

**X—TYPE MOTOR**  
**ASSEMBLY MANUAL**  
**MOTOR BY ADAM NUGENT**  
**ROSENERGETR**

- 1. X TYPE MOTOR FRAME FOR HEADBLOCKS**
  - a. MOTOR BLOCK LOWER FRAME BOTTOM HEADBLOCK FASTENED TO XTYPE MOTOR FRAME**
    - i. INSTALL OIL THROWER LINES**
    - ii. INSTALL LOWER CRANK SHAFT BEARING JOURNAL DUMBY FASTEN**
- 2. POWER TRAIN FROM REAR TO FRONT**
  - a. MAIN GENERATOR COUPLING**
    - i. TO REAR TURBO CHARGER FANS 1 AND 2**
      - 1. FASTENED TO REAR FLYWHEEL**
        - a. CRANK SHAFT DUMMY FASTEN WITH FRONT AND REAR UPPER CRANKSHAFT BEARING JOURNAL**
        - b. TO LOWER CRANKSHAFT BEARING JOURNALS**

- ii. FASTEN HARMONIC BALANCER PLATES TO CRANKSHAFT
  - iii. FASTEN FRONT FLYWHEEL
- 3. HEAD BLOCKS BOTTOM SIDE FLIP UPSIDE DOWN FOR ASSEMBLY
  - a. INSERT CYLINDER LINERS IN LEFT AND RIGHT BANK
  - b. FASTEN PISTON TO CONNECTION ROD
    - i. FASTEN PISTON RINGS
  - c. INSERT IN CYLINDER LINER
  - d. FEED VALVES THROW CYLINDER HEADER
    - i. SHARK BITE WATER HEADER AND CYLINDER LINER WATER JACKET LINEW
  - e. FASTEN CYLINDER HEADER TO CYLINDER LINER
  - f. FASTEN CYLINDER HEADER TO HEADBLOCK WITH CRAB PLATES
    - i. TIGHTEN CRAB BOLTS
- 4. OVERHEAD CYLINDER BLOCK
  - a. INSTALL CAMSHAFT BRIDGE
    - i. OIL LINE TO CAMSHAFTS END STUB
    - ii. TO CAMSHAFT BRIDGES
      - 1. OIL JUMPER TO VALVE BRIDGE
    - iii. INSTAL CAMSHAFT BRIDGE UPPER SHELL
  - b. INSTALL VAVLE BRIDGE
    - i. ROCKER ARM AND LASH ADJUSTER ASSEMBLY
      - 1. TO VALVE SPRINGS AND STEMS
        - a. CALIBRATE
  - c. (HEADER PARTS ARE IDENTICAL TO CUMMINS ENGINE 567)
  - d. SEND FUEL LINE TO FUEL INJECTOR

- e. MU FUEL INJECTOR TO HEADER
  - f. FUEL INJECTOR TO SPRING LOAD LINKAGE
  - g. TO THROTTLE CONTROL LINKAGE
    - i. TO GOVERNOR
    - ii. TO FUEL PATH CRANK CASE WEB REAR ENGINE
- 5. FRONT TO REAR ENGINE PLATE HEAD BLOCK**
- a. HEADBLOCK
    - i. CAMSHAFT MOUNTED ON HEADBLOCK CAMSHAFT END STUB AND FRONT STUB
    - ii. FASTENED TO CAMSHAFT BRIDGES WITH UPPER CUPS.
    - iii. DAMPER FASTENED TO CAMSHAFT FRONT
      - 1. HEADBLOCK TURBOCHARGER FASTEND TO DAMPER
        - a. AIR DUCTED TO LEFT AND RIGHTSIDE OF HEAD BLOCK AIR FLOW CHANNEL
        - b. TURBOCHARGER FASTEND TO SERVER MOTOR
        - c. AIR FLOWS THROUGH AIR FILTER
- 6. TURBOCHARGERS AIR FLOW WALLS EACH HEADBLOCK LEFT AND RIGHT FROM FRONT TURBO CHARGE TO REAR FAN (BEFORE FANS FUEL AND OIL PATH WEB CASE**
- a. BLEEDS TO FAN 1 AND FAN 2 FASTENED TO CRANKSHAFT
  - b. PASSAGE TO FAN 2 EXHAUSTED THROUGH UPPER EXHAUST PIPES
- 7. NEXT TURN HEADBLOCK RIGHT SIDE UP (SO OIL PAN ON THE BOTTOM)**
- a. INSERT OIL COOLER IN OIL PAN

