



Tabletting Science
Sharing our knowledge



Support for our customers continues to expand and now covers over 100 countries worldwide

Science and service

Holland is the world's best-known manufacturer of tablet punches and dies. We have been established for over 70 years and pride ourselves on being a true British manufacturing success. Our experience, research and engineering know-how come together to provide precision tooling solutions for thousands of customers in over 100 countries. Our approach to design, development and delivery is unique and collaborative. We work with you at all stages from new tablet concepts to existing product troubleshooting.

A world leader

We recognise that the quality of our service and technical support is a key factor that helps to position us as a world leader. We continue to pioneer innovative new solutions that help our customers to reach new levels of manufacturing flexibility and efficiency. We live in an increasingly competitive world and we will help you succeed.

In order to ensure our high standards are maintained, every aspect of our business is regularly audited. It is this focus on quality and continuous improvement that sets us apart and ensures our hard-earned reputation for excellence continues to shine through everything we do. This brochure provides the highlights of our comprehensive offer.

We do not supply stock tools. Every punch and die we manufacture is bespoke.

Committed to our customers

We recognise that the very best tooling solutions should be supported with the very best service. That is why I Holland invest a great deal of time and money into understanding precisely what our customers need to help them run efficient and profitable tableting operations. This results in a range of services that really set the standard for the industry and differentiates our business. Whatever levels of support you require there is always an I Holland specialist on hand to help.

Customer service

Whether it is a production problem, an issue to do with maintenance of your tooling, advice on the latest tooling specifications, high quality team training or simply to share knowledge and experience, we are delighted to help.

Our services are always being reviewed so be sure to check out the latest information via our website www.tabletingsscience.com

We understand that service is everything





Problem solving and collaboration

We have been working to solve design and production problems with tablet manufacturers for many years. Our design engineers work closely with your teams during the entire process from research and development through to trial and scale up. With appropriate tablet design and correct steel and coating specification, we help to increase your productivity and reduce your costs.

Our collaborative relationships with our clients enable us to produce innovative tooling solutions and we are always looking for new ways of helping you to optimise your production and solve any issues you may have.

We developed our Tool Management System and PharmaCare® 7 Step process to provide you with the means to effectively manage and maintain your tooling inventory to maximise its life and produce a better product for longer.

Our designers are regarded as some of the best in the world and we place great emphasis on offering a high level of technical support, advice and specialist training.

We help to increase your productivity and reduce your costs

Typical problems we help to solve and their associated issues include:

- **Sticking** - Tablet weight variation, tablet shape variation, slower production, reduced tablet output & issues with downstream processes
- **Picking** - Loss of detail to the embossing & tablet weight variation
- **Corrosion** - Damage to tooling, transfer to tablets & damage to tablet press parts
- **Abrasion** - Wear of tooling, wear of tablet press parts, tablet capping, de-lamination & tablet flashing



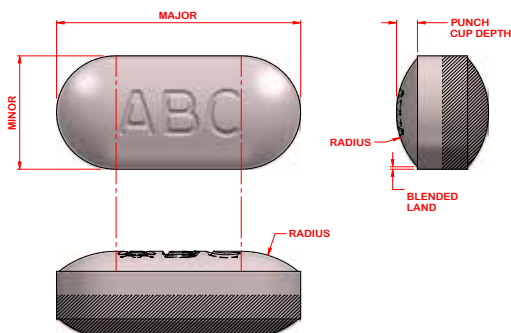
Design

Good tablet and tooling design is essential to prevent tableting problems, produce high quality tablets and maximise the efficiency of the tableting process. Our expert team can advise you on all elements of tablet and tool design and its impact on:

- Tablet shape & profile
- Breakability
- Tooling performance
- Branding
- Anti-counterfeiting

Working with you from the very inception of a project, whether it be optimisation of existing designs, or the creation of new ones, I Holland can provide valuable expertise during the all-important tablet design phase.

The importance of problem solving through good tablet and tooling design should not be underestimated; after all, punches and dies are the most critical interface with your end product, the tablet





Materials, research and development

In partnership with research and technical institutions, we continuously explore the science behind tablet tooling to find permanent and affordable solutions to your tablet manufacturing challenges.

PharmaGrade® refined steel

Selecting the right steel for each application is absolutely key to the successful performance of your tablet compression tooling. There are 1000's of steel types available, but only a few that meet tablet compression tooling requirements. Good steel selection will achieve an optimum balance of the following steel properties:

- Hardness
- Strength
- Toughness
- Abrasive wear resistance
- Adhesive wear resistance
- Corrosion resistance
- Clean structure
- Good machinability

At I Holland we have achieved exactly that with our quality PharmaGrade® steels which are ESR refined at no extra cost.

