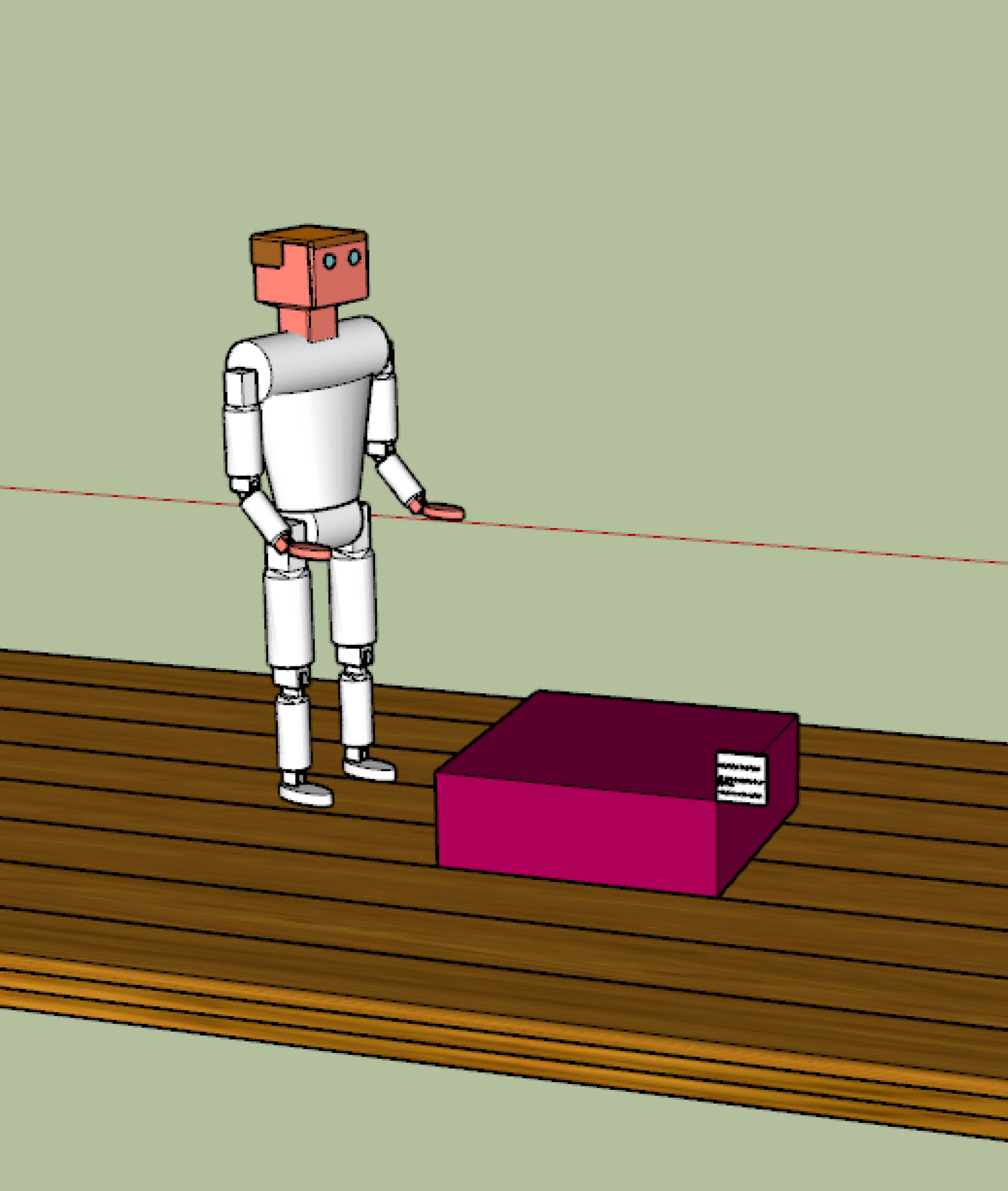
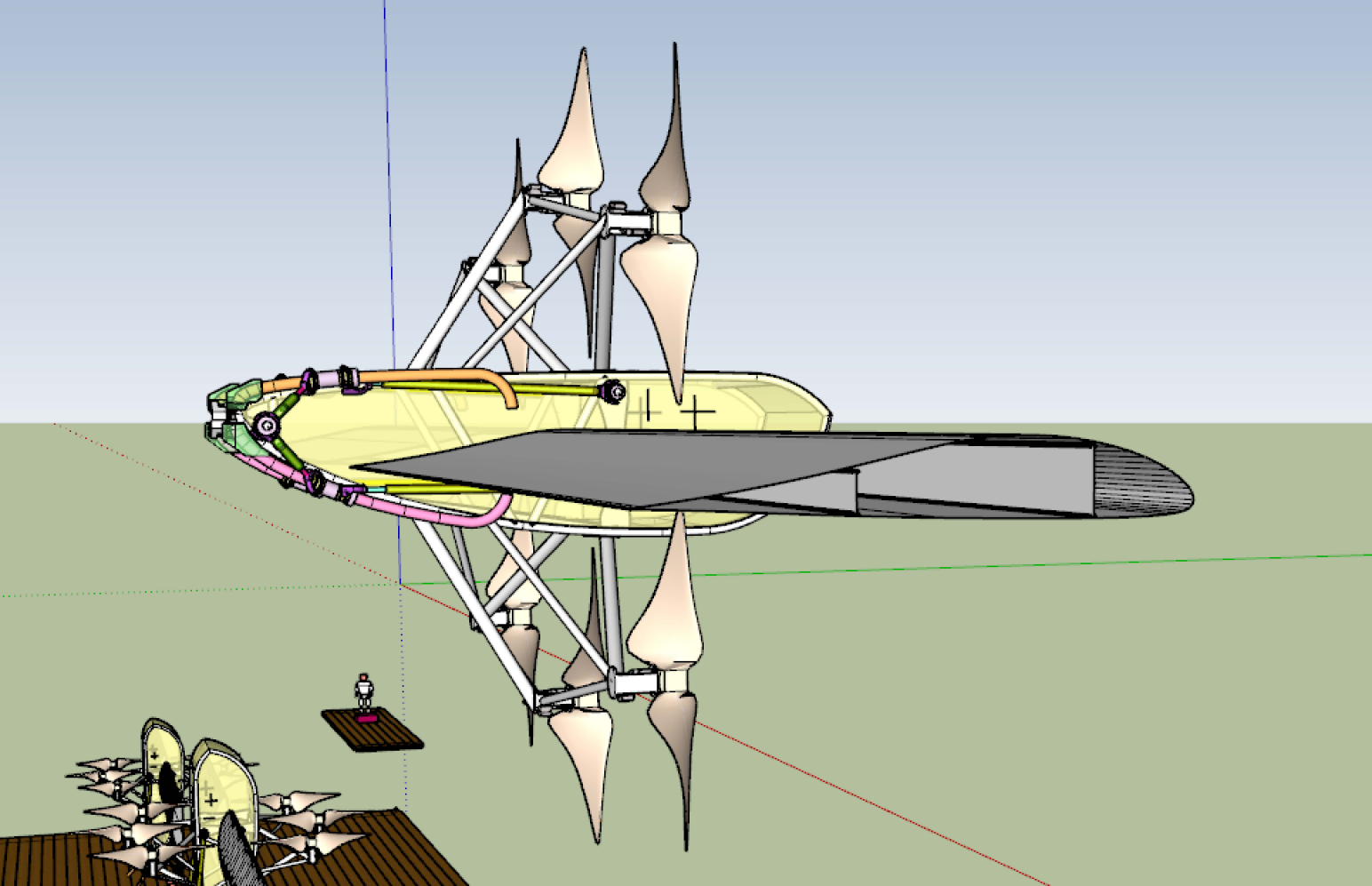
DISCLAIMER

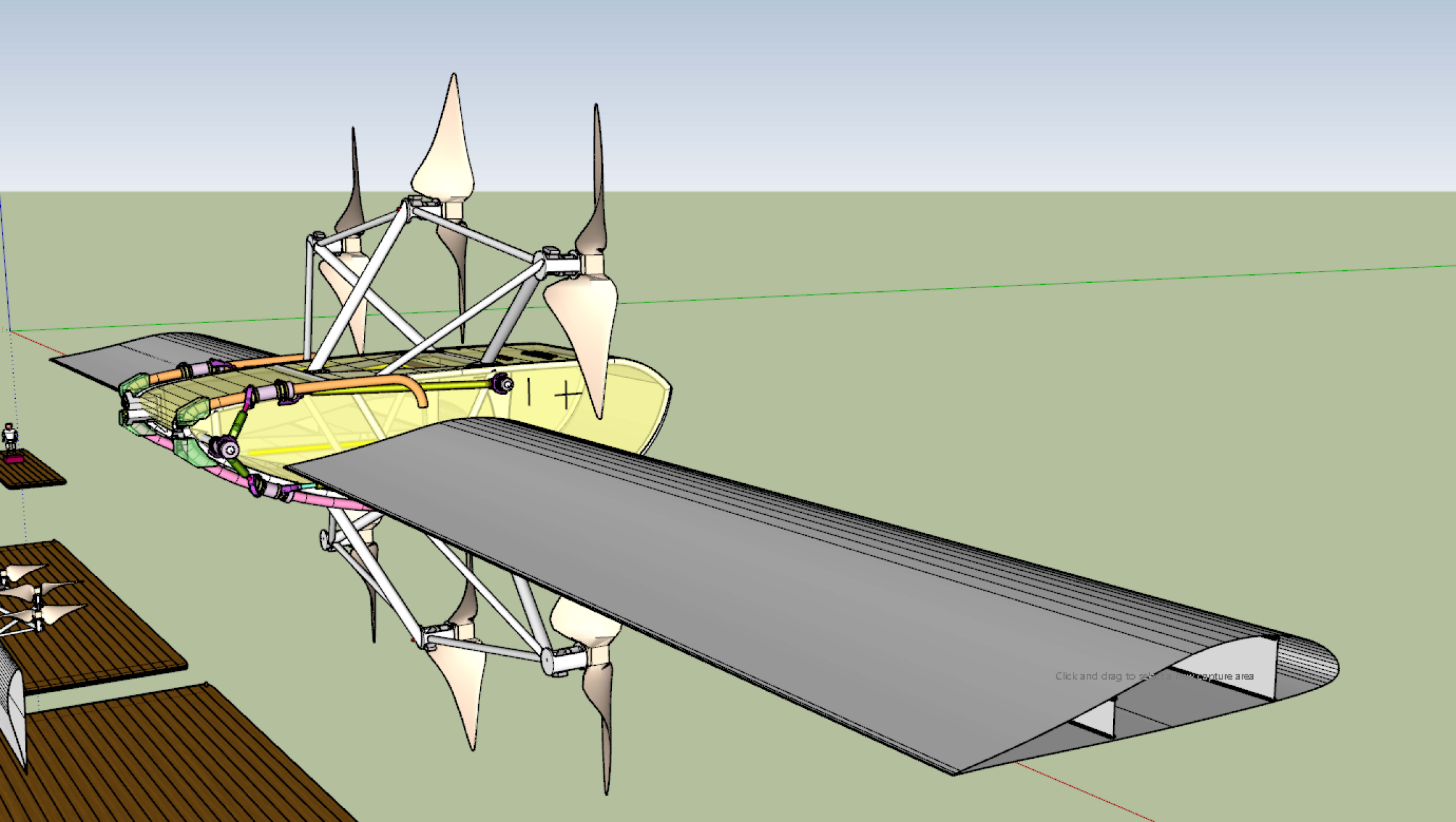
1) Any physically real object has the potential to act in a manner that is dangerous.

