

TRAINING MODULE

8D Problem Solving Report

Contain first. Root-cause second. Never the other way around.

A working module for engineers with 1–2 years on the floor. By the end you will be able to run all eight disciplines in order, and explain why D3's containment step exists before D4's root-cause work even starts.

Ford Motor Company TOPS (Team Oriented Problem Solving), Q-101 Standard, 1987

What You Will Be Able to Do After This Module

1 Explain how 8D differs from a Kaizen sheet — specifically, what D3 adds that Kaizen doesn't have.

2 Apply the trigger logic correctly: which defects earn an 8D, and which don't.

3 Run D0 through D8 in order on a real defect, without skipping the containment step.

4 Explain why D5's Permanent Corrective Action must be VERIFIED before D6 begins.

5 Recognize the two most common mistakes junior IEs make when they first write an 8D.

8D Is Kaizen, Plus a Containment Step

You've already run a 5-Whys chain in the Kaizen module. 8D reuses that exact skill — inside a stricter, defect-response structure:

KAIZEN SHEET

An improvement opportunity you found. No customer defect has necessarily occurred yet — you're being proactive.

8D REPORT

A defect has already happened — or a confirmed high risk exists. Before anyone even asks “why,” something has to stop the bleeding.

That extra urgency is exactly D3, Interim Containment — dated and verified BEFORE D4's root-cause work even begins. Kaizen has no equivalent step, because Kaizen doesn't assume something is actively escaping right now.

Two Clocks Running at Once, on Purpose

D0–D3 happen FAST, often same-day. D4 onward can take days or weeks. Both are correct — because they're solving different problems:

D0–D3

HOURS TO 1 DAY

Stop defective product from reaching the customer, right now — even before you know why it's happening.

D4–D5

DAYS

Find the actual root cause and choose a Permanent Corrective Action — verified, not assumed.

D6–D8

WEEKS

Implement for real, update every living document, check for the same risk elsewhere, close formally.

A containment fix (extra inspection, a sort, a temporary process change) is NEVER the Permanent Corrective Action — it's a bridge. Confusing the two is exactly what D5's verification step exists to prevent.

WHERE THIS METHOD COMES FROM

Built for a Line That Cannot Simply Stop

Ford developed 8D in 1987 for exactly the pressure a real assembly plant faces: a defect is escaping right now, and “we’ll know the root cause in two weeks” isn’t an acceptable answer to a customer or a downstream plant TODAY. The 8-discipline structure — now an industry standard well beyond Ford — forces an immediate, verified stopgap while the real investigation runs in parallel, never letting containment quietly become the permanent answer.

This tool inherits that same discipline, generated from data your other tools already produced.

FORD Q-101

*TOPS — Team Oriented
Problem Solving, 1987*

Assembly & Production Defects Only

IN SCOPE

Defects generated on YOUR assembly or production process — something your own station, method, or equipment caused.

OUT OF SCOPE

Supplier defects, component design issues, incoming material problems — different root-cause owners, different investigation entirely.

Same discipline as the Control Plan module's Quality boundary: this tool commits to what YOUR data can actually investigate, and stays out of an incoming-inspection or supplier-quality investigation it has no visibility into.

Nine Disciplines, D0 Through D8



Trigger Logic — Three Tiers of Confidence

PRIMARY

PFMEA row where AP = HIGH or MEDIUM — risk already confirmed by the PFMEA module.

SECONDARY

Kaizen row where ECRS = Eliminate or Rearrange — waste already confirmed by an IE observation.

PRIORITY

Station + Step matches BOTH sources — the highest-confidence trigger of all.

Our worked example — “Component missing or double-loaded” — IS a PRIORITY trigger: it's both a PFMEA AP=HIGH row (from the PFMEA module) AND a Kaizen finding at the exact same station and step (from the Kaizen module).

1

D0–D3

Symptom Through Containment

This block moves fast — often same day. Nobody waits for the root cause to stop the bleeding.

D3's containment is explicitly dated and verified BEFORE D4 opens.

D0–D3 Worked

D0 — Symptom

Missing connector detected at downstream test, Stn 4. 3 escapes this week.

