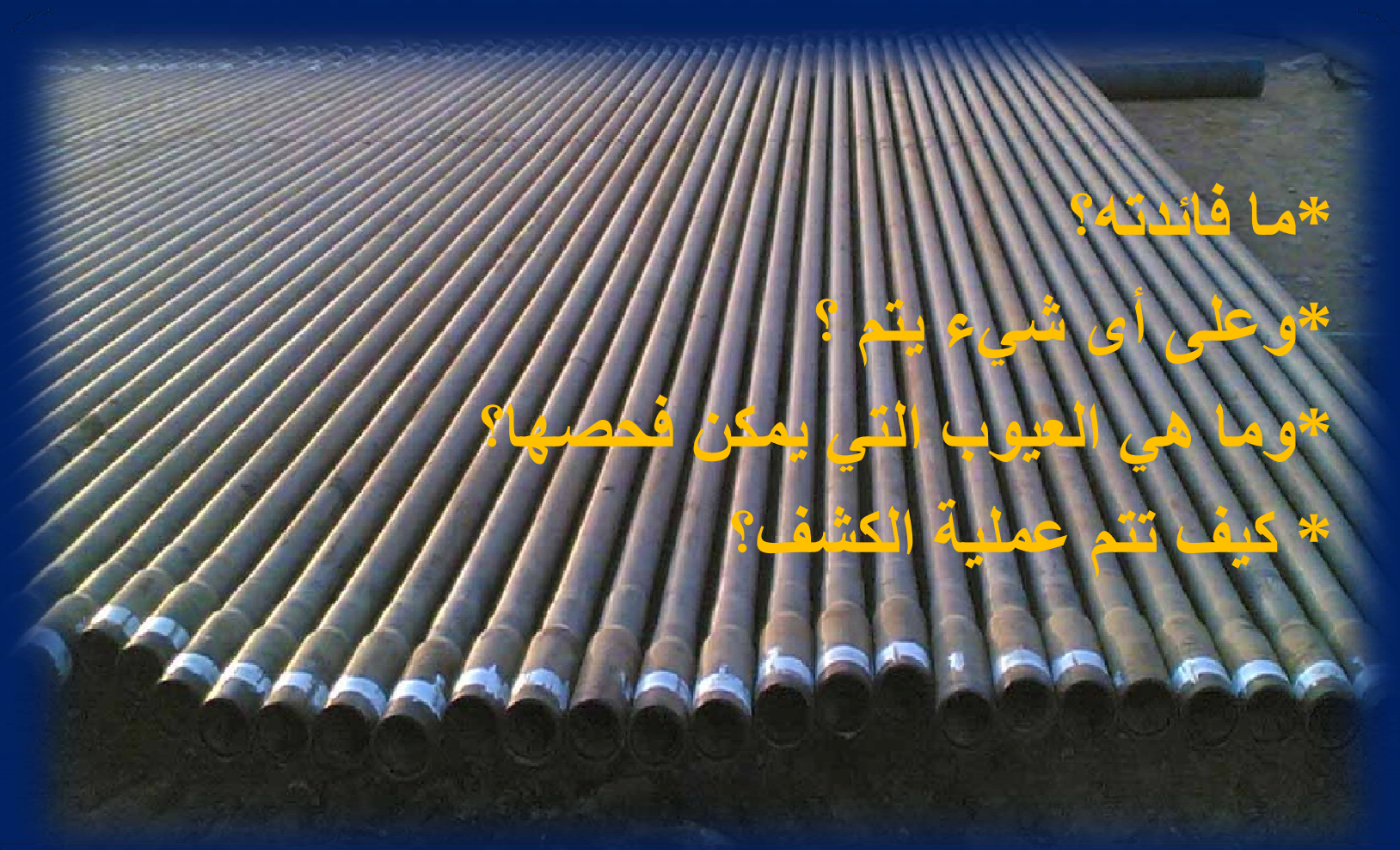
EMI

Electro magnetic inspection

EMI

ELECTRO MAGNETIC INSPECTION



*ما فائدته؟

*وعلى أى شيء يتم ؟

*وما هي العيوب التي يمكن فحصها؟

* كيف تتم عملية الكشف؟

فائدته

- الحد من المخاطر والأعطال التي قد تواجه خط سير العمل :

بما أن مواسير الحفر تكون واقعه تحت جهد كبير ويمر بها سوائل ذات ضغوط عاليه فبالتالي تكون معرضه للكثير من المشاكل التي نعمل للحد منها بالكشف عليها بوسائل اختبارات اللااتلافيه ومنها الاختبار الكهرومغناطيسي.

