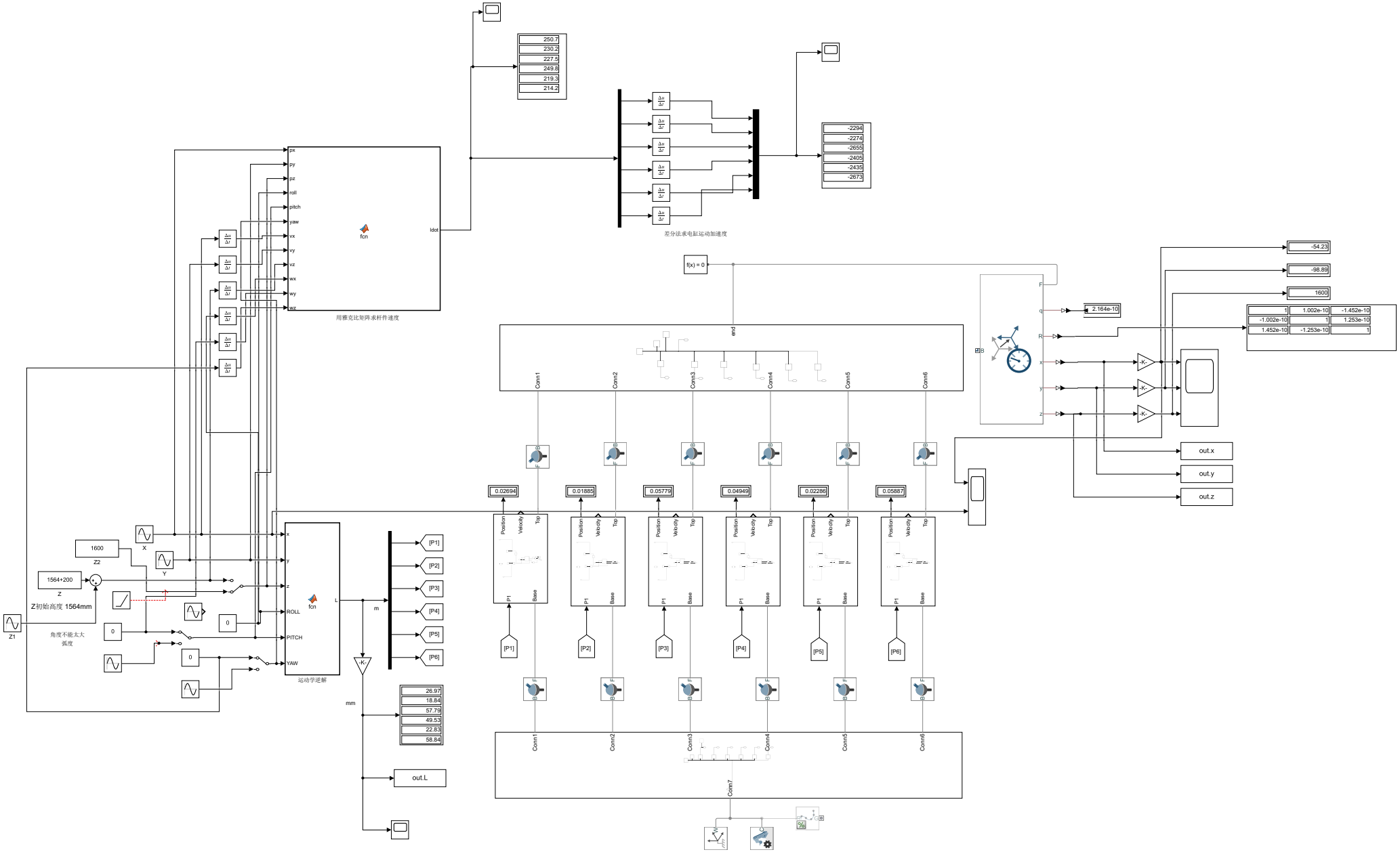
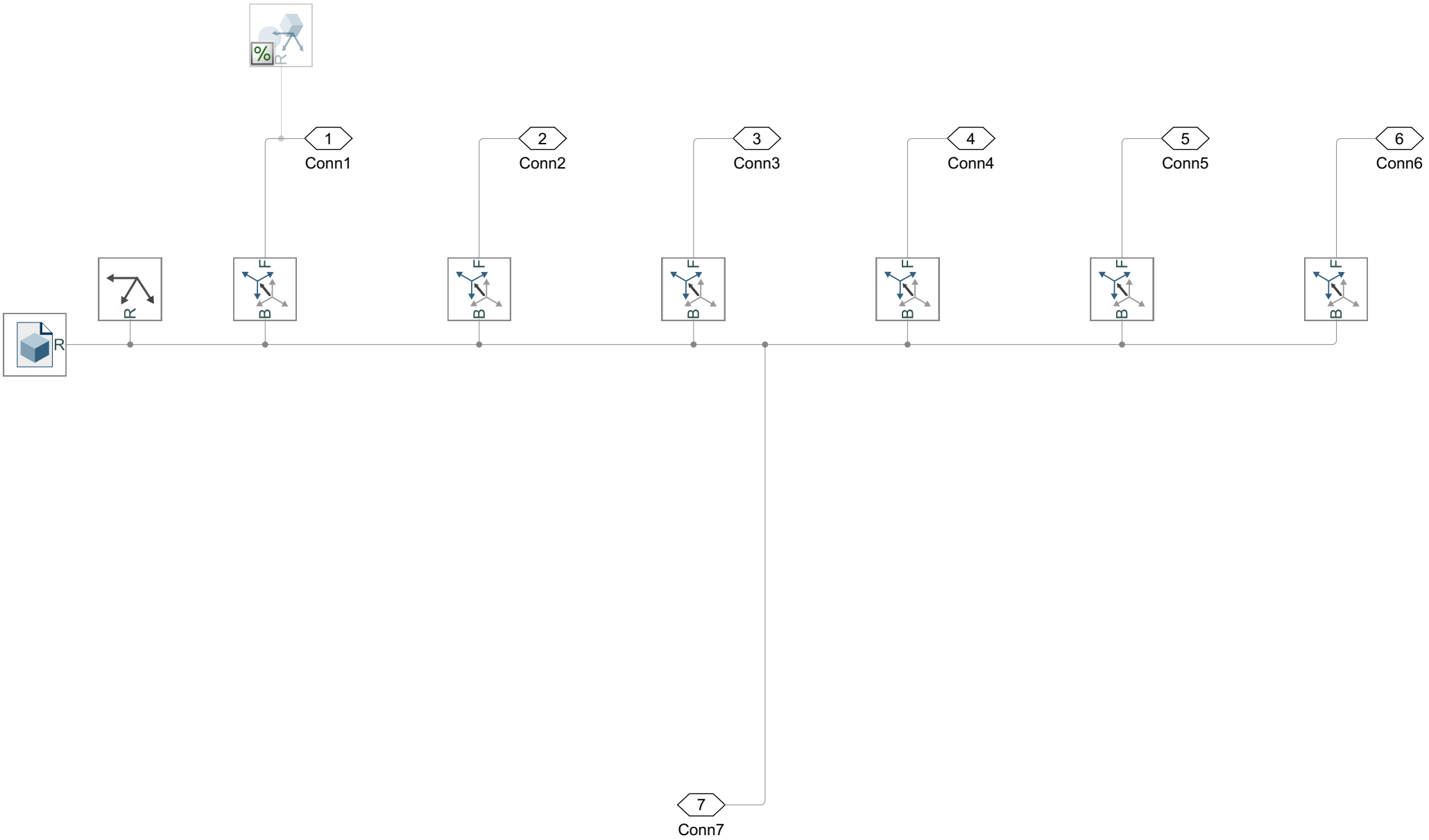
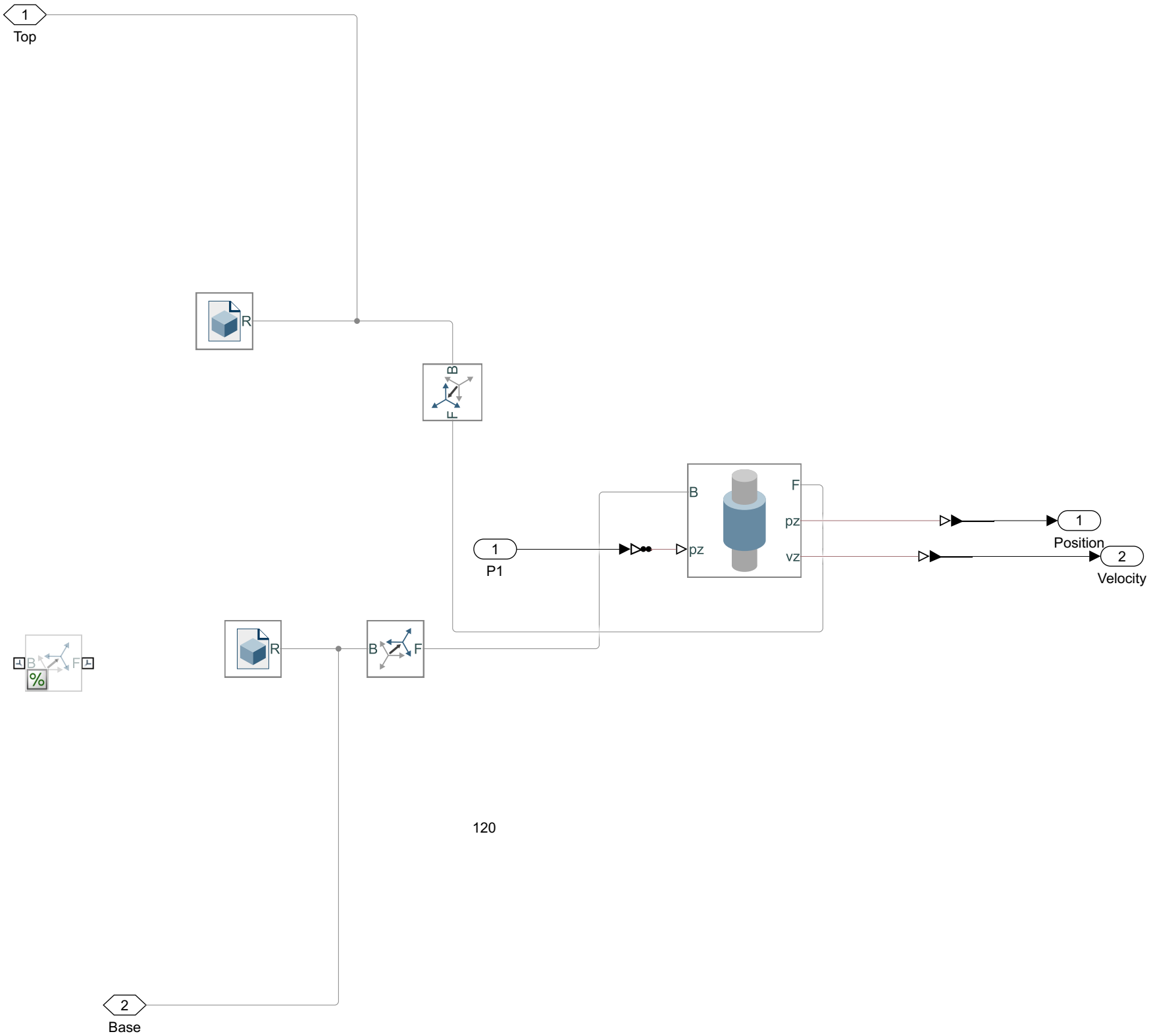
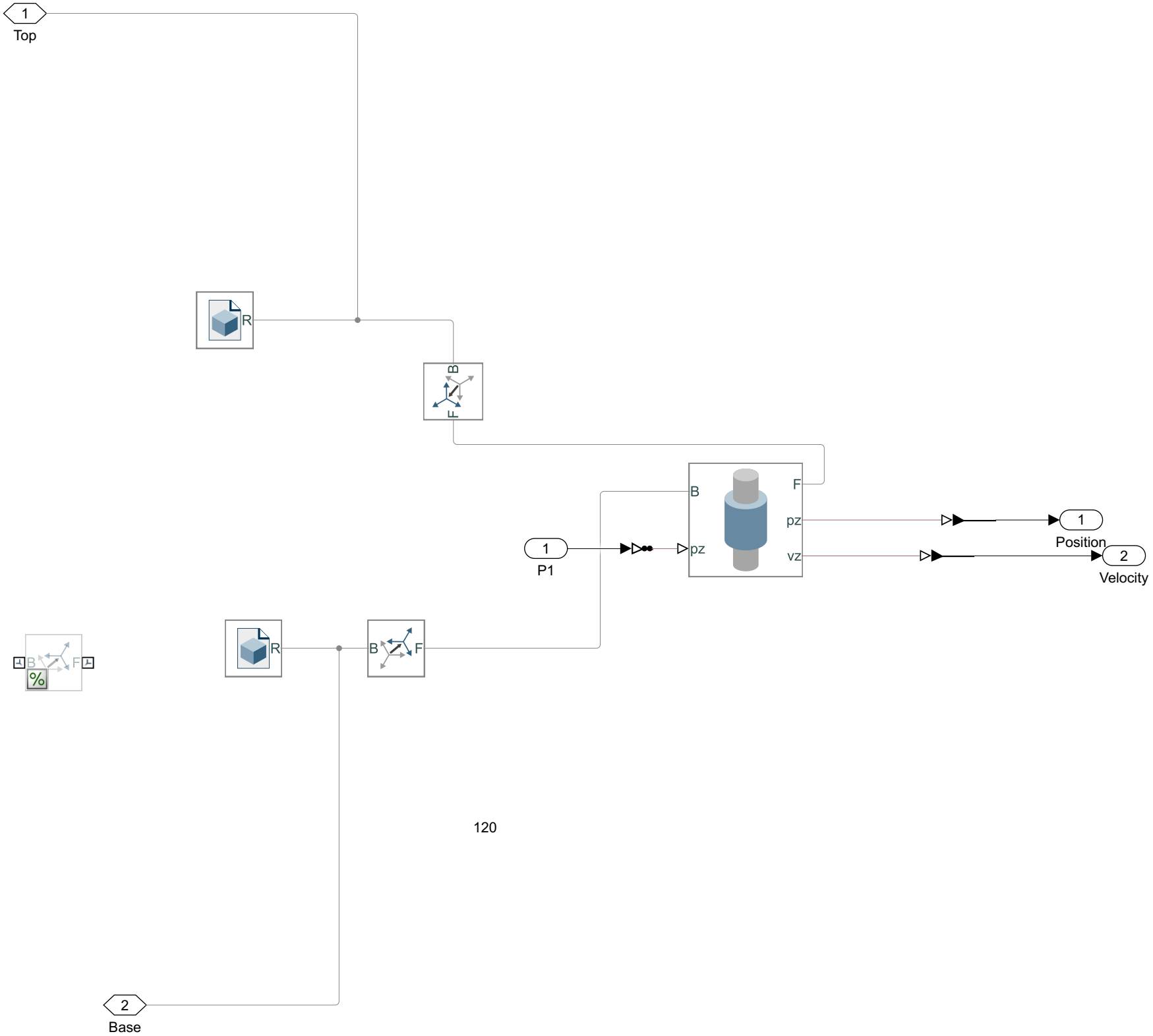
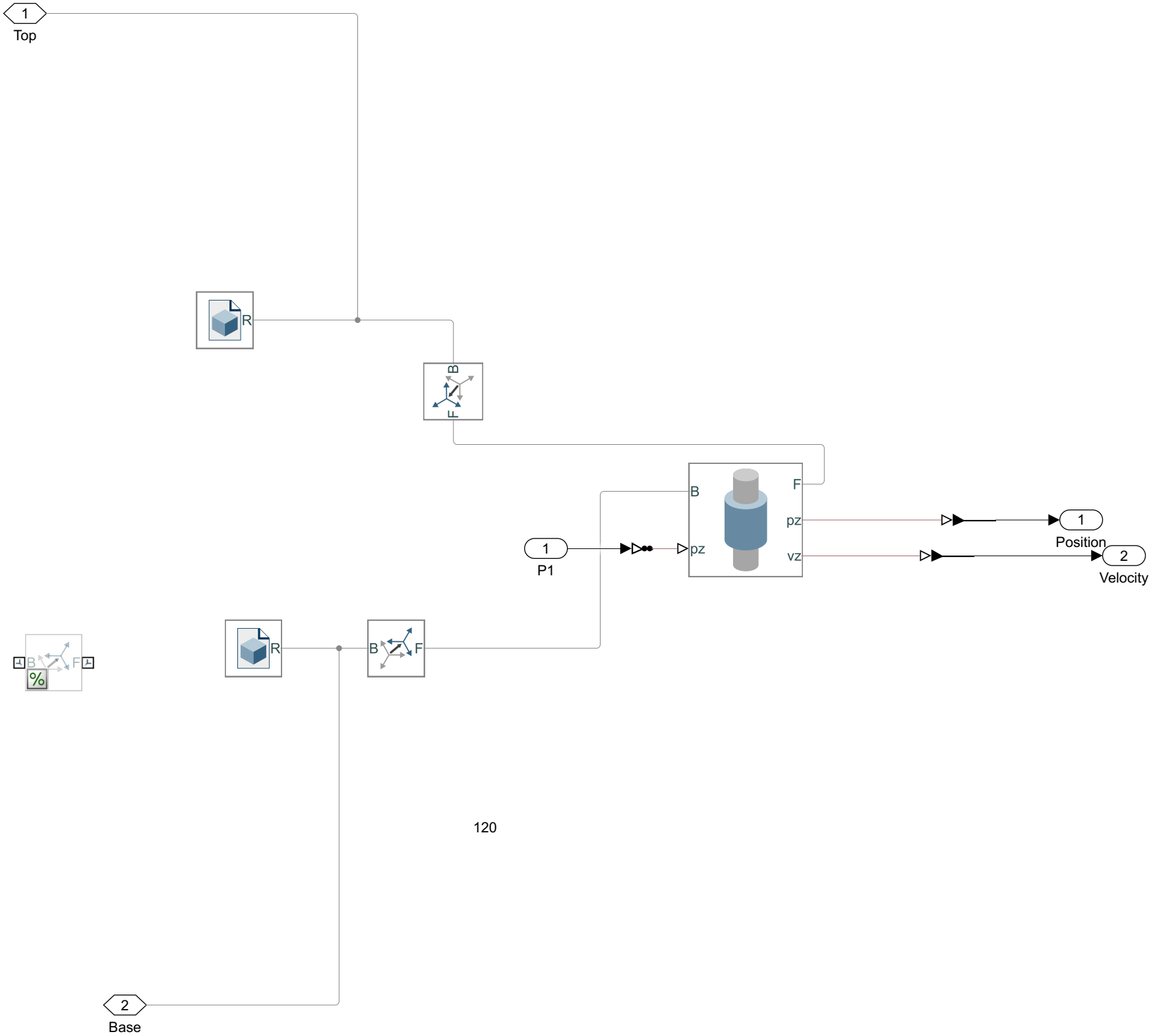
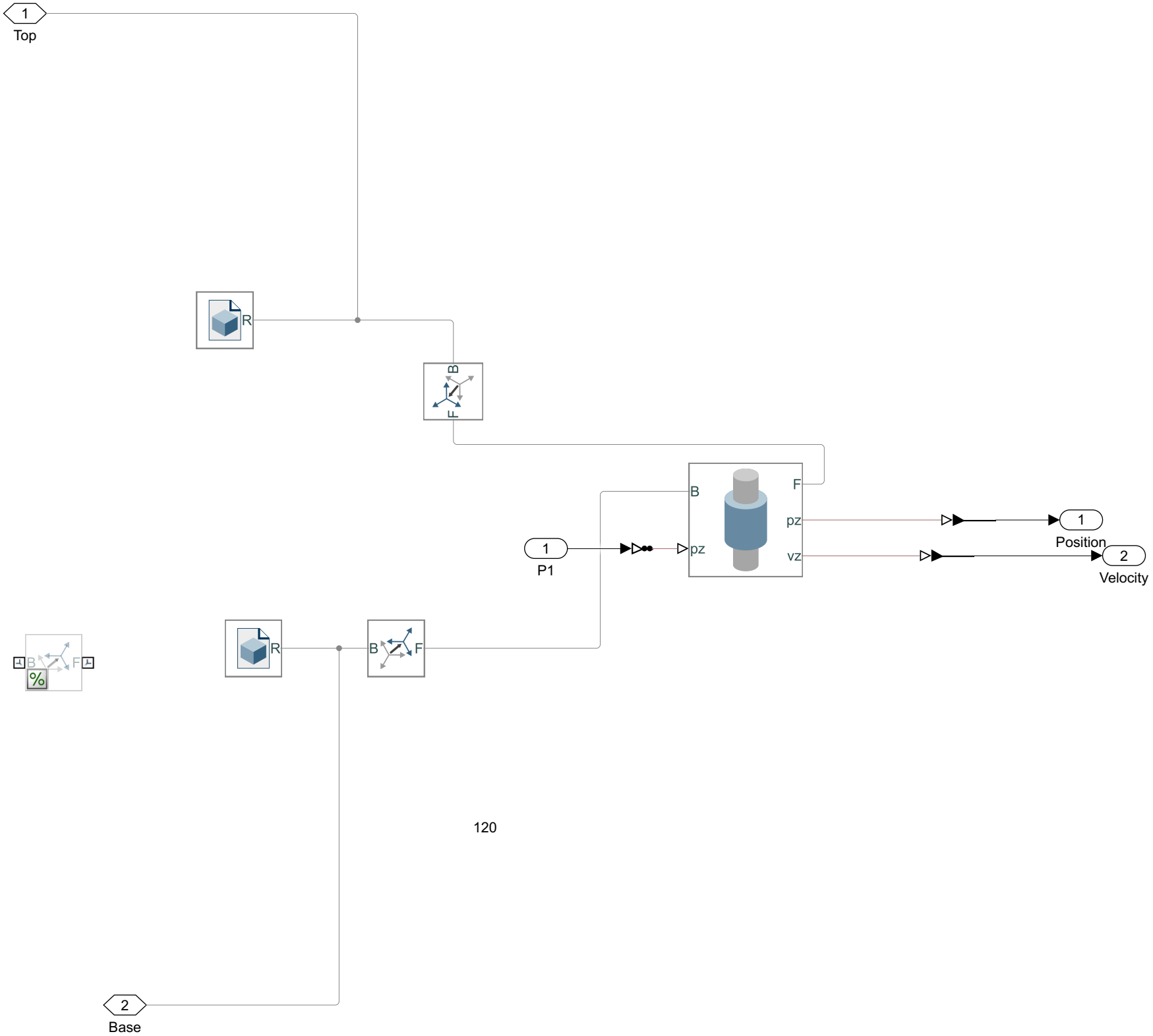

250.7
230.2
227.5
249.8
219.3
214.2
-2294
-2274
-2655
-2405
-2435
-2673
差分法求电缸运动加速度
px
py
pz
roll
pitch
yaw
vx
vy
vz
wx
wy
wz
fcn
Idot
用雅克比矩阵求杆件速度
f(x) = 0
end
Conn1
Conn2
Conn3
Conn4
Conn5
Conn6
Conn7
0.02694
0.01885
0.05779
0.04949
