

# **IMPROVING THE REDUCTION PROCESS OF CRANKSHAFTS BY ELECTROLYTIC-PLASMA MODIFICATION**

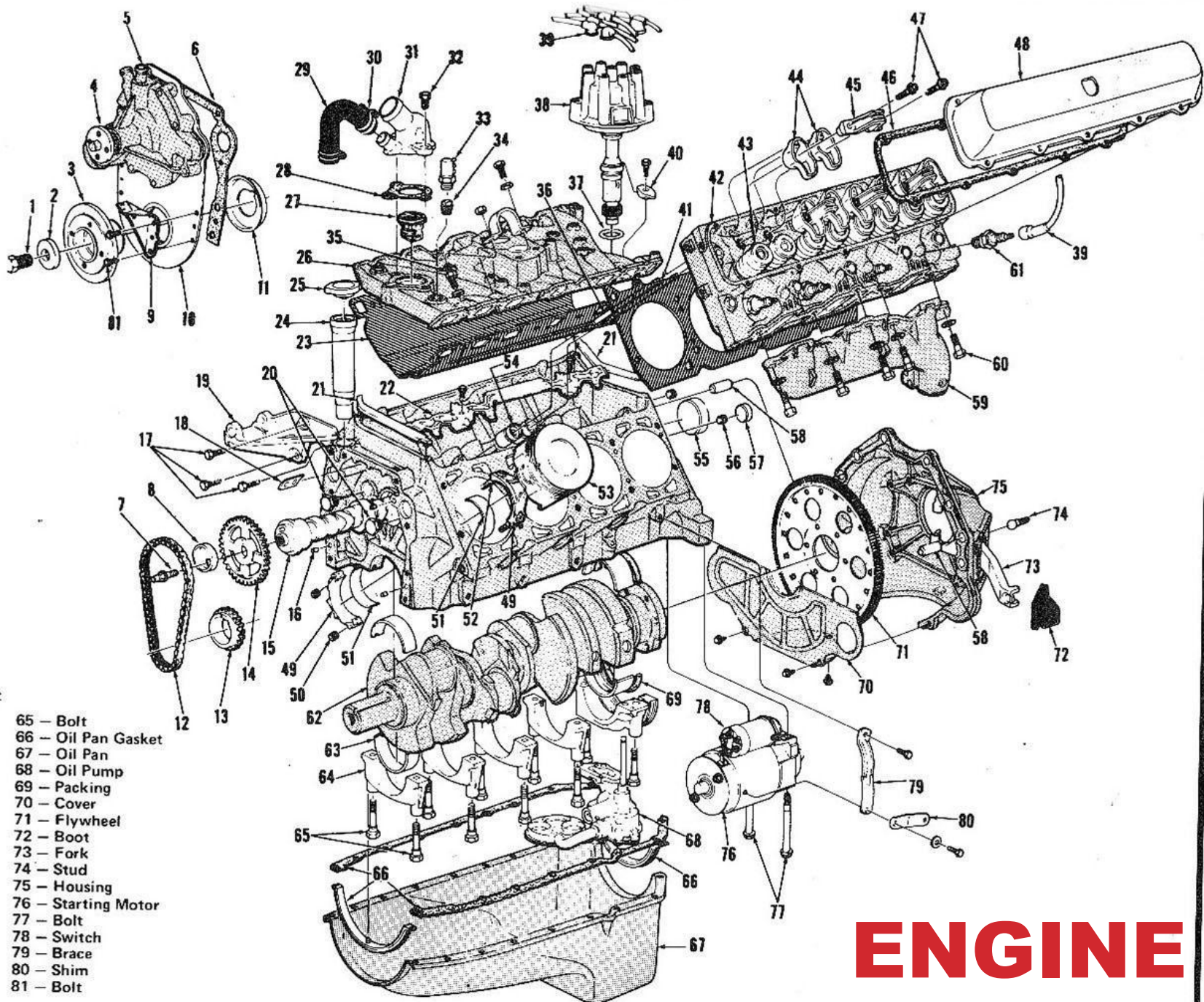
**GRIDUNOV IVAN**

**21-DTT-3A**



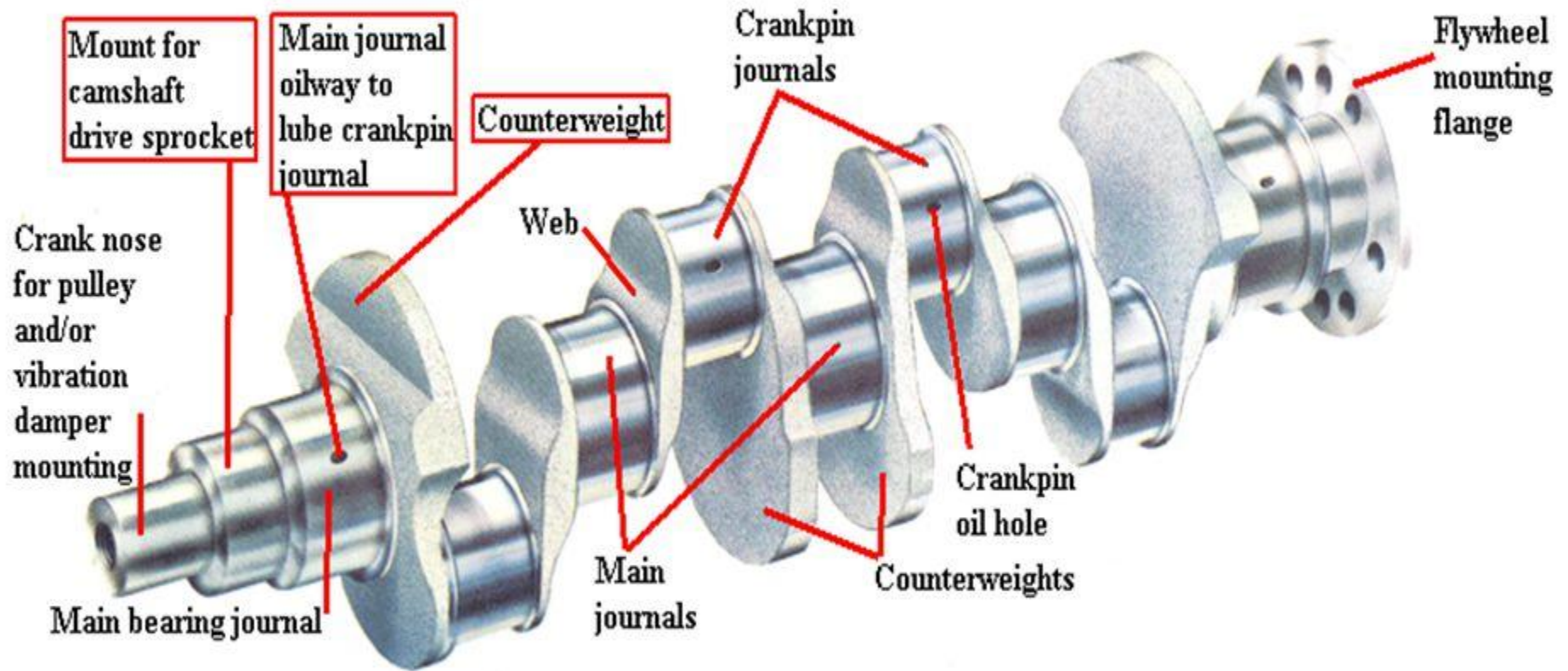
**DIFFICULT CONDITIONS**

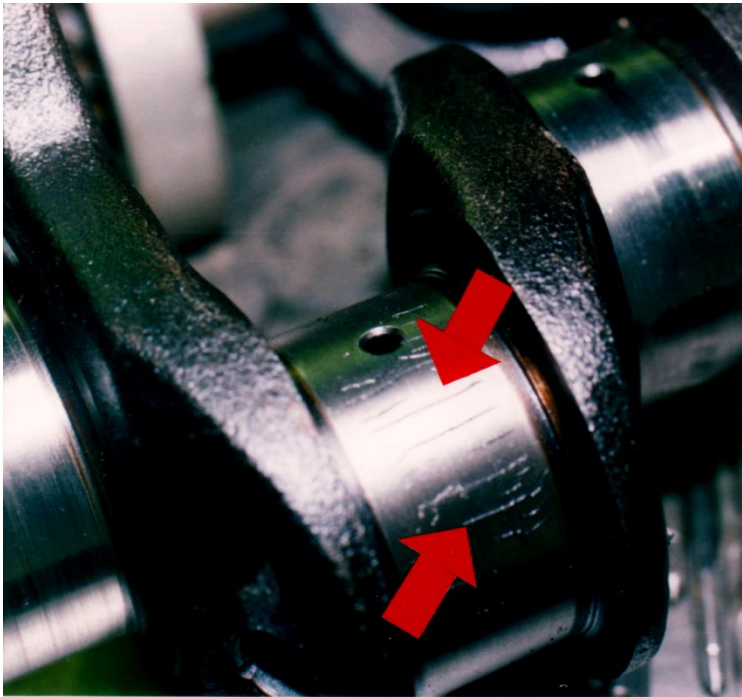
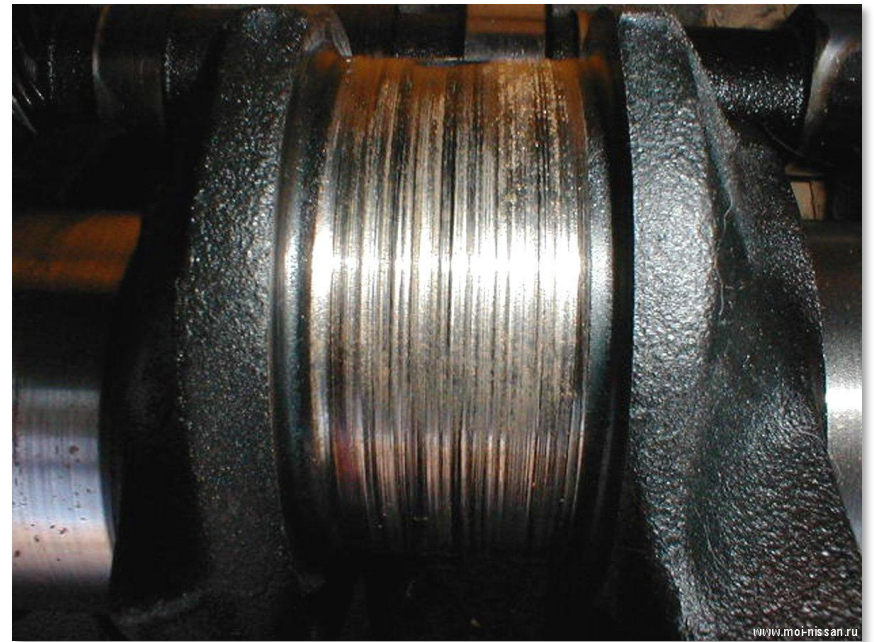
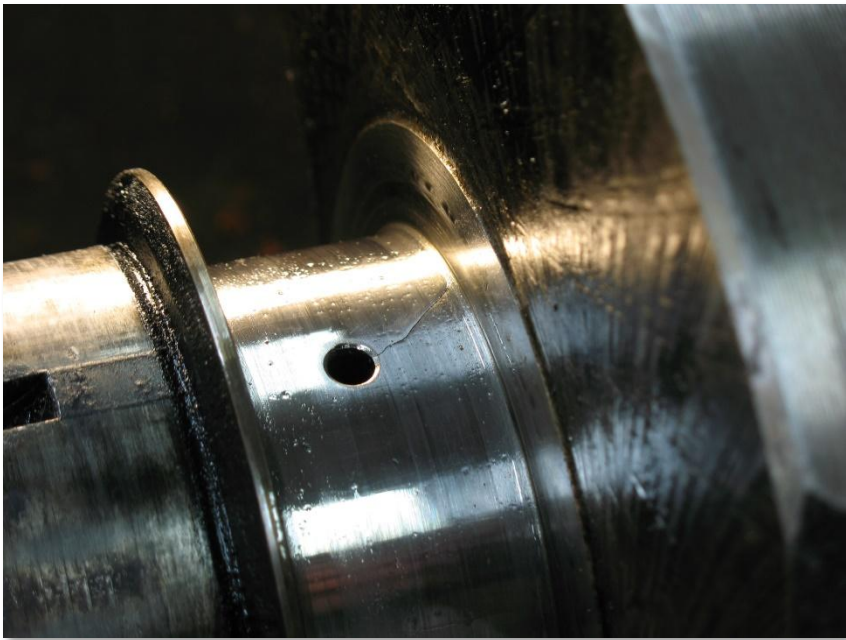
- 1 - Bolt
- 2 - Washer
- 3 - Balancer
- 4 - Hub
- 5 - Water Pump
- 6 - Gasket
- 7 - Bolt
- 8 - Eccentric
- 9 - Indicator
- 10 - Cover
- 11 - Slinger
- 12 - Timing Chain
