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SERVICE BULLETIN QUA / 03 / 003

(QUASAR AMUSEMENT RIDE)

OCTOBER 1993

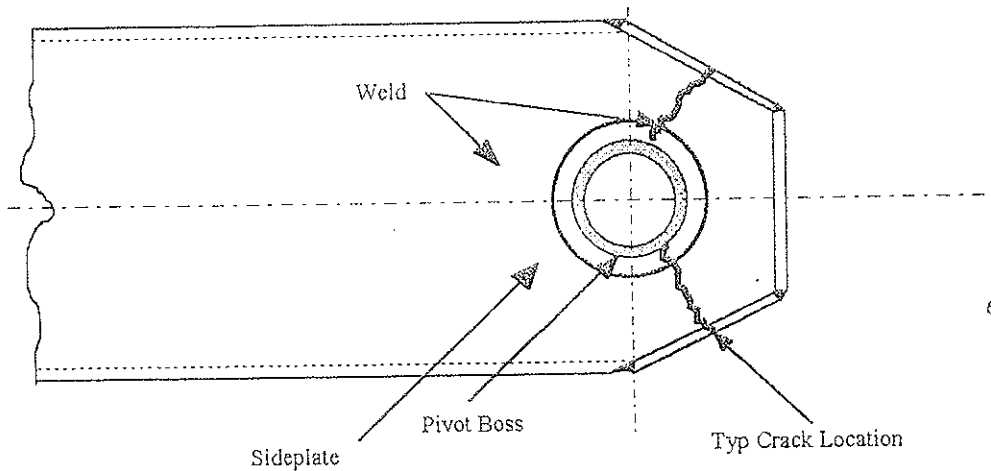
Modification Procedure

- 1) Chock slewing ring link arm safely and knock out ram to driven link fixing pins.
- 2) Knock out all link pivot pins at either end and detach all links from lifting frame assembly .
Transport to suitable work station.
- 3) On links that have cracks in parent metal gouge out welds and remove end plates. If end plates are sound then clean up and retain them, if cracked then they must be discarded.
On links with no cracks in parent metal then the end plates need not be removed.
- 4) Note that the following procedure must only be carried out on one pivot boss weld at a time so that the original pivot boss position and alignment is retained.
Gouge out circumferential weld around pivot boss on one side only and clean up.
Carry out weld prep procedure around pivot boss hole using air arc or other appropriate procedure and clean up.
- 5) Weld pivot boss to link using an initial root run and completing procedure with a 6mm fillet weld.
Note that either manual metal arc or MIG may be used for the weld procedure. Repeat on other side of pivot boss.
- 6) If cracks are present in parent metal then vee out and weld with full penetration half butt welds. Grind welds flush with sidewalls of link both inside and outside faces of link.
- 7) Refit and weld endplates in position if applicable.
- 8) Weld new 6mm thick sideplates in position both sides of link as shown.
- 9) Refit link arms to main lifting frame and attach ram.
- 10) Note it is imperative that procedure 4) and 5) is performed on one hinge boss at a time to maintain original alignment of hinge boss and pin.
Ensure correct alignment before welding in position.
- 11) After completion of modification all weldments to be inspected by appropriate N.D.T. procedure and certified as sound in writing.
- 12) Modification to be inspected by appointed person and passed as satisfactory.
- 13) Modification thereafter to be inspected to periodic N.D.T. inspection annually.

Items required to complete modification 2-No 6mm thick sideplates per pivot point.

