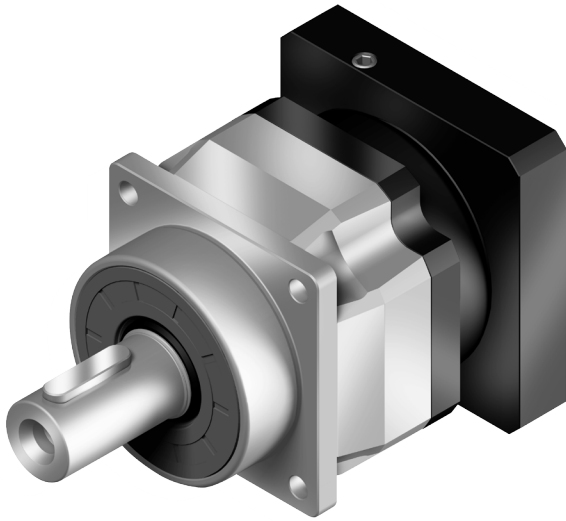


AF – Planetary Series

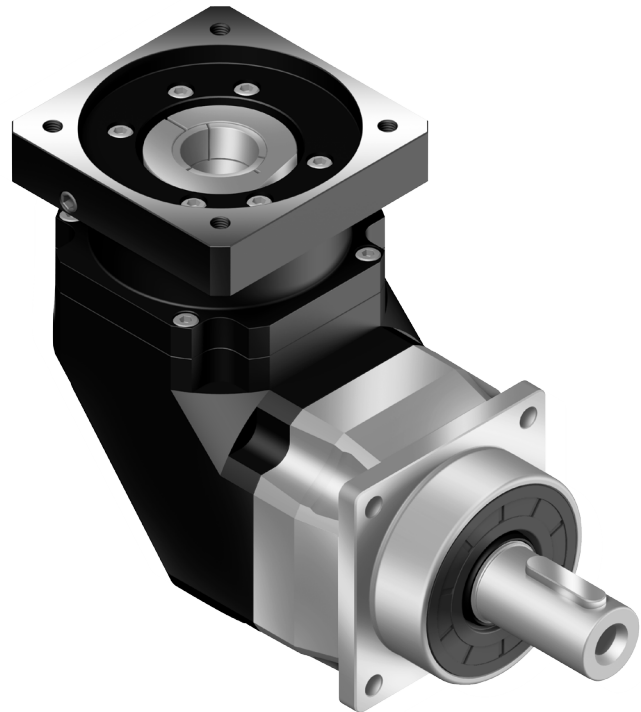
Precision Range – Stainless Steel



Heavy duty roller bearings for demanding loads

AF

- **Stainless steel construction**
- **Square B5 style output flange**
- **7 frame sizes from 042 up to 220**
- **26 reduction ratios from 3:1 up to 200:1**
- **Nominal output torque up to 2000 Nm**
- **Backlash from as low as ≤ 1 arcmin**
- **Efficiency of up to ≥ 97 %**
- **Operating noise levels as low as 56 dB**



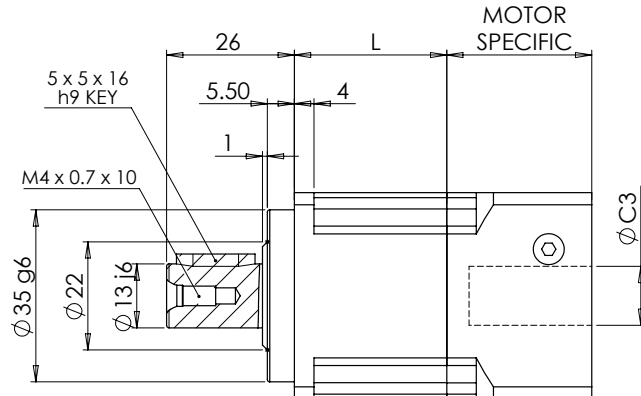
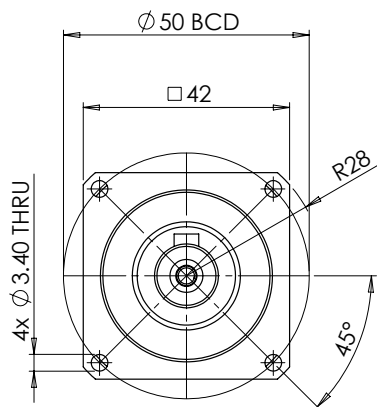
The **Apex AF** series has all the benefits of stainless steel construction but is fitted with precision tapered roller bearings for increased radial load bearing capacity suitable for the most demanding applications.

High precision, high torque and quiet operation are provided by 100% optimized helical gearing. Straddle mounted high precision tapered roller bearings allow for higher radial and axial loads.

The **Apex AFR** series has a 90° input via helical bevel gear. It features an extremely short, light yet rigid housing and full compatibility with standard motor adapters.

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF042 – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 31.0 mm

DIM L Double Stage = 58.5 mm

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	20	36.0	60	0.03
4:1	19	34.2	57	0.03
5:1	22	39.6	66	0.03
6:1	20	36.0	60	0.03
7:1	19	34.2	57	0.03
8:1	17	30.6	51	0.03
9:1	14	25.2	42	0.03
10:1	14	25.2	42	0.03
~ DOUBLE STAGE ~				
15:1	20	36.0	60	0.03
20:1	19	34.2	57	0.03
25:1	22	39.6	66	0.03
30:1	20	36.0	60	0.03
35:1	19	34.2	57	0.03
40:1	17	30.6	51	0.03
45:1	14	25.2	42	0.03
50:1	22	39.6	66	0.03
60:1	20	36.0	60	0.03
70:1	19	34.2	57	0.03
80:1	17	30.6	51	0.03
90:1	14	25.2	42	0.03
100:1	14	25.2	42	0.03

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	5000
Max. Input Speed (rpm)	10000
Torsional Rigidity (Nm/arcmin)	3
Max. Radial Load on Output (N)*	610
Max. Axial Load on Output (N)*	320
Efficiency (1 STG / 2 STG) (%)	≥ 97 / ≥ 94
Unit weight (1 STG / 2 STG) (kg)	0.6 / 0.8
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 56

