

# SPOT WELDER CAP TIPS

Mipalloy is dedicated to manufacture and supply superior quality copper alloys.

Apart from having a majority market share in all our product lines in India, we regularly export our products to USA, Canada, UK, Germany, Spain, Australia, Turkey, Mexico, Indonesia, Oman, Saudi Arabia, Singapore, Thailand, Malaysia, Egypt etc.

Since Copper forms the core of all our activities and as we have considerable experience in handling this precious red metal, our motto is **“COMPLETE COMPETENCE IN COPPER”**



**mipalloy**<sup>®</sup>

COMPLETE COMPETENCE IN COPPER



ISO 9001:2000

# PRODUCTION PROGRAM

## PREAMBLE:

This is a brief presentation of the various spot welder cap materials manufactured by Mipalloy and an endeavor to assist the user to select the best type of spot welder cap for his application.

## COMMON ADVANTAGES OF CAP TYPE SPOT WELDER ELECTRODE:

It is an Internationally accepted norm to adopt cap & shank type of spot welding electrode for large requirements of spot welding. This system form the inherent advantages of caps which are low cost and higher productivity. Spot welder caps are commonly manufactured by cold heading which results in a double edged advantage of lower material consumption for manufacture (translating into lower costs) and higher mechanical properties like higher hardness, higher tensile strength etc due to intense cold working.

## MIPALLOY'S STATE OF ART MANUFACTURING PROCESS

We are an international supplier of spot welder caps to over twenty large automobile manufacturing countries like USA, Canada, United Kingdom, Germany, Spain, Australia, Turkey, Mexico, Indonesia, Oman, Saudi Arabia, Singapore, Thailand, Malaysia, Egypt etc.

We supply to both end users and distributors from our state of art cold forging plant in Chennai, India. India with its cost competitive labor and Chennai being a large international seaport / airport helps us in keeping our costs low ensuring our customers get the most out of their investment. We can handle order quantities of even a few hundred to well over a million.

## CAP ON TAP

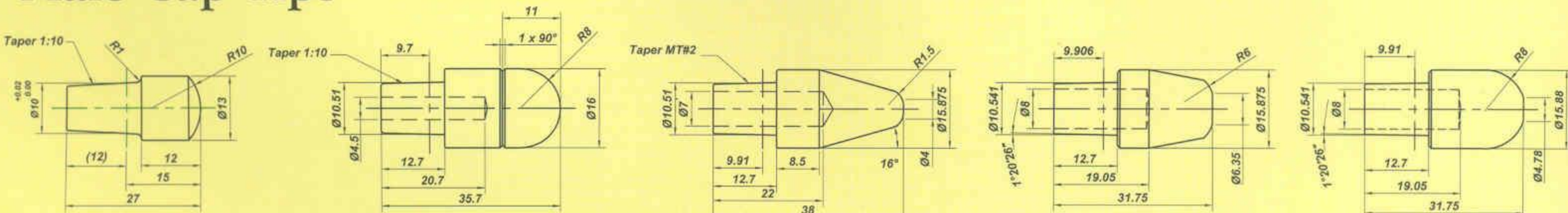
We stock caps in popular alloys as per our Catalogue and popular international designs. We ensure shipments are made on time every time. In case your cap is not a standard one, you can discuss stocking options with us and we will be glad to stock and ship caps as per your prints just when you need them.

## SILVER SPOT

Best spot welding results can only be obtained by using the right spot welder caps for a given application. With technology growing exponentially in the automotive industry and the customer getting more demanding, the industry is shifting to special steels with custom coatings. Traditional spot welder caps are sometimes inadequate to provide a satisfactory weld. This is especially true when welding special coated steels. To solve this problem of the industry, Mipalloy manufactures caps in different materials as mentioned overleaf.



## Male Cap Tips



KS4-0017

S090 096 042

5216044

MA-25

MB-25

## 1. CHROMIUM ZIRCONIUM COPPER SPOT WELDER CAPS:

## 2. ZIRCONIUM COPPER SPOT WELDER CAPS:

This is the basic cap material having a composition of 1% Chromium, 0.1% Zirconium; balance Copper – nominal.

This is a cap material having composition of 0.1% - Zirconium; balance – Copper nominal.

The nominal hardness of a cold forged Chromium Zirconium Copper cap is 85HRB, which results in long working life of the cap.