- ومن مميزاته انه يكشف العيوب السطحية والتحت سطحيه والعيوب الداخلية والتي قد لا تظهر بوسائل الكشف الأخرى.

تطبيقه

- **يطبق الاختبار الكهرومغناطيسي على:**
  - مواسير الحفر .
  - مواسير الإنتاج.

العيوب التي يكشفها

- عيوب مواسير الحفر كثيرة لكن بواسطة الاختبار الكهرومغناطيسي يمكن حصرها وكشفها بسهوله ومن أهم العيوب وأكثرها انتشارا
  - التآكل بأنواعه
  - الشروخ سواء كان سطحية أو تحت سطحية أو داخلية
- وهذه العيوب إما أن تكون طوليه أو عرضيه أو مائلة وبالتالي هناك نوعين من الكشف كشف عرضي وكشف طولي حسب العيب .

EMI

- EMI 1
- EMI 2

EMI

EMI 1

One Function

(Inspected Transverse Defects)

Easy To Transportation

EMI 2

Four Function

Inspected:

1-Transverse Defects

2-Longtiudnal Defects

3-Wall Thickness

4-Grade

Hard To Transportation

EMI

EMI: Cover The Upset To Upset Scanning Of Steel Drill Pipe Tubes For any Defects.

EMI

1ST:INSPECTED OF TRANSVERSE DEFECTS(**EMI 1**):