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

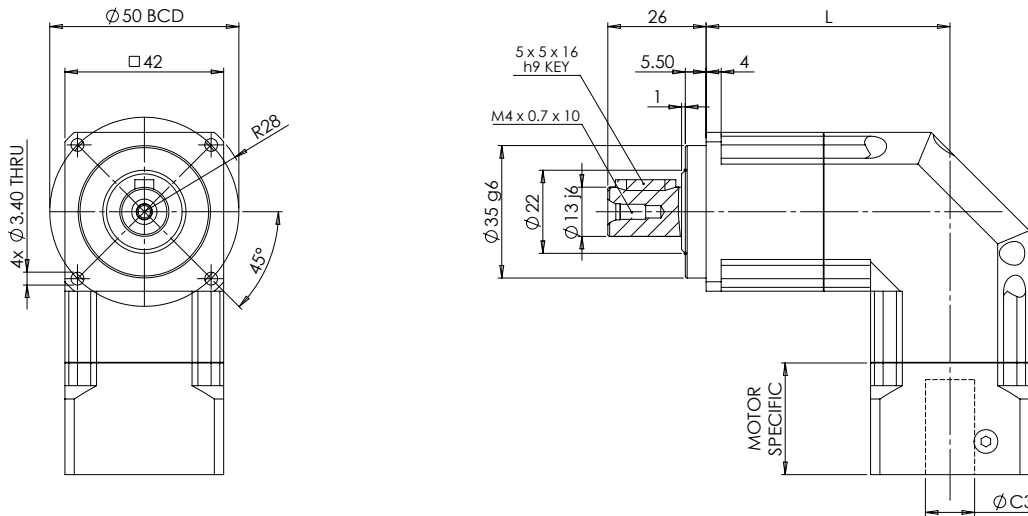
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 5 arcmin	P2
Reduced ≤ 3 arcmin	P1
Micro (on request)	P0
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro (on request)	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AFR042 – Right Angle Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 64.5 mm
DIM L Double Stage = 92.0 mm

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	9	16.2	27	0.09
4:1	12	21.6	36	0.09
5:1	15	27.0	45	0.09
6:1	20	36.0	60	0.09
7:1	19	34.2	57	0.09
8:1	17	30.6	51	0.09
9:1	14	25.2	42	0.09
10:1	14	25.2	42	0.09
~ DOUBLE STAGE ~				
15:1	14	25.2	42	0.09
20:1	14	25.2	42	0.09
25:1	15	27.0	45	0.09
30:1	20	36.0	60	0.09
35:1	19	34.2	57	0.09
40:1	17	30.6	51	0.09
45:1	14	25.2	42	0.09
50:1	14	25.2	42	0.09
60:1	20	36.0	60	0.09
70:1	19	34.2	57	0.09
80:1	17	30.6	51	0.09
90:1	14	25.2	42	0.09
100:1	14	25.2	42	0.09

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	5000
Max. Input Speed (rpm)	10000
Torsional Rigidity (Nm/arcmin)	3
Max. Radial Load on Output (N)*	610
Max. Axial Load on Output (N)*	320
Efficiency (1 STG / 2 STG) (%)	≥ 95 / ≥ 92
Unit weight (1 STG / 2 STG) (kg)	0.9 / 1.2
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 61

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

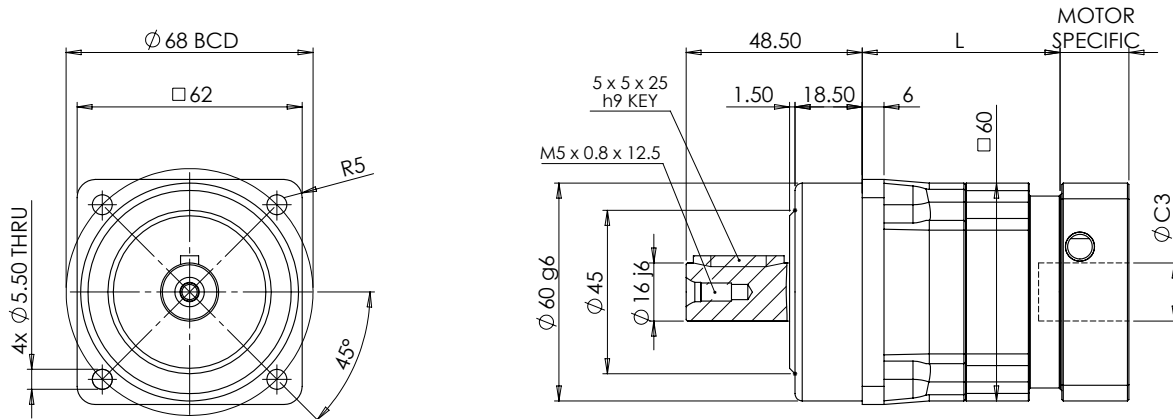
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 6 arcmin	P2
Reduced ≤ 4 arcmin	P1
Micro (on request)	P0
~ DOUBLE STAGE ~	
Standard ≤ 9 arcmin	P2
Reduced ≤ 7 arcmin	P1
Micro (on request)	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF060 – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 54.5 mm

DIM L Double Stage = 65.5 mm

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	55	99.0	165	0.16
4:1	50	90.0	150	0.14
5:1	60	108.0	180	0.13
6:1	55	99.0	165	0.13
7:1	50	90.0	150	0.13
8:1	45	81.0	135	0.13
9:1	40	72.0	120	0.13
10:1	40	72.0	120	0.13
~ DOUBLE STAGE ~				
15:1	55	99.0	165	0.03
20:1	50	90.0	150	0.03
25:1	60	108.0	180	0.03
30:1	55	99.0	165	0.03
35:1	50	90.0	150	0.03
40:1	45	81.0	135	0.03
45:1	40	72.0	120	0.03
50:1	60	108.0	180	0.03
60:1	55	99.0	165	0.03
70:1	50	90.0	150	0.03
80:1	45	81.0	135	0.03
90:1	40	72.0	120	0.03
100:1	40	72.0	120	0.03

