

Вибір високоякісних спеціальних матеріалів для штамів

Наша основна пропозиція складається з цих 4 видів сталі, але ми також можемо надати конкретний сорт сталі (або близький еквівалент), який вам потрібен, а також карбід. Якщо не вказано інше, всі пуанسونи та матриці, перелічені в нашому каталозі та системі кодів продуктів, будуть виготовлені з нашого матеріалу M2 (1.3343) HSS.

Матеріали, позначені * є в наявності на нашому складі

Марка сталі				Хімічний склад (%)								Властивість (1 + 10 краце)			
Güvenal Steel Ref.	Related Standards			C	W	Mo	Mn	Si	Cr	V	Co	Зносостійкість	Твердість при високих температурах	Ударна в'язкість	Шліфувальність
	AISI	VDEh	JIS												
*M2	M2	1.3343	SKH51	0.88	6.00	5.00	0.40	0.45	4.00	2.00	-	5	5	8	5
*PS (ASP30)	S590	1.3294	SKH40	1.30	6.00	5.00	0.50	0.70	4.00	3.00	8.00	7	9	9	9
*M42	M42	1.3247	SKH59	1.10	1.50	9.50	0.40	0.70	4.00	1.00	8.00	8	9	4	5
V4E	-	-	-	1.40	-	3.50	0.40	0.40	4.70	3.70	-	9	9	7	9

M2	M2 - це звичайна високошвидкісна сталь, загартована та трічі відпущена до HRC:60-63. Вона має хорошу в'язкість, зносостійкість та високу міцність на тиск. Підходить для штампування товщини менше 5 мм. Аналог P6M5
PS (ASP30)	ASP30 PM Steel — це надвисокопродуктивна інструментальна сталь, призначена для високошвидкісних застосувань. Вироблена за допомогою технології порошкової металургії (PM), ця сталь є однією з найкращих у своїй категорії, маючи виняткові властивості, такі як стійкість до високих температур, твердість і зносостійкість. Ця високолегована кобальтова порошкова металургійна сталь має чудові характеристики для механічної обробки або холодної обробки. Стабільна продуктивність, що забезпечує шліфувальність і меншу деформацію після термічної обробки. Відмінна гаряча оброблюваність і можливість отримання високолегованої сталі. Висока зносостійкість.
M42	Цей матеріал особливо рекомендується для використання у винтах, болтах та кріпильних пуансонах. M42 — це високошвидкісний сталевий сплав із серії молібдену, що містить додатково від 8 до 10 відсотків кобальту. Він широко використовується у металообробній промисловості завдяки своїй вищій червоній твердості порівняно з більш традиційними високошвидкісними сталями. Ця підвищена твердість дозволяє скоротити час циклу у виробничих умовах завдяки вищій швидкості різання та більшим інтервалам між замінами інструментів. M42 також менш схильний до відколів під час перерваних різань і є більш економічним порівняно з карбідними інструментами.
V4E	Vanadis 4 Extra Super Clean — одна з найбільш універсальних порошкових інструментальних сталей, доступних сьогодні на ринку, що поєднує в собі чудову зносостійкість і з високою стійкістю до відколів та деформації країв. Вона забезпечує чудову оброблюваність як у м'якому, так і в загартованому стані, забезпечуючи переваги як при виготовленні, так і при обслуговуванні інструменту.

Стандартні покриття поверхні для макс. довговічності пуансона



"Щоб отримати покриття, будь ласка, додайте «Код покриття» до кінця назви пуансона або коду замовлення."

TiN



- TiN є найбільш економічно вигідним і широко використовуваним PVD покриттям.
- Воно забезпечує належну термічну стабільність для більшості операцій з холодною обробкою металу.
- TiN ідеально підходить для легких процесів штампування з використанням мастильних матеріалів для штампування, але не рекомендується для використання з нержавіючою сталлю, нікелем або міддю.

Код покриття:
TiN

Material: Titanium nitride
Technology: PVD
Товщина: 1.3 µm - 3 µm
Колір: Золотистий

AlCrN Advanced Arc



- Наш найпопулярніший тип покриття.
- AlCrN забезпечує чудову зносостійкість і подовжує термін експлуатації інструменту.
- Ідеально підходить для штампування, пробивання, вирубування та екструзії.
- Не рекомендується для алюмінію.
- Значно твердіше за традиційний TiCN.

Код покриття:
AlCrn

Material: AlCrN
Technology: PVD Advanced Arc
Товщина: 2 - 4 µm
Колір: Сірий

DUPLEX-VARIANTIC



- Відмінні результати при різанні, формуванні, штампуванні та прецизійному різанні.
- Низький коефіцієнт тертя.
- Висока стійкість до окислення.
- Надзвичайно висока зносостійкість.
- Наше найкраще покриття преміум-класу, що забезпечує довговічність і високу продуктивність.

Код покриття:
Duplex

Material: TiAlCN
Technology: PVD Advanced Arc
Товщина: 4 - 6 µm
Колір: стара троянда

DLC



- Покриття DLC чудово підходить для штампування кольорових металів (алюмінію тощо).
- Висока стійкість до абразивного зносу та задинок.
- DLC демонструє найкращі результати у поєднанні з попереднім та остаточним поліруванням.

Код покриття:
Dlc

Material: DLC
Technology: PACVD
Товщина: 2 - 4 µm
Колір: Темно сірий і чорний

DRAG-FINISH (G-Lap)



Для кожного виробу виконується безкоштовний спеціальний процес DRAG-FINISH, який ми кодуємо як G-Lap. Güvenal завжди гарантує ідеальну якість поверхні. Якщо ваші виробу мають покриття, G-Lap виконується знову після етапу покриття.

Güvenal «G-Lap» використовує спеціалізовану операцію, що містить алмазні частинки, для полірування навіть найнерівніших поверхонь та важкодоступних місць.

- Підвищує довговічність прошивних та формувальних інструментів.
- Забезпечує рівномірну обробку поверхні без деформації або пошкодження.
- Покращує якість обробки та збільшує адгезію для PVD/CVD покриттів.
- Практично не видаляється матеріал, що забезпечує постійне дотримання жорстких допусків.

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4 ОСНОВНІ ПЕРЕВАГИ ВИБОРУ СТАНДАРТНОГО ПУАНСОНА ТА МАТРИЦІ

У промислових операціях з формування металу компоненти для штампування, що використовуються для пробивання отворів, часто розробляються індивідуально для кожного продукту, що призводить до несумісності з іншими операціями пресування. Набори пуансонів і матриць зазвичай є одноразовими компонентами, розробленими спеціально для кожної машини та операції. Наприклад, набір може бути розроблений для конкретного процесу. Розробка індивідуальних наборів штампів і матриць для кожної лінійки продукції не є ефективним підходом до планування виробничого обладнання та капіталу. Натомість, використання стандартних комплектів пуансонів та матриць для поширених виробничих процесів та матеріалів заготовок є набагато ефективнішою стратегією. На цьому етапі Güvenal є ідеальним партнером для ваших проєктів, пропонуючи продукцію, що відповідає стандартам DIN-ISO, та можливості швидкої доставки.

1. Покращена узгодженість та точність розмірів

Стандартні виробничі інструменти забезпечують кращу точність розмірів та прецизійність порівняно зі штампами на замовлення. Деталі, виготовлені за допомогою стандартизованих комплектів штампів, як правило, мають менше дефектів, що стабілізує виробничий процес.

2. Підвищена економічна ефективність

Стандартні штамповані компоненти допомагають зменшити витрати на брак і переробку. Оптові замовлення також дозволяють значно заощадити на капітальному обладнанні. Зберігання невеликої кількості компонентів зменшує витрати на запаси.

3. Спрощене технічне обслуговування та заміна

Стандартні, взаємозамінні компоненти пуансона та матриці спрощують обслуговування та заміну. Коли деталь ламається, її можна швидко замінити існуючою запасною частиною, що усуває необхідність виготовлення деталей на замовлення.

4. Прискорені процеси проєктування та створення прототипів

Стандартні компоненти прискорюють процес проєктування та створення прототипів. CAD-моделі дозволяють інженерам перевіряти відповідність компонентів на ранній стадії проєктування, скорочуючи час виготовлення прототипів і прискорюючи розробку продукту. Ці переваги роблять виробничий процес набагато ефективнішим, що призводить до значної економії коштів і поліпшення якості.

РОЗУМІННЯ ЗАЗОРУ ДЛЯ ПУАНСОНІВ І МАТРИЦЬ

Зазор між пуансоном і матрицею — це відстань між ріжучою кромкою пуансона і ріжучою кромкою матриці, яка має вирішальне значення для чистого і точного різання металу. Цей зазор забезпечує ефективне зрізання матеріалу пуансоном і створення чистого отвору без надмірної деформації або задирок.

“Важливість зазору між пуансоном і матрицею” «Правильний зазор забезпечує високу якість різання з мінімальною кількістю задирок, скорочуючи час на доопрацювання та підвищуючи ефективність виробництва.

Він також мінімізує знос інструменту, продовжуючи термін експлуатації дорогого інструменту та скорочуючи витрати на технічне обслуговування.

Крім того, оптимізований зазор покращує енергоефективність, оскільки для різання потрібно менше зусиль.

«Фактори, що впливають на вибір кліренсу»

Стан інструменту: Стан інструменту впливає на регулювання зазору залежно від зносу інструменту.

Матеріал: Тверді матеріали вимагають більшого зазору, ніж м'які.

Товщина: Більш товсті заготовки потребують більшого зазору.

Рекомендований зазор для звичайних матеріалів:

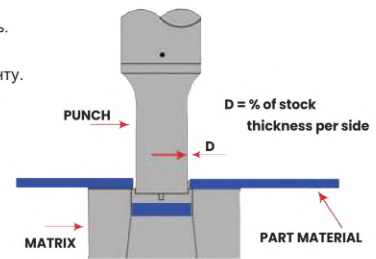
Ми рекомендуємо підтримувати зазор між матрицею та пуансоном, рівний 10% від товщини оброблюваного листа.

Більш міцні матеріали вимагають більших зазорів, а матеріали з високою точністю — менших.

“Регулювання зазору для спеціальних застосувань”

Точне вирубання: Цей метод вимагає дуже малих зазорів для високої точності, але призводить до більшого зносу інструменту.

Тверді/високоміцні матеріали: вони потребують більшого зазору через свою міцність, а менші зазори збільшують знос інструменту з часом.



Recommended Clearance for Common Materials:

Material	Soft	Hard
Алюміній	% 10	% 12
Латунь / Мідь	% 6	% 8
Низьковуглецева сталь	% 10	% 12
Високовуглецева сталь	% 18	% 20

Підсумовуючи, зазор між пуансоном і матрицею безпосередньо впливає на якість різання, довговічність інструменту та ефективність виробництва. Регулювання з урахуванням типу матеріалу та застосування надзвичайно важливим для досягнення оптимальної продуктивності.

Наприклад: Рекомендований зазор 10% для матеріалу товщиною 2,0 мм (зазор = 0,20 мм);

Загальний зазор між пуансоном і матрицею (= зазор з кожного боку * 2): 0,40 мм Розмір пуансона: 12,60 мм і розмір отвору матриці: 13,00 мм

ПРО ПУАНСОНИ З ВИШТОВХУВАЧЕМ (отлипатель)

“Güvenal Standard Solid Blank – серія виштовхувальних пуансонів”

Серія пуансонів з виштовхувачем, що пропонується компанією Güvenal у вигляді стандартних суцільних заготовок, забезпечує виштовхування заготовки (задинок або стружки) з точки пробивання за допомогою вбудованого у пуансон виштовхувача.

Applicable to ISO 8020 series, as well as Ball Lock, Heavy-Duty Headed, Center-Dowel Headed, and Bottle-Neck product groups.

All models are in stock and ready for shipment.



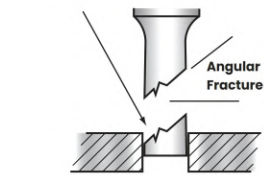
Система складається з трьох основних частин: виштовхувального штифта, пружини та стопорного гвинта. Пружина у верхній частині виштовхувача забезпечує необхідну силу для його функціонування, а стопорний гвинт затягується в головці пуансона, щоб закріпити всю конструкцію. Під час роботи пуансон спочатку контактує з матеріалом. Одночасно виштовхувальний штифт відсувається назад, стискаючи пружину. Потім пуансон продовжує свою нормальну роботу, створюючи необхідний отвір у матеріалі. Після відокремлення штампа пружина розширюється, виштовхуючи виштовхувальний штифт назовні і звільняючи заготовку з кінчика пуансона.

Punches and Retainers / Stamping

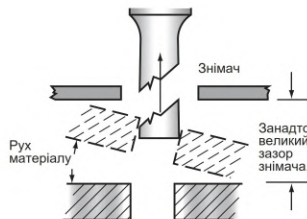
KEY FACTORS BEHIND PUNCH PROBLEMS



невдале вилучення деталі з матриці



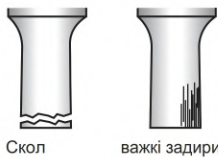
НЕСПРАВНІСТЬ:
Частина пуансона відламалася в матеріалі.



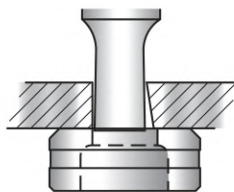
ЙМОВІРНА ПРИЧИНА:
Занадто великий зазор знімача.

МОЖЛИВЕ РІШЕННЯ: Розташуйте знімач ближче до матеріалу

Скол, викривлення і задири



НЕСПРАВНІСТЬ:
Відкол на поверхні пуансона або сильне зношування однієї ділянки пуансона.



ЙМОВІРНА ПРИЧИНА:
Неправильне вирівнювання між пуансоном і матрицею, що призводить до зтягування пуансона.

МОЖЛИВЕ РІШЕННЯ: Відрегулюйте вирівнювання між пуансоном і матрицею, щоб створити рівний зазор по всьому периметру.

ПОРУШЕННЯ СТИСКУ



ПОРУШЕННЯ:
Відбувається, коли міцність на стиск пуансона перевищена і вся робоча частина руйнується.

ЙМОВІРНА ПРИЧИНА:
Спроба пробити надзвичайно тверді або товсті матеріали, або повне зміщення пуансона та матриці.

МОЖЛИВЕ РІШЕННЯ: Перевірте вирівнювання, і якщо проблема не пов'язана з вирівнюванням, зверніться до Güvenal.

НЕСПРАВНІСТЬ ГОЛОВКИ ПУАНСОНА

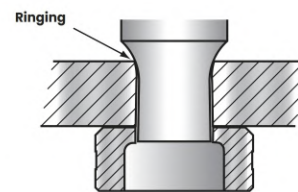


НЕСПРАВНІСТЬ: Головка пуансона тріскається або відламується.

ЙМОВІРНІ ПРИЧИНИ ТА ПОЯСНЕННЯ:

- Товщина матеріалу не повинна змінюватися. Причина полягає в тому, що під час процесу відведення пуансона, якщо він залишається застряглим, раптове напруження може призвести до відлому головки.
- Для отримання більш гладкої поверхні мінімальна площа перехідної частини пуансона повинна бути покрита. **легше**
- Головка дуже тверда, і вона не піддається відпуску.
- Не використовується матриця з пуансоном.
- Встановлення пуансона на плиту замість використання тримача пуансона.
- Використання нещільно закріпленого або зношеного фіксатора (пуансона).

RINGING чи деформація матеріалу



НЕВДАЧА: Матеріал, що піддається штампуванню, деформується з кожним ударом преса.

ЙМОВІРНА ПРИЧИНА:
Матеріал товстіший за робочу довжину пуансона, або пуансон занадто глибоко входить у матрицю.

МОЖЛИВЕ РІШЕННЯ: Відрегулюйте довжину ходу, щоб вона входила в матрицю максимум на 6-7%.

ПОПЕРЕДЖЕННЯ:

Забезпечення безпечної роботи: Використання цього інструменту є відповідальністю оператора верстата.

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Punches and Retainers / Stamping



High-Tech 5-Axis Grinding for Premium Güvenal Punches
Quality, Affordability, and Speed Combined

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A Quick Look at the Manufacturing Processes for Premium Güvenal Punches

- 1 --- Planning and Design**
 Immediately after your order reaches Güvenal, your customer representative opens your order in the system. Then, engineers complete the product design and planning process on the same day.
- 2 --- Material Preparation**
 Material for your order is immediately supplied from our raw material stocks, from our ready-made, heat-treated steel bars. One of the most important features of Güvenal for stamping punches is its very strong raw material stocks and all steel bars are ready in our stocks in heat-treated form. After your order is processed by the raw material warehouse, this raw material is delivered to the production facility with a barcoded process document.
- 3 --- Grinding & Machining Settings**
 The necessary adjustments are made by the operators on the 5-axis grinding machines. And production is started.
- 4 --- Manufacturing Phase**
 Production is completed on our 5-AXIS CNC GRINDING machines with our special prescription and top-class raw materials.
- 5 --- Quality Control and Inspections**
 After production is completed, all necessary checks are carried out by QC teams for each piece separately.
- 6 --- Güvenal's unique DRAG-FINISH process**
 For each piece - a free and special DRAG-FINISH process, which we code as G-Lap, is performed. Güvenal always guarantees perfect surface quality. If your products have coating, this process is performed again after the coating phase.
- 7 --- Delivery Phase**
 After G-Lap, a simplified final QC is done. The product is marked by the delivery team with laser marking. Then, each product is waxed to prevent damage during delivery. After labeling and packing, it is ready for delivery.

Ready Heat-Treated Steel Bars



Ready Solid Blanks



5-Axis Multi-grinding Machines & 6-Axis Wire EDM Machines of Güvenal



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DEFENCE and AMMUNITION TOOLING for STAMPING

You can contact us for the most suitable solutions for your punches needs for the defense and ammunition industry. Güvenal is an expert address in grinding the most complex geometries with up to 2 micron precision.

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"Turkish-Made / Globally Connected Quality"

We are proud to produce all of our products in our state-of-the-art center in Istanbul, Türkiye. Our facility is continuously updated with the latest advancements in manufacturing, inspection and material technology. The relationships we maintain with material, machine, and tool manufacturers worldwide enable us to stay at the forefront of industry technology ensuring that our facilities are among the most modern and well-equipped.

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"The Perfect Combination"

We seamlessly integrate high-quality tool steel with advanced coatings to significantly extend tool service life. This optimal combination minimizes wear and material buildup, reducing your overall tooling costs. With this approach, your tools will deliver exceptional durability and performance, providing value and reliability that you've never experienced before."

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ISO Certified:
To ensure the highest quality and meet customer requirements, we continuously improve our Quality Management System in accordance with ISO 9001:2015.

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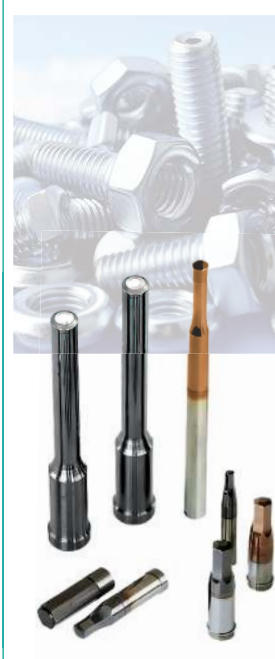
CUSTOM TOOLING and WIRE-EDM PARTS



CUSTOM CAN & END TOOLING SOLUTIONS FOR FOOD AND BEVERAGE



CARBIDE PUNCHES FOR BOLTS, NUTS AND PARTS



CUSTOM-MADE SELF-LUBRICATING COMPONENTS



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Punches and Retainers / Stamping



We produce custom, precise, and in-house tooling parts for industries such as automotive, home appliances defense and aerospace, food and beverage, fasteners, door and window manufacturing, medical, electronic and many other sectors.

High-Performance Special Material Selection for Punches

Our core offering consists of these 4 steels, but we are also capable of providing the specific steel grade (or a close equivalent) you require, as well as Carbide. Unless otherwise specified, all punch and die buttons listed in our catalog and product code system will be manufactured from our M2 material.

Materials marked with * are available in our stock.

Steel Grade				Chemical Composition (%)								Feature (1 → 10 better)			
Güvenal Steel Ref.	Related Standards			C	W	Mo	Mn	Si	Cr	V	Co	Wear Resistance	Hot Hardness	Toughness	Grindability
	AISI	VDEh	JIS												
*M2	M2	1.3343	SKH51	0.88	6.00	5.00	0.40	0.45	4.00	2.00	-	5	5	8	5
*PS (ASP30)	S590	1.3294	SKH40	1.30	6.00	5.00	0.50	0.70	4.00	3.00	8.00	7	9	9	9
*M42	M42	1.3247	SKH59	1.10	1.50	9.50	0.40	0.70	4.00	1.00	8.00	8	9	4	5
V4E	-	-	-	1.40	-	3.50	0.40	0.40	4.70	3.70	-	9	9	7	9

M2	M2 is a conventional high-speed steel, hardened and triple tempered to HRC:60-63. It has good toughness, wear resistance and high compression strength. Suitable for stamping thickness less than 5 mm.
PS (ASP30)	ASP30 PM Steel is an extra-high-performance tool steel, designed for high-speed applications. Manufactured using powder metallurgy (PM) technology, this steel is one of the finest in its category, offering exceptional properties such as high-temperature resistance, hardness, and wear resistance. This cobalt high-alloyed powder metallurgy steel offers excellent features for machining or cold work. Stable performance that certain grindability and less deformation after heat treatment. Excellent Hot Workability and becoming it is possible a high alloy. Superior wear resistance.
M42	This material is especially preferred for use in screws, bolts, and fastener punches. M42 is a high-speed steel alloy from the molybdenum series, containing an additional 8 to 10 percent cobalt. It is widely utilized in the metal manufacturing industry due to its superior red hardness compared to more conventional high-speed steels. This enhanced hardness allows for shorter cycle times in production environments, thanks to its higher cutting speeds and longer intervals between tool changes. M42 is also less prone to chipping during interrupted cuts and is more cost-effective compared to carbide tools.
V4E	Vanadis 4 Extra Super Clean is one of the most versatile PM tool steels available in today's market, combining excellent wear resistance with high resistance to edge chipping and deformation. It offers outstanding machinability in both soft and hardened conditions, providing advantages in both tool manufacturing and tool maintenance.

Our Standard Surface Coatings for Ultimate Punch Life



"To receive the coating service, please add the 'Coating Code' to the end of the punch or order code"

TiN



- TiN is the most cost-effective and widely used PVD coating.
- It offers suitable thermal stability for most cold working metal operations.
- TiN is ideal for light stamping processes with stamping lubricants but is not recommended for use with stainless steel, nickel, or copper applications.

Coating Code:
Tin

Material: Titanium nitride
Technology: PVD
Thickness Range: 1.3 µm - 3 µm
Colour: Gold

AlCrN Advanced Arc



- Our most popular coating type.
- AlCrN offers excellent wear resistance and extended tool life.
- Ideal for stamping, piercing, blanking, and extrusions.
- Not recommended for aluminum.
- Significantly harder than traditional TiCN.

Coating Code:
Alcrn

Material: AlCrN
Technology: PVD Advanced Arc
Thickness Range: 2 - 4 µm
Colour: Grey

DUPLEX-VARIANTIC



- Excellent results in cutting, forming, stamping and precision cutting.
- Low friction.
- High oxidation resistance.
- Extremely high wear resistance.
- Our top-performing premium coating option for durability and performance.

Coating Code:
Duplex

Material: TiAlCN
Technology: PVD Advanced Arc
Thickness Range: 4 - 6 µm
Colour: Old Rose

DLC



- The DLC coating is excellent for stamping non-ferrous metals (aluminum etc.)
- Superior resistance to abrasive wear and galling.
- DLC performs best when combined with pre and final polishing.

Coating Code:
Dlc

Material: DLC
Technology: PACVD
Thickness Range: 2 - 4 µm
Colour: Dark-grey & Black

DRAG-FINISH (G-Lap)



For each piece - a free and special DRAG-FINISH process, which we code as G-Lap, is performed. Güvenal always guarantees perfect surface quality. If your products have coating, G-Lap is performed again after the coating phase.

Güvenal "G-Lap" utilizes a specialized operation containing diamond particles to polish even the most irregular surfaces and hard-to-reach areas.

- Improves the durability of piercing and forming tools.
- Delivers a uniform surface finish without distortion or damage.
- Enhances the finish and increases adhesion for PVD/CVD coatings.
- Virtually no material is removed, ensuring tight tolerances are consistently maintained.

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Punches and Retainers / Stamping



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4 KEY BENEFITS OF CHOOSING STANDARD PUNCH AND MATRIX

In industrial metal forming operations, stamping components used for hole punching are often custom-designed for each product, leading to incompatibility with other press operations. Punch and matrix sets are typically one-off components designed specifically for each machine and operation. For instance, a set may be designed for a particular process. Designing custom punch and matrix sets for every product line is not an efficient approach for planning manufacturing equipment and capital. Instead, using standard punch and matrix sets for common manufacturing processes and workpiece materials is a much more efficient strategy. At this point, Güvenal is an ideal partner for your projects, offering products compliant with DIN-ISO standards and fast delivery capabilities.

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1. Improved Consistency and Dimensional Accuracy

Standard production tools provide better dimensional accuracy and precision compared to custom dies. Parts made with standardized die sets tend to have fewer defects, which stabilizes the production process.

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2. Increased Cost Efficiency

Standard stamping components help reduce scrap and rework costs. Bulk ordering also results in significant savings on capital equipment. Storing a small number of components reduces inventory costs.

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3. Simplified Maintenance and Replacement

Standard, interchangeable punch and matrix components simplify maintenance and replacement. When a part breaks, it can be quickly replaced with an existing spare part, eliminating the need for custom part fabrication.

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4. Accelerated Design and Prototyping Processes

Standard components speed up the design and prototyping process. CAD models allow engineers to verify component fit early in the design process, reducing prototype production time and accelerating product development. These benefits make the production process much more efficient, resulting in significant cost savings and improved quality.

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UNDERSTANDING DIE CLEARANCE FOR PUNCHES AND MATRIX

Punch and die clearance is the distance between the punch's cutting edge and the matrix cutting edge, critical for clean precise cuts in metal punching. This clearance ensures the punch effectively shears the material and creates a clean hole without excessive deformation or burrs.

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"Importance of Punch and Die Clearance" Proper clearance ensures high-quality cuts with minimal burrs, reducing rework time and increasing production efficiency. It also minimizes tool wear, extending the lifespan of expensive tooling and reducing maintenance costs.