The nominal hardness of a cold forged Zirconium Copper caps is 75 HRB.

The Zirconium in the cap prevents brassing up during welding of galvanized steels.

The Zirconium content in the cap discourages the zinc in the galvanized steel to alloy with the Copper in the cap and form brass. These caps also eliminate the sticking problem experienced during welding coated steels.

Since it is Mipalloy's most popular cap material, standard designs are always available ex stock off the shelf.

Mipalloy stocks caps as per Toyota's design – T16Z & T13Z. Since we stock large quantity of raw materials in the form of barstock, caps can be produced with short lead times.

It is the lowest cost spot welding cap material.

It is a low cost spot welder cap material.

Chromium Zirconium Copper has a large application window and can be used for welding majority of jobs including plain Cold rolled and cold annealed steels, galvanized steels, Nickel steels and Terne coated steel sheets

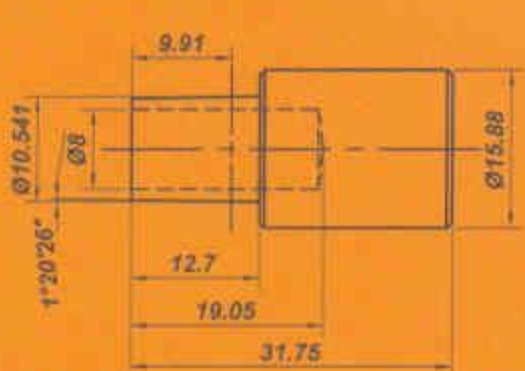
Zirconium Copper caps are most suited for welding galvanized steels and other coated steels.

Chromium Zirconium Copper is designated **Mipalloy 3ZR**.

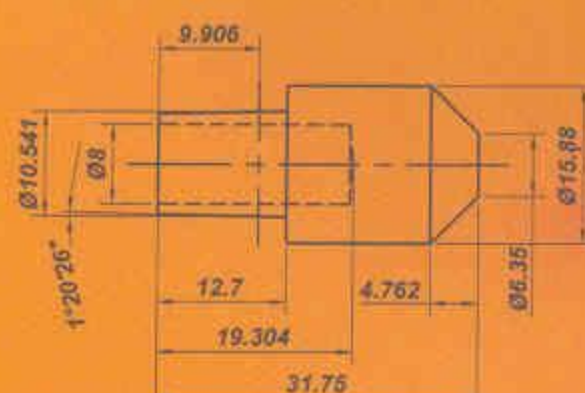
Zirconium Copper is designated **Mipalloy Z**.

Other international nomenclature include,  
 CDA's UNS no- C18150; CMW's - CMW328  
 Mallory's - Mallory 328 KME's - Elbrodur HF & G,  
 TDM's - Elmedur XS,

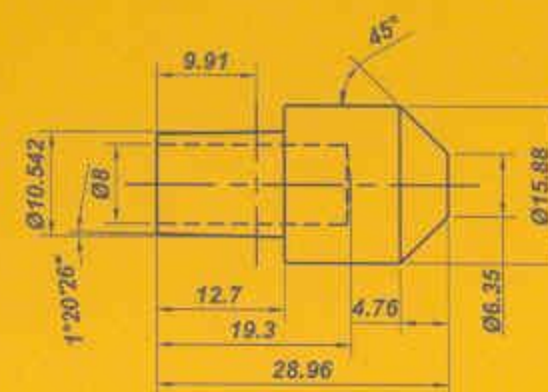
Other international nomenclature include;  
 CDA's UNS no – C15000 CMW's – CMW 28  
 Mallory's – Mallory 28 KME's – Elbrodur N4  
 TDM's – Elmedur Z. Nipperts - Ztrode



