CLICK&DRY™

SPRAY DRY NOZZLES

HYGIENE | LONG LIFE | HIGH PERFORMANCE | GREATER RETURN

HI-FLO **COMPACT SERIES**

WORLD'S LEADING COMPACT DRYER NOZZLES

ONE SYSTEM, MORE CHOICES

with **PUSH FIT Pressure Bias**~ Concentric Wear Part Retainer as standard



~pat. & other pat. pend.

OFFER VALID FOR ANY DRYER FULLY COMMISSIONED OR UPGRADED TO SELECT CLICK&DRY™ COMPACT SYSTEMS*

Guarantee

1 YEAR WEAR COVER - DISC & SWIRL
2 YEAR NO WEAR PART BREAKAGES*
2 YEAR NO THREAD GALLING
Or we will replace for free * see inside

- *Easiest Cleaning*
- *Lowest Operating Cost*
- *Longest Operational Life*
- *Full Axial Pressure Sealing*
- *Optimized Product Quality*
- *Superior Spray Performance*



'No Seal Groove' Smooth Hygienic Cap Chamber~



Longer Life Wear Parts~ inc. Seal-In-Disc™



Full Axial Sealing~ Without Expensive Backup Rings



OPTIONAL Easy-out Concentric Clasp (CCT)~



OPTIONAL Drip-Pro™ Check Valve~

Spray Nozzle Engineering

www.spraydrynozzle.com

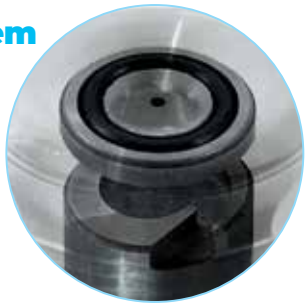
"IT'S ALL ABOUT HYGIENE, QUALITY, PERFORMANCE, PRODUCTIVITY AND REDUCED OPERATING COSTS"

CLICK&DRY™

What's the CLICK&DRY™ difference?

IT'S ALL ABOUT HYGIENE, QUALITY, PERFORMANCE, PRODUCTIVITY AND REDUCED OPERATING COSTS

1 Seal-In-Disc™~ Orifice Disc System

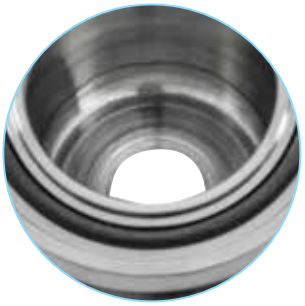


The O-ring is conveniently located in the disc for easier cap cleaning and increased hygiene. This permits a lower outer-face profile to reduce product build up (also known as bearding) whilst delivering the added benefit of greater cap strength at high pressure.

2 New cap profile design

Seal-In-Disc™ allows for a lower cap profile to further reduce product build up (bearding). The design avoids compromising material strength to meet high pressure requirements.

3 'No Seal Groove'~ Smooth Hygienic Cap Chamber~



Smooth internal Cap Chamber is a unique feature of the CLICK&DRY™ series making it easy to clean and most hygienic Cap design on the market.

4a No Groove Cap with Seal-In-Disc™~

This unique arrangement allows traditional disc/swirl metering geometry to remain unchanged, ensuring continuity in powder consistency. The internal cap profile allows a safer assembly and more hygienic internal cap profile.

4b Compact Hi-Flo Swirl~

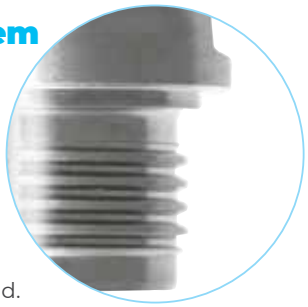


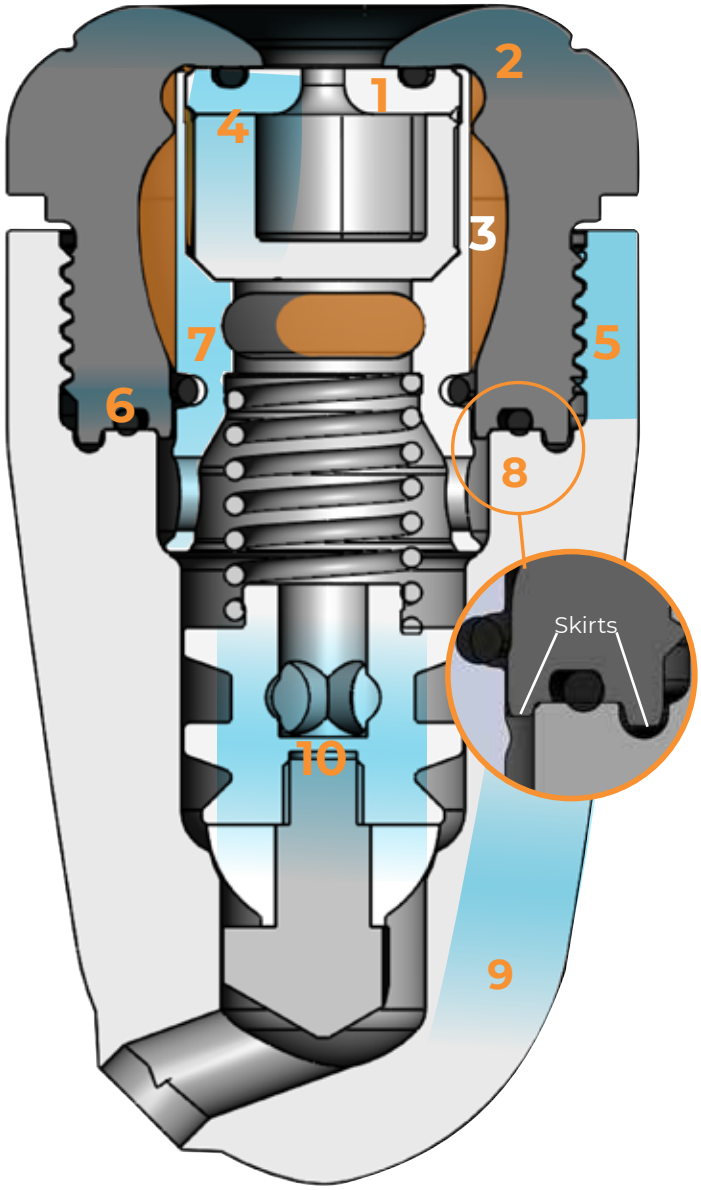
The Compact Hi-Flo Swirl design delivers the same superior spray performance using trusted swirl geometry in an improved laminar flow body.

5 Ultimate long life body thread system

(Only available in Compact and SuperMaxi Caps)

Protected against impact damage during operation and cleaning. The female threaded lance socket protects all vital sealing and thread forms in the lance, reducing damage and replacement costs. Robust cap threads reduce thread galling.





Performance Option
Compact Push-Fit
with Easy-Out CCT Clasp

~pat. & other pat. pend.

Do you know about our unique **wear and breakage** guarantee?

See page 9 for details.

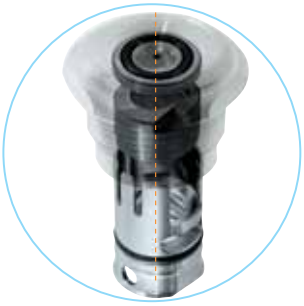






7 Optional Concentric Clasp Technology (CCT)~

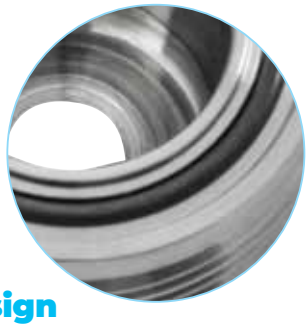
CCT system is an axial wear part alignment system not dependent on tight cap bore contact of wear parts. Keeping wear parts concentrically aligned within the cap profile and fluid path, saves time and money with consistent spray performance and easy carbide extraction without breakage, improving wear part life span and cost reduction.