PharmaCote® coating solutions

The I Holland PharmaCote® range is the most scientifically proven selection of coatings in the tablet tooling market. I Holland's research into Tableting Science over many years has proven that when punch coatings are developed correctly and their beneficial characteristics are matched to those of the formulation, they maximise corrosion resistance, increase wear resistance and prevent sticking.

TSAR≈Predict

TSAR≈Predict is a revolutionary, free of charge service that forecasts the best anti-stick PharmaCote® coating solution for your formulation. TSAR≈Predict calculates single particle adhesion to the punch tip face eliminating the need for expensive and time consuming coating trials. It is the culmination of two years' research in association with the University of Nottingham to investigate the root causes as to why formulations stick to tooling surfaces.



Multi-tip tooling

We understand the demands for increased productivity within tablet production and have a range of options to suit varying requirements; including the ability to replace individual punch tips, to maximise the number of tips per punch, and to ease cleaning procedures. I Holland have been leading the way in the production and installation of multi-tip punches and dies for over 30 years.



Product innovations

As a leader in its field, I Holland has introduced many innovations to the tableting industry. We are constantly thinking about ways to improve the performance and longevity of our products. Below is an indication of some the innovative products and services we have developed.



Rotahead

Rotahead punches allow the head to rotate independently to the punch body, providing a 'bearing' between the punch head and cams for extended tooling life.



WIP Key

Designed with Wash In Place (WIP) solutions in mind, this coated key is extremely resistant to corrosion and the ideal tool for use in the challenging conditions found within WIP presses.



Universal Seal Groove

Our Universal Seal Groove allows drip cups to be fitted onto punches to reduce the risk of oil contamination and, with the use of bellows, to minimise wear of punch guides. They also reduce the risk of oil contamination.



Metallised Bellows and Drip Cups

We have developed metallised bellows and drip cups that are identifiable by standard metal detection equipment to reduce the possibility of small silicone fragments ending up in the finished tablet.



XDF®

XDF® (eXtended Dwell Flat) is our innovative patented elliptical head form designed to increase dwell time on your existing press without the need for time consuming and expensive modifications.



85%

of punch and die problems and damage can be conclusively traced back to poor handling and after-care procedures

Tooling maintenance

PharmaCare® 7 Step Process

It's simply good business sense - maintain and store your punches and dies correctly and you will produce a better product for longer, reduce costs and enhance profitability.

PharmaCare® 7 Step Process is a planned, professional maintenance and storage programme which will contribute more than it costs to your company's profitability.

01. Clean

Tooling should be cleaned and dried to remove any oil or product residue, which is essential to avoid product contamination.

02. Assess

Punches and dies should be visually assessed to establish if the tablet production process is running well or not and to identify whether any maintenance is required.

03. Repair

Any tooling repair identified at the assess stage should be carried out prior to polishing to extend tooling life, minimise breakages and maintain good tablet image definition.

04. Measure

Once any repairs have been made it is essential to measure critical tooling dimensions to check that they have stayed within tolerance.

05. Polish

After any repairs and when measurements have been checked, tooling should be polished to a smooth mirror finish to ensure that tablet definition is maintained.

06. Lubricate

Before storage, tooling should be lubricated to protect it and prevent corrosion. Lubrication also serves to optimise the interface between tooling and press, aiding its smooth operation.

07. Store

The final stage in maintaining optimum punch and die condition is their correct storage to safeguard from damage.

I Holland carry out hundreds of tool maintenance audits globally every year. Contact us to arrange yours info@iholland.co.uk



Tooling management

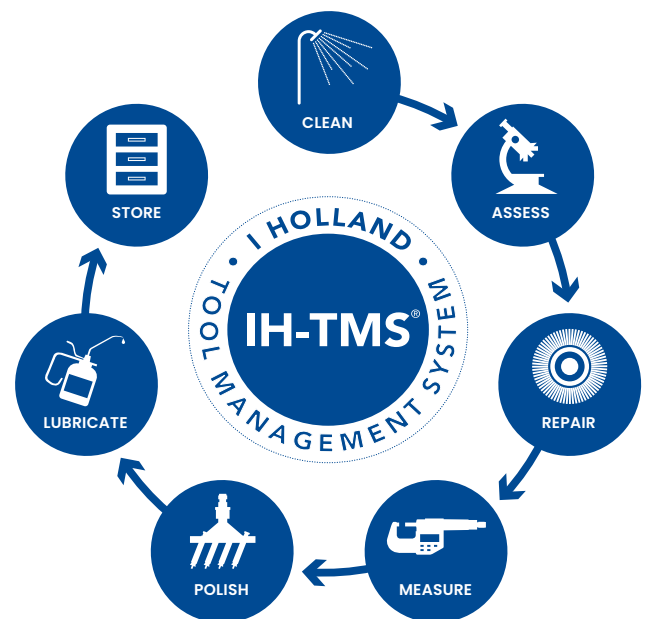
Tool Management System

The punches and dies used to make pharmaceutical tablets, nutraceutical supplements and confectionery products are subject to legislation in almost all countries around the world. The I Holland Tool Management System (IH-TMS) has been developed to allow proactive monitoring of your tooling and to ensure compliance.

