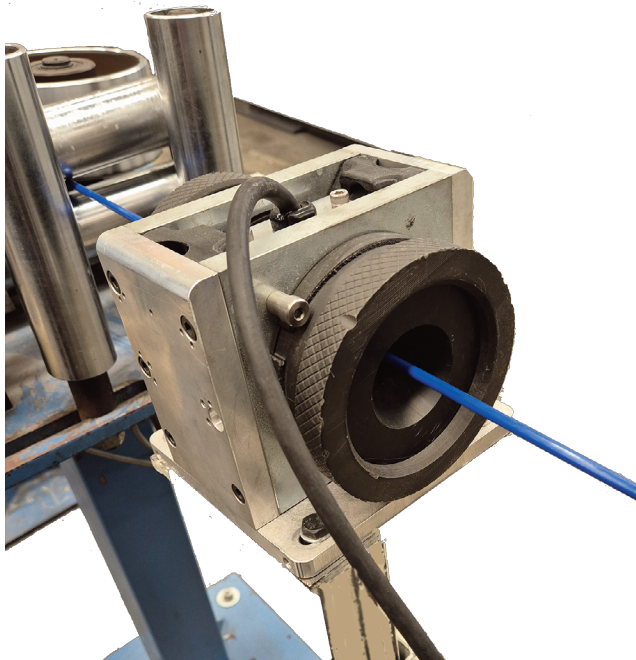


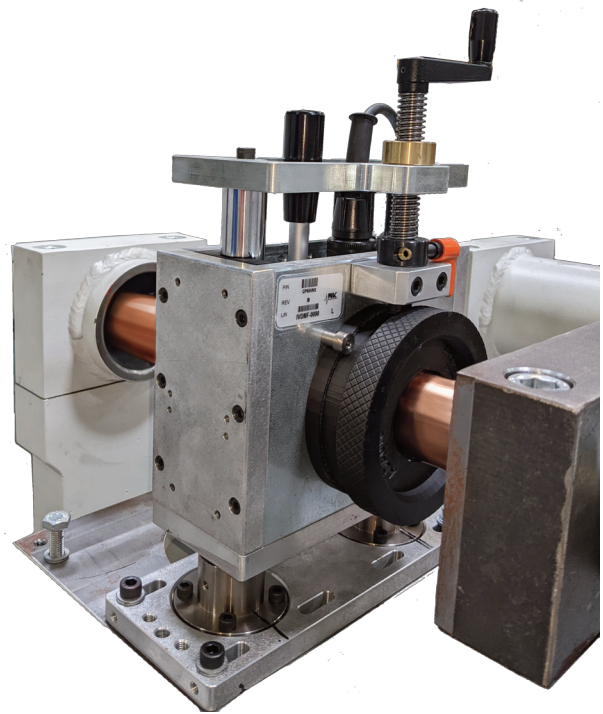
# Coil Platforms & Test Coils

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Selecting Coil Platforms & Coils for Use with  
MAC<sup>®</sup> Eddy Current Instruments



*65 NS Coil Platform*



*65 VNS Coil Platform*

# Coil Platforms for Eddy Current Testing

- ❑ **Precision Engineered for MAC NDT Systems**
- ❑ **Accurate Positioning of Test Coils**
- ❑ **Test Magnetic or Non-Magnetic Material**
- ❑ **Models for Encircling or Tangent Coils**
- ❑ **Test Cylindrical, Square, Hex, Rectangular Bar, Wire & Tube**

## Encircling Coil Platforms Provide Proper Alignment

Proper positioning of the test coil with respect to the material being tested is a key ingredient of any eddy current inspection system. The test material must be mechanically and electrically centered when it passes by or through encircling coils. MAC coil platforms are available for a range of coil sizes and types. Stock sizes range from 1/8" up to 10.75" ID. (3.175mm - 263.5mm). MAC coil platforms are generally used in conjunction with MAC triple pinch and V-roll benches designed to drive and center the material in the test coil. For production line applications using customer supplied straighteners, guides and similar processes without a bench, a coil platform such as the CP65NS (Figure 1) would be a good choice.