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Additionally, optimized clearance improves energy efficiency by requiring less force for cutting.

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"Factors Affecting Clearance Selection"

Tooling Condition: The state of the tools impacts the clearance adjustment depending on tool wear.

Material: Harder materials require more clearance than softer ones.

Thickness: Thicker workpieces need more clearance.

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Recommended Clearance for Common Materials:

We suggest maintaining a cutting clearance between the matrix and the punch equal to 10% of the sheet thickness being processed. Stronger materials require higher clearances, while precise grades require lower clearances.

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"Adjusting Clearance for Special Applications"

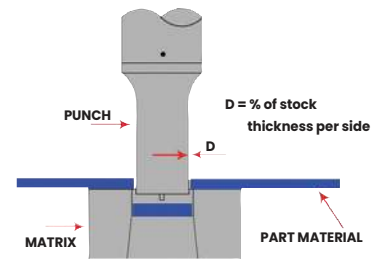
Fine Blanking: This technique demands very small clearances for high precision but results in higher tool wear.

Hard/High Tensile Materials: These require more clearance due to their strength, and tighter clearances increase tool wear over time.

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In summary, punch and die clearance directly impacts cut quality, tool longevity, and production efficiency. Adjustments based on material and application type are crucial for optimal performance.

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Recommended Clearance for Common Materials:

Material	Soft	Hard
Aluminum	% 10	% 12
Brass / Copper	% 6	% 8
Low Carbon Steel	% 10	% 12
High Carbon Steel	% 18	% 20

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EXAMPLE: Recommended clearance 10% with 2,0 mm thick material (clearance = 0,20 mm):

Total punch-to-matrix clearance (= clearance per side * 2): 0,40 mm **Punch Point Size:** 12,60 mm & **Matrix Hole Size:** 13,00 mm

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ABOUT EJECTOR PUNCHES

"Güvenal Standard Solid Blank – Ejector Punch Series"

The **Ejector Punches** series, offered by Güvenal as **standard solid blank**, ensures the **ejection of the slug (burr or chip) from the punch point** by integrating the ejector into the punch.

Applicable to **ISO 8020 series**, as well as **Ball Lock, Heavy-Duty Headed, Center-Dowel Headed, and Bottle-Neck** product groups.

All models are in stock and ready for shipment.

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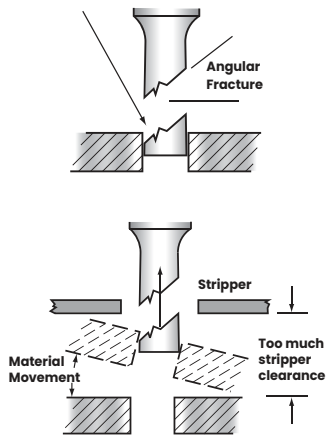


The system is composed of three main parts: **Ejector Pin, Spring, and Set Screw**. The spring on top of the ejector provides the necessary force for its function, while the set screw is tightened into the punch head to secure the entire assembly. During operation, the punch first contacts the material. At the same time, the ejector pin is pushed back, compressing the spring. The punch then continues its normal function, creating the required hole in the material. Once the slug is separated, the spring expands, pushing the ejector pin outward and releasing the slug from the punch tip.

KEY FACTORS BEHIND PUNCH PROBLEMS



STRIPPING FAILURE

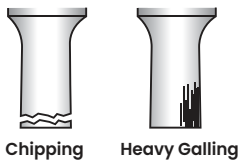


FAILURE:
A portion of the punch is broken off in the material.

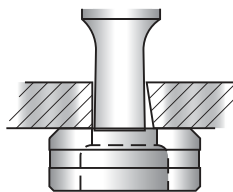
PROBABLE CAUSE:
Too much stripper clearance.

POSSIBLE SOLUTION: *Adjust stripper closer to the material.*

CHIPPING and GALLING



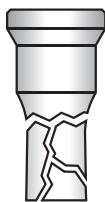
FAILURE:
Punch face chipping or heavy galling on one area of punch.



PROBABLE CAUSE:
Poor alignment between punch and matrix causing the punch to drag.

POSSIBLE SOLUTION: *Adjust alignment between punch and matrix to create equal clearance all around.*

COMPRESSIVE FAILURE



FAILURE: Occurs when the compressive strength of the punch has been exceeded and the entire working end fractures.

PROBABLE CAUSE:
Attempting to punch extremely hard or thick materials, or complete misalignment of the punch and die.

POSSIBLE SOLUTION: *Check the alignment, and if the issue is not with the alignment, consult Güvenal.*

PUNCH HEAD FAILURE

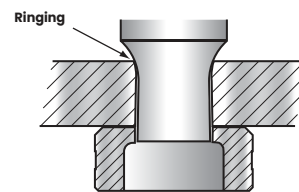


FAILURE: Punch head fractures or breaks off.

PROBABLE CAUSES and EXPLANATIONS:

- The material thickness should not be variable. The reason is that during the punch retraction process, if the punch remains stuck, sudden stress may cause the head to break off.
- For a smoother surface, the minimum step area of the punch should be coated. This smoothness allows the punch to move more easily.
- The head is very hard, and there is no tempering in it.
- Not using a matrix with the punch.
- Mounting the punch onto the plate instead of using a Punch Retainer.
- Using a loose or worn Punch Retainer.

RINGING



FAILURE: Material being punched is deformed with each stroke of the press.

PROBABLE CAUSE:
Material is thicker than the working length of the punch, or the punch is entering into the matrix too far.

POSSIBLE SOLUTION: *Adjust the stroke length to enter into the matrix a maximum of 6 - 7%.*

WARNING:
Ensuring the safe use of this tooling is the machine operator's responsibility.

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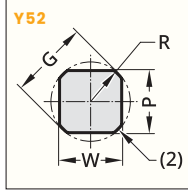
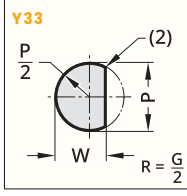
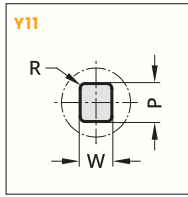
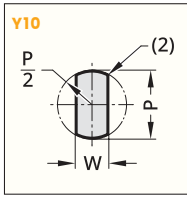
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Punches and Retainers / Stamping

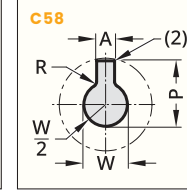
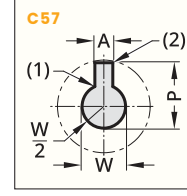
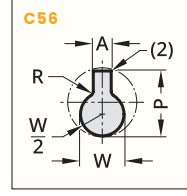
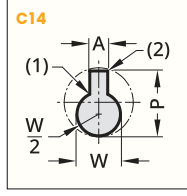
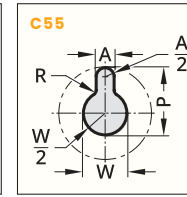
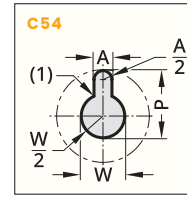
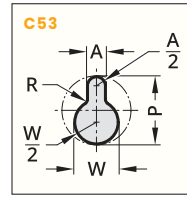
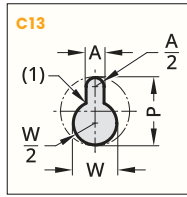
Standardised Special Shapes 

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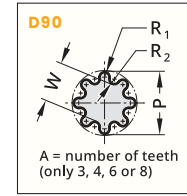
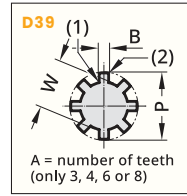
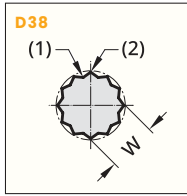
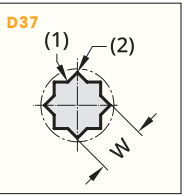
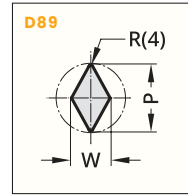
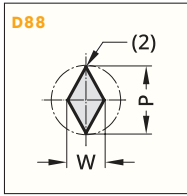
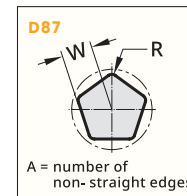
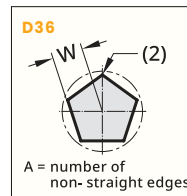
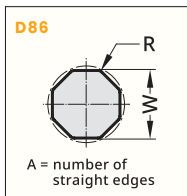
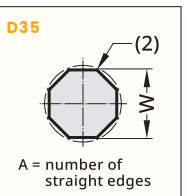
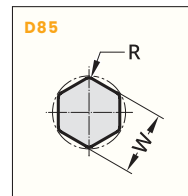
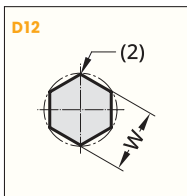
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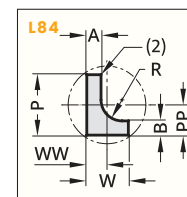
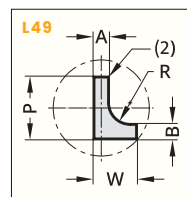
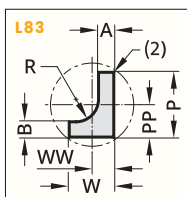
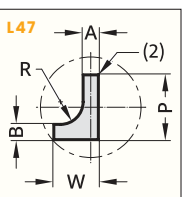
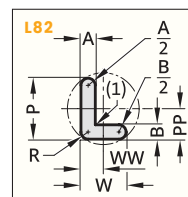
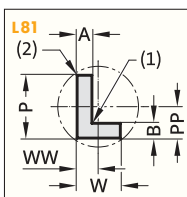
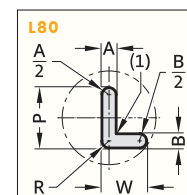
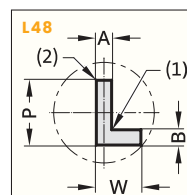
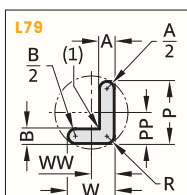
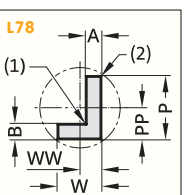
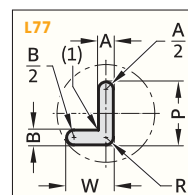
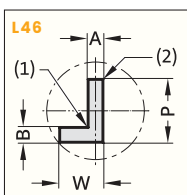
Key-hole shapes



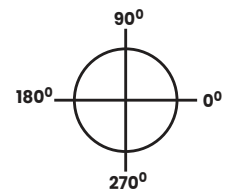
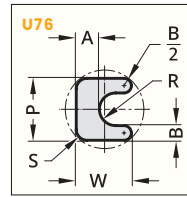
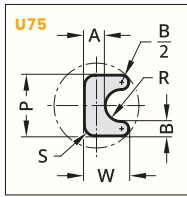
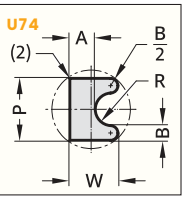
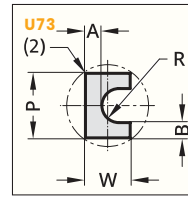
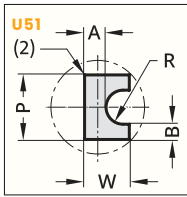
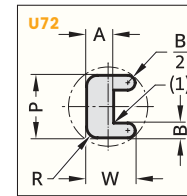
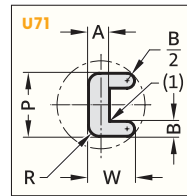
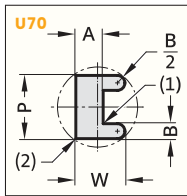
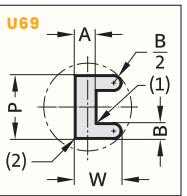
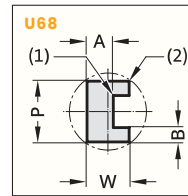
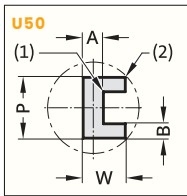
Polygons



L-shapes

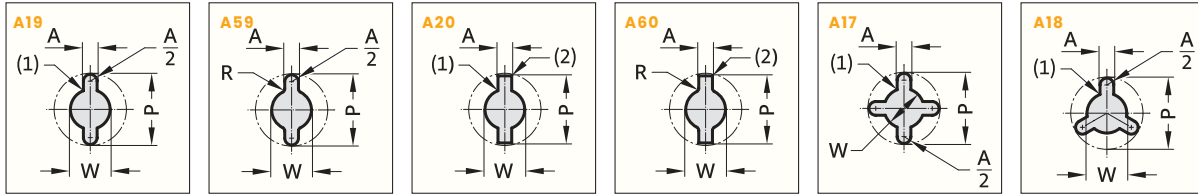


U-shapes

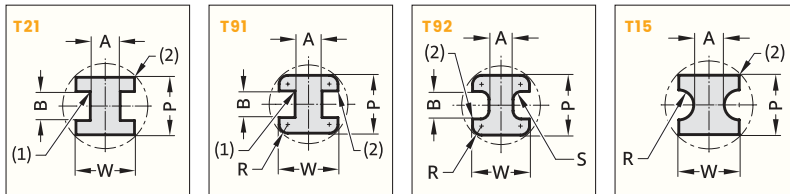


Standardised Special Shapes 

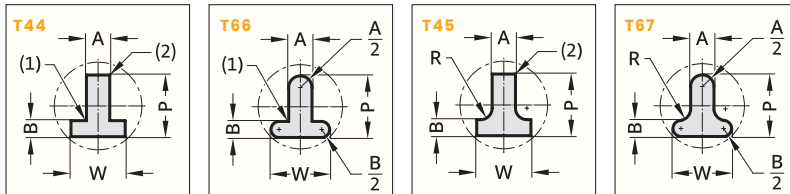
Multi key-hole shapes



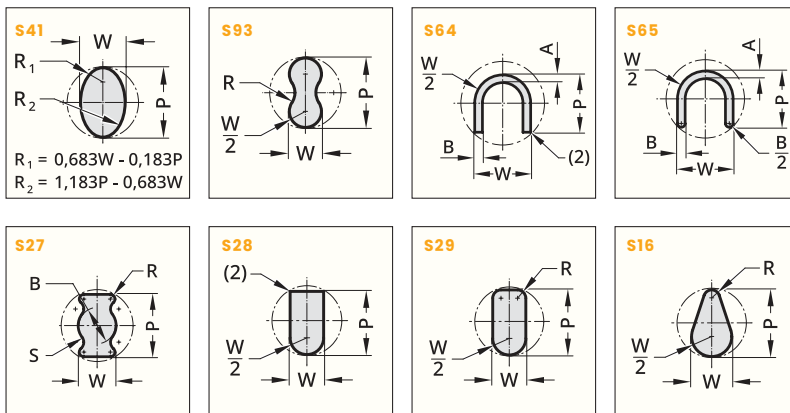
Double T-shapes



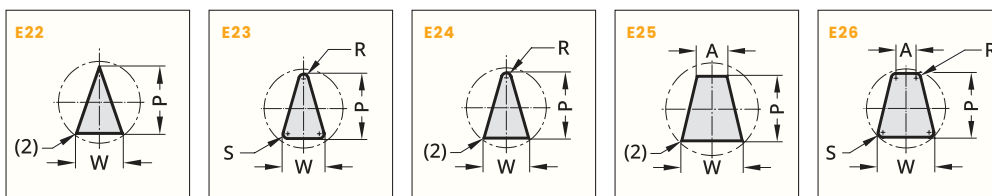
Simple T-shapes



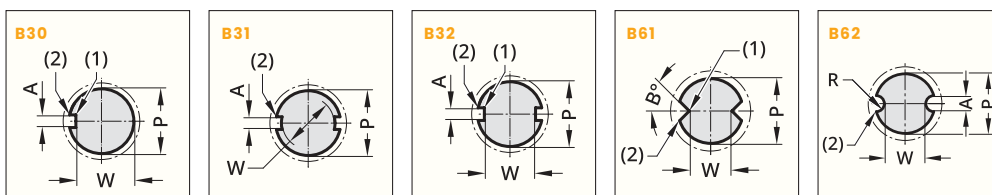
Various



Triangles, trapezes



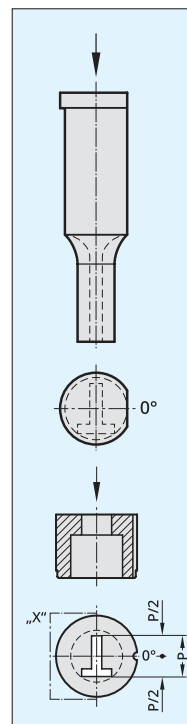
Key-hole



View - X

Cutting gap / Clearance (a)
 Roundings with the corresponding sharp corners reduce the cutting gap per side (a). If the cutting gap is 0.04 mm (a) or less, **Güvenal** will round the sharp edges if the cutting punch and the matrixes are ordered together. This reduces the installation time and the risk of an edge breaking during operation.

Note:
 (1) and (2) - roundings and sharp edges
 (1) rounding on the cutting punch of max. R0.2, corresponds to a sharp edge on the matrix (2) rounding on the cutting matrix of max. R0.2, corresponds to a sharp edge on the punch



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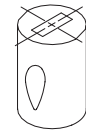
i KEYING INFORMATION - OPTIONS (1/2)

STANDARD LOCATION

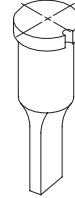
BALL LOCK PUNCH



BALL LOCK MATRIX



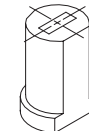
HEADED PUNCH



MATRIX STRAIGHT



MATRIX HEADED



Standard ballseat location for all ball lock products is 90°. Standard flat and dowel groove location is at 0°.

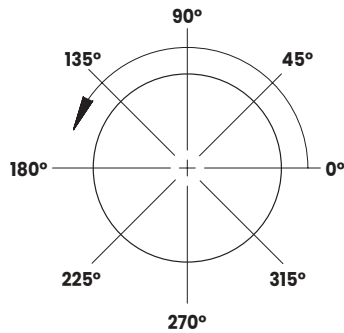
Note: 0° is at 3:00. Alternate no charge locations are 0°, 90°, 180°, 270° (see drawing).

To order alternate locations specify **Keying type / _ _ _ °**.

Ball lock punch example: BAO x 13 x P8.2 x W6.1 x 19 x 100 - BS/0°

Matrix Straight example: MKO25-32 P=13.0 W=10.5 - K1

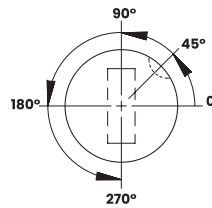
CUSTOM LOCATIONS



TYPICAL EXAMPLES:

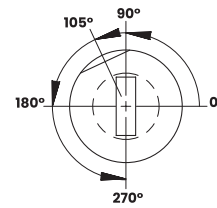
CUSTOM BALL SEAT LOCATION PUNCH

BS/45°



CUSTOM FLAT LOCATION MATRIX

K2/105°



Any Keying Options can be radially positioned by specifying the appropriate keying and its desired angle. The appropriate angle is defined by a counter clockwise rotation from 0°.

Note: Parts are viewed in die position looking from above the die. Punches are viewed looking through the shanks. Matrixes are viewed through top face.

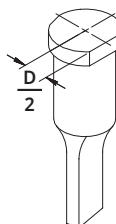
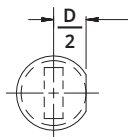
FLATS ON HEADED PRODUCTS

K1 and **K5** are ground flush to shank. **K6** is a user defined flat and requires an "F" dimension specified with order.

K5 flats are standard 180° apart.

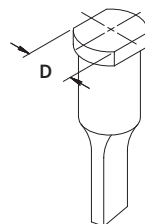
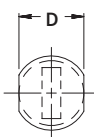
K1

KEY FLAT



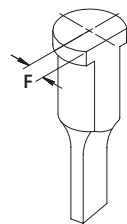
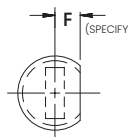
K5

DOUBLE FLAT



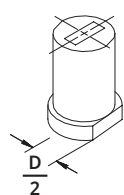
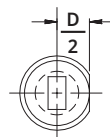
K6

BODY FLAT



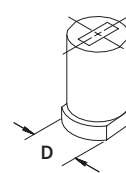
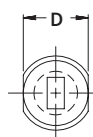
K1

KEY FLAT



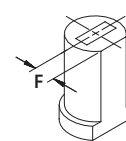
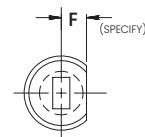
K5

DOUBLE FLAT



K6

BODY FLAT

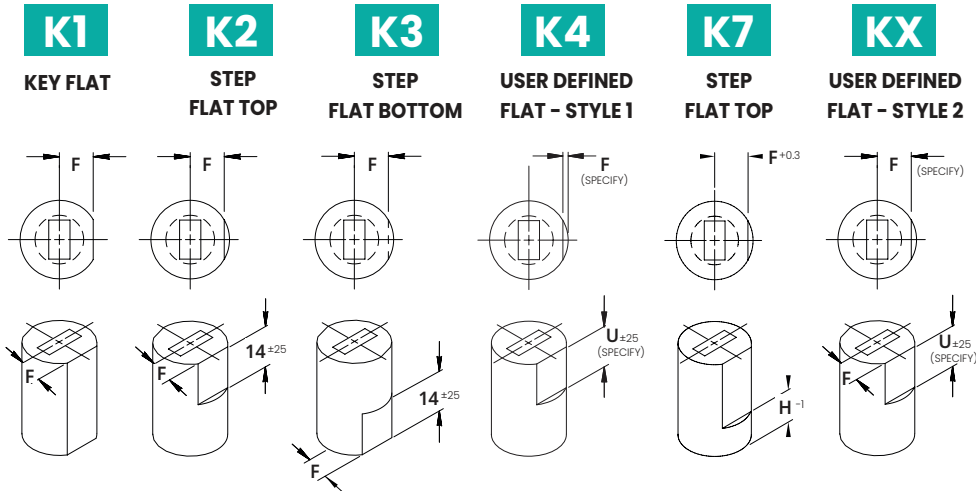


i KEYING INFORMATION - OPTIONS (2/2)

FLATS ON MATRIX - STRAIGHT

K1 uses "F" dimension as defined in chart, unless an alternate "F" dimension is specified with order.

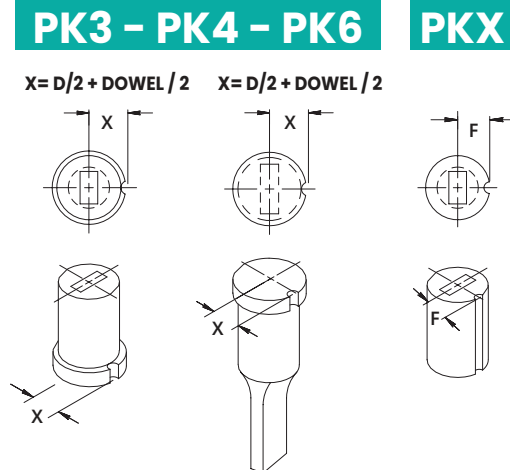
K2 and **K3** use "F" dimensions as defined in chart. **K4** and **KX** are user defined flats and requires "F" and "U" dimension specified with order.



BODY DIA	K1 - K2 - K3		K7	
	"F" +0.02	F	F	H
8	3.5	-	-	-
10	4.0	-	-	-
13	5.5	5.0	9	-
16	7.0	6.5	9	-
20	8.5	8.5	9	-
22	9.5	-	-	-
25	11.0	10.5	16	-
32	14.0	14.0	16	-
38	17.0	-	-	-
40	18.0	18.0	16	-
45	20.5	-	-	-
50	23.0	23.0	16	-
56	26.0	-	-	-
63	29.5	29.5	16	-
71	33.5	-	-	-
76	35.5	-	-	-
85	40.0	-	-	-
90	42.5	-	-	-
100	47.5	-	-	-

DOWEL GROOVES

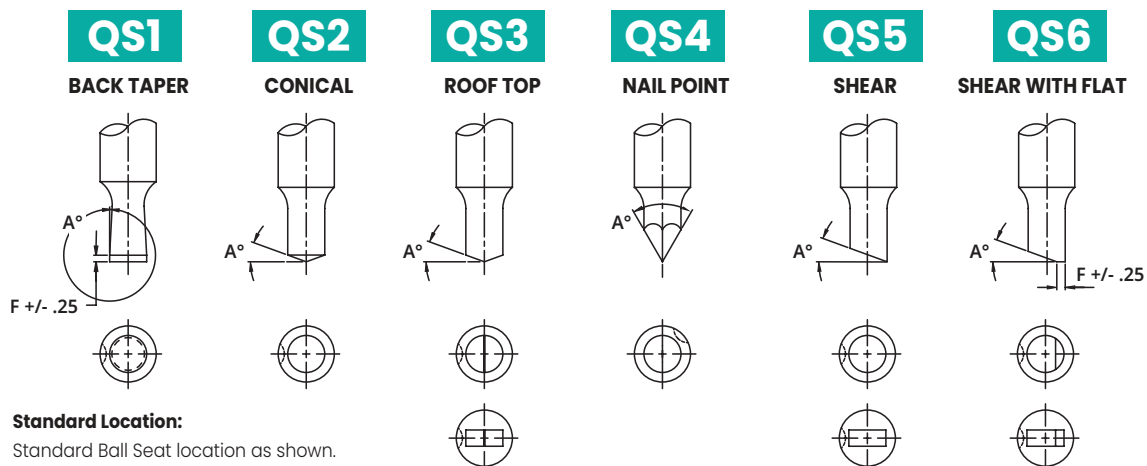
PK3, PK4 and **PK6** are standard **3, 4, 6**, dowel grooves. On Headed products, the groove is positioned tangent to shank. On all other products the dowel is ground to an "F" dimension as shown on chart. **PKX** is a user defined dowel groove and requires an "F" dimension and dowel size specified with the order.



BODY DIA. "D"	PKX SPECIFY DOWEL	PK3 3.0 DOWEL	PK4 4.0 DOWEL	PK6 6.0 DOWEL
	"F" Dimensions			
8	SPECIFY	4.7	5.2	6.2
10	SPECIFY	5.5	6.0	7.0
13	SPECIFY	6.7	7.2	8.2
16	SPECIFY	8.0	8.0	9.0
20	SPECIFY	10.0	10.0	11.0
22	SPECIFY	11.0	11.0	12.0
25	SPECIFY	12.5	12.5	13.5
32 ≥	SPECIFY	D/2	D/2	D/2

SHEAR ANGLES

Angle "A" and dimension "F" are user defined and must be specified with order.