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Crack Repair

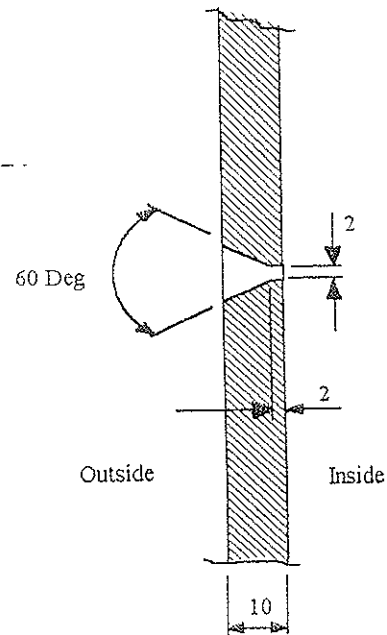


Sideplate

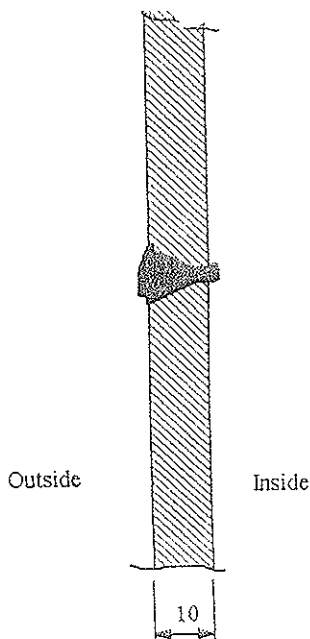
Pivot Boss

Typ Crack Location

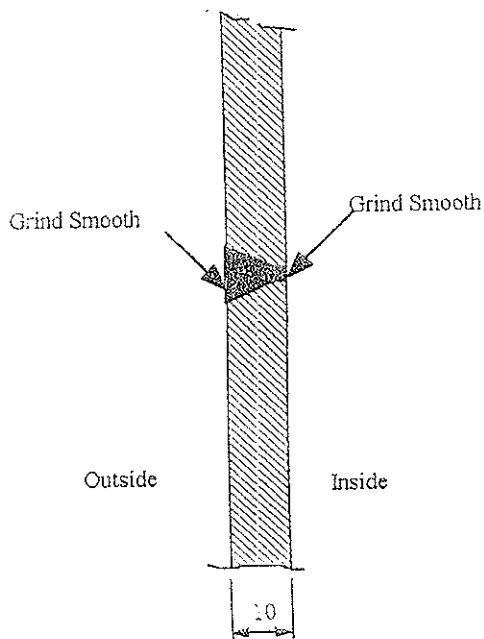
Side Elevation On Pivot Boss



Typ Weld Prep For Crack Repair



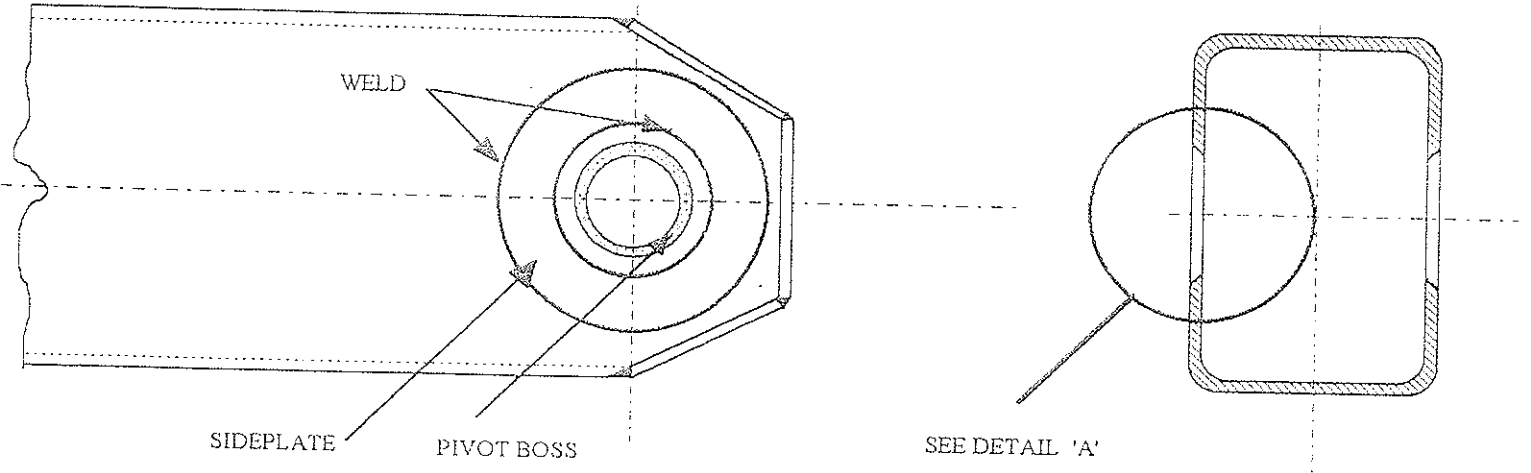
Typ View After Welding



Typ View After Dressing

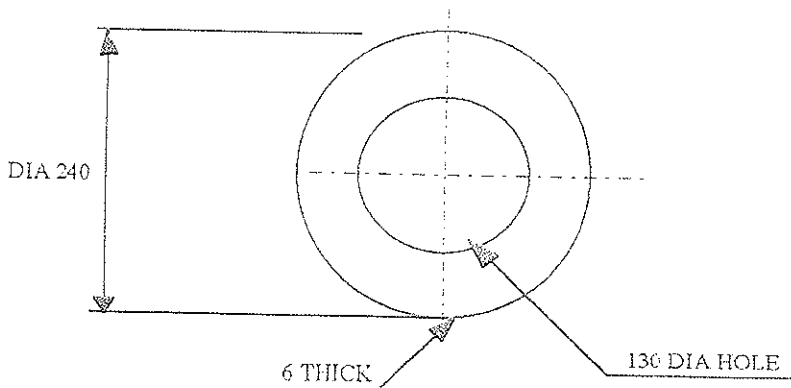


Modification Detail Of Link Arm



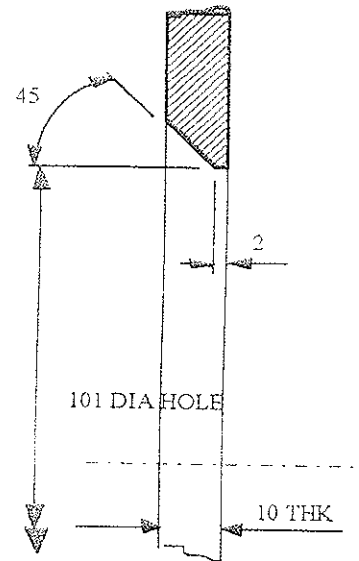
SIDE ELEVATION ON PIVOT BOSS

SECTION THRO LINK WITH
WITH PIVOT BOSS REMOVED



MATERIAL PLATE TO BS 4360 - 43A

DETAIL OF SIDEPLATE