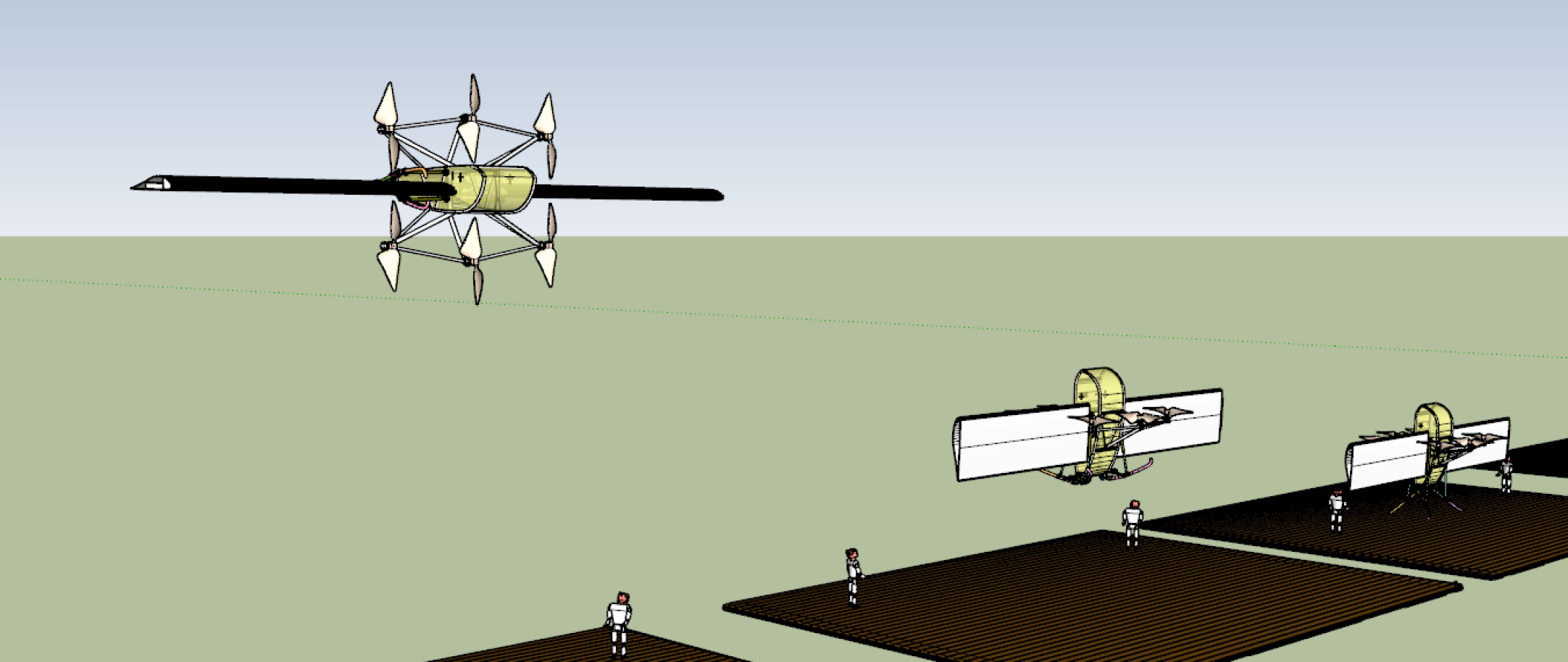
2) Actions of any real object, at a minimum, should be reasonable, and also safe, and also legally allowed.

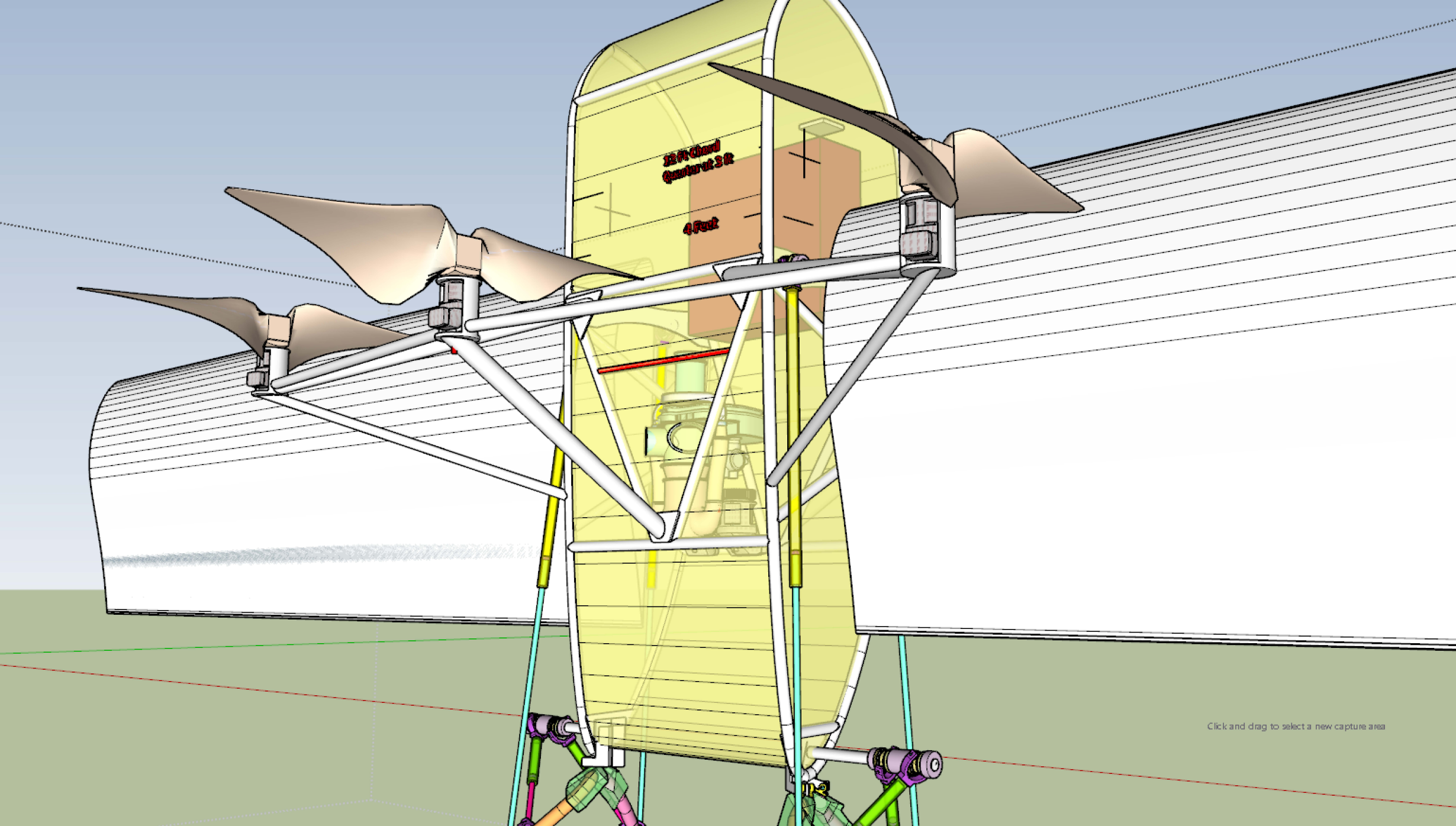
3) We advise, DO NOT MAKE any physically real object if you cannot properly control its actions.

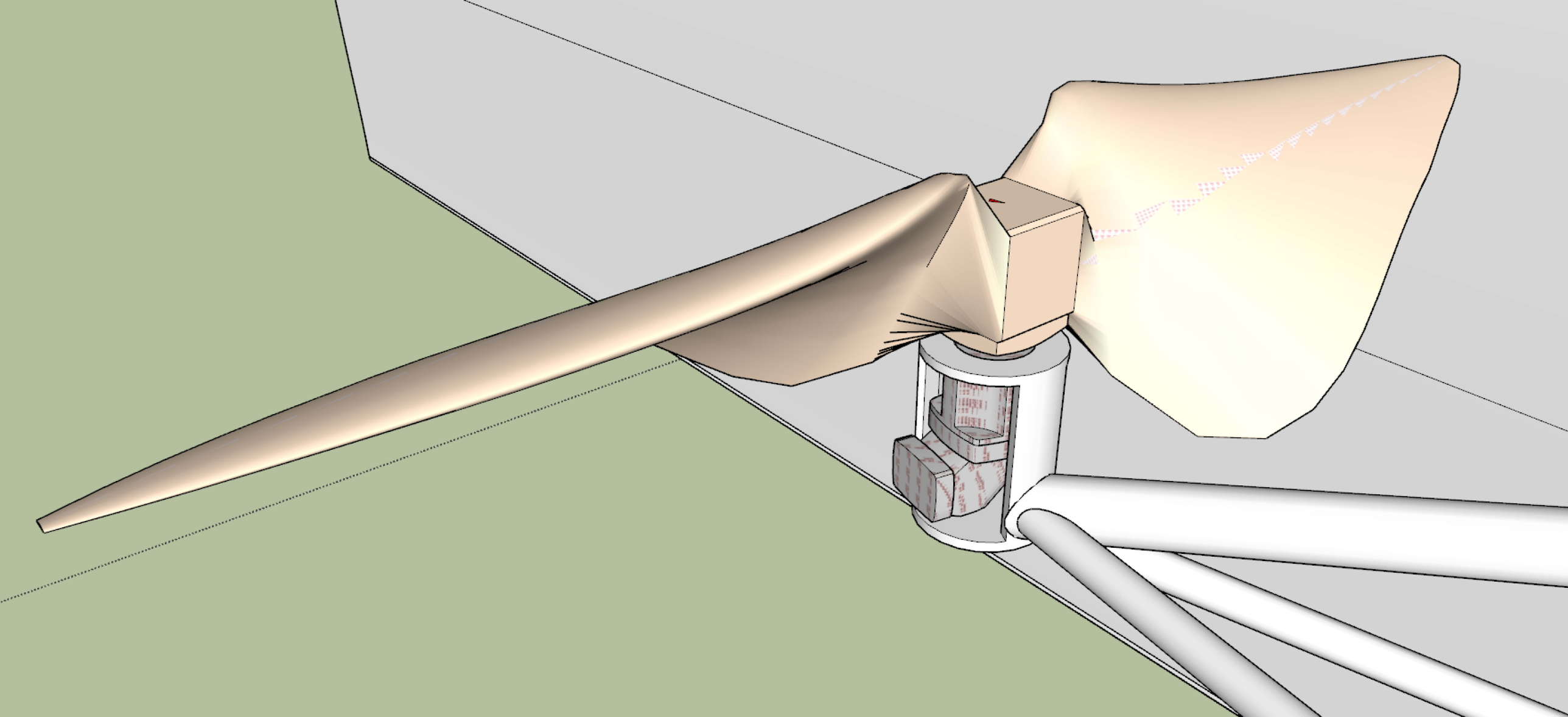









12 Ft Chord
Quarter at 3 ft
4 Feet
Click and drag to select a new capture area



Flow Capacity Chart

Flow Capacity Nomogram

Flow Capacities of Parker Hose at Recommended Flow Velocities

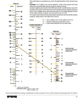
The chart below is provided as an aid in the determination of the correct hose size.

Example: at 16 gallons per minute (gal/min), what is the proper hose size within the recommended velocity range for pressure lines?

Locate 16 gallons per minute in the left-hand column and 20 feet per second in the right-hand column (the maximum recommended velocity range for pressure lines). Lay a straight line across these two points. The inside diameter shown in the centre column is above. d as we have to use -8 (1/2").