0.02286
0.05887
Position
Velocity
Top
P1
Base
[P1]
[P2]
[P3]
[P4]
[P5]
[P6]
-54.23
-98.89
1600
1
1.002e-10
-1.452e-10
-1.002e-10
1
1.253e-10
1.452e-10
-1.253e-10
1
2.164e-10
F
q
R
x
y
z
B
-K-
out.x
out.y
out.z
1600
Z2
1564+200
Z
Z初始高度 1564mm
Z1
角度不能太大
弧度
X
Y
0
x
y
z
ROLL
PITCH
YAW
fcn
L
运动学逆解
m
mm
-K-
26.97
18.84
57.79
49.53
22.83
58.84
out.L

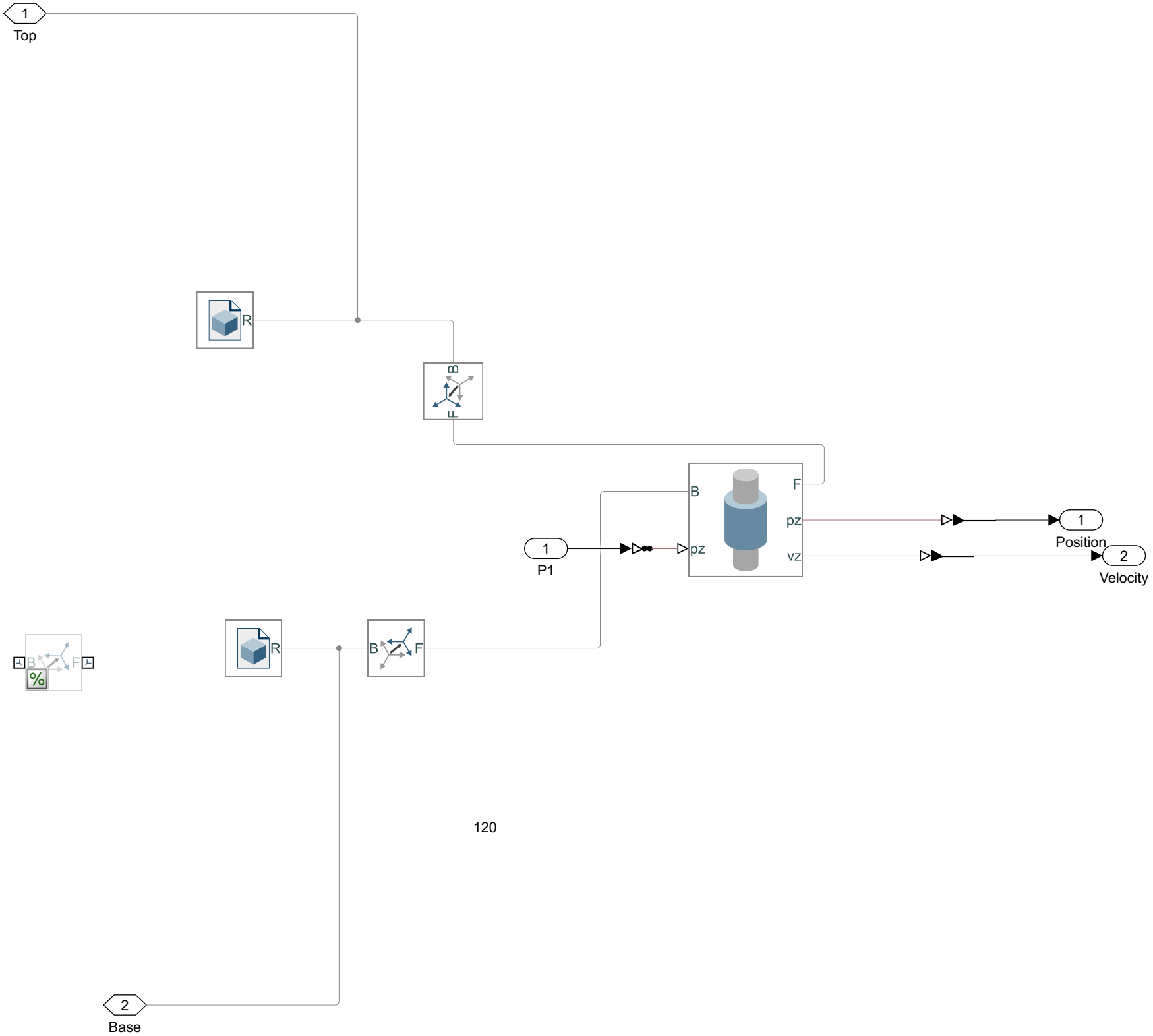

1
Conn1
2
Conn2
3
Conn3
4
Conn4
5
Conn5
6
Conn6
7
Conn7
R
B
F

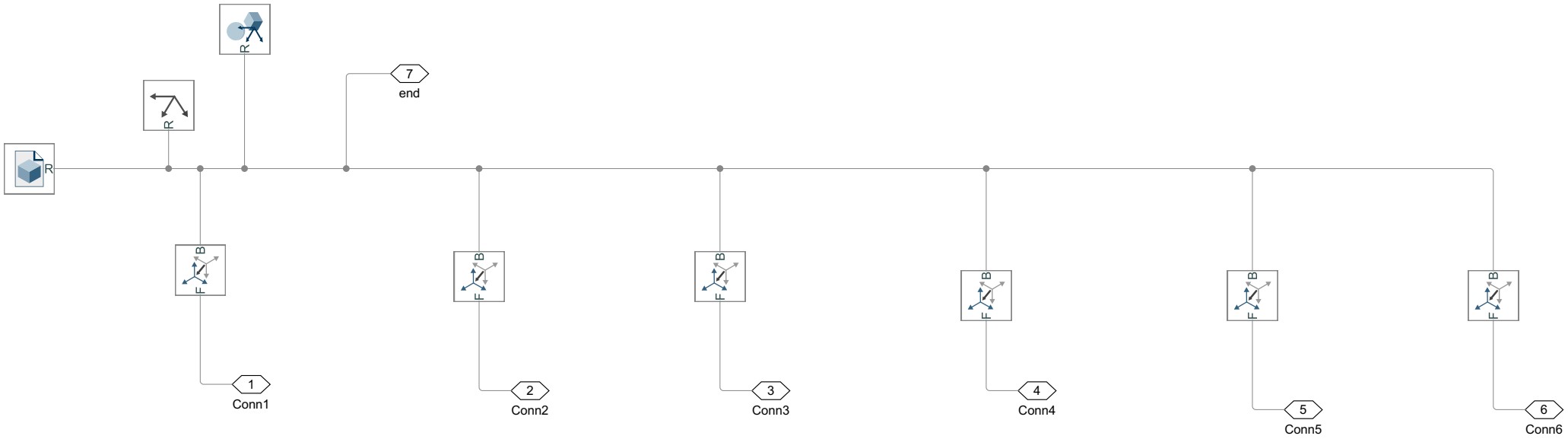