## Selecting the Proper Coil Platform and Test Coil

The type of material being tested and its metallurgical characteristics are the most important factors in selecting coil platforms and test coils. For non-ferrous materials such as copper, aluminum, and most stainless steels where there are minimal or no permeability variations in the test material that could interfere with the eddy current test, a non-saturating coil platform is the correct choice. For applications such as larger diameter ferrous material with major permeability variations, Direct Current saturation coil platforms are required. By magnetizing the material to near saturation, the permeability is held constant, optimizing the accuracy of the eddy current test.

## Standard Non-Saturation Coil Platforms

The CP65 series coil platforms are robust units that hold the test coil. Easy insert bushings stabilize the material and provide a constant center configuration during the test. These coil platforms are designed to test tube, pipe and rod. (Figure 1).

Non Saturation Models:

CP65NS -	to 65mm diameter material
CP125NS -	up to 125mm diameter material
CP65VNS -	up to 65mm diameter and offers vertical adjustment
CP125VNS -	up to 125mm diameter and offers vertical adjustment

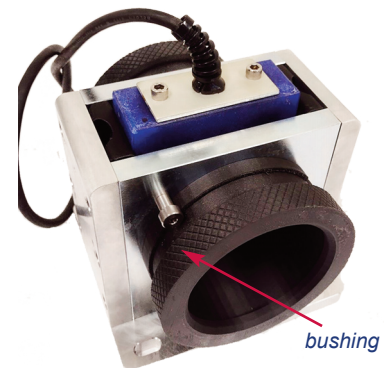


Figure 1 - CP65NS

## Non Saturation-Coil Platforms and Test Coils for Testing Wire

Coil Platforms and wiretester coils for inspecting wire are available for wire sizes ranging from ultra-fine below 0.002" (0.051mm) up to 0.725" (18.42mm). Shown at right is (Figure 2) a CP11 for use with standard wire tester coil XWN, and (Figure 3) a CP05 with XSB extra small body coil demonstrating a test on 0.18mm small diameter wire. MAC test coils (Figure 4) can also be used without a coil platform in cases where the wire producer needs to integrate the coil into their own custom system for feeding and handling the wire.

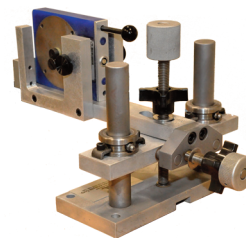


Figure 2 - CP11 with XWN-081 wiretester coil



Figure 3 - CP05 with XSB wiretester coil

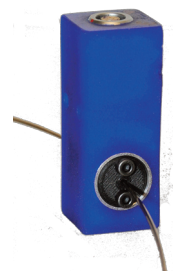


Figure 4 - XWNE3-XSB extra small body wiretester coil

## Limited Saturation Coil Platforms for Some Thin Wall Small Diameter Tube

The CP65 series includes models for use in testing some low permeability thin wall, small diameter tube or bar. These models include a built in permanent magnet. Typical low permeability materials are certain grades of stainless steel up to 1-1/2" (38.1 mm) diameter. CP65VPM (Figure 5) includes built-in-bushings, permanent magnet and vertical alignment. Models include permanent magnets for minor limited saturation.

CP65PM	up to 65mm diameter	CP65 VPM	includes vertical adjustment
CP125PM	up to 125mm diameter	CP125VPM	includes vertical adjustment

## Using Magnetic Test Coils for Saturation with Standard CP65 Coil Platforms

For some stainless steel alloys such as 400 grade products, a magnetic XESSTM test coil can provide a superior test result by suppressing signals from noise created by permeability variations that can interfere with the detection and interpretation of defect signals. This XESSTM coil (Figure 6) is available in a medium size, and can be used with Standard CP65 model coil platforms.

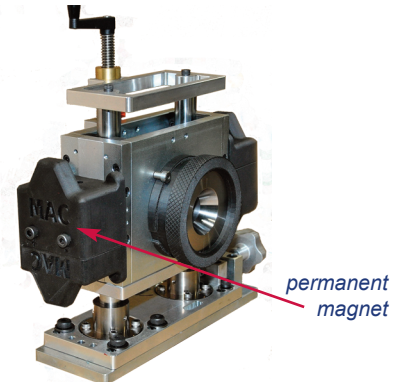


Figure 5 - CP65VPM with test coil, built-in bushings, permanent magnet, & vertical alignment.

