

LOCOMOTIVE VALVES

OSCILLATING CYLINDER

SLIDE VALVE

PISTON VALVE

STEPHENSON

WALSCHAERTS

RUBY

HOW IT WORKS

STEAM PRESSURE IS GENERATED BY THE BOILER

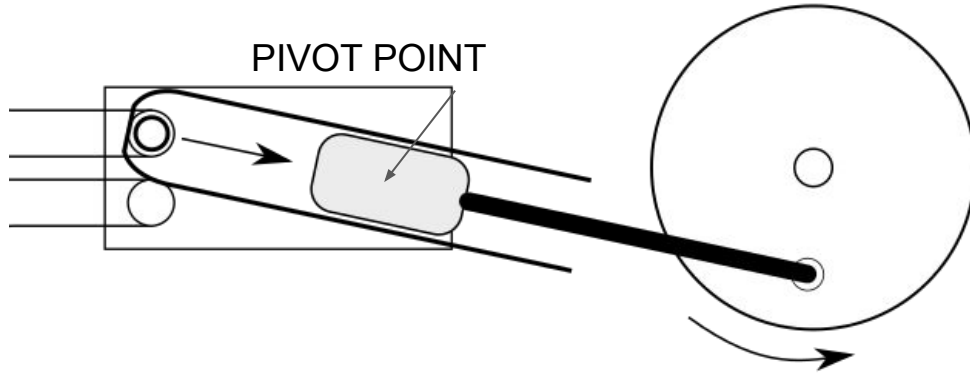
STEAM IS PIPED TO THE VALVE BODY WHERE THE SLIDE OR PISTON VALVE RESIDES

THE VALVE IS CONNECTED TO A ROD WHICH IS MOVED BY AN ECCENTRIC OR ECCENTRIC LEVER CONNECTED TO THE AXLE OR WHEEL

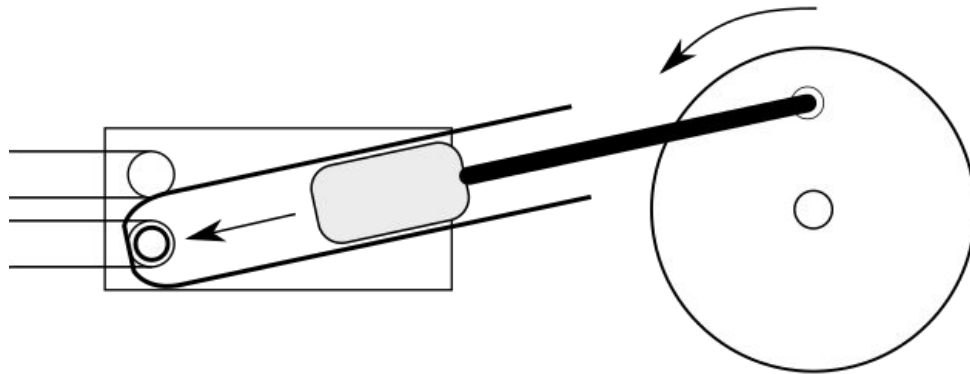
THE ECCENTRICS ARE 90 DEGREES OUT OF PHASE WITH THE CYLINDER STROKE WHICH CAUSES THEM TO OPEN AT OR NEAR THE BEGINNING OF EACH STROKE AND REACH FULL OPEN AT MID STROKE

OSCILLATING CYLINDER

Steam In



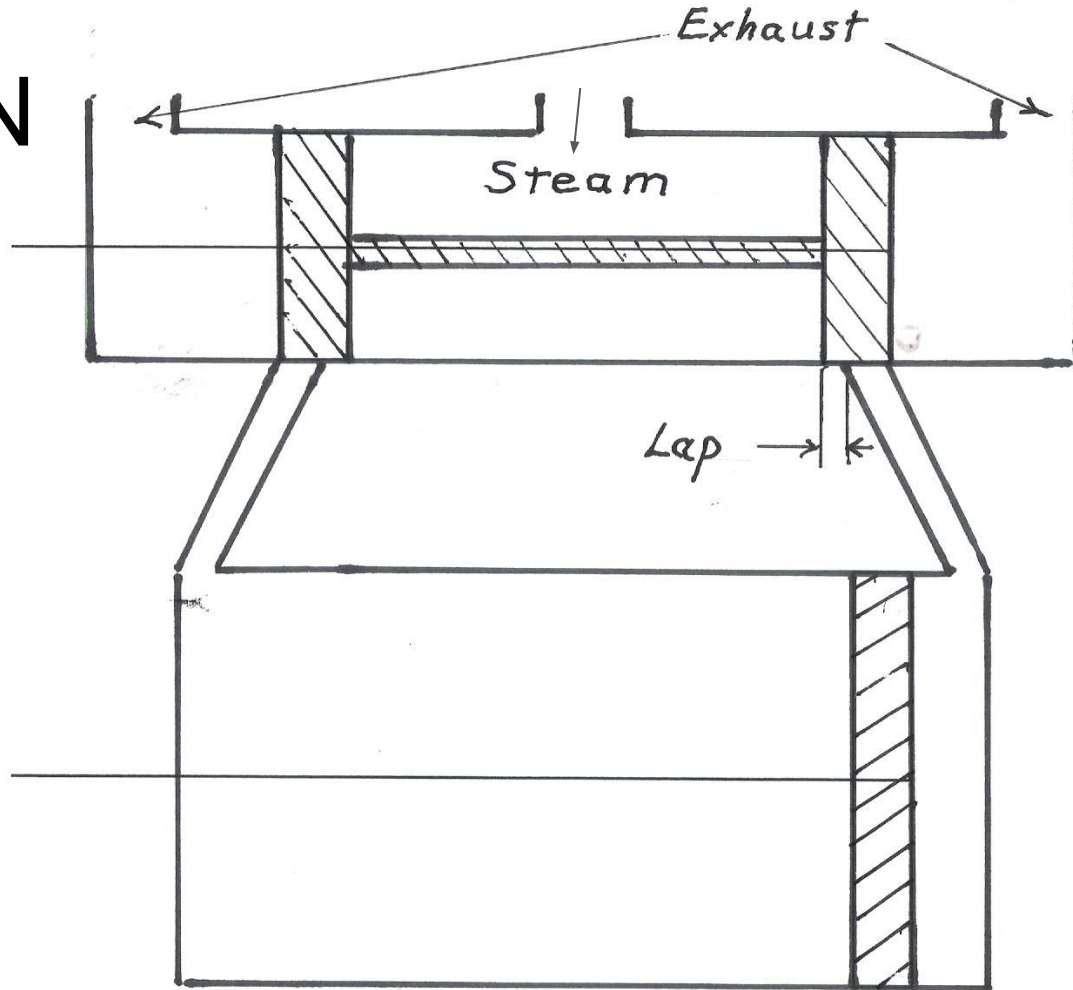
CAN REQUIRE HAND
START



REQUIRES
FLYWHEEL

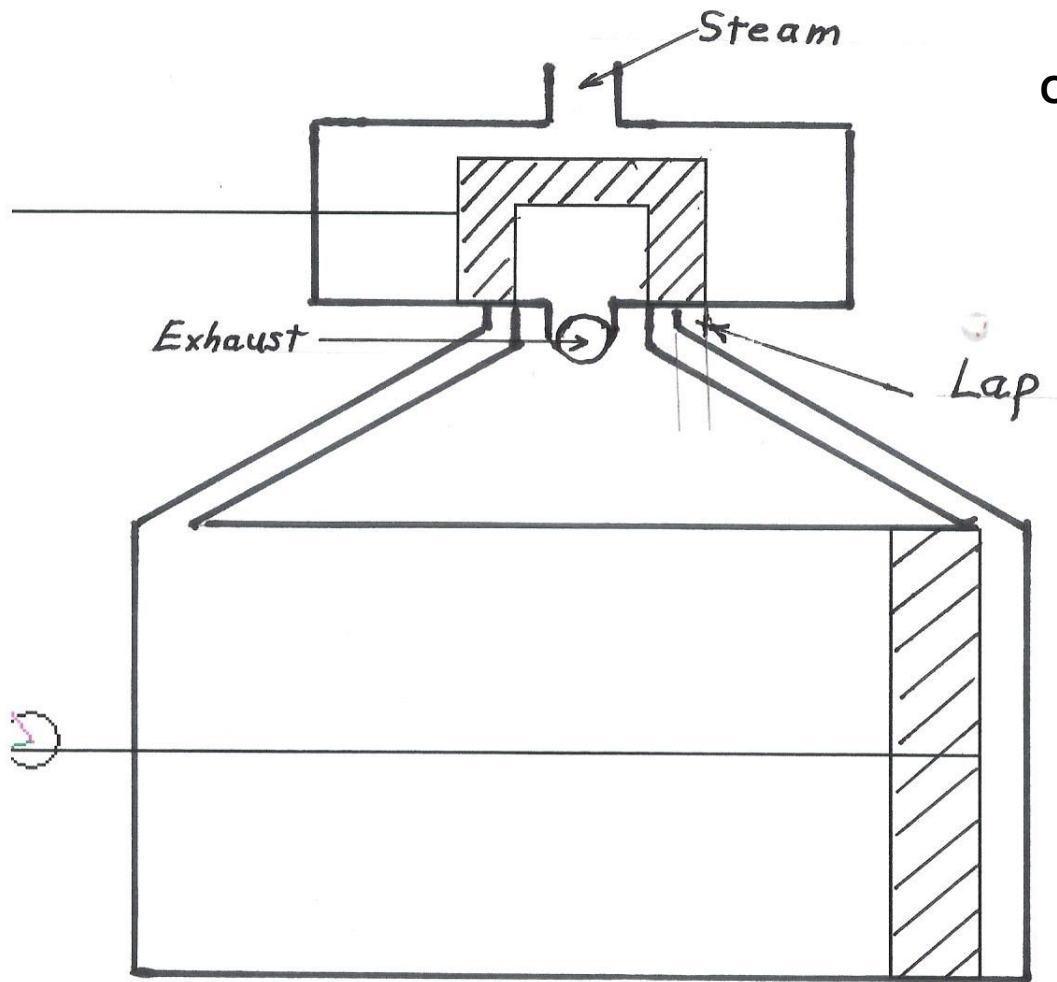
Exhaust

PISTON
VALVE



INSIDE OR OUTSIDE
ADMISSION

SLIDE VALVE



OUTSIDE ADMISSION

SLIDE OR "D" VALVE LAP

VALVE GEARING: SIMPLE REVERSING MOTIONS

Cross leakage



SIMPLE VALVE
NO LAP.

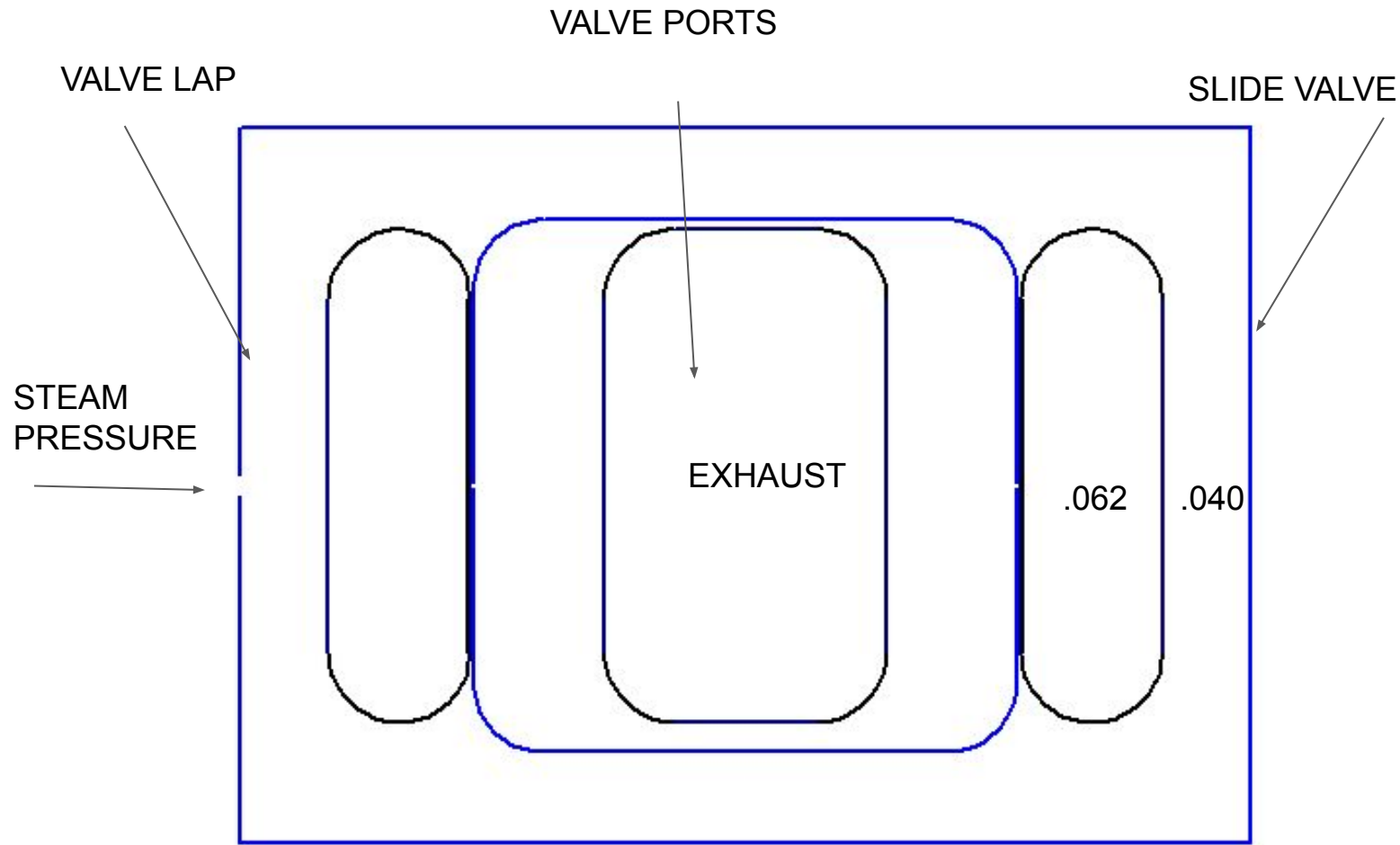


VALVE WITH
SMALL LAP.

