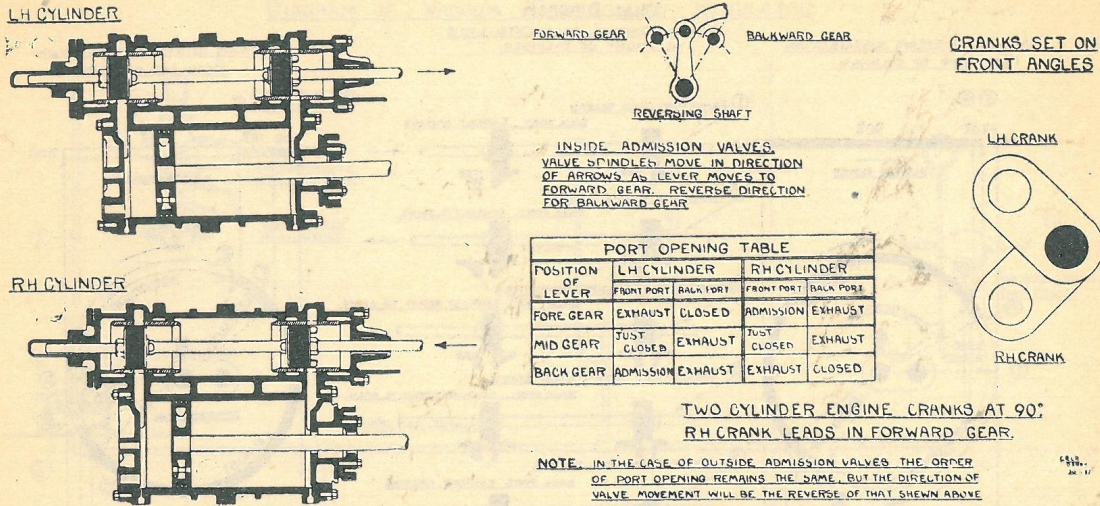


# ENGINEMEN'S M.I.C. MOVEMENT



THE testing of valves and pistons by front angles settings of the cranks is sometimes preferred, and this method is here described.

To test both or all cylinders right through by this method, however, the engine must be moved half a turn after the first test in order to bring the cranks on to the two back angles where the valves and pistons will be tested from the back.

It is essential that the cranks should be accurately set on the angles, because in mid-gear the steam edges of valves will just cover the two front or back ports, according to whether the front or back angles are being used, and, therefore, a small error in setting may give misleading results. In engines with two inside cylinders an accurate setting may be obtained by stopping the two crossheads dead level at the front or back of the slide bars, but if the engine has two outside cylinders only, some difficulty may be experienced in stopping just right because it is impossible to see both crossheads simultaneously.

For a two-cylinder engine, R.H. crank leading, the test is as follows: In mid-gear both valves will be in line, the front steam edges in each case just covering the front cylinder ports, whilst the two back cylinder ports will be open to exhaust. Moving the lever into forward gear causes the valves to move in opposite directions so that the L.H. valve will open the front port to exhaust and will close the back port completely, whilst the R.H. valve will open the front port to admission and the back port to exhaust.

As the lever is moved into back gear the valve movements are reversed, the L.H. valve then opening the front port to steam and the back port to exhaust whilst the R.H. valve will open the front port to exhaust and will close the back port. Similar results will be obtained whether the valves are of outside or inside admission.

To carry out a test using this setting, apply the brake, open the cylinder taps, and open the regulator slightly with the lever in mid-gear to test both valves for tightness. If both valves are in order there should be no blow from any of the cylinder taps or from the chimney, though if a steam chest tap is fitted there will, of course, be a continuous blow from this the whole time the regulator is open.

In forward gear steam should blow from the right front tap only, whilst in back gear steam should blow from the L.H. front tap only, but these indications will be modified if defects exist as outlined below:—

(1) Steam blows from R.H. front and back cylinder taps accompanied by blow from the chimney in forward gear.

*Cause.* R.H. piston leaking past.

(2) Steam blows from R.H. front cylinder tap with or without wisps of steam from R.H. back cock, and a blow is heard up chimney in forward gear.

*Cause.* R.H. front port bar defective.

(3) Steam from either or both of front cylinder taps with lever in mid-gear.

*Cause.* Broken front lap on either or both valves (or engine not accurately set).

(4) Steam from R.H. back cylinder tap with lever in back gear.

*Cause.* Defect on back lap of R.H. valve.

(5) Steam from L.H. back cylinder tap with lever in forward gear.

*Cause.* Defect on back lap of L.H. valve.

(6) Steam blows from L.H. front and back cylinder taps accompanied by a blow from the chimney with lever in back gear.

*Cause.* L.H. piston blowing through.

(7) Steam blows from L.H. front tap with or without wisps of steam from L.H. back tap accompanied by a blow from chimney with lever in back gear.

*Cause.* L.H. front port bar defective.

(8) A continuous blow from the chimney in all positions of the reversing lever but accompanied by wisps of steam from the R.H. or L.H. back cylinder taps in mid-gear will indicate the R.H. or L.H. valve is defective, and is blowing straight through to exhaust.

For a further test the engine may be moved half a turn and reset with the cranks on the two back angles when the R.H. piston will be tested from the back in forward gear and the L.H. piston from the back in backward gear, the back taps and port bars will be tested in corresponding manner to that used for the fronts.