Standard Location:

Standard Ball Seat location as shown. Headed Product Flat location counter clockwise 90°.

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

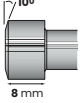




Punches and Retainers / Stamping

OVERVIEW: PUNCH BLANKS





“ Our ready-to-ship solid blanks from stock ”










HEAD SHAPE			M2 (1.3343)		ASP30 (PS / PM)	
			without ejector	with ejector	without ejector	with ejector
Conical Head Punch	 h6	DIN 9861 ISO 6752	HBZ			
Cylinder Head Punch	 m5	ISO 8020	SBZAPM2	SFZAJM2	SBZ-APPS	SFZ-AJPS
Heavy Duty Headed Punch	 m5 10° 8 mm		SBZF	SFZF		
Center Dowel Headed Punch	 m5	ISO 8020 with center dowel	DSZ	DFZ		
Bottle-neck Punch	 h6	DIN 5118	UBZ	UFZ		
Ball Lock Punch Light Duty	 g5	ISO 10071	BHZ	BFZ		
Ball Lock Punch Heavy Duty	 g5	NAAMS	BAZ	BAFZ		

EDM Matrix Blanks - from stock

HEAD SHAPE	Matrix with Counter-bore Relief	Headed, Matrix with Counter-bore Relief
	 n5 j6	 m5
	ISO 8977	ISO 8977
M2 (1.3343)	MKB	MLB

Punch Retainers - from stock

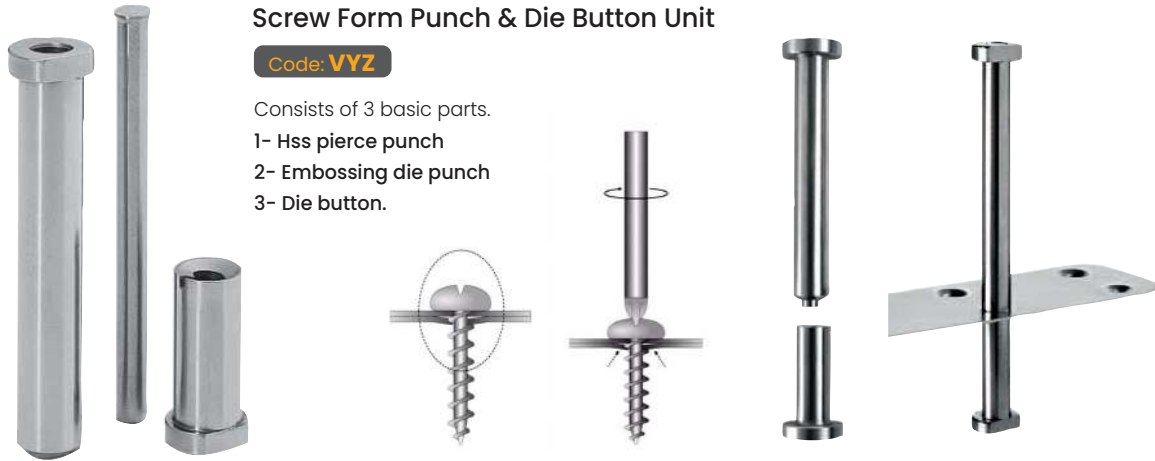
Details			Code
Punch Retainer for Round Punches		ISO 8020	GPR
Punch Retainer for Shaped Punches		ISO 8020	GPRS
Ball Lock Punch Retainer Light Duty		ISO 10071 NAAMS	GCRT
Ball Lock Punch Retainer Heavy Duty		ISO 10071 NAAMS	GBRT
Heavy Duty Headed Punch Retainer for Round Punches		Head Dia. = Body +5mm 8±0.01 10°	GPRF
Heavy Duty Headed Punch Retainer for Shaped Punches		Head Dia. = Body +5mm 8±0.01 10°	GPRFS
Mounting Ring for Bottle-neck Punch		DIN 5118	G162

Screw Form Punch & Die Button Unit

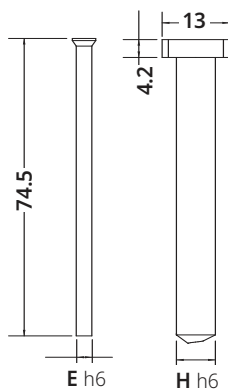
Code: **VYZ**

Consists of 3 basic parts.

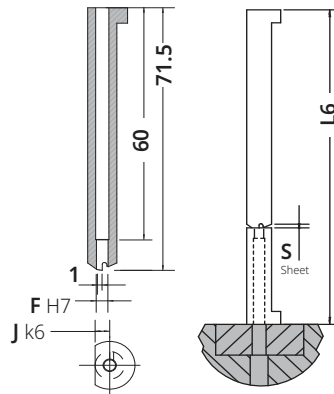
- 1- Hss pierce punch
- 2- Embossing die punch
- 3- Die button.



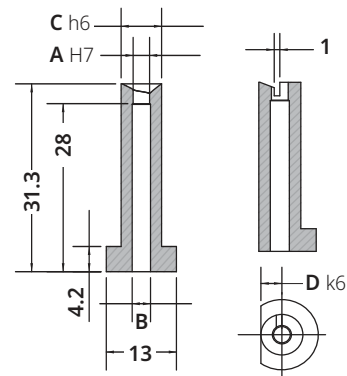
1 - HSS Pierce Punch



2 - Embossing Die Punch



3 - Die Button

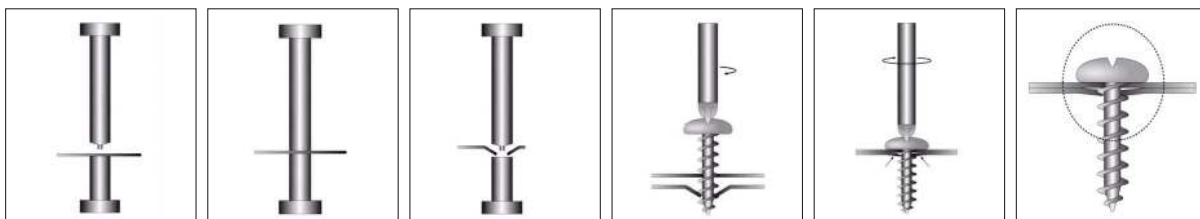


Order Code	Screw	A	B	C	D	E	F	H	J	L6	S Sheet
VYZ B35	B 3.5	2.75	3.2	7.5	3.75	2.7	2.7	7.5	3.75	101.72	0.5
VYZ B39	B 3.9	3.05	3.4	7.5	3.75	3	3	7.5	3.75	101.85	0.63
VYZ B42	B 4.2	3.15	3.5	8.5	4.25	3.1	3.1	8	4	101.97	0.75
VYZ B48	B 4.8	3.85	4.2	9	4.5	3.8	3.8	8	4	102.10	0.88
VYZ B55	B 5.5	4.35	4.8	9	4.5	4.3	4.3	8	4	102.22	1
VYZ B63	B 6.3	4.85	5.3	10.5	5.25	4.8	4.8	10	5	102.42	1.2

In terms of working systematics; in all cutting and forming dies, it creates screw forms with the purpose of connecting two sheet metal strips.

Usage: Hss pierce punch is brought to press operation by inserting in die button. While the embossing on the end of the die button bends and embosses, the HSS pierce punch forms hole. The sheet metals are prepared to be screwed. The unit forms a hole in screw thread dimension tolerance and helical thread grooves with embossing for screwing and tightening (putting together).
The unspecified tolerances will be according to DIN ISO 2768 T1 (f).

Sheet Metal Thickness: (s)
Screw 3.5mm: Max.0.50 mm. Thickness
Screw 3.9mm: Max.0.63 mm. Thickness
Screw 4.2mm: Max.0.75 mm. Thickness
Screw 4.8mm: Max.0.88 mm. Thickness
Screw 5.5mm: Max.1.00 mm. Thickness
Screw 6.3mm: Max.1.20 mm. Thickness



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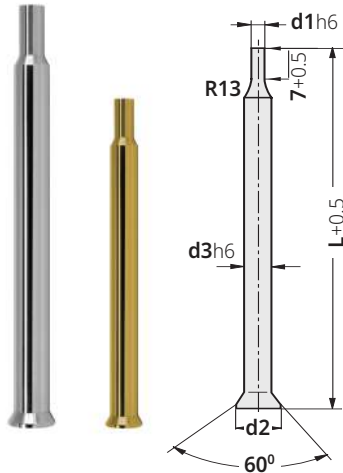
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Punches and Retainers / Stamping



DIN 9861 **Form C**
Conical Head Punches
Stepped **Code: HKZ**

d1	L	d3	d2
0.8	71	2	3
	80		
1	71		
	80		
1.2	71		
	80		
1.5	71		
	80		
1.6	71		
	80		
1.8	71		
	80		
1	71	3	4.5
	80		
1.5	71		
	80		
1.8	71		
	80		
2.2	71		
	80		
2.3	71		
	80		
2.6	71		
	80		
2.8	71		
	80		

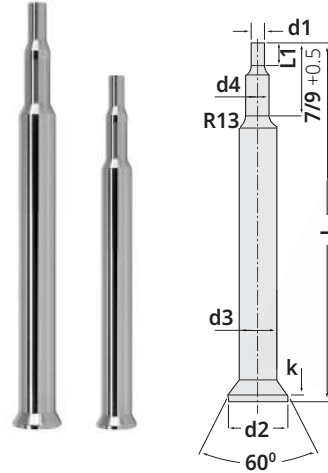
According to DIN 9861 norm, there is limitation for body and cutting diameter. In this norm, while body diameter for conical head stepped punch is max. 3 mm cutting diameter can be max. 2.95 mm.



Order: **HKZ**. d3 x d1 x L



Material: 1.3343 (M2)
Hardness: 62 - 64 HRC



DIN 9861 **Form E**
Conical Head Punches
Stepped **Code: H2K**

d1	d4	d3	d2	L	L1	k
1	1.4	3	4.5	71		
1.2	1.6					
1.5	1.8					
1.7	2.1			80	2	0.5
2.2	2.6					
2.5	2.8					
1.6	2.2	4	5.5	71	2.5	0.5
1.8	2.3					
2.3	2.8					
2.6	3			80	2.5	0.5
3	3.5					
3.2	3.7					
2.4	3	5	6.5	71	3	0.5
2.8	3.5					
3.2	4					
3.6	4.2			80	3	0.5
4.2	4.6					
4.5	4.8					
2.5	3.2	6	8	71		
3	3.8					
3.5	4.2					
4	4.8			80	3	0.5
4.5	5.3					
5	5.5					
5.5	5.8					

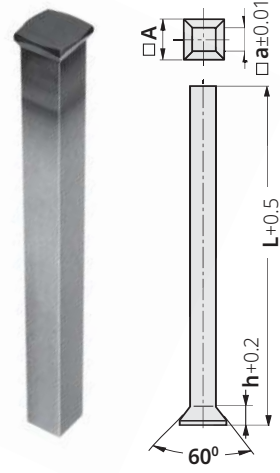
It is preferred for thin work pieces and light duty works. Upon request, our punch production is available in the desired material and dimensions and also in shapes.



Order: **H2K**. d1 x d4 x d3 x L x L1



Material: 1.3343 (M2)
Hardness: 62 - 64 HRC

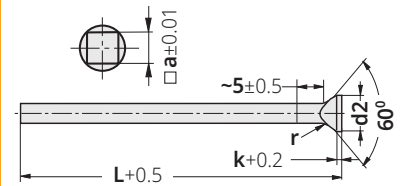


Slot - **Form DA** forged head
Square Head Punch, Slot
Stepped **Code: HFK**

a	L	A	h	a	L	A	h
1	71	1.8	1.2	7	71	9	2.8
2		3	1.4	8		10	
3		4.5	1.8	9		11	
4		5.5	1.8	10		12	
5		6.5	1.8	12			
6		8	2.2	14			



Order: **HFK**. a x L



Conical Head Punch
Shaped **Code: HFY**

a	L	A	k	a	L	A	k
1	71	1.8	0.5	7	71	10.5	1
2		3		8		12	
3		4.5		9		13.5	
4		6		10		15	
5		7.5		12		18	
6		9					

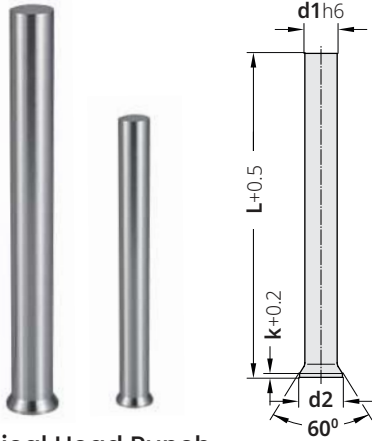
Excluding product types in tables, our production such as headless and different slot types, also punches upon request are available.



Order: **HFY**. a x L



HFK **HFY**
Material: 1.3343 (M2)
Hardness: 62 - 64 HRC



Conical Head Punch
DIN 9861 / ISO 6752

Code: **HBZ**

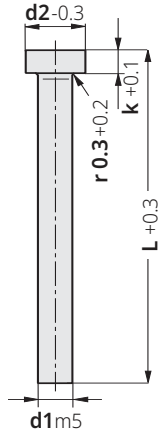
d1	L	d2	k
0.5	71	0.9	0.2
	80		
	100		
0.6	71	1.1	0.2
	80		
	100		
0.7	71	1.3	0.2
	80		
	100		
0.8	71	1.4	0.4
	80		
	100		
0.9	71	1.6	0.4
	80		
	100		
1	71	1.8	0.5
	80		
	100		
1.1	71	2	0.5
	80		
	100		
1.2	71	2.2	0.5
	80		
	100		
1.3	71	2.5	0.5
	80		
	100		
1.4	71	2.8	0.5
	80		
	100		
1.5	71	3	0.5
	80		
	100		
1.6	71	3.2	0.5
	80		
	100		
1.7	71	3.5	0.5
	80		
	100		
1.8	71	5.5	0.5
	80		
	100		
1.9	71	125	0.5
	80		
	160		
2	71	5	0.5
	80		
	100		
2.1	71	5	0.5
	80		
	100		
2.2	71	5	0.5
	80		
	100		
2.3	71	5	0.5
	80		
	100		
2.4	71	5	0.5
	80		
	100		

d1	L	d2	k
2.5	71	3.5	0.5
	80		
	100		
2.6	71	4	0.5
	80		
	100		
2.7	71	4	0.5
	80		
	100		
2.8	71	4.5	0.5
	80		
	100		
2.9	71	4.5	0.5
	80		
	100		
3	71	5	0.5
	80		
	100		
3.1	71	5	0.5
	80		
	100		
3.2	71	5	0.5
	80		
	100		
3.3	71	5	0.5
	80		
	100		
3.4	71	5	0.5
	80		
	100		
3.5	71	5	0.5
	80		
	100		
3.6	71	5	0.5
	80		
	100		
3.7	71	5	0.5
	80		
	100		
3.8	71	5	0.5
	80		
	100		
3.9	71	5	0.5
	80		
	100		
4	71	5.5	0.5
	80		
	100		
4.1	71	6	0.5
	80		
	100		
4.2	71	6	0.5
	80		
	100		
4.3	71	6	0.5
	80		
	100		
4.4	71	6	0.5
	80		
	100		
4.5	71	6	0.5
	80		
	100		
4.6	71	6	0.5
	80		
	100		
4.7	71	6	0.5
	80		
	100		
4.8	71	6	0.5
	80		
	100		
4.9	71	6	0.5
	80		
	100		
5	71	6.5	0.5
	80		
	100		
5.1	71	6.5	0.5
	80		
	100		
5.2	71	6.5	0.5
	80		
	100		
5.3	71	6.5	0.5
	80		
	100		
5.4	71	6.5	0.5
	80		
	100		
5.5	71	7	0.5
	80		
	100		
5.6	71	7	0.5
	80		
	100		
5.7	71	7	0.5
	80		
	100		
5.8	71	7	0.5
	80		
	100		
5.9	71	7	0.5
	80		
	100		
6	71	8	0.5
	80		
	100		
6.1	71	8	0.5
	80		
	100		
6.2	71	8	0.5
	80		
	100		
6.3	71	8	0.5
	80		
	100		
6.4	71	8	0.5
	80		
	100		
6.5	71	9	1
	80		
	100		
6.6	71	9	1
	80		
	100		
6.7	71	9	1
	80		
	100		
6.8	71	9	1
	80		
	100		
6.9	71	9	1
	80		
	100		
7	71	9	1
	80		
	100		
7.1	71	9	1
	80		
	100		
7.2	71	9	1
	80		
	100		
7.3	71	9	1
	80		
	100		
7.4	71	9	1
	80		
	100		
7.5	71	10	1
	80		
	100		
7.6	71	10	1
	80		
	100		
7.7	71	10	1
	80		
	100		
7.8	71	10	1
	80		
	100		
7.9	71	10	1
	80		
	100		
8	71	10	1
	80		
	100		
8.1	71	10	1
	80		
	100		
8.2	71	10	1
	80		
	100		
8.3	71	10	1
	80		
	100		
8.4	71	10	1
	80		
	100		
8.5	71	11	1
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	100		
8.6	71	11	1
	80		
	100		
8.7	71	11	1
	80		
	100		
8.8	71	11	1
	80		
	100		
8.9	71	11	1
	80		
	100		
9	71	11	1
	80		
	100		
9.9	71	12	1
	80		
	100		
10	71	12	1
	80		
	100		
10.5	71	13	1
	80		
	100		
11	71	13	1
	80		
	100		
11.5	71	14	1
	80		
	100		

d1	L	d2	k
4.1	71	5.5	0.5
	80		
	100		
4.2	71	5.5	0.5
	80		
	100		
4.3	71	5.5	0.5
	80		
	100		
4.4	71	5.5	0.5
	80		
	100		
4.5	71	6	0.5
	80		
	100		
4.6	71	6	0.5
	80		
	100		
4.7	71	6	0.5
	80		
	100		
4.8	71	6	0.5
	80		
	100		
4.9	71	6	0.5
	80		
	100		
5	71	6.5	0.5
	80		
	100		
5.1	71	6.5	0.5
	80		
	100		
5.2	71	6.5	0.5
	80		
	100		
5.3	71	6.5	0.5
	80		
	100		
5.4	71	6.5	0.5
	80		
	100		
5.5	71	7	0.5
	80		
	100		
5.6	71	7	0.5
	80		
	100		
5.7	71	7	0.5
	80		
	100		
5.8	71	7	0.5
	80		
	100		
5.9	71	7	0.5
	80		
	100		
6	71	8	0.5
	80		
	100		
6.1	71	8	0.5
	80		
	100		
6.2	71	8	0.5
	80		
	100		
6.3	71	8	0.5
	80		
	100		
6.4	71	8	0.5
	80		
	100		
6.5	71	9	1
	80		
	100		
6.6	71	9	1
	80		
	100		
6.7	71	9	1
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6.8	71	9	1
	80		
	100		
6.9	71	9	1
	80		
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7.1	71	9	1
	80		
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7.2	71	9	1
	80		
	100		
7.3	71	9	1
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	100		
7.4	71	9	1
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	100		
7.5	71	10	1
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7.6	71	10	1
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	100		
7.7	71	10	1
	80		
	100		
7.8	71	10	1
	80		
	100		
7.9	71	10	1
	80		
	100		
8	71	10	1
	80		
	100		
8.1	71	10	1
	80		
	100		
8.2	71	10	1
	80		
	100		
8.3	71	10	1
	80		
	100		
8.4	71	10	1
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	100		
8.5	71	11	1
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8.6	71	11	1
	80		
	100		
8.7	71	11	1
	80		
	100		
8.8	71	11	1
	80		
	100		
8.9	71	11	1
	80		
	100		
9	71	11	1
	80		
	100		
9.9	71	12	1
	80		
	100		
10	71	12	1
	80		
	100		
10.5	71	13	1
	80		
	100		
11	71	13	1
	80		
	100		
11.5	71	14	1
	80		
	100		

d1	L	d2	k
6.1	71	8	0.5
	80		
	100		
6.2	71	8	0.5
	80		
	100		
6.3	71	8	0.5
	80		
	100		
6.4	71	8	0.5
	80		
	100		
6.5	71	9	1
	80		
	100		
6.6	71	9	1
	80		
	100		
6.7	71	9	1
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6.8	71	9	1
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	100		
6.9	71	9	1
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	100		
7	71	9	1
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	100		
7.1	71	9	1
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	100		
7.2	71	9	1
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	100		
7.3	71	9	1
	80		
	100		
7.4	71	9	1
	80		
	100		
7.5	71	10	1
	80		
	100		
7.6	71	10	1
	80		
	100		
7.7	71	10	1
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7.8	71	10	1
	80		
	100		
7.9	71	10	1
	80		
	100		
8	71	10	1
	80		
	100		
8.1	71	10	1
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8.2	71	10	1
	80		
	100		
8.3	71	10	1
	80		
	100		
8.4	71	10	1
	80		
	100		
8.5	71	11	1
	80		
	100		
8.6	71	11	1
	80		
	100		
8.7	71	11	1
	80		
	100		
8.8	71	11	1
	80		
	100		
8.9	71	11	1
	80		

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Code: **SBZAPM2**

Cylinder Head Punch

Solid Blank – ISO 8020

Order Code	d1	L	d2	k	r
SBZAPM202071		71			
SBZAPM202080	2	80	5	3	0.2
SBZAPM202100		100			
SBZAPM202571		71			
SBZAPM202580	2.5	80	5.5	3	0.2
SBZAPM2025100		100			
SBZAPM203071		71			
SBZAPM203080	3	80	6.5	3	0.2
SBZAPM203100		100			
SBZAPM203571		71			
SBZAPM203580	3.5	80	6	3	0.2
SBZAPM2035100		100			
SBZAPM204071		71			
SBZAPM204080	4	80	7	5	0.3
SBZAPM204100		100			
SBZAPM204571		71			
SBZAPM204580	4.5	80	7.5	5	0.3
SBZAPM2045100		100			
SBZAPM205071		71			
SBZAPM205080		80			
SBZAPM205090	5	90	8	5	0.3
SBZAPM205100		100			
SBZAPM205125		125			
SBZAPM2055100	5.5	100	8.5	5	0.3

Order Code	d1	L	d2	k	r
SBZAPM206071		71			
SBZAPM206080		80			
SBZAPM206100	6	100	9	5	0.3
SBZAPM206125		125			
SBZAPM206160		160			
SBZAPM2065100	6.5	100	9.5	5	0.3
SBZAPM207080		80			
SBZAPM207100	7	100	10	5	0.3
SBZAPM207125		125			
SBZAPM2075100	7.5	100	10.5	5	0.3
SBZAPM208071		71			
SBZAPM208080		80			
SBZAPM208100	8	100	11	5	0.3
SBZAPM208125		125			
SBZAPM208160		160			
SBZAPM208200		200			
SBZAPM2085100	8.5	100	11.5	5	0.3
SBZAPM209080		80			
SBZAPM209100	9	100	12	5	0.3
SBZAPM209125		125			
SBZAPM2095100	9.5	100	12.5	5	0.3
SBZAPM210071		71			
SBZAPM210080		80			
SBZAPM210100	10	100	13	5	0.3
SBZAPM210125		125			
SBZAPM210160		160			
SBZAPM210200		200			
SBZAPM2105100	10.5	100	13.5	5	0.3
SBZAPM211080		80			
SBZAPM211100	11	100	14	5	0.3
SBZAPM211125		125			
SBZAPM2115100	11.5	100	14.5	5	0.3
SBZAPM212071		71			
SBZAPM212080		80			
SBZAPM212100	12	100	15	5	0.3
SBZAPM212125		125			
SBZAPM212160		160			
SBZAPM2125100	12.5	100	15.5	5	0.3
SBZAPM213071		71			
SBZAPM213080		80			
SBZAPM213090		90			
SBZAPM213100	13	100	16	5	0.3
SBZAPM213125		125			
SBZAPM213160		160			
SBZAPM213200		200			
SBZAPM2135100	13.5	100	16.5	5	0.3

Order Code	d1	L	d2	k	r
SBZAPM214080		80			
SBZAPM214100	14	100	17	5	0.3
SBZAPM214125		125			
SBZAPM2145100	14.5	100	17.5	5	0.3
SBZAPM215100	15	100	18	5	0.3
SBZAPM215125		125			
SBZAPM2155100	15.5	100	18.5	5	0.3
SBZAPM216071		71			
SBZAPM216080		80			
SBZAPM216090		90			
SBZAPM216100	16	100	19	5	0.3
SBZAPM216125		125			
SBZAPM216160		160			
SBZAPM216200		200			
SBZAPM2165100	16.5	100	19.5	5	0.3
SBZAPM217100	17	100	20	5	0.3
SBZAPM2175100	17.5	100	20.5	5	0.3
SBZAPM218100	18	100	21	5	0.3
SBZAPM218125		125			
SBZAPM219100	19	100	22	5	0.3
SBZAPM220071		71			
SBZAPM220080		80			
SBZAPM220090		90			
SBZAPM220100	20	100	23	5	0.3
SBZAPM220125		125			
SBZAPM220160		160			
SBZAPM220200		200			
SBZAPM221100	21	100	24	5	0.3
SBZAPM222100	22	100	25	5	0.3
SBZAPM223100	23	100	26	5	0.3
SBZAPM224100	24	100	27	5	0.3
SBZAPM225071		71			
SBZAPM225080		80			
SBZAPM225090		90			
SBZAPM225100	25	100	28	5	0.3
SBZAPM225125		125			
SBZAPM225160		160			
SBZAPM225200		200			
SBZAPM226100	26	100	29	5	0.3
SBZAPM227100	27	100	30	5	0.3
SBZAPM228100	28	100	31	5	0.3
SBZAPM229100	29	100	32	5	0.3
SBZAPM230100	30	100	33	5	0.3
SBZAPM230125		125			
SBZAPM232080		80			
SBZAPM232090		90			
SBZAPM232100	32	100	35	5	0.3
SBZAPM232125		125			
SBZAPM232160		160			
SBZAPM240100	40	100	43	5	0.3
SBZAPM240125		125			



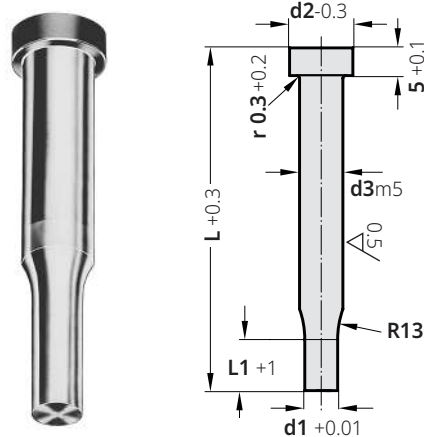
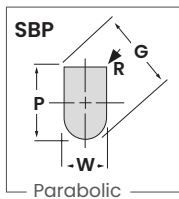
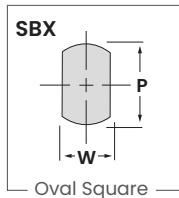
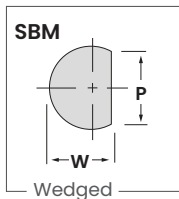
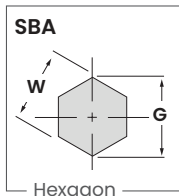
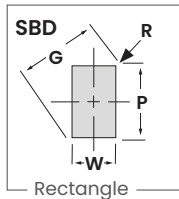
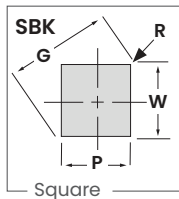
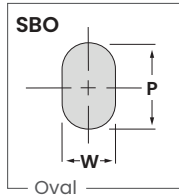
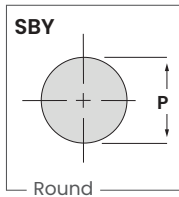
Material: 1.3343 (M2) completely ground
Head Hardness: (52 ±3 HRC)

Heat Treated: 62 – 64 HRC **Surface:** ≥ 950 HV 0.3



Mounting of cylinder head type punch to the holder plate during usage is planned, guiding process is provided by the stripper plate. By mounting punches in this style, the elimination of axial errors that resulted from incorrect mounting of die set or press is more easier. The use of this mounting method provided the alteration between the transmission of punching power and bearing. Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding. For harder work pieces, ASP / PS (powder metal) and for very hard and abrasive work pieces, sintered carbide punches are preferred.