2- No Req Per Pivot Point

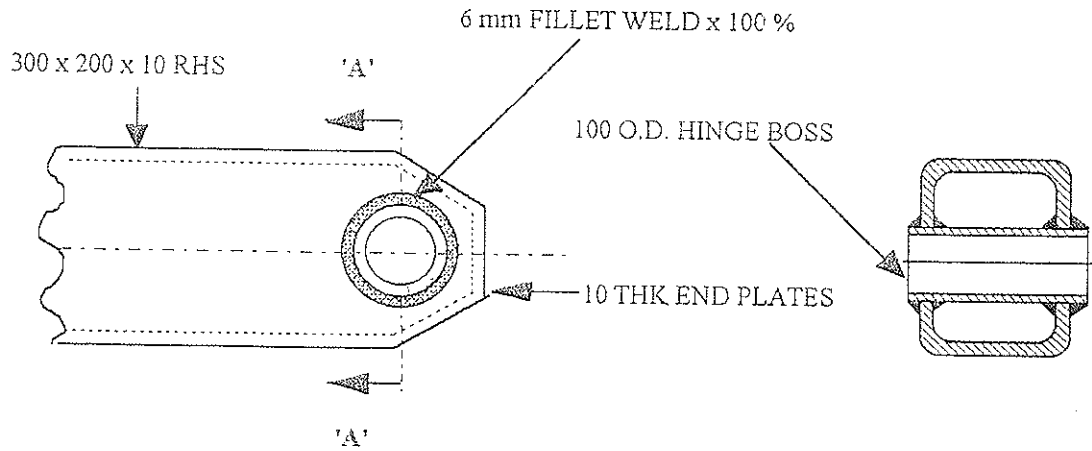


DETAIL 'A' WELD PREP

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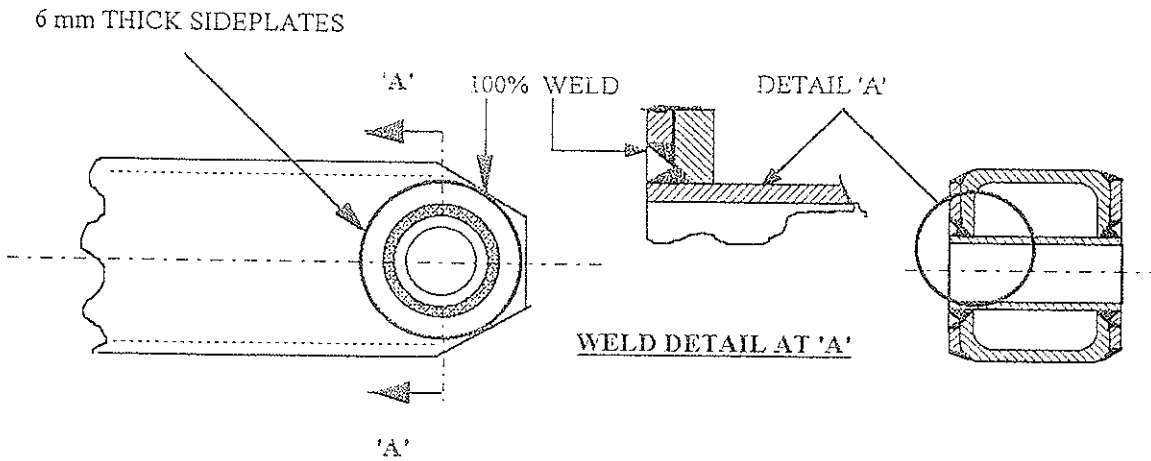
Quasar Lifting Frame Modification

Existing Driven Link Detail



SIDE ELEVATION ON DRIVEN LINK

SECTION ON 'A'-'A'



SIDE ELEVATION ON DRIVEN LINK

SECTION ON 'A'-'A'

Modified Driven Link Detail

Summary Of Modifications

- 1) Full weld preparation in hinge boss clearance hole to give full penetration weld.
- 2) Grind out and weld any existing cracks in RHS sidewall or end plates.
- 3) Sideplate on either side of RHS sidewalls

Subject :- Main Lifting Frame Links.

