

# OMEGA MANUFACTURING CORP

## Engineering Change Order

ECO Information	
ECO Number:	ECO-2025-0067
Date Initiated:	January 16, 2025
Initiated By:	Tom Wilson, Design Engineer
Priority:	<div><div></div>Medium</div>
Status:	Pending Customer Approval

## PART INFORMATION

Field	Current	New
Part Number	OM-4472-C	OM-4472-C
Part Name	Hydraulic Valve Body	Hydraulic Valve Body
Revision	Rev B	Rev C

## CUSTOMER IMPACT

- Customer: Caterpillar Inc.
- Contract: CAT-2024-HV892
- Affected Quantity: 1,200 units remaining in current order

## REASON FOR CHANGE

⚠ Field failure analysis indicates stress concentration at radius transition causing premature cracking after 800 hours operation.

### Failure Details:

- Customer reported 3 failures in December 2024
- Root cause: Inadequate fillet radius causing stress concentration
- Impact: Premature component failure affecting equipment uptime

## DESCRIPTION OF CHANGE

- 🔧 Increase fillet radius from R2.0mm to R3.5mm at location A-A
- ✚ Add stress relief groove 0.5mm deep x 2.0mm wide at critical section
- 📄 Update material specification from 6061-T6 to 7075-T6 aluminum

ENGINEERING ANALYSIS

Analysis Type	Result
FEA Analysis	40% reduction in stress concentration
Expected Life	Increase from 800hrs to 2,000+ hrs
Material Cost	Increase: \$3.50 per unit
Machining Time	Increase: 8 minutes per unit


AFFECTED DOCUMENTS

Document	Current Rev	New Rev
Drawing: DWG-OM-4472-C	Rev B	Rev C
Specification: SPEC-4472-HV	Rev A	Rev B
Work Instruction: WI-4472-MACH	Rev C	Rev D
Quality Plan: QP-4472	Rev B	Rev C

COST IMPACT

Item	Cost
Material cost increase (1,200 units)	\$4,200
Tooling modification	\$2,800
Additional machining time	\$1,920
Total cost impact	\$8,920

SCHEDULE IMPACT

- Tooling modification time: 5 days
- First article approval: 3 days
- Customer delivery impact:  No impact to customer delivery dates

APPROVAL WORKFLOW

Role	Approver	Status	Date
Design Engineer	T. Wilson	 Approved	1/16/2025
Manufacturing Engineer	S. Patel	 Approved	1/17/2025
Quality Manager	J. Kim	 Approved	1/17/2025
Program Manager	A. Rodriguez	 Approved	1/18/2025
Customer Approval	Caterpillar Inc.	 Pending	-

IMPLEMENTATION PLAN

1. 📄 Submit ECO to customer for approval (1/19/2025)
2. 🛠️ Modify tooling upon customer approval (5 days)
3. 🏭 Produce first article samples (2 days)
4. 📄 Submit first article to customer (3 days)
5. ✅ Implement on production upon approval

## EFFECTIVITY

- **Effective with:** Part Serial Number 2025-001201 and subsequent
  - **Existing inventory:** Use as-is with customer concession
  - **New production:** Incorporate all changes
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**ECO Status:** 🟡 Pending Customer Approval

**Customer Response Due:** January 30, 2025