

Typical distances within a regular alpha helix:

hn(i) - hn(i+1) 2.8 Å
ha(i) - hn(i+1) 3.4 Å
hb(i) - hn(i+1) 3.2 Å
hn(i) - hn(i+3) 3.5 Å
o(i) - hn(i+4) 2.1 Å
ha(i) - hn(i+3) 3.4 Å
ha(i) - hb(i+3) 3.4 Å

Typical torsion angles within a regular alpha helix:

phi: c^o(i-1) - n(i) - c(i) - c^o(i) -60 deg
psi: n(i) - c(i) - c^o(i) - n(i+1) -60 deg

In X-PLOR notation these 2 torsion angles are:

```
assign (resid 1 and name o) (resid 2 and name n)
      (resid 2 and name ca) (resid 2 and name o ) 1.0 -60.0 10.0 2
```

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assign (resid 2 and name n) (resid 2 and name ca)
      (resid 2 and name c) (resid 3 and name n ) 1.0 -60.0 10.0 2
```

Typical distances within a regular beta strand:

hn(i) - hn(i+1) 4.2 Å
ha(i) - hn(i+1) 2.2 Å
hb(i) - hn(i+1) 3.5 Å

ha(i) - ha(j) 2.2 Å
hn(i+1) - o(j-1) 2.2 Å
o(i+1) - hn(j-1) 2.2 Å
ha(i+2) - ha(j-2) 2.2 Å

ca(i) - ca(i+1) 3.8 Å
ca(i) - ca(i+2) 6.3 Å
ca(i) - ca(i+3) 9.7 Å
ca(i) - ca(i+4) 12.6 Å

Typical torsion angles within a regular beta strand:

phi: c^o(i-1) - n(i) - c(i) - c^o(i) -120 deg
psi: n(i) - c(i) - c^o(i) - n(i+1) +150 deg

beta strand side chain:

hn(i) - n(i) - c(i) - c(i) -60 deg
o(i) - c^o(i) - c(i) - c(i) +60 deg

In X-PLOR notation these 4 beta strand torsion angles are:

```
assign (resid 1 and name o) (resid 2 and name n)
      (resid 2 and name ca) (resid 2 and name o ) 1.0 -120.0 10.0 2
```

```
assign (resid 2 and name n) (resid 2 and name ca)
      (resid 2 and name c) (resid 3 and name n ) 1.0 150.0 10.0 2
```

```
assign (resid 2 and name hn) (resid 2 and name n)
      (resid 2 and name ca) (resid 2 and name cb) 1.0 -60.0 10.0 2
```

```
assign (resid 2 and name o) (resid 2 and name c)
      (resid 2 and name ca) (resid 2 and name cb) 1.0 60.0 10.0 2
```