8 Unique Seal Face Protection Skirts~

(Only available in Compact and SuperMaxi Caps)

World's first unique heavy-duty dual seal face protection. Featuring robust cap design protection skirts for protection against O-ring seal groove damage.



9 Aerodynamic design

(Only available on Compact and SuperMaxi Bodies)

Unique design assists air flow around nozzle on the outside and improved laminar flow on the inside.

10 Optional Drip-Pro™ Check Valve

Optional Hi-Flo Drip-Pro™ Check Valve with replaceable soft seal. The full flow design is easily removed for cleaning in one simple action. An optional spring configuration is available to match your opening/closing pressure requirements.



6 Full Axial Compressive Seal System

Allowing higher pressure capabilities with NO EXPENSIVE BACK-UP RINGS. It meets international Sealing Standards for high pressure Dryer operations preventing O-ring extrusion for high and low pressure applications.



NEW Replaceable Check Valve Sealing Face System means no internal wear on body. A seal material for all concentrate and condition types. Eliminates outdated stainless sealing valves that gives better positive shut off.

CLICK&DRY™

Innovative Technology

HYGIENE | LONG LIFE | HIGH PERFORMANCE | GREATER RETURN

Long Life Hi-flo Compact Swirl

A long life compact design with the same flow performance



Same tangential inlet length

The compact CLICK&DRY™ swirl design delivers equal performance in comparison to traditional larger thick swirls commonly used in many dryers. To achieve this, the tangential inlet length of the CLICK&DRY™ compact swirl is uncompromised, achieving significant benefits in size reduction, superior strength and improved performance.

Long Life Seal-In-Disc™ ~



Allows smoother Cap internals, greater hygiene, reduced bearding and high strength

The revolutionised Seal-In-Disc™ (Orifice Disc) is designed to incorporate the Orifice Disc O-ring. No O-ring groove in the Cap chamber allows for a smoother internal cap. This innovation makes it easy to clean, gives the assembly more strength in high pressure applications while reducing cap bearding (build-up).

OPTIONAL# Concentric Clasp Technology (CCT)*~

With CCT Assembly Logic, your swirls can only be assembled safely ONE way - the RIGHT way.

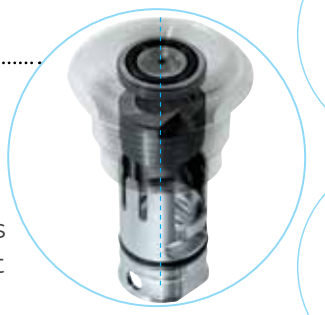


Wear part alignment = Better spray performance and wear life

The Concentric Clasp Technology (CCT) is available in all CCT Clasp assemblies. Achieve perfect wear part alignment, better spray performance and increased wear life. Most importantly, swirl can only be assembled one way to eliminate errors. CCT Clasp is designed to ensure all wear parts are held in total concentricity. This state of concentricity is critical for consistent spray quality and performance.

Easy-Out CCT Clasp

Extract wear parts easily without damage, the Easy-Out CCT Clasp is designed for easy installation and removal. Remove wear parts without the need for impact force, which could lead to costly carbide breakage.





Wear Part Removal Tools

Designed to be used with Easy-Out CCT Clasp Cap to assist the lifespan of CLICK&DRY™ wear parts and save on going costs. Use CLICK&DRY™ recommended tools to receive a 2-year wear part guarantee*.

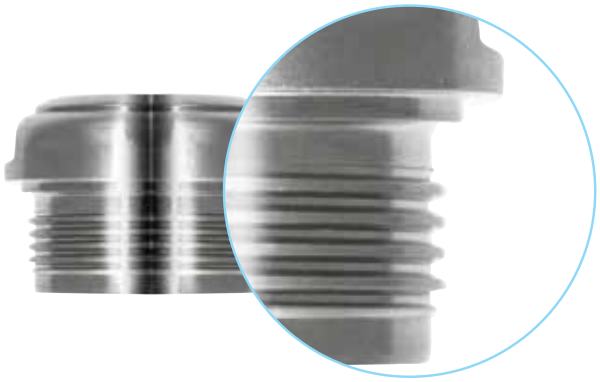
*OPTIONAL: requires approved Cap upgrade.

Save wear parts, save money and increase quality!

CLICK&DRY™

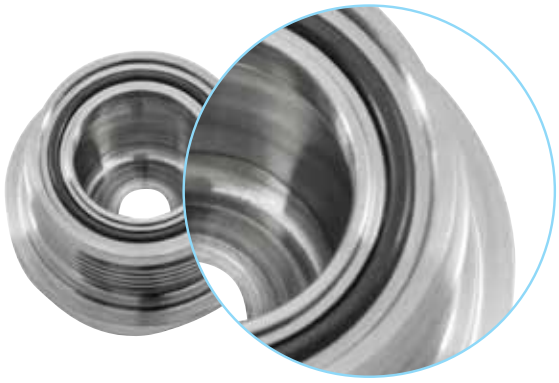
~pat. & other pat. pend.

Large Anti-Galling Threads



Designed with heavy-duty larger threads, which are highly resistant to normal impact damage during lance handling. Larger threads also mean it is easier to clean. Both lance body and cap are covered by our new for old replacement guarantee*.

Seal Face Protection Skirt ˜



Seal Face Protection Skirt is standard for CLICK&DRY™ Compact and SuperMaxi Series. World's first unique heavy-duty dual seal face protection. This robust cap protection skirt is designed for protection against O-ring seal groove damage.

Full Axial Compressive Seal System˜

Exclusive to CLICK&DRY™, this feature minimises Body Seal damage and leakage. The Body Seal is only in contact with the sealing surface once assembly is fully home. Meets international Sealing Standards for high-pressure dryer operations, preventing O-ring extrusion for high and low pressure applications.

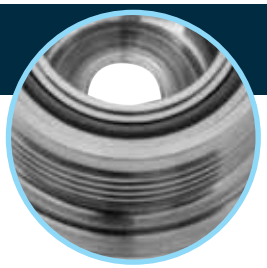


The body Seal is only in contact with sealing surface once assembly is fully home, eliminating seal drag and tear during assembly, a major cause of leakage in radial seal nozzle caps.



Seal Retention˜

During assembly o-rings might dislodge or misalign. Spray Nozzle Engineering has remedied this with seal retention technology pat. pend., Your Click&Dry™ Cap (and optional orifice disc) will now keep the o-ring exactly where it needs to be. Resulting benefits include faster change outs; reduced o-ring misplacement, safer operation.



Smooth Hygienic Cap Chamber˜



With no seal groove in the Cap chamber, CLICK&DRY™ internal Cap surface is smooth making cleaning and maintenance easier. This helps prevent product residue usually lodged in the groove area. An outstanding innovation that eliminates the risk of unnecessary contamination.

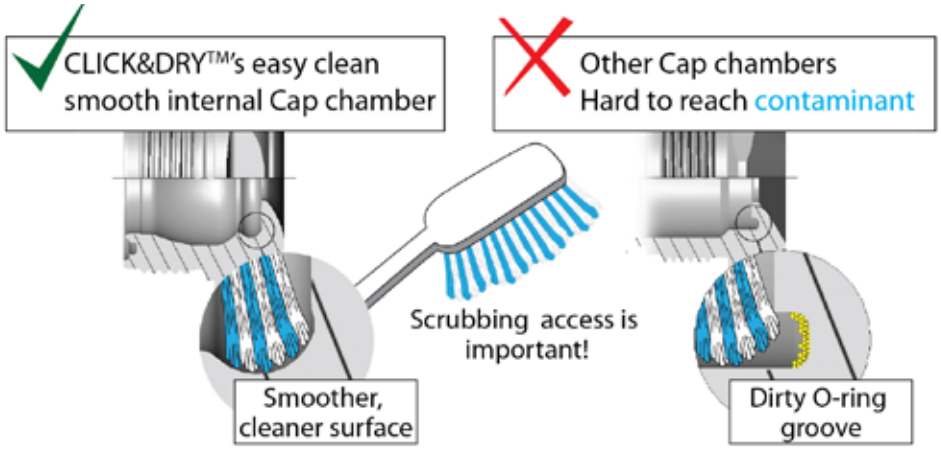
CLICK&DRY™

HYGIENE | LONG LIFE | HIGH PERFORMANCE | GREATER RETURN

Features and Benefits

Hygiene

- Smooth Cap chamber hygienic design and no dirty O-ring groove for easy cleaning within the fluid path
- Low Cap profile – less product build up (bearding)
- Larger thread design for easier cleaning



Long Life Wear Parts

- Seal-In-Disc™ (Orifice Disc) Technology and Hi-Flo Swirl are unique design features exclusive to CLICK&DRY™. This innovation delivers improved spray dry nozzle work-flow, powder quality and long term cost saving.
- Concentric Clasp Technology (CCT) – available for assemblies with CCT Clasp. The ultimate solution that ensures perfect wear part alignment and improves wear part life. Select assemblies with Easy-Out CCT Clasp come with **1-year wear cover guarantee** from date of commission.