1
Top
R
B
F
B
F
pz
vz
1
P1
1
Position
2
Velocity
R
B
F
B
F
%
2
Base

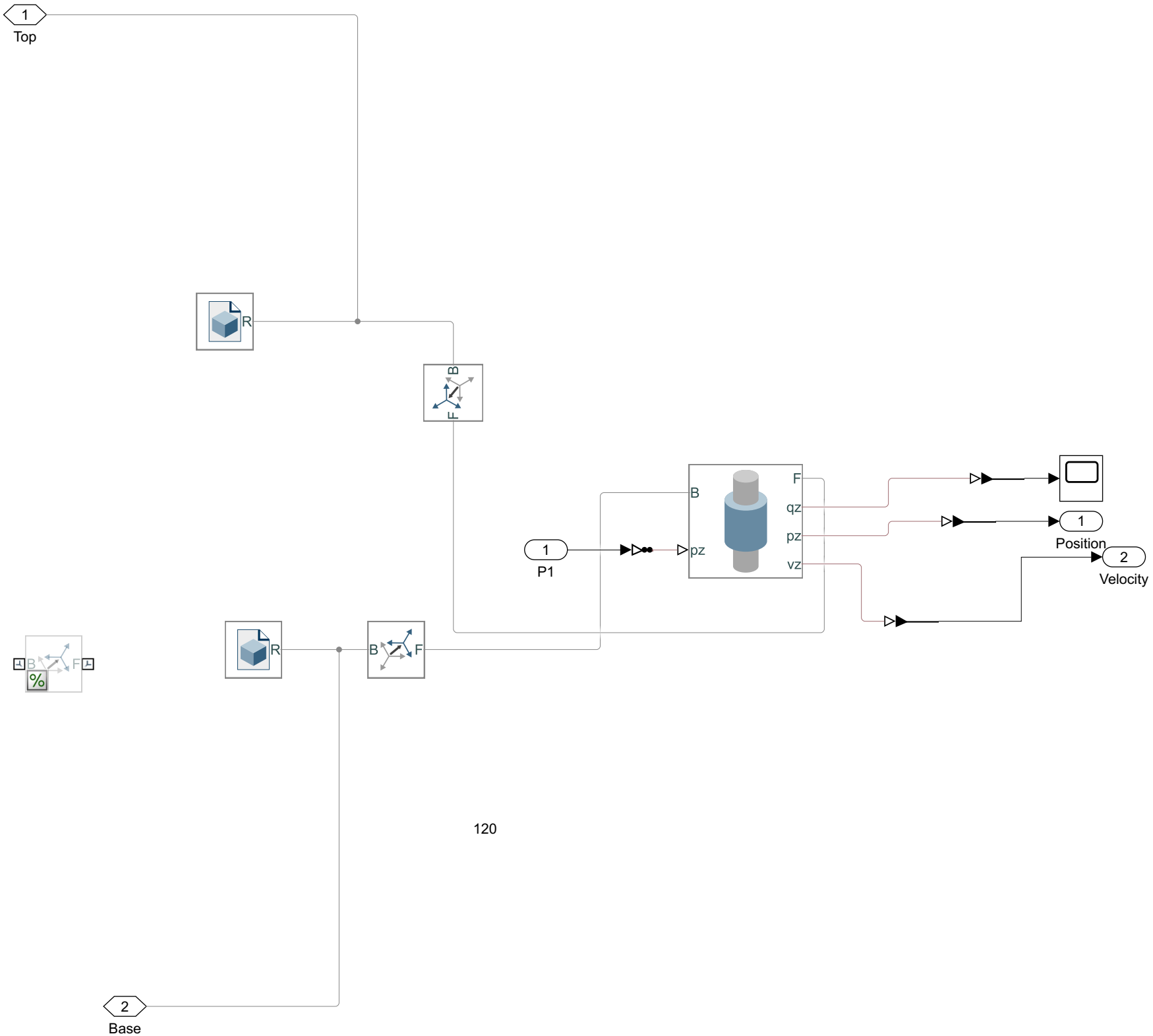

1
Top
R
B
F
B
F
pz
vz
1
P1
1
Position
2
Velocity
R
B
F
2
Base


1
Top
R
B
F
B
F
pz
vz
1
P1
1
Position
2
Velocity
R
B
F
2
Base


1
Top
R
B
F
B
F
pz
vz
1
P1
1
Position
2
Velocity
R
B
F
2
Base


1
Top
R
B
F
B
F
pz
vz
1
P1
1
Position
2
Velocity
R
B
F
2
Base


R
R
R
7
end
F
B
1
Conn1
2
Conn2
3
Conn3
4
Conn4
5
Conn5
6
Conn6


1
Top
R
B
F
B
qz
pz
vz
F
1
P1
pz
1
Position
2