D1 — Team

IE, Quality, Production, Materials Handling Lead — same 4-function CFT as the Judgement Review module.

D2 — Problem (5W2H)

What: missing connector. Where: Stn 4 test. When: this week. Who found it: test operator. How many: 3 units.

D3 — Containment

100% visual inspection added before shipment. Implemented same day. Verified effective by QA Lead.

2

D4–D5

Root Cause → Verified PCA

D4 reuses the SAME why-chain as the Kaizen module for this exact station — not re-derived from scratch.

PCA stays unverified — marked pending — until someone actually signs off. No silent auto-approval.

D4–D5 Worked

D4 — ROOT CAUSE [source: Kaizen why-chain]

Why 5 — Root Cause: No process ownership was assigned to trigger a kitting review when a BOM/variant changes.

D5 — PERMANENT CORRECTIVE ACTION (PCA)

Pre-kit connectors by size, plus kitting-review checklist item added to the engineering-change process — the same countermeasure the Kaizen module carried through.

PCA VERIFIED BY: — IE to verify before D6

PCA VERIFY DATE: — date pending

D6 literally cannot start honestly until these two fields are filled — that gate is what stops a hopeful fix from being mistaken for a verified one.

3

D6–D8

Implement Through Closure

D6 is where the loop closes back to every living document you've already met in this training series.

D7 asks a bigger question than D6: could this SAME root cause exist somewhere else on the line?

D6–D8 Worked

D6 — Implement & Validate

SOP Revised (Rev No. pending), PFMEA Rev AP recalculated, Control Plan updated if Special Characteristic.

D7 — Prevent Recurrence

Check every OTHER station using bulk-bin picking for the same EC-to-kitting ownership gap — systemic, not just local.

D8 — Formal Closure

Team recognition, closure status recorded — the case is done, traceably, not just abandoned.

D6's three updates are exactly the SOP, PFMEA, and Control Plan modules you've already trained on — 8D is the event that triggers all three to actually get revised.

Five Mistakes That Give Junior IEs Away



Skipping D3 and going straight to root-cause work — leaving product exposed while the investigation runs.



Treating the D3 containment action as if it were the Permanent Corrective Action — it's a bridge, not the fix.



Marking D6 complete while D5's PCA verification is still “pending” — that gate exists for a reason.



Opening an 8D for a supplier or incoming-material defect — outside this tool's declared scope.



Skipping D7 because D6 already “fixed it here” — the same root cause is often sitting at another station too.

What generate_8D.py Does For You

Pulls D2 through D7 content from tools you've already run — never re-derives what's already known.

1

Applies trigger logic automatically

Scans PFMEA and Kaizen outputs for PRIMARY, SECONDARY, and PRIORITY matches — the Slide 8 logic, run across the whole line.

2

Pulls D2/D4/D5 straight from Kaizen and PFMEA

Problem, why-chain, and recommended action carried forward — never contradicts what those modules already established.

3

D3 containment sourced from your industry library + SOP

A real defect-table lookup, not a generic placeholder.

4

Outputs one 8D file per case, plus a consolidated Tracker

8D_<StnNo>_<DefectClass>_<timestamp>.xlsx per case, and 8D_Tracker.xlsx rolling every open case up for review.

KEY TAKEAWAYS

Recap — Say This Back In Your Own Words

- 8D is Kaizen's 5-Whys engine, wrapped in a stricter defect-response discipline — D3 is the difference.
- Containment (D3) is dated and verified BEFORE root-cause work (D4) even starts. Never the reverse.
- A Permanent Corrective Action must be VERIFIED, not just proposed, before D6's implementation begins.
- D6 closes the loop back to SOP, PFMEA, and Control Plan — the same documents from earlier modules, now actually revised.

TALK IT THROUGH — 3 QUESTIONS FOR YOUR NEXT LINE WALK

1. Find an 8D on your line where D3 and the PCA look suspiciously similar — was the containment quietly treated as permanent?
2. Pick a closed 8D — did D6 actually trigger a revised SOP, PFMEA, and Control Plan, or just get marked “done”?
3. Has D7 ever been skipped on your line — and could that same root cause be sitting untouched at another station right now?