Improved sealing to prevent leakage

- Full Axial Compressive Seal System, exclusive to CLICK&DRY™, ensures all seals are only in contact with sealing faces once assembly is fully screwed home. This prevents seal drag and tear.
- Axial Compressive Seal System, an exclusive feature of CLICK&DRY™, ensures all seals are only in contact with sealing faces once assembly is fully screwed home. This prevents seal drag and tear.

Lower operating cost

- Significant savings in on-going costs are achieved by reducing tungsten carbide component breakages and wear. Our innovations are designed to prolong wear part life. Upgrade to CLICK&DRY™ Easy-out CCT Clasp systems to receive **1-year wear cover** and **2-year breakage cover on wear parts.**

Easy to use

- No Assembly Error Push-Fit Retainer Design offers improved wear part alignment and longer wear part life.
- A range of tools and accessories designed for easy assembly and to minimize carbide damage.
- Concentric Clasp Technology (CCT) – available for assemblies with CCT Clasp. With CCT Clasps, you can only assemble one way, the right way, eliminating errors. Easy-Out CCT Clasp Assemblies offer "No Wear Part damage extraction" when used with CLICK&DRY™ Tools ensuring longer wear part life along with **2-year breakage cover on wear parts.**

Designed for Code Compliance

- Unique fully Axial sealing and FEA designed nozzle caps and bodies. Deliver NO GAP seal arrangements to prevent seal failure while assisting compliance to pressure piping codes and reducing operating risk.
- No gap fully Axial Compressive Seal System designed to minimise seal rubbing and tear damage, while delivering sealing compliance at the highest industry operating pressures.

High Strength

- Stronger and longer lasting Cap design with no seal groove inside the cap chamber eliminating high stress weakness points.
- Larger anti-galling thread design minimises thread galling.
- Seal Face Protection Skirt helps protect Body O-ring groove and seal face damage.

~pat. & other pat. pend.

GREATER STRENGTH MEANS GREATER PRESSURE INTEGRITY.
OLDER NOZZLE HARDWARE VS **CLICK&DRY™**

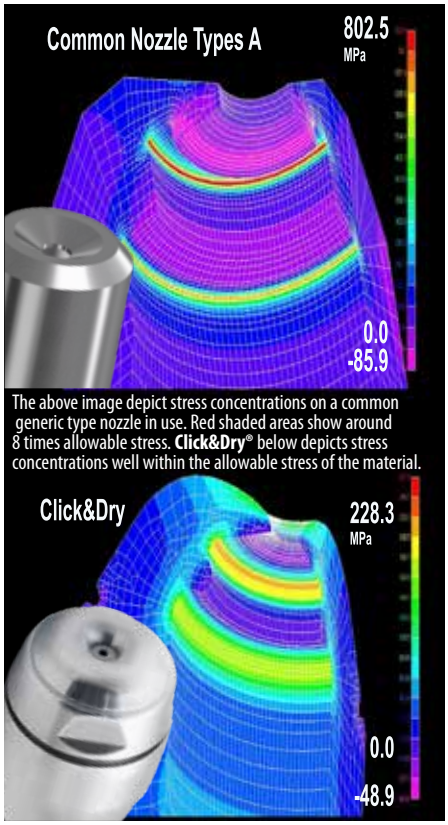
The **Click&Dry™** design makes safety and pressure integrity its number one design priority. Since the early 1970's, high volume powder production has seen the emergence of nozzle type dryers as a major developing trend, resulting in steadily increasing operating pressures to achieve the volumes and consistencies required. This placed enormous demand upon pre-existing nozzle hardware designs, which over time has essentially remained unchanged. Today, it is not readily shown that this hardware is operable without significant risk and within accepted safety factors now dictated by modern industry.

Spray Nozzle Engineering has studied many types of dryer nozzle hardware in use today. The initial findings of this study were that a generic form of nozzle design has been in common use for some considerable time, from a number of different sources, with most utilising radial seals and very similar hardware geometry. It was also determined through analysis in this study, that a large proportion of such equipment reviewed may operate far in excess of industry accepted stress and pressure limits due to this observed generic geometry and radial seal arrangements. Further, that much of this hardware exists in a worn or old and fatigued condition, which alone, poses a high risk of failure. **Click&Dry™ was developed to function within a range of operational safety factors which far exceed that of current competitive equipment in the field, with unique high pressure axial seals, as well as a design that resists the normal types of observed wear characteristics of older style nozzles in service.**

Industries working with pressure systems and vessels, typically stipulate a safety factor of 2-2.5 times based upon the yield stress of the material in use. If operating at a safety factor below 2, a thorough understanding of your fatigue cycles and the potential failure risk is critical. Operating at safety factors approaching 1 or below, ensures failure is imminent based upon known engineering protocol and the properties of typical materials used. This is why **Click&Dry™** components are designed around important **pressure related standards** such as **ASME B31.3.** These standards are dedicated to safe operation of pressure systems and provide safety margins that exceed those in current use based upon the yield stress and other important factors.

World Wide Sealing Standards all dictate the use of backup rings in the typical radial seal arrangements found in most common dryer nozzles. Widely adopted global standards typically call for pressure limits of around **100barG** without backup rings. One exception is **JIS B2406** seal standard which still limits the working pressure without backup rings to only **255barG**, this only being achievable with enormously tight radial gap and costly higher duro-rated O-rings. It is clear most modern dryers operate far in excess of these pressures and as such require a more reliable and compliant sealing option. **Click&Dry™ axial seal** arrangement allows for greater operating pressures **with no need for expensive backup rings and high duro-seals**. This is good news for dryer operators in managing operating costs of daily seal replacement.

It can be seen from the review summary below, that many common older spray components in use today operate at pressures far exceeding their yield stress, with a risk of failure, being extremely high. Operating this older equipment at this level is not recommended. This review chart provides the customer with a range of notional safety factors to help them identify the level of operational risk they currently choose to adopt.



The above image depict stress concentrations on a common generic type nozzle in use. Red shaded areas show around 8 times allowable stress. **Click&Dry®** below depicts stress concentrations well within the allowable stress of the material.