Velocity
R
B
F
B
F
2
Base

```
function L = fcn(x,y,z,ROLL,PITCH,YAW)
coder.extrinsic('rotz');
coder.extrinsic('roty');
coder.extrinsic('rotx');
% 逆解
% function L  = Stewart_IK_AlgebraFunc(x,y,z,a,b,g)
%%运动学参数
%零初始位置时静平台位置（相对于静平台坐标系）
B1=[-169.76;-581.96;49.49];
B2=[130.07;-592.10;49.49];
B3=[588.88;143.98;49.49];
B4=[447.74;408.70;49.49];
B5=[-419.12;438;49.49];
B6=[-577.81;183.41;49.49];
%零初始位置时动平台位置（相对于动平台坐标系）
P1=[-350;-346.41;-46.39];
P2=[350;-346.41;-46.39];
P3=[470;-129.9;-46.39];
P4=[125;476.31;-46.39];
P5=[-125;476.31;-46.39];
P6=[-475;-129.9;-46.39];


%%
X=[x;y;z];

RX=[1 0 0;0 cos(ROLL) -sin(ROLL);0 sin(ROLL) cos(ROLL)];
RY=[cos(PITCH) 0 sin(PITCH);0 1 0;-sin(PITCH) 0 cos(PITCH)];
RZ=[cos(YAW) -sin(YAW) 0;sin(YAW) cos(YAW) 0; 0 0 1];
R=RZ*RY*RX;


%% 计算长度-初始长度
l1=norm(X+R*P1-B1)-600-901.47;
l2=norm(X+R*P2-B2)-600-901.47;
l3=norm(X+R*P3-B3)-600-901.47;
l4=norm(X+R*P4-B4)-600-901.47;
l5=norm(X+R*P5-B5)-600-901.47;
l6=norm(X+R*P6-B6)-600-901.47;