IH-TMS is an affordable stand-alone tool management system that helps you track your tooling. The system is 21 CFR Part 11 compliant and allows you to monitor tool rotations, tooling inventory and tooling maintenance. It will also keep account of tablet quantities.

It has the capability to measure your tooling with either hand held instruments or non-contact lasers and can archive tool and tablet images and drawings, ensuring full traceability and data integrity.

Not only does tool management help with industry regulations, it also makes good financial sense. If you can manage and optimise your tablet production assets, you will reduce downtime and increase productivity... the equation really is that simple.





Training and knowledge sharing

We understand the importance to your business of well trained, skilled and knowledgeable operators, technicians, supervisors and managers, which is why we run a long-established program of technical seminars and training courses.

We host several seminars per year at the I Holland production facility in the United Kingdom.

Our experts also speak at numerous seminars worldwide and will visit your site to provide personalised training to your team.

In addition, we have developed I Holland Online Training so your staff can study courses at times convenient to everyone, anywhere in the world, at any time you need. This multi-media approach creates an engaging online learning experience, which can be customised to your individual company requirements and can even be validated with interactive quizzes.

All of our courses draw on knowledge gained from our 70 plus years' experience and include animations, illustrations and videos so each learner is fully engaged.

Our training courses cover wide ranging subjects, including:

- Tooling specification & procurement
- Tablet design & troubleshooting
- Troubleshooting tablet & tooling problems
- Tooling materials, treatments & coatings
- PharmaCare® 7 Step process
- Tooling measurement
- Tooling standards and terminology

Our technical experts are in demand to share their knowledge, speaking at events all over the world



Quality assurance

I Holland is an ISO 9001 registered company, audited twice each year to reconfirm our position as a supplier of quality products and services.

All areas of the business are audited including manufacturing systems, training, purchasing, despatch, customer support and sales and marketing.

We adopt the ISO standard proudly and use it as a benchmark for setting standards across our business systems and processes.

We carry out annual supplier audits on all of our external suppliers.

More than 30 audits are typically carried out each year across internal departments of our business to ensure quality remains at the heart of our product offering.

Each authorised punch tip is recorded before the product leaves the factory, giving you the assurance that a quality product has been despatched.

Every product leaving our factory undergoes a 100% quality inspection



Speed of response

Clients come to us from around the world for our knowledge, experience, innovative tooling solutions and a high level of technical support. All of this is backed up with an important ingredient... an unparalleled speed of response.

We understand that our customers need to exceed the ever-growing demands in their industries. To help you meet your deadlines, and ensure satisfaction with our customer service, speed of response is a core part of our vision statement and has been for many years.

Our customers see this from the very beginning with prompt, direct contact at the initial inquiry stage to understand the exact requirements. Our modern systems encourage fast gathering of correct and critical information first time, every time. This allows I Holland to issue the right proposal within 24-48 hours.

During concept and design, we provide proactive support throughout the decision making process, whilst offering suggestions for improvements

to assist your productivity. We are proud to say that our drawing production and manufacturing lead-times set the standard across the industry. Once your product is ready, we ensure it gets to you as quickly as possible, allowing for overnight deliveries across the world.

What truly sets us apart is our dedication to after-sales service. We want to ensure that you are happy with your tooling all the way through its life cycle. We use the very latest information technology to communicate with both our agents and customers so we can reach you in moments.

Don't forget, I Holland operate 24/7 and with our network of agents throughout the world, there is always someone in your time zone ready to help.



Our vision

To be the customer's preferred choice as the market leading provider of innovative tablet tooling and complementary equipment, underpinned by our understanding of Tableting Science and characterised by:

- **Quality of products**
- **Value for money**
- **Speed of response**
- **Technical support**
- **Excellent customer service**



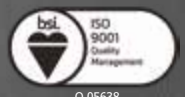
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As a BS EN ISO 9001:2015 registered company, we have total commitment to ensuring all our punch and die products and services are manufactured and supplied to the highest possible standards. I Holland Ltd reserve the right to alter the equipment specifications as may be required. © I Holland Ltd 2019



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