CLICK&DRY™

A STRONGER CHOICE

OPERATING PRESSURE GUIDE

SPRAY DRY NOZZLE TYPE COMPACT	Maximum pressures (barG) at various operator determined Factors Of Safety* (FOS)							
	NOT RECOMMENDED ( ) indicates the criteria applied for FOS=1.0			OPERATIONAL CAUTION ADVISED*		**ASME B31.3** COMPLIANT OPERATING RANGE*		
	0.25	**0.5**	**1.0**	**1.25**	**1.5**	**1.75**	**2.0**	**2.5**
NON C&D Common Nozzle Type (A)	268	134	67	54	44	38	34	23
NON C&D Common Nozzle Type (B)	312	156	78	62	52	45	39	26
Standard CLICK&DRY™ COMPACT Armour Clasp LP Part # 90001-21, Low Profile Design, Clasp Type, O -Ring Groove In Disc	3180	1590	795	636	530	**454**	323**	207

Notes *

- Applies to 350barG at 20-220degC before pre-load (cap torquing) and no other loads, fatigue life of approx. 20,000 cycles.
- The ASME compliant pressure range as per the green coloured section.
- Data represents scaled stresses not fatigue life, as FOS is based upon Factor of safety for all failure modes and yield strength is the primary mode for most scaled loads (ie. because fatigue needs the actual stress to estimate the fatigue life and double fatigue life typically occurs at -20% stress, whereas -20% on yield is an FOS of 1.2 not 2.0 for fatigue).
- A minimum FOS in pressure vessel design is 2-2.5, what is inherent in the ASME B31.3 is approximately 1.3-2.0.
- Notional fatigue life of at least 5000 cycles factor of safety based upon internal design pressures & minimum yield stress & minimal pre-load.
- **Indicates ASME B31.3 compliant pressure for design at 220C.

CLICK&DRY™

Service Support, Maintenance and Guarantee

Work with the most dedicated and experienced support team to assist you with all your nozzle requirements.



With over two decades of experience working with Plant Operators, we've developed a customer and solution focused service, support materials, training and a complete range of low impact tools; to give our customers the product confidence that they need. CLICK&DRY™ offers free consultation and custom solutions to suit your requirements.

Choosing CLICK&DRY™ not only delivers a product that reduces operating costs, extends wear life and improves powder quality, but you now also receive the best product support for your spraying needs.

Hardware and accessories maintenance

Your nozzle parts are precision high pressure components. Their proper use, care and maintenance is critical for safe, reliable and efficient operation. To assist operators, we offer durable laminated SOP guide sets which can be displayed in your work area.

Taking care of your CLICK&DRY™ equipment will help deliver significant reduction in damage, increase safety and assist in trouble free operation.

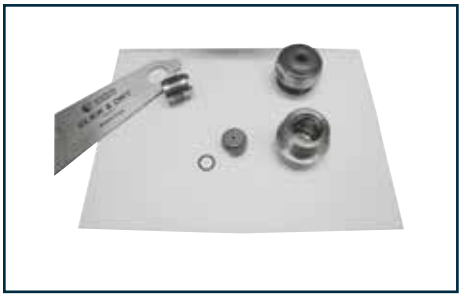
As well as our Soft Handling Baskets we offer Soft Handling Boards to reduce damage and increase product life.



STANDARD OPERATING PROCEDURE (SOP) FOR EVERY SYSTEM



SOFT HANDLING BASKET



SOFT HANDLING BOARD

~pat. & other pat. pend.

"Smart tools save money"

Do you know about our unique wear and breakage guarantee?

For our industry 1st offer read on.....





NEW for OLD FREE replacement Guaranteed!

2 Years No Thread Galling,
2 Years No Wear Part Breakages and
1 Year Wear Cover on Disc and Swirl
Guaranteed

We are so confident in the longevity of our proven CLICK&DRY™ system, that in the highly unlikely event that you experience a problem, we offer you this exclusive replacement guarantee.

Available to end users from first date of commissioning or upgrading any dryer to select CLICK&DRY™ systems.

1 YEAR WEAR COVER - DISC AND SWIRL GUARANTEE

1 Year Replacement** Guarantee from first date of supply for any dryer fully commissioned or upgraded to select CLICK&DRY™ systems*. We will replace the wear affected items from your first commissioning set## of CLICK&DRY™ Swirls and/or CLICK&DRY™ Seal-In-Disc™ Orifice Discs if you experience any wear beyond normal operational wear tolerances#

2 YEAR NO THREAD GALLING GUARANTEE

2 Year Replacement** Guarantee from date of commission on CLICK&DRY™ Compact weld-on Bodies and CLICK&DRY™ Compact Caps with Thread Protection Skirt if you experience inoperable thread galling using select CLICK&DRY™ Compact systems, we will replace the thread damaged components from your first commissioning set## of CLICK&DRY™ Bodies & Caps of the Compact Systems.

2 YEAR NO WEAR PART BREAKAGES^ GUARANTEE

2 Year Replacement** Guarantee from date of commission on all CLICK&DRY™ Swirls and CLICK&DRY™ Seal-In-Disc™ Orifice Disc, we will replace the breakage effected items from your first commissioning set## of CLICK&DRY™ Swirls and /or orifice discs, if you experience total breakage^ of parts while running CLICK&DRY™ Assembly with Easy-Out CCT Clasp.

Conditions

*** Included CLICK&DRY™ systems for breakage cover**

CLICK&DRY™ Systems which shall qualify for 2 Year No Wear Part Breakages must include Easy-Out CCT Clasp option (Conversion CCT Clasp and Retainer Systems are not included in this offer). User must provide evidence of continue use of CLICK&DRY™ Easy-Out CCT Clasp Tool range (Extraction Tool, Multi-Tool, and Bench Mount and Swirl Removal Tools). Offer excludes the use of Soft Removal Push Tool or any similar push tool or unauthorised tools.

Offer is also only valid for end users of CLICK&DRY™ Nozzle Caps with Seal Face Protection Skirt and Large Anti-galling Thread system. User must provide evidence of continue use of CLICK&DRY™ Cap Wrench and Multi-Tool Clasp Spanner.

*** Included CLICK&DRY™ systems for wear part cover**

CLICK&DRY™ Systems which shall qualify for 1 Year Wear Cover must include all CCT Clasp and Easy-Out CCT Clasp option (Retainer Systems are not included in this offer). User must provide evidence of continue use of CLICK&DRY™ Relevant Tools (Extraction Tool, Multi-Tool, and Bench Mount and Swirl Removal Tools). The use of Soft Removal Push Tool voids guarantee unless used only with Conversion CCT Clasp. Offer excludes the use of any similar push tool or unauthorised tools.

Offer Limitation

This offer may not be available in conjunction with any other special supply offers. Offers subject to change. Consult factory for offer details before purchase. The customer is fully responsible for the on-going operation and operational cost of their plant during any guarantee claim process. This includes ensuring adequate inventory at the customer's cost of any CLICK&DRY™ component for continued plant operation. Terms and conditions are subject to change without notice. Consult factory for details.

Definitions

^ Breakage:

Breakages shall be defined as any cracks, fractures, fragmentation or separated portions visible to the naked eye, which would render wear part totally unusable. This does not include normal wear.

 # Normal operational wear tolerances

For the purpose of qualifying wear replacement in this guarantee, normal operational wear shall be wear attributed to pressure erosion only (not chemical action) and shall be wear as measured on each individual component that would increase flow at a given pressure by more than 5%.

Disclaimer: This is not a statement of allowable wear for your application. Every user must determine their own level of maximum allowable wear.

Commissioning set

The minimum quantity of components subject to the above mentioned guarantee, required for the total number of lances in the drier operable at one time, at commissioning of the drier, excluding spares.

**** Replacement:**

New replacement components will only be supplied where deemed qualified and approved for such replacement under this guarantee. Replacement assessment process will commence on receipt of goods in question. Replacement is only applicable for CLICK&DRY™ parts. Replacement guarantee does not include installation, fabrication, certification and shipping costs. Supplied parts shall be exchange only. Proof of purchase is required at redemption. Excluding any cost of removal, installation or freight of components.

CLICK&DRY™

Compact Push Fit Spray Dry Nozzle Range

Entry Level -Retainer

Compact Push Fit Retainer Range

An easy clean, quality, superior strength and easy assembly spray dry nozzle system for small to medium lances.