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	5000
Max. Input Speed (rpm)	10000
Torsional Rigidity (Nm/arcmin)	7
Max. Radial Load on Output (N)*	1400
Max. Axial Load on Output (N)*	1100
Efficiency (1 STG / 2 STG) (%)	≥ 97 / ≥ 94
Unit weight (1 STG / 2 STG) (kg)	1.3 / 1.5
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 58

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

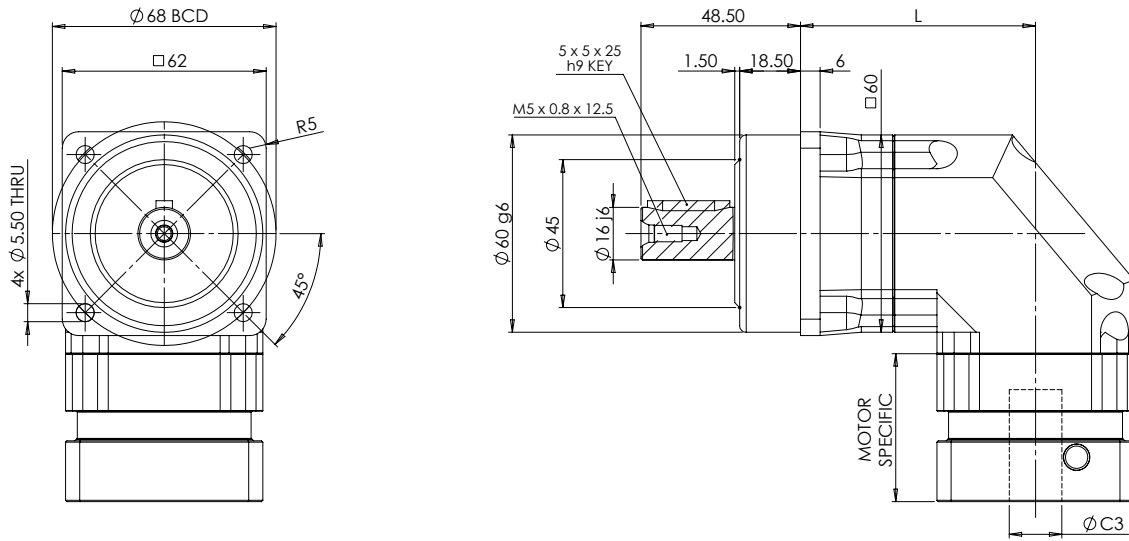
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 5 arcmin	P2
Reduced ≤ 3 arcmin	P1
Micro (on request)	P0
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro (on request)	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AFR060 – Right Angle Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 71.5 mm
DIM L Double Stage = 99.0 mm

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	36	64.8	108	0.35
4:1	48	86.4	144	0.35
5:1	60	108.0	180	0.35
6:1	55	99.0	165	0.35
7:1	50	90.0	150	0.35
8:1	45	81.0	135	0.35
9:1	40	72.0	120	0.35
10:1	40	72.0	120	0.35
14:1	42	75.6	126	0.07
20:1	40	72.0	120	0.07
~ DOUBLE STAGE ~				
25:1	60	108.0	180	0.09
30:1	55	99.0	165	0.09
35:1	50	90.0	150	0.09
40:1	45	81.0	135	0.09
45:1	40	72.0	120	0.09
50:1	60	108.0	180	0.09
60:1	55	99.0	165	0.09
70:1	50	90.0	150	0.09
80:1	45	81.0	135	0.09
90:1	40	72.0	120	0.09
100:1	40	72.0	120	0.09

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	5000
Max. Input Speed (rpm)	10000
Torsional Rigidity (Nm/arcmin)	7
Max. Radial Load on Output (N)*	1400
Max. Axial Load on Output (N)*	1100
Efficiency (1 STG / 2 STG) (%)	≥ 95 / ≥ 92
Unit weight (1 STG / 2 STG) (kg)	2.1 / 1.5
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 63

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

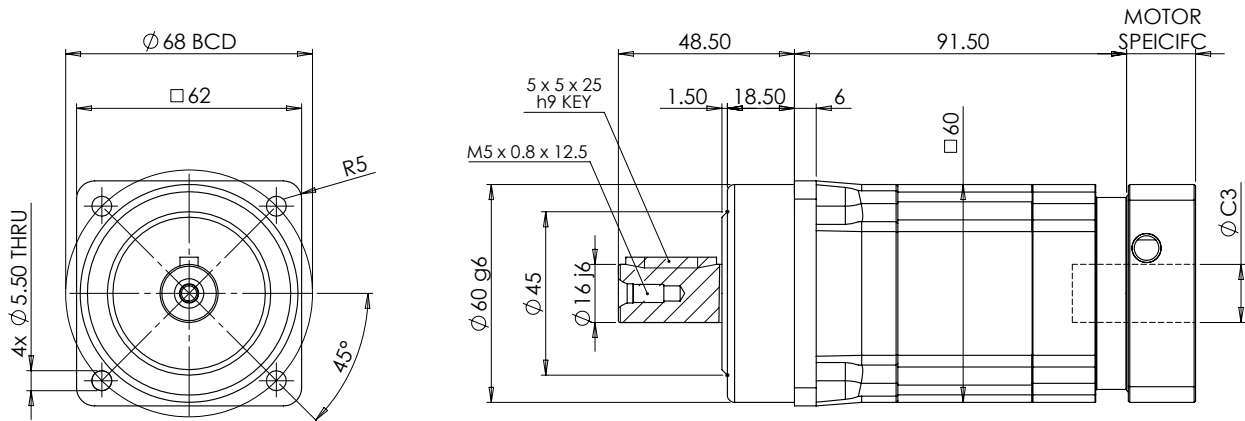
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 6 arcmin	P2
Reduced ≤ 4 arcmin	P1
Micro (on request)	P0
~ DOUBLE STAGE ~	
Standard ≤ 9 arcmin	P2
Reduced ≤ 7 arcmin	P1
Micro (on request)	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF060A – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
AF060A OPTION NOT AVAILABLE IN SINGLE STAGE REDUCTION RATIOS				
~ DOUBLE STAGE ~				
15:1	55	99.0	165	0.13
20:1	50	90.0	150	0.13
25:1	60	108.0	180	0.13
30:1	55	99.0	165	0.13
35:1	50	90.0	150	0.13
40:1	45	81.0	135	0.13
45:1	40	72.0	120	0.13
50:1	60	108.0	180	0.13
60:1	55	99.0	165	0.13
70:1	50	90.0	150	0.13
80:1	45	81.0	135	0.13
90:1	40	72.0	120	0.13
100:1	40	72.0	120	0.13

