



# TORQUE INDICATING ADAPTER

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# ON PAPER: JWC's 24" filter influent butterfly valves

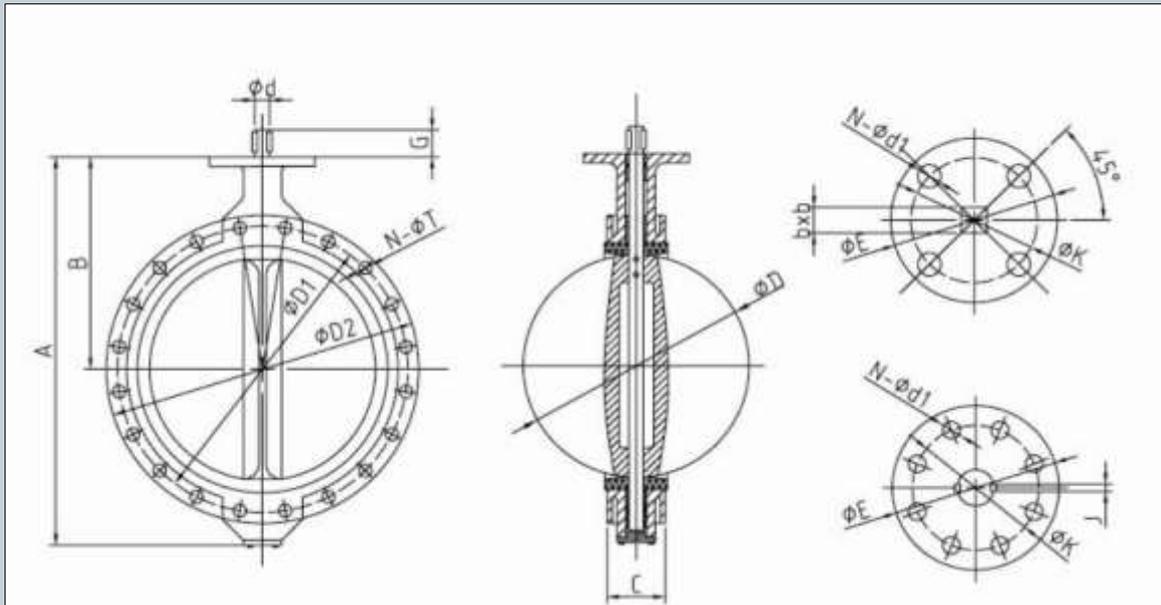


The JWC maintenance crew investigated the failure of six NEWLY installed 24 inch butterfly valves.

- Valve cleats set at 150 in./lbs.
- Actuator torque limits were properly set.
- Actuators capable of closing to valve specifications.