For suction hose, follow the same procedure except use recommended velocity range for intake lines in the right-hand column.

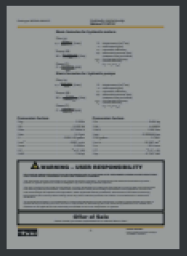
where: Q = flow in gallons per minute (gal/min & l/min)
V = velocity in feet per second (ft/s & m/s)
d = hoses inside diameter (mm & dash size)



* gallons are US gallons
Conversion factor: gal/min x 3.785 = l/min; ft/s x 0.3048 = m/s

Recommended velocities are according to hydraulic fluids of maximum viscosity ... at ... working at temperatures within ... and ...

1



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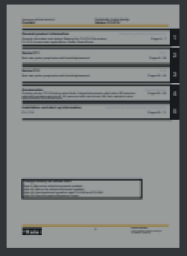


3

Basic formulas for hydraulic motors

Flow (q)

$$q = \frac{D \times n}{1000 \times \eta_v} \text{ [l/min]}$$

Torque (M)

$$M = \frac{D \times \Delta p \times \eta_{hm}}{63} \text{ [Nm]}$$

Power (P)

$$P = \frac{q \times \Delta p \times \eta_t}{600} \text{ [kW]}$$

D - displacement [cm^3/rev]
n - shaft speed [rpm]
η_v - volumetric efficiency
Δp - differential pressure [bar] (between inlet and outlet)
η_{hm} - mechanical efficiency
η_t - overall efficiency ($\eta_t = \eta_v \times \eta_{hm}$)

Basic formulas for hydraulic pumps

Flow (q)

$$q = \frac{D \times n \times \eta_v}{1000} \text{ [l/min]}$$

Torque (M)

$$M = \frac{D \times \Delta p}{63 \times \eta_{hm}} \text{ [Nm]}$$

Power (P)

$$P = \frac{q \times \Delta p}{600 \times \eta_t} \text{ [kW]}$$

D - displacement [cm^3/rev]
n - shaft speed [rpm]
η_v - volumetric efficiency
Δp - differential pressure [bar] (between inlet and outlet)
η_{hm} - mechanical efficiency
η_t - overall efficiency ($\eta_t = \eta_v \times \eta_{hm}$)

Conversion factors

1 kg	2.20 lb
1 N	0.225 lbf
1 Nm	0.738 lbf ft
1 bar	14.5 psi
1 l	0.264 US gallon
1 cm^3	0.061 cu in
1 mm	0.039 in
1°C	$^5/_9$(°F-32)
1 kW	1.34 hp

Conversion factors

1 lb	0.454 kg
1 lbf	4.448 N
1 lbf ft	1.356 Nm
1 psi	0.068948 bar
1 US gallon	3.785 l
1 cu in	16.387 cm^3
1 in	25.4 mm
1 °F	$^9/_5$°C + 32
1 hp	0.7457 kW

WARNING – USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Offer of Sale

Please contact your Parker representation for a detailed "Offer of Sale".

Parker Hannifin
Pump & Motor Division Europe
Trollhättan, Sweden

Frame size F12	**-030**	**-040**	**-060**	**-080**	**-090**	**-110**	**-125**	**-152**	**-162**	**-182**	**-250**
Displacement [cm^3/rev]	30.0	40.0	59.8	80.4	93.0	110.1	125.0	149.8	163.1	179.8	242
[cu in/rev]	*1.83*	*2.44*	*3.65*	*4.91*	*5.68*	*6.72*	*7.63*	*9.14*	*9.95*	*10.97*	*14.8*
Operating pressure [3]											
max intermittent[1] [bar]	500	480	500	480	420	480	480	480	480	480	420
[psi]	*7250*	*7000*	*7250*	*7000*	*6000*	*7000*	*7000*	*7000*	*7000*	*7000*	*6000*
max continuous [bar]	450	420	450	420	350	420	420	420	420	420	350
[psi]	*6500*	*6000*	*6500*	*6000*	*5 000*	*6000*	*6000*	*6000*	*6000*	*6000*	*5 000*
Motor operating speed [3] [rpm]											
max intermittent [1]	8600	6700	6400	5300	5000	4800	4600	4000	4000	4000	3000
max continuous	7300	6100	5800	4800	4600	4400	4200	3700	3700	3700	2700
min continuous	50	50	50	50	50	50	50	50	50	50	50
Max pump selfpriming speed [2]											
L or R function; max [rpm]	3100	2800	2400	2200	2200	2000	2000	1700	1600	1500	1500
Motor input flow											
max intermittent[1] [l/min]	219	268	347	426	465	528	575	608	648	728	726
[gpm]	*57.9*	*70.8*	*91.7*	*112.5*	*122.8*	*139.5*	*151.9*	*144.5*	*171.2*	*192.3*	*191.8*
max continuous [l/min]	201	244	317	386	428	484	525	547	583	655	653
[gpm]	*53.1*	*64.5*	*83.7*	*102.0*	*113.1*	*127.9*	*138.7*	*144.5*	*154.0*	*173.0*	*172.5*
Drain temperature[3], max [°C]	115	115	115	115	115	115	115	115	115	115	115
[° F]	*239*	*239*	*239*	*239*	*239*	*239*	*239*	*239*	*239*	*239*	*239*
min [°C]	-40	-40	-40	-40	-40	-40	-40	-40	-40	-40	-40
[° F]	*-40*	*-40*	*-40*	*-40*	*-40*	*-40*	*-40*	*-40*	*-40*	*-40*	*-40*
Theoretical torque at 100 bar [Nm]	47.6	63.5	94.9	127.6	147.6	174.8	198.4	241	257	289	384.1
[lbf ft]	*35.1*	*46.9*	*70.0*	*94.2*	*108.9*	*129.0*	*146.4*	*177.8*	*189.6*	*213.2*	*283.5*
Mass moment of inertia											
($x10^{-3}$) [kg m^2]	1.7	2.9	5	8.4	8.4	11.2	11.2	21	21	21	46
($x10^{-2}$) *[lbft^2]*	*4.03*	*6.88*	*11.86*	*19.93*	*19.93*	*26.58*	*26.58*	*79.83*	*79.83*	*79.83*	*109.16*
Weight [kg]	11.5	15.7	18.6	25.7	25.7	33	33	40	40	40	77
[lb]	*25.3*	*34.6*	*41*	*56.7*	*56.7*	*72.6*	*72.6*	*88*	*88*	*88*	*170*

1) Intermittent: max 6 seconds in any one minute.
2) Selfpriming speed valid at sea level. Find more info on page 42
3) See also installation information. Page 69

Efficiency

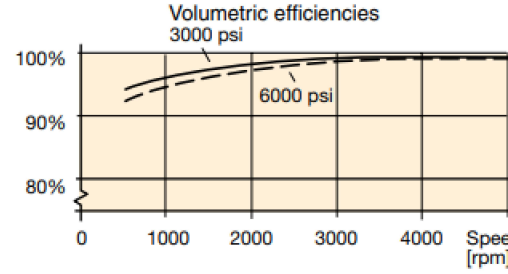
Because of its high overall efficiency, driving a motor/pump from series F12 requires less fuel or electric power.

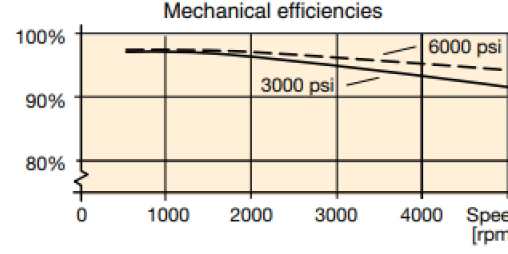
Also, it allows the use of a small reservoir and heat exchanger, which in turn reduce cost, weight, and installation size.

The diagrams to the right show volumetric and mechanical efficiencies of an F12-030 motor.

F12-030 motors can be equipped with Power Boost which in high speed applications can decrease the mechanical losses by up to 15%, see page 7.

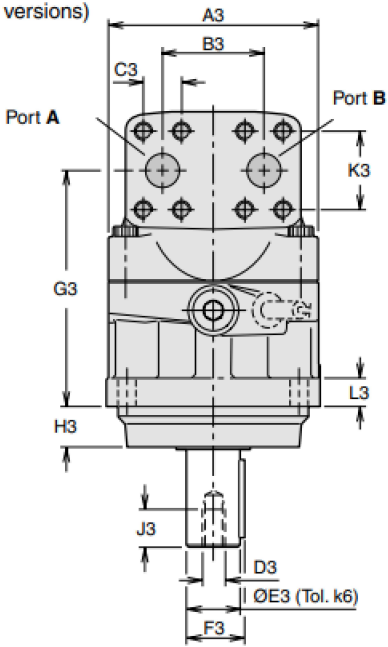
Contact Parker Hannifin for efficiency information on a particular F12 frame size that is being considered.

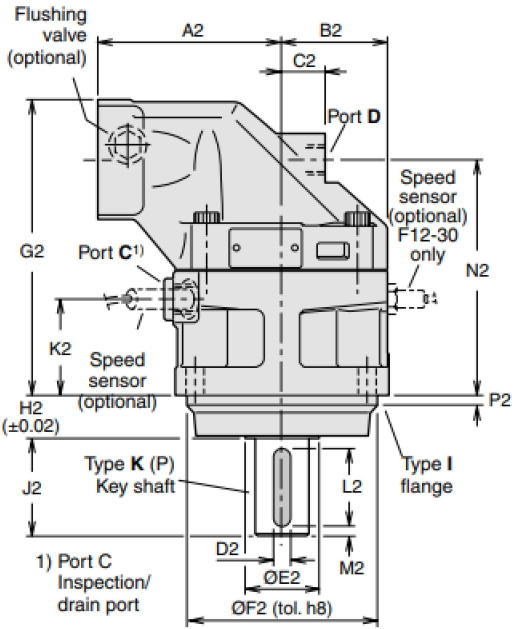




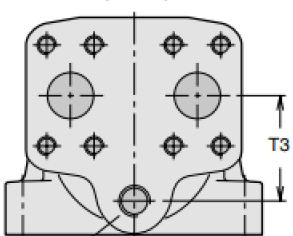
F12-30, -40, -60, -80, -90, -110 and -125

(ISO versions)

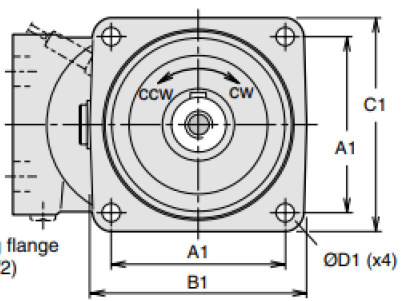




F12-80 shown



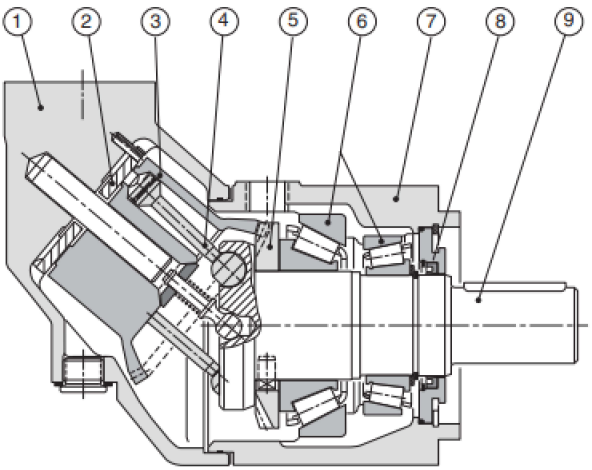
Port **E** (third drain port)
F12-110 and -125 barrel housing
(ISO /cartridge version)