A.R.M. (UK) Ltd have been alerted to the possibility of a potential problem in the Quasar lifting frames involving the weldment of the main hinge boss to the link assembly.

On investigation it would appear that some hinge bosses may have inadequate weld preparation and may suffer fatigue induced cracking emanating from the area of the hinge boss and propagating outward at 45° into the parent metal of the links.

In view of the facts above we have prepared a service bulletin containing an appropriate inspection schedule and repair method if inspection proves it is required.

Inspection Schedule For Main Lifting Frame.

Weekly Inspection.

- 1) Visual inspection of the area immediately in the vicinity of the hinge bosses situated at either end of the two main travelling links, one link being ram driven and one being a trailing link

Check for any indication of a crack both in the weldment of the boss to the link and also in the link parent metal. If cracks are visible then these areas are to be subjected to non destructive testing as in 2) and 3) below to determine the extent of any possible damage.

If crack damage is confirmed by N.D.T. inspection then the repair schedule described in the service bulletin QUA/03/003/01 to QUA/03/003/04 inclusive is to be carried out immediately.

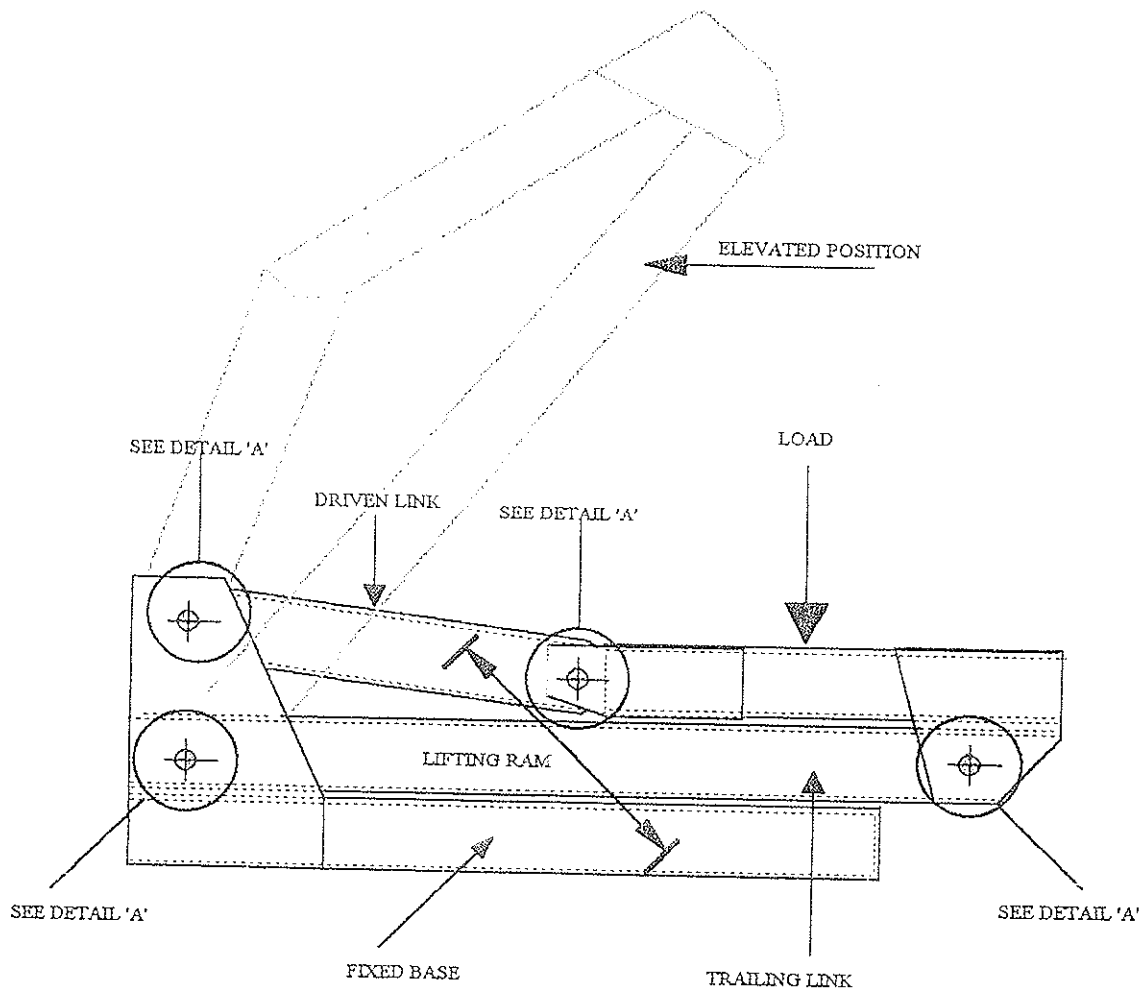
Annual Inspection.