**OUTPUT OF ACTUATOR: 1,940FT/LBS.**

**VALVES SEAT AT 970 FT/LBS.**



# LOAD CELL, MEET YOUR NEW FRIEND VALVE

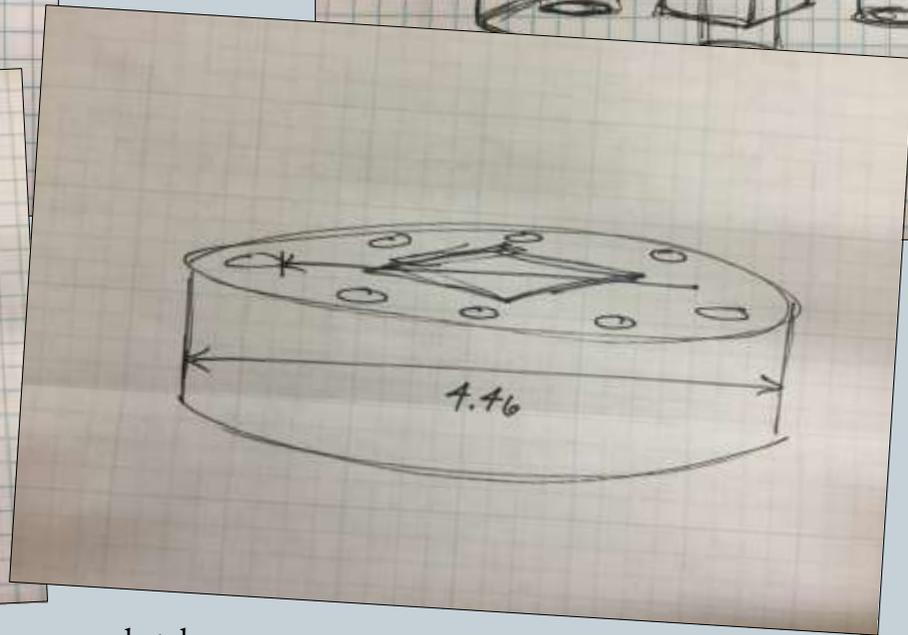
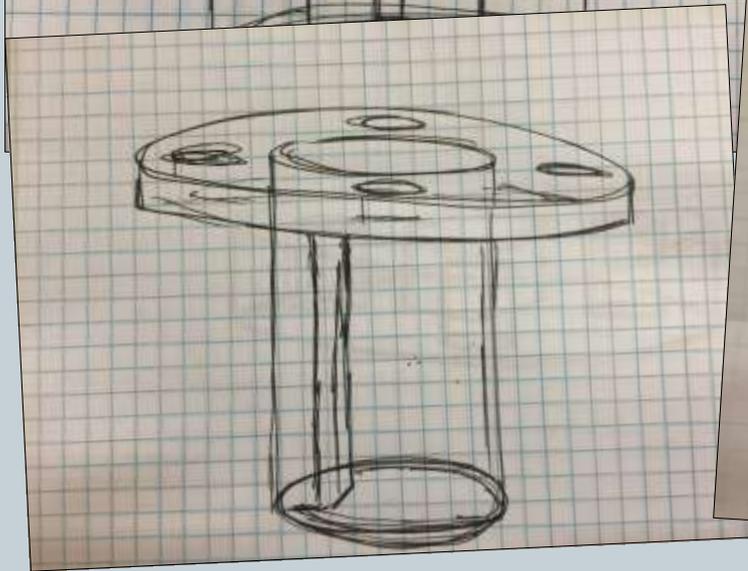
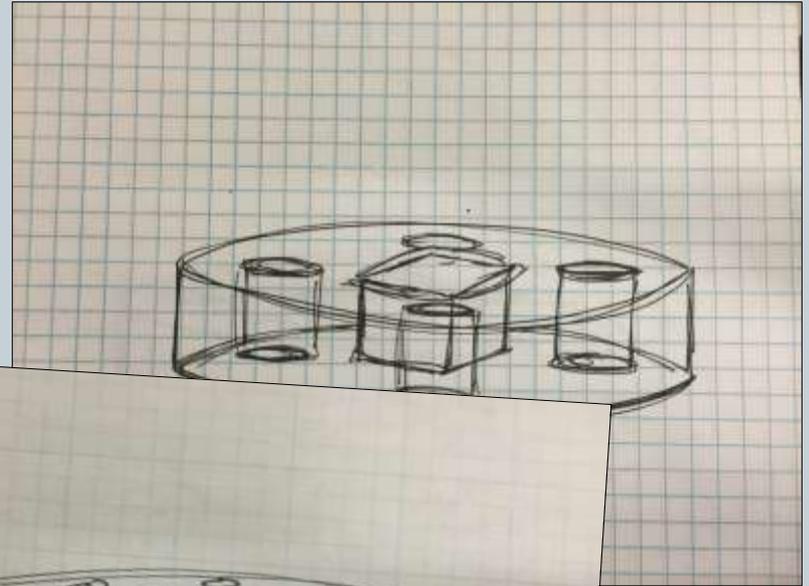
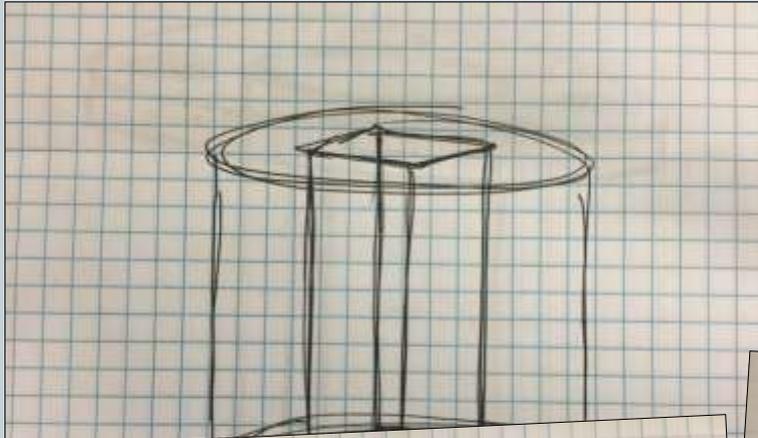


The valves failed to seat and leaked excessively. With the use of a reaction torque transducer we planned to confirm the application of torque required to seat the valve.