Type **I** mounting flange
(ISO 3019/2)

F12 cross sections

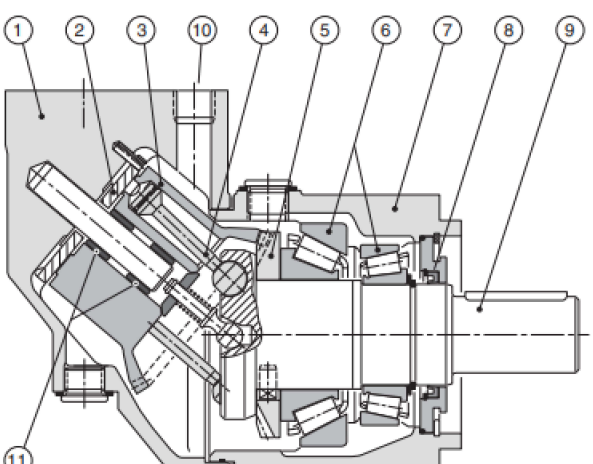
F12-30, -40, -60 and -80
(F12-60 shown)



Legend:

1. Barrel housing
2. Valve plate
3. Cylinder barrel
4. Piston with piston ring
5. Timing gear
6. Tapered roller bearings
7. Bearing housing
8. Shaft seal
9. Output/input shaft
10. Port E (F12-110)
11. Needle bearings (F12-110)

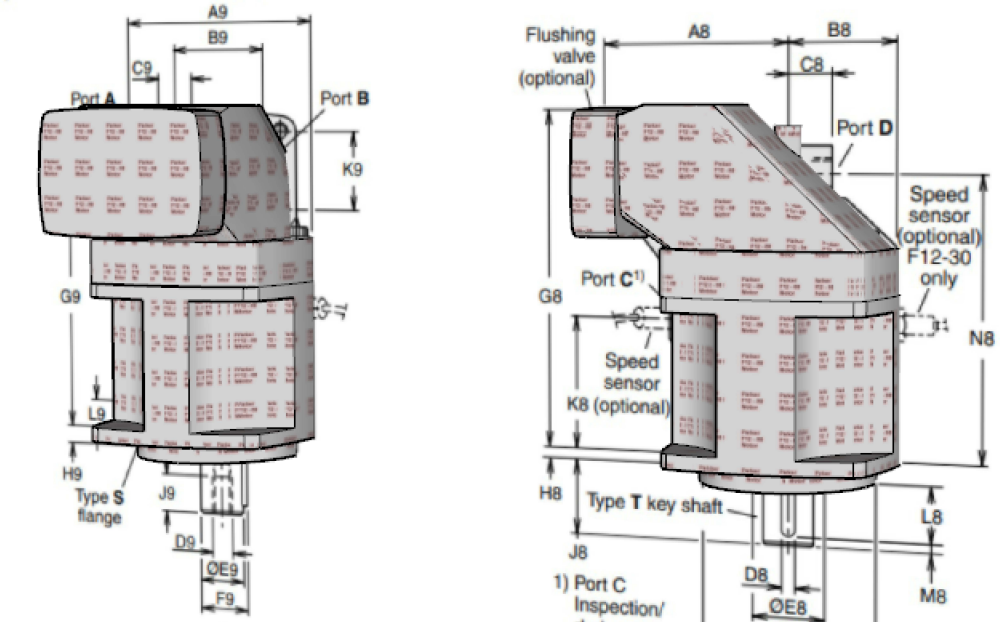
F12-110



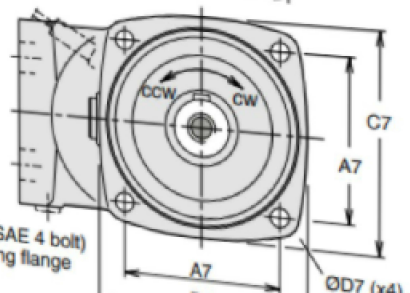
Parker Hannifin
Mobile Controls Division
Trollhättan, Sweden

Installation dimensions

F12-30, -40, -60, -80, -90, -110 and -125
(SAE versions with 4 bolt flange)



Shown: F12-80 with 4 bolt flange



Shaft option S (U)

Installation dimensions

Dim.	F12-30	F12-40	F12-60	F12-80 F12-90	F12-110 F12-125
A7	3.54	4.51	4.51	4.51	6.36
B7	4.65	5.83	5.83	6.10	8.03
C7	4.65	5.67	5.67	6.10	7.87
D7	0.55	0.55	0.55	0.55	0.83
A8	3.94	4.33	4.92	5.31	5.71
B8	2.32	2.56	2.76	3.05	3.35
C8	0.98	1.02	0.87	1.26	1.50
D8	0.25	0.31	0.31	0.38	0.44
E8	1.30	1.65	1.65	2.05	2.26
F8	4.000/ 3.998	5.000/ 4.998	5.000/ 4.998	5.000/ 4.998	6.000/ 5.998
G8	7.46	7.76	8.43	9.45	10.39
H8	0.31	0.31	0.31	0.31	0.31
J8	1.50	1.89	1.89	2.13	2.64
K8	2.83	2.99	3.11	3.74	3.90
L8	1.25	1.50	1.50	1.75	2.13
M8	0.10	0.16	0.16	0.16	0.29
N8	6.04	6.34	7.02	7.76	8.35
Q8[1]	1.02	1.06	1.06	1.14	1.54
Q8[2]	-	-	-	0.91	-
R8[1]	1.30	1.89	1.89	2.13	2.63
R8[2]	-	-	-	1.88	-
A9	4.80	5.28	5.67	6.10	6.69
B9	2.60	2.60	2.60	2.95	3.27
C9	0.937	0.937	0.937	1.094	1.250
D9*	5/16"-24	3/8"-24	3/8"-24	1/2"-20	5/8"-18
E9	1.000/ 0.998	1.250/ 1.248	1.250/ 1.248	1.500/ 1.498	1.750/ 1.748
F9	1.11	1.39	1.39		
G9	6.00				