Features	Benefits
Push Fit Retainer Assembly	Easy assembly. Entry level wear part alignment
Smooth Cap chamber	Easy clean and high strength
Large anti-galling threads	Easy clean and disassembly
Seal Face Protection Skirt	Minimise wear part damage
Full Axial Compressive Seal System	Improve pressure sealing to reduce leakage
Come with Seal-In-Disc™ and Hi-flo Swirl	Give it superior strength and improve nozzle performance
Seal Retention	Prevent O-ring movement for leakage protection

Compact Push Fit Retainer



with Standard Cap and Short Body



with Standard Cap and Standard Body

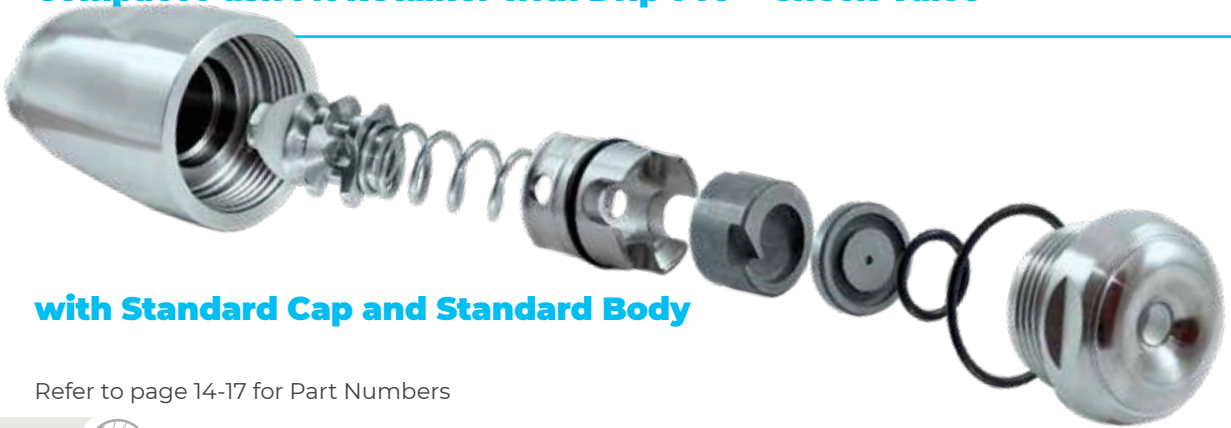
Refer to page 14-17 for Part Numbers

Optional Drip-Pro™ Check Valve

Heavy-Duty Check Valve reduces the problem of dripping and scorched particles.

Add Drip-Pro™ Check Valve to receive all benefits from Compact Push Fit Retainer/ Easy-out CCT Clasp plus reduced scorched particle for longer run times.

Compact Push Fit Retainer with Drip-Pro™ Check Valve



with Standard Cap and Standard Body

Refer to page 14-17 for Part Numbers

~pat. & other pat. pend.

Performance Level - CCT Clasp

Compact Push Fit Easy-out CCT Clasp Range

Upgrade to the Easy-out CCT Clasp assembly to enjoy all Push Fit Retainer's benefits plus total wear part concentricity.

Features	Benefits
Easy-out CCT Clasp Assembly	Perfect wear part alignment ensures consistent spray quality, performance and easy disassembly. Comes with 2 year wear and breakage guarantee.
Smooth Cap chamber	Easy clean and high strength
Large anti-galling threads	Easy clean and disassembly
Seal Face Protection Skirt	Minimise wear part damage
Full Axial Compressive Seal System	Improve pressure sealing to reduce leakage
Come with Seal-In-Disc™ and Hi-flo Swirl	Give it superior strength and improve nozzle performance
Seal Retention	Prevent O-ring movement for leakage protection

Compact Push Fit Easy-out CCT Clasp



with Standard Cap and Standard Body

Refer to page 14-17 for Part Numbers



New hi-flow design	Runs longer and easily removed for cleaning
PTFE or Durocon replaceable seals	Choices to suit your needs
Heavy duty	Easy clean and disassembly
Open-port design	Can be run on all dryer types

Compact Push Fit Easy-out CCT Clasp with Drip-Pro™ Check Valve



with Standard Cap and Standard Body

Refer to page 14-17 for Part Numbers



CLICK&DRY™

Feature comparison table

FEATURES	ENTRY LEVEL **ULTRA SHORT**	ENTRY LEVEL **DRIP PRO™ UPGRADEABLE**
	COMPACT PUSH-FIT RETAINER WITH SHORT CAP AND SHORT BODY 	**COMPACT PUSH-FIT RETAINER WITH OPTIONAL DRIP-PRO™ CHECK VALVE** 
Easy-out CCT Clasp Assembly	✗	✗
Smooth Cap chamber	✓	✓
Large anti-galling threads	✓	✓
Seal Face Protection Skirt	✓	✓
Full Axial Compressive Seal System	✓	✓
Seal-In-Disc™ and Hi-flo Swirl	✓	✓
Seal Retention	✓	✓
Drip Pro™ Check Valve	✗	OPTIONAL
Replaceable Valve Seals	✗	OPTIONAL
Heavy duty	✗	OPTIONAL
Open-port design	✗	OPTIONAL
Guarantee* **1 Year Wear Cover on Disc and Swirl**	✗	✗
2 Years No Wear Part Breakages	⊗	⊗
2 Year No Thread Galling	✓	✓
4 Year No Thread Galling	✗	✗



Start with the basics

This Entry Level provides all the basic pressure integrity benefits of the Compact series with a short body to deliver the most compact configuration.

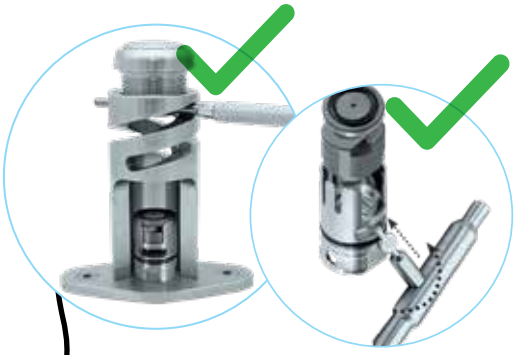
Optimise Push Fit Retainer

Add optional Drip-Pro™ Check Valve to reduce the dripping and scorched particle problems. The Compact Drip-Pro™ Check Valve comes complete with the shortest, reliable Check Valve nozzle system in the market today.

~pat. & other pat. pend.

Save wear parts, save money and increase quality!

UPGRADE WITH MORE **ULTRA SHORT**	PERFORMANCE LEVEL **DRIP PRO™ UPGRADEABLE**	
COMPACT PUSH-FIT EASY-OUT CCT CLASP WITH SHORT CAP AND SHORT BODY	**COMPACT PUSH-FIT EASY-OUT CCT CLASP WITH DRIP-PRO™ CHECK VALVE**	
		
✓	✓	Easy-Out CCT Clasp designed for no breakage removal of wear parts. Use with CLICK&DRY™ removal tools to improve wear part life. Refer to guarantee page9
✓	✓	Easy clean and high strength
✓	✓	Prevent Thread Galling and lance damage. Easy clean
✓	✓	Protect important seal faces from damage and aids life
✓	✓	Minimise wear part damage and improve safety
✓	✓	Superior wear resistance and long life with improved nozzle performance and hygiene
✓	✓	Prevent O-ring movement for leakage protection
✗	**OPTIONAL**	Reduce drips and scorched particles with longer run time
✗	**OPTIONAL**	Choose from PTFE/Durocon replaceable Seals to suit your sealing needs
✗	**OPTIONAL**	Robust and easy clean design
✗	**OPTIONAL**	Superior run times with reduced pressure loss
✓	✓	Available for all Easy-Out CCT Clasp assemblies. See page 9 for details
✓	✓	Available for all Easy-Out CCT Clasp assemblies. See page 9 for details
✓	✓	Available for Compact Easy-Out CCT Clasp. Ask us about Compact Series
✗	✗	Available for SuperMaxi Easy-Out CCT Clasp. Ask us about SuperMaxi Series



Or start with more, start with Easy-out CCT Clasp

All of the benefits of the Easy-out CCT Clasp system are available in our shortest body configuration. The overall body length not exceeding 53mm for the most compact installations.