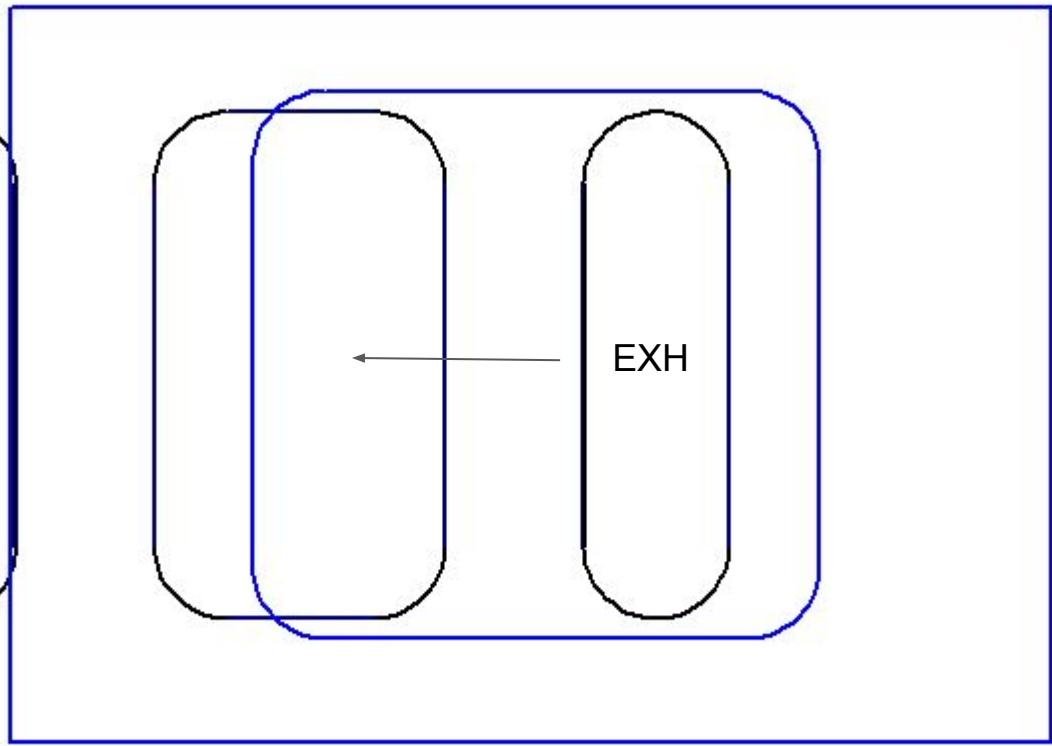
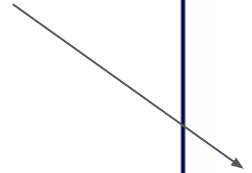


NORMAL VALVE

Fig. 148.—Simple slide valve without lap permits direct cross-leakage to the exhaust port. A small amount of lap prevents this leakage,