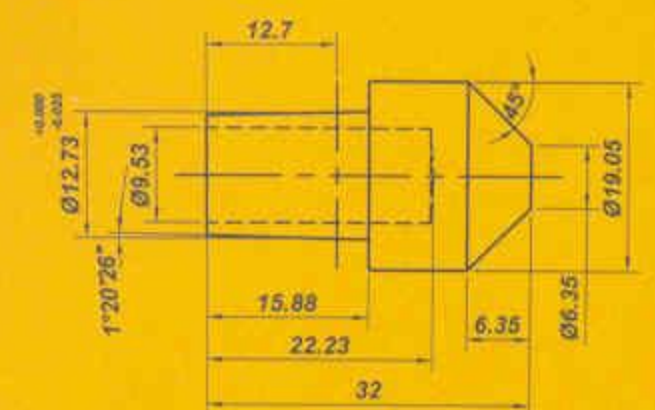
MC-25



ME-25Z



MEF-2500



MEF-2600

### 3. TITANIUM CARBIDE COATED CHROMIUM ZIRCONIUM COPPER CAP:

This is a Cr.Zr.Cu cap having nose coated with hard Titanium carbide. The thickness of the titanium carbide metal matrix composite will be 20 – 40 micron meter.

The titanium carbide coating is seven times harder than Chromium Zirconium Copper.

This high hardness combined with much higher melting temperature of titanium carbide tends to create a barrier between work pieces being welded and the electrodes, thereby reducing sticking and brass formation.

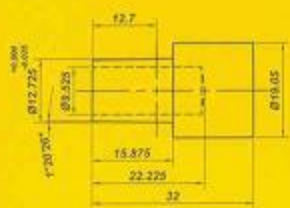
Mipalloy supplies Titanium carbide coated caps on firm purchase order.

Titanium carbide caps are more expensive in comparison to bare Chromium Zirconium Copper electrodes.

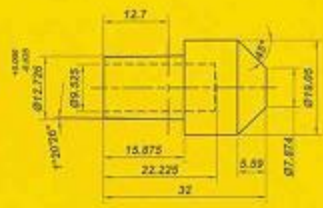
Titanium carbide caps are most suited for welding galvanized and special coated steels.

Titanium carbide coated caps are designated **Mipalloy TiC**.

There is no other international nomenclature.



MCF-2600



MEF-2600-1

### 4. DISPERSION STRENGTHENED COPPER CAPS:

These caps are made by powder metallurgy. These caps have 1% Aluminium oxide and other proprietary composition- nominal.

The nominal hardness of a cold forged dispersion strengthened copper cap is 80HRB, but its unique feature is a very high annealing temperature of 950 C. It does not lose its hardness even at a high temperature of 950 C.

It has non-sticking characteristics, resists mushrooming, reduces downtime for maintenance, reduces electricity bills due to high electrical conductivity, works on all steels including High strength low alloy(HSLA) steels, galvanized steels etc.

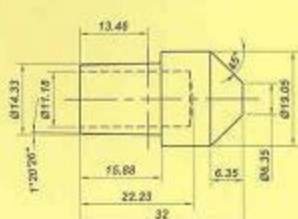
Mipalloy manufactures Dispersion strengthened copper caps on firm purchase order.

DSC caps are among the most expensive caps as far as sticker price is concerned but it offers much longer life, In actual production run, it is more cost effective versus Chromium Zirconium Copper.

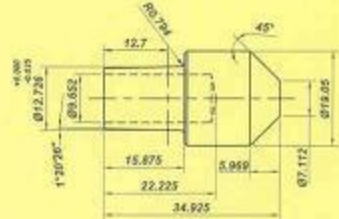
It is most suited for coated steel welding application.

Dispersion strengthened copper are designated **Mipalloy DSC**.

Other international nomenclature include; CDA's – UNS no-C15760; Ecka Granule's – C3/70; Nippert's Nitrode.