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	5000
Max. Input Speed (rpm)	10000
Torsional Rigidity (Nm/arcmin)	7
Max. Radial Load on Output (N)*	1400
Max. Axial Load on Output (N)*	1100
Efficiency (%)	≥ 94
Unit weight (kg)	2.0
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 60

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

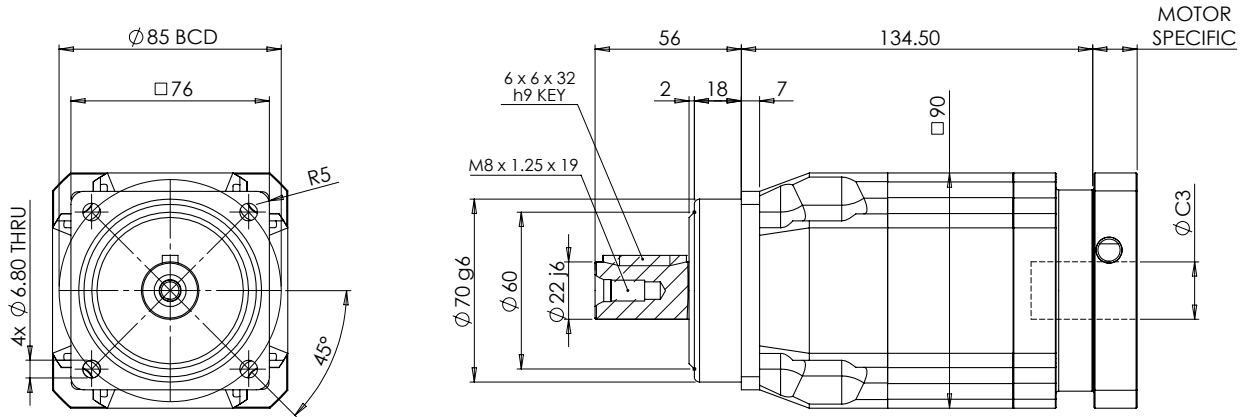
Backlash Option	Order Code
~ SINGLE STAGE ~	
NOT AVAILABLE	~
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro (on request)	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF075A – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
AF075A OPTION NOT AVAILABLE IN SINGLE STAGE REDUCTION RATIOS				
~ DOUBLE STAGE ~				
15:1	130	234.0	390	0.47
20:1	140	252.0	420	0.47
25:1	160	288.0	480	0.47
30:1	150	270.0	450	0.47
35:1	140	252.0	420	0.47
40:1	120	216.0	360	0.47
45:1	100	180.0	300	0.47
50:1	160	288.0	480	0.44
60:1	150	270.0	450	0.44
70:1	140	252.0	420	0.44
80:1	120	216.0	360	0.44
90:1	100	180.0	300	0.44
100:1	100	180.0	300	0.44

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	4000
Max. Input Speed (rpm)	8000
Torsional Rigidity (Nm/arcmin)	14
Max. Radial Load on Output (N)*	4100
Max. Axial Load on Output (N)*	3700
Efficiency (%)	≥ 94
Unit weight (kg)	5.5
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 63

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

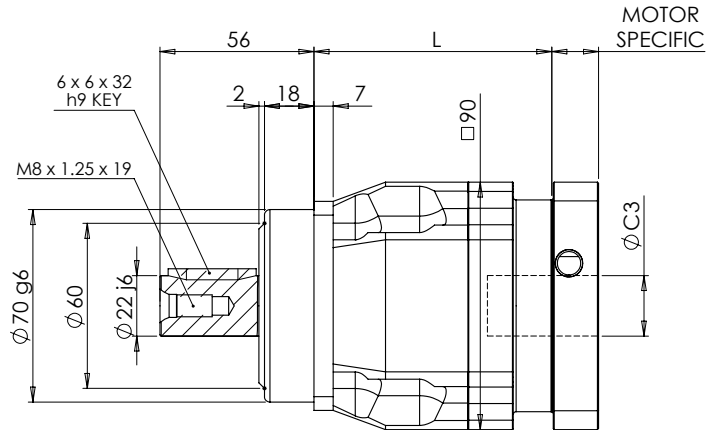
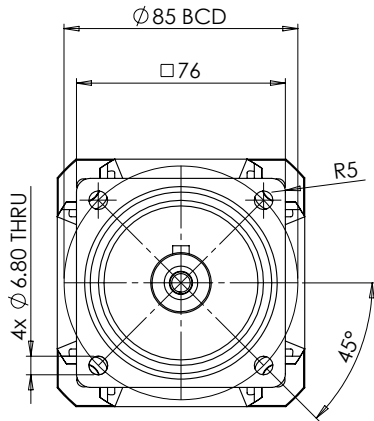
Backlash Option	Order Code
~ SINGLE STAGE ~	
NOT AVAILABLE	~
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro (on request)	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF075 – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 86.5 mm
DIM L Double Stage = 119.5 mm