- 2) The area as described in 1) above to be checked by non destructive testing for cracks in the weldment or surrounding parent metal, and to be certified sound in writing by a suitably qualified inspector.
- 3) Recommended methods of non destructive testing :- Electromagnetic and Ultrasonic.
- 4) If the non destructive testing establishes the existence of cracks then repairs must be made immediately in conformity to the manufactures laid down procedures in service bulletin pages :-

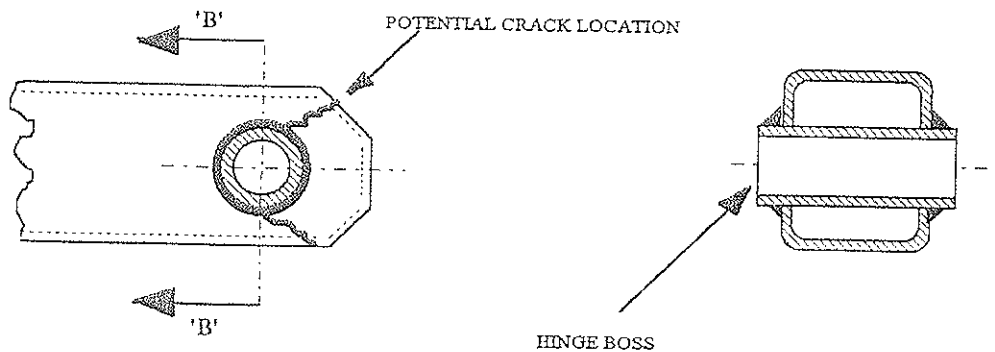
QUA/03/003/01 To QUA/O3/003/04 Inclusive.

- 5) On completion of repairs and before operating the machine the repair is to be confirmed as sound and with no significant defects using test methods as in 2) and 3) above. This to be certified in writing by a suitably qualified person.

Quasar Lifting Frame



SIDE ELEVATION ON LIFTING FRAME



DETAIL 'A'

SECTION ON 'B-B'

SERVICE BULLETIN QUA / 03 / 003

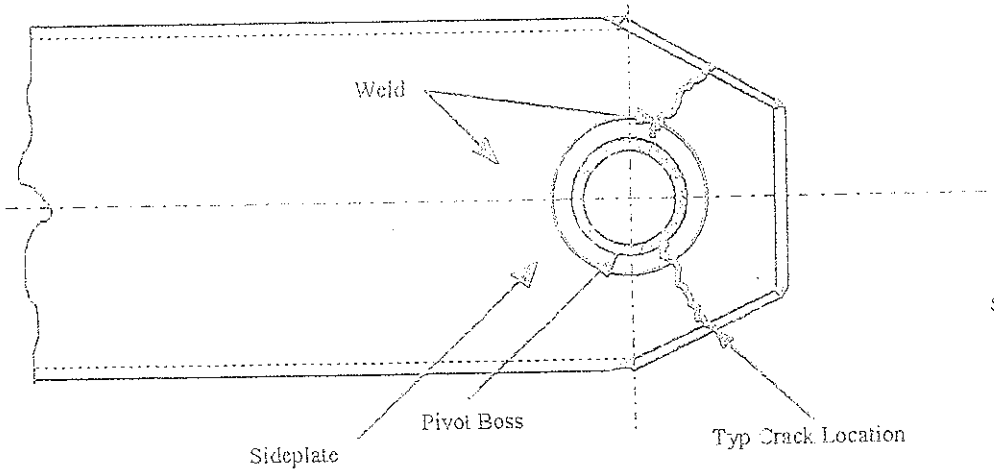
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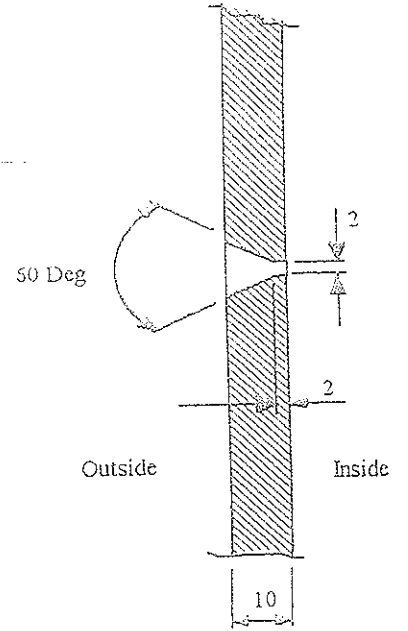
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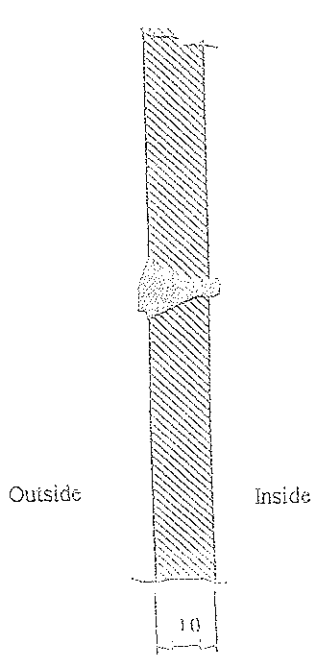
Crack Repair