If you're ready for the best

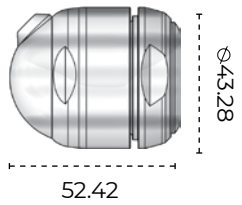
The Easy-out CCT Clasp with optional Drip-Pro™ is a complete performance package delivering the ultimate outcomes for your application.

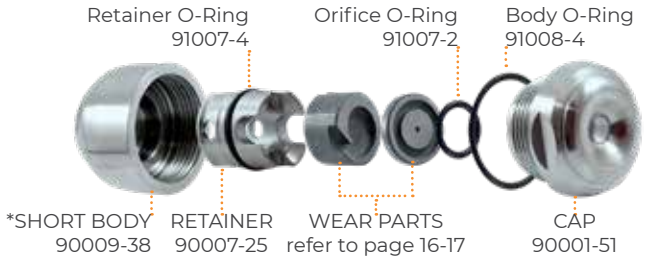
One system - more choices

Overall Dimensions (mm)

ENTRY LEVEL

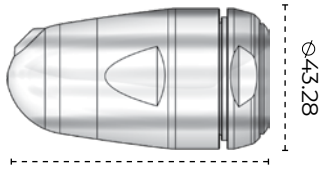
COMPACT PF RETAINER SHORT BODY SHORT CAP

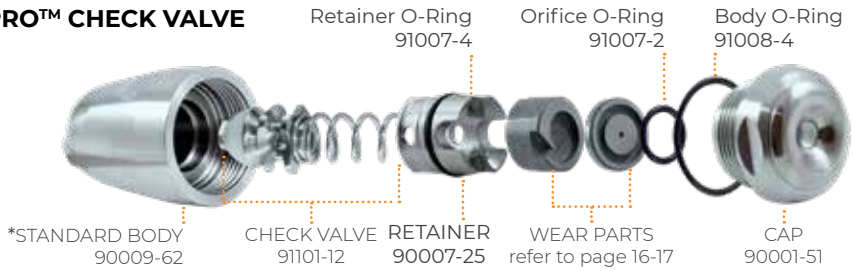




ENTRY LEVEL WITH CHECK VALVE

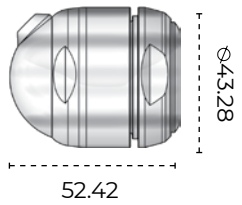
COMPACT PF RETAINER WITH DRIP-PRO™ CHECK VALVE

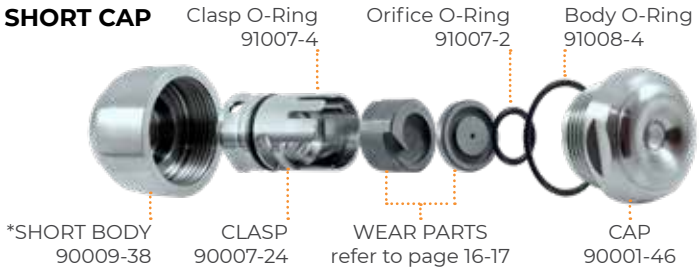




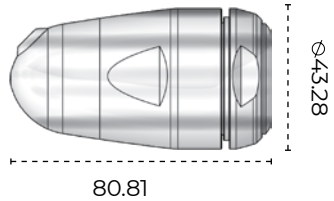
UPGRADE WITH EASY-OUT CCT CLASP

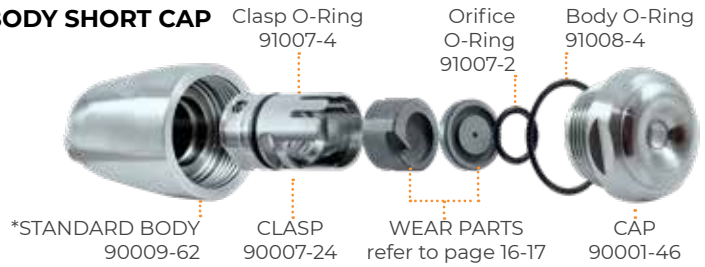
COMPACT PF EASY-OUT CCT CLASP SHORT BODY SHORT CAP





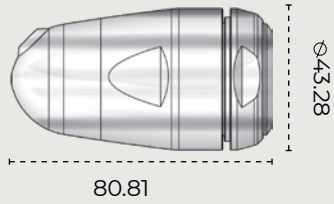
COMPACT PF EASY-OUT CCT CLASP STANDARD BODY SHORT CAP

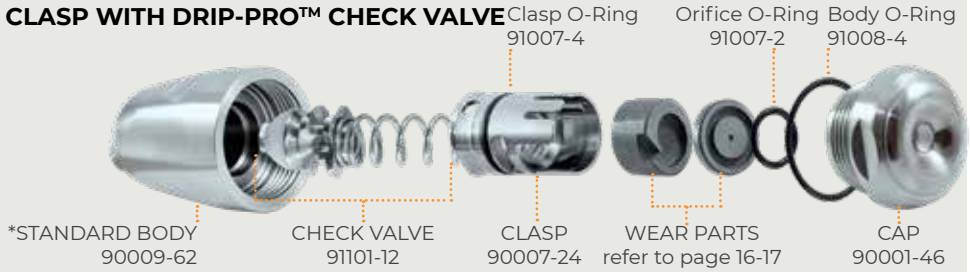




SIMPLY THE BEST

COMPACT PF EASY-OUT CCT CLASP WITH DRIP-PRO™ CHECK VALVE





* NOTE: 45⁰ Compact lance body part number shown. Advise factory your exact body connection requirement (pressure, pipe size, schedule, type, threaded or butt weld).

PF: Push Fit
CCT: Concentric Clasp Technology

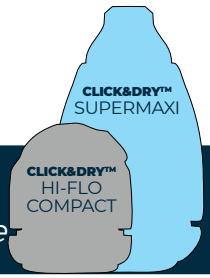
Optional Threaded Retainer

Easier installation and removal
For heavy product adhesion problems



Optional SuperMaxi

Superior strength for large lance



Ask factory for more information

~pat. & other pat. pend.

Tools and Accessories - Saving time and money



Stop 'tool to carbide' force contact and costly premature wear part breakage

Our commitment to making your carbide parts last longer

1 Extraction Tool

No carbide contact extraction tool for nozzles that are heavily soiled during operation. Adhered wear parts can be removed with a simple twist with no damage to expensive carbide parts allowing your parts to run natural cycles rather than prematurely break.

5 Multi-tool Spanner

The CLICK&DRY™ Multi-tool is our entry level separation tool, can also be used for other disassembly functions for check valve.

2 Orifice Gauge

Our approach to Spray Drying is simple "help our customers monitor and reduce wear" we have monitoring tools such as orifice gauges and training guides to suit all dryer types and sizes.

6 Wrench

Our range of 1 or 2-handed wrenches allows cap tightening or removal with gloves during high pressure lance changes.

3 Push Removal Tool*

This press tool with soft aluminium pin helps loosen parts on low adhesion applications only. Designed for Push Fit Retainer Caps.

7 Soft Handling Basket

Use the PTFE lined soft handling basket to avoid impact damage and ensure components are properly carried, cleaned and inspected for defects. Custom basket sizes available.

4 Swirl Removal Key Tool

The swirl removal tool is the key to stopping precious wear part impact damage which can lead to costly wear part damage and possible fractures under high operating pressures. (CCT Clasp use only)

8 Flat Blade O-ring Removal Pick

Designed to allow removal of all o-ring safely without costly damage to parts

NOTE: The Push Removal Tool does not comply with our Wear Parts Guarantee

WEAR PARTS

Seal-In-Disc™ (Orifice Disc) pat. pend.