- b. INSERT DRAIN
  - c. INSERT OIL PAN SUMP PUMP
  - 8. OIL PATH
    - a. FLYWHEEL
    - b. TO SCAVENGER OIL PUMP HOUSING
      - i. MESH FLYWHEEL WITH OIL PUMP DAMPER
        - 1. SCAVENGER PUMP
          - a. OIL LINE 1 TO OIL PAN
            - i. OIL PAN SUMP PAN
            - ii. OIL PUMP SIGHT AND ALARM
          - b. OIL LINE 2 PUMP SIGHT AND ALARM
          - c. OIL TANK TO OIL PUMP TO OIL LINE 1
          - d. OIL PUMP SIGHT AND ALARM TO REAR OIL PATH CRANKCASE WEB PRESSURE PLATE
        - ii. PRESSURE PLATE TO OIL THROWER
          - 1. BACK TO FLYWHEEL
      - c. SCAVENGER OIL PUMP HOUSING
        - i. TO GOVERNOR WORKAROUND
        - ii. OIL BY PASS REGULATOR
9. FASTEN UPPER CRANKSHAFT BEARING JOURNALS
  - a. INSTALL FRONT LEFT BANK HEADBLOCK
  - b. INSTALL CYLINDER LINER AND PISTON CONNECTION RODS
  - c. FASTEN THE THREE CONNECTION RODS TO CRANKSHAFT
  - d. REPEAT CYLINDER HEADER AND HEADBLOCK ASSEMBLY DIRECTION

- 10. MOUNT WATER HOUSING TO RIGHT OF FRONT FACE ENGINE AROUND FLYWHEEL HOUSING**
  - a. FASTEN DAMPER TO WATER PUMP RIGHT BANK**
  - b. CONNECT UPPER AND BOTTOM WATER LINES WITH SHARK BITE TO CYLINDER LINER AND HEADER**
  - c. WATER HOUSING TO THERMOSTAT**
  - d. BOTTOM LEFT BANK TO WATER LINER CLYNDER HEADER AND CLYNDER HEADER WITH SHARK BITE TO WATER HOUSING**
    - i. LAST AFTER THE LAST HEADBLOCK(FRONT FACING ENGINE TOP LEFT) IS INSTALLED WITH CLYNDER LINER AND CLYNDER HEADER CONNECT WATER LINE TO WATER HOUSING**
- 11. TOP LEFT HEAD BLOCK**
  - a. CYLINDER LINER**
  - b. INSERT PISTON WITH PISTON RINGS WITH CONNECTION RODS THROUGH CYLINDER LINER**
  - c. FASTEN CONNECTION ROD THROUGH (CONNECTION ROD HOLES AND PLUG)**
  - d. REPEAT OVERHEAD CYLINDER BLOCK AND ACCESSORIES ASSEMBLY**
- 12. FUEL PATH**
  - a. FUEL SOLENOID CIRCUIT**
  - b. FUEL LIMITER**
  - c. FUEL HOSES (4)**
  - d. TO BALL VALVE (ONE FOR EACH)**
  - e. TO GOVERNOR ALL BANKS ACCUMULATOR PISTON**
  - f. TO FUEL LINES**
    - i. SENDING**

- ii. RETURNING
  - iii. CRANKWEB CASE FUEL PATH
- g. LEFT TOP BANK FUEL PUMP WITH
- h. OVERLOAD SHUT OFF (FUEL EMERGENCY PUMP AND ALARM)
  - i. FUEL LINES SENDING AND RETURNING
- 13. OVERSPEED SHUT OFF
  - a. SWITCH PUMP CIRCUIT
  - b. FLYWEIGHT ON CAMSHAFT WITH SPRING
- 14. WHEN ALL DAMPERS ARE INSTALLED INSTALL BELT AND TIGHTEN
- 15. OIL PATH FROM FLYWHEEL HOUSING
  - a. TO WORK AROUND GOVERNOR
    - i. FLOAT 1
    - ii. FLOAT 2 (LUBE OIL PRESSURE RELIEF VALVE)
    - iii. AROUND GOVERNOR SHAFT PATH
- 16. THROTTLE LINKAGE TO POWER PISTON
  - a. TO ACCUMULATOR PISTON FUEL PATH
  - b. TO GOVERNOR FUEL HOUSING LINES MEET ROTARY CHECK VALVES
  - c. TO GOVERNOR THROTTLE SHAFT
- 17. GOVERNOR SHAFT
  - a. FASTENED TO GOVERNOR CENTRIFUGAL SPRINGS
    - i. TO FLYWEIGHTS
    - ii. TO PRESSURE REGULATOR R
    - iii. PASSAGE FROM UPPER AND LOWER AIR WALLS IN HEAD BLOCK