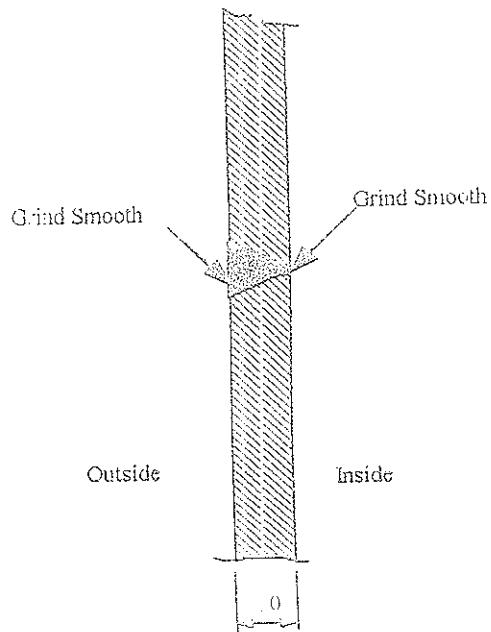
Side Elevation On Pivot Boss



Typ Weld Prep For Crack Repair

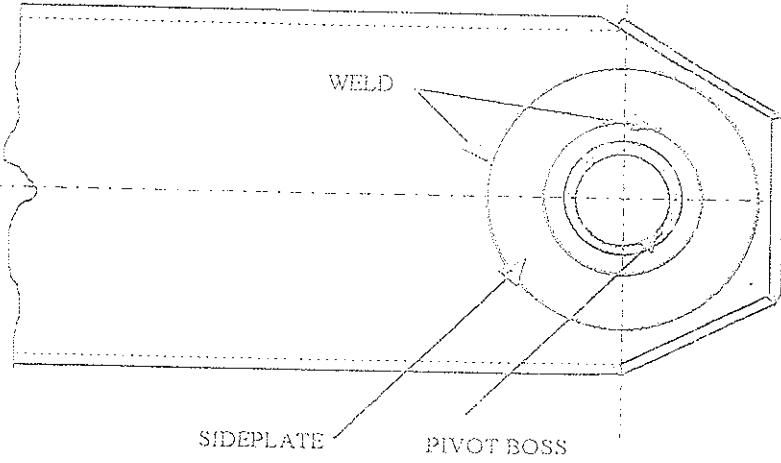


Typ View After Welding

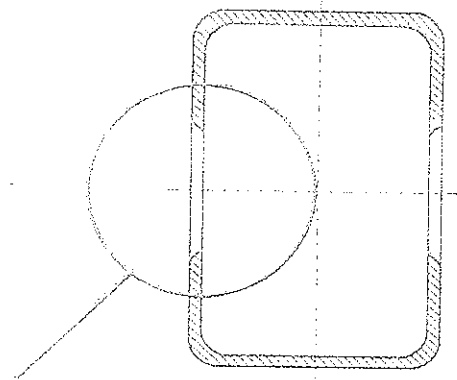


Typ View After Dressing

Modification Detail Of Link Arm

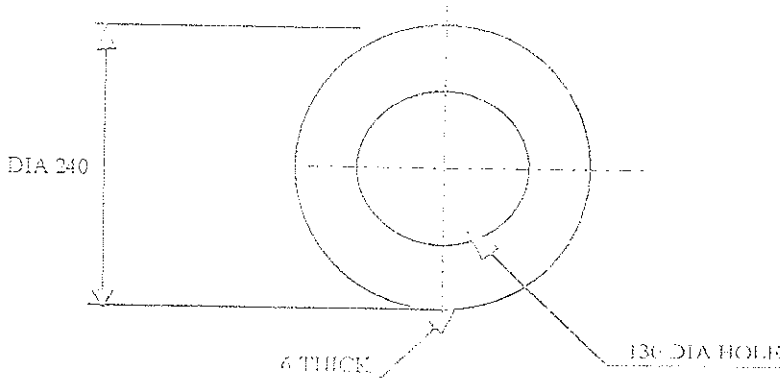


SIDE ELEVATION ON PIVOT BOSS



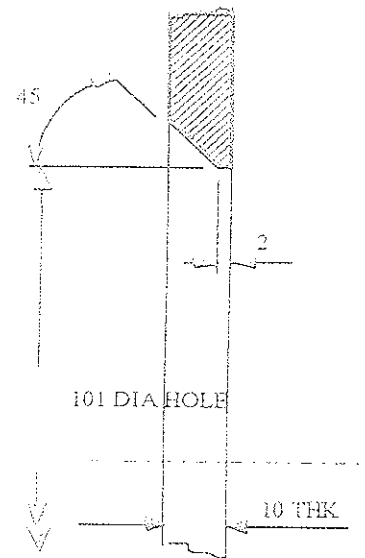
SEE DETAIL 'A'