SHAPES



How to order:
 Shape
 d3
 P/W
 L1
 L
 Material

SBY x 10 x P7.0 x 13 x 80 - M2
 SBO x 10 x P8.2 x W5.2 x 25 x 100 - M2

Cylinder Head Stepped Punch / ISO 8020

Code: **SB..**

Apart from our standards, special dimensions and complex geometries can be produced according to your technical drawings.

Please refer to the table on the left side

SBY - SBO - SBK - SBD - SBA - SBM - SBX - SBP

Order	d3	Head d2	d1 / Shape		Standard L1	Alternative L1 Min. Max.	L
			(SBY) Round P	Other Shapes W G/P			
SB.. 04	4	7	1.6 ~ 3.95	1.6 - 4	8	10 - 13	50 63 71 80 90
SB.. 05	5	8	1.6 ~ 4.95	1.6 - 4.95	13	10 - 19	
SB.. 06	6	9	2.4 ~ 5.95	2.4 - 5.95	13	10 - 19	
SB.. 08	8	11	3.2 ~ 7.95	3.2 - 7.95	19	13 - 25	
SB.. 10	10	13	4.5 ~ 9.95	4.5 - 9.95	19	13 - 25	
SB.. 13	13	16	6 ~ 12.95	6 - 12.95	19	13 - 25	100 125
SB.. 16	16	19	8 ~ 15.95	7.5 - 15.95	19	13 - 25	
SB.. 20	20	23	10 ~ 19.95	8 - 19.95	19	13 - 25	71 80 90
SB.. 25	25	28	12 ~ 24.95	9 - 24.95	19	13 - 25	
SB.. 32	32	35	16 ~ 31.95	10 - 31.95	25	19 - 30	
SB.. 40	40	43	20 ~ 39.95	14 - 39.95	25	19 - 30	125

FLATS ON HEADED PRODUCTS

K1
KEY FLAT

K5
DOUBLE FLAT

K6
BODY FLAT

K1 and K5 are ground flush to shank. **K6** is a user defined flat and requires an "F" dimension specified with order. **K5** flats are standard 180° apart.

Order Example with Flat:
 SBO x 10 x P8.2 x W5.2 x 25 x 100 - **K1** - M2
 |
 Keying Info

Order Example with Flat and Coating:
 SBO x 10 x P8.2 x W5.2 x 25 x 100 - **K1** - M2 - **Alcrn**
 |
 Coating Info

OPTIONAL FEATURES

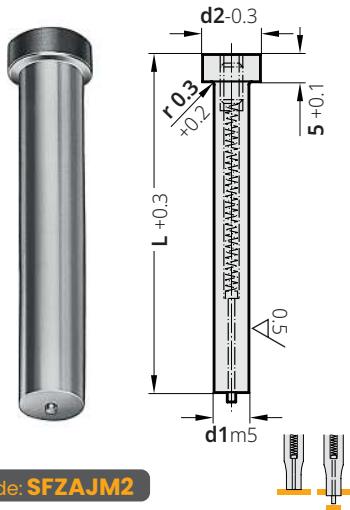
COATING

For details on Keying Information / Key Flat Options, More Complex Special Shapes, Shear Angles, and Coatings, please refer to the beginning of Category 6.

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Punches and Retainers / Stamping

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Code: **SFZAJM2**

Cylinder Head Punch with Ejector
Solid Blank – ISO 8020


Order Code	d1	L	d2
SFZAJM205050	5	50	8
SFZAJM205063		63	
SFZAJM205071		71	
SFZAJM205080		80	
SFZAJM205090		90	
SFZAJM205100		100	
SFZAJM205125		125	
SFZAJM255100	5.5	100	8.5
SFZAJM206050	6	50	9
SFZAJM206063		63	
SFZAJM206071		71	
SFZAJM206080		80	
SFZAJM206090		90	
SFZAJM206100		100	
SFZAJM206125		125	
SFZAJM2065100	6.5	100	9.5
SFZAJM207100	7	100	10
SFZAJM2075100	7.5	100	10.5
SFZAJM208050	8	50	11
SFZAJM208063		63	
SFZAJM208071		71	
SFZAJM208080		80	
SFZAJM208090		90	
SFZAJM208100		100	
SFZAJM208125		125	
SFZAJM208160		160	

Order Code	d1	L	d2
SFZAJM2085100	8.5	100	11.5
SFZAJM209100	9	100	12
SFZAJM2095100	9.5	100	12.5
SFZAJM210050	10	50	13
SFZAJM210063		63	
SFZAJM210071		71	
SFZAJM210080		80	
SFZAJM210090		90	
SFZAJM210100		100	
SFZAJM210125		125	
SFZAJM210160		160	
SFZAJM2105100	10.5	100	13.5
SFZAJM211080	11	80	14
SFZAJM211100		100	
SFZAJM2115100	11.5	100	14.5
SFZAJM212050	12	50	15
SFZAJM212063		63	
SFZAJM212071		71	
SFZAJM212080		80	
SFZAJM212090		90	
SFZAJM212100		100	
SFZAJM212125		125	
SFZAJM212160		160	
SFZAJM2125100	12.5	100	15.5
SFZAJM213050	13	50	16
SFZAJM213063		63	
SFZAJM213071		71	
SFZAJM213080		80	
SFZAJM213090		90	
SFZAJM213100		100	
SFZAJM213125		125	
SFZAJM213160		160	
SFZAJM2135100	13.5	100	16.5
SFZAJM214080	14	80	17
SFZAJM214100		100	
SFZAJM2145100	14.5	100	17.5
SFZAJM215080	15	80	18
SFZAJM215100		100	
SFZAJM2155100	15.5	100	18.5

Order Code	d1	L	d2
SFZAJM216050	16	50	19
SFZAJM216063		63	
SFZAJM216071		71	
SFZAJM216080		80	
SFZAJM216090		90	
SFZAJM216100		100	
SFZAJM216125		125	
SFZAJM216160	160		
SFZAJM2165100	16.5	100	19.5
SFZAJM217100	17	100	20
SFZAJM218100	18	100	21
SFZAJM219100	19	100	22
SFZAJM220063	20	63	23
SFZAJM220071		71	
SFZAJM220080		80	
SFZAJM220090		90	
SFZAJM220100		100	
SFZAJM220125		125	
SFZAJM220160	160		
SFZAJM221100	21	100	24
SFZAJM222100	22	100	25
SFZAJM223100	23	100	26
SFZAJM224100	24	100	27
SFZAJM225063	25	63	28
SFZAJM225071		71	
SFZAJM225080		80	
SFZAJM225090		90	
SFZAJM225100		100	
SFZAJM225125	125		
SFZAJM225160	160		
SFZAJM226100	26	100	29
SFZAJM227100	27	100	30
SFZAJM228100	28	100	31
SFZAJM229100	29	100	32
SFZAJM230100	30	100	33
SFZAJM232090	32	90	35
SFZAJM232100		100	
SFZAJM232125		125	
SFZAJM232160		160	
SFZAJM240100	40	100	43
SFZAJM240125		125	

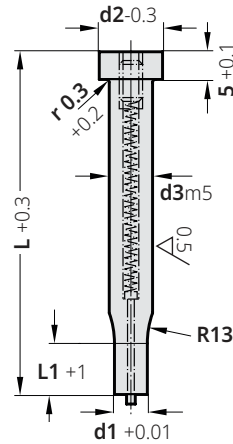
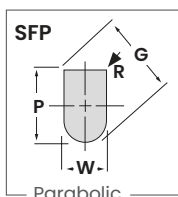
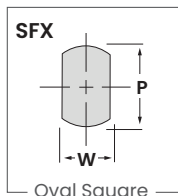
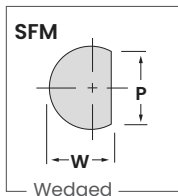
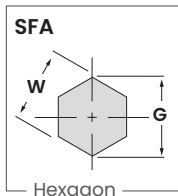
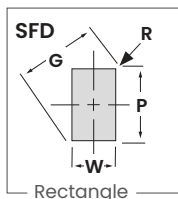
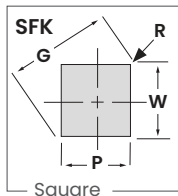
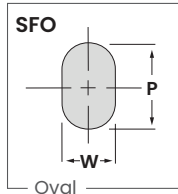
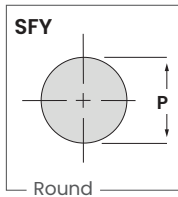
 **Material:** 1.3343 (M2) completely ground
Head Hardness: (52 ±3 HRC)

Heat Treated: 62 - 64 HRC **Surface:** ≥ 950 HV 0.3

 Mounting of cylinder head type punch to the holder plate during usage is planned, guiding process is provided by the stripper plate. By mounting punches in this style, the elimination of axial errors that resulted from incorrect mounting of die set or press is more easier. The use of this mounting method provided the alteration between the transmission of punching power and bearing. Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding. For harder work pieces, ASP / PS (powder metal) and for very hard and abrasive work pieces, sintered carbide punches are preferred.

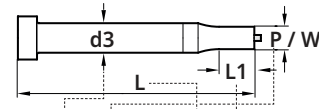
Punches and Retainers / Stamping

SHAPES



How to order:

Shape
d3
P/W
L1
L
Material



SFY x 10 x P7.0 x 13 x 80 - M2
SFO x 10 x P8.2 x W5.2 x 25 x 100 - M2

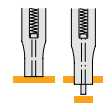
Cylinder Head Stepped Punch with Ejector

Code: SF..

Apart from our standards, special dimensions and complex geometries can be produced according to your technical drawings.

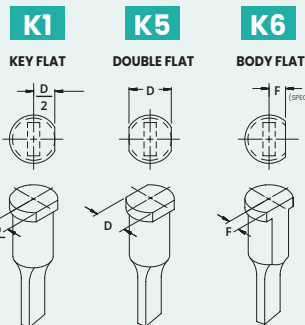
Please refer to the table on the left side

SFY - SFO - SFK - SFD - SFA - SFM - SFX - SFP



Order	d3	Head d2	d1 / Shape		Standard L1	Alternative L1 Min. Max.		L
			(SFY) Round P	Other Shapes W G/P				
SF.. 05	5	8	1.6 ~ 4.95	1.6 - 4.95	13	10 - 19	50	
SF.. 06	6	9	2.4 ~ 5.95	2.4 - 5.95	13	10 - 19	63	
SF.. 08	8	11	3.2 ~ 7.95	3.2 - 7.95	19	13 - 25	71	
SF.. 10	10	13	4.5 ~ 9.95	4.5 - 9.95	19	13 - 25	80	
SF.. 13	13	16	6 ~ 12.95	6 - 12.95	19	13 - 25	90	
SF.. 16	16	19	8 ~ 15.95	7.5 - 15.95	19	13 - 25	100	
SF.. 20	20	23	10 ~ 19.95	8 - 19.95	19	13 - 25	125	
SF.. 25	25	28	12 ~ 24.95	9 - 24.95	25	19 - 30		
SF.. 32	32	35	16 ~ 31.95	10 - 31.95	25	19 - 30		
SF.. 40	40	43	20 ~ 39.95	14 - 39.95	25	19 - 30		

FLATS ON HEADED PRODUCTS



K1 and K5 are ground flush to shank. K6 is a user defined flat and requires an "F" dimension specified with order. K5 flats are standard 180° apart.

Order Example with Flat:

SFO x 10 x P8.2 x W5.2 x 25 x 100 - K1 - M2

Keying Info

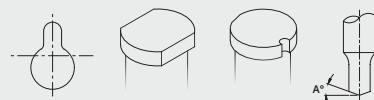
Order Example with Flat and Coating:

SFO x 10 x P8.2 x W5.2 x 25 x 100 - K1 - M2 - Alcrn

Coating Info

OPTIONAL FEATURES

COATING



For details on Keying Information / Key Flat Options, More Complex Special Shapes, Shear Angles, and Coatings, please refer to the beginning of Category 6.

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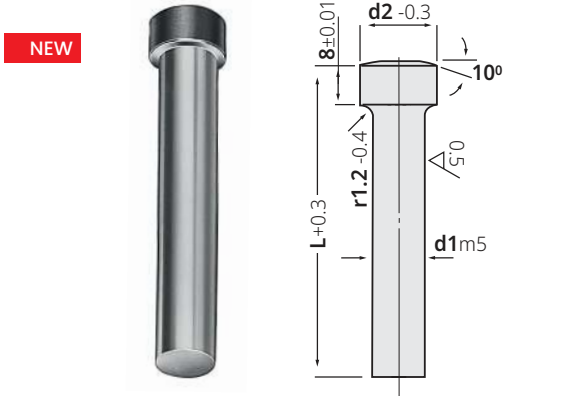
17

18

Punches and Retainers / Stamping

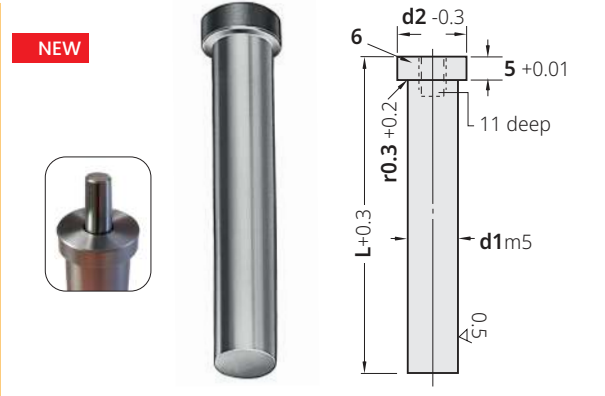
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Punches and Retainers / Stamping



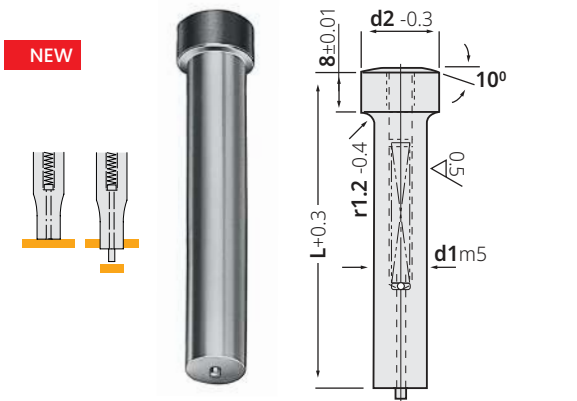
Heavy Duty Headed Punch Code: **SBZF**
 * Larger-headed Blank Type

d1	Order			d2
	L: 70	L: 80	L: 100	
6	SBZF 6 x 70	SBZF 6 x 80	SBZF 6 x 100	11
8	SBZF 8 x 70	SBZF 8 x 80	SBZF 8 x 100	13
10	SBZF 10 x 70	SBZF 10 x 80	SBZF 10 x 100	15
12	SBZF 12 x 70	SBZF 12 x 80	SBZF 12 x 100	17
13	SBZF 13 x 70	SBZF 13 x 80	SBZF 13 x 100	18
16	SBZF 16 x 70	SBZF 16 x 80	SBZF 16 x 100	21
20	SBZF 20 x 70	SBZF 20 x 80	SBZF 20 x 100	25
25	SBZF 25 x 70	SBZF 25 x 80	SBZF 25 x 100	30
32	-	-	SBZF 32 x 100	37



Center Dowel Headed Punch Code: **DSZ**
 ISO 8020, with center dowel Blank Type

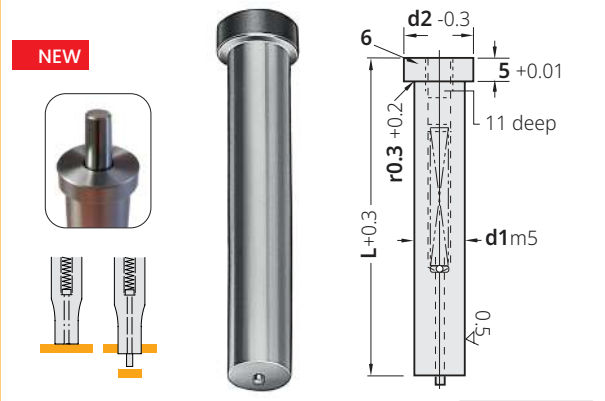
d1	Order				d2
	L: 71	L: 80	L: 90	L: 100	
10	DSZ10 x 71	DSZ10 x 80	DSZ10 x 90	DSZ10 x 100	13
13	DSZ13 x 71	DSZ13 x 80	DSZ13 x 90	DSZ13 x 100	16
16	DSZ16 x 71	DSZ16 x 80	DSZ16 x 90	DSZ16 x 100	19
20	DSZ20 x 71	DSZ20 x 80	DSZ20 x 90	DSZ20 x 100	23
25	DSZ25 x 71	DSZ25 x 80	DSZ25 x 90	DSZ25 x 100	28
32	DSZ32 x 71	DSZ32 x 80	DSZ32 x 90	DSZ32 x 100	35



Heavy Duty Headed Punch with Ejector Code: **SFZF**
 * Larger-headed Blank Type

d1	Order			d2
	L: 70	L: 80	L: 100	
8	SFZF 8 x 70	SFZF 8 x 80	SFZF 8 x 100	13
10	SFZF 10 x 70	SFZF 10 x 80	SFZF 10 x 100	15
12	-	-	SFZF 12 x 100	17
13	SFZF 13 x 70	SFZF 13 x 80	SFZF 13 x 100	18
16	SFZF 16 x 70	SFZF 16 x 80	SFZF 16 x 100	21
20	SFZF 20 x 70	SFZF 20 x 80	SFZF 20 x 100	25
25	SFZF 25 x 70	SFZF 25 x 80	SFZF 25 x 100	30
32	-	-	SFZF 32 x 100	37

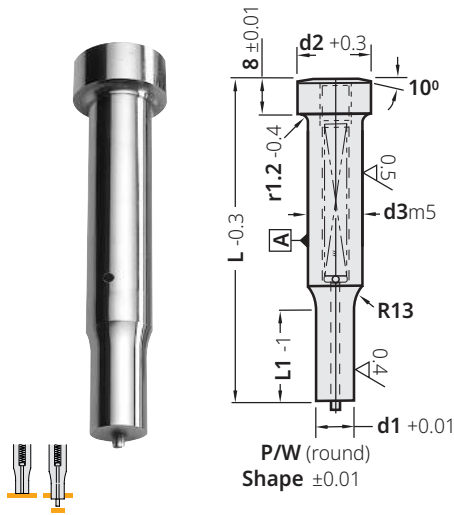
SBZF **SFZF**
 Material: 1.3343 (M2) completely ground
 Heat Treated: 60 - 63 HRC / Head Hardness: 40 - 55 HRC



Center Dowel Headed Punch with Ejector Code: **DFZ**
 ISO 8020, with center dowel Blank Type

d1	Order				d2
	L: 71	L: 80	L: 90	L: 100	
10	DFZ10 x 71	DFZ10 x 80	DFZ10 x 90	DFZ10 x 100	13
13	DFZ13 x 71	DFZ13 x 80	DFZ13 x 90	DFZ13 x 100	16
16	DFZ16 x 71	DFZ16 x 80	DFZ16 x 90	DFZ16 x 100	19
20	DFZ20 x 71	DFZ20 x 80	DFZ20 x 90	DFZ20 x 100	23
25	DFZ25 x 71	DFZ25 x 80	DFZ25 x 90	DFZ25 x 100	28
32	DFZ32 x 71	DFZ32 x 80	DFZ32 x 90	DFZ32 x 100	35

DSZ **DFZ**
 Material: 1.3343 (M2) completely ground
 Heat Treated: 60 - 63 HRC / Head Hardness: 40 - 55 HRC



Heavy Duty Stepped Punch with Ejector

* Larger-headed

Code: **SF..F**

Please refer to the table on the right side

SFYF-SFOF-SFKF-SFDF-SFAF-SFMF-SFCF-SFPF

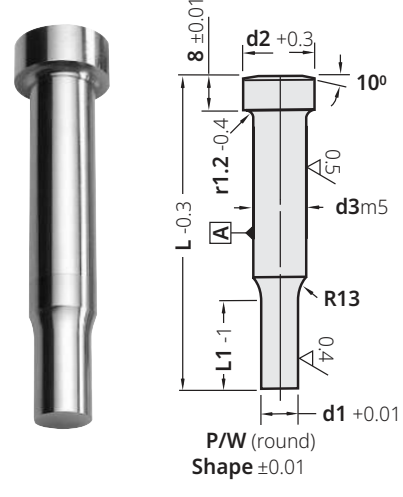
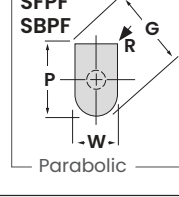
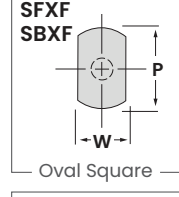
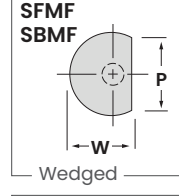
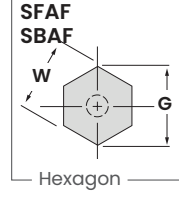
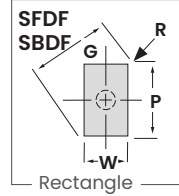
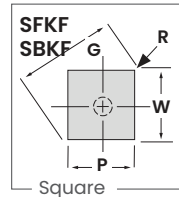
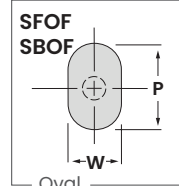
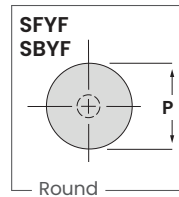
Order d3	Head d2	d1 / Shape		Standard L1	Alternative L1		L
		(SFYF) Round P	Other Shapes W G/P		Min.	Max.	
SF..F08	13	3.2 ~ 7.95	3.2 - 7.95	13	13	25	70
SF..F10	15	4.5 ~ 9.95	4.5 - 9.95	13	13	25	
SF..F13	18	6 ~ 12.95	6 - 12.95	13	13	25	
SF..F16	21	8 ~ 15.95	7.5 - 15.95	19	13	25	
SF..F20	25	10 ~ 19.95	8 - 19.95	19	13	25	
SF..F25	30	12 ~ 24.95	9 - 24.95	19	13	25	
SF..F32	37	16 ~ 31.95	10 - 31.95	25	19	30	100

How to order:

Shape
d3
P/W
L1
L
Material

SFYF x 10 x P7.0 x 13 x 80 - M2
SFOF x 10 x P8.2 x W5.2 x 25 x 100 - M2

SHAPES



Heavy Duty Stepped Punch

* Larger-headed

Code: **SB..F**

Please refer to the table on the left side

SBYF-SBOF-SBKF-SBDF-SBAF-SBMF-SBCF-SBPF

Order d3	Head d2	d1 / Shape		Standard L1	Alternative L1		L
		(SBYF) Round P	Other Shapes W G/P		Min.	Max.	
SB..F08	13	3.2 ~ 7.95	3.2 - 7.95	13	13	25	60
SB..F10	15	4.5 ~ 9.95	4.5 - 9.95	13	13	25	
SB..F13	18	6 ~ 12.95	6 - 12.95	13	13	25	
SB..F16	21	8 ~ 15.95	7.5 - 15.95	19	13	25	
SB..F20	25	10 ~ 19.95	8 - 19.95	19	13	25	
SB..F25	30	12 ~ 24.95	9 - 24.95	19	13	25	
SB..F32	37	16 ~ 31.95	10 - 31.95	25	19	30	100

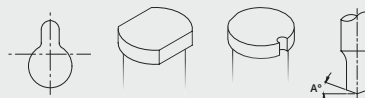
How to order:

Shape
d3
P/W
L1
L
Material

SBYF x 10 x P7.0 x 13 x 80 - M2
SBOF x 10 x P8.2 x W5.2 x 25 x 100 - M2

OPTIONAL FEATURES

COATING



For details on Keying Information / Key Flat Options, More Complex Special Shapes, Shear Angles, and Coatings, please refer to the beginning of Category 6.

