**3D Joints**



 Restricts Allows

Revolute R 5 1

Prismatic P 5 1

Helical (Screw) H(S) 5 1

Cylindrical C 4 2

Universal (Hooke) U(H) 4 2

Globe (Spherical) G(S) 3 3

Flat (Planar) F(P) 3 3

3D mobility

M = 6(nL-1) - 5 nJ1 - 4 nJ2 - 3 nJ3



**MacPherson Strut**

****

**MacPherson Strut**

6 2 (R,P) 1 (C) 4 (4G) 4

nL \_\_\_\_\_\_\_\_\_\_ nJ1 \_\_\_\_\_\_\_\_\_\_ nJ2 \_\_\_\_\_\_\_\_\_\_ nJ3 \_\_\_\_\_\_\_\_\_\_ M \_\_\_\_\_\_\_\_\_\_



R

G

G

C

G

P

G

PISTON ROD

CHASSIS

A-ARM

STRUT

RACK

TIE

ROD

**Stewart-Gough Platform (hydraulic)**

14 0 18 (12U, 6C) 0 6

nL \_\_\_\_\_\_\_\_\_\_ nJ1 \_\_\_\_\_\_\_\_\_\_ nJ2 \_\_\_\_\_\_\_\_\_\_ nJ3 \_\_\_\_\_\_\_\_\_\_ M \_\_\_\_\_\_\_\_\_\_



U

U

U

U

U

U

TOP PLATE

PISTON

GROUND

CYLINDER

U

U

U

U

U

U

C

C

C

C

C

C

**Stewart-Gough Platform (electric)**

20 12 (6R, 6H) 12 (U) 0 6

nL \_\_\_\_\_\_\_\_\_\_ nJ1 \_\_\_\_\_\_\_\_\_\_ nJ2 \_\_\_\_\_\_\_\_\_\_ nJ3 \_\_\_\_\_\_\_\_\_\_ M \_\_\_\_\_\_\_\_\_\_

****

R

R

R

U

U

TOP PLATE

NUT

GROUND

MOTOR

U

U

U

R

R

R

H

H

H

H

H

H

U

SCREW

U

U

U

U

U

U

**Planar and Spherical Four Bar**

4 4 0 0 -2 ???

nL \_\_\_\_\_\_\_\_\_\_ nJ1 \_\_\_\_\_\_\_\_\_\_ nJ2 \_\_\_\_\_\_\_\_\_\_ nJ3 \_\_\_\_\_\_\_\_\_\_ M \_\_\_\_\_\_\_\_\_\_

****