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	130	234.0	390	0.61
4:1	140	252.0	420	0.48
5:1	160	288.0	480	0.47
6:1	150	270.0	450	0.45
7:1	140	252.0	420	0.45
8:1	120	216.0	360	0.44
9:1	100	180.0	300	0.44
10:1	100	180.0	300	0.44
~ DOUBLE STAGE ~				
15:1	130	234.0	390	0.13
20:1	140	252.0	420	0.13
25:1	160	288.0	480	0.13
30:1	150	270.0	450	0.13
35:1	140	252.0	420	0.13
40:1	120	216.0	360	0.13
45:1	100	180.0	300	0.13
50:1	160	288.0	480	0.13
60:1	150	270.0	450	0.13
70:1	140	252.0	420	0.13
80:1	120	216.0	360	0.13
90:1	100	180.0	300	0.13
100:1	100	180.0	300	0.13

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	4000
Max. Input Speed (rpm)	8000
Torsional Rigidity (Nm/arcmin)	14
Max. Radial Load on Output (N)*	4100
Max. Axial Load on Output (N)*	3700
Efficiency (1 STG / 2 STG) (%)	≥ 97 / ≥ 94
Unit weight (1 STG / 2 STG) (kg)	3.7 / 4.1
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 60

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

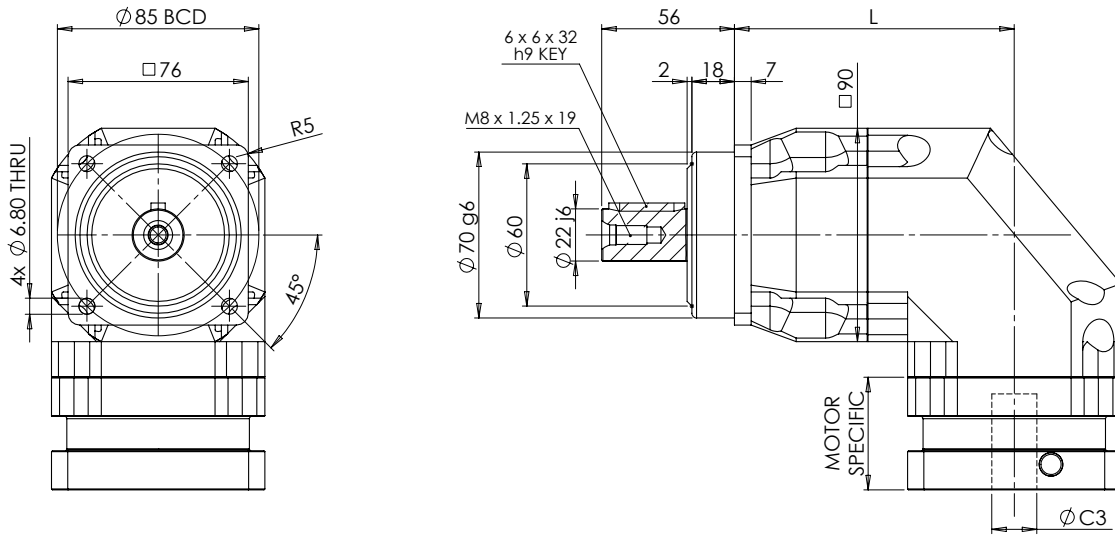
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 5 arcmin	P2
Reduced ≤ 3 arcmin	P1
Micro ≤ 1 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro (on request)	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AFR075 – Right Angle Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 118.0 mm
DIM L Double Stage = 136.5 mm

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	90	162.0	270	2.25
4:1	120	216.0	360	2.25
5:1	150	270.0	450	2.25
6:1	150	270.0	450	2.25
7:1	140	252.0	420	2.25
8:1	120	216.0	360	2.25
9:1	100	180.0	300	2.25
10:1	100	180.0	300	2.25
14:1	140	252.0	420	1.87
20:1	100	180.0	300	1.87
~ DOUBLE STAGE ~				
25:1	150	270.0	450	0.35
30:1	150	270.0	450	0.35
35:1	140	252.0	420	0.35
40:1	120	216.0	360	0.35
45:1	100	180.0	300	0.35
50:1	100	180.0	300	0.35
60:1	150	270.0	450	0.35
70:1	140	252.0	420	0.35
80:1	120	216.0	360	0.35
90:1	100	180.0	300	0.35
100:1	100	180.0	300	0.35
120:1	150	270.0	450	0.31
140:1	140	252.0	420	0.31
160:1	120	216.0	360	0.31
180:1	100	180.0	300	0.31
200:1	100	180.0	300	0.31

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	4000
Max. Input Speed (rpm)	8000
Torsional Rigidity (Nm/arcmin)	14
Max. Radial Load on Output (N)*	4100
Max. Axial Load on Output (N)*	3700
Efficiency (1 STG / 2 STG) (%)	≥ 95 / ≥ 92
Unit weight (1 STG / 2 STG) (kg)	6.4 / 7.8
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 65

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

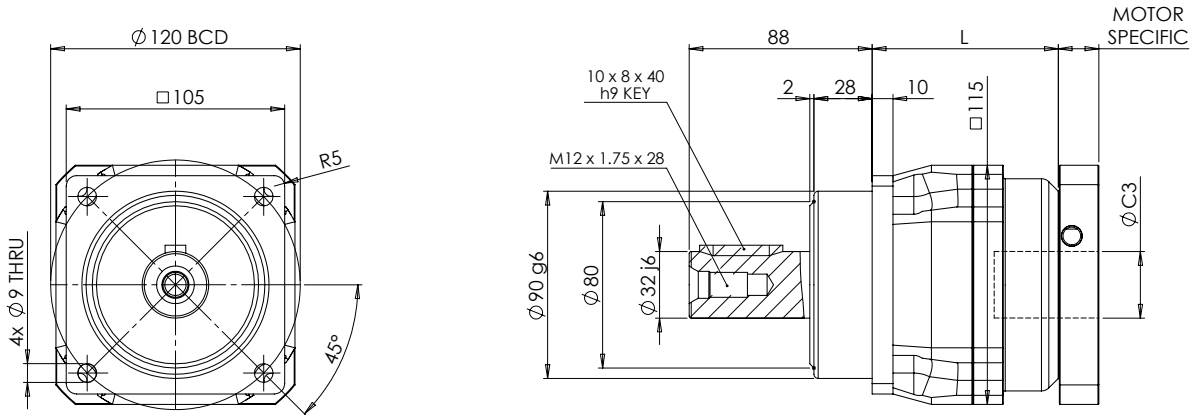
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 6 arcmin	P2
Reduced ≤ 4 arcmin	P1
Micro ≤ 2 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 9 arcmin	P2
Reduced ≤ 7 arcmin	P1
Micro ≤ 4 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF100 – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 89.5 mm
DIM L Double Stage = 131.0 mm