A, B:
**) U

Mou

F1
-
-
-
-
-
-

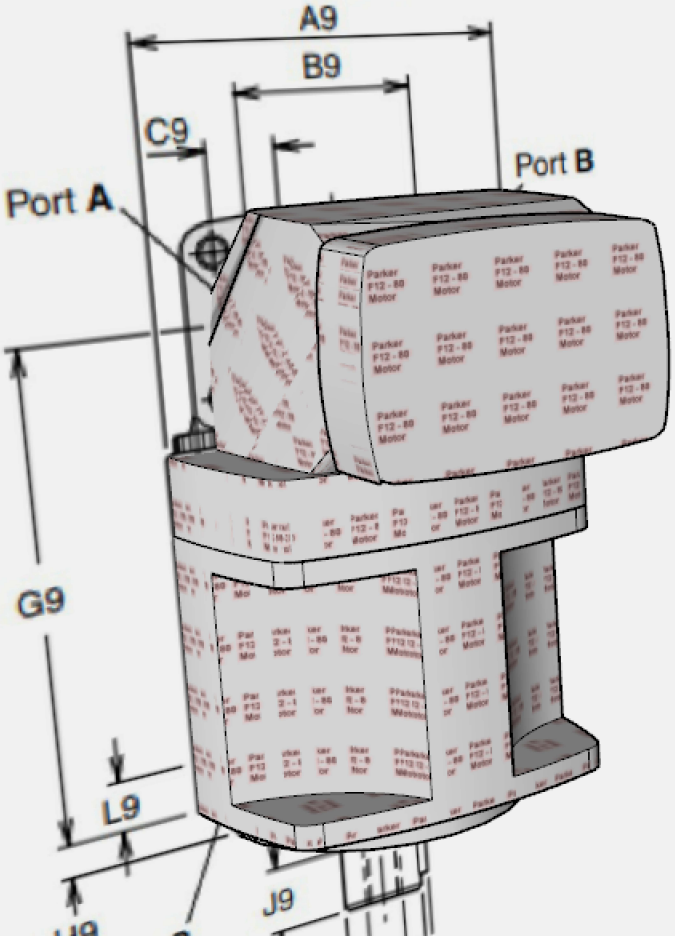
Click and drag to select

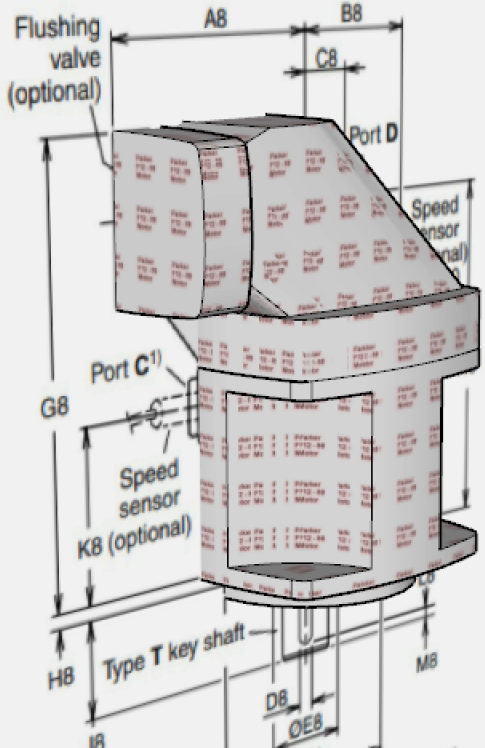
Splin

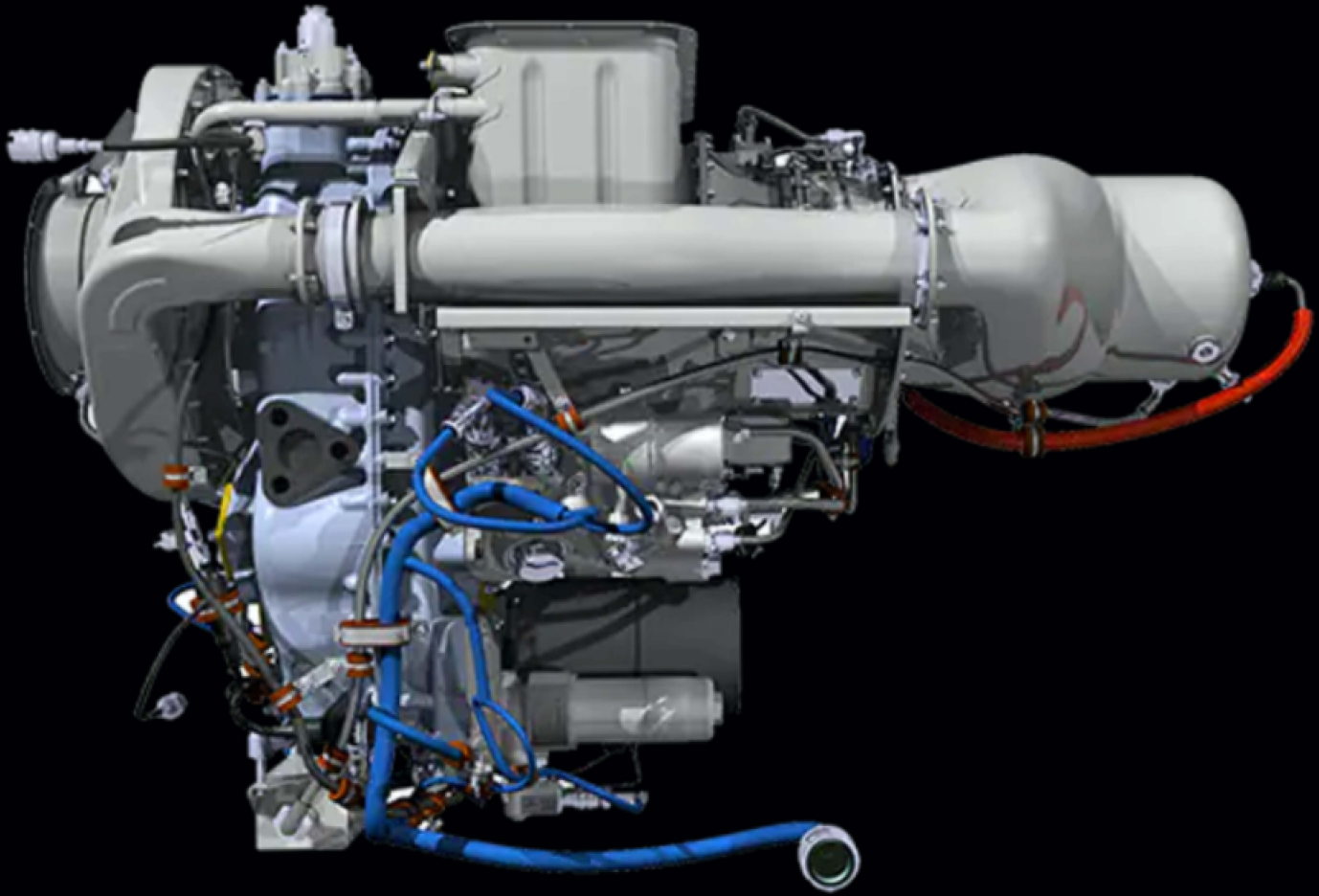
F12
-4
-6

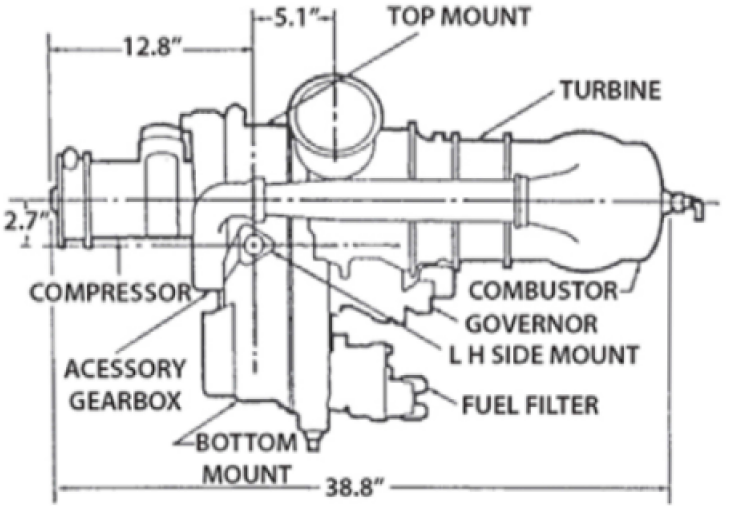
F12-30, -40, -60, -80, -90, -110 and -125

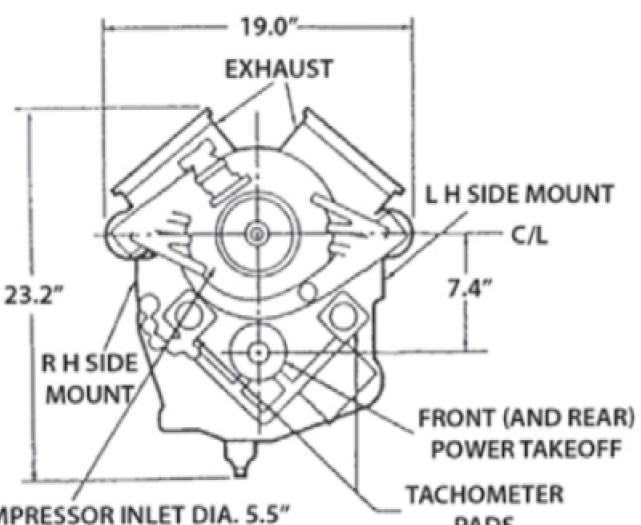
(SAE versions with 4 bolt flange)



