIDS

Blanking Lids have no ports and are designed to provide a seal for reaction vessels. Lids fit 60mm, 100mm, 150mm, 200mm Duran® type flanges and have a central handle to facilitate easy handling.

Ref No.	Flange ID (mm)	Ø OD (mm)	Height (mm)
PC706.060	60	100	16
.100	100	138	20
.150	150	184	20
.200	200	242	20



ROD Baffles

Rod Baffles are used to increase agitation and promote thorough mixing. Feature a stainless steel core fully encapsulated in PTFE to give a product which is chemically resistant and non-contaminating. Assemble with corresponding compression fitting.

Ref No.	Shaft Ø (mm)	Shaft L (mm)	Baffle WxDxL (mm)	Total L (mm)
PC708.008.150	8	150	16 x 12 x 150	300
.008.200	8	200	16 x 12 x 150	350
.008.250	8	250	16 x 12 x 150	400
.012.150	12	150	20 x 15 x 200	350
.012.200	12	200	20 x 15 x 200	400
.012.250	12	250	20 x 15 x 200	450
.016.150	16	150	35 x 22 x 250	400
.016.200	16	200	35 x 22 x 250	450
.016.250	16	250	35 x 22 x 250	500



HIGH PERFORMANCE (HP) SHAFT GUIDE WITH NPT THREAD



COWIE® HP Shaft Guides provide an effective guide for use with **GLASS** and **METAL** Shaft Stirrers over a wide range of temperature without shedding particles from the seal whilst maintaining vacuum. The seal is made from a specially formulated PTFE-PEEK composite and this material is also used to provide a moulded-in guide ring to aid alignment of the shaft.

Note: PEEK has reduced chemical resistance compared to PTFE and may be affected by acids, phenols and halogen based compounds.

The maximum recommended speeds are 500rpm continuous or 800rpm intermittent.

HP Shaft Guides have an NPT thread for direct assembly into COWIE® Reactor Lids.

Ref No.	Shaft Ø (mm)	NPT Thread	Height (mm) excl. joint	Hex (mm)
PC710.0819.PK	8	¾"	63	28 AF
.1019.PK	10	¾"	63	28 AF
.0825.PK	8	1"	67	40 AF
.1025.PK	10	1"	67	40 AF
.1225.PK	12	1"	67	40 AF
.1625.PK	16	1"	80	40 AF
.1925.PK	19	1"	80	40 AF

UNIVERSAL STIRRER GUIDE WITH NPT THREAD



COWIE® Universal Stirrer Guides have an NPT Screw Thread Fitting for direct assembly into COWIE® Reactor Lids or NPT Extension Adapters and can be used with PTFE Shaft Stirrers.

Unique features of the design are a permanently loaded Composite PTFE/PEEK Seal and a Glass Ball-Bearing for rigidity and smoothness of operation.

- Exceptional chemical resistance
- Anti-whip and reduced vibration
- Vacuum (5mmHg) and pressure (3-5psi) performance
- No shedding
- Maximum recommended speeds are continuous 500rpm, intermittent 800rpm

Ref No.	Shaft Ø (mm)	NPT Thread	Height (mm) excl. joint	Guide Ø (mm)
PC709.0819	8	¾"	106	44
.1019	10	¾"	106	44
.1219	12	¾"	106	44
.0825	8	1"	110	44
.1025	10	1"	110	44
.1225	12	1"	112	54
.1625	16	1"	112	54

Stirrer Guides and Shaft Guides are also available for Standard Taper Ground Glass Joints - see page 35-36

CUSTOM MANUFACTURE OPTIONS

We manufacture a truly diverse range of Custom Process Chemistry Equipment to meet your specific requirements, including lids manufactured from TFM, Glass Filled PTFE and PTFE Laminates.

Whether you are a User requiring a single item or an Original Equipment Manufacturer (OEM) requiring high volume quantities we offer a service based on over 30 years experience in the manufacture of PTFE products and supported by a Technical Team of chemists and engineers specialising in the properties of PTFE and the use of PTFE products.

Examples of Custom Process Chemistry Equipment

- **Non-Listed Lid sizes and flange types**
Fit all sizes and types of flange.
- **Lids with integral locating rings**
An aid to the location and assembly of Lids in glass reaction vessels.
- **Solid lids with integral fittings**
Fittings are an integral part of the lid and are of especial use in permanent fixtures.
- **Reaction vessels to 10 litre capacity**
Almost any type of reactor with standard flanges or special lid fittings.
- **Baffles**
An aid to improved mixing in stirred reactors.
- **Spargers**
For the efficient distribution of inlet gases into reaction media.
- **Temperature Probes**
A COWIE® speciality and produced with thermocouple and platinum resistance sensors in almost any shape or size.
- **Condensers**
Of interest in systems using HF.
- **Shafts**
Fittings for every description.
- **Filtration units**
In-situ separation of reaction products.
- **Addition funnels**
To aid addition of material.



To receive our offer for custom Reactor Lids and Fittings please send your specification, including quantities required to enquiries@cowie.com.