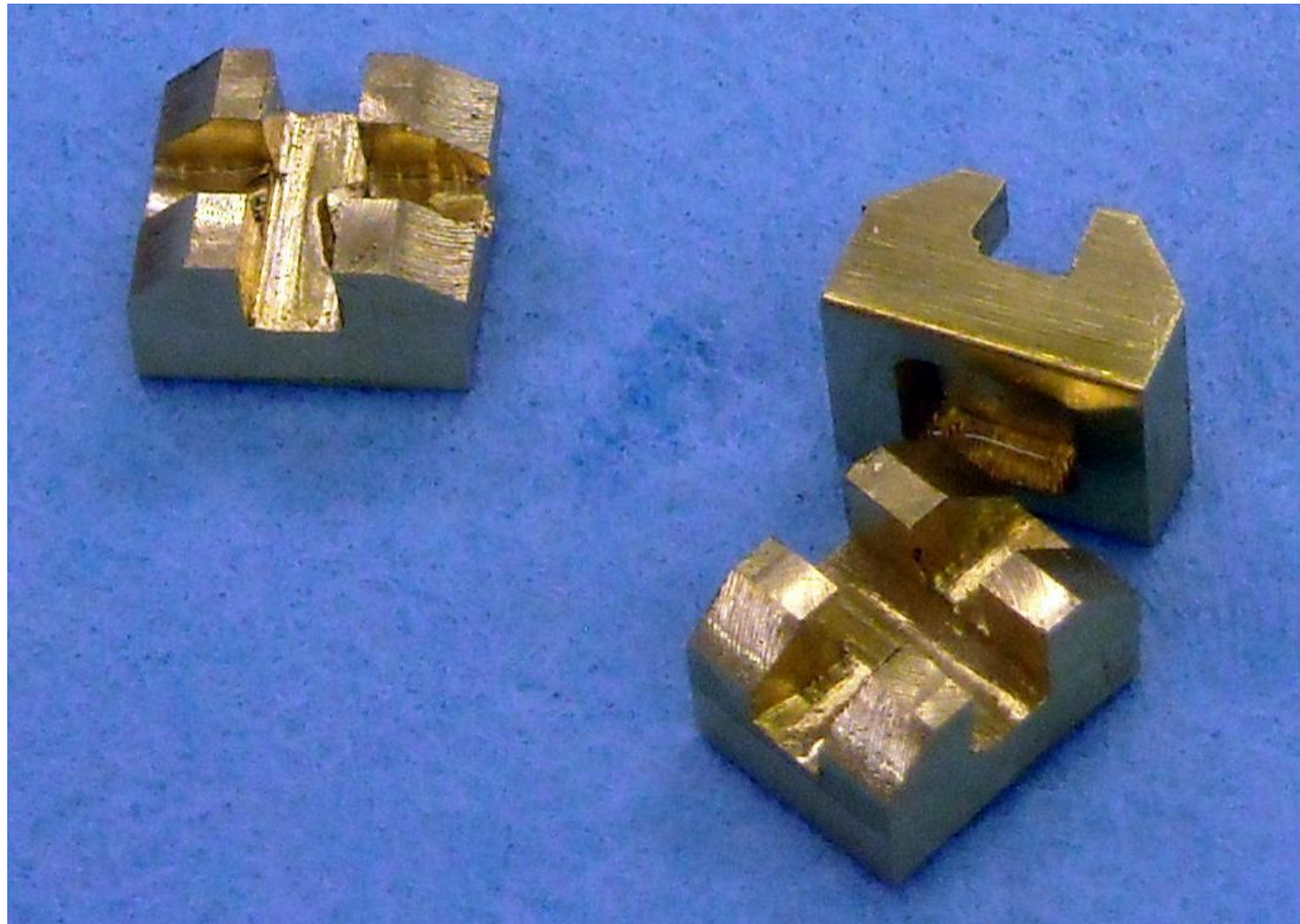


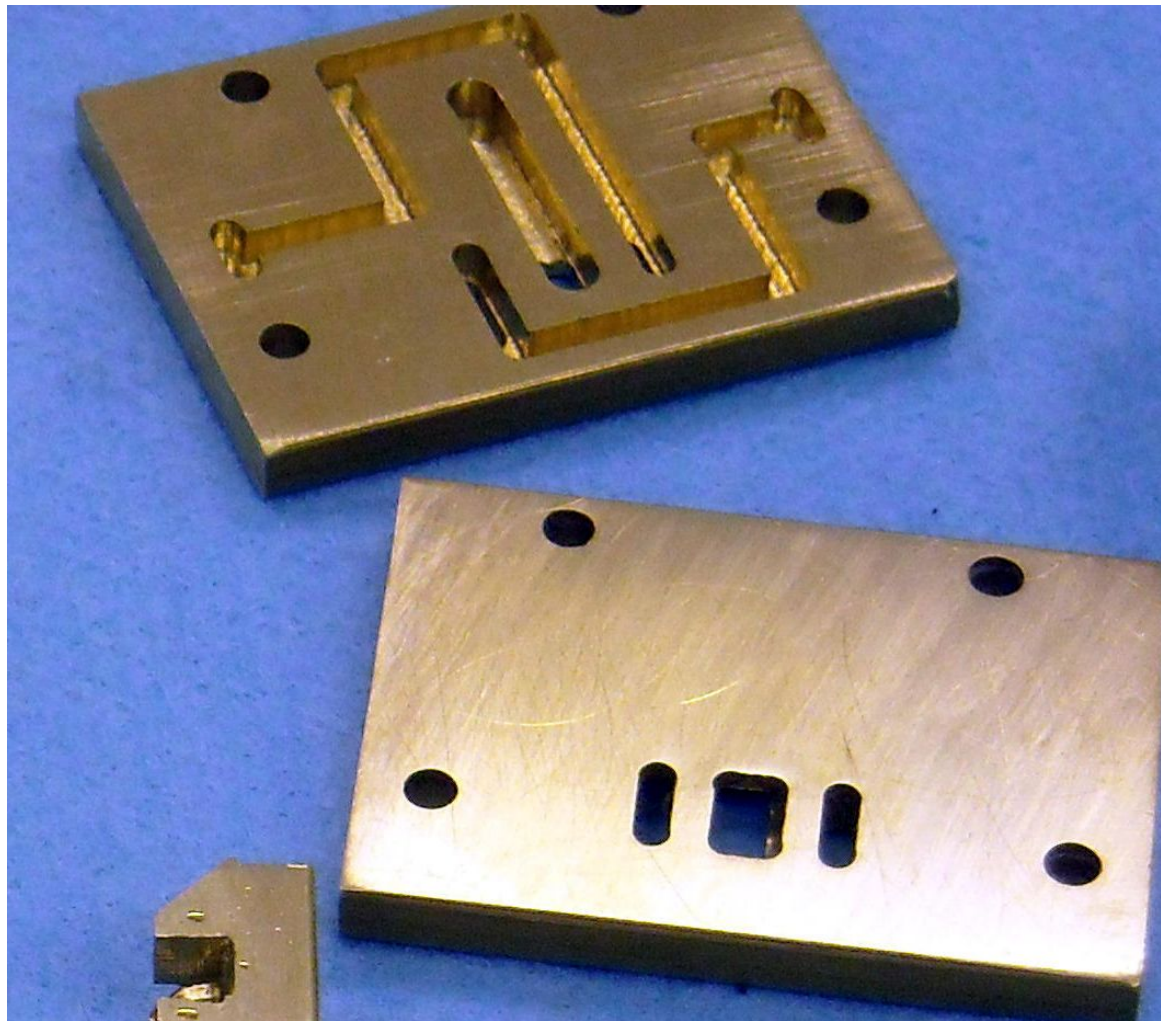
STEAM



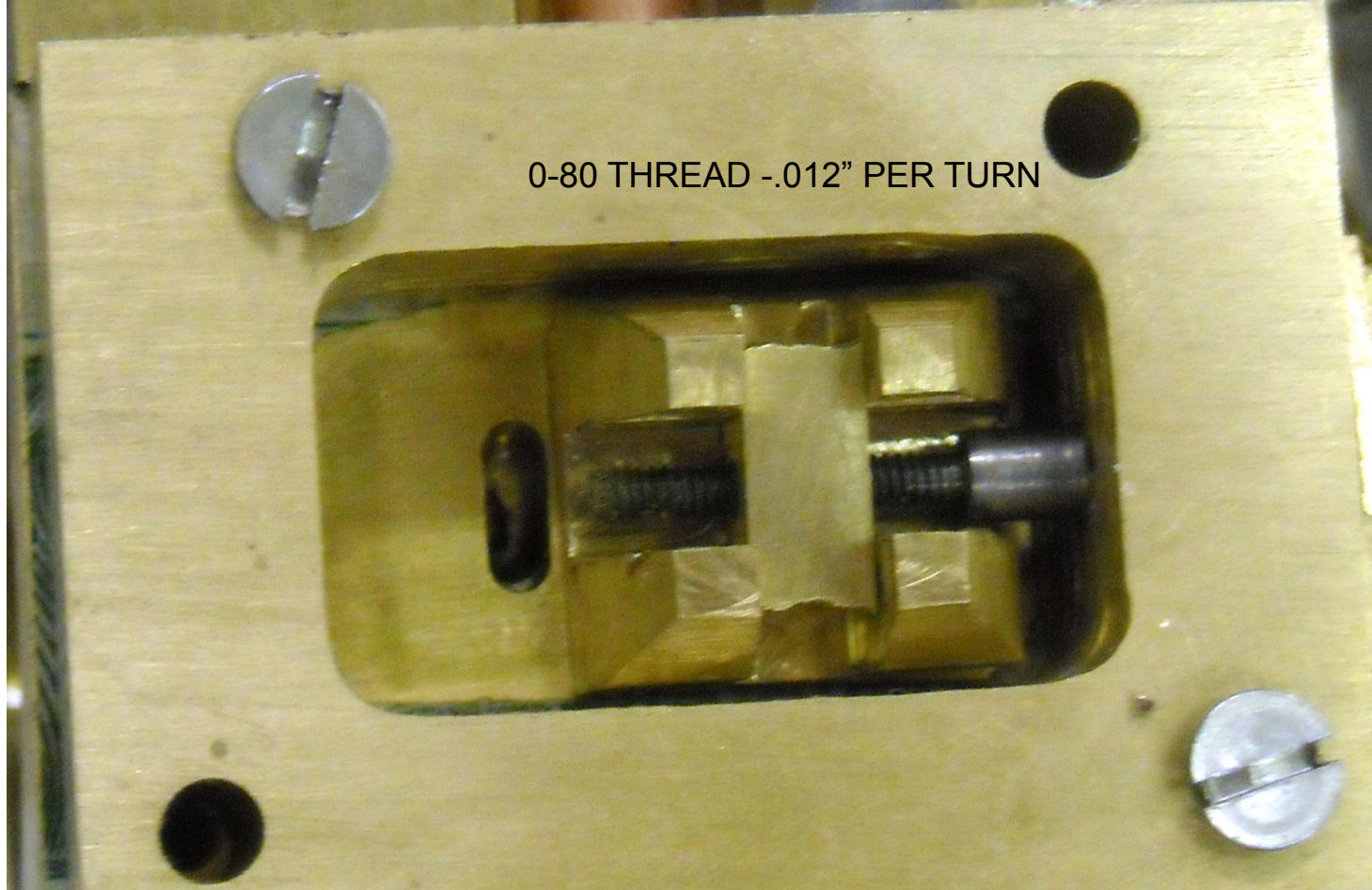
EXH







SLIDE VALVE IN FULL OPEN POSITION



0-80 THREAD -.012" PER TURN

SET SCREW ADJUSTMENT

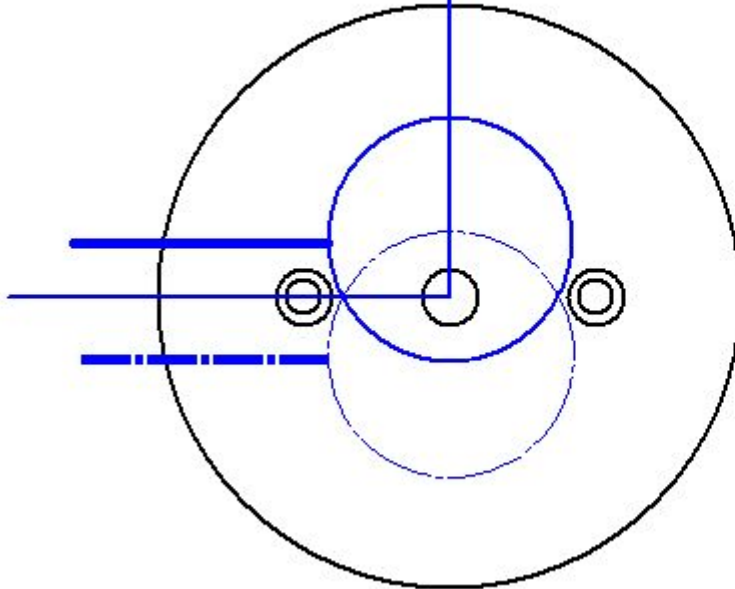