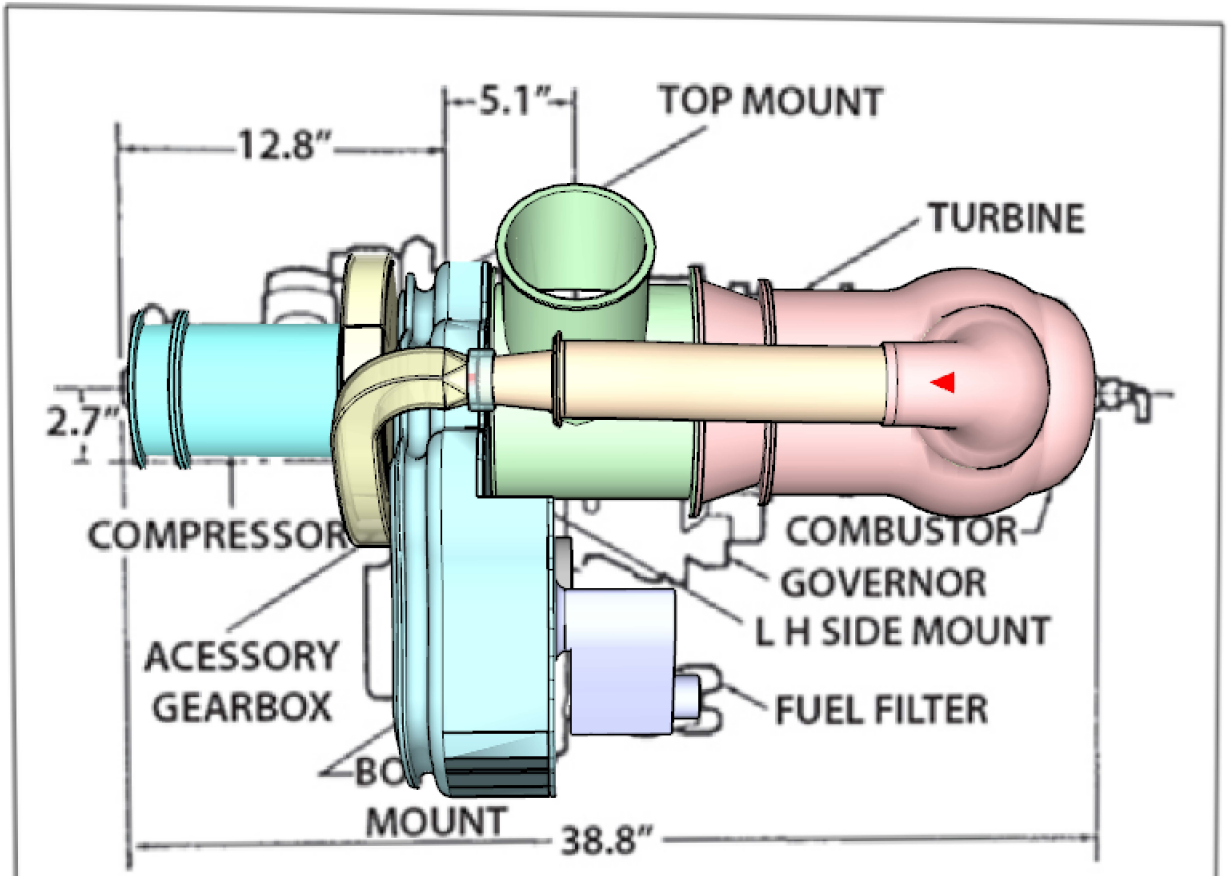


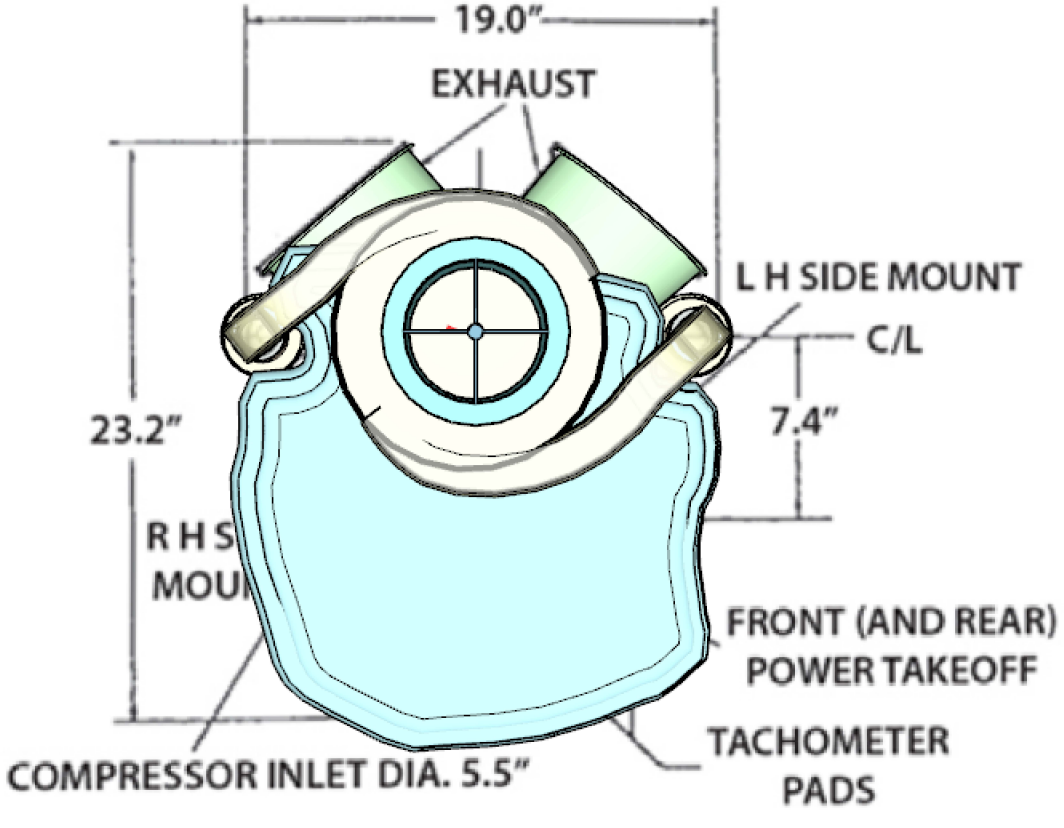




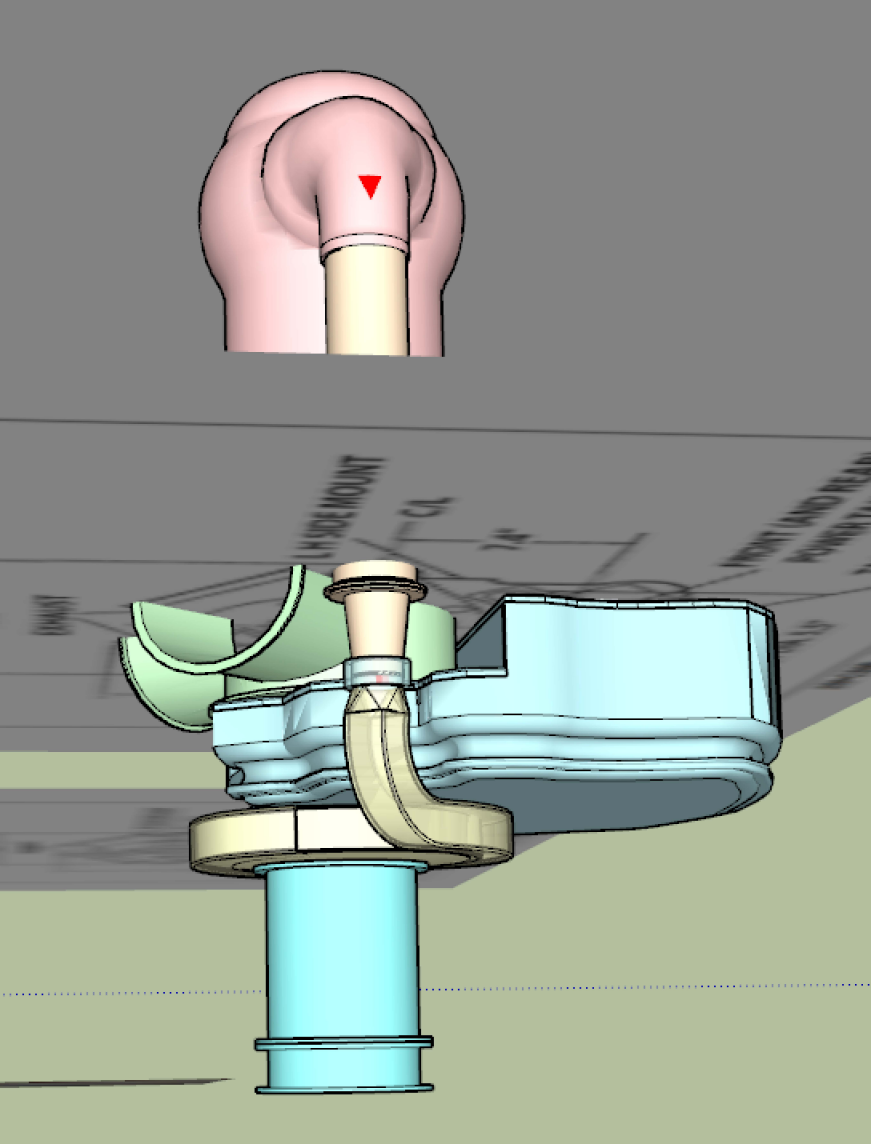


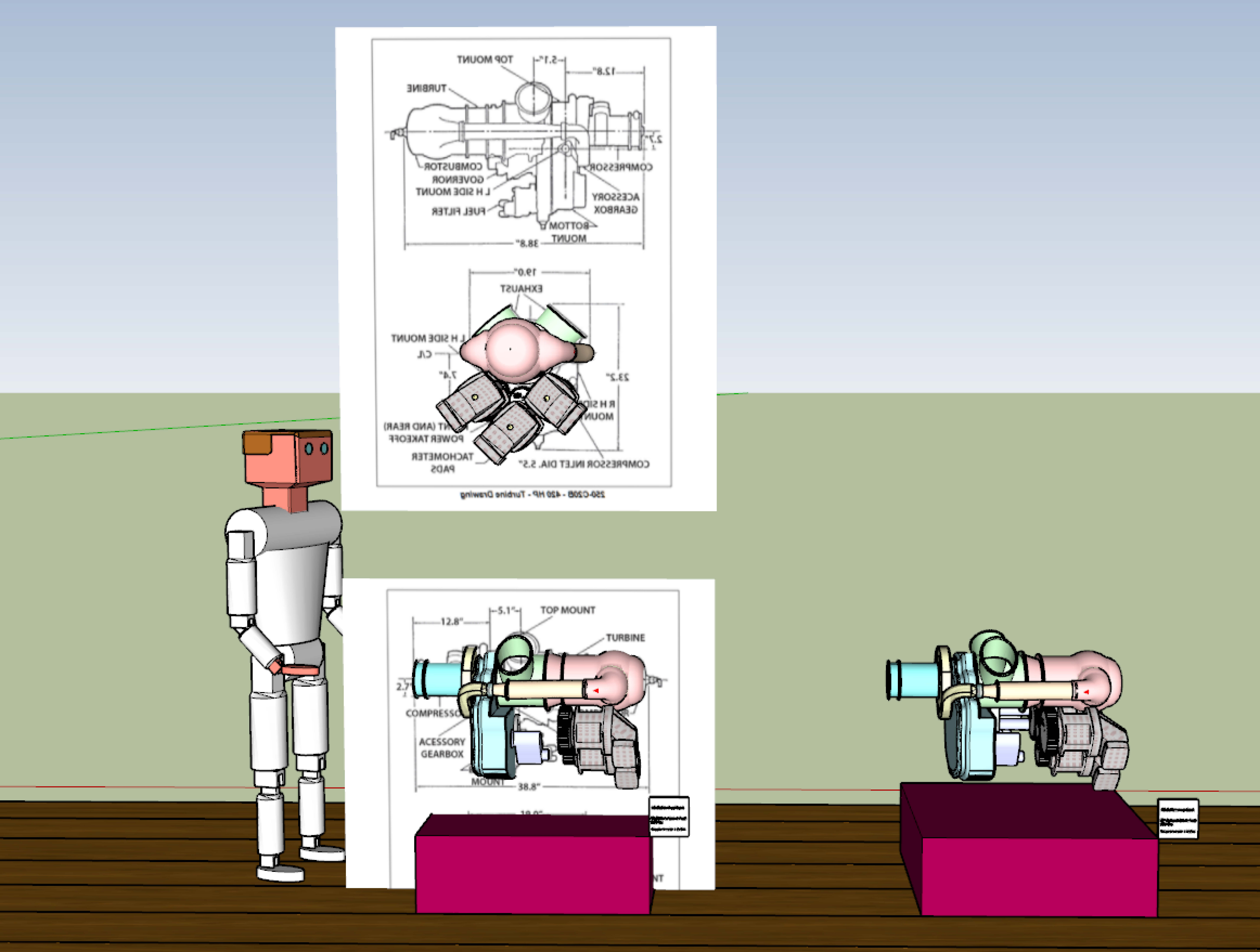
250-C20B - 420 HP - Turbine Drawing


5.1"
TOP MOUNT
12.8"
TURBINE
2.7"
COMPRESSOR
COMBUSTOR
GOVERNOR
L H SIDE MOUNT
ACESSORY
GEARBOX
FUEL FILTER
MOUNT
38.8"