To do so a method for adapting the transducer to the valve shaft was necessary.



# DESIGN



sketchy

# LATHE



JWC contacted a local machinist to compose a female 1" square drive adapter.

-Material: 303 Stainless Steel.

-Fastened with (8) .375 x 2.5 - 316 stainless bolts.



# SQUARE DRIVE



# SOCKET TO 'EM



2.5" shaft coupling welded to 1" drive socket.



# FRUITION



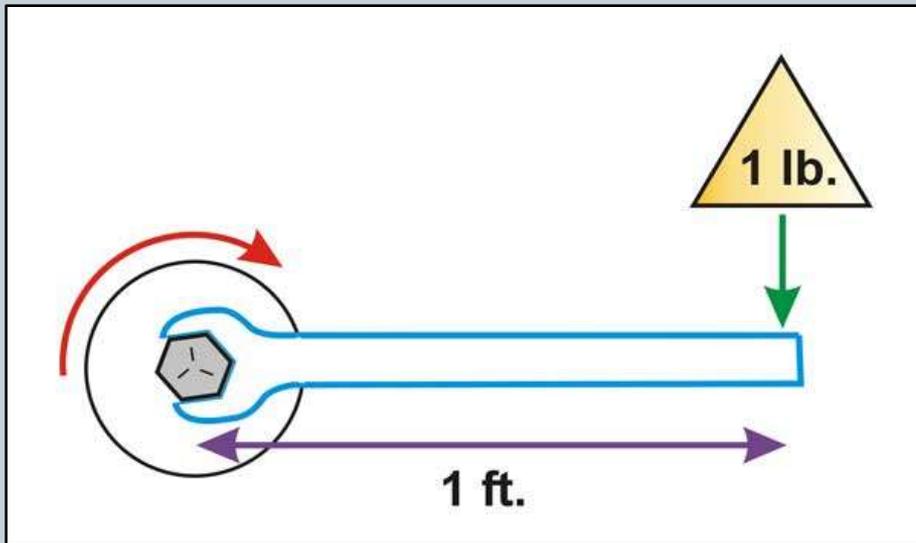


# TORQUE



The use of a torque multiplier would greatly increase safety and efficiency in gaining the required ft/lbs. within the enclosed space.

GOAL: Apply torque and determine how many ft pounds are required to seat 24" valve.



A torque multiplier gives mechanical advantage. For example, a torque multiplier with a rating of 3:1 will turn its output shaft with three times the torque, but at one third the speed, of the input shaft.



3:1 ratio epicyclical gearing set to convert low torque (max. 730 ft.-lbs.) to high torque (max. 2,200 ft.-lbs.)

# EXECUTION



IN ACTION

# RESULT



- Valve Manufacturer specified valves seat @ 970ft/lbs.
- Actuator manufacturer specified load setting @ 1,940 ft/lbs.

Reality: >2,000 ft/lbs = negative results.



# Could be yours for the price of...



Transducer/ Load cell	\$2040.00
Display/ Calibration	1633.00
Shaft socket	\$250.00
Female 1" adapter	\$433.00
Torque multiplier	\$250.00
<b>Total:</b>	<b>\$4606.00</b>

Or just 3 easy payments of \$1,533.33

# OUTCOME



COST	VALVES	TO INSTALL NEW VALVES
INFLUENT VALVE PROJECT: (6) valves	\$80,000.00	ADDITIONAL: \$80,000.00
TORQUE UNIT:	\$4606.00	
TOTAL:	\$84,606.00	\$164,606.00
OUTCOME:	Warranty replacement. Avoid spending additional \$80,000.00	