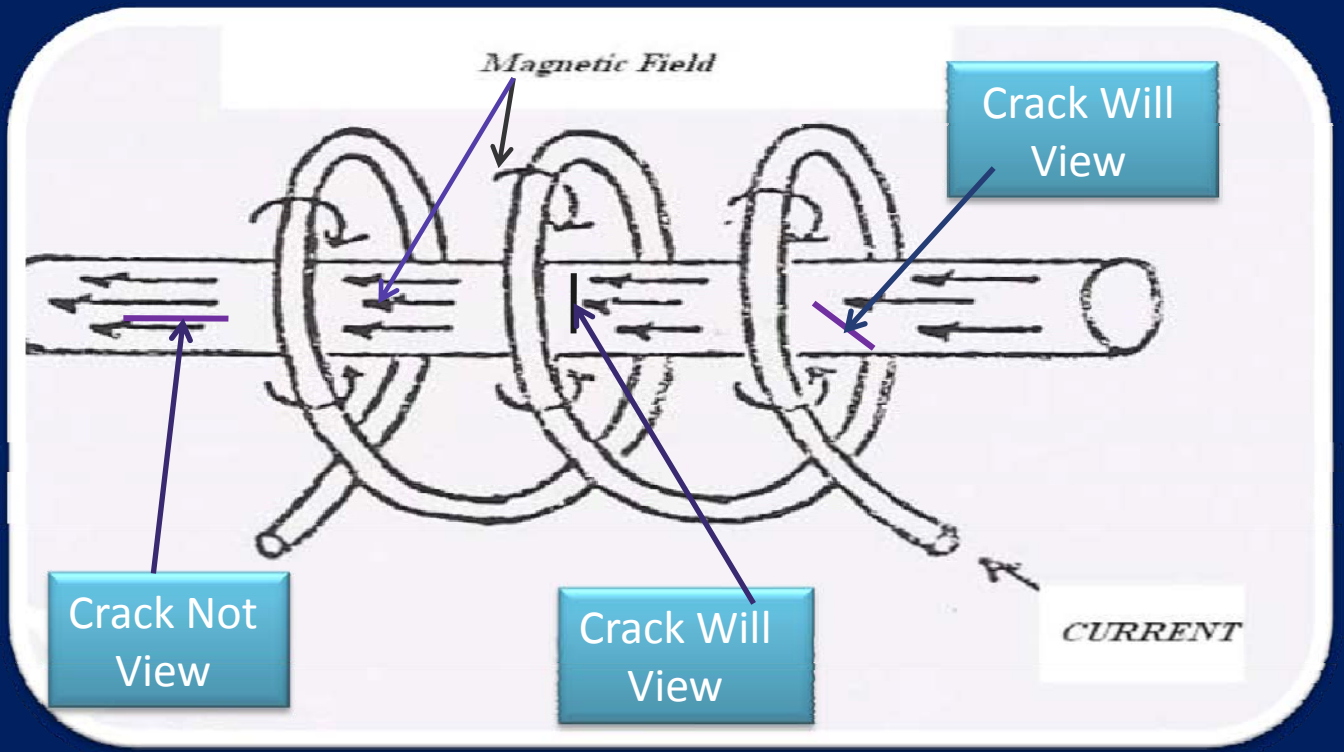
EMI 1

INSPECTION APPARATUS:

1- DC-COIL : Shall be designed to allow active Longitudinal magnetic Field Inspection Of The Tube Surface.

DC-COIL

Form of The Magnetic Field



2- Flux leakage Sensors:

Search Unit : Consist Of Number of Turn Of wire in

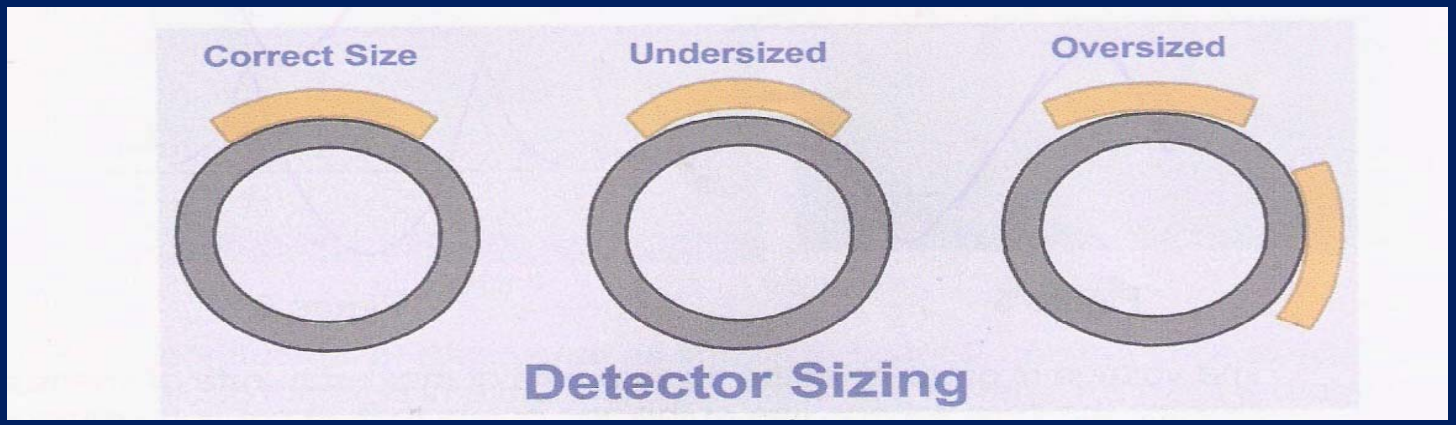
"Non-Ferromagnetic Shoe"

The Shoe

.The Shoe is Curved to match the pipe diameter.