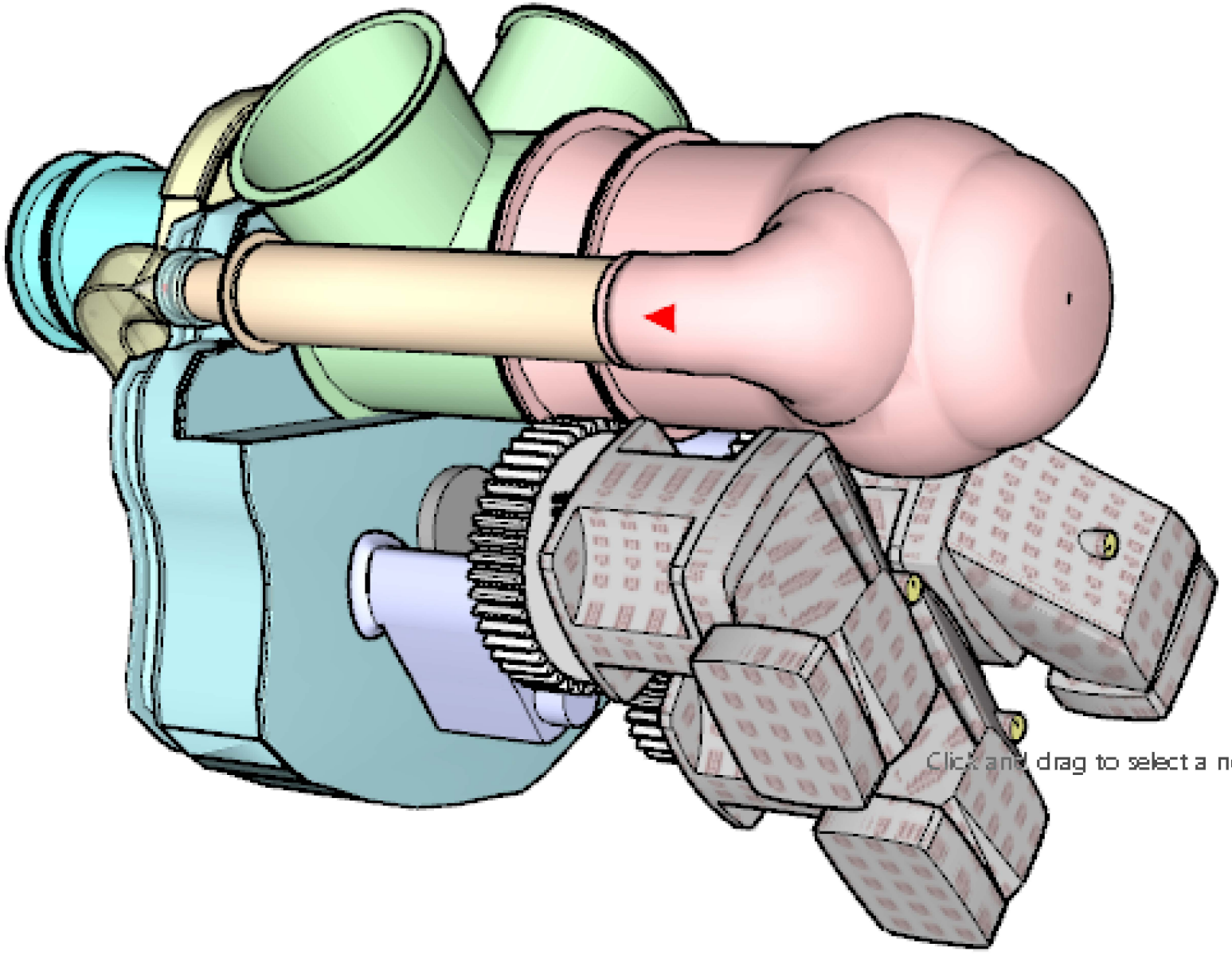


250-C20B - 420 HP - Turbine Drawing

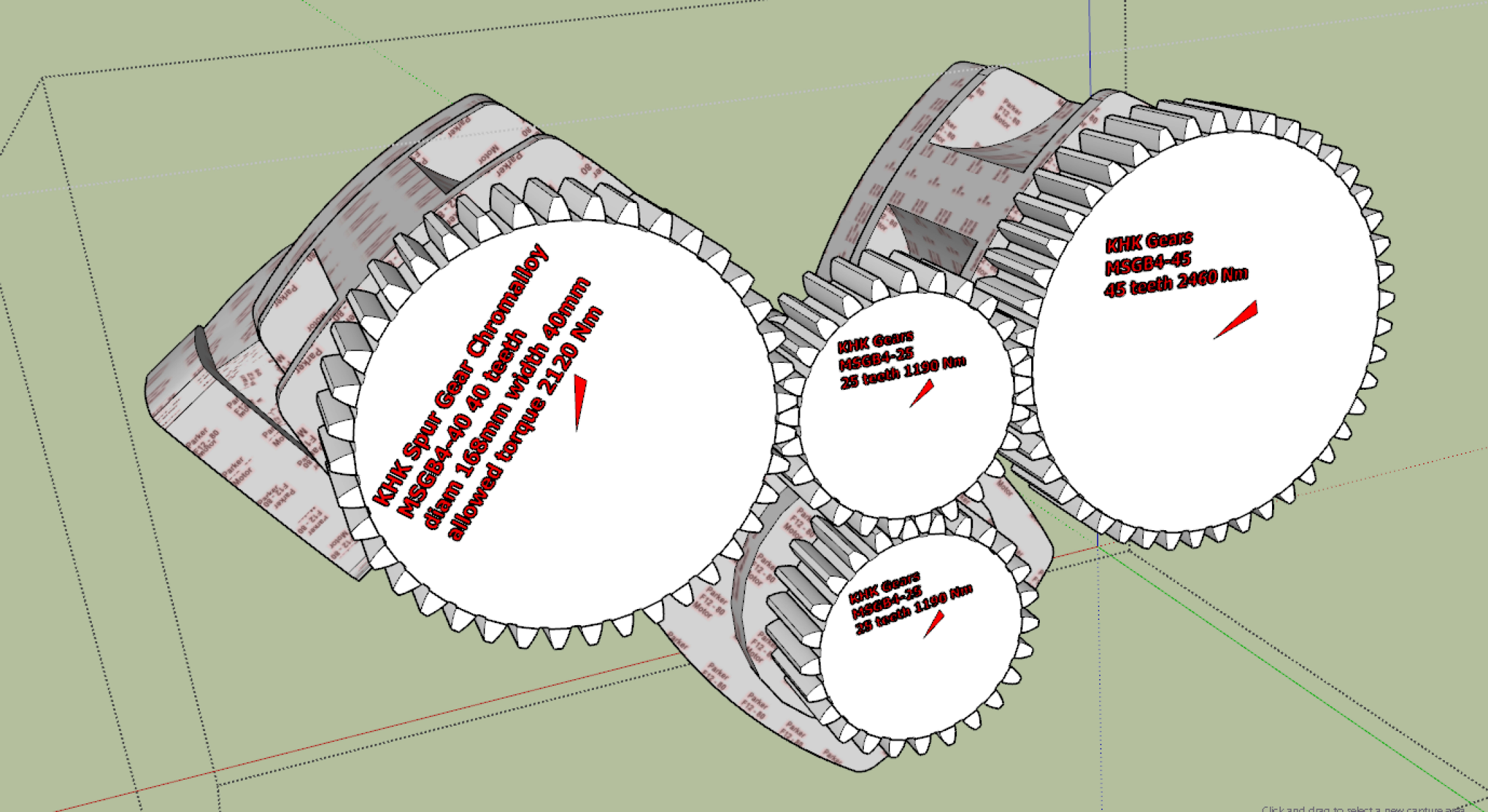


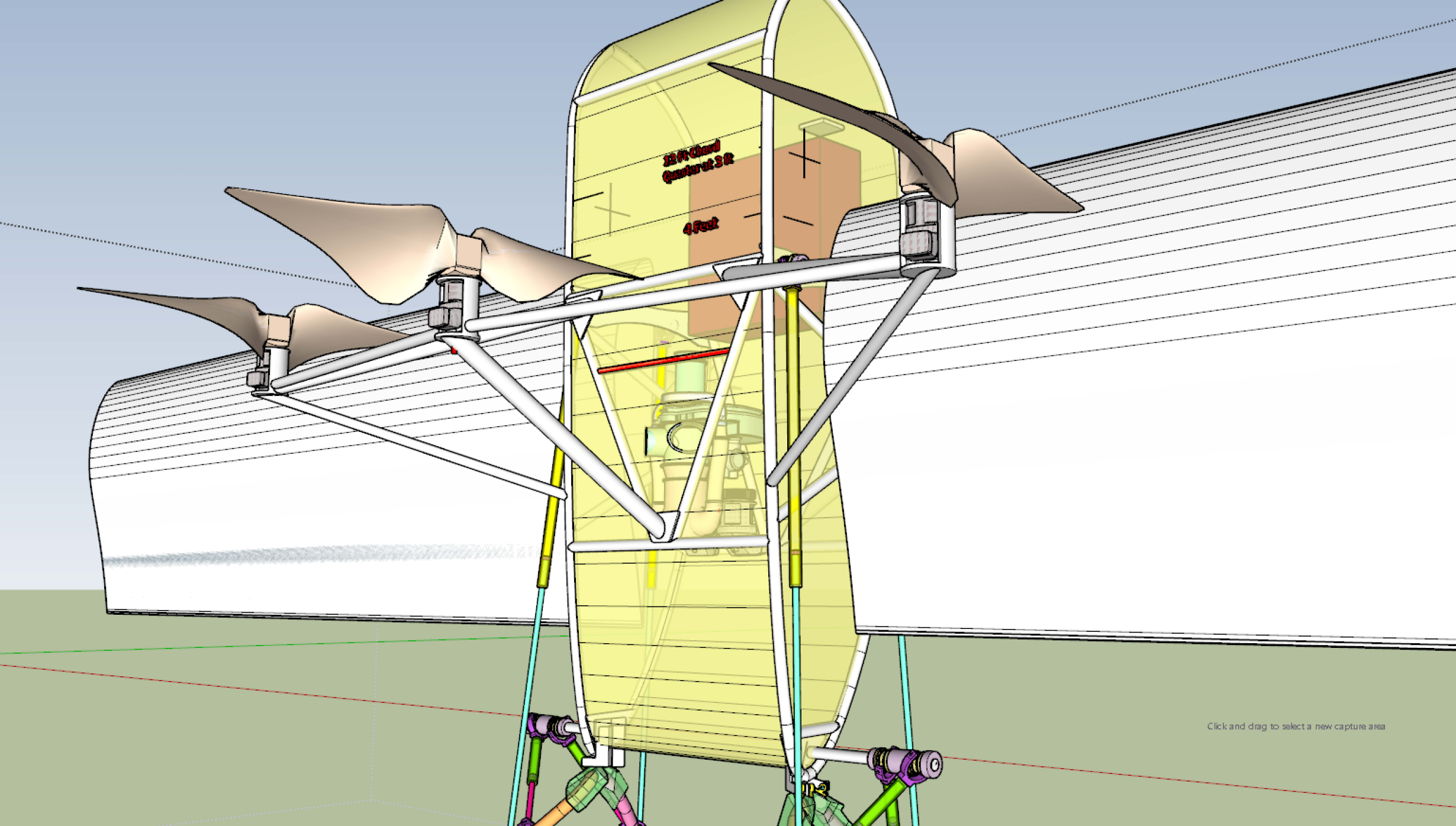

TOP MOUNT
5.1"
12.8"
TURBINE
COMBUSTOR
GOVERNOR
L H SIDE MOUNT
FUEL FILTER
COMPRESSOR
ACESSORY GEARBOX
BOTTOM MOUNT
38.8"
19.0"
EXHAUST
C/L
7.4"
23.2"
TACHOMETER PADS
COMPRESSOR INLET DIA. 5.2"
250-C20B - 420 HP - Turbine Drawing
12.8"
5.1"
TOP MOUNT
TURBINE
ACESSORY GEARBOX
MOUNT
38.8"

250-C20B - 420 HP - Turbine Drawing


Click and drag to select a new capture area

250-C20B - 420 HP - Turbine Drawing


KHK Spur Gear Chromalloy
MSGB4-40 40 teeth
diam 168mm width 40mm
allowed torque 2120 Nm
KHK Gears
MSGB4-25
25 teeth 1190 Nm
KHK Gears
MSGB4-45
45 teeth 2460 Nm
KHK Gears
MSGB4-25
25 teeth 1190 Nm