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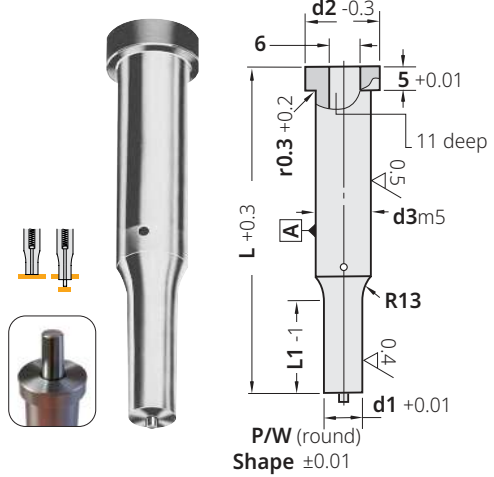
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Punches and Retainers / Stamping


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Punches and Retainers / Stamping



Center Dowel Stepped Punch with Ejector

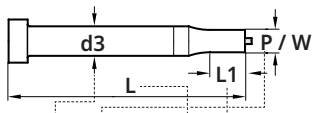
Code: **DF...**

Please refer to the table on the right side 

DFY - DFO - DFK - DFD - DFA - DFM - DFX - DFP

Order	Head	d1 / Shape		Standard	Alternative		L
		(DFY) Round P	Other Shapes W G/P		L1	L1 Min. Max.	
DF.. 10	13	4.5 ~ 9.95	4.5 - 9.95	19	13 25		63
DF.. 13	16	6 ~ 12.95	6 - 12.95	19	13 25		
DF.. 16	19	8 ~ 15.95	7.5 - 15.95	19	13 25		
DF.. 20	23	10 ~ 19.95	8 - 19.95	19	13 25		
DF.. 25	28	12 ~ 24.95	9 - 24.95	19	13 25		
DF.. 32	35	16 ~ 31.95	10 - 31.95	25	19 30		

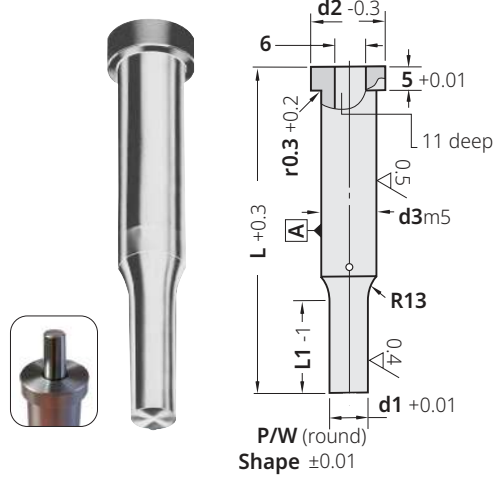
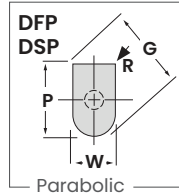
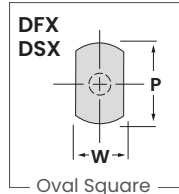
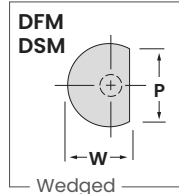
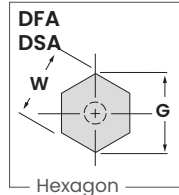
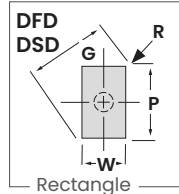
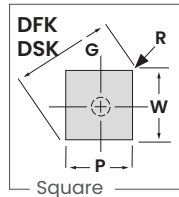
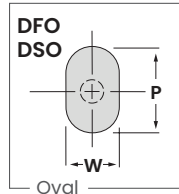
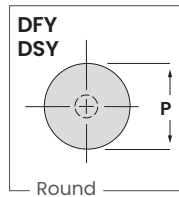
How to order:



Shape
d3
P/W
L1
L
Material


DFY x 10 x P7.0 x 13 x 80 - M2
DFO x 10 x P8.2 x W5.2 x 25 x 100 - M2

SHAPES



Center Dowel Stepped Punch

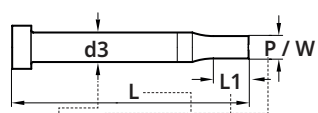
Code: **DS...**

Please refer to the table on the left side 

DSY - DSO - DSK - DSD - DSA - DSM - DSX - DSP

Order	Head	d1 / Shape		Standard	Alternative		L
		(DSY) Round P	Other Shapes W G/P		L1	L1 Min. Max.	
DS.. 10	13	4.5 ~ 9.95	4.5 - 9.95	19	13 25		63
DS.. 13	16	6 ~ 12.95	6 - 12.95	19	13 25		
DS.. 16	19	8 ~ 15.95	7.5 - 15.95	19	13 25		
DS.. 20	23	10 ~ 19.95	8 - 19.95	19	13 25		
DS.. 25	28	12 ~ 24.95	9 - 24.95	19	13 25		
DS.. 32	35	16 ~ 31.95	10 - 31.95	25	19 30		


How to order:



Shape
d3
P/W
L1
L
Material

DSY x 10 x P7.0 x 13 x 80 - M2
DSO x 10 x P8.2 x W5.2 x 25 x 100 - M2

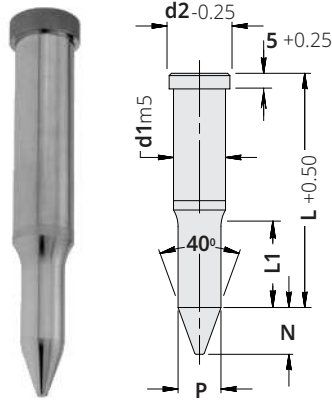
OPTIONAL FEATURES

COATING 

For details on Keying Information / Key Flat Options, More Complex Special Shapes, Shear Angles, and Coatings, please refer to the beginning of Category 6.



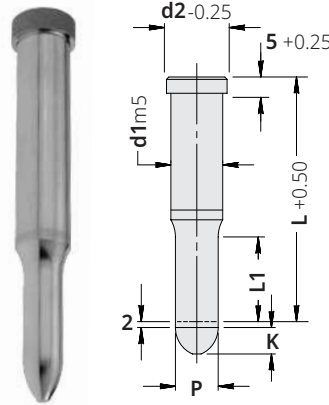
Pilots enter a previously punched hole to accurately position the workpiece and hold it in place before the main punches operate. This ensures precise and repeatable punching operations.



Code: **SPK**

Pilot with Taper End

d1	d2	Taper P	N	Ref P	L1	L
10	13	4.85 ~ 10	8	5.6	Standard Alternative	71
13	16	6.30 ~ 13	10	7.1		80
16	19	9.95 ~ 16	15	10.8	Standard Alternative	100
20	23	13.6 ~ 20	20	14.4		125
25	28	17.3 ~ 25	25	18	Standard Alternative	140
32	35	20.9 ~ 32	30	21.7		25 30




Code: **SPX**

Pilot - Spherical

d1	d2	K	Taper P	Standard L1	Alternative L1 min. max.	L
4	7	4	1.55 ~ 4	8	10	50
5	8		1.55 ~ 5	13		
6	9		1.55 ~ 6	13		
8	11	10	2.45 ~ 8	19	13	60
10	13		3.15 ~ 10			71
13	16		4.95 ~ 13		13	80
16	19		7.95 ~ 16			100
20	23		9.95 ~ 20		19	30
25	28	11.95 ~ 25				
32	35	15.95 ~ 32	25	19	30	

Code: **SPP**

Pilot - Parabolic Type

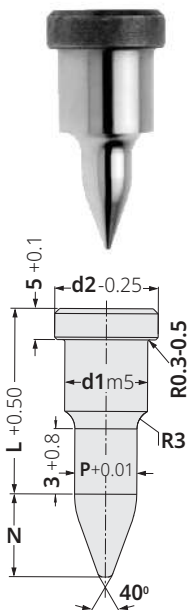
 Order: **SPK**
d1 x P x L1 x L

Standard Tolerances
Round / P +0.01 -0.00  .01 From P to d1
When P = d1, shank / body tolerances apply.

Order: **SPX**
d1 x P x L1 x L


Order: **SPP**
d1 x P x L1 x L

SPK - SPX - SPP
Material: 1.3343 (M2)
Hardness: 62 - 64 HRC

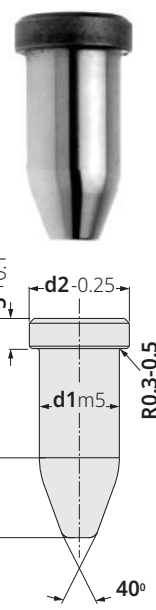


Code: **SMK** Pointed End
Pilot - Compact Type

d1	P	N	d2	L
4	1.95 ~ 3.99	4	7	20
5	2.65 ~ 4.99	5	8	
6	3.3 ~ 5.99	6	9	
8	4.1 ~ 7.99	7	11	22
10	4.8 ~ 9.99	8	13	25
13	6.25 ~ 12.99	10	16	28
16	9.85 ~ 15.99	15	19	
20	13.5 ~ 19.99	20	23	35
25	17.2 ~ 24.99	25	28	
32	20.8 ~ 31.99	30	35	


 Order: **SMK**
d1 x P x N x L

Material: 1.3343 (M2)
Hardness: 62 - 64 HRC



Code: **SMX** Spherical End
Pilot - Compact & Spherical

d1	N	d2	L
3.01 ~ 4	4	7	20
4.01 ~ 5	5	8	
5.01 ~ 6	6	9	
6.01 ~ 8	7	11	22
8.01 ~ 10	8	13	25
10.01 ~ 13	10	16	28
13.01 ~ 16	15	19	
16.01 ~ 20	20	23	35

 Order: **SMX**
d1 x N x L

Material: 1.3343 (M2)
Hardness: 62 - 64 HRC

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Punches and Retainers / Stamping

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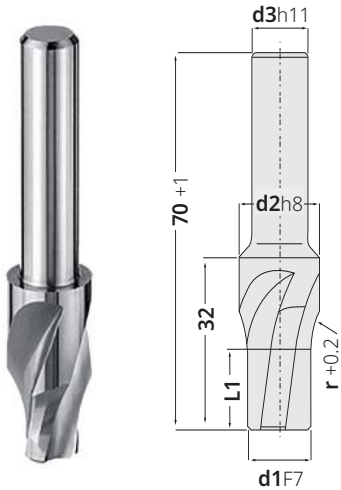
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Punches and Retainers / Stamping



Code: **UFT**

Piloted Counterbore Punch
(for tapered head)

d1	d2	d3	r	L1	x (d1)
2	3.3	3.5	3.5	5	01
2.1 ~ 2.2	3.5	3.5	5	5	01
2.3 ~ 2.5	3.8	4.0	5	5	01
2.6 ~ 2.9	4.3	4.5	6	7	01
3 ~ 3.4	4.9	5.0	6	7	01
3.5 ~ 3.9	5.4	5.5	8	7	01
4 ~ 4.4	5.9	6.0	8	8	01
4.5 ~ 4.9	6.4	6.5	8	8	01
5 ~ 5.4	7.4	7.5	10	10	01
5.5 ~ 5.9	8.5	8.5	10	10	01
6	9.5	10	12	12	05
6.5 ~ 7	10.5	10	12	12	05
7.5 ~ 8	11.5	10	12	12	05
8.5 ~ 9	13.5	10	15	12	05
9.5 ~ 10	14.5	10	15	12	05
10.5 ~ 11	15.5	10	15	15	05
11.5 ~ 12	16.5	10	15	15	05
12.5 ~ 13	17.5	10	15	15	05
13.5 ~ 14	18.5	10	15	15	05
14.5 ~ 15	19.5	10	15	15	05
15.5 ~ 16	20.5	10	15	15	05
16.5 ~ 17	21.5	16	15	15	05
17.5 ~ 18	22.5	16	15	15	05
18.5 ~ 19	23.5	16	15	15	05
19.5 ~ 20	25.5	16	15	15	05



Order:
UFT. d1

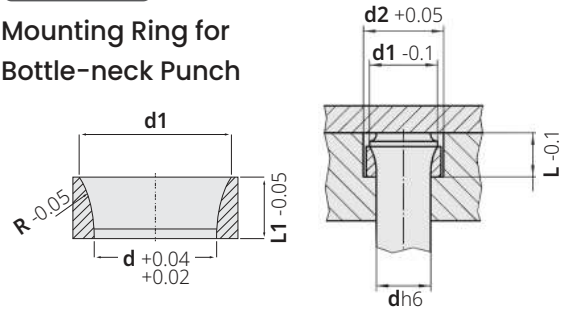


Material: 1.3343 (M2)
Hardness: 62 - 66 HRC



Code: **G162**

**Mounting Ring for
Bottle-neck Punch**



Order Code	d	d1	d2	L	L1	R
G162 30	3	4.5	6	7	4	6.5
G162 35	3.5	5	7	7	4	8
G162 40	4	5.5	7	8	4	8
G162 50	5	7	9	11	7	10
G162 51	5.1	7	9	11	7	10
G162 55	5.5	8	10	11	7	10
G162 60	6	9	11	11	7	10
G162 65	6.5	10	12	11	7	12
G162 70	7	10	12	11	7	12
G162 75	7.5	11	13	11	7	12
G162 80	8	11	13	12	8	12
G162 85	8.5	13	15	12	8	15
G162 90	9	13	15	12	8	15
G162 95	9.5	14	16	12	8	15
G162 100	10	14	16	13	9	15
G162 110	11	15	17	13	9	15
G162 120	12	16	18	13	9	15
G162 130	13	17	19	13	9	15
G162 140	14	18	20	13	9	15
G162 150	15	19	21	13	9	15
G162 160	16	20	22	13	9	15
G162 170	17	21	23	13	9	15
G162 180	18	22	24	13	9	15
G162 190	19	23	25	13	9	15
G162 200	20	25	27	14	10	15



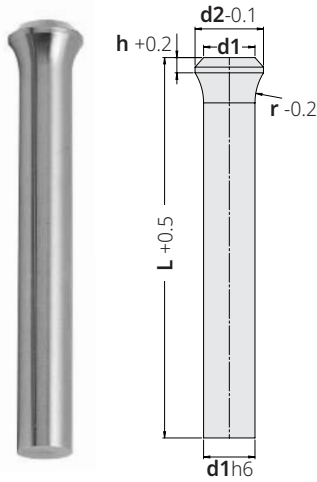
"G162" is used for more practical mounting of Bottle-neck Punches on the retainer plate.

Advantages:

- * Cylindrical counter bore in the retainer plate is sufficient.
- * Tempered Mounting Ring reduces the shrinking in the untempered retainer plate.

- * You can take advantage of the positive features of Bottle-neck Punches without complex installation.

Material: Tempered Steel



Bottle-neck Punch (Blank type)

Code: **UBZ**

DIN 5118 (Trambone type)

The Güvenal UBZ Series is precisely engineered for high-demand applications where strong retraction force is essential.

Order Code	d1	L	d2	h	r
UBZ020080	2	80	3	3	3.5
UBZ020100		100			
UBZ021100	2.1	100	3.2	3	5
UBZ022100	2.2	100	3.2	3	5
UBZ023100	2.3	100	3.5	3	5
UBZ024100	2.4	100	3.5	3	5
UBZ025080	2.5	80	3.5	3	5
UBZ025100		100			
UBZ026100	2.6	100	4	3	6.5
UBZ027100	2.7	100	4	3	6.5
UBZ028100	2.8	100	4	3	6.5
UBZ029100	2.9	100	4	3	6.5
UBZ030080	3	80	4.5	3	6.5
UBZ030100		100			
UBZ031100	3.1	100	4.5	3	6.5
UBZ032100	3.2	100	4.5	3	6.5
UBZ033100	3.3	100	4.5	3	6.5
UBZ034100	3.4	100	4.5	3	6.5
UBZ035080	3.5	80	5	3	8
UBZ035100		100			
UBZ036100	3.6	100	5	3	8
UBZ037100	3.7	100	5	3	8
UBZ038100	3.8	100	5	3	8
UBZ039100	3.9	100	5	3	8
UBZ040080	4	80	5.5	4	8
UBZ040100		100			
UBZ041100	4.1	100	5.5	4	8
UBZ042100	4.2	100	5.5	4	8
UBZ043100	4.3	100	5.5	4	8

Order Code	d1	L	d2	h	r
UBZ044100	4.4	100	5.5	4	8
UBZ045080	4.5	80	6	4	8
UBZ045100		100			
UBZ046100	4.6	100	6	4	8
UBZ047100	4.7	100	6	4	8
UBZ048100	4.8	100	6	4	8
UBZ049100	4.9	100	6	4	8
UBZ050080	5	80	7	4	10
UBZ050100		100			
UBZ051100	5.1	100	7	4	10
UBZ052100	5.2	100	7	4	10
UBZ053100	5.3	100	7	4	10
UBZ054100	5.4	100	7	4	10
UBZ055080	5.5	80	8	4	10
UBZ055100		100			
UBZ056100	5.6	100	8	4	10
UBZ057100	5.7	100	8	4	10
UBZ058100	5.8	100	8	4	10
UBZ059100	5.9	100	8	4	10
UBZ060080	6	80	9	4	10
UBZ060100		100			
UBZ061100	6.1	100	9	4	10
UBZ062100	6.2	100	9	4	10
UBZ063100	6.3	100	9	4	10
UBZ064100	6.4	100	9	4	10
UBZ065100	6.5	100	10	4	12
UBZ070100	7	100	10	4	12
UBZ075100	7.5	100	11	4	12
UBZ080080	8	80	11	4	12
UBZ080100		100			
UBZ085100	8.5	100	13	4	15
UBZ090100	9	100	13	4	15
UBZ095100	9.5	100	14	4	15
UBZ100100	10	100	14	4	15
UBZ105100	10.5	100	15	4	15
UBZ110100	11	100	15	4	15
UBZ115100	11.5	100	16	4	15
UBZ120100	12	100	16	4	15
UBZ125100	12.5	100	17	4	15
UBZ130100	13	100	17	4	15
UBZ135100	13.5	100	18	4	15
UBZ140100	14	100	18	4	15
UBZ150100	15	100	19	4	15
UBZ160100	16	100	20	4	15
UBZ170100	17	100	21	4	15
UBZ180100	18	100	22	4	15
UBZ190100	19	100	23	4	15
UBZ200100	20	100	25	4	15



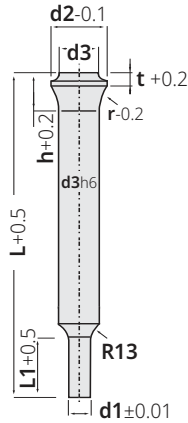
Material: 1.3343 (M2) Hardness: 62 - 66 HRC
Head Hardness: 45 - 55 HRC

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Punches and Retainers / Stamping

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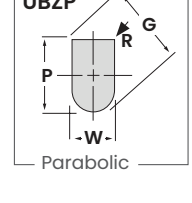
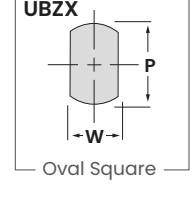
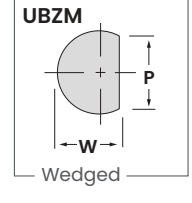
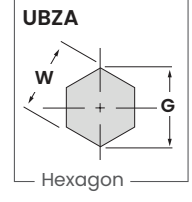
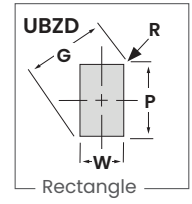
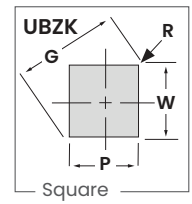
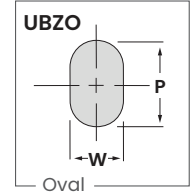
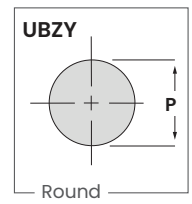
NEW



How to order:
 Shape
 d3
 P/W
 L1
 L
 Material

UBZY x 10 x P7.0 x 13 x 80 - M2
UBZO x 10 x P8.2 x W5.2 x 25 x 100 - M2

SHAPES



Bottle-neck Stepped Punch DIN 5118 (Trambone type) Code: **UBZ..**

The Güvenal UBZ Series is precisely engineered for high-demand applications where strong retraction force is essential. Apart from our standards, special dimensions and complex geometries can be produced according to your technical drawings.

Please refer to the table on the right side

UBZY - UBZO - UBZK - UBZD - UBZA - UBZM - UBZX - UBZP

Order	d3	Head d2	t	h	r	d1 / Shape		Standard L1	Alternative L1 Min. Max.	L
						(UBZY) Round P	Other Shapes W G/P			
UBZ.. 03	3	4.5	3	6.03	6.5	1.00 ~ 2.95	1.00 ~ 2.95	10	13 - 19	50 63 71 80 90 100
UBZ.. 04	4	5.5	4	7.38	8	1.50 ~ 3.95	1.50 ~ 3.95	13	10 - 19	
UBZ.. 05	5	7	4	8.36	10	1.50 ~ 4.95	1.50 ~ 4.95	13	10 - 19	
UBZ.. 06	6	9	4	9.27	10	1.60 ~ 5.95	1.60 ~ 5.95	13	10 - 19	
UBZ.. 08	8	11	4	9.81	12	2.50 ~ 7.95	2.00 ~ 7.95	19	13 - 25	
UBZ.. 10	10	14	4	11.48	15	3.20 ~ 9.95	3.50 ~ 9.95	19	13 - 25	
UBZ.. 13	13	17	4	11.48	15	5.00 ~ 12.95	4.50 ~ 12.95	19	13 - 25	71 - 80 90 - 100
UBZ.. 16	16	20	4	11.48	15	8.00 ~ 15.95	6.50 ~ 15.95	19	13 - 25	
UBZ.. 20	20	25	4	12.29	15	10.00 ~ 19.95	8.00 ~ 19.95	19	13 - 25	

FLATS ON HEADED PRODUCTS

K1

KEY FLAT

K5

DOUBLE FLAT

K6

BODY FLAT

K1 and K5 are ground flush to shank. **K6** is a user defined flat and requires an "F" dimension specified with order. **K5** flats are standard 180° apart.

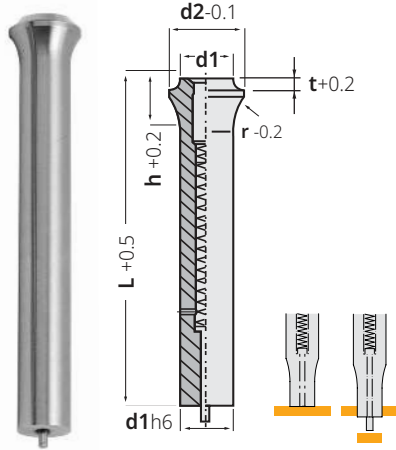
Order Example with Flat:
 UBZO x 10 x P8.2 x W5.2 x 25 x 100 - **K1** - M2
 Keying Info

Order Example with Flat and Coating:
 UBZO x 10 x P8.2 x W5.2 x 25 x 100 - K1 - M2 - **Duplex**
 Coating Info

OPTIONAL FEATURES

COATING

For details on Keying Information / Key Flat Options, More Complex Special Shapes, Shear Angles, and Coatings, please refer to the beginning of Category 6.



Code: **UFZ** (Blank)

Bottle-neck Punch with Ejector

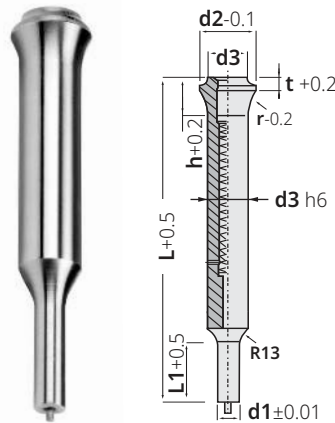
DIN 5118 (Trambone type)

Order Code	d1	L	d2	t	h	r
UFZ050080	5	80	7	4	8.36	10
UFZ050100		100				
UFZ060080	6	80	9	4	9.27	10
UFZ060100		100				
UFZ070080	7	80	10	4	9.81	12
UFZ070100		100				
UFZ080080	8	80	11	4	9.81	12
UFZ080100		100				
UFZ090100	9	100	13	4	11.48	15
UFZ100100	10	100	14	4	11.48	15
UFZ105100	10.5	100	14.5	4	11.48	15
UFZ110100	11	100	15	4	11.48	15
UFZ120100	12	100	16	4	11.48	15
UFZ130100	13	100	17	4	11.48	15
UFZ150100	15	100	19	4	11.48	15
UFZ155100	15.5	100	19.5	4	11.48	15
UFZ160100	16	100	20	4	11.48	15
UFZ200100	20	100	25	4	12.29	15
UFZ250100	25	100	31	4	13	15



Material: 1.3343 (M2)
Hardness: 62 - 66 HRC
Head Hardness: 45 - 55 HRC

NEW



Code: **UFZ..**

Bottle-neck Stepped Punch with Ejector

DIN 5118 (Trambone type)

The Güvenal UFZ Series is precisely engineered for high-demand applications where strong retraction force is essential. Apart from our standards, special dimensions and complex geometries can be produced according to your technical drawings.