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	208	374.4	624	3.25
4:1	290	522.0	870	2.74
5:1	330	594.0	990	2.71
6:1	310	558.0	930	2.65
7:1	300	540.0	900	2.62
8:1	260	468.0	780	2.58
9:1	230	414.0	690	2.57
10:1	230	414.0	690	2.57
~ DOUBLE STAGE ~				
15:1	208	374.4	624	0.47
20:1	290	522.0	870	0.47
25:1	330	594.0	990	0.47
30:1	310	558.0	930	0.47
35:1	300	540.0	900	0.47
40:1	260	468.0	780	0.47
45:1	230	414.0	690	0.47
50:1	330	594.0	990	0.44
60:1	310	558.0	930	0.44
70:1	300	540.0	900	0.44
80:1	260	468.0	780	0.44
90:1	230	414.0	690	0.44
100:1	230	414.0	690	0.44

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	4000
Max. Input Speed (rpm)	8000
Torsional Rigidity (Nm/arcmin)	25
Max. Radial Load on Output (N)*	9200
Max. Axial Load on Output (N)*	5820
Efficiency (1 STG / 2 STG) (%)	≥ 97 / ≥ 94
Unit weight (1 STG / 2 STG) (kg)	6.9 / 8.1
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 63

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

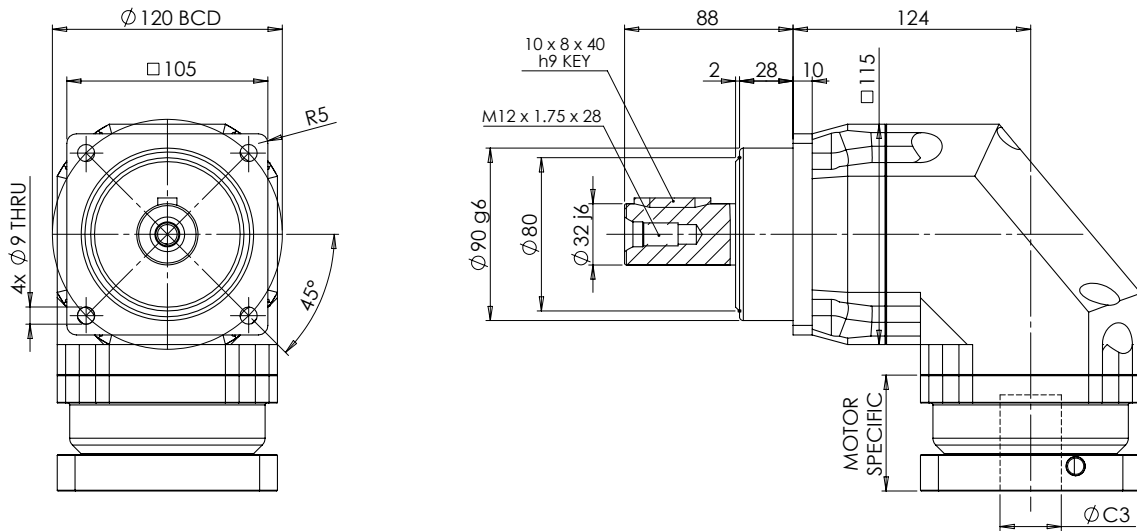
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 5 arcmin	P2
Reduced ≤ 3 arcmin	P1
Micro ≤ 1 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro ≤ 3 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AFR100 – Right Angle Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 124.0 mm
DIM L Double Stage = 162.5 mm

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	195	351.0	585	6.84
4:1	260	468.0	780	6.84
5:1	325	585.0	975	6.84
6:1	310	558.0	930	6.84
7:1	300	540.0	900	6.84
8:1	260	468.0	780	6.84
9:1	230	414.0	690	6.84
10:1	230	414.0	690	6.84
14:1	300	540.0	900	6.25
20:1	230	414.0	690	6.25
~ DOUBLE STAGE ~				
25:1	325	585.0	975	2.25
30:1	310	558.0	930	2.25
35:1	300	540.0	900	2.25
40:1	260	468.0	780	2.25
45:1	230	414.0	690	2.25
50:1	230	414.0	690	2.25
60:1	310	558.0	930	2.25
70:1	300	540.0	900	2.25
80:1	260	468.0	780	2.25
90:1	230	414.0	690	2.25
100:1	230	414.0	690	2.25
120:1	310	558.0	930	1.87
140:1	300	540.0	900	1.87
160:1	260	468.0	780	1.87
180:1	230	414.0	690	1.87
200:1	230	414.0	690	1.87

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	4000
Max. Input Speed (rpm)	8000
Torsional Rigidity (Nm/arcmin)	25
Max. Radial Load on Output (N)*	9200
Max. Axial Load on Output (N)*	5800
Efficiency (1 STG / 2 STG) (%)	≥ 95 / ≥ 92
Unit weight (1 STG / 2 STG) (kg)	13.9 / 15.1
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 68