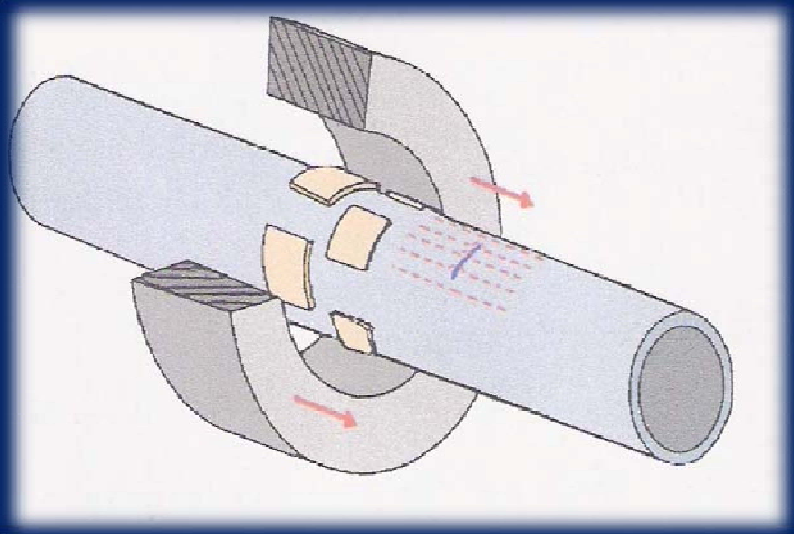
.The Shoe shall be sized for the pipe being inspected and shall be Rid on the surface of the pipe without any visible gap

THE DETECTOR



THE DETECTORS

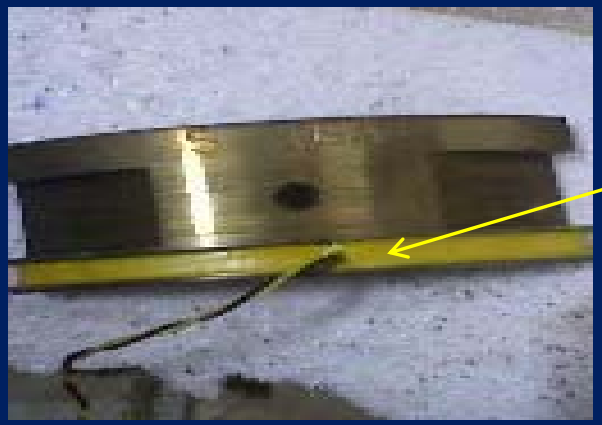
- In transverse Inspection: There are eight (8)Detectors distributed around the pipe surface for magnetic field distortions in the region where the field is normally longitudinal as Figure.



THE DETECTOR (SHOE)

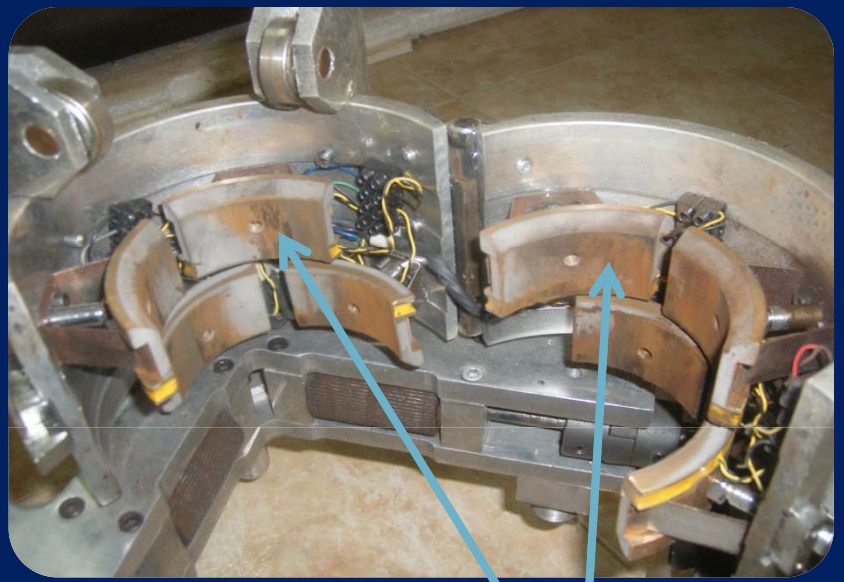
- **THE SHOE IN TRANSVERSE OR LONGITUDINAL INSPECTION:**

Is scanned along the pipe in magnetic field any flux leakage will pass through the coil (In shoe) and induce A voltage in the coil. This happens because flux lines cutting.