ORIFICE SIZES

Part Number	Part Description
TCORL-034	T/C O-Ring Groove Orifice Disc .034
TCORL-037	T/C O-Ring Groove Orifice Disc .037
TCORL-040	T/C O-Ring Groove Orifice Disc .040
TCORL-045	T/C O-Ring Groove Orifice Disc .045
TCORL-049	T/C O-Ring Groove Orifice Disc .049
TCORL-052	T/C O-Ring Groove Orifice Disc .052
TCORL-055	T/C O-Ring Groove Orifice Disc .055
TCORL-058	T/C O-Ring Groove Orifice Disc .058
TCORL-061	T/C O-Ring Groove Orifice Disc .061
TCORL-064	T/C O-Ring Groove Orifice Disc .064
TCORL-066	T/C O-Ring Groove Orifice Disc .066
TCORL-067	T/C O-Ring Groove Orifice Disc .067
TCORL-068	T/C O-Ring Groove Orifice Disc .068
TCORL-070	T/C O-Ring Groove Orifice Disc .070
TCORL-072	T/C O-Ring Groove Orifice Disc .072
TCORL-073	T/C O-Ring Groove Orifice Disc .073
TCORL-075	T/C O-Ring Groove Orifice Disc .075
TCORL-076	T/C O-Ring Groove Orifice Disc .076
TCORL-079	T/C O-Ring Groove Orifice Disc .079

Part Number	Part Description
TCORL-080	T/C O-Ring Groove Orifice Disc .080
TCORL-082	T/C O-Ring Groove Orifice Disc .082
TCORL-085	T/C O-Ring Groove Orifice Disc .085
TCORL-086	T/C O-Ring Groove Orifice Disc .086
TCORL-087	T/C O-Ring Groove Orifice Disc .087
TCORL-088	T/C O-Ring Groove Orifice Disc .088
TCORL-090	T/C O-Ring Groove Orifice Disc .090
TCORL-092	T/C O-Ring Groove Orifice Disc .092
TCORL-094	T/C O-Ring Groove Orifice Disc .094
TCORL-097	T/C O-Ring Groove Orifice Disc .097
TCORL-100	T/C O-Ring Groove Orifice Disc .100
TCORL-102	T/C O-Ring Groove Orifice Disc .102
TCORL-103	T/C O-Ring Groove Orifice Disc .103
TCORL-106	T/C O-Ring Groove Orifice Disc .106
TCORL-109	T/C O-Ring Groove Orifice Disc .109
TCORL-112	T/C O-Ring Groove Orifice Disc .112
TCORL-115	T/C O-Ring Groove Orifice Disc .115
TCORL-118	T/C O-Ring Groove Orifice Disc .118
TCORL-121	T/C O-Ring Groove Orifice Disc .121

Concentric Swirl pat. pend.



SWIRL SIZES

Part Number	Part Description
90033-1	TC S1 SWIRL 3L Click&Dry
90033-2	TC S2 SWIRL 3L Click&Dry
90033-3	TC S3 SWIRL 3L Click&Dry
90033-4	TC S4 SWIRL 3L Click&Dry
90033-5	TC S5 SWIRL 3L Click&Dry
90033-6	TC S6 SWIRL 3L Click&Dry
90033-7	TC S7 SWIRL 3L Click&Dry
90033-8	TC S8 SWIRL 3L Click&Dry
90033-9	TC S9 SWIRL 3L Click&Dry
90033-10	TC S10 SWIRL 3L Click&Dry

NOTE: SPRAY NOZZLE ENGINEERING CAN PROVIDE MANY OTHER CUSTOM BODY and CONNECTION OPTIONS ON REQUEST.

Other sizes available upon request

Note: Custom pipe sizes and inlet connections available on request, price on application. Pressure rating may vary depending on pipe schedules used. Spray Nozzle Engineering recommends all welds to bodies be carried out to ASME or equivalent weld and NDT procedures that match your chosen operating and safety margin pressures.

PERFORMANCE TABLE

CLICK&DRY™ *CD FLOW RATES AND DIMENSIONS - Hollow Cone, 50° to 80° Spray Angles*

NOZZLE NUMBER	SPRAY ANGLE	SWIRL	Orifice (mm)	DIA (In.)	LITRES PER HOUR @ BAR												
					K factor	15 bar	35 bar	50 bar	**70 bar**	90 bar	100 bar	120 bar	150 bar	175 bar	200 bar	275 bar	350 bar
CD2-40 **CD1-49**	**75** **85**	**SW2** **SW1**	**1.02** **1.24**	0.040 0.049	11.4	44.1	67.4	80.6	**95.3**	108	114	125	140	151	161	189	213
CD4-34 **CD3-40**	**60** **70**	**SW4** **SW3**	**0.864** **1.02**	0.034 0.040	13.7	53.0	80.9	96.7	**114**	130	137	150	167	181	193	227	256
CD5-34 **CD4-40**	**50** **65**	**SW5** **SW4**	**0.864** **1.02**	0.034 0.040	16.0	61.8	94.4	113	**133**	151	160	175	195	211	226	265	298
CD4-43 **CD3-49**	**65** **75**	**SW4** **SW3**	**1.09** **1.24**	0.043 0.049	18.2	70.6	108	129	**153**	173	182	200	223	241	258	302	341
CD6-37 **CD5-40** **CD4-46** **CD3-55**	**50** **60** **70** **75**	**SW6** **SW5** **SW4** **SW3**	**0.940** **1.021** **1.17** **1.40**	0.037 0.040 0.046 0.055	20.5	79.4	121	145	**172**	195	205	225	251	271	290	340	384
CD6-40 **CD5-43** **CD4-52**	**50** **60** **70**	**SW6** **SW5** **SW4**	**1.02** **1.09** **1.32**	0.040 0.043 0.052	22.8	88.3	135	161	**191**	216	228	250	279	301	322	378	426
CD5-49 **CD4-58** **CD3-67**	**60** **70** **80**	**SW5** **SW4** **SW3**	**1.24** **1.47** **1.70**	0.049 0.058 0.067	25.1	97.1	148	177	**210**	238	251	275	307	332	355	416	469

~pat. & other pat. pend.

PERFORMANCE TABLE (cont.)