Please refer to the table on the right side 

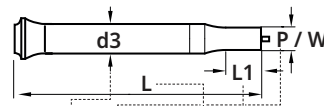
UFZY - UFZO - UFZK - UFZD - UFZA - UFZM - UFZX - UFZP

Order	d3	d1 / Shape		L1 Standard	L
		(UFZY) Round P	Other Shapes W G/P		
UFZ.. 05	5	2.00 ~ 4.95	2.00 ~ 4.95	13	80 100
UFZ.. 06	6	2.00 ~ 5.95	2.00 ~ 5.95	13	
UFZ.. 08	8	4.00 ~ 7.95	3.00 ~ 7.95	19	
UFZ.. 10	10	5.00 ~ 9.95	3.50 ~ 9.95	19	
UFZ.. 13	13	6.00 ~ 12.95	4.50 ~ 12.95	19	
UFZ.. 16	16	8.00 ~ 15.95	6.50 ~ 15.95	19	
UFZ.. 20	20	10.00 ~ 19.95	8.00 ~ 19.95	19	
UFZ.. 25	25	12.00 ~ 24.95	9.00 ~ 24.95	19	

Order	Alternative L1 Min. Max.	Head d2	t	h	r
UFZ.. 05	10 - 19	7	4	8.36	10
UFZ.. 06	10 - 19	9	4	9.27	10
UFZ.. 08	13 - 25	11	4	9.81	12
UFZ.. 10	13 - 25	14	4	11.48	15
UFZ.. 13	13 - 25	17	4	11.48	15
UFZ.. 16	13 - 25	20	4	11.48	15
UFZ.. 20	13 ~ 25	25	4	12.29	15
UFZ.. 25	13 ~ 25	31	4	13	15

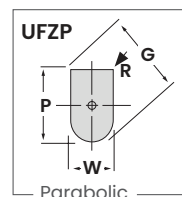
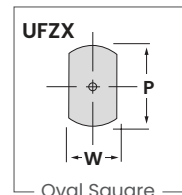
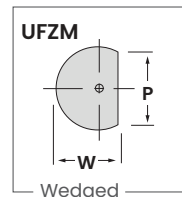
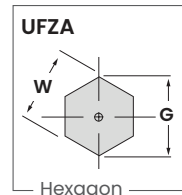
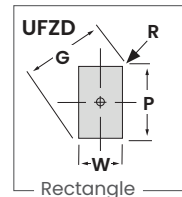
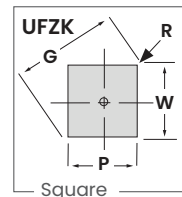
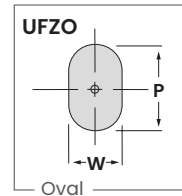
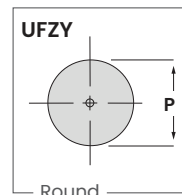
How to order:

Shape
d2
P/W
L1
L
Material



UFZY x 10 x P7.0 x 13 x 80 - M2
UFZO x 10 x P8.2 x W5.2 x 25 x 100 - M2

SHAPES



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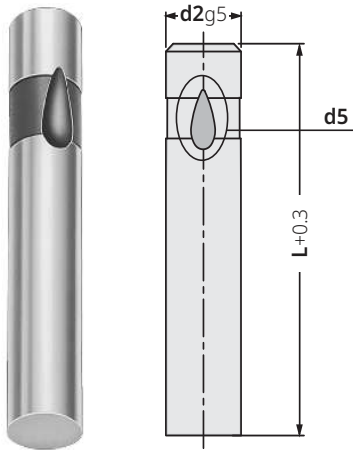
17

18

Punches and Retainers / Stamping

- 1
- 2
- 3
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- 5
- 6
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- 8
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- 11
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- 14
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- 16
- 17
- 18

Punches and Retainers / Stamping



Code: BHZ Light Duty

Ball Lock Punch (Blank type)
ISO 10071

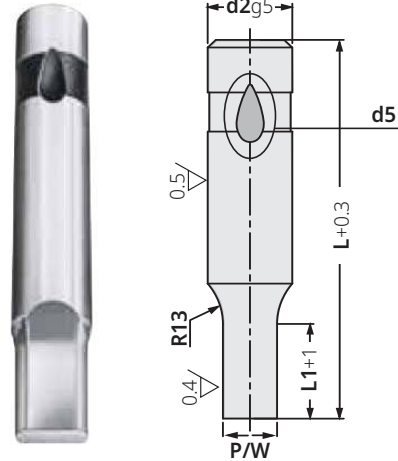
d2	d5	L	d2	d5	L
6	6	63	20	8	63
		71			71
		80			80
		90			90
		100			100
10	8	63	25	8	63
		71			71
		80			80
		90			90
		100			100
13	8	63	32	8	63
		71			71
		80			80
		90			90
		100			100
16	8	63	38	8	63
		71			71
		80			80
		90			90
		100			100



Order:
BHZ. d2 x L

Material: 1.3343 (M2)
Hardness: 60-62 HRC

Body and cutting edge are precision ground. Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.



Code: BH... Light Duty

Ball Lock Stepped Punch

Please refer to the table on the right side

BHY - BHO - BHK - BHD - BHA - BHM - BHX - BHP

Order d2	Ball Socket d5	Shape		Standard L1	Alternative L1		L
		(BHY) Round P	Other Shapes W G/P		Min.	Max.	
BH.. 06	6	2.2 ~ 5.9	2.2 ~ 5.9	13	10	-	63
BH.. 10	8	2.5 ~ 9.9	2.5 ~ 9.9	19	10	19	71
BH.. 13	8	5.0 ~ 12.9	4.5 ~ 12.9	19	13	25	80
BH.. 16	8	8.0 ~ 15.9	6.0 ~ 15.9	19	13	25	90
BH.. 20	8	12 ~ 19.9	8 ~ 19.9	19	13	25	100
BH.. 25	8	16 ~ 24.9	10 ~ 24.9	19	13	25	125
BH.. 32	8	24 ~ 31.9	12.5 ~ 31.9	25	25	30	80
BH.. 38	8	30 ~ 37.9	14 ~ 37.9	25	25	30	90
							100
							125

How to order:
Shape
d2
P/W
L1
L
Material

BHY x 10 x P8.2 x 19 x 100 - M2
BHO x 13 x P8.2 x W5.2 x 25 x 100 - M2

- When P = d2 shank / body tolerances apply.

Material: 1.3343 (M2)
Hardness: 60- 62 HRC

Wedge force

Contact

Connecting Punch to Retainer with Ball Socket

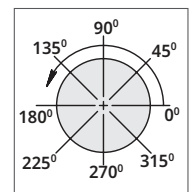
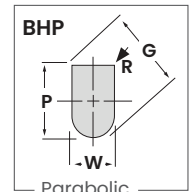
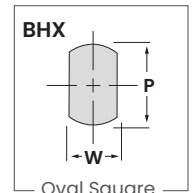
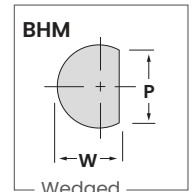
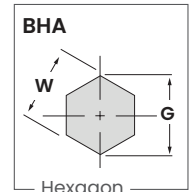
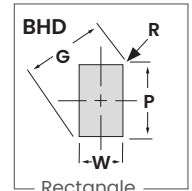
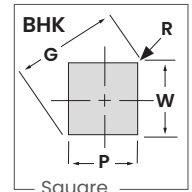
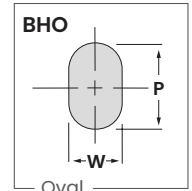
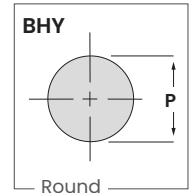
Space Requirements of Ball Locking Place

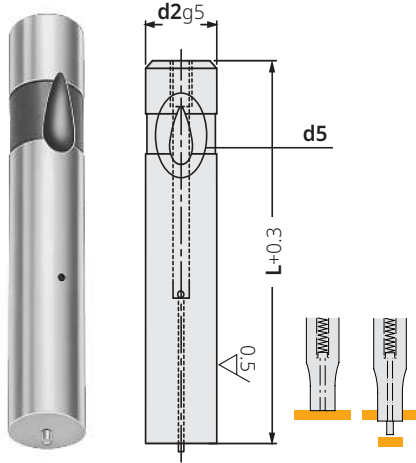
Punch Dia. A	Ball Dia. B	Clearance C
6	6	10
10	8	11
13		
16		
20		
25		
32		
38		

A
B
C

for precise retainers, please add 1.7 to "C" dimension

SHAPES





Code: **BFZ**

 Light Duty

Ball Lock Punch with Ejector
ISO 10071 (Blank type)

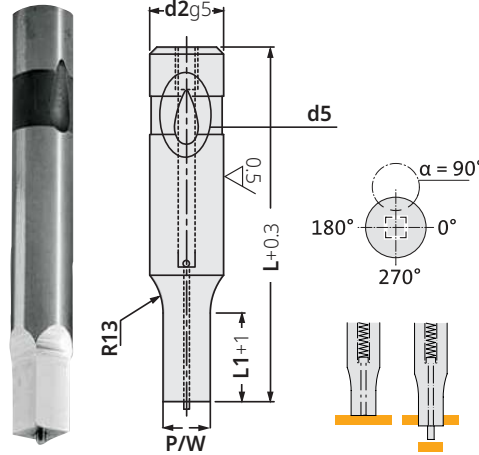
d2	d5	L	d2	d5	L
6	6	63	20	8	63
		71			71
		80			80
		90			90
		100			100
		125			125
10	8	63	25	8	63
		71			71
		80			80
		90			90
		100			100
		125			125
13	8	63	32	8	71
		71			80
		80			80
		90			90
		100			100
		125			125
16	8	63	38	8	80
		71			90
		80			90
		90			100
		100			100
		125			125



Order:
BFZ. d2 x L

Material:
1.3343 (M2)
Hardness: 60-62 HRC

Body and cutting edge are precision ground. Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.



Code: **BF...**

 Light Duty

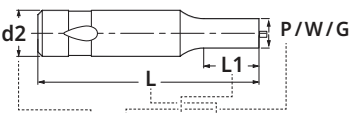
Ball Lock Stepped Punch with Ejector

Please refer to the table on the right side 
BFY - BFO - BFK - BFD - BFA - BFM - BFX - BFP

Order d2	Ball Socket d5	Shape		Standard L1	Alternative L1		L
		(BFY) Round P	Other Shapes W G/P		Min.	Max.	
BF.. 06	6	2.2 ~ 5.9	2.2 ~ 5.9	13	10	-	63 71 80 90 100 125
BF.. 10	8	2.5 ~ 9.9	2.5 ~ 9.9	19	10	19	
BF.. 13	8	5.0 ~ 12.9	4.5-12.9	19	13	25	
BF.. 16	8	8.0 ~ 15.9	6.0-15.9	19	13	25	
BF.. 20	8	12 ~ 19.9	8 ~ 19.9	19	13	25	
BF.. 25	8	16 ~ 24.9	10-24.9	19	13	25	
BF.. 32	8	24 ~ 31.9	12.5-31.9	25	25	30	80 90 100 125
BF.. 38	8	30 ~ 37.9	14-37.9	25	25	30	

How to order:

Shape
d2
P/W
L1
L
Material



BFY x 10 x P8.2 x 19 x 100 - M2
BFO x 13 x P8.2 x W5.2 x 25 x 100 - M2

- When P = d2 shank / body tolerances apply.



Material: 1.3343 (M2)
Hardness: 60- 62 HRC

Round / P +01 / -00

	.01	From P to d2
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Shape / P/W/G ±01

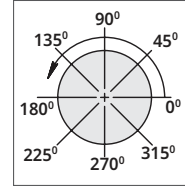
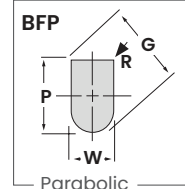
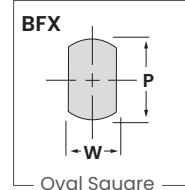
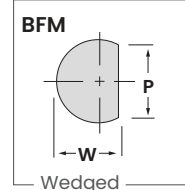
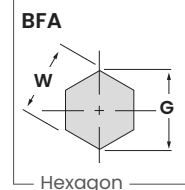
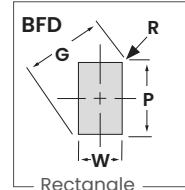
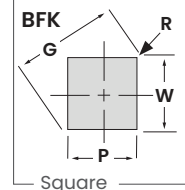
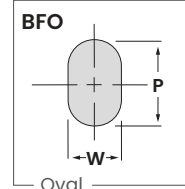
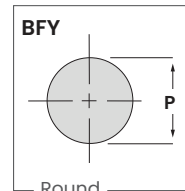
	.02	From P to d2
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Standard Tolerances

Standard position of ball socket is 90°. It can be preferred as 0°- 180°- 270°.

Note: Parts are viewed in die position looking from above the die. Punches are viewed looking through the body. Matrixes are viewed through top face.

SHAPES



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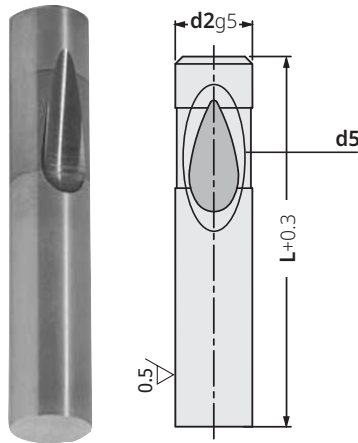
17

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Punches and Retainers / Stamping

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Punches and Retainers / Stamping

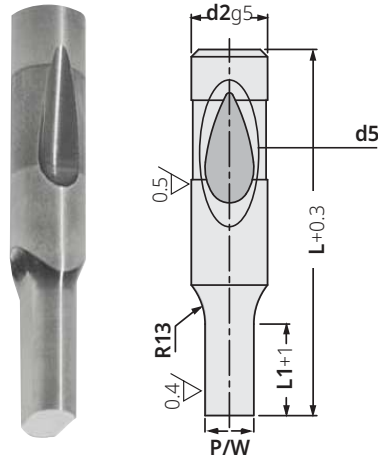


Code: BAZ Heavy Duty
Ball Lock Punch (Blank type)

d2	d5	L	d2	d5	L
10	10	71	25	12	80
		80			90
		90			100
		100			
13	12	71	32	12	110
		80			125
		90			80
		100			90
		125			125
16	12	71	40	12	100
		80			110
		90			125
		100			80
		125			90
20	12	71	40	12	100
		80			110
		90			125
		100			80
		125			90

Order: BAZ. d2 x L
Material: 1.3343 (M2)
Hardness: 60-62 HRC

Body and cutting edge are precision ground. Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.



Code: BA... Heavy Duty
Ball Lock Stepped Punch

Please refer to the table on the right side
BAY - BAO - BAK - BAD - BAA - BAM - BAX - BAP

Order d3	Ball Socket d5	Shape		Standard L1	Alternative L1 Min. Max.		L
		(BAY) Round P	Other Shapes W G/P				
BA.. 10	10	2.5 ~ 9.8	2.5 ~ 10	19	10	19	71
BA.. 13	12	5 ~ 12.8	4.5 ~ 13	19	13	25	80
BA.. 16	12	8 ~ 15.8	6 ~ 16	19	13	25	90
BA.. 20	12	12 ~ 19.8	8 ~ 20	19	13	25	100
BA.. 25	12	16 ~ 24.8	10 ~ 25	19	13	25	110
BA.. 32	12	24 ~ 31.8	12 ~ 32	19	13	25	125
BA.. 40	12	30 ~ 39.8	14 ~ 40	25	19	30	

- BA.. Punches conform to NAAMS standards.

How to order:
 Shape d2 P/W L1 L
 Material

BAY x 10 x P5.5 x 19 x 90 - M2
 BAO x 13 x P8.2 x W6.1 x 19 x 100 - M2

- When P = d2 shank / body tolerances apply.

Material: 1.3343 (M2)
Hardness: 60- 62 HRC

Wedge force **Contact**

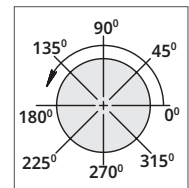
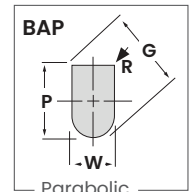
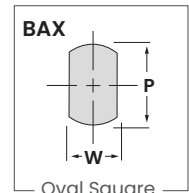
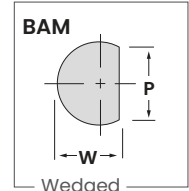
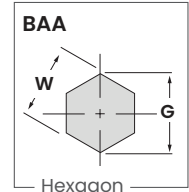
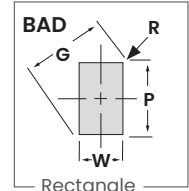
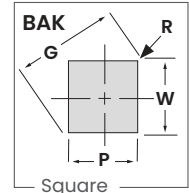
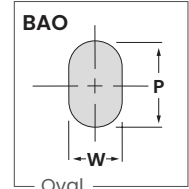
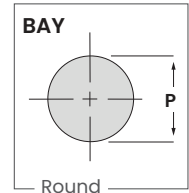
Connecting Punch to Retainer with Ball Socket

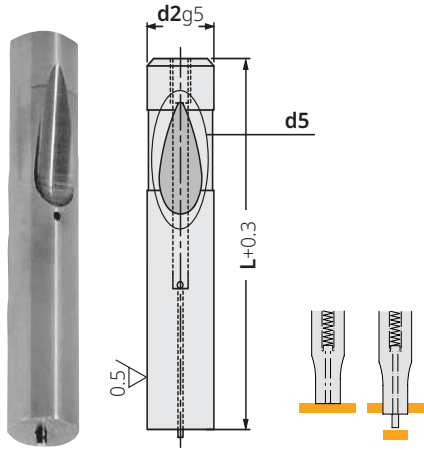
Space Requirements of Ball Locking Place

Punch Dia. A	Ball Dia. B	Clearance C
10	10	13
13	12	15
16		
20		
25		
32		
40		

for precise retainers, please add 1.7 to "C" dimension

SHAPES





Code: **BAFZ**  Heavy Duty

Ball Lock Punch with Ejector
(Blank type)

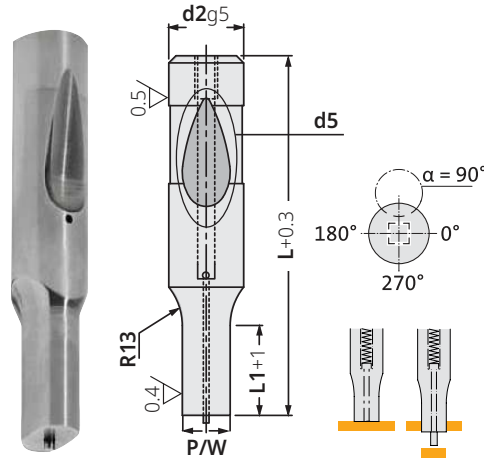
d2	d5	L	d2	d5	L	
10	10	71	25	12	80	
		80			90	
		90			100	
		100				
13	12	71	32	12	110	
		80			125	
		90			80	
		100				90
		125				100
16	12	70	40	12	100	
		80			110	
		90			125	
		100			80	
		125			90	
20	12	71	40	12	100	
		80			110	
		90			125	
		100			80	
		110			90	
		125			100	



Order:
BAFZ. d2 x L

Material:
1.3343 (M2)
Hardness: 60-62 HRC

Body and cutting edge are precision ground. Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.



Code: **BAF...**  Heavy Duty

Ball Lock Stepped Punch with Ejector

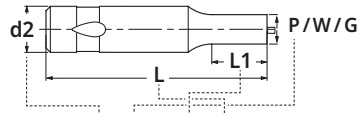
Please refer to the table on the right side 

BAFY - BAFO - BAFK - BAFD - BAFA - BAFM - BAFX - BAFP

Order d3	Ball Socket d5	Shape		Standard L1	Alternative L1		L
		(BAFY) Round P	Other Shapes W G/P		Min.	Max.	
BAF.. 10	10	2.5 ~ 9.8	2.5 - 10	19	10	19	71
BAF.. 13	12	5.0 ~ 12.8	4.5 - 13	19	13	25	
BAF.. 16	12	8.0 ~ 15.8	6.0 - 16	19	13	25	80
BAF.. 20	12	12 ~ 19.8	8.0 - 20	19	13	25	90
BAF.. 25	12	16 ~ 24.8	10 - 25	19	13	25	100
BAF.. 32	12	24 ~ 31.8	12 - 32	19	13	25	110
BAF.. 40	12	30 ~ 39.8	14 - 40	25	19	30	125


- BAF.. Punches conform to NAAMS standards.

How to order:




BAFY x 10 x P8.2 x 19 x 100 - M2
BAFO x 13 x P8.2 x W5.2 x 25 x 100 - M2


- When P = d2 shank / body tolerances apply.

 Material: 1.3343 (M2)
Hardness: 60- 62 HRC

Round / P +01 / -00

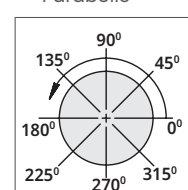
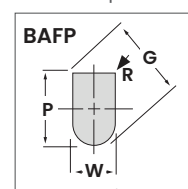
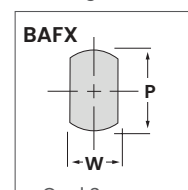
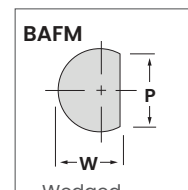
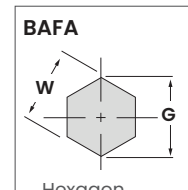
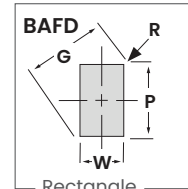
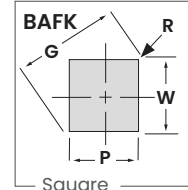
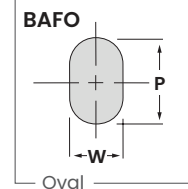
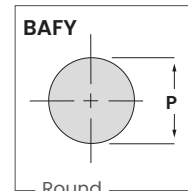


Shape / P/W/G ±01



Standard Tolerances
Standard position of ball socket is 90°. It can be preferred as 0°- 180°- 270°.
Note: Parts are viewed in die position looking from above the die. Punches are viewed looking through the body. Matrixes are viewed through top face.

SHAPES



- 1
- 2
- 3
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- 5
- 6
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- 14
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- 17
- 18

Punches and Retainers / Stamping

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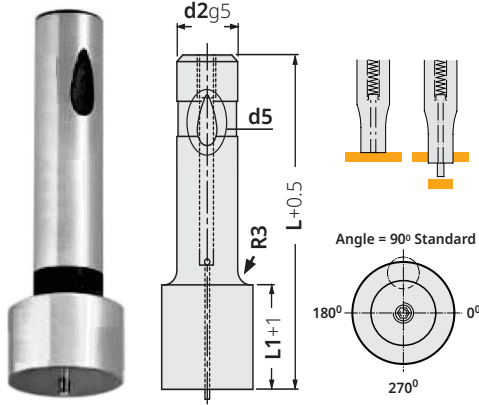
15

16

17

18

Punches and Retainers / Stamping



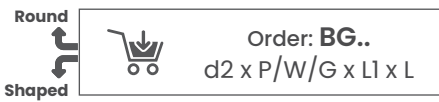
ROUND TYPE PUNCHES

Code: **BG..** Light Duty

Larger Ball Lock Ejector Punch

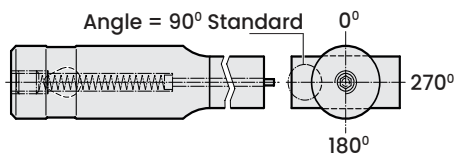
Body and outer dia. are precision ground.

Order d2	Ball Socket d5	P (round) Min. Max.	L1 Min. - Max.	L
BGY. 10	8	10.1 ~ 25	16	80 90 100
BGY. 13	8	13.1 ~ 32	20	
BGY. 16	8	16.1 ~ 38	25	
BGY. 20	8	20.1 ~ 40	25	
BGY. 25	8	25.1 ~ 44	25	
BGY. 32	8	32.1 ~ 50	32	
BGY. 40	8	40.1 ~ 63	32	



Please refer to the table on the right side
BGY - BGO - BGK - BGD - BGA - BGM - BGX - BGP

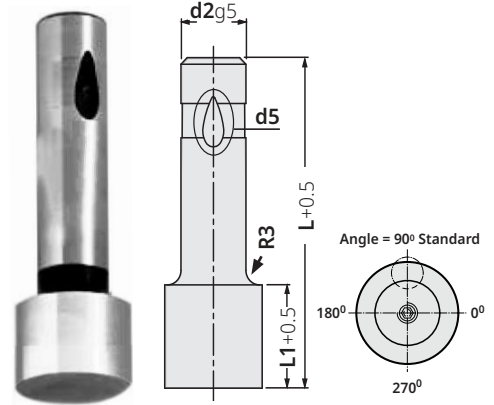
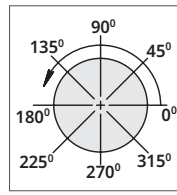
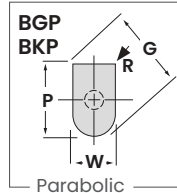
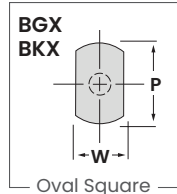
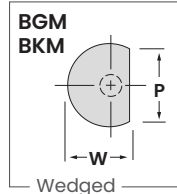
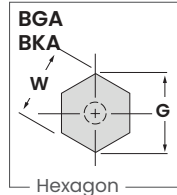
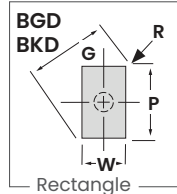
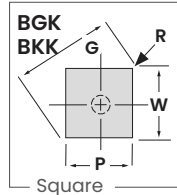
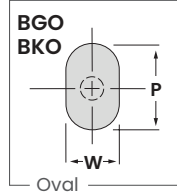
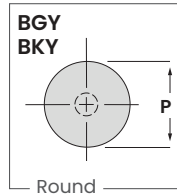
SHAPED TYPE PUNCHES



Order d2	Ball Socket d5	P (shape) Min. Max.	L1 Min. - Max.	L
BG.. 10	8	3.0 ~ 25	16	80 90 100
BG.. 13	8	5.0 ~ 32	20	
BG.. 16	8	6.5 ~ 38	25	
BG.. 20	8	8.0 ~ 40	25	
BG.. 25	8	10 ~ 44	25	
BG.. 32	8	11.5 ~ 50	32	
BG.. 40	8	14 ~ 63	32	

Note: Special dimensions on request.

SHAPES



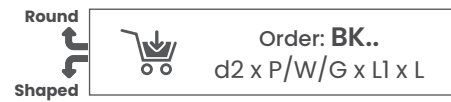
ROUND TYPE PUNCHES

Code: **BK..** Light Duty

Larger Ball Lock Punch

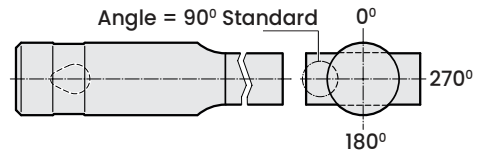
Body and outer dia. are precision ground.