- THESE ARE THE SHOES ACCUMULATED IN ONE PLUG.
- THIS PLUG CONNECT IN ELECTRONIC SYSTEM PROCESSING.

The detectors are accumulated in the Head



The pipe is stationary and the head is propelled along its length

REFERENCE STANDARD


REFERENCE STANDARD

REFERENCE STANDARD

Reference Standard Shall be through- wall Drilled Hole Standard .

There are eight (8) Holes in standard

Eight Holes in standard as follows:

The standard have one hole for each detector . the holes arranged in spiral pattern as figure.

ELECTRONIC SYSTEM PROCESSING

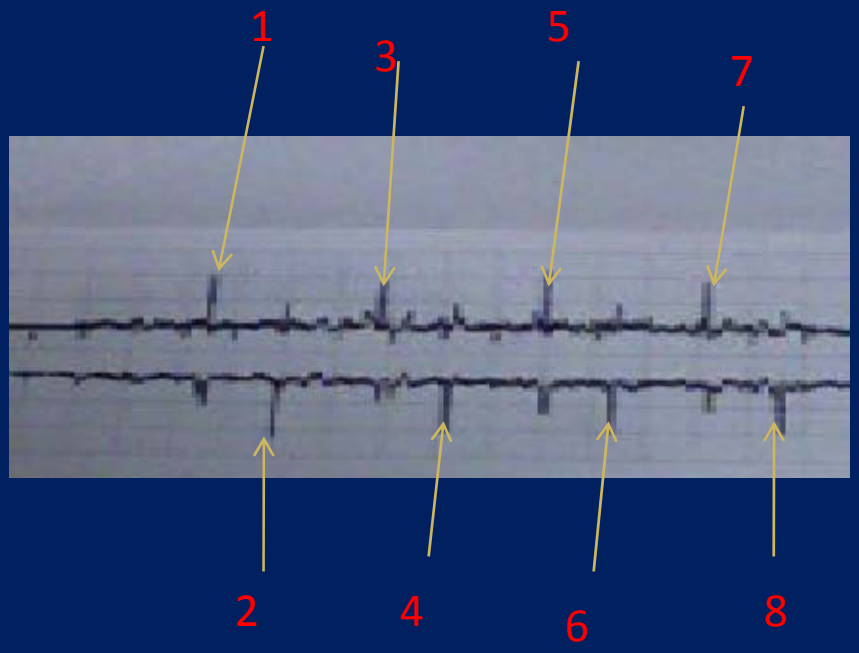
ELECTRONIC SIGNAL PROCESSING

The voltage generated by a search coil extremely small
an amplifier is required to pring the signal up to a usable level
there is normally one amplifier for search coil so that the gains can be individual adjusted .

ELECTRONIC SIGNAL PROCESSING

Eight Indications Must Be In One Level As Test Follows:

- eight indication shall be 10 ml
- noise 3-1 ml



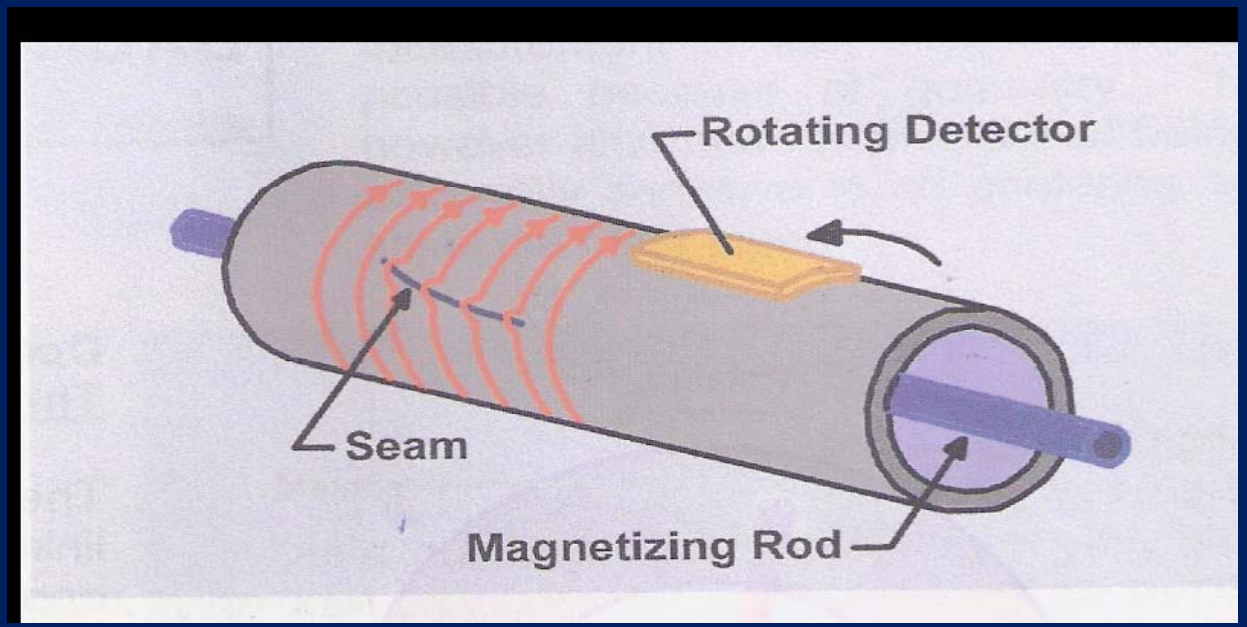
- after finish from test trans to the pipes

EMI

2ST:INSPECTED OF LONGITUDINAL DEFECTS(**EMI 2**):

EMI 2

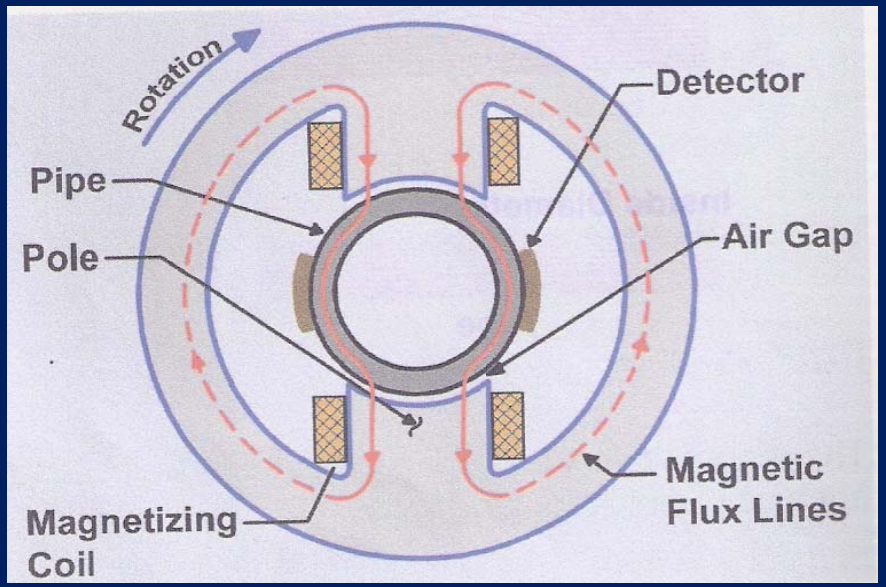
•The Detection of longitudinal defects must be found Transverse Magnetic field (circular) Perpendicular to the axis of the pipe . This the field is result from "central conductor" (magnetizing Rod)



THE DETECTOR LONG FORM

The detector in rotation case so that found two shoes only to cover the pipe.

ROTATION HEAD



The pipe is driven through the inspection head

REFERENCE STANDARD

REFERENCE STANDARD

- The Reference Standard Of Longitudinal Defects Is Deferent About The Reference Standard Of Transverse Defects.

- The Reference Standard Shall Be:

-Made from steel with the same diameter and nominal wall thickness of the pipe being inspection

- The defect in reference standard is long notch.

Then enter in electronic Signal system .

