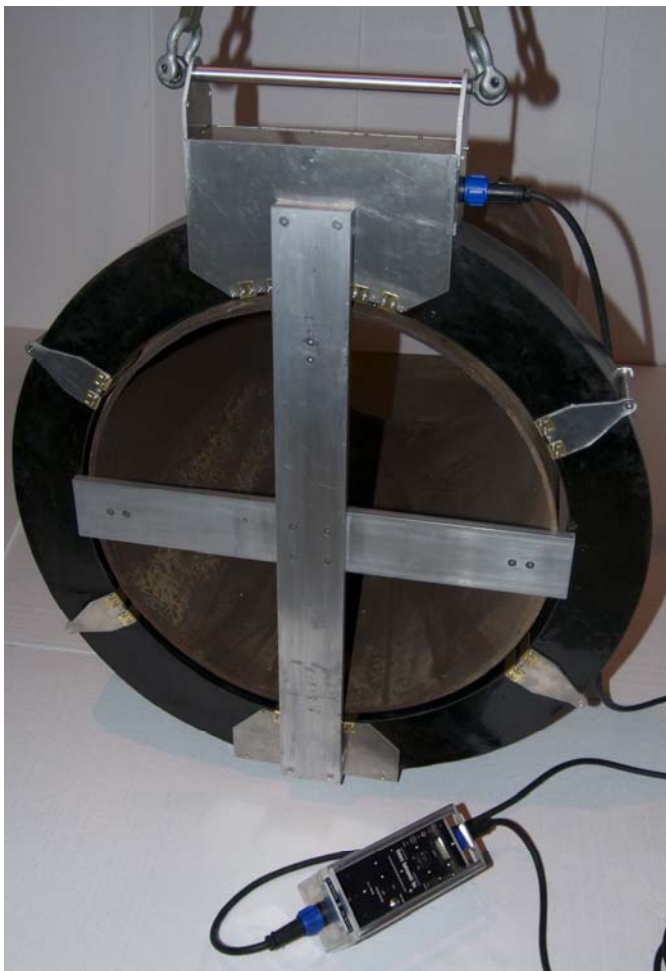




WD-Series Coils for Pipeline Pre-Weld Demagnetization

Western Instruments WD-Series Coils have many different Magnetization and Demagnetization (Demag) uses. The Outline below is for our WDV-PD Series that is configured for Pipeline Pre-Weld Demag;



The WDV-44-PD pictured here, is equipped for Pre-weld Demag with;

- Remote Control Demag Panel, with;
 - Reversible Polarity
 - Infinitely Variable Amperage
 - Continuous Reading Amp Meter
 - Energize Button Activation.
 - Cable Assemblies
- 44" Coil with Connector Housing
- End and Centralizing Assembly
- Housing Lifting Lug Assembly
- Cast Feet
- Upper ID Wear Bar Assembly
- Lower ID Wear Bars Assembly
- 4 Side ID Wear Bars Assemblies
- Housing Lifting Lug Assembly.

Due to the versatility of our equipment designs, our Remote Controls can be interchanged between our WDV-25-PD thought to the WDV-60-PD.

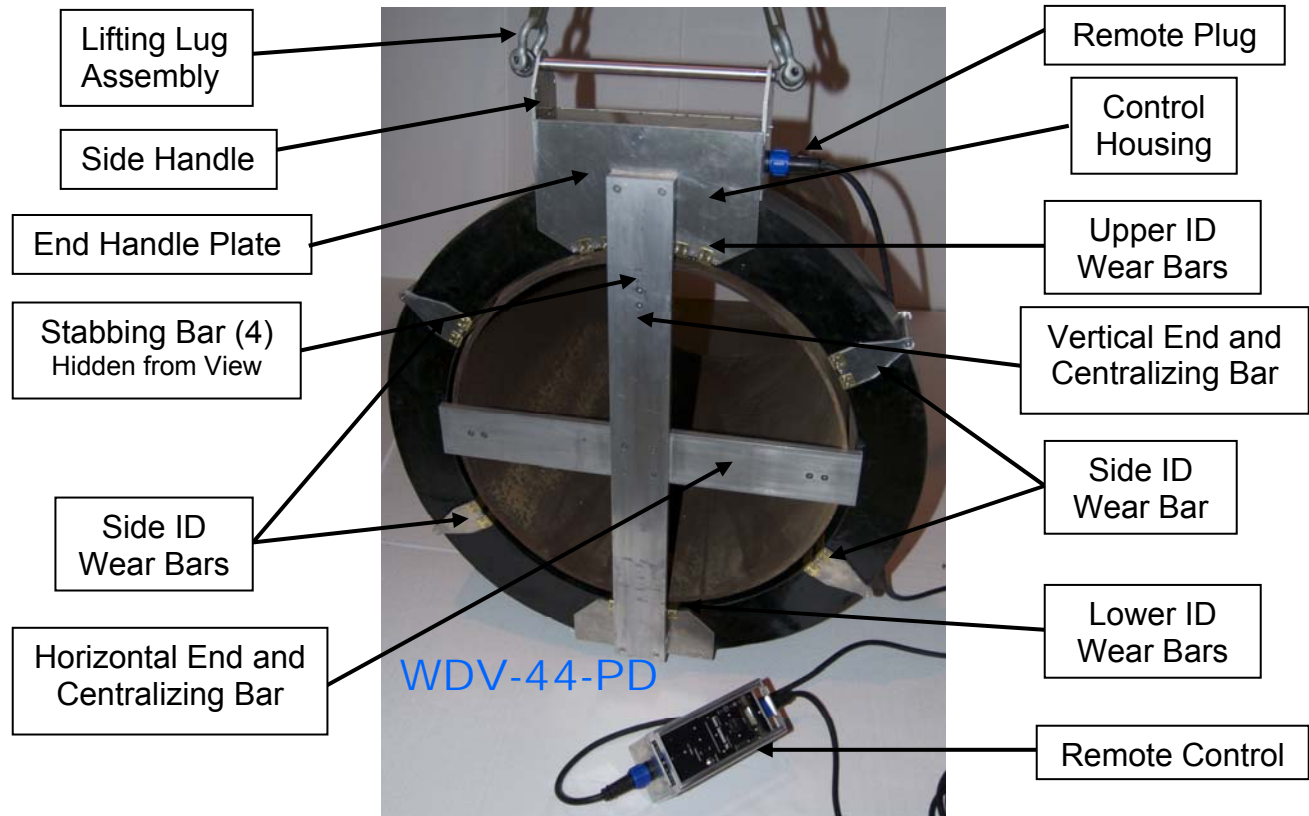
The End and Centralizing Assembly, serves two functions, firstly to center the Coil around the Pipe End being Demagnetized, to ensure even demagnetization around the entire end of the Pipe. If the inside of the Coil

