ULTRA MAXBIT

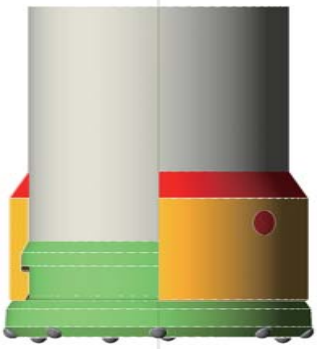
Welding Instruction for Casing Shoe

Welding Instruction for Casing Shoe of Big Bore

The casing shoe must be correctly welded to the casing in order to carry out successful casing drilling. If the casing shoe is not welded accurately to the casing, mis-alignment will result. This can cause the following problems.

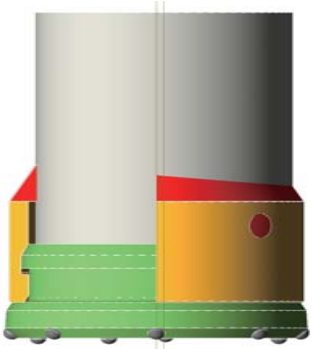
(1) Hole deviation
(2) Damage to the casing
(3) Damage to the shoulder of pilot bit.
*If these problems arise, the recovery of the pilot bit may not be possible

Good



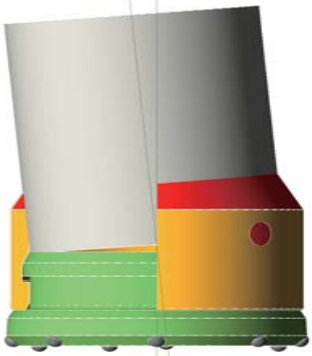
Correct condition.
Good centering between casing and the casing shoe.

Bad



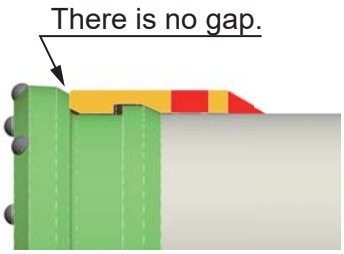
Incorrect condition.
Unequal connection of the gap between casing and the casing shoe.

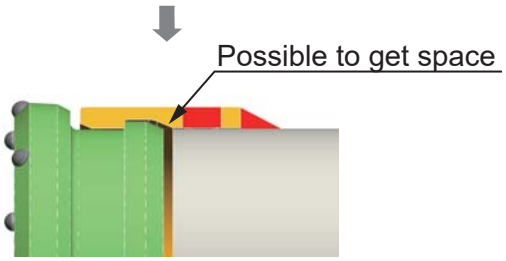
Bad



Incorrect condition.
Tilting connection between casing and the casing shoe.

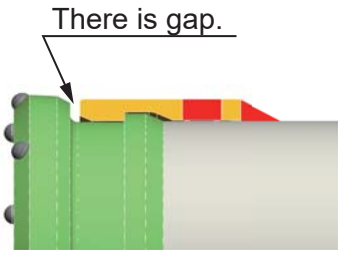
Good





Correct condition.
Welded with above condition.
Ring bit is possible to rotate.

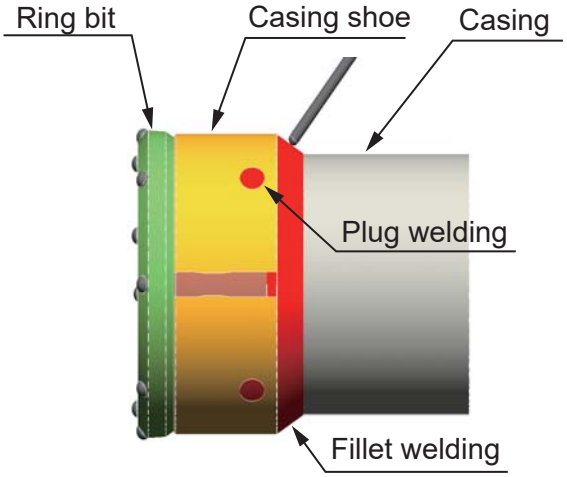
Bad



Incorrect condition.
Welded with above condition.
Ring bit may not be rotated.

● Caution

Ensure that all surfaces to be welded are perfectly clean and free from any contaminations including moisture.