## DC Saturation Coil Platforms for Larger Diameter Carbon Steel and Other Magnetic Tubing or Bar

Direct Current saturation is required when inspecting larger diameter ferromagnetic materials that contain permeability variations that interfere with the eddy current test. Typically, carbon steel, certain grades of stainless, and even cupro-nickel, where permeability variations can develop from cold working the material, need saturation to achieve optimum eddy current test results. Models are available for use in testing .125" to 10" (3.18mm to 255mm) diameter product.

### Models CP65mm, CP125mm

(Figure 7) CP190mm (Figure 8), and CP255mm DC coil platforms use an electromagnet to saturate the material. They do not require water cooling because they use low current, high voltage power. They use encircling test coils (Figure 6) and can be supplied with triple guide rolls on either side to maintain proper centering in the coil.



Figure 6 - XESST Test Coil used with CP 65, CP125 and CP190

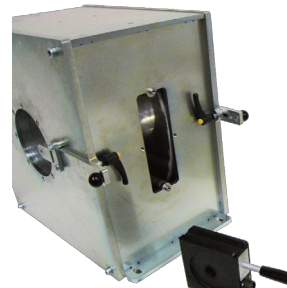


Figure 7 - CP125mm Coil Platform with an XESST coil

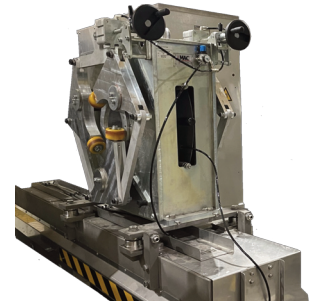


Figure 8 - CP190mm saturation coil platform shown on a slide mechanism.

### Models CP352 (Figure 9), CP502

(Figure 10) and CP602 are air cooled and come supplied with a low voltage DC power supply for the saturation coil system. These coil platforms utilize a barrel type encircling coil (Figure 11) inserted in the coil platform.

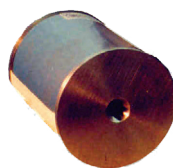


Figure 11- Barrel encircling test Coil

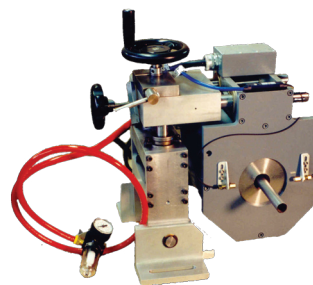


Figure 9 - CP352 air cooled coil platform to test magnetic material .25" - 3.5" (6.35mm - 88.9mm) diameter. A small, separate power supply is provided. The barrel test coil is inserted.

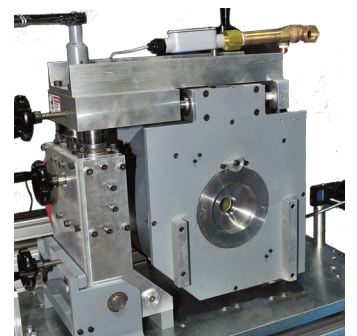


Figure 10 - CP502 air cooled coil platform to test magnetic material 3.6" - 5" diameter using a barrel test coil

The 352CP is used for testing thin and medium wall carbon steel tubing and surface inspection of bar stock.

Models CP350, CP500, CP750 and CP900 can be better choices for operation in a mill. Water cooling is utilized for these more powerful, larger size saturation coil platforms. These heavy duty coil platforms are often mounted on slide and elevate platforms that allow vertical and horizontal adjustments to center the test coil accurately around the test material.

## Tangent Saturating & Non-Saturating Coil Platforms

MAC tangent coil platforms are designed to hold tangent test coils for some on-line applications, such as weld lines, where threading the material through a standard encircling coil is a problem, and only the weld zone or a localized area requires inspection. Because tangent coil platforms cover a limited test area of the tube under inspection, an improved signal-to-noise ratio may result.

When testing heavy wall magnetic material, the **CP125T** (Figure 12), provides saturation required for optimum eddy current performance on magnetic material and can handle the entire size range of 1.0" - 5.0" (25.4mm - 125mm) of most weld mills. The **CP125T** can also test square or rectangular material with a flat roll kit.