SECTION THRO LINK WITH
WITH PIVOT BOSS REMOVED



MATERIAL PLATE TO BS 4360 - 45A

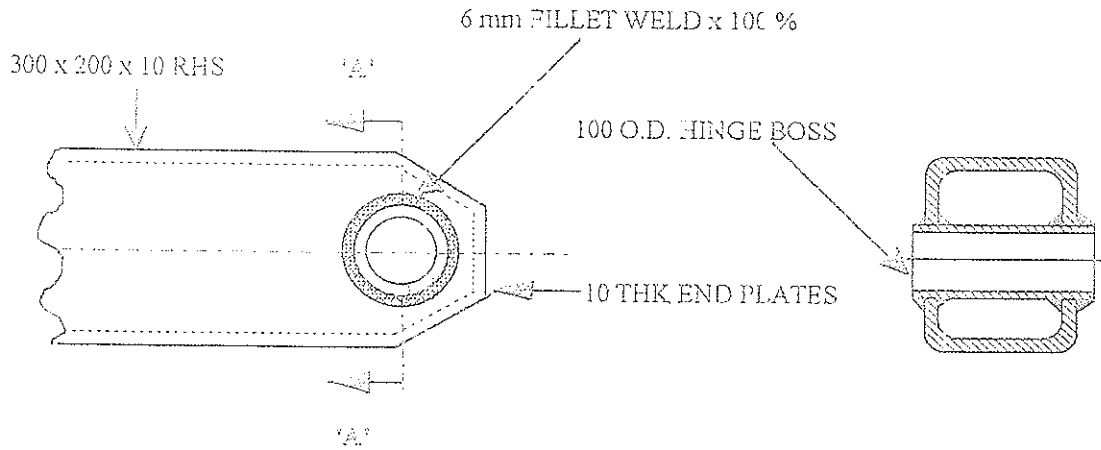
DETAIL OF SIDEPLATE
2 - No Req Per Pivot Point



DETAIL 'A' WELD PREP

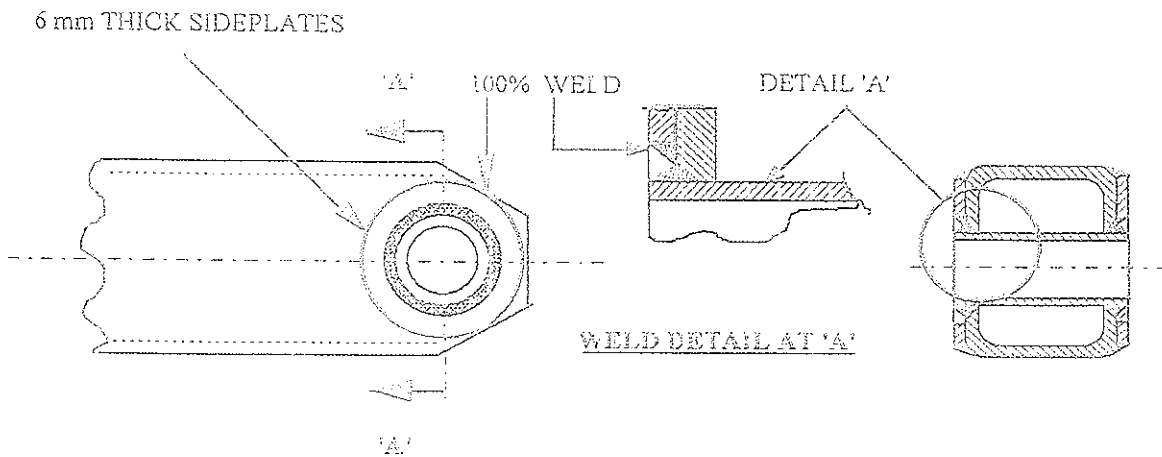
Quasar Lifting Frame Modification

Existing Driven Link Detail



SIDE ELEVATION ON DRIVEN LINK

SECTION ON 'A-A'



SIDE ELEVATION ON DRIVEN LINK

SECTION ON 'A-A'