Order d2	Ball Socket d5	P (round) Min. Max.	L1 Min. - Max.	L
BKY. 10	8	10.1 ~ 25	16	80 90 100
BKY. 13	8	13.1 ~ 32	20	
BKY. 16	8	16.1 ~ 38	25	
BKY. 20	8	20.1 ~ 40	25	
BKY. 25	8	25.1 ~ 44	25	
BKY. 32	8	32.1 ~ 50	32	
BKY. 40	8	40.1 ~ 63	32	



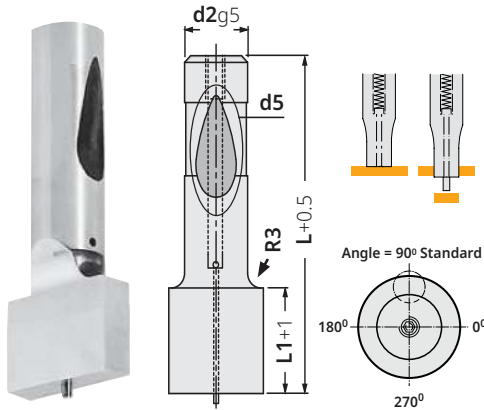
Please refer to the table on the left side
BKY - BKO - BKK - BKD - BKA - BKM - BKX - BKP

SHAPED TYPE PUNCHES

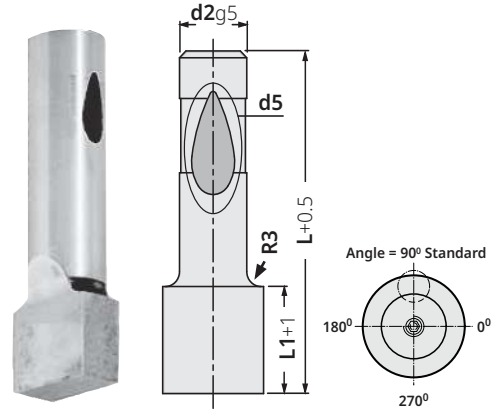
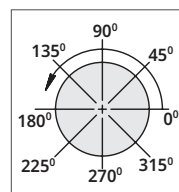
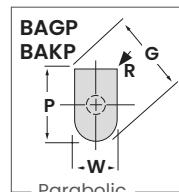
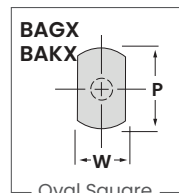
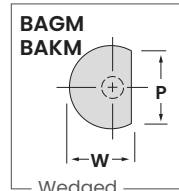
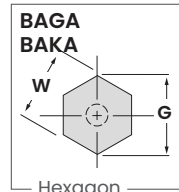
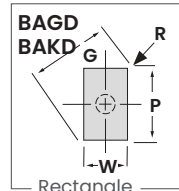
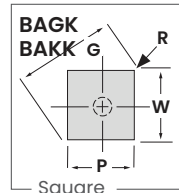
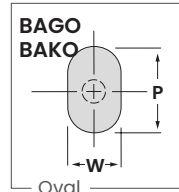
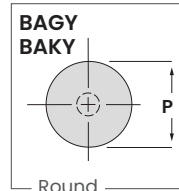


Order d2	Ball Socket d5	P (shape) Min. Max.	L1 Min. - Max.	L
BK.. 10	8	3.0 ~ 25	16	80 90 100
BK.. 13	8	5.0 ~ 32	20	
BK.. 16	8	6.5 ~ 38	25	
BK.. 20	8	8.0 ~ 40	25	
BK.. 25	8	10 ~ 44	25	
BK.. 32	8	11.5 ~ 50	32	
BK.. 40	8	14 ~ 63	32	

Note: Special dimensions on request.



SHAPES



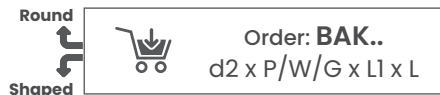
ROUND TYPE PUNCHES

Code: **BAK..** 

Larger Ball Lock Punch
Body and outer dia. are precision ground.

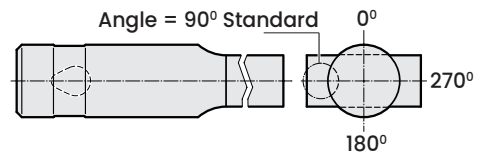
Order d2	Ball Socket d5	P (round) Min. Max.	L1 Min. - Max.	L
BAKY. 10	10	10.1 ~ 25	16	80
BAKY. 13	12	13.1 ~ 32	20	
BAKY. 16	12	16.1 ~ 38	25	90
BAKY. 20	12	20.1 ~ 40	25	
BAKY. 25	12	25.1 ~ 47	25	100
BAKY. 32	12	32.1 ~ 63	32	
BAKY. 40	12	40.1 ~ 63	32	

- BAK.. Punches conform to NAAMS standards.



Please refer to the table on the left side
BAKY - BAKO - BAKK - BAKD - BAKA - BAKM - BAKX - BAKP

SHAPED TYPE PUNCHES



Order d2	Ball Socket d5	P (shape) Min. Max.	L1 Min. - Max.	L
BAK.. 10	10	3.0 ~ 25	16	80
BAK.. 13	12	5.0 ~ 32	20	
BAK.. 16	12	6.5 ~ 38	25	90
BAK.. 20	12	8.0 ~ 40	25	
BAK.. 25	12	10 ~ 47	25	100
BAK.. 32	12	11.5 ~ 63	32	
BAK.. 40	12	14 ~ 63	32	

 Note: Special dimensions on request.

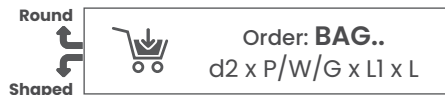
ROUND TYPE PUNCHES

Code: **BAG..** 

Larger Ball Lock Ejector Punch
Body and outer dia. are precision ground.

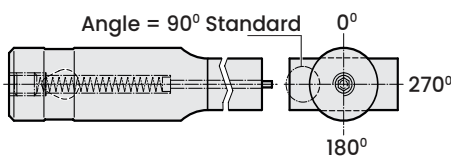
Order d2	Ball Socket d5	P (round) Min. Max.	L1 Min. - Max.	L
BAGY. 10	10	10.1 ~ 25	16	80
BAGY. 13	12	13.1 ~ 32	20	
BAGY. 16	12	16.1 ~ 38	25	90
BAGY. 20	12	20.1 ~ 40	25	
BAGY. 25	12	25.1 ~ 47	25	100
BAGY. 32	12	32.1 ~ 63	32	
BAGY. 40	12	40.1 ~ 63	32	

- BAG.. Punches conform to NAAMS standards.




Please refer to the table on the right side
BAGY - BAGO - BAGK - BAGD - BAGA - BAGM - BAGX - BAGP

SHAPED TYPE PUNCHES



Order d2	Ball Socket d5	P (shape) Min. Max.	L1 Min. - Max.	L
BAG.. 10	10	3.0 ~ 25	16	80
BAG.. 13	12	5.0 ~ 32	20	
BAG.. 16	12	6.5 ~ 38	25	90
BAG.. 20	12	8.0 ~ 40	25	
BAG.. 25	12	10 ~ 47	25	100
BAG.. 32	12	11.5 ~ 63	32	
BAG.. 40	12	14 ~ 63	32	

 Note: Special dimensions on request.

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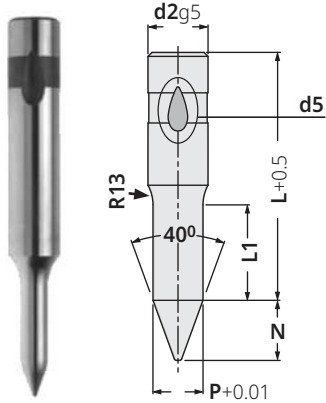
17

18



Pilots enter a previously punched hole to accurately position the workpiece and hold it in place before the main punches operate. This ensures precise and repeatable punching operations.

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- 2
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- 14
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- 16
- 17
- 18



Code: **BPK** Light Duty

Ball Lock Pilot - Conical

d2	d5	P	L1	N	L
10	8	5.9 ~ 9.9	19	8	71
13	8	9.9 ~ 12.9	19	10	80
16	8	12.9 ~ 15.9	25	15	100
20	8	15.9 ~ 19.9	25	20	71
25	8	19.9 ~ 24.9	25	25	80
32	8	24.9 ~ 31.9	25	30	100
38	8	31.9 ~ 37.9	30	35	125

Note: P / L selection upon request.
- Special dimensions on request.



Order: **BPK**. d2 x P x L



Material: 1.3343 (M2)
Hardness: 60-62 HRC

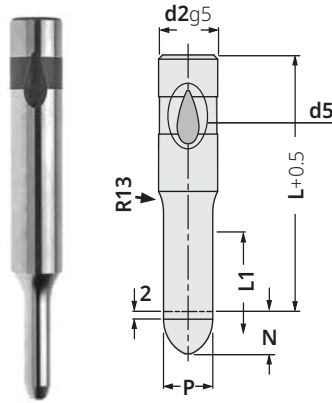
"N" becomes = 1.2 x "P" minimum when "P" is below (see table).

Round / P+01 / -00



.01 From P to d2

- When P = d2 shank / body tolerances apply.



Code: **BPX** Light Duty

Ball Lock Pilot - Spherical

d2	d5	P	L1	N	L
6	6	2.9 ~ 5.9	13	-	71
10	8	5.9 ~ 9.9	19	8	80
13	8	9.9 ~ 12.9	19	10	100
16	8	12.9 ~ 15.9	25	15	71
20	8	15.9 ~ 19.9	25	15	80
25	8	19.9 ~ 24.9	25	20	100
32	8	24.9 ~ 31.9	25	25	125

Note: P / L selection upon request.
- Special dimensions on request.



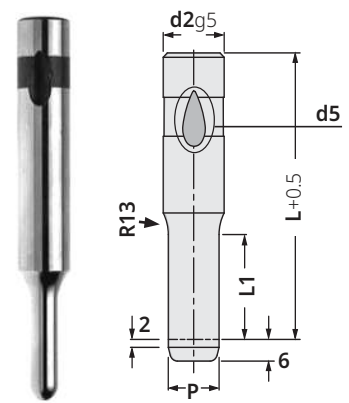
Order: **BPX**. d2 x P x L



Material: 1.3343 (M2)
Hardness: 60-62 HRC

- It is length of "L" pilot except end.
- 2 mm length is guided to punch before punch contacting sheet metal.

	P	N
	≤ 10 mm	8 mm
10.1 mm	- 15 mm	12 mm
	> 15 mm	15 mm



Code: **BPP** Light Duty

Ball Lock Pilot - Parabolic

d2	d5	P	L1	L
6	6	2.2 ~ 6.0	13	
10	8	2.5 ~ 10	19	63
13	8	5 ~ 13	19	71
16	8	8 ~ 16	19	80
20	8	12 ~ 20	19	90
25	8	16 ~ 25	19	100

Note: P / L selection upon request.
- Special dimensions on request.



Order: **BPP**. d2 x P x L



Material: 1.3343 (M2)
Hardness: 60-62 HRC

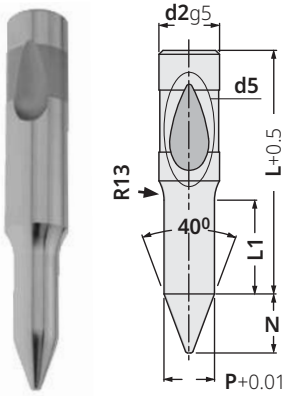
Round / P+01 / -00



.01 From P to d2

- When P = d2 shank / body tolerances apply.






Code: **BAPK**  Heavy Duty

Ball Lock Pilot – Conical

d2	d5	P	L1	N	L
10	10	5.9 ~ 9.9	19	8	80
13	12	9.9 ~ 12.9	19	10	100
16	12	12.9 ~ 15.9	25	15	125
20	12	15.9 ~ 19.9	25	20	80
25	12	19.9 ~ 24.9	25	25	100
32	12	24.9 ~ 31.9	25	30	125
38	12	31.9 ~ 37.9	30	35	140
					150

Note: P / L selection upon request.
- Special dimensions on request.

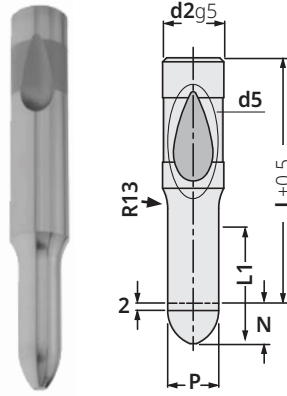
 Order: **BAPK**. d2 x P x L

 **Material:** 1.3343 (M2)
Hardness: 60-62 HRC

"N" becomes = 1.2 x "P" minimum when "P" is below (see table).

Round / P+01 / -00  .01 From P to d2

- When P = d2 shank / body tolerances apply.




Code: **BAPX**  Heavy Duty

Ball Lock Pilot – Spherical

d2	d5	P	L1	N	L
10	10	2.5 ~ 10	19	10	71
13	12	5 ~ 13	19	10	80
16	12	8 ~ 16	19	10	100
20	12	12 ~ 20	19	10	71
25	12	16 ~ 25	19	10	80
32	12	24 ~ 32	19	10	100
40	12	30 ~ 40	25	10	125

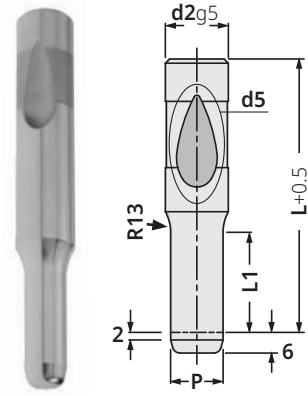
Note: P / L selection upon request.
- Special dimensions on request.

 Order: **BAPX**. d2 x P x L

 **Material:** 1.3343 (M2)
Hardness: 60-62 HRC

- It is length of "L" pilot except end.
- 2 mm length is guided to punch before punch contacting sheet metal.

	P	N
	≤ 10 mm	8 mm
10.1 mm	- 15 mm	12 mm
	> 15 mm	15 mm





Code: **BAPP**  Heavy Duty

Ball Lock Pilot – Parabolic

d2	d5	P	L1	L
10	10	2.5 ~ 10	19	71
13	12	5 ~ 13	19	80
16	12	8 ~ 16	19	100
20	12	12 ~ 20	19	71
25	12	16 ~ 25	19	80
32	12	24 ~ 32	19	100
40	12	30 ~ 40	25	125

Note: P / L selection upon request.
- Special dimensions on request.

 Order: **BAPP**. d2 x P x L

 **Material:** 1.3343 (M2)
Hardness: 60-62 HRC

Round / P+01 / -00  .01 From P to d2

- When P = d2 shank / body tolerances apply.

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"GÜVENAL is the right address for high-quality Die & Mould Components, including precision punches and matrix, for all industrial applications."



Punches and Retainers / Stamping

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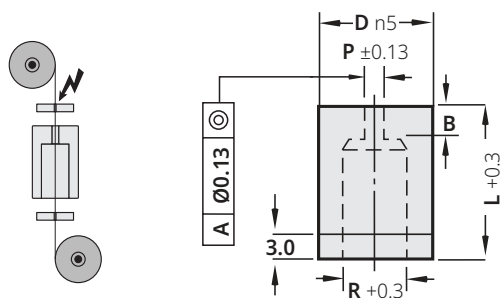
Punches and Retainers / Stamping



Code: **MKB**

Matrix with Counter-bore Relief


Blank type & with starting holes for wire-edm ISO 9877



With starting holes for "wire-edm".

D	P	B - point length		R	L
		S (standard)	A (optional)		
8	0.8	4	-	4	20
10	0.8	4	8	6	
13	1.6	5	8	8	22
16	1.6	5	8	9.5	
20	1.6	5	12	12	25
22	1.6	6	12	15	
25	1.6	6	12	17.5	28
28	1.6	6	12	17.5	
30	1.6	6	12	17.5	32
32	1.6	6	12	21	
35	1.6	6	12	21	35
38	1.6	8	12	27	
40	1.6	8	12	27	40
45	3.2	8	12	36	
50	3.2	8	12	41	

 Order: **MKB**. D x L - B

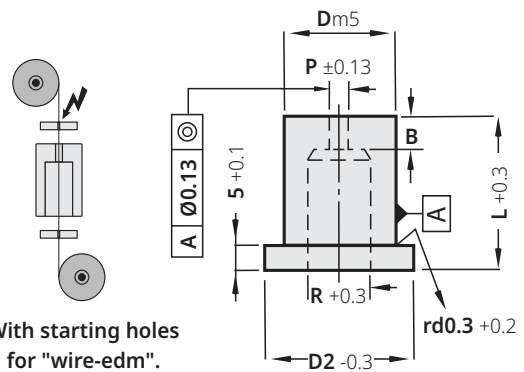
 **Material:** 1.3343 (M2)
Hardness: 60 - 62 HRC



Code: **MLB**

Headed Matrix with Counter-bore Relief

Blank type & with starting holes for wire-edm ISO 9877



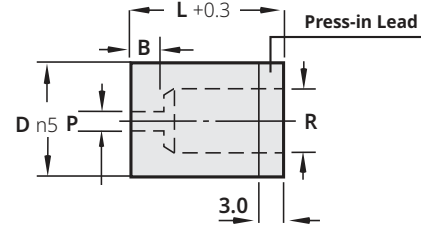
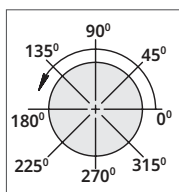
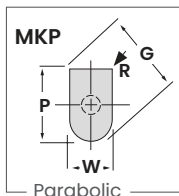
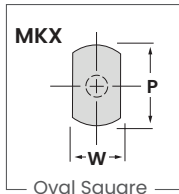
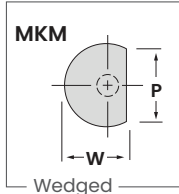
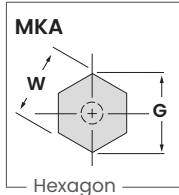
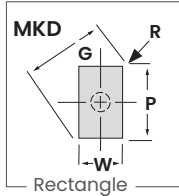
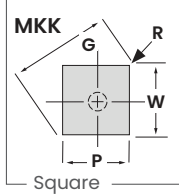
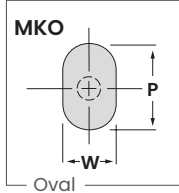
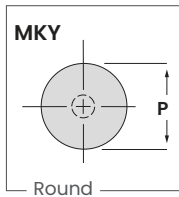
With starting holes for "wire-edm".

D	D2	P	B - point length		R	L
			S (standard)	A (optional)		
8	11	0.8	4	-	4	20
10	13	0.8	4	8	6	
13	16	1.6	5	8	8	22
16	19	1.6	5	8	9.5	
20	23	1.6	5	12	12	25
22	25	1.6	6	12	15	
25	28	1.6	6	12	17.5	28
28	31	1.6	6	12	17.5	
30	33	1.6	6	12	17.5	32
32	35	1.6	6	12	21	
35	38	1.6	6	12	21	35
38	41	1.6	8	12	27	
40	43	1.6	8	12	27	

 Order: **MLB**. D x L - B

 **Material:** 1.3343 (M2)
Hardness: 60 - 62 HRC


SHAPES



Code: **MK..**

Matrix - Straight ISO 8977


Apart from our standards, special dimensions and complex geometries can be produced according to your technical drawings.

 Please refer to the table on the left side

MKY - MKO - MKK - MKD - MKA - MKM - MKX - MKP

Code	D	B - point length		ROUND (MKY) Range P	SHAPE Min. W Max. P/G	R	L													
		S (standard)	A (optional)				20	22	25	28	30	32	35	40	60					
MK...08	8	4	-	1.50 - 3.20	1.50 - 3.20	4	•	•	•	•	•	•	•							
MK...10	10	4	8	1.60 - 5.00	1.60 - 5.00	6	•	•	•	•	•	•	•							
MK...13	13	5	8	1.80 - 7.20	1.80 - 7.20	8	•	•	•	•	•	•	•							
MK...16	16	5	8	5.00 - 8.80	2.50 - 8.80	9.5	•	•	•	•	•	•	•							
MK...20	20	5	12	5.50 - 11.00	3.20 - 11.00	12	•	•	•	•	•	•	•	•						
MK...22	22	6	12	7.50 - 14.00	4.00 - 14.00	15	•	•	•	•	•	•	•	•						
MK...25	25	6	12	9.50 - 16.50	4.80 - 16.50	17.5	•	•	•	•	•	•	•	•						
MK...28	28	6	12	11.50 - 19.50	4.80 - 20.00	17.5	•	•	•	•	•	•	•	•						
MK...30	30	6	12	11.50 - 20.00	4.80 - 20.00	17.5	•	•	•	•	•	•	•	•						
MK...32	32	6	12	13.00 - 20.00	5.50 - 20.00	21	•	•	•	•	•	•	•	•						
MK...35	35	6	12	13.00 - 23.00	5.50 - 23.00	21	•	•	•	•	•	•	•	•						
MK...38	38	8	12	16.00 - 26.00	6.40 - 26.00	27	•	•	•	•	•	•	•	•						
MK...40	40	8	12	16.00 - 26.00	6.40 - 26.00	27			•	•	•	•	•	•						
MK...45	45	8	12	19.00 - 35.00	8.00 - 35.00	36											•	•	•	•
MK...50	50	8	12	22.00 - 40.00	9.00 - 40.00	41													•	•

 Order: **MK (type) D x L x shape (P/W/R/G)**

 **Material:** 1.3343 (M2)
Hardness: 60 - 62 HRC


Order Example

MKO 25 - (A) 32 - P=13.0 W=10.5 - K1

Code D L Shape Keying Info

* "B" Point length

* If you want the Point Length to be Optional, add code (A).
No code is written in the standard.

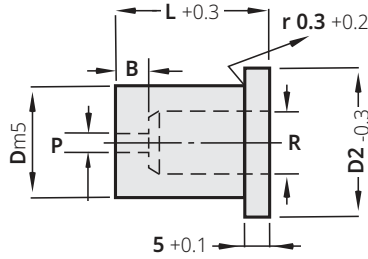
 For details on Keying Information / Key Flat Options, and More Complex Special Shapes, please refer to the beginning of Category 6.

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Punches and Retainers / Stamping

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Punches and Retainers / Stamping



Code: **ML..**

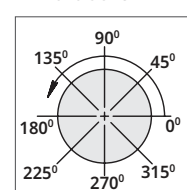
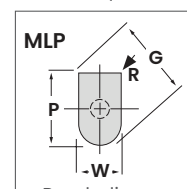
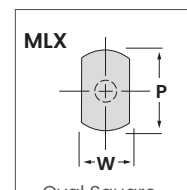
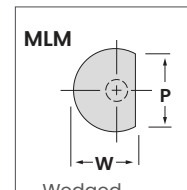
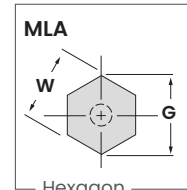
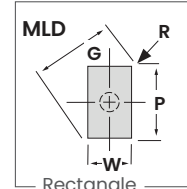
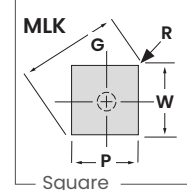
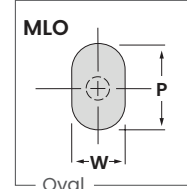
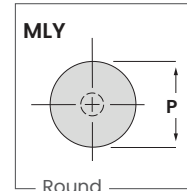
Matrix - Headed ISO 8977

Apart from our standards, special dimensions and complex geometries can be produced according to your technical drawings.

Please refer to the table on the right side  **MLY - MLO - MLK - MLD - MLA - MLM - MLX - MLP**

Code	D	D2	B - point length		ROUND (MLY) Range P	SHAPE Min. W Max. P/G	R	L								
			S (standard)	A (optional)				20	22	25	28	30	32	35	40	
ML...08	8	11	4	-	1.50 - 3.20	1.50 - 3.20	4	•	•	•	•	•	•	•		
ML...10	10	13	4	8	1.60 - 5.00	1.60 - 5.00	6	•	•	•	•	•	•	•		
ML...13	13	16	5	8	1.80 - 7.20	1.80 - 7.20	8	•	•	•	•	•	•	•		
ML...16	16	19	5	8	5.00 - 8.80	2.50 - 8.80	9.5	•	•	•	•	•	•	•		
ML...20	20	23	5	12	5.50 - 11.00	3.20 - 11.00	12	•	•	•	•	•	•	•		
ML...22	22	25	6	12	7.50 - 14.00	4.00 - 14.00	15	•	•	•	•	•	•	•		
ML...25	25	28	6	12	9.50 - 16.50	4.80 - 16.50	17.5	•	•	•	•	•	•	•		
ML...28	28	31	6	12	11.50 - 19.50	4.80 - 20.00	17.5	•	•	•	•	•	•	•		
ML...30	30	33	6	12	11.50 - 20.00	4.80 - 20.00	17.5	•	•	•	•	•	•	•		
ML...32	32	35	6	12	13.00 - 20.00	5.50 - 20.00	21	•	•	•	•	•	•	•		
ML...35	35	38	6	12	13.00 - 23.00	5.50 - 23.00	21	•	•	•	•	•	•	•		
ML...38	38	41	8	12	16.00 - 26.00	6.40 - 26.00	27	•	•	•	•	•	•	•		
ML...40	40	43	8	12	16.00 - 26.00	6.40 - 26.00	27			•	•	•	•	•		

SHAPES



Order: **ML (type) D x L x shape (P/W/R/G)**

Material: 1.3343 (M2)
Hardness: 60 - 62 HRC


Order Example

MLY 25 - (A) 32 - P=13.0

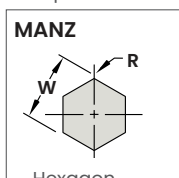
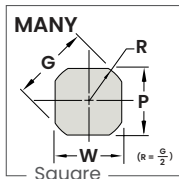
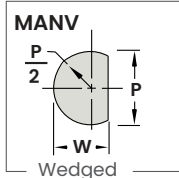
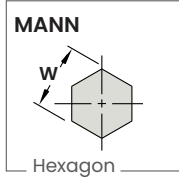
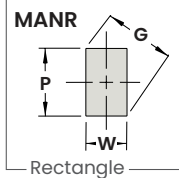
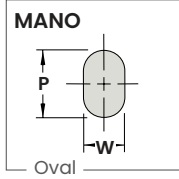
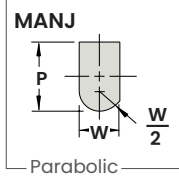
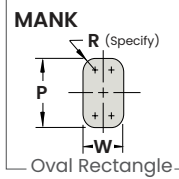
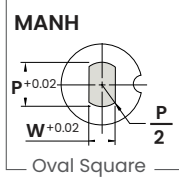
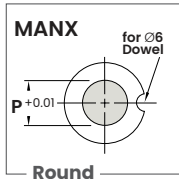
Code d2 LI Shape

* "B" Point length

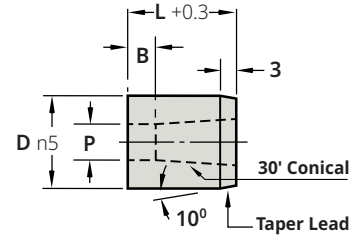
* If you want the Point Length to be Optional, add code (A).
No code is written in the standard.

 For details on Keying Information / Key Flat Options, and More Complex Special Shapes, please refer to the beginning of Category 6.

SHAPES



NEW



Code: **MAN..**

Matrix - Tapered Relief Ref.: NAAMS

This series of matrix comes standard with the 'PK6' Dowel Grooves (NAAMS standard) option for Ø6 dowels, unless otherwise specified.