CLICK&DRY™ CD FLOW RATES AND DIMENSIONS - Hollow Cone, 50° to 80° Spray Angles

NOZZLE NUMBER	SPRAY ANGLE	SWIRL	Orifice (mm)	DIA (In.)	LITRES PER HOUR @ BAR												
					K factor	15 bar	35 bar	50 bar	**70 bar**	90 bar	100 bar	120 bar	150 bar	175 bar	200 bar	275 bar	350 bar
CD6-46	**55**	**SW6**	**1.17**	0.046	27.4	106	162	193	**229**	259	273	300	335	362	387	453	512
CD5-52	**65**	**SW5**	**1.32**	0.052													
CD4-61	**75**	**SW4**	**1.55**	0.061													
CD3-70	**80**	**SW3**	**1.78**	0.070													
CD6-52	**55**	**SW6**	**1.32**	0.052	31.9	124	189	226	**267**	303	319	349	391	422	451	529	597
CD5-58	**65**	**SW5**	**1.47**	0.058													
CD4-70	**75**	**SW4**	**1.78**	0.070													
CD7-49	**50**	**SW7**	**1.24**	0.049	36.5	141	216	258	**305**	346	365	399	447	482	516	605	682
CD6-55	**60**	**SW6**	**1.40**	0.055													
CD5-64	**70**	**SW5**	**1.63**	0.064													
CD4-76	**80**	**SW4**	**1.93**	0.076													
CD7-52	**50**	**SW7**	**1.32**	0.052	41.0	159	243	290	**343**	389	410	449	502	543	580	680	767
CD6-61	**60**	**SW6**	**1.55**	0.061													
CD5-70	**70**	**SW5**	**1.78**	0.070													
CD7-58	**55**	**SW7**	**1.47**	0.058	45.6	177	270	322	**381**	432	456	499	558	603	645	756	853
CD6-64	**65**	**SW6**	**1.63**	0.064													
CD5-76	**75**	**SW5**	**1.93**	0.076													
CD4-91	**80**	**SW4**	**2.31**	0.091													
CD7-61	**55**	**SW7**	**1.55**	0.061	50.1	194	297	355	**419**	476	501	549	614	663	709	831	938
CD6-70	**65**	**SW6**	**1.78**	0.070													
CD5-82	**75**	**SW5**	**2.08**	0.082													
CD7-64	**55**	**SW7**	**1.63**	0.064	54.7	212	324	387	**458**	519	547	599	670	724	773	907	1020
CD6-76	**65**	**SW6**	**1.93**	0.076													
CD5-88	**75**	**SW5**	**2.24**	0.088													
CD8-67	**50**	**SW8**	**1.70**	0.067	68.4	265	404	483	**572**	649	684	749	837	904	967	1130	1280
CD7-76	**60**	**SW7**	**1.93**	0.076													
CD6-88	**70**	**SW6**	**2.24**	0.088													
CD5-109	**80**	**SW5**	**2.77**	0.109													
CD8-76	**50**	**SW8**	**1.93**	0.076	82.0	318	485	580	**686**	778	820	899	1010	1090	1160	1360	1540
CD7-85	**65**	**SW7**	**2.16**	0.085													
CD6-103	**75**	**SW6**	**2.62**	0.103													
CD8-82	**55**	**SW8**	**2.08**	0.082	95.7	371	566	677	**801**	908	957	1050	1170	1270	1350	1590	1790
CD7-97	**65**	**SW7**	**2.46**	0.097													
CD6-115	**75**	**SW6**	**2.92**	0.115													
CD9-82	**50**	**SW9**	**2.08**	0.082	109	424	647	773	**915**	1040	1090	1200	1340	1450	1550	1810	2050
CD8-91	**60**	**SW8**	**2.31**	0.091													
CD7-106	**70**	**SW7**	**2.69**	0.106													
CD6-127	**80**	**SW6**	**3.23**	0.127													
CD9-88	**50**	**SW9**	**2.24**	0.088	123	477	728	870	**1030**	1170	1230	1350	1510	1630	1740	2040	2300
CD8-100	**60**	**SW8**	**2.54**	0.100													
CD7-118	**70**	**SW7**	**3.00**	0.118													
CD6-142	**80**	**SW6**	**3.61**	0.142													
CD9-94	**55**	**SW9**	**2.39**	0.094	137	530	809	967	**1140**	1300	1370	1500	1680	1810	1930	2270	2560
CD8-106	**65**	**SW8**	**2.69**	0.106													
CD7-127	**75**	**SW7**	**3.23**	0.127													
CD9-106	**55**	**SW9**	**2.69**	0.106	160	618	944	1130	**1340**	1510	1600	1750	1950	2110	2260	2650	2980
CD8-121	**65**	**SW8**	**3.07**	0.121													
CD7-145	**75**	**SW7**	**3.68**	0.145													
CD10-103	**50**	**SW10**	**2.62**	0.103	182	706	1080	1290	**1530**	1730	1820	2000	2230	2410	2580	3020	3410
CD9-115	**60**	**SW9**	**2.92**	0.115													
CD8-133	**70**	**SW8**	**3.38**	0.133													
CD10-118	**55**	**SW10**	**3.00**	0.118	205	794	1210	1450	**1720**	1950	2050	2250	2510	2710	2900	3400	3840
CD9-127	**60**	**SW9**	**3.23**	0.127													
CD8-145	**70**	**SW8**	**3.68**	0.145													
CD9-136	**65**	**SW9**	**3.45**	0.136	228	883	1350	1610	**1910**	2160	2280	2500	2790	3020	3220	3780	4260
CD8-157	**75**	**SW8**	**3.99**	0.157													
CD9-148	**65**	**SW9**	**3.76**	0.148	251	971	1480	1770	**2100**	2380	2510	2750	3070	3320	3550	4160	4690
CD10-136	**60**	**SW10**	**3.45**	0.136	274	1060	1620	1930	**2290**	2590	2740	3000	3350	3620	3870	4540	5120
CD9-154	**70**	**SW9**	**3.91**	0.154													
CD10-151	**60**	**SW10**	**3.84**	0.151	296	1150	1750	2100	**2480**	2810	2960	3250	3630	3920	4190	4910	5540
CD10-157	**65**	**SW10**	**3.99**	0.157	319	1240	1890	2260	**2670**	3030	3190	3500	3910	4220	4510	5290	5970

FLOW RATE (LPH) = $K\sqrt{BAR}$

Standard Materials: 'Low Thread Gall' Stainless Steel, Tungsten Carbide. Other Materials And Sizes Available On Request.

NOTE: All data shown as a guide only. Data based on water flow. Always consult factory.

Alternative options

Ask us about



Threaded Retainer

Easier installation and removal
For heavy product adhesion problems

Not ready for a full upgrade?

Ask us about no weld ***Conversion series*** *options*



Conversion series Adaptor Caps

Superior strength for large lance



Drip-Pro™ Check Valve Series

Scorched particle reduction

The 10 facts on spray dry safety handbook

Operator Knowledge

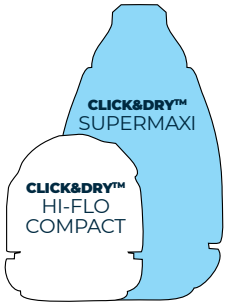


The 10 facts on spray dry safety handbook is a new approach to helping dryer owners, operators and OEMs to identify risks in operations and nozzle designs used in high pressure spray drying.

A valuable training guide for all stake holders. Speak to us today for a free copy and consultation.

Downloadable on spraydrynozzle.com

Is large lance nozzle damage a big problem in your dryer? Ask us about **CLICK&DRY™** Compact's big brother



Optional SuperMaxi Series

Super strong for large lances with 4 years no thread damage guarantee

SuperMaxi Push-fit Easy-out CCT Clasp with optional Drip-Pro™ Check Valve

Simply the best, SuperMaxi Series

CLICK&DRY™ SuperMaxi Push Fit Easy-out CCT Clasp with Drip-Pro™ Check Valve is a complete nozzle performance package ready to give you more choices for your application. Featuring Push-fit assembly without retainer threads for easier assembly and cleaning. This assembly comes standard with:

- Superior construction suitable for large lances
- Large Anti-galling Threads in stainless material making cross threading a thing of the past
- Easy-out CCT Clasp ensures perfect wear part alignment. Achieve consistent spray quality and improve wear part life
- Seal Face Protection Skirt minimises wear part damage
- Push-Fit Pressure Bias[pat. pend.] Technology
- Shortest, reliable **Drip-Pro™ Check Valve** reduces dripping and scorched particle problems

Upgrade to the SuperMaxi Easy-out CCT Clasp range to receive 4 Years No Thread Galling, 2 Years No Wear Part Breakages and 1 Year Wear Cover on Disc and Swirl. Ask us for more details.





SuperMaxi Threaded Easy-out CCT Clasp with optional Drip-Pro™ Check Valve

Problem - difficult disassembly due to heavy wear part adhesion

Solution - Threaded Easy-out CCT Clasp options

CLICK&DRY™ SuperMaxi Threaded Easy-out CCT Clasp with Drip-Pro™ Check Valve option allows easy disassembly of heavily adhered wear parts without the risk of expensive wear part damage. Use in conjunction with the unique **CLICK&DRY™** tool systems to prolong wear part life and reduce operating cost.

The SuperMaxi Threaded Easy-out CCT Clasp comes complete with the shortest, reliable **Drip-Pro™ Check Valve**, which reduces dripping and scorched particle problems.

Ask us about the SuperMaxi Easy-out CCT Clasp Guarantee!



Threaded Easy-out CCT Clasp

The 10 facts on spray dry safety handbook

Scorched particle reduction



The 10 facts on spray dry safety handbook is a new approach to helping dryer owners, operators and OEMs to identify risks in operations and nozzle designs used in high pressure spray drying.

A valuable training guide for all stake holders. Speak to us today for a free copy and consultation.

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NEW ZEALAND
Phone +64 7 839 6444
Fax +64 7 839 6445

AUSTRALIA
Phone +61 3 9583 2368
Fax +61 3 9585 0218

WORLD WIDE SALES
Email sales@spraydrynozzle.com
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