L=[l1;l2;l3;l4;l5;l6]./1000; %%mm 转换成 m
% L=zeros(6,1)
```

```
function ldot = fcn(px,py,pz,roll,pitch,yaw,vx,vy,vz,wx,wy,wz)
Xdot = [vx;vy;vz;wx;wy;wz];
J = inv(Jacobian_Stewart(px,py,pz,roll,pitch,yaw));
ldot = ones(6,1);
ldot = J*Xdot;

function J = Jacobian_Stewart(px,py,pz,roll,pitch,yaw)
% syms px py pz roll pitch yaw;
L = IK_Stewart_vector(px,py,pz,roll,pitch,yaw);
L_vector = ones(3,6);
u_vector = ones(3,6);
for i = 1:6
    L_vector(:,i) = L(i,:).';
    u_vector(:,i) = (L_vector(:,i))/norm(L_vector(:,i));
end

% The position of Bi relative to B
P1=[-350;-346.41;-46.39];
P2=[350;-346.41;-46.39];
P3=[470;-129.9;-46.39];
P4=[125;476.31;-46.39];
P5=[-125;476.31;-46.39];
P6=[-475;-129.9;-46.39];
RX = [1 0 0;0 cos(roll) -sin(roll);0 sin(roll) cos(roll)];
RY = [cos(pitch) 0 sin(pitch);0 1 0;-sin(pitch) 0 cos(pitch)];
RZ = [cos(yaw) -sin(yaw) 0;sin(yaw) cos(yaw) 0; 0 0 1];
R = RZ*RY*RX;
Pio1 = R*P1; Pio2 = R*P2; Pio3 = R*P3; Pio4 = R*P4; Pio5 = R*P5; Pio6 = R*P6;
Jacobian = ones(6,6);
%% calculate Jocobian
Jacobian(1,:) = [u_vector(:,1).' (cross(Pio1,u_vector(:,1))).'];
Jacobian(2,:) = [u_vector(:,2).' (cross(Pio2,u_vector(:,2))).'];
Jacobian(3,:) = [u_vector(:,3).' (cross(Pio3,u_vector(:,3))).'];
Jacobian(4,:) = [u_vector(:,4).' (cross(Pio4,u_vector(:,4))).'];
Jacobian(5,:) = [u_vector(:,5).' (cross(Pio5,u_vector(:,5))).'];
Jacobian(6,:) = [u_vector(:,6).' (cross(Pio6,u_vector(:,6))).'];
% J = Jacobian;
J = inv(Jacobian);
end
end
```