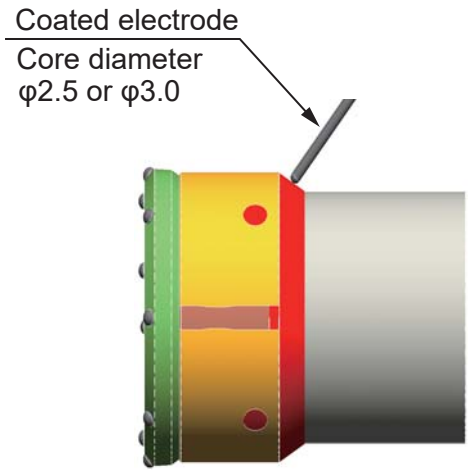


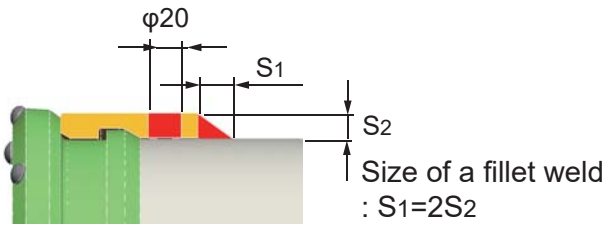
The casing and casing shoe consists of different materials, caution must be taken when welding these items so that weld cracks are not generated.

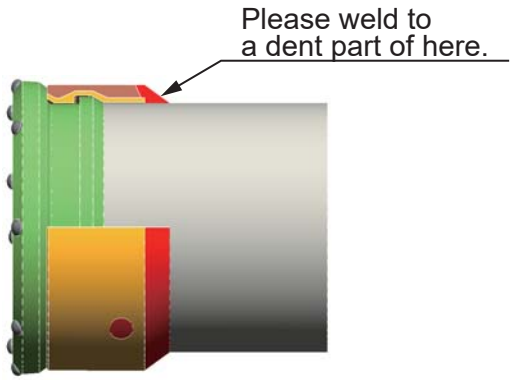
Metal components of casing Shoe
: JIS S45C (SAE No.1045)
C:0.42-0.48 Si:0.15-0.35 Mn:0.60-0.90
P:<0.30 S:<0.35 Cu:<0.30 Ni+Cr:<0.35

Manual arc welding is recommended for welding the casing shoe to the casing. The coated electrode should be satisfied the specification in JIS E4316 or E4916 (AWS E7016 orE7018).
Welding should be carried with an electrode of 2.5mm or 3.0mm diameter. Electric current should be 80 - 90Ａ with 2.5mm and 90 - 120A with 3.0mm. For making good welding strength, to ensure enough melting zone is very important. To increase the welding strength for difficult drilling condition, plug holes or grooves in the casing shoe should be welded to casing.

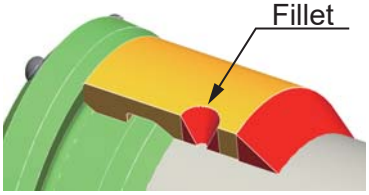
● Fillet welding



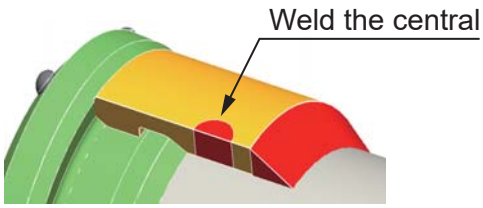




● Plug welding



Plug welding (Process 1.)

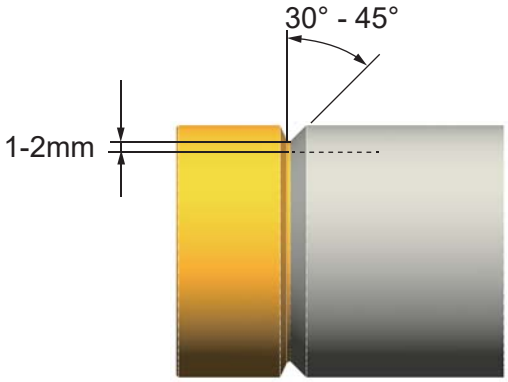


Plug welding (Process 2.)

The electrode should be stored in dry condition. Before welding electrode should be drying at 300 -350℃ for about 1 hr. Welding surface should be clean & dry before welding. It is recommended that when there is snow and rain, welding should be done in workshop if possible. And if possible before welding it is recommended to preheat the parts to around 100℃.
For more specified instructions see in the electrode manual.