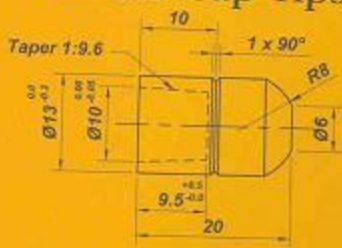


MEF-2601

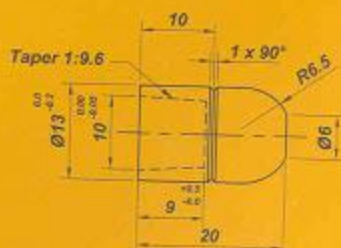


ME-26-1-0.280

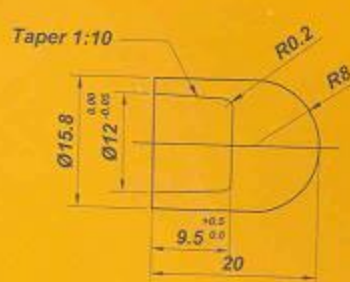
# Female Cap Tips



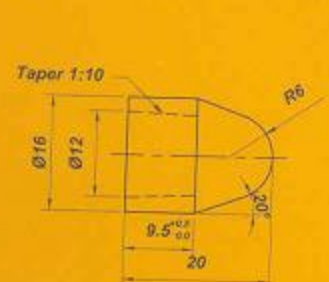
T-13-D



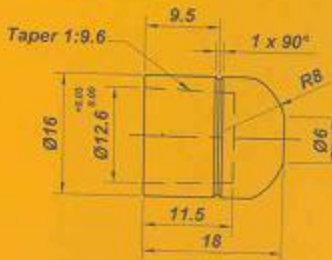
T-13-D-R6.5



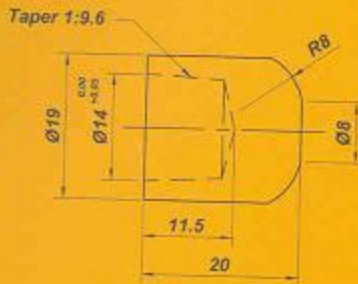
FF-16-ZOO



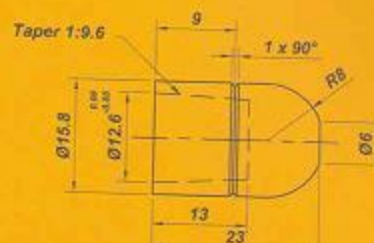
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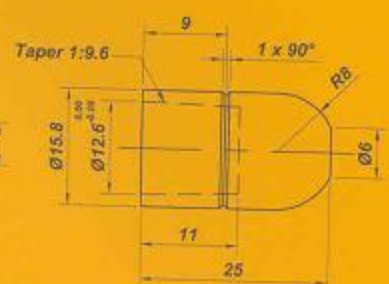
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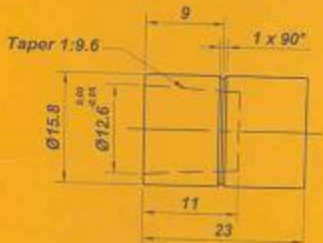
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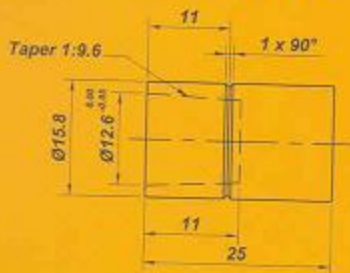
T-16-D



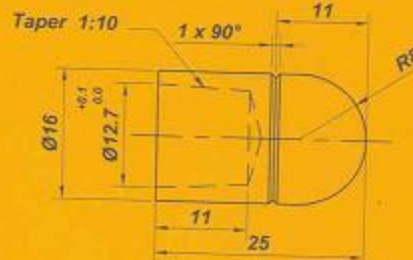
T-16-D-25



T-16-D-F



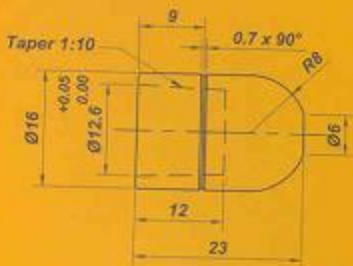
T-16-D-F-25



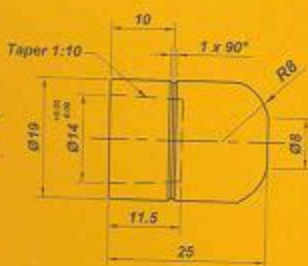
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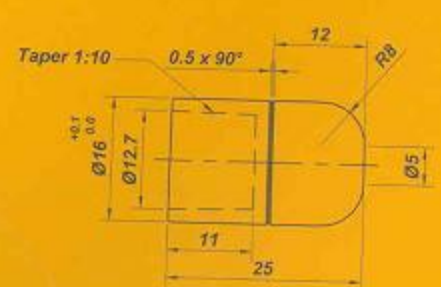
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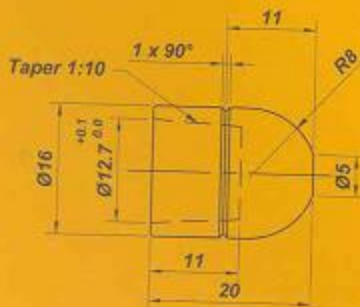
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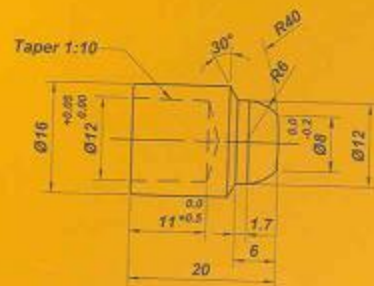
MPE-26-Z