VALVE MOVEMENT AT THE AXLE OR WHEEL

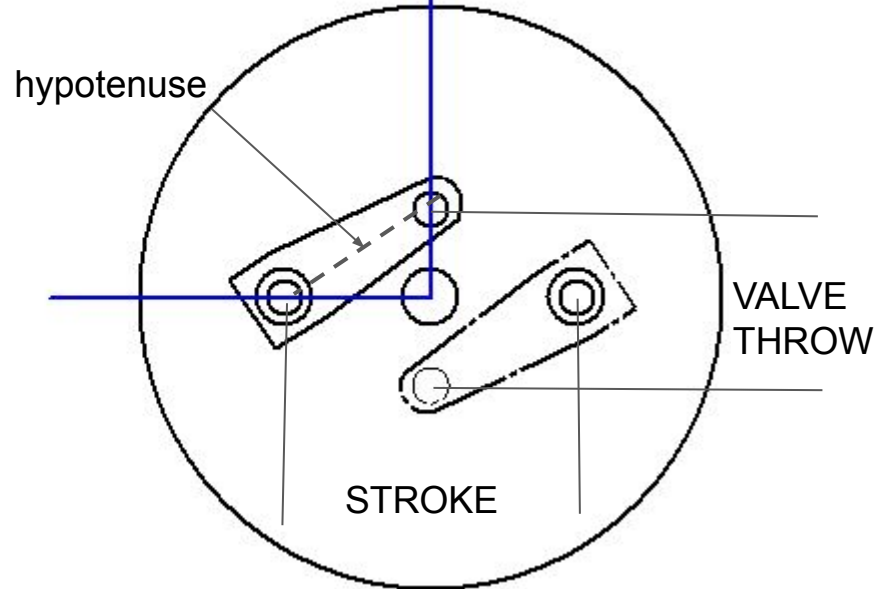
INSIDE (ECCENTRIC)

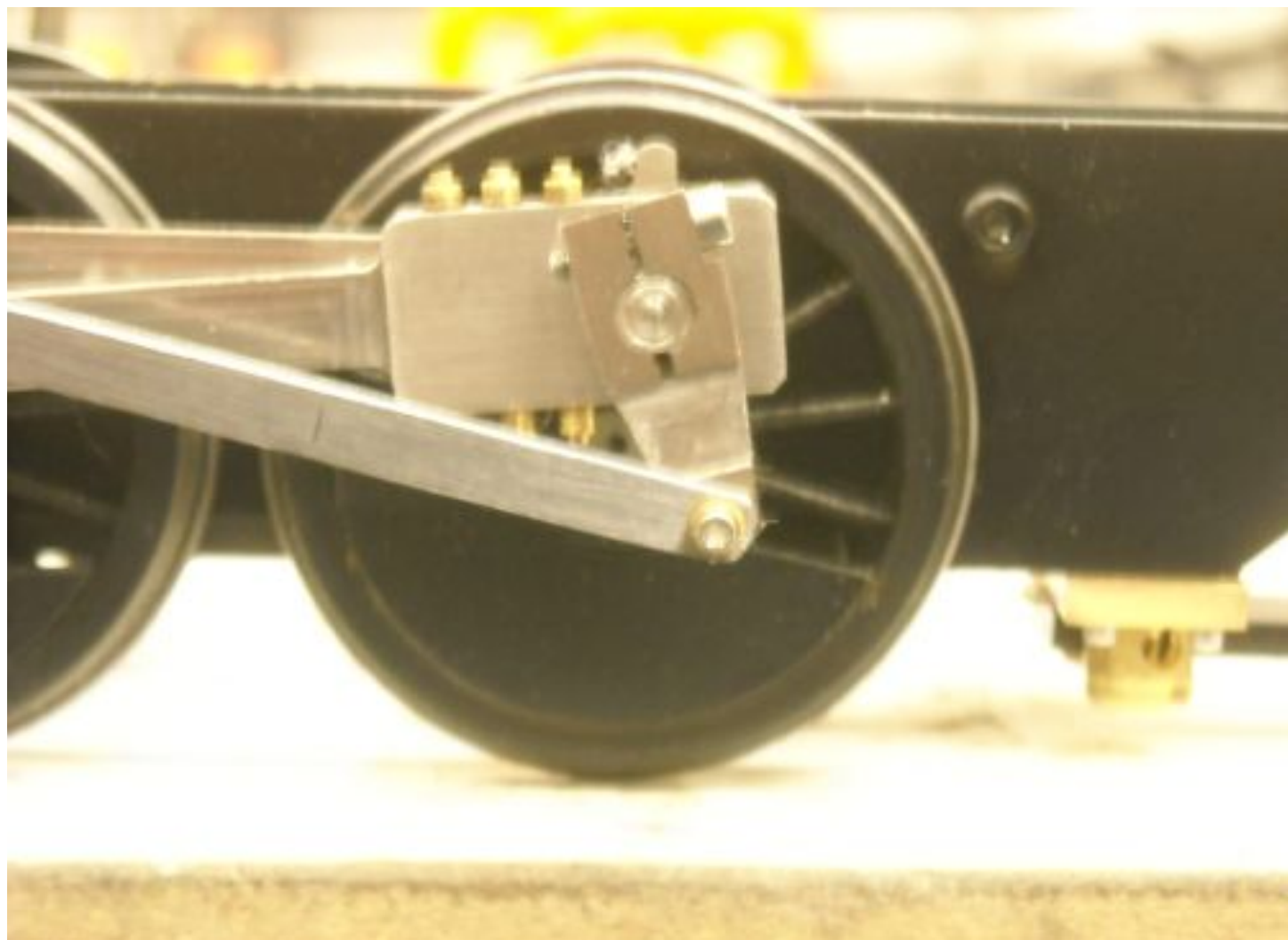
OUTSIDE (RETURN CRANK)

ADJUSTABLE TIMING

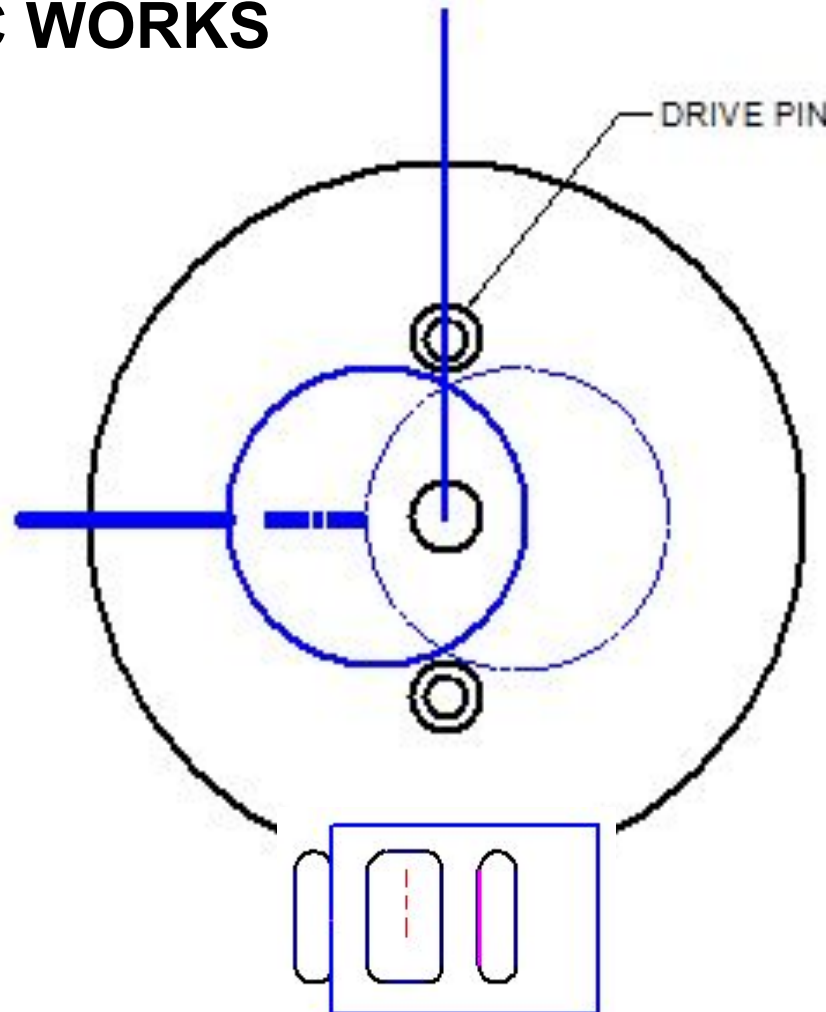
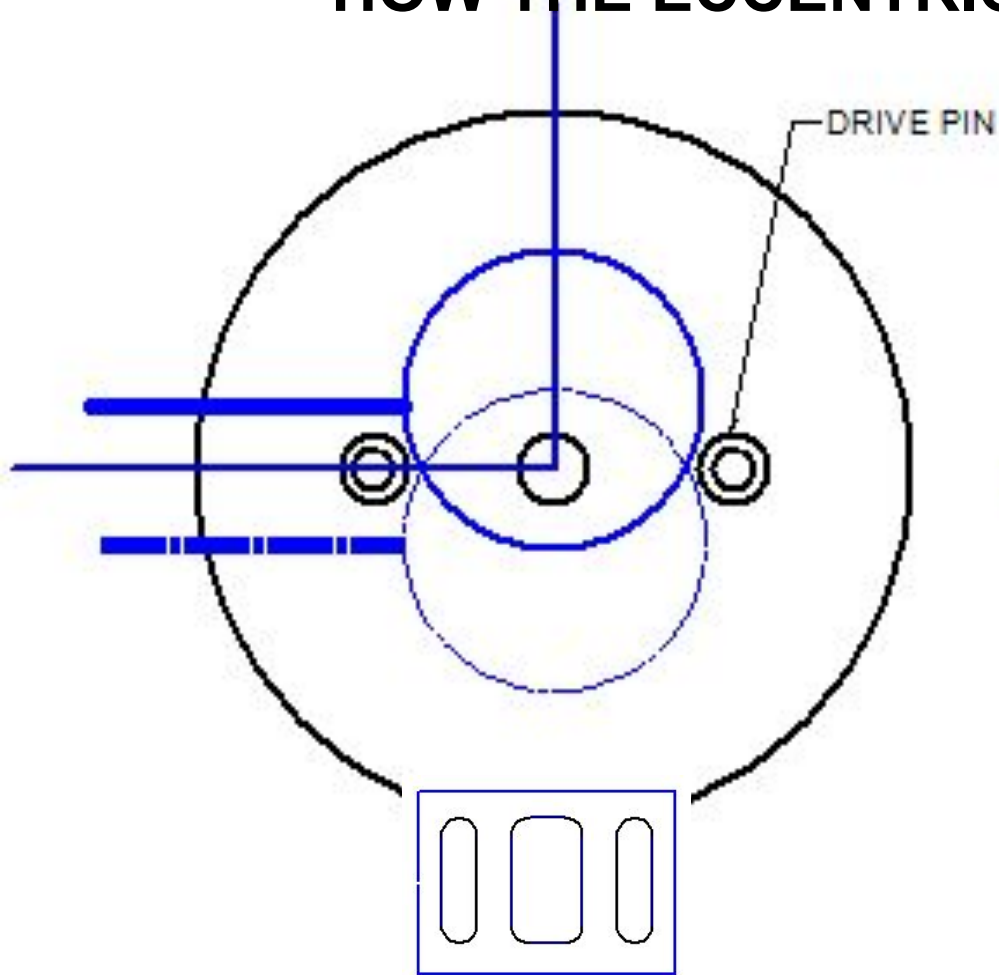