- 13 - Gear, Crankshaft
- 14 - Gear, Camshaft
- 15 - Camshaft
- 16 - Pin
- 17 - Bolt
- 18 - Baffle
- 19 - Bracket
- 20 - Plug
- 21 - Seal
- 22 - Baffle
- 23 - Gasket
- 24 - Tube
- 25 - Cap
- 26 - Intake Manifold
- 27 - Thermostat
- 28 - Gasket
- 29 - Hose
- 30 - Clamp
- 31 - Outlet
- 32 - Bolt
- 33 - Switch
- 34 - Plug
- 35 - Bolt
- 36 - Push Rod
- 37 - Gasket
- 38 - Distributor
- 39 - Wire
- 40 - Clamp
- 41 - Head Gasket
- 42 - Head
- 43 - Spring
- 44 - Rocker Arm
- 45 - Push Rod Pivot
- 46 - Valve Cover Gasket
- 47 - Bolt
- 48 - Cover
- 49 - Connecting Rod
- 50 - Nut
- 51 - Bearing
- 52 - Bolt
- 53 - Piston & Pin
- 54 - Valve Lifter
- 55 - Plug
- 56 - Plug
- 57 - Plug
- 58 - Pin
- 59 - Exhaust Manifold
- 60 - Bolt
- 61 - Spark Plug
- 62 - Crankshaft
- 63 - Bearing
- 64 - Cap
- 65 - Bolt
- 66 - Oil Pan Gasket
- 67 - Oil Pan
- 68 - Oil Pump
- 69 - Packing
- 70 - Cover
- 71 - Flywheel
- 72 - Boot
- 73 - Fork
- 74 - Stud
- 75 - Housing
- 76 - Starting Motor
- 77 - Bolt
- 78 - Switch
- 79 - Brace
- 80 - Shim
- 81 - Bolt