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

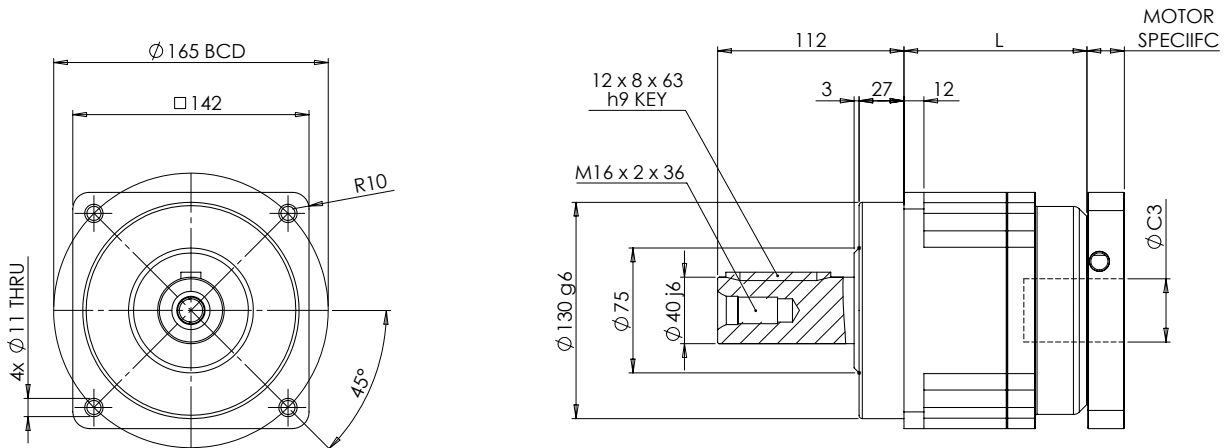
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 6 arcmin	P2
Reduced ≤ 4 arcmin	P1
Micro ≤ 2 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 9 arcmin	P2
Reduced ≤ 7 arcmin	P1
Micro ≤ 4 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF140 – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 110.0 mm
DIM L Double Stage = 166.5 mm

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	342	615.6	1026	9.21
4:1	542	975.6	1626	7.54
5:1	650	1170.0	1950	7.42
6:1	600	1080.0	1800	7.25
7:1	550	990.0	1650	7.14
8:1	500	900.0	1500	7.07
9:1	450	810.0	1350	7.04
10:1	450	810.0	1350	7.03
~ DOUBLE STAGE ~				
15:1	342	615.6	1026	2.71
20:1	542	975.6	1626	2.71
25:1	650	1170.0	1950	2.71
30:1	600	1080.0	1800	2.71
35:1	550	990.0	1650	2.71
40:1	500	900.0	1500	2.71
45:1	450	810.0	1350	2.71
50:1	650	1170.0	1950	2.57
60:1	600	1080.0	1800	2.57
70:1	550	990.0	1650	2.57
80:1	500	900.0	1500	2.57
90:1	450	810.0	1350	2.57
100:1	450	810.0	1350	2.57

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	3000
Max. Input Speed (rpm)	6000
Torsional Rigidity (Nm/arcmin)	50
Max. Radial Load on Output (N)*	14000
Max. Axial Load on Output (N)*	11400
Efficiency (1 STG / 2 STG) (%)	≥ 97 / ≥ 94
Unit weight (1 STG / 2 STG) (kg)	13.7 / 16.6
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 65

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

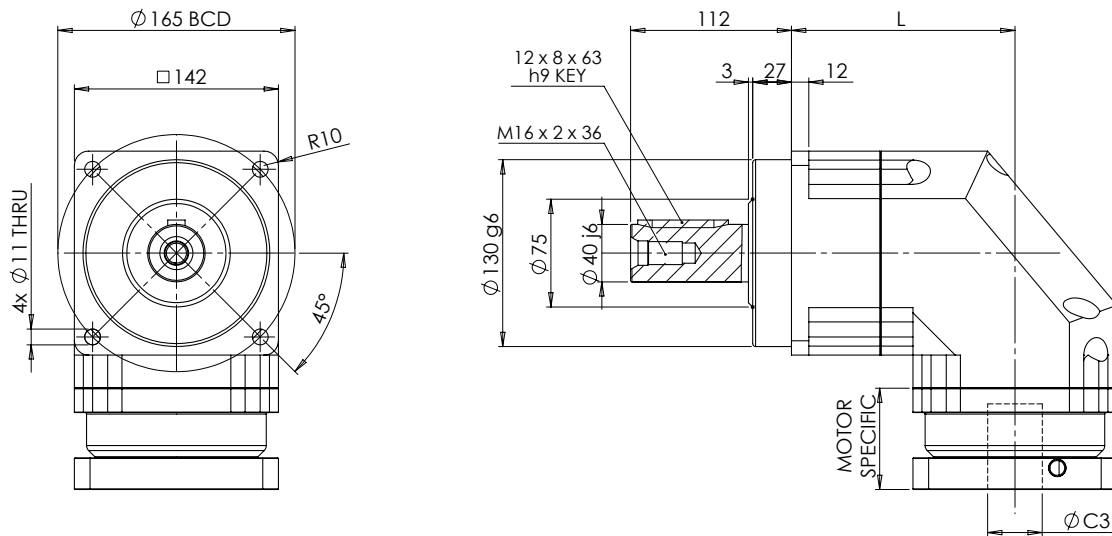
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 5 arcmin	P2
Reduced ≤ 3 arcmin	P1
Micro ≤ 1 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro ≤ 3 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AFR140 – Right Angle Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 155.5 mm
DIM L Double Stage = 201.0 mm

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	342	615.6	1026	23.4
4:1	520	936.0	1560	23.4
5:1	650	1170.0	1950	23.4
6:1	600	1080.0	1800	23.4
7:1	550	990.0	1650	23.4
8:1	500	900.0	1500	23.4
9:1	450	810.0	1350	23.4
10:1	450	810.0	1350	23.4
14:1	550	990.0	1650	21.8
20:1	450	810.0	1350	21.8
~ DOUBLE STAGE ~				
25:1	650	1170.0	1950	6.84
30:1	600	1080.0	1800	6.84
35:1	550	990.0	1650	6.84
40:1	500	900.0	1500	6.84
45:1	450	810.0	1350	6.84
50:1	650	1170.0	1950	6.84
60:1	600	1080.0	1800	6.84
70:1	550	990.0	1650	6.84
80:1	500	900.0	1500	6.84
90:1	450	810.0	1350	6.84
100:1	450	810.0	1350	6.84
120:1	600	1080.0	1800	6.25
140:1	550	990.0	1650	6.25
160:1	550	990.0	1650	6.25
180:1	450	810.0	1350	6.25
200:1	450	810.0	1350	6.25