For larger diameter material, the **CP850** (Figure 13), can test up to 12.0" (304.8mm). For smaller diameter non-magnetic material such as copper and stainless in continuous lines, non-saturation tangent coil platforms such as the **CP21** (Figure 14) **TCP20** (Figure 15) and **CP90** can be used.

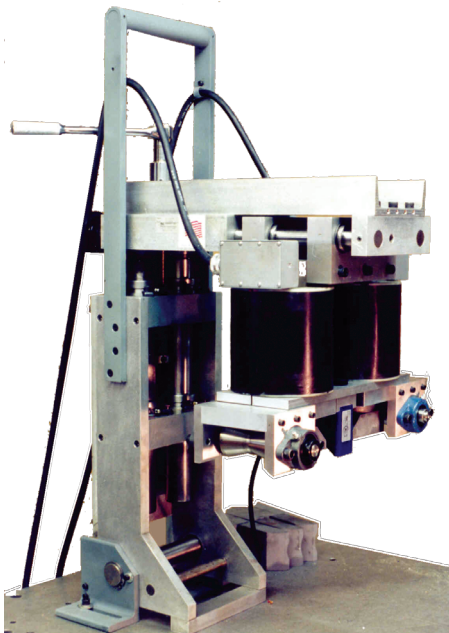


Figure 13 - CP850 Tangent CP

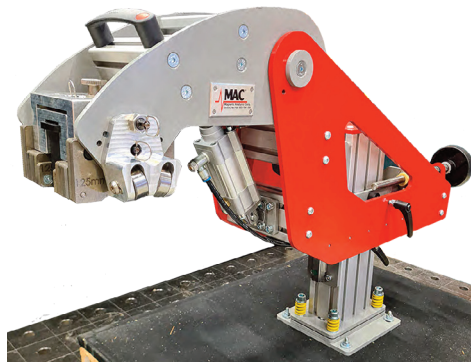


Figure 12 - CP125T Tangent Coil Platform

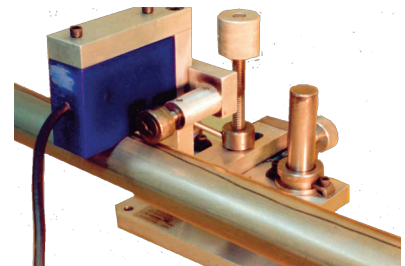


Figure 14 - CP21 Tangent Coil Platform

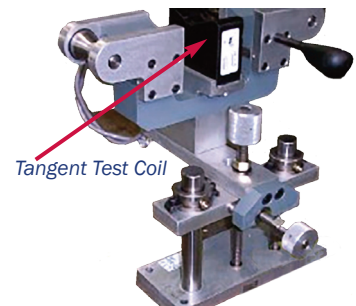


Figure 15 - TCP 20 Tangent Coil Platform

## Legacy Non-Saturation Coil Platforms

MAC has a large range of constant center coil platform designs which are currently supported and may be available for some applications. Where adjustment in the vertical height is required for installation on a production line, slide and elevate platforms are available for mounting the coil platform.

CP05 Universal probe holder	TCP20 Tangent with PM saturation	CP60 XVM w/ V+H
CP09 XIG probe with or without wheels	CP21 (XYA Flat) - tangent	CP63 XPC w/ V+H
CP10	CP23 (XYA Flat) - tangent	CP70 XJX w/ V only
CP11 Standard Wiretester coils	CP24 XIG probe/coil holder	CP73 XPC w/ V+H
CP11 Wiretester XWN/XWS coil	CP30	CP75 XVM w/ V+H
CP13	CP31 XVM/Varimac coil - pair only	CP90 XYA - tangent non-magnetic
CP18	CP33 Special Null XPC coil	

## Legacy Saturation Coil Platforms

### Currently Available:

CP351 air cooled  
 CP503 air cooled  
 CP602 air cooled  
 CP850 tangent

### Currently Supported:

CP350 water cooled  
 CP500 water cooled  
 CP600 water cooled

CP750 water cooled  
 CP900 water cooled