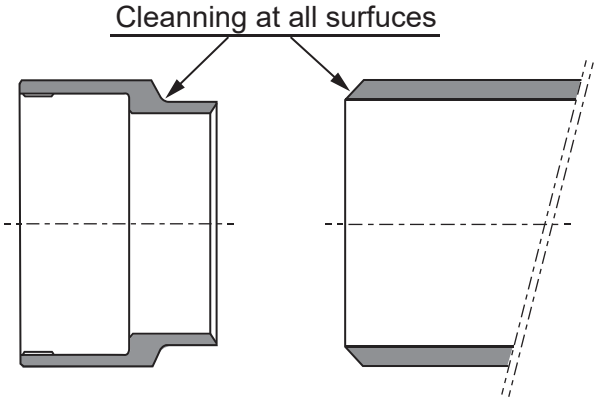
Welding Instruction for Casing Shoe of Standard Ultra Maxbit

Chamfer the end of the casing at an angle between 30 - 45 degree .
In very difficult broken ground, the following additional operation should be carried out.
Cut a radius of 15 - 20 degree at the following intervals.



Caution

Ensure that all surfaces to be welded are perfectly clean and free from any contamination including moisture.



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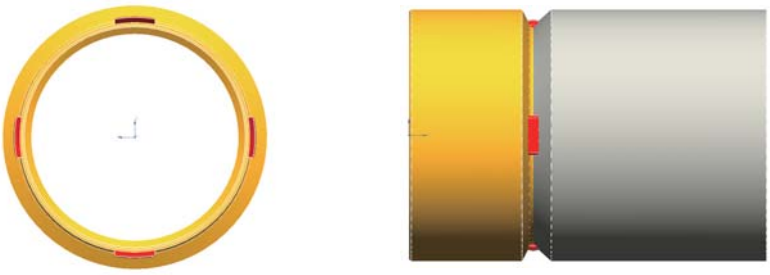
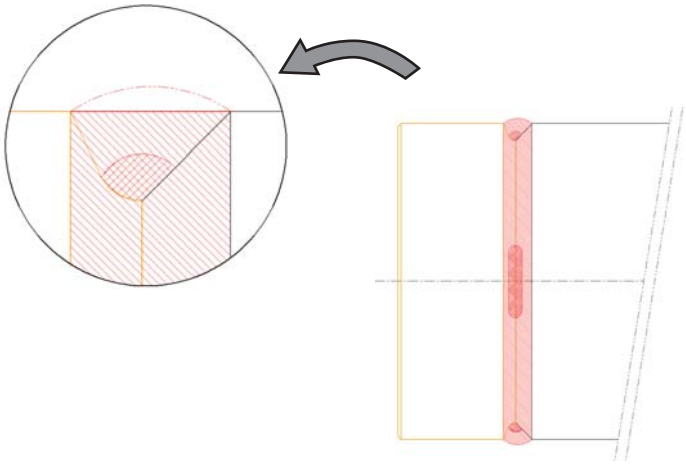
Select a low-hydrogen solvent for the casing shoe welding. Pre-heat the chamfer of the casing shoe before welding.
Recommended weld solvent: JIS D4313/AWS E7016,JIS YGW11/AWS ER70S-G
Pre-heat: Preheat the groove of the casing shoe to 100°C.
Take sufficient time to weld them temporarily not to cause a weld crack due to sudden heating or cooling.
Weld them in the diagonal order as shown in below figure.
Completely remove the slag during the temporary welding.

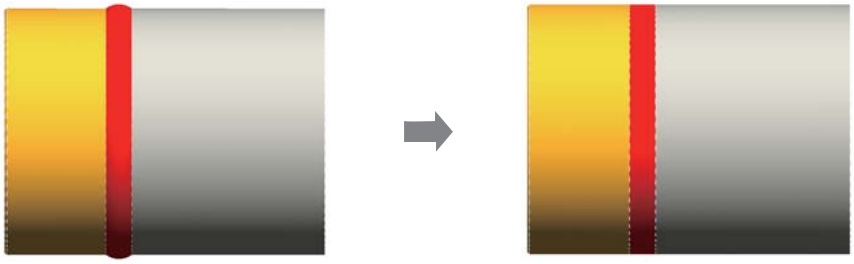


仮溶接は、対角線に行ってください。

Ensure that sufficient weld is applied to both casing and casing shoe, and excess weld is built up. Finally grind off excess weld from outer diameter of casing.

*If excess weld is not removed, it will interfere with smooth installation of the casing.





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2018.1.E(2A)