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	3000
Max. Input Speed (rpm)	6000
Torsional Rigidity (Nm/arcmin)	50
Max. Radial Load on Output (N)*	14000
Max. Axial Load on Output (N)*	11400
Efficiency (1 STG / 2 STG) (%)	≥ 95 / ≥ 92
Unit weight (1 STG / 2 STG) (kg)	23.7 / 26.7
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 70

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

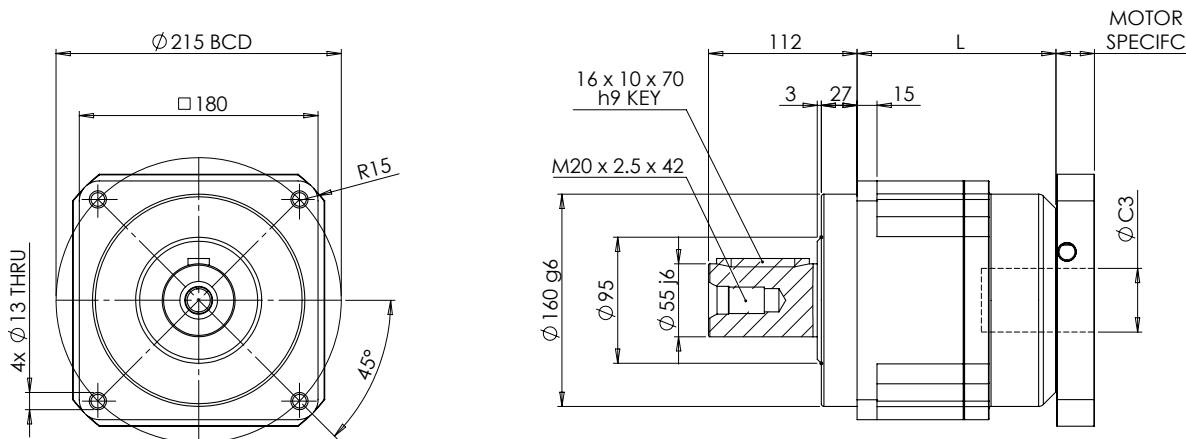
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 6 arcmin	P2
Reduced ≤ 4 arcmin	P1
Micro ≤ 2 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 9 arcmin	P2
Reduced ≤ 7 arcmin	P1
Micro ≤ 4 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF180 – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 150.0 mm
DIM L Double Stage = 205.5 mm

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	588	1058.4	1764	28.98
4:1	1050	1890.0	3150	23.67
5:1	1200	2160.0	3600	23.29
6:1	1100	1980.0	3300	22.75
7:1	1100	1980.0	3300	22.48
8:1	1000	1800.0	3000	22.59
9:1	900	1620.0	2700	22.53
10:1	900	1620.0	2700	22.51
~ DOUBLE STAGE ~				
15:1	588	1058.4	1764	7.42
20:1	1050	1890.0	3150	7.42
25:1	1200	2160.0	3600	7.42
30:1	1100	1980.0	3300	7.42
35:1	1100	1980.0	3300	7.42
40:1	1000	1800.0	3000	7.42
45:1	900	1620.0	2700	7.42
50:1	1200	2160.0	3600	7.03
60:1	1100	1980.0	3300	7.03
70:1	1100	1980.0	3300	7.03
80:1	1000	1800.0	3000	7.03
90:1	900	1620.0	2700	7.03
100:1	900	1620.0	2700	7.03

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	3000
Max. Input Speed (rpm)	6000
Torsional Rigidity (Nm/arcmin)	145
Max. Radial Load on Output (N)*	18000
Max. Axial Load on Output (N)*	19500
Efficiency (1 STG / 2 STG) (%)	≥ 97 / ≥ 94
Unit weight (1 STG / 2 STG) (kg)	28.0 / 33.0
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 67

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

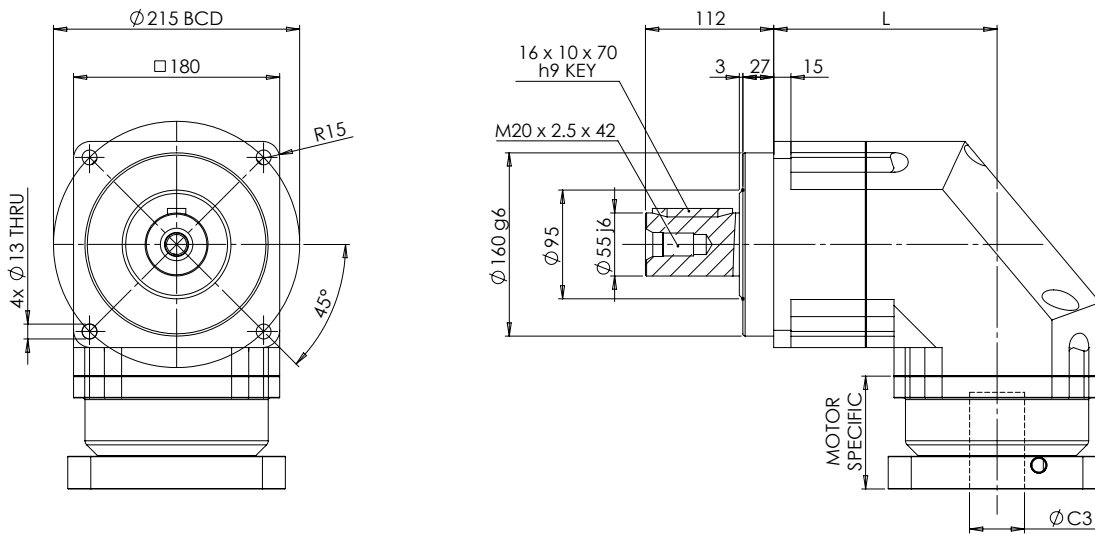
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 5 arcmin	P2
Reduced ≤ 3 arcmin	P1
Micro ≤ 1 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro ≤ 3 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AFR180 – Right Angle Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 195.0 mm
DIM L Double