12 Ft Chord
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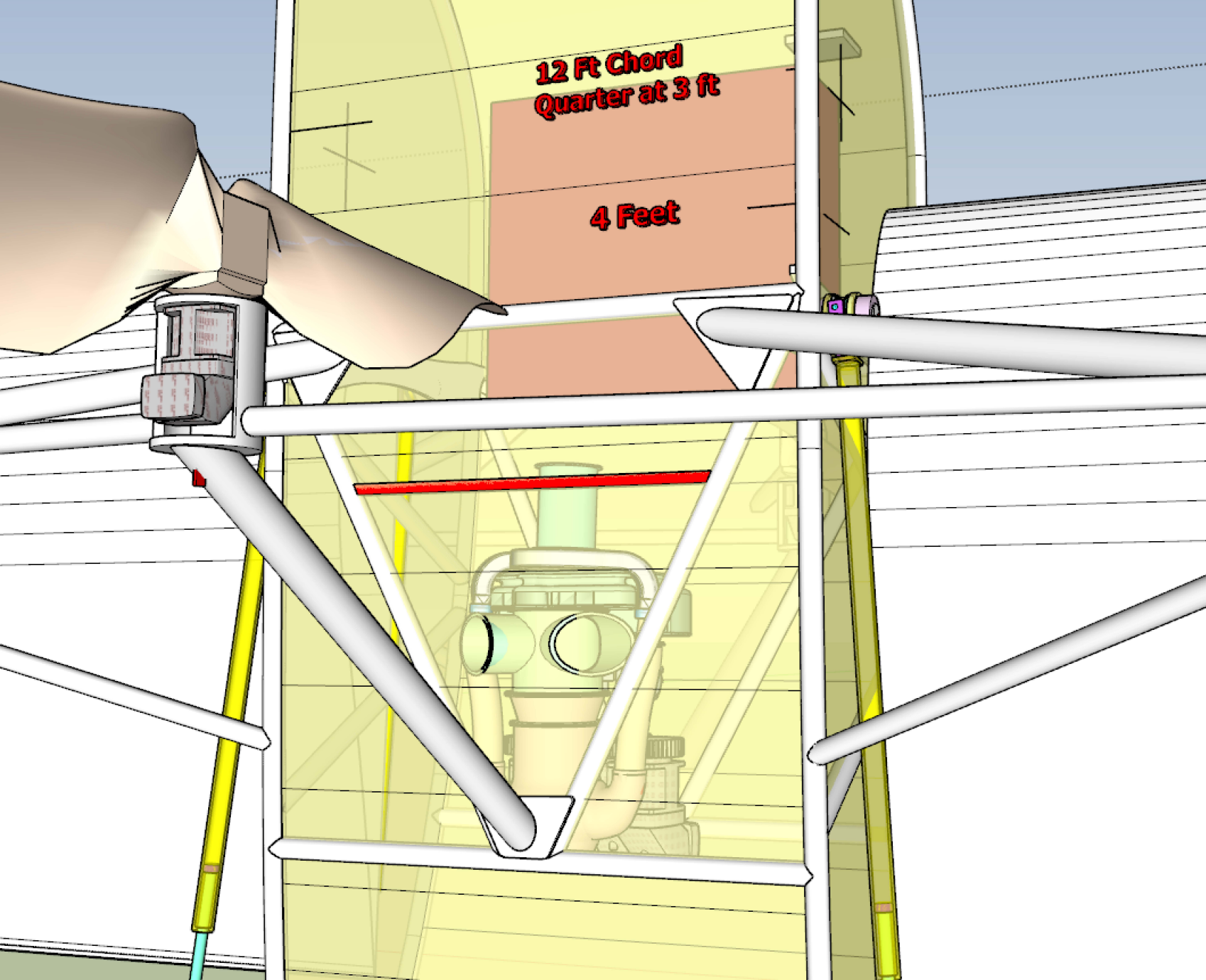
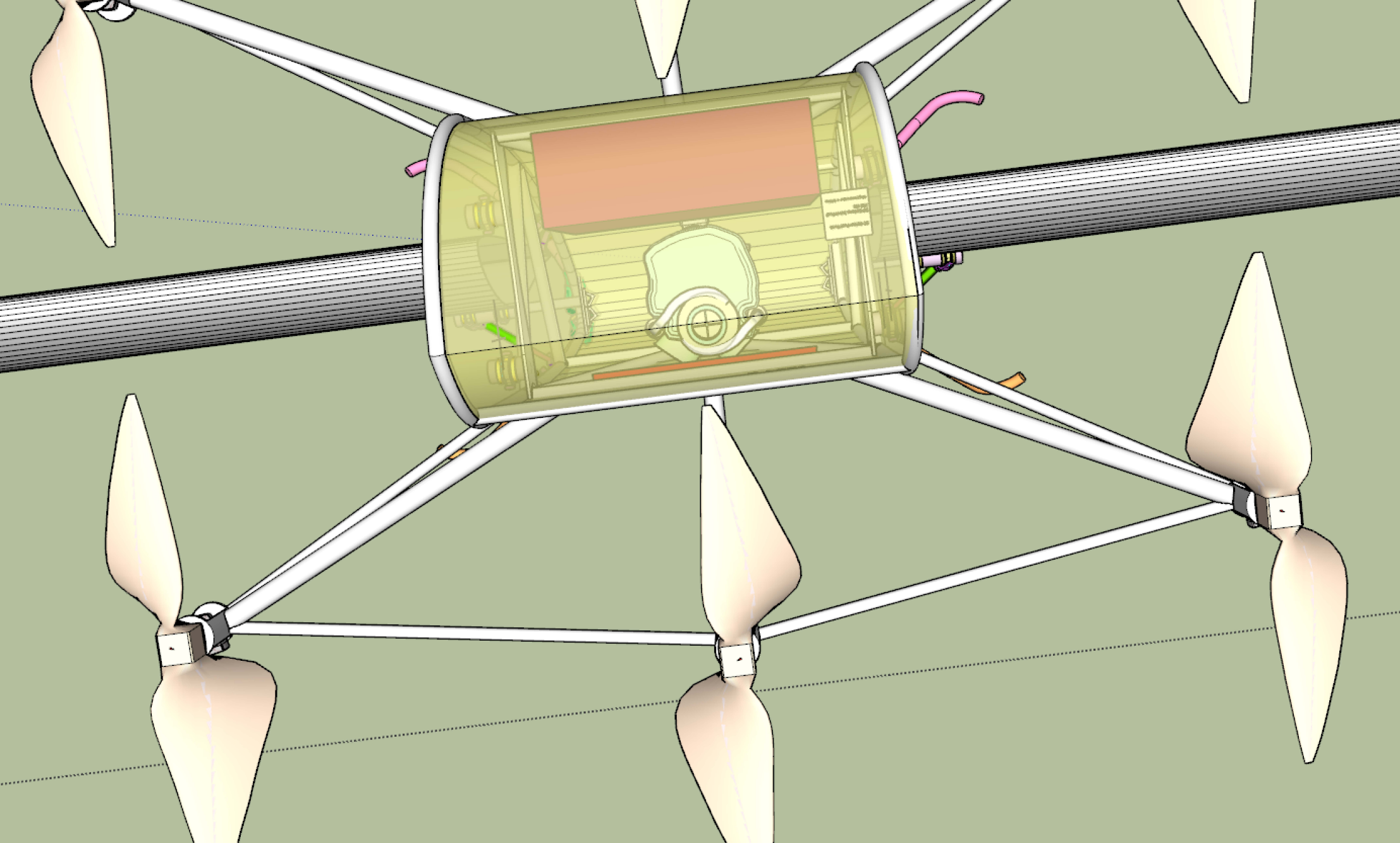
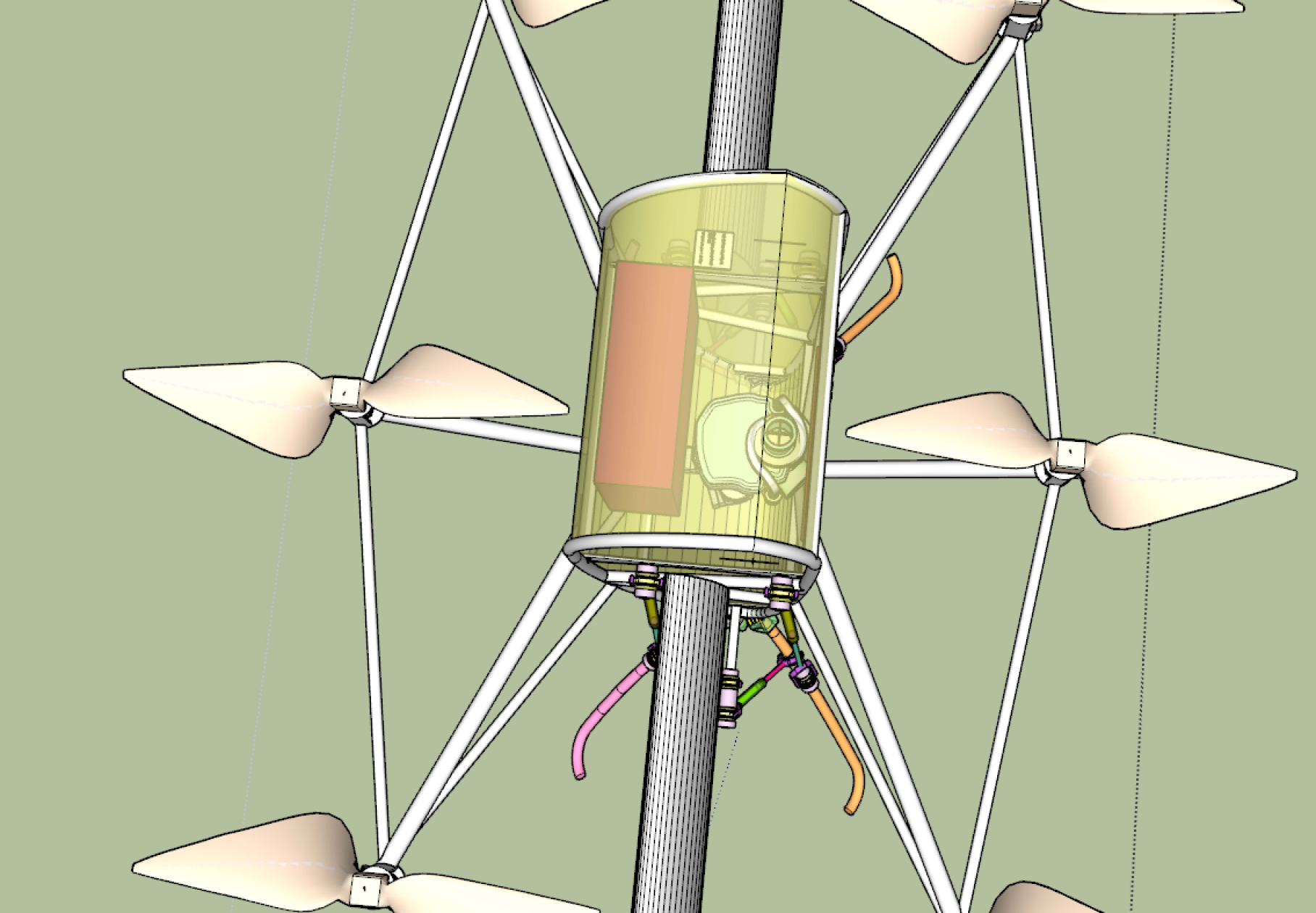
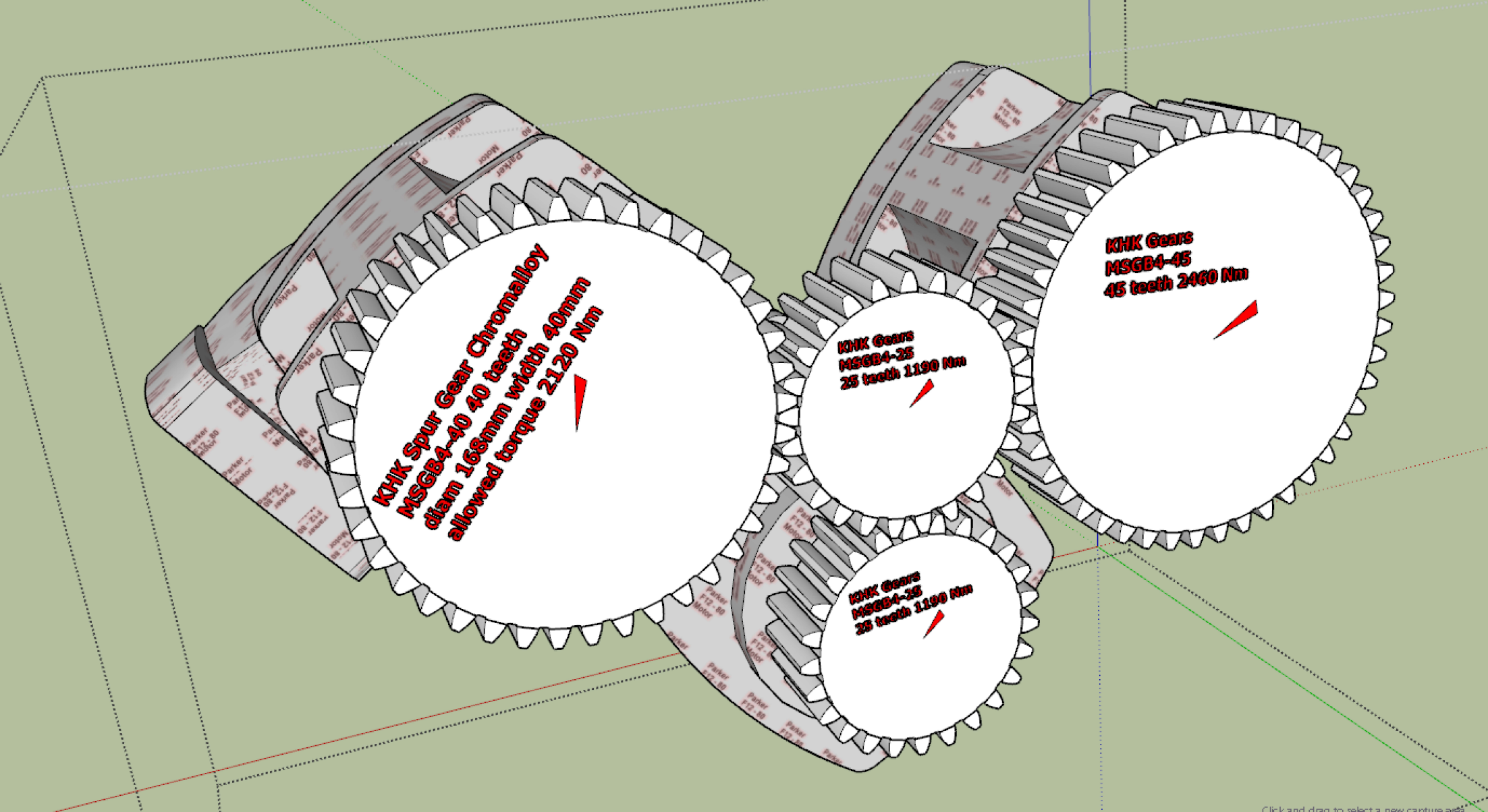
4 Feet
Click and drag to select a new capture area


12 Ft Chord
Quarter at 3 ft
4 Feet






KHK Spur Gear Chromalloy
MSGB4-40 40 teeth
diam 168mm width 40mm
allowed torque 2120 Nm
KHK Gears
MSGB4-25
25 teeth 1190 Nm
KHK Gears
MSGB4-45
45 teeth 2460 Nm
KHK Gears
MSGB4-25
25 teeth 1190 Nm