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Dated February 1994

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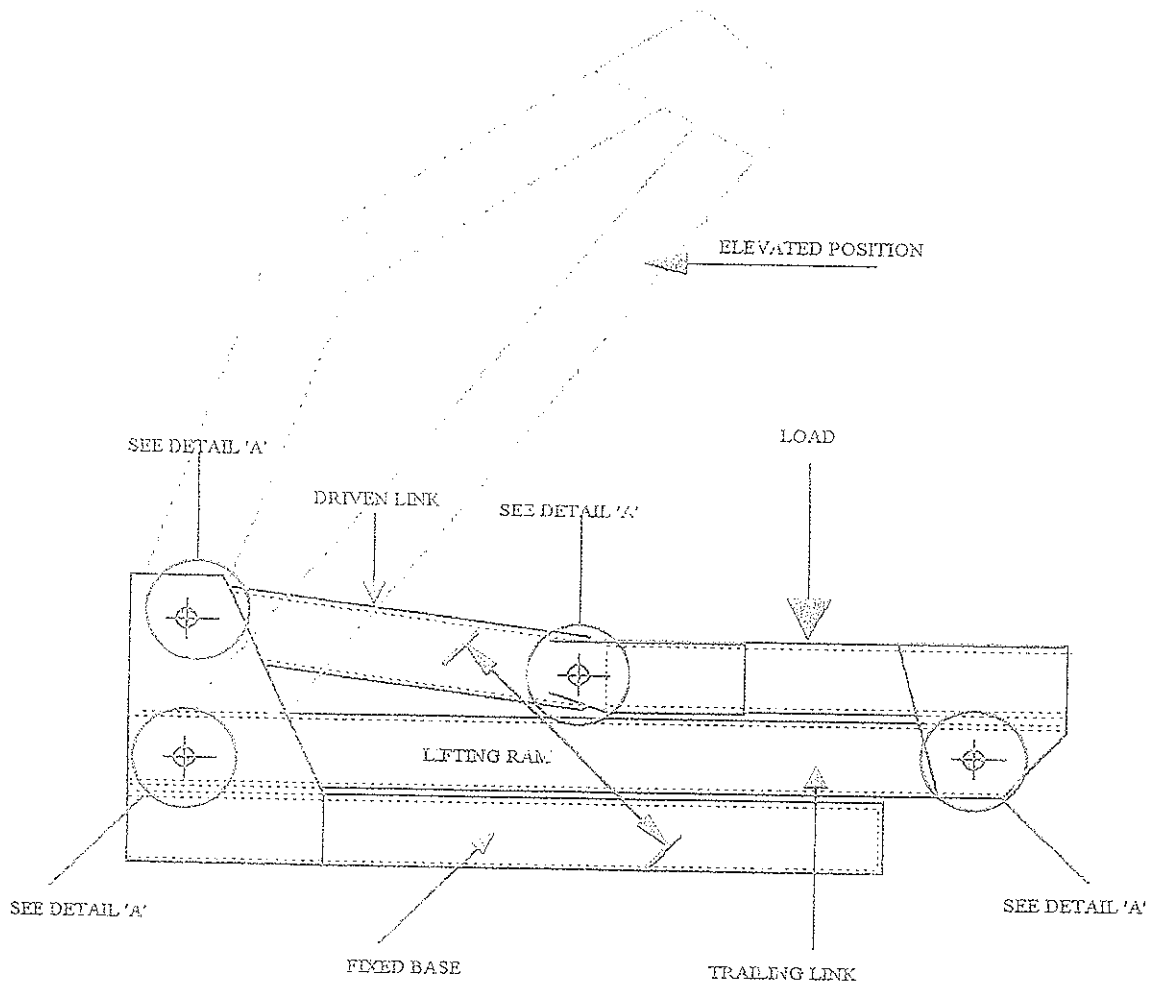
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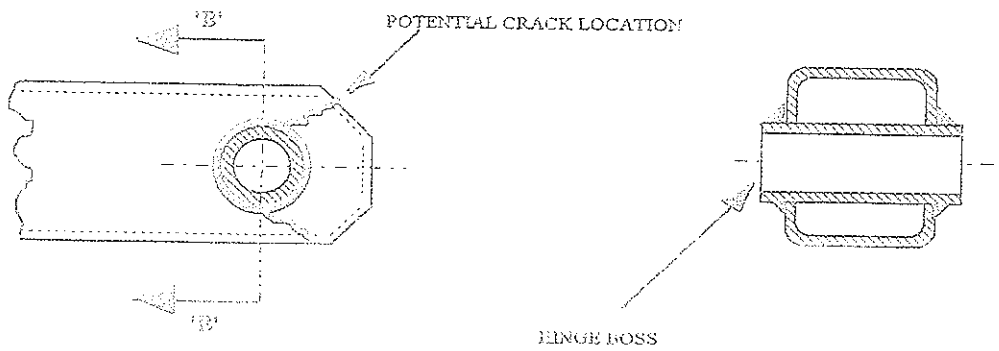
QUA/03/003/01 To QUA/03/003/04 Inclusive.

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Quasar Lifting Frame



SIDE ELEVATION ON LIFTING FRAME



DETAIL 'A'

SECTION ON 'B-B'