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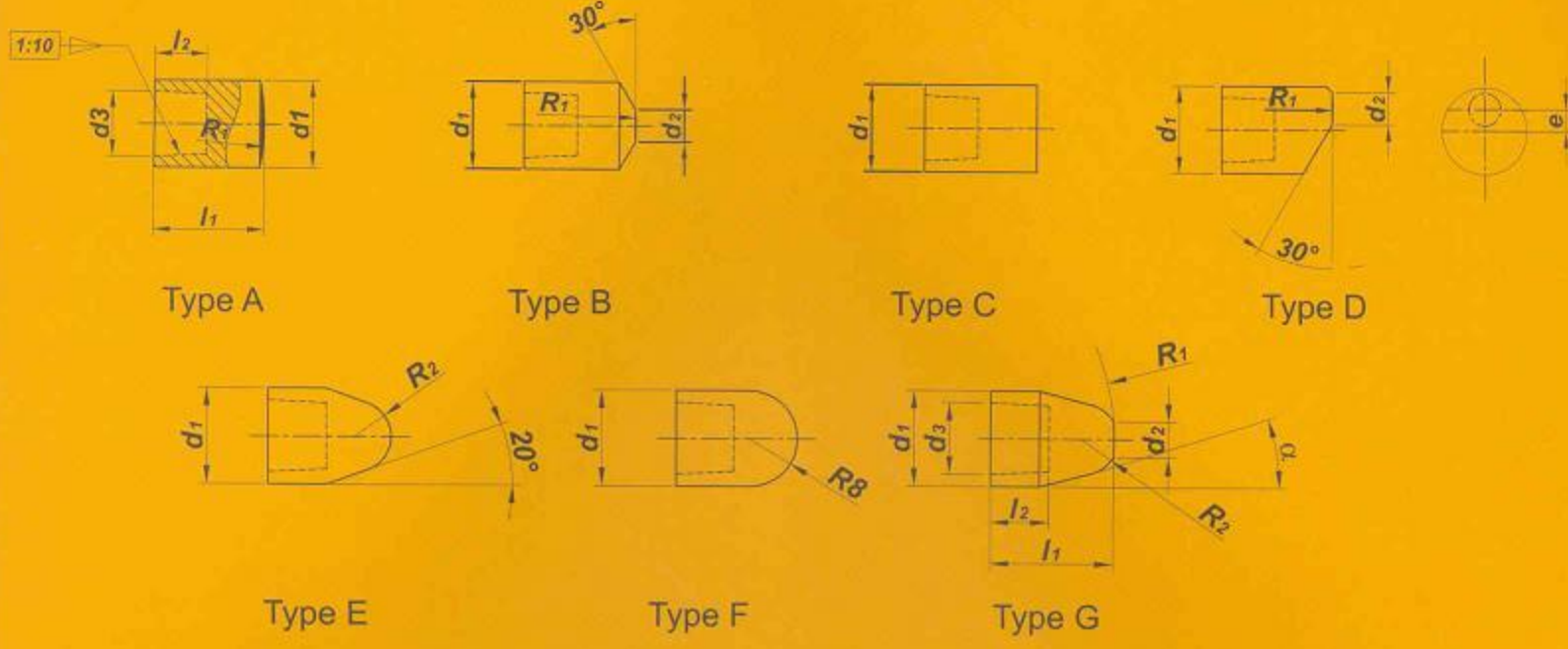


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S090 096 056

# ISO Type Cap Tips



Sl.no	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	e	R1	R2	α
1.	13	5	10	18	8	3	32	5	-
2.	16	6	12	20	9.5	4	40	6	15
3.	20	8	15	22	11.5	5	50	8	22.5



# mipalloy®



## Complete Competence in Copper

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