EMI

3: SCAN WALL THICKNESS :

WALL THICKNESS

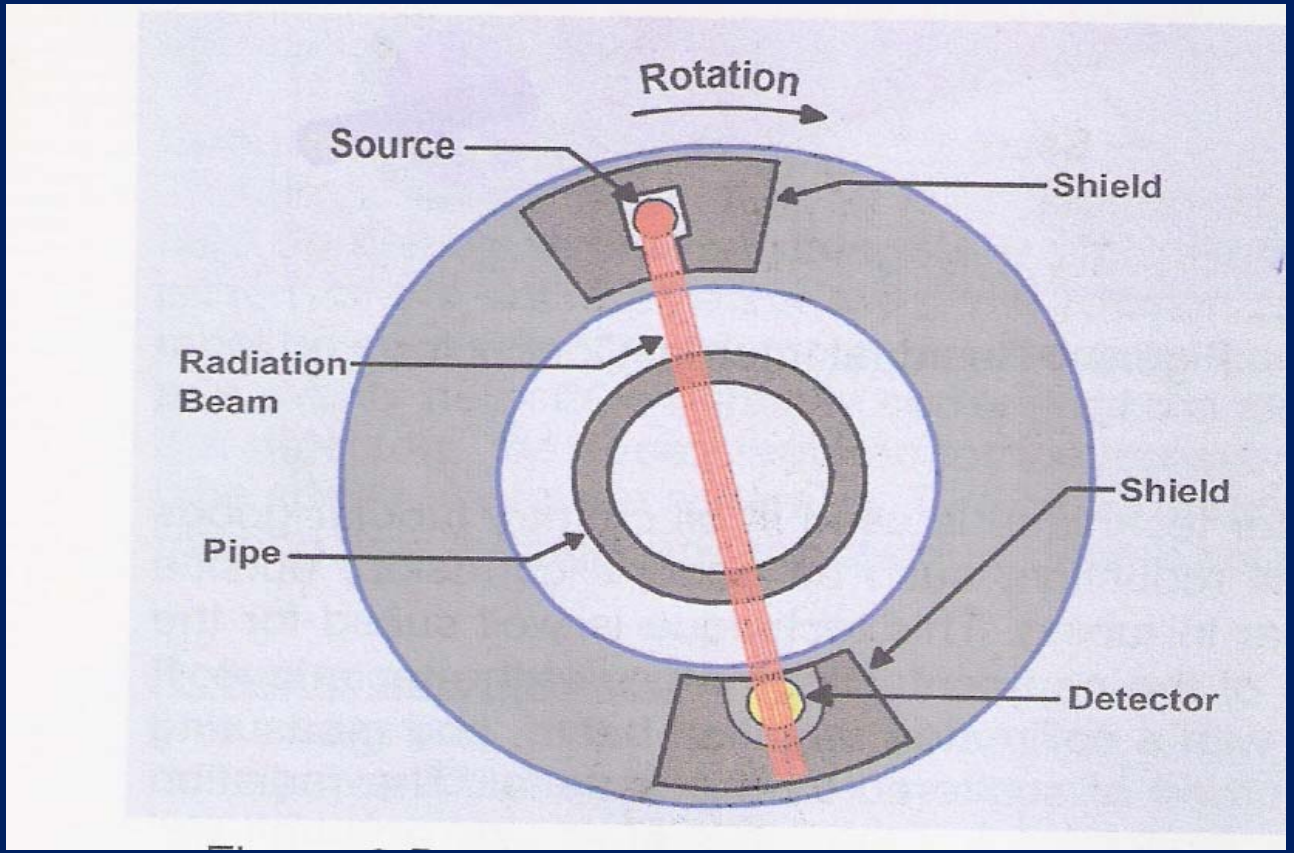
- Radiation Source In Rotation Head.

-probe for Radiation Ray(Gama Ray) to Know Wall Thickness.

- Computer take the Signal From Probe by Cable Pass Through Magnetized Rod

-Then Enter To The Electronic Signal System For Adjusted The Signal

WALL THICKNESS



REFERENCE STANDARD

REFERENCE STANDARD

- The reference standard Shall be:

- Made from steel with the same diameter and nominal wall thickness of the pipe being inspection

- The defect is redaction in Wall Thickness.

4: GRADE :

- from through EMI 2 I Can Know the deferent Grade In Job

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Syria

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