FIXED TIMING



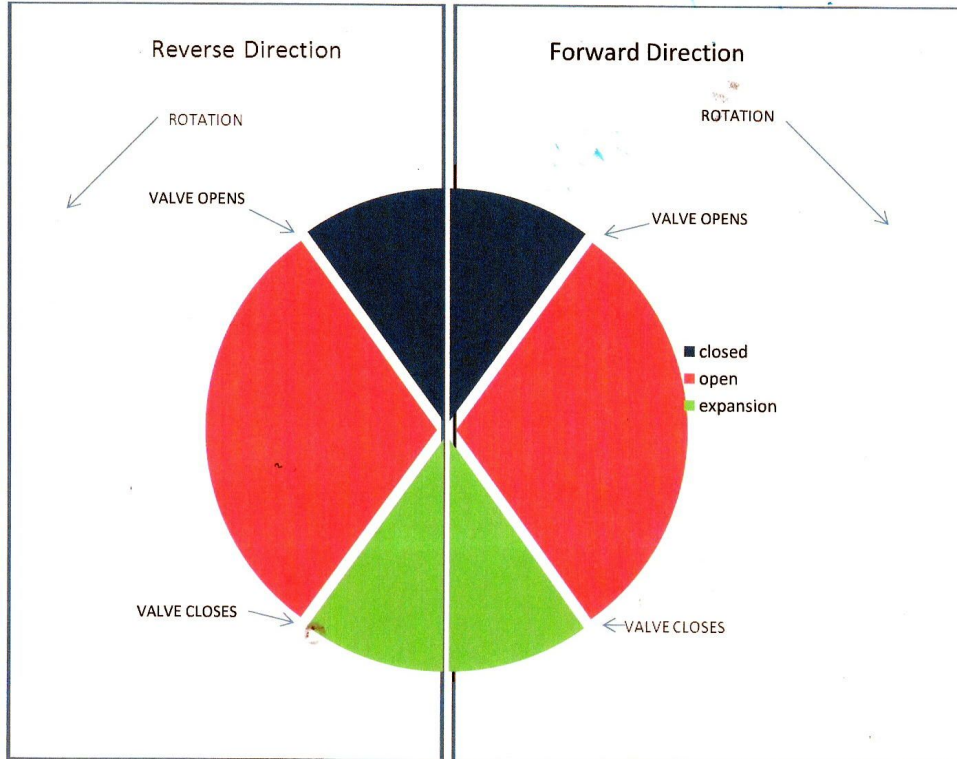


HOW THE ECCENTRIC WORKS

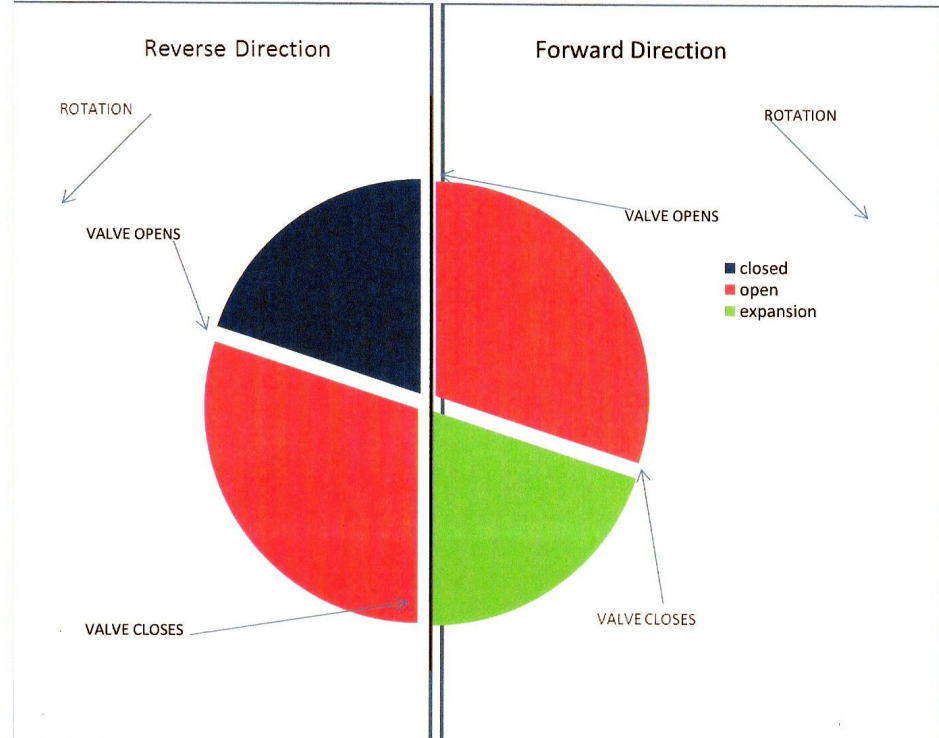




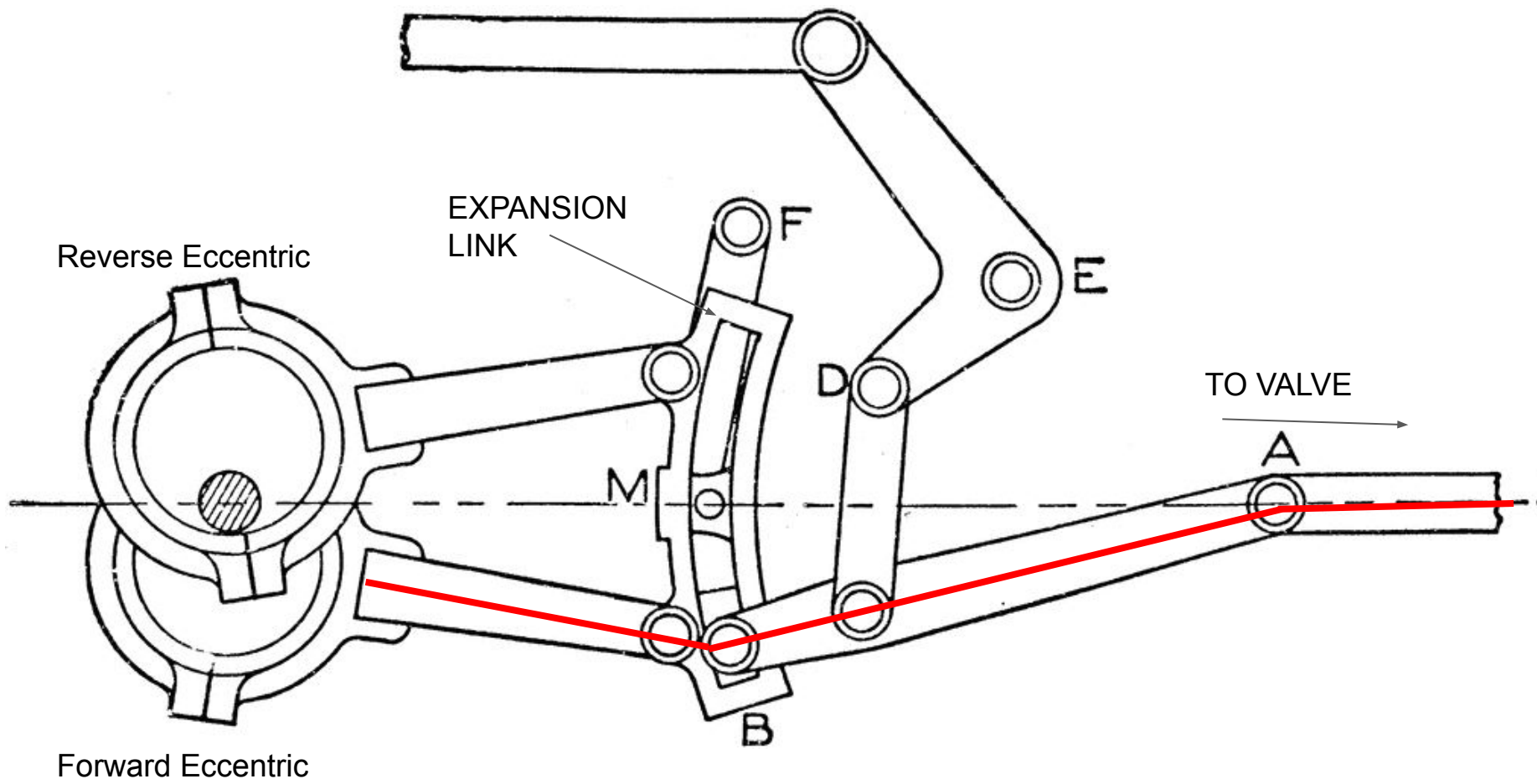
STOCK RUBY – PORT SIZE .053

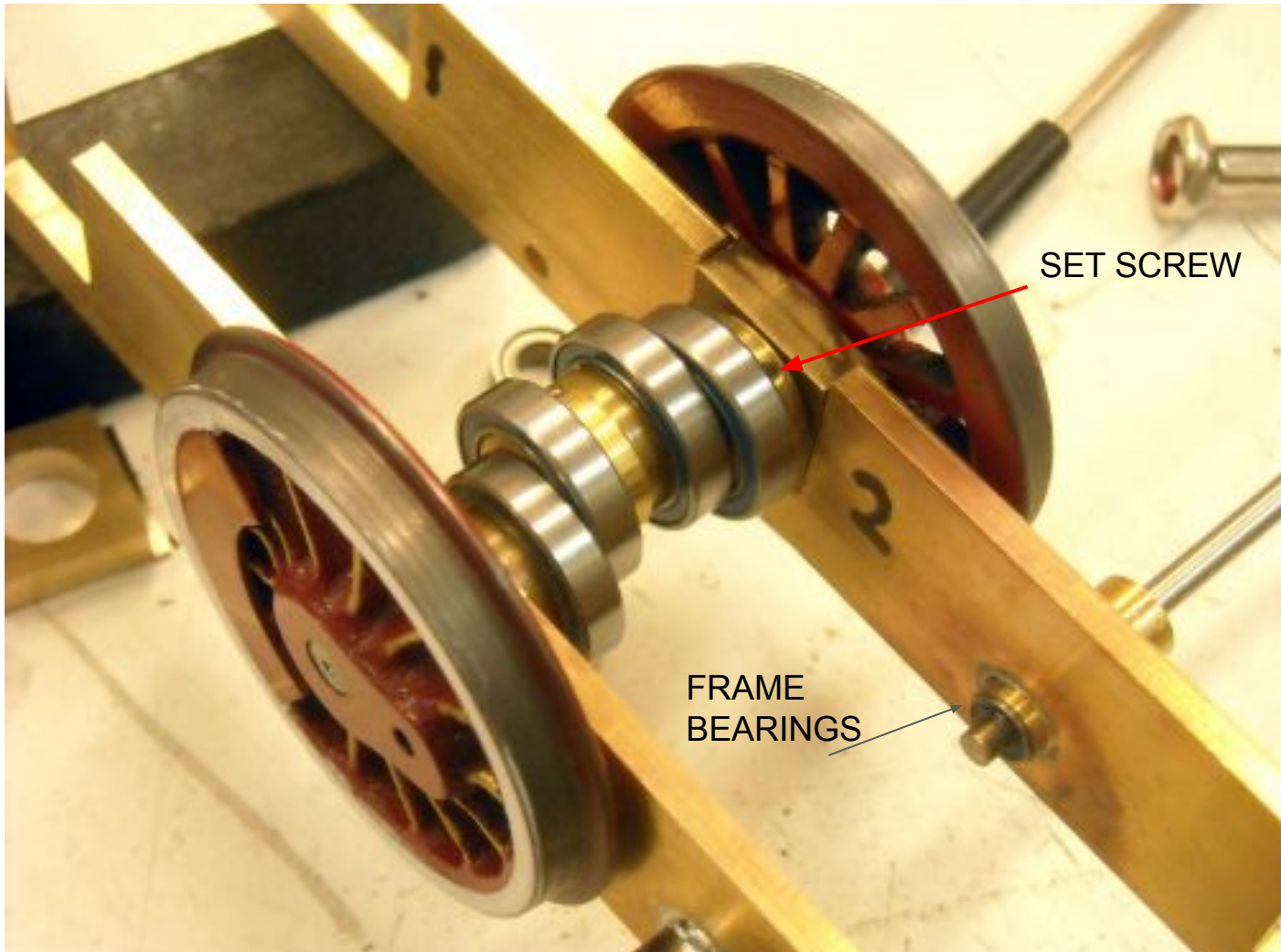


Ruby timed for best forward running



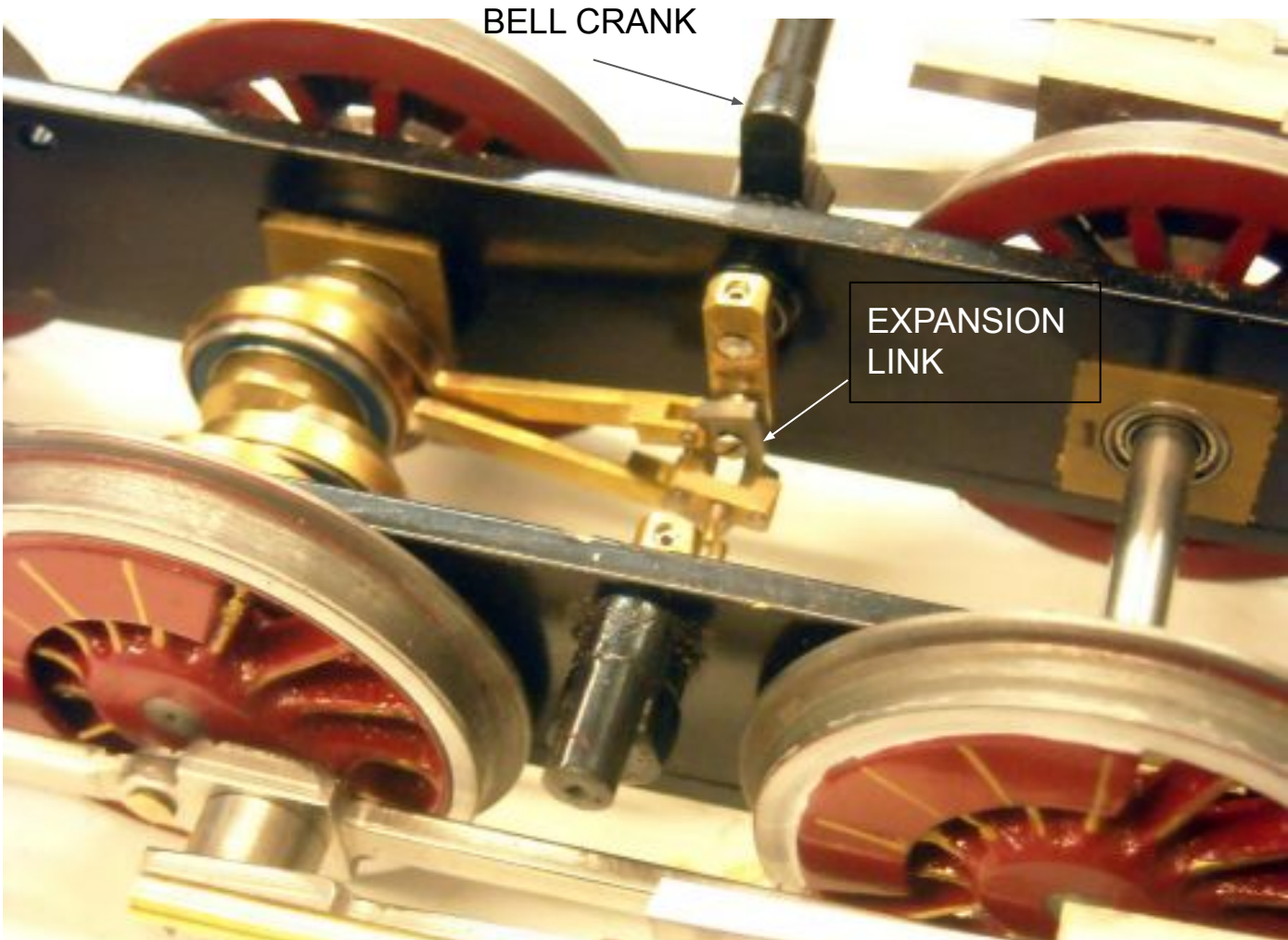
STEPHENSON VALVE GEAR