were simply rested on the surface of the Pipe, an even demagnetization would occur. End and Centralizing Assemblies have holes for several sizes of Pipe, which the spacers attached to. The spacers locate the Coil around the Top, Bottom, 3 and 9 o'clock positions of the Pipe ID, and permits the Coil to slid onto the pipe end so centralizing occurs when the Coil comes to rest.

The second function of the End and Centralizing Assembly is to hold the Coil at the end being Demagnetized. During a Demag Cycle, the powerful magnetic field produced by

the Coil causes a great deal of attractive force, which causes the Coil to want to quickly travel toward the middle of a length of Pipe. This *Center Seeking Force* must be restrained, and thus the need for the End and Centralizing Assembly.

WDV-PD Nomenclature



The first question asked by Pipeline Contractors is what is the size range capability of each Coil. Firstly, on the maximum size of pipe for each Coil, we specify a clearance of between 1/2" (12.5mm) and 1" (25mm) on the radius. Thus a WDV-25-PD has the higher limit of 24" OD Pipe. The minimum size of pipe that can be Demagnetized, or what we call Pipe Size Overlap, has as much to do with Centering the Coil around the Pipe End as it does with the Powerful Magnetic Field required to demagnetize a Pipe End. The rule of thumb is to limit this range to about 8" or 9" (210mm or 229mm), thus a WDV-25-PD will demagnetize about 16" to 24" Pipe (406mm to 610mm). The table below provides the Demagnetization Range for each WD-Series Coil.

Coil Model	Minimum OD Size	Maximum OD Size
WDV-8-PD	1.9" (48mm)	7 1/2" (190mm)
WDV-10-PD	2 3/8" (60mm)	9 5/8" (244mm)
WDV-14-PD	4 1/2" (114mm)	12 3/4" (324mm)
WDV-16-PD	9 5/8" (244mm)	14" (356mm)
WDV-18-PD	10 3/4" (273mm)	16" (406mm)
WDV-25-PD	16" (406mm)	24" (610mm)
WDV-32-PD	24" (610mm)	30" (762mm)
WDV-38-PD	30" (762mm)	36" (914mm)
WDV-44-PD	36" (914mm)	42" (1067mm)
WDV-50-PD	42" (1067mm)	48" (1219mm)
WDV-60-PD	48" (1219mm)	56" (1422mm)

Operation

Western publishes several different procedures for Demagnetizing of Pipe Ends, in the equipment manuals, however customers are invited for instruction prior to new Coils being crated and shipped. No matter the Demagnetization procedure used, the cycle time to Demag, after the Coil is placed on the end of a Pipe, is less than 30 seconds. The *Reversing and Reducing DC Demag* lasts for over a week, thus a Demag Crew works ahead of Welders, not slowing production.

Coil Models from the WDV-14-PD and below weigh less than 60 Pounds (27kg) and are intended to be handled manually by the operator. The WDV-16-PD weighs just over 100 Pounds (45kg) and are intended to be handled with a utility crane. The WDV-60-PD weighs in at just over 1000 Pounds (455kg), thus a dual wheel truck with a bumper mount crane is sufficient. The same truck will require a generator appropriately sized for the Coil, a WDV-8-PD requires 1500 watts, while the WDV-60-PD requires 15 Kilowatts, again making a 1 Ton Truck more that acceptable. Most modern engine driven Welders, used on a Pipeline Right of Way, have sufficient AC Power for even the largest WDV-PD Coils.



To ensure Demagnetization has been achieved, operators are equipped with Pocket Magnetometers (Western's W-FI-10) which is run over the bevel of the pipe. The rule of thumb for an acceptable level of magnetization for welding (manual or automatic) is a field of +/- 5 Gauss.

Conclusion

Experienced Pipeline Welders routinely purchase our W-FI-10's and use them to measure pipe ends prior to Welding. The Rule of Thumb for an acceptable level of Demagnetization was not set by a Welding Engineer, but by field experience of numerous welders. They know that a slightly higher magnetization level will result in X-Ray and UT rejects.