**ENGINE**

# Crank Shaft







Grinding



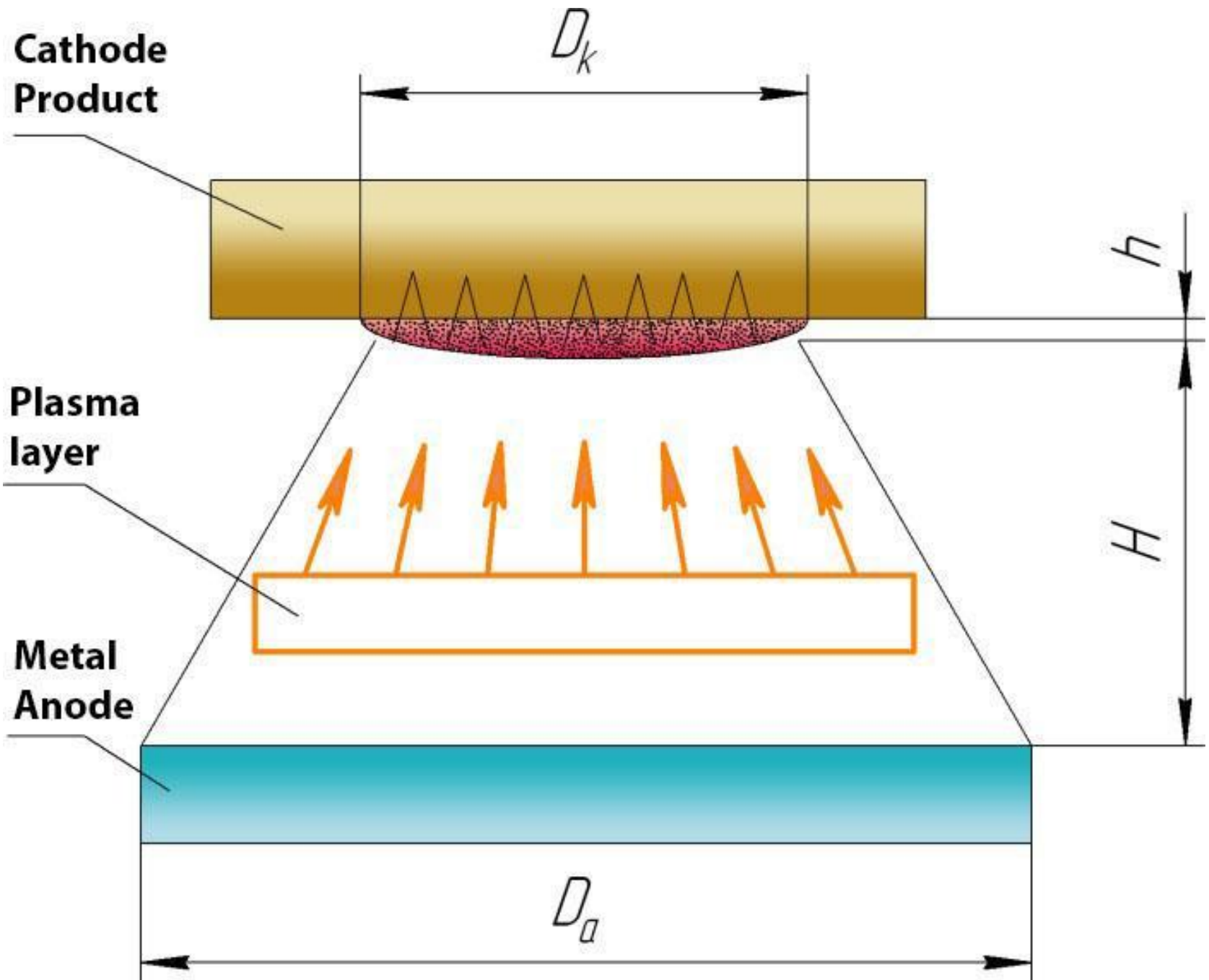
Surfacing

Hardening with high-frequency currents



Nitriding





**THANKS FOR  
WATCHING!**