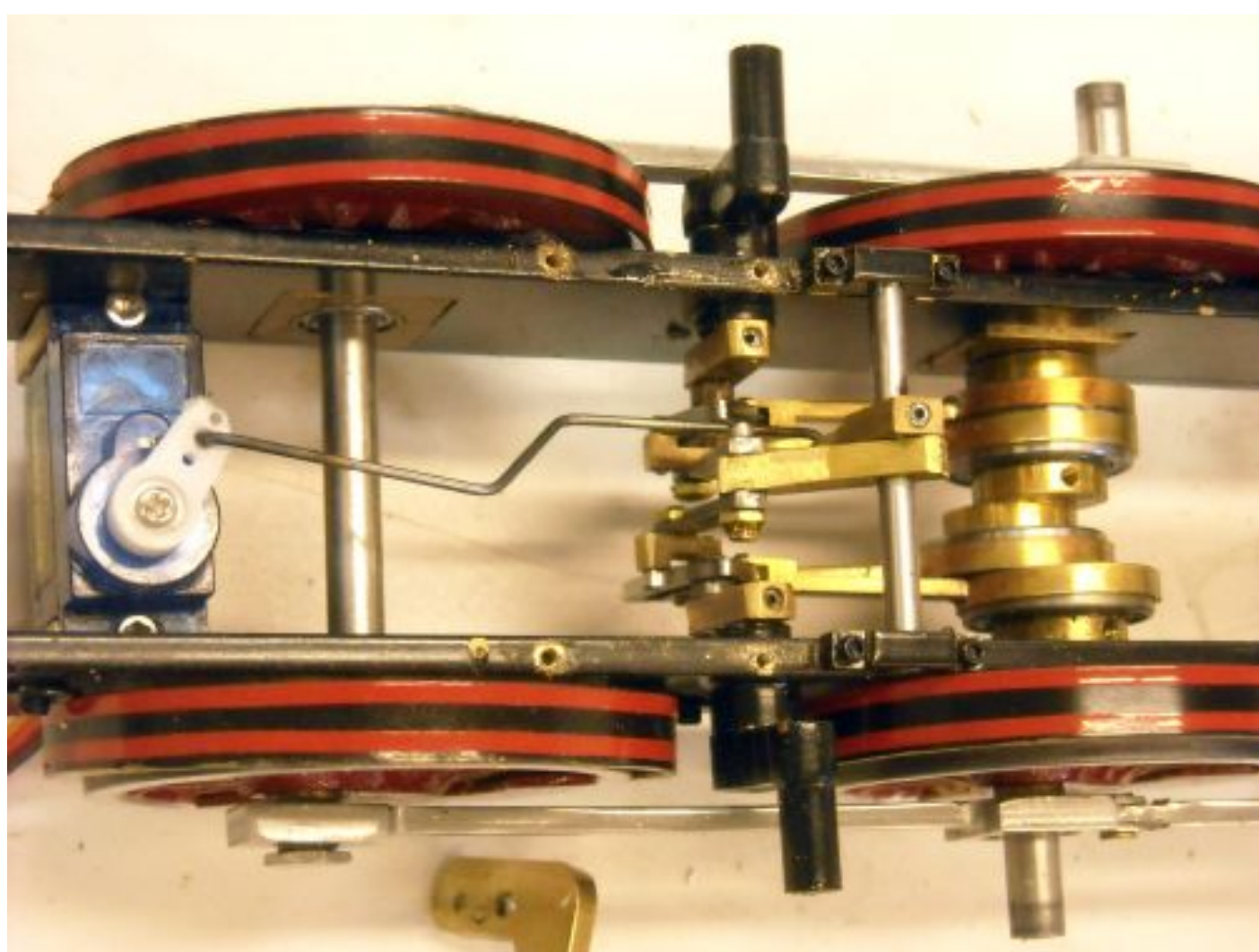
SET SCREW

FRAME
BEARINGS



BELL CRANK

EXPANSION
LINK



WALSCHAERTS VALVE GEAR

VALVE STEM

COMBINATION LEVER

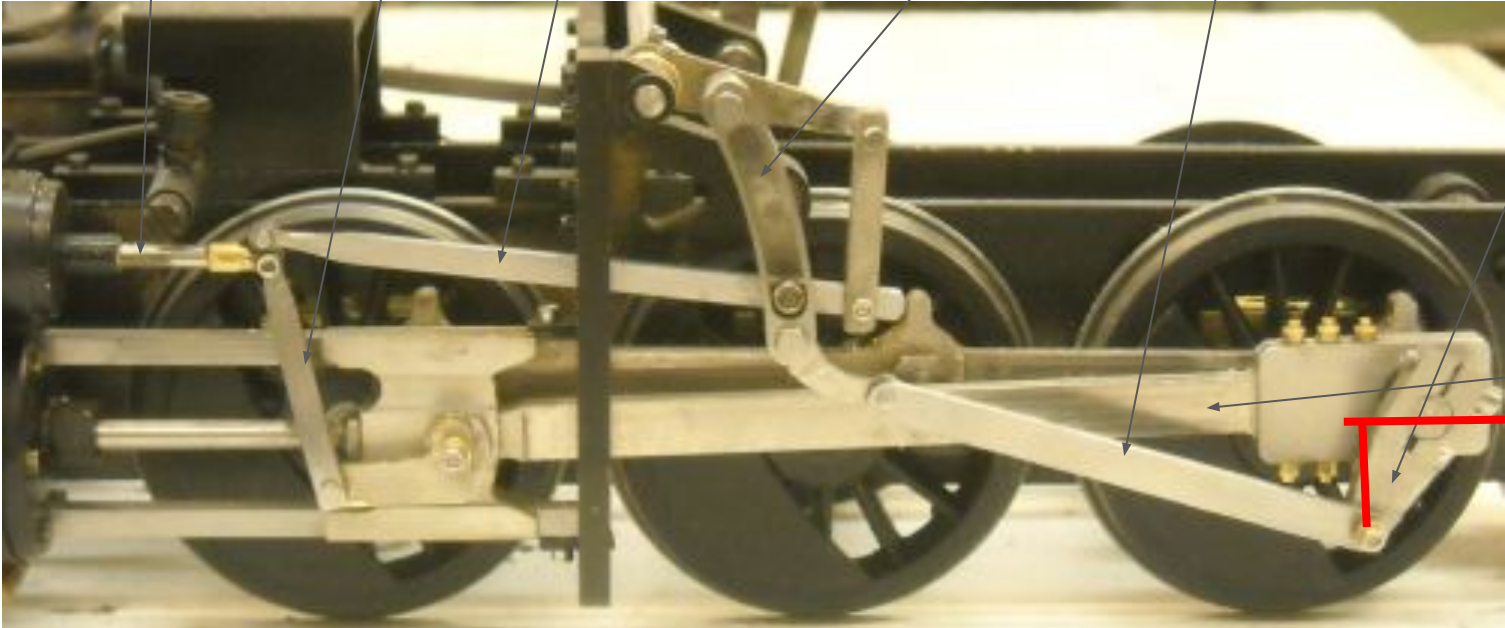
RADIUS ROD

EXPANSION LINK

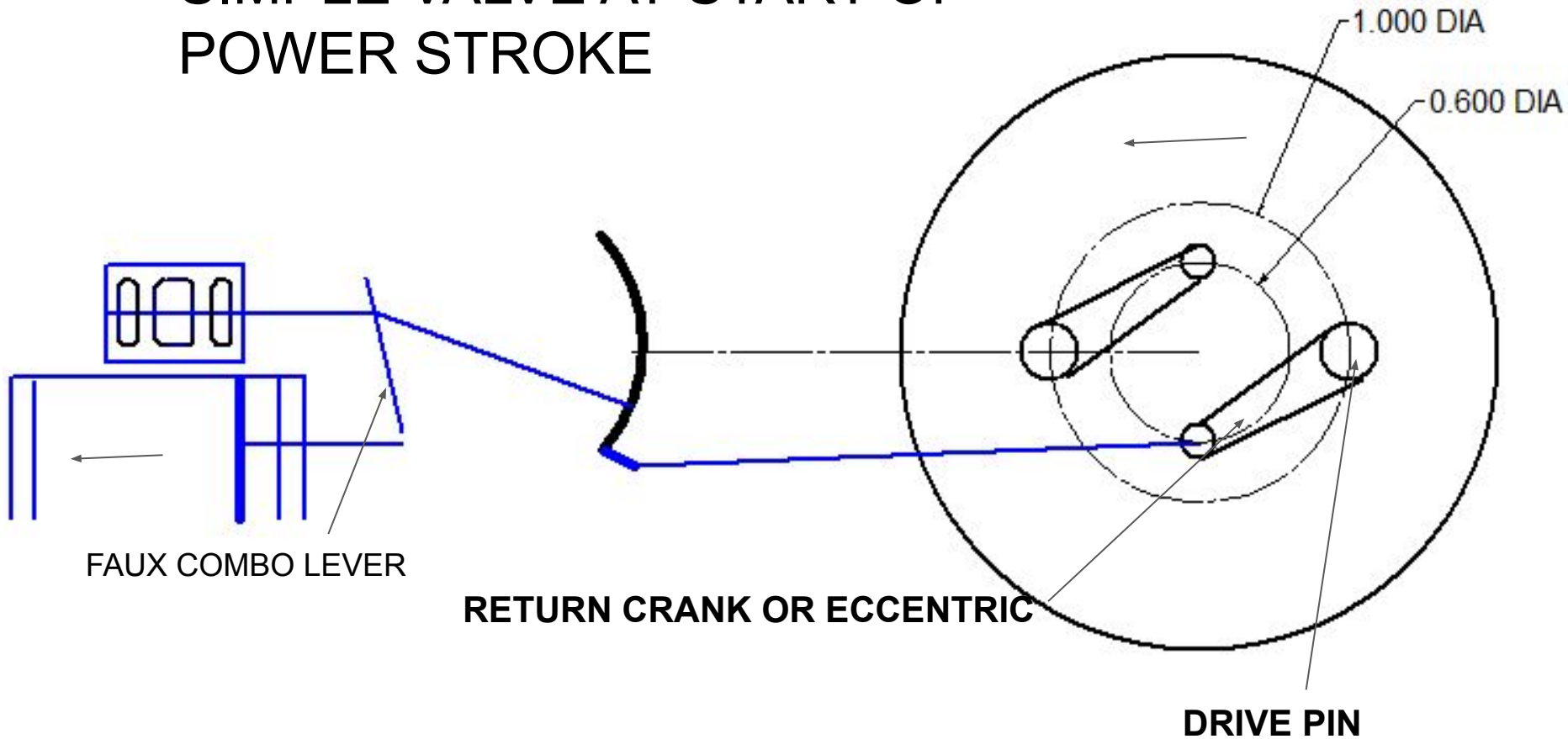
RETURN LINK

RETURN CRANK

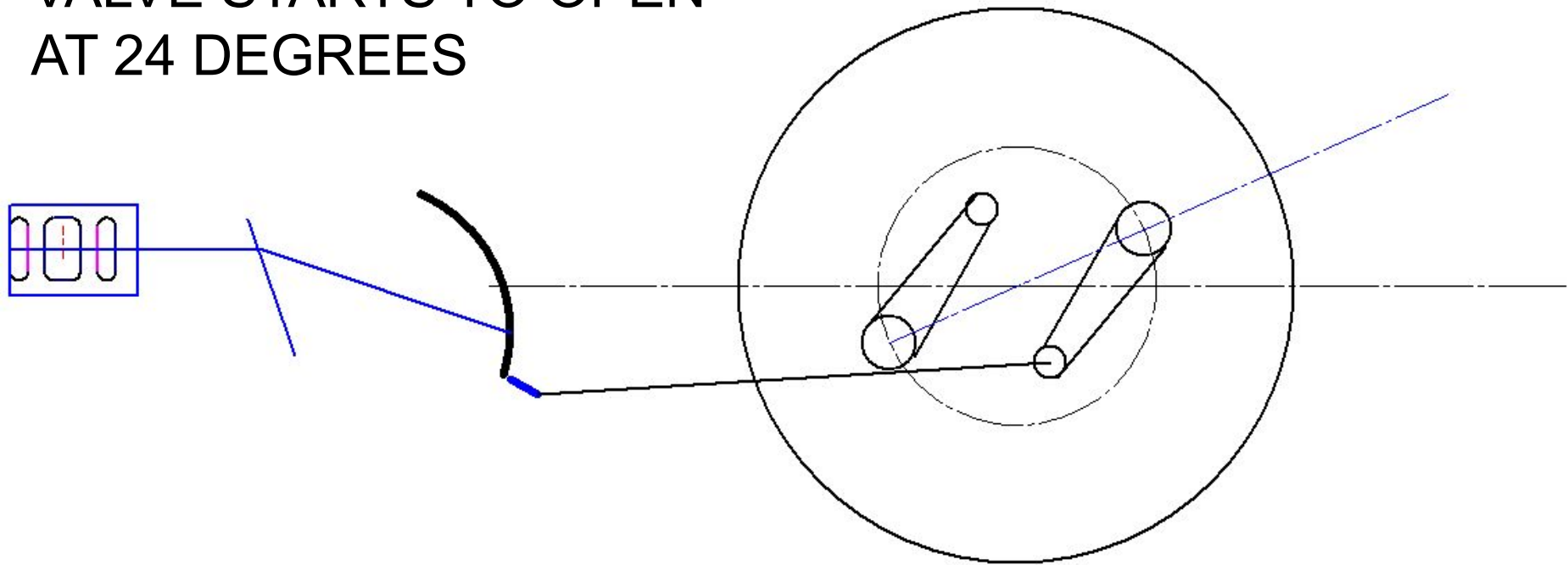
DRIVE ROD



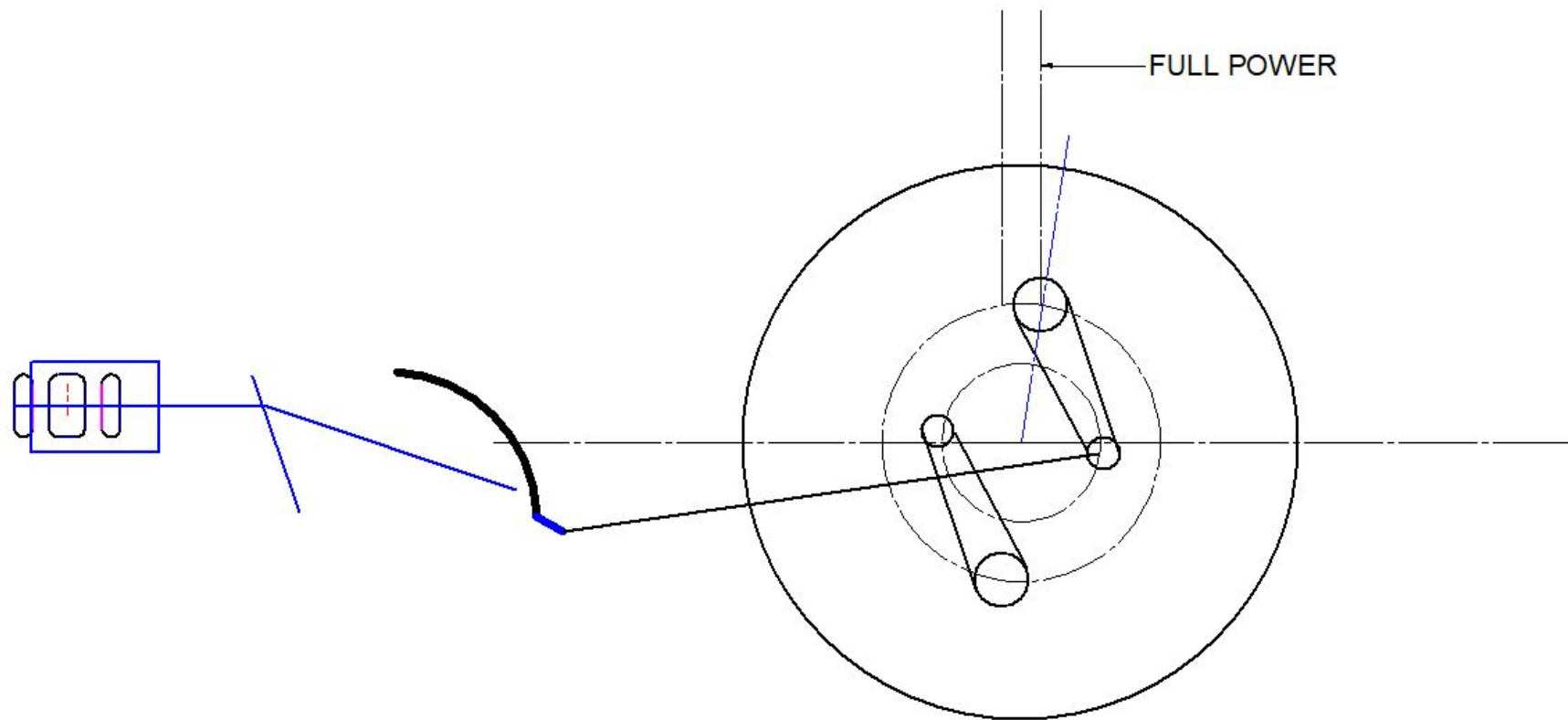
SIMPLE VALVE AT START OF POWER STROKE



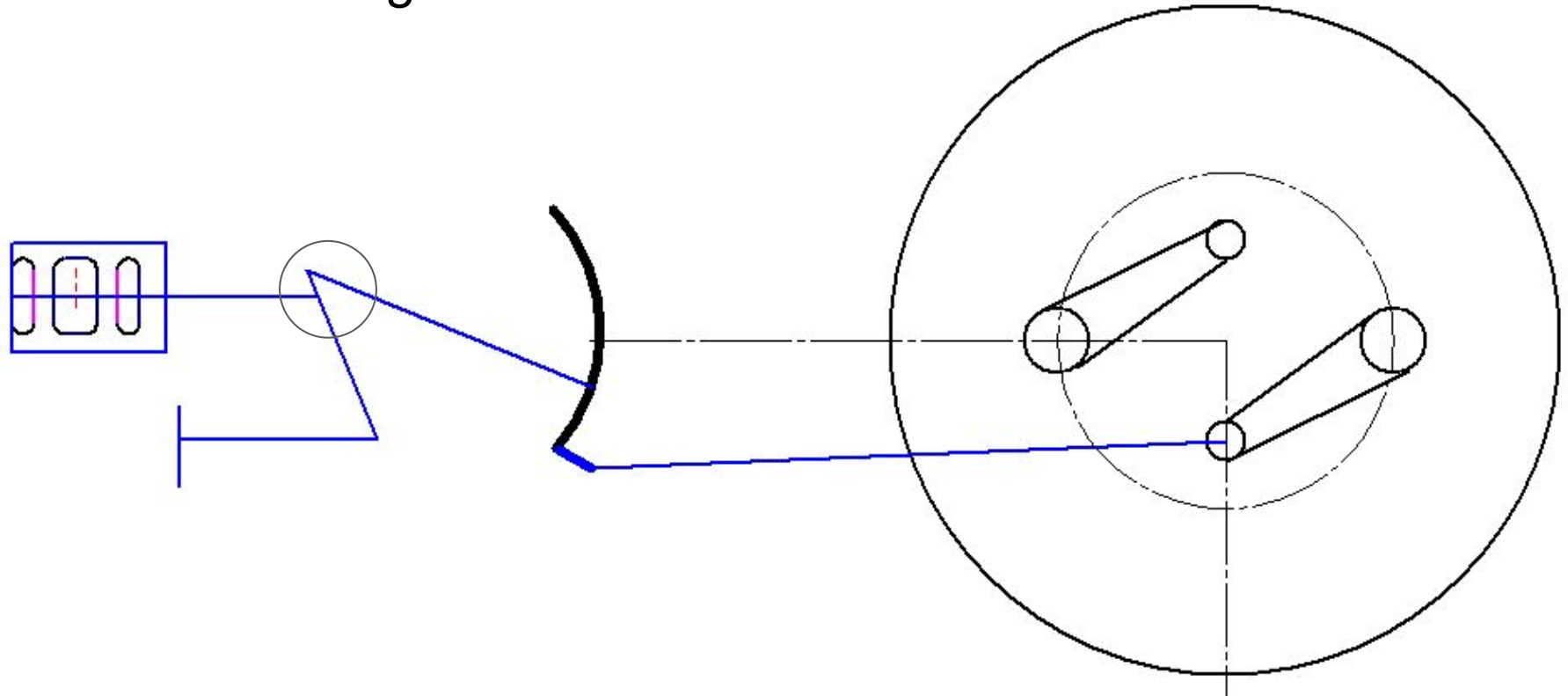
VALVE STARTS TO OPEN
AT 24 DEGREES



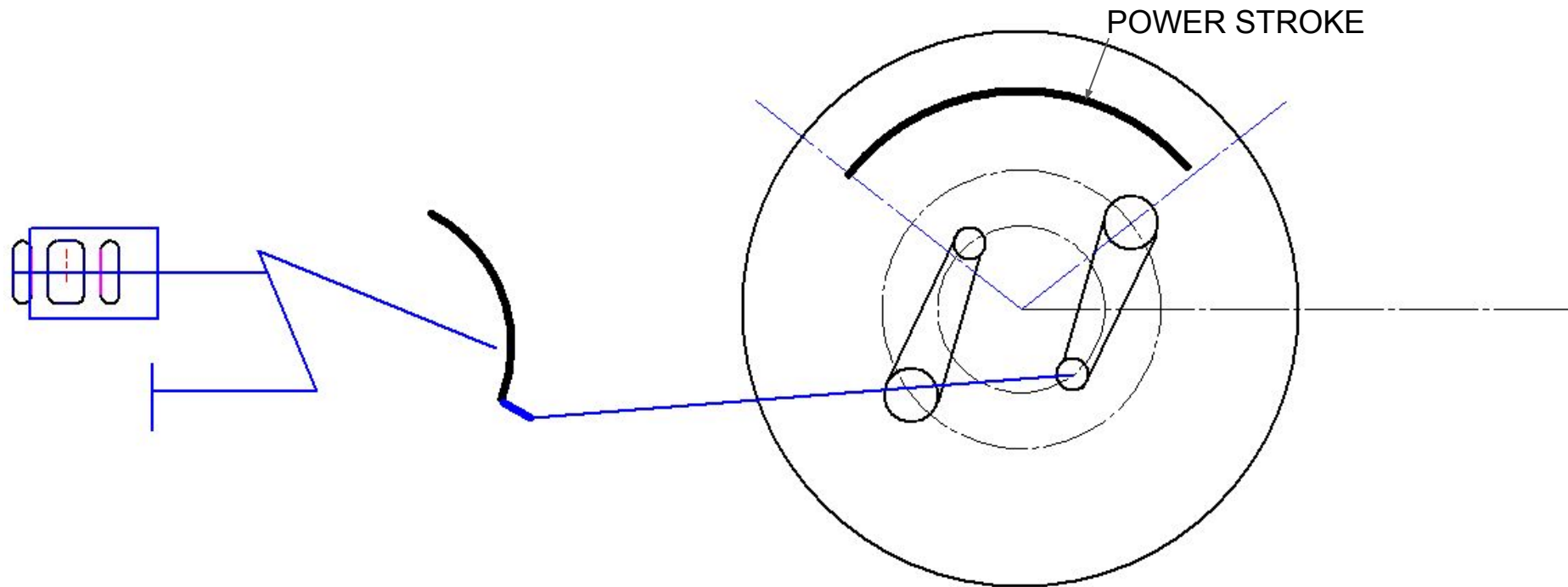
ONLY 16 DEGREES OF FULL POWER

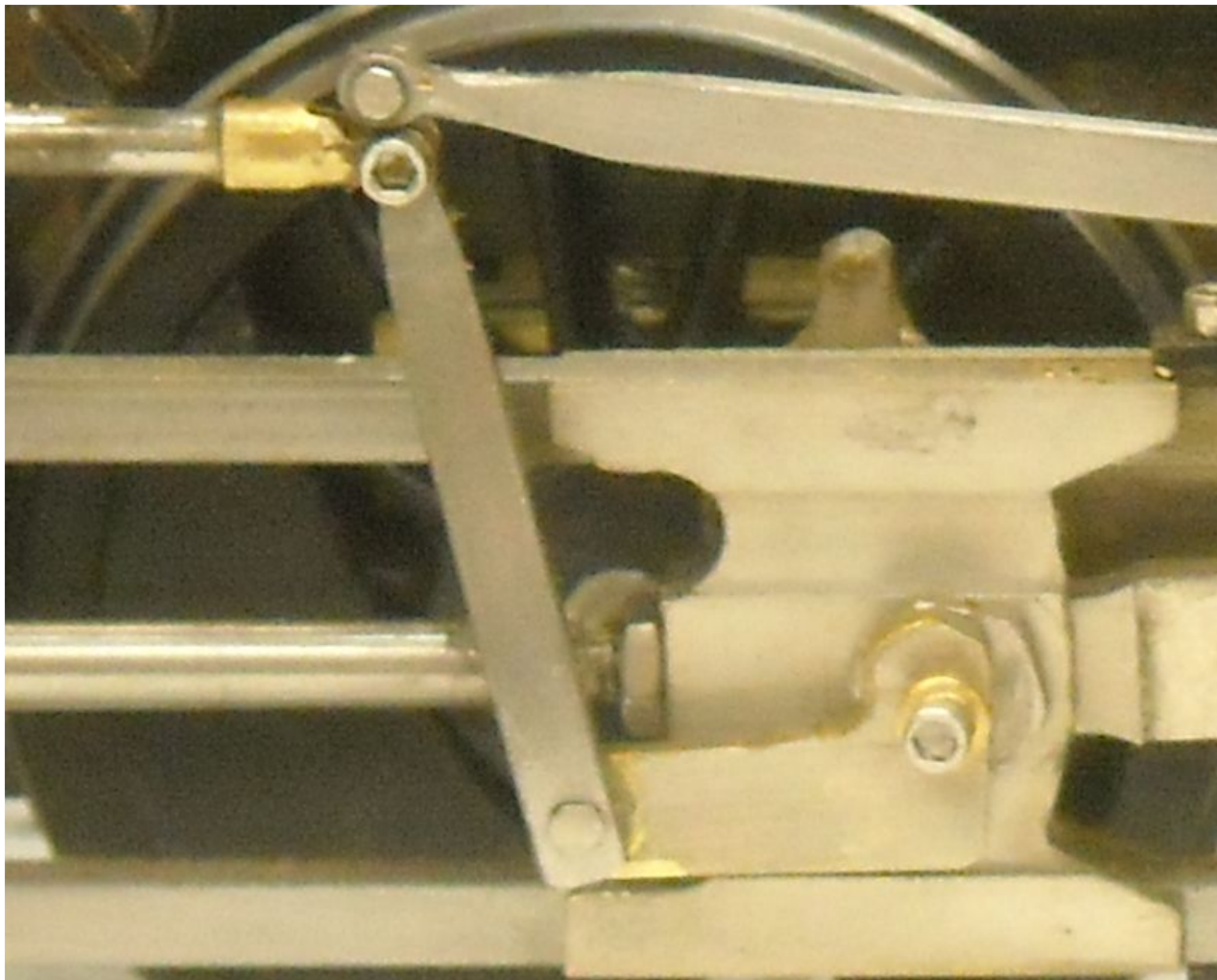


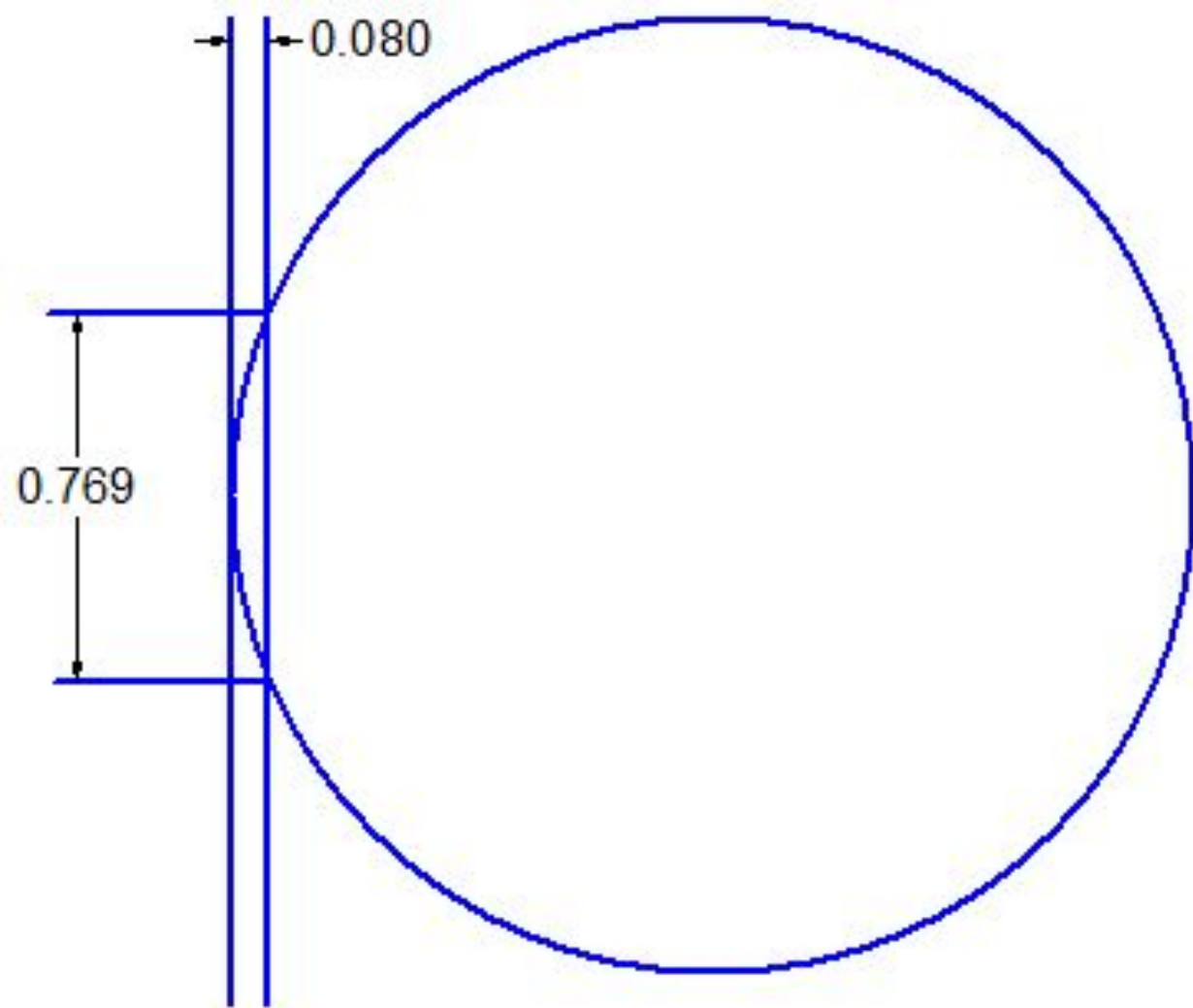
Valve now is opening at top dead center with a working combination lever



NOW 104 DEGREES OF FULL POWER

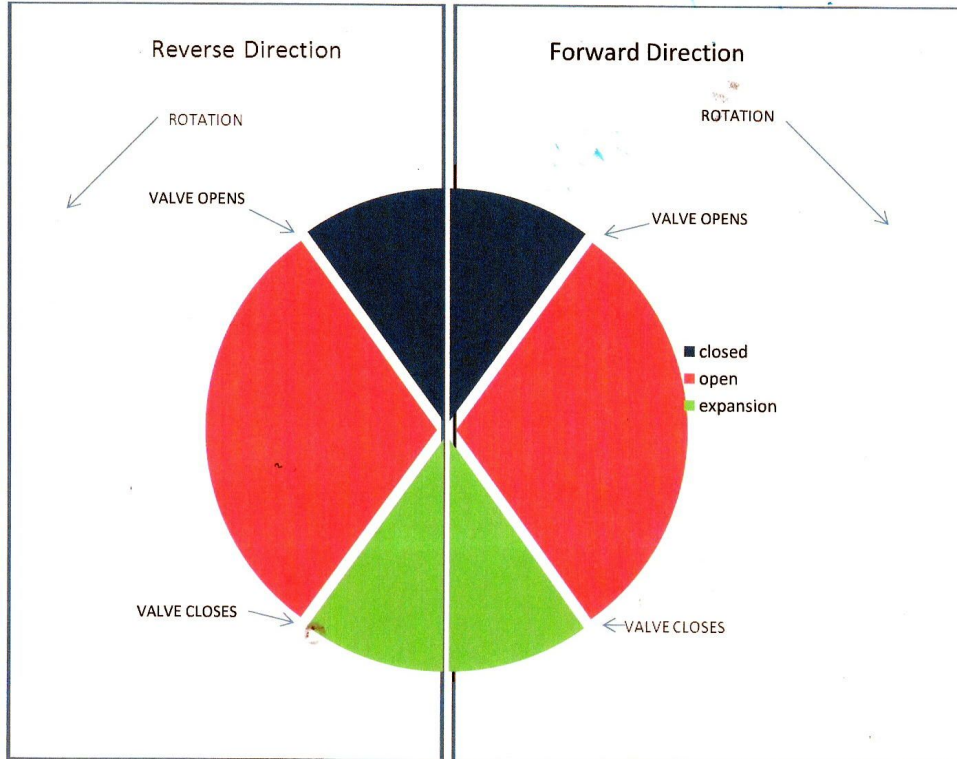




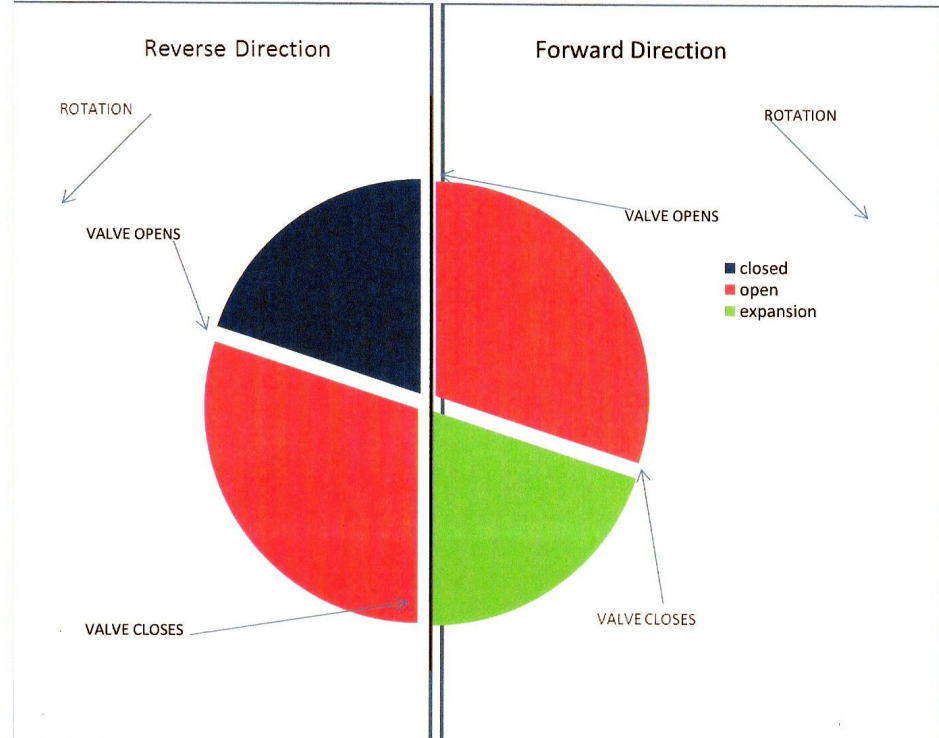


RUBY VALVE CHANGES

STOCK RUBY – PORT SIZE .053

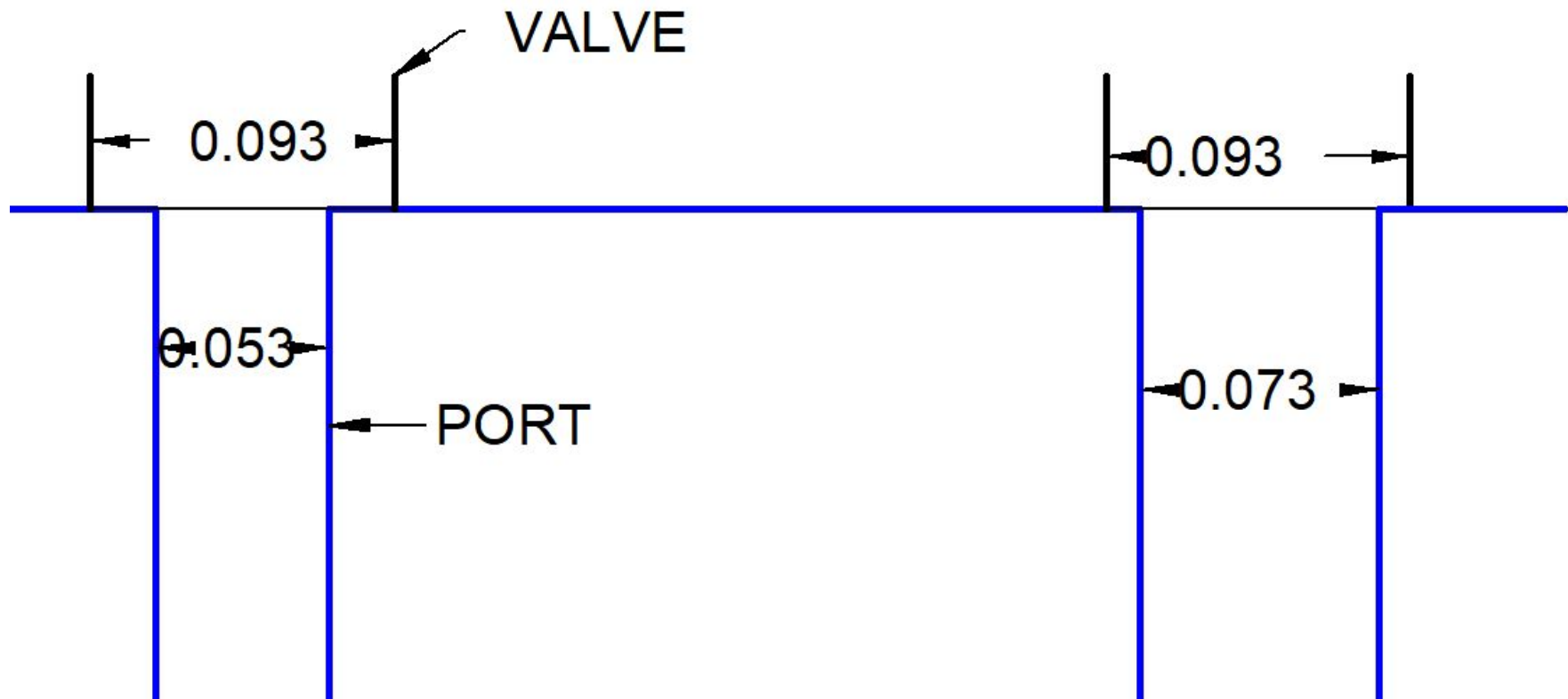


Ruby timed for best forward running

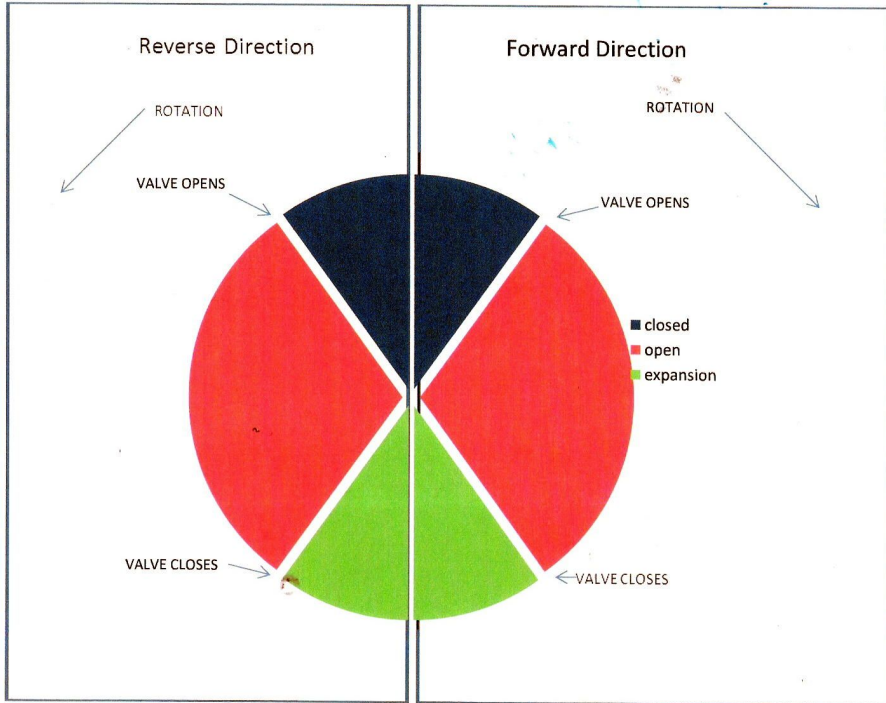


75% LAP

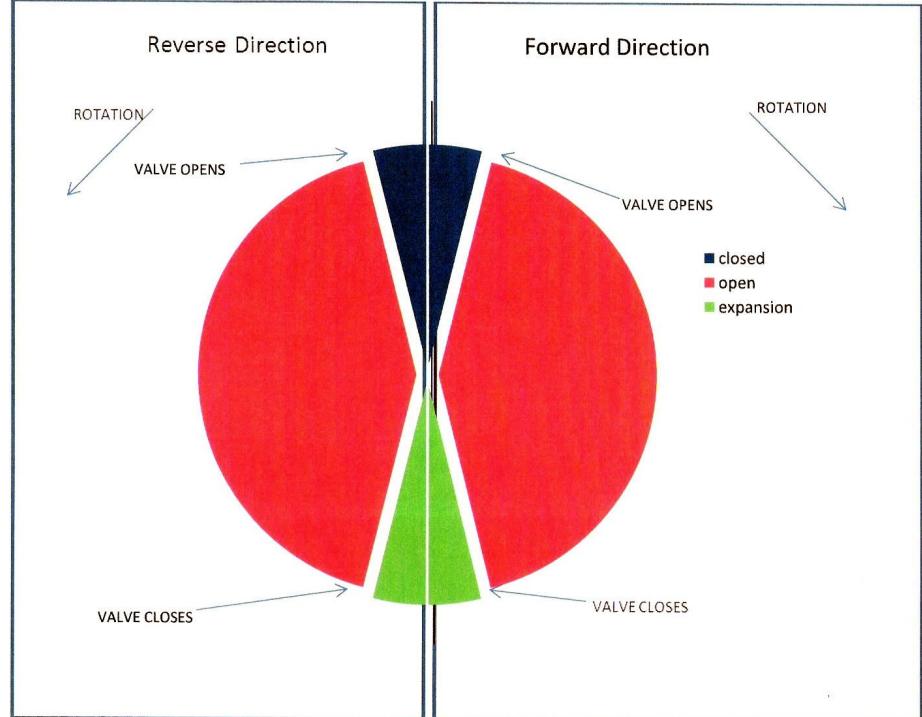
27% LAP



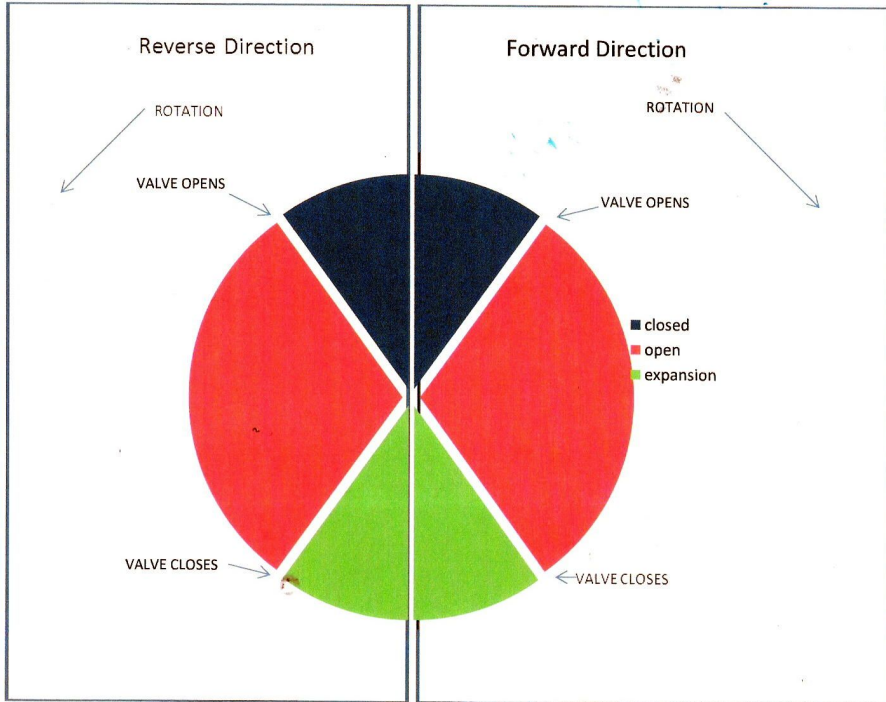
STOCK RUBY – PORT SIZE .053



Port Size Changed to - .073"



STOCK RUBY – PORT SIZE .053



.073 Port tuned for best forward running