 Please refer to the table on the left side

MANX - MANH - MANK - MANJ - MANO - MANR - MANN - MANV - MANY - MANZ

Code	D	B - point length		ROUND Range P	SHAPE Min. W Max. P/G	L													
		S (standard)	A (optional)			13	16	20	22	25	28	30	32	35	40				
MAN.. 10	10	4	5	1.60 - 6.80	1.30 - 6.80	•	•	•	•	•	•	•	•	•	•	•	•	•	
MAN.. 13	13	5	8	3.00 - 8.80	1.90 - 8.80	•	•	•	•	•	•	•	•	•	•	•	•	•	
MAN.. 16	16	5	8	7.40 - 10.80	1.90 - 10.80			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 20	20	5	10	9.50 - 13.60	1.90 - 13.60			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 22	22	6	10	10.50 - 15.00	1.90 - 15.00			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 25	25	6	10	12.00 - 17.00	1.90 - 17.00			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 32	32	6	12	16.00 - 22.00	1.90 - 22.00			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 38	38	8	12	18.00 - 27.00	1.90 - 27.00			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 40	40	8	12	18.00 - 27.00	1.90 - 27.00			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 45	45	8	12	18.00 - 35.00	2.40 - 35.00			•	•	•	•	•	•	•	•	•	•	•	
MAN.. 50	50	8	12	18.00 - 40.00	4.00 - 40.00			•	•	•	•	•	•	•	•	•	•	•	



Order:
MAN (type) D x L x **shape** (P/W/G) x PK6



Material: 1.3343 (M2)
Hardness: 60 - 62 HRC

Order Example

MANX 25 - (A) 32 - P=13.0 - PK6
Code D L Shape Keying Info
* "B" Point length

* If you want the Point Length to be Optional, add code (A).
No code is written in the standard.



For details on Keying Information / Key Flat Options, and More Complex Special Shapes, please refer to the beginning of Category 6.

 MAN matrixes conform to NAAMS™ standard for Tapered Relief Die Buttons.

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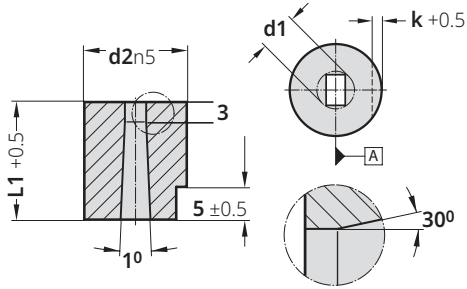
18

Punches and Retainers / Stamping



Code: **MP..**

Matrix, Straight - Tapered Relief



Please refer to the table on the right side

MPY - MPO - MPK - MPD - MPA - MPM - MPX - MPP

d1 = shape	d2	k	L1
1.6 ~ 3.2	8	1	16
2 ~ 5	10		
3 ~ 7	13		
5 ~ 8	16	1.5	22
7 ~ 11	20		25
11 ~ 16	25		28
16 ~ 19	32	2.5	32
19 ~ 28	40		

Order: **MP** (type) x d2 x L1
shape (P/W/R/G)

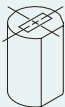


Material: 1.3343 (M2)
Hardness: 60 - 62 HRC

Order Example

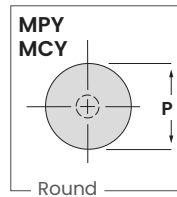
MPX 25-28 P=16.0 W=12.5 - K1/90°

Code | d2 | L1 | Shape | Keying info



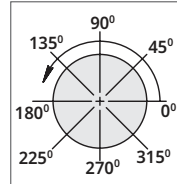
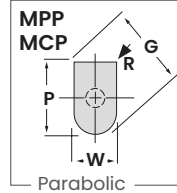
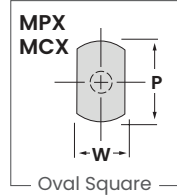
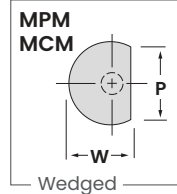
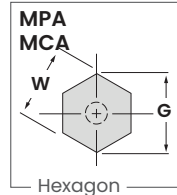
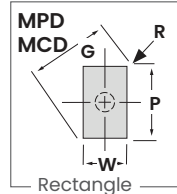
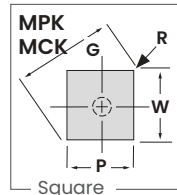
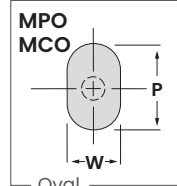
For details on Keying Information / Key Flat Options, please go to the beginning of Category-6.

SHAPES



Code: **MC..**

Matrix, Headed - Tapered Relief



Please refer to the table on the left side

MCY - MCO - MCK - MCD - MCA - MCM - MCX - MCP

d1 = shape	d2	d3	k	L1
1.6 ~ 3.2	8	11	1	16
2 ~ 5	10	13		
3 ~ 7	13	16		
5 ~ 8	16	19	1.5	22
7 ~ 11	20	23		25
11 ~ 16	25	28		28
16 ~ 19	32	35	2.5	32
19 ~ 28	40	43		

Order: **MC** (type) x d2 x L1
shape (P/W/R/G)

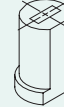


Material: 1.3343 (M2)
Hardness: 60 - 62 HRC

Order Example

MCY 16-25 P=8.0

Code | d2 | L1 | Shape



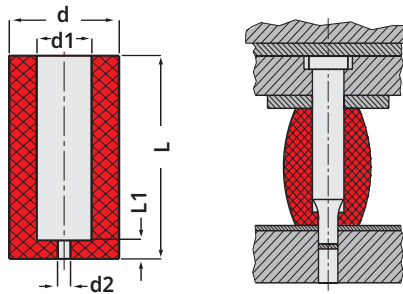
For details on Keying Information / Key Flat Options, please go to the beginning of Category-6.



Polyurethane Punch Stripper

Code: **PYB**

Overspread on punch (shock absorber)



Order Code	d	d1	d2	L1	L	Punch Length
PYB 445	4	17	1.6	5	45	56 / 63
PYB 655	6	19				63
PYB 855	8	21	3	5	55	71
PYB 1055	10	23				80
PYB 1355	13	26				90
PYB 1655	16	30	Punch Hole	5	55	100
PYB 2055	20	38				
PYB 2555	25	50				

d2: (1.6 - 3.0 mm) (d1) while opening hole diameter / drilling polyurethane (punch) bush should be applied and drilled in pressed (S max) position. Spring load is obtained while extending outwards.

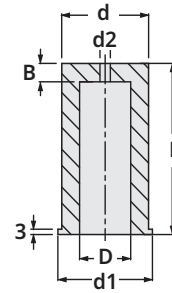
In S. max flexion, load coefficient data daN / Kg.

d	17	19	21	23	26	30	38	50
S daN 3 mm	60	65	70	90	110	140	210	370
S daN 6 mm	115	120	130	160	190	230	360	650
S daN 9 mm	-	180	210	240	300	370	550	1020

S max: Load coefficient daN = Kg. / (10 newton), while polyurethane bush S max in pressed, load data is advisory.



In dies that polyurethane punch stripper is used, there is no need to dismantle stripper plate to make repair whetting and modification on die components, there is not any effect on precise parts, it is excellent for all painted / anodized, plastic plated and polished parts. It is compatible to use with oil and grease. It is overspread on punch. Placement is done according to the stripper hardness. There is no need for extra holder. Stepped-punch hole will be opened at the first stroke of press on stripper edge. Especially, in large dies requiring very wide stripper plate, this product is very compatible.



 Heavy Duty

 Light Duty

Code: **MTS**

Polyurethane Stripper for Ball Lock

Exchangeable and compatible with NAAMS standards.

Punch Dia.	D	d	L	d1	d2	B
10	9.75	18	44	21	1.6	6
			54			
			64			
			74			
13	12.75	32	44	26	3	6
			54			
			64			
			74			
16	15.75	28	44	31	3	6
			54			
			64			
			74			
20	19.75	33	44	36	3	7
			54			
			64			
			74			
25	24.75	40	44	43	3	7
			54			
			64			
			74			
32	31.70	50	44	55	3	7
			54			
			64			
			74			
40	39.70	60	44	65	3	8
			64			



Order: **MTS. d x L**



Material: Polyurethane / 95 Shore-A

Polyurethane Length for Strippers:

While ordering, please specify punch length.

Heavy Duty Ball Lock Punch Length	Light Duty Ball Lock Punch Length	Recommended Stripper Length "L"
80	71	43 (44)
90	80	52 (54)
100	90	63 (64)
110	100	72 (74)

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Punches and Retainers / Stamping

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Punches and Retainers / Stamping

NEW

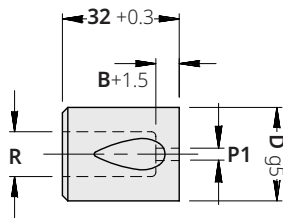


Ball Lock Matrix - Blank

Blank Type

Material:
1.3343 (M2)

Hardness:
60 - 62 HRC

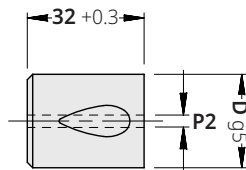


Code: MBC

Order Code	D	B	R	P1
MBC 13	13	4	5.8	1.2
MBC 16	16	5	8	1.6
MBC 20	20	5	11.9	2
MBC 25	25	6	16	3.6
MBC 32	32	6	20	4.4

Material:
1.3343 (M2)

Hardness:
60 - 62 HRC



Code: MBE

Order Code	D	P2
MBE 13	13	1.2
MBE 16	16	1.6
MBE 20	20	2
MBE 25	25	2.4
MBE 32	32	2.4

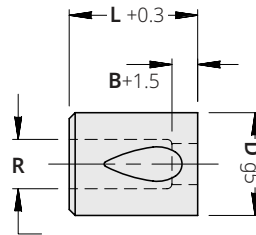
NEW



Ball Lock Matrix

Code: MB..

Automotive Standard / Shaped Types



Please refer to the table on the right side

MBY - MBO - MBK - MBD - MBA - MBM - MBX - MBP

Code	D	B	R	L	ROUND (MBY)	SHAPE	
					Range P	Min. W	Max. G/P
MB.. 13	13	4	6	32	1.6 - 5	1.6	5
MB.. 16	16	5	8	32	3.2 - 7.2	2	7.2
MB.. 20	20	5	12	32	4 - 11	2.5	11
MB.. 25	25	6	16	32	8 - 15	4	15
MB.. 32	32	6	20	32	11 - 19	5	19



Order:

MB. (type) D x L x Shape (P/W/G)

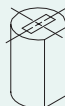
Material: 1.3343 (M2)

Hardness: 60 - 62 HRC

Order Example

MBY 25-32 P=13.0

Code D L Shape



For details on Keying Information / Key Flat Options, please go to the beginning of Category-6.

SHAPES

MBY

Round

MBO

Oval

MBK

Square

MBD

Rectangle

MBA

Hexagon

MBM

Wedged

MBX

Oval Square

MBP

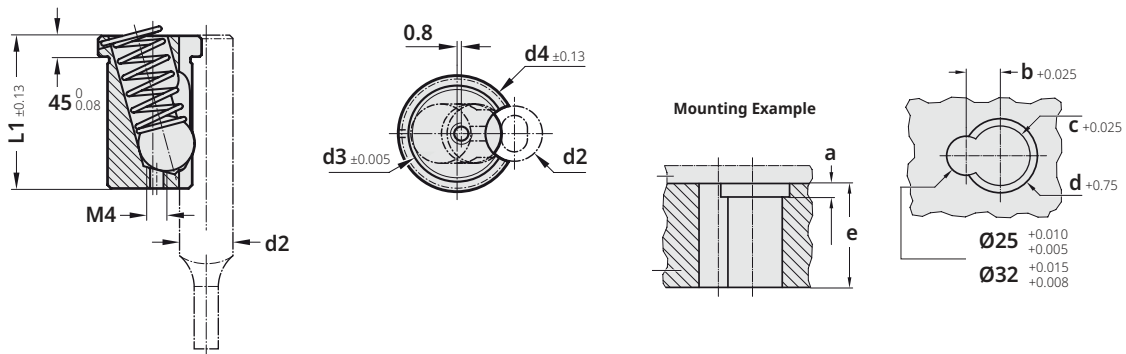
Parabolic

NEW



Ball-lock Special Retainer Insert

Code: **GZSH / GZSA**



Code: **GZSH**

 **Light Duty**

Order Code	d2	d3	d4	L1	a	b	c	d	e
GZSH 6	6	12	14.6	25.7	6	6.5	12.013	15	25.7
GZSH 10	10	14	16.6		10	9	14.013	17	
GZSH 13	13				13	10.5			
GZSH 16	16				16	12			
GZSH 20	20	16	18.6	25.7	20	14	16.013	19	25.7
GZSH 25	25				25	16.5			
GZSH 32	32				32	20			
GZSH 38	38				38	23			

Code: **GZSA**

 **Heavy Duty**

Order Code	d2	d3	d4	L1	a	b	c	d	e
GZSA 10	10	16	19.6	34.7	10	10	16.016	20	34.7
GZSA 13	13	20	24.6		13	11.5	20.013	25	
GZSA 16	16				16	13			
GZSA 20	20				20	15			
GZSA 25	25	20	24.6	34.7	25	17.5	20.013	25	34.7
GZSA 32	32				32	21			
GZSA 40	40				40	25			



- The new Ball-lock Special Retainer Insert is much smaller in size and takes up less space.
- Its most important feature is quick assembly. During tool operation, stamping / punching tools that are damaged can be replaced without distributing the tool, by using the ball on the sleeve and applying downward pressure with a screwdriver (removal/installation of the punch).
- The Insert type is selected based on two different products: Light Duty and Heavy Duty.
- The new Inserts are fully compatible with all Güvenal Ball-lock Punches.

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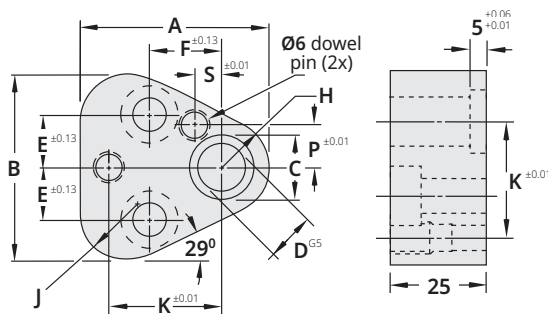


Punch Retainer

Code: **GPR**

For round punches / ISO 8020

- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Retainer includes 2 dowel pins + 2 screws.



Order Code	GPR 10	GPR 13	GPR 16	GPR 20	GPR 25	GPR 32
D Punch	10	13	16	20	25	32
A	44.5	50.8	54	60.3	69.9	69.9
B	43.7	50	53.2	59.5	69.1	69.1
C	14	17	20	24	29	36
E	11.1	14.3	15.9	17.5	19.8	19.8
F	19	19	19	19	23.8	23.8
H	9.5	12.7	14.3	17.5	22.2	22.2
J	12	15.2	16.8	20	24.7	24.7
K	26.925	29.970	31.750	33.530	40.640	40.640
P	9	12	13.5	16.5	22	22
S	7.5	6.5	6	5	7	7
Screw	M8	M8	M8	M10	M12	M12

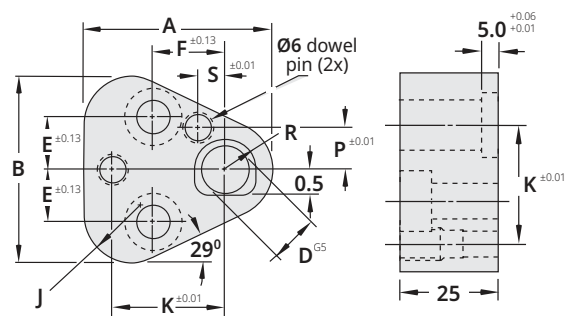


Punch Retainer

Code: **GPRS**

For shaped punches / ISO 8020

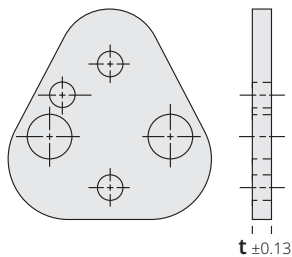
- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Retainer includes 2 dowel pins + 2 screws.



Order Code	GPRS 10	GPRS 13	GPRS 16	GPRS 20	GPRS 25	GPRS 32
D Punch	10	13	16	20	25	32
A	44.5	50.8	54	60.3	69.9	69.9
B	43.7	50	53.2	59.5	69.1	69.1
E	11.1	14.3	15.9	17.5	19.8	19.8
F	19	19	19	19	23.8	23.8
R	7	8.5	10	12	14.5	18
H	9.5	12.7	14.3	17.5	22.2	22.2
J	12	15.2	16.8	20	24.7	24.7
K	26.925	29.970	31.750	33.530	40.640	40.640
P	9	12	13.5	16.5	22	22
S	7.5	6.5	6	5	7	7
Screw	M8	M8	M8	M10	M12	M12

Punches and Retainers / Stamping

Shim & Backing Plate for Punch Retainer



Code: **PRSP**

Shim Plate - t= 1.8(soft)

Order Code	Compatible Retainer	D Punch	t
PRSP 1018	GPR / GPRS	10	1.8
PRSP 1318	GPR / GPRS	13	1.8
PRSP 1618	GPR / GPRS	16	1.8
PRSP 2018	GPR / GPRS	20	1.8
PRSP 2518	GPR / GPRS	25	1.8
PRSP 3218	GPR / GPRS	32	1.8

Code: **PRBP**

Backing Plate - t= 4.8(55 HRC)

Order Code	Compatible Retainer	D Punch	t
PRBP 1048	GPR / GPRS	10	4.8
PRBP 1348	GPR / GPRS	13	4.8
PRBP 1648	GPR / GPRS	16	4.8
PRBP 2048	GPR / GPRS	20	4.8
PRBP 2548	GPR / GPRS	25	4.8
PRBP 3248	GPR / GPRS	32	4.8

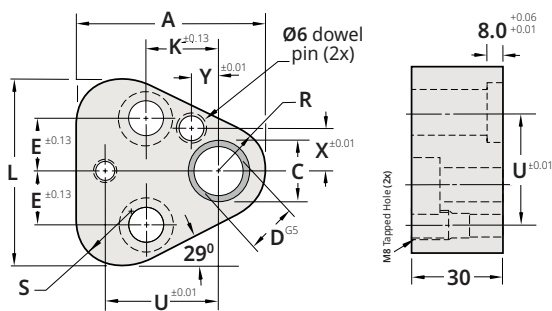
NEW



Code: **GPRF**

Heavy Duty Headed Punch Retainers For round punches

- "Punch Retainers Specifically Designed for Güvenal "SBZF - SFZF" Type Punches"
- Centre of pin holes are reference points for punch hole position.
 - Shim and backing plate should be supplied separately.
 - Retainer includes 2 dowel pins + 2 screws.



Order Code	GPRF 10	GPRF 13	GPRF 16	GPRF 20	GPRF 25
D Punch	10	13	16	20	25
A	44.5	50.8	54	60.3	69.9
L	43.7	50	53.2	59.5	69.1
C	15.5	18.5	21.5	25.5	30.5
E	11.1	14.3	15.9	17.5	19.8
K	19	19	19	19	23.8
R	9.5	12.7	14.3	17.5	22.2
S	12	15.2	16.8	20	24.7
U	26.925	29.970	31.750	33.350	40.640
X	9	12	13.5	16.5	22
Y	7.5	6.5	6	5	7
Screw	M8	M8	M8	M10	M12

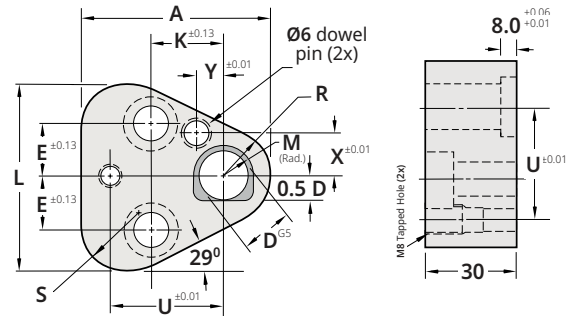
NEW



Code: **GPRFS**

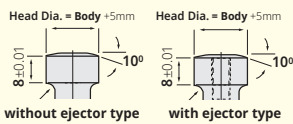
Heavy Duty Headed Punch Retainers For shaped punches

- "Punch Retainers Specifically Designed for Güvenal "SBZF - SFZF" Type Punches"
- Centre of pin holes are reference points for punch hole position.
 - Shim and backing plate should be supplied separately.
 - Retainer includes 2 dowel pins + 2 screws.



Order Code	GPRFS 10	GPRFS 13	GPRFS 16	GPRFS 20	GPRFS 25
D Punch	10	13	16	20	25
A	44.5	50.8	54	60.3	69.9
L	43.7	50	53.2	59.5	69.1
E	11.1	14.3	15.9	17.5	19.8
K	19	19	19	19	23.8
M	7.75	9.25	10.75	12.75	15.25
R	9.5	12.7	14.3	17.5	22.2
S	12	15.2	16.8	20	24.7
U	26.925	29.970	31.750	33.530	40.640
X	9	12	13.5	16.5	22
Y	7.5	6.5	6	5	7
Screw	M8	M8	M8	M10	M12

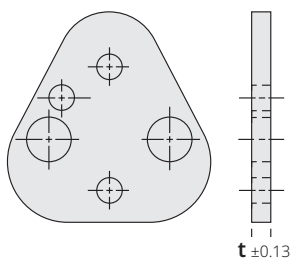
Heavy Duty Headed (SBZF & SFZF)



"Punch Retainers Specifically Designed for Güvenal "SBZF - SFZF" Type Punches"

The **GPRF** and **GPRFS** punch retainers are engineered for use with heavy-duty (larger-headed) punches. Round punches only require a single dowel, which can reduce machining time by as much as 50%. The centrally aligned dowel ensures precise punch-to-matrix alignment, resulting in better part quality, longer punch lifespan, and minimized downtime. Shaped punches require an additional dowel for proper alignment. This punch and retainer combination ensures consistent dimensional accuracy every time.

Shim & Backing Plate for Punch Retainer



Code: **PRSP**

Shim Plate - t=1.8 (soft)

Order Code	Compatible Retainer	D Punch	t
PRSP 1018	GPRF / GPRFS	10	1.8
PRSP 1318	GPRF / GPRFS	13	1.8
PRSP 1618	GPRF / GPRFS	16	1.8
PRSP 2018	GPRF / GPRFS	20	1.8
PRSP 2518	GPRF / GPRFS	25	1.8

Code: **PRBP**

Backing Plate - t= 4.8 (55 HRC)

Order Code	Compatible Retainer	D Punch	t
PRBP 1048	GPRF / GPRFS	10	4.8
PRBP 1348	GPRF / GPRFS	13	4.8
PRBP 1648	GPRF / GPRFS	16	4.8
PRBP 2048	GPRF / GPRFS	20	4.8
PRBP 2548	GPRF / GPRFS	25	4.8

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Punches and Retainers / Stamping

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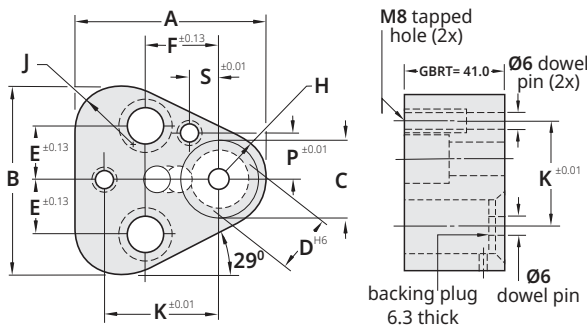
Punches and Retainers / Stamping



Code: **GBRT**

 Heavy Duty

Ball Lock Punch Retainer - Heavy Duty



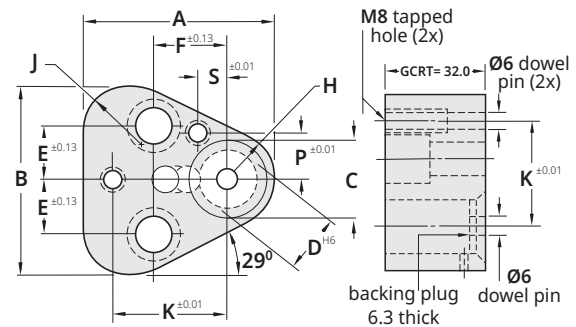
Order Code	GBRT 13	GBRT 16	GBRT 20	GBRT 25	GBRT 32
D Punch	13	16	20	25	32
A	50.8	54	60.3	69.9	69.9
B	50	53.2	59.5	69.1	69.1
C	17	20	24	29	36
E	14.3	15.9	17.5	19.8	19.8
F	19.0	19.0	19	23.8	23.8
H	12.7	14.3	17.5	22.2	22.2
J	15.2	16.8	20	24.7	24.7
K	29.970	31.750	33.530	40.640	40.640
P	12	13.5	16.5	22	22
S	6.5	6	5	7	7
Screw	M8	M8	M10	M12	M12



Code: **GCRT**

 Light Duty

Ball Lock Punch Retainer - Light Duty

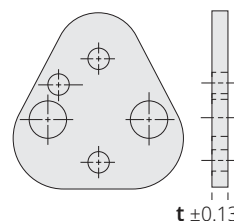


Order Code	GCRT 10	GCRT 13	GCRT 16	GCRT 20	GCRT 25
D Punch	10	13	16	20	25
A	44.5	50.8	54	60.3	69.9
B	43.7	50	53.2	59.5	69.1
C	10	18.5	21.5	25.5	30.5
E	11.1	14.3	15.9	17.5	19.8
F	19	19	19	19	23.8
H	9.5	12.7	14.3	17.5	22.2
J	12	15.2	16.8	20	24.7
K	26.925	29.970	31.750	33.530	40.640
P	9	12	13.5	16.5	22
S	7.5	6.5	6	5	7
Screw	M8	M8	M8	M10	M12

- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Shaped punches use the secondary dowel for precise alignment; round punches need only one.
- The precision-ground ball hole assures perfect alignment of any punch shape – even if you replace the retainer.
- **Retainer includes;** 2 dowel pins + 2 screws + 1 ball + 1 spring + 1 ball release screw.

Shim & Backing Plate for Punch Retainer

Please check Code: **PRSP** and **PRBP** for shim and backing plates.



Shim Plate t = 1.8 (soft)

Code: **PRSP**

Backing Plate t = 4.8 (55 HRC)

Code: **PRBP**

* GBRT retainer is compatible to "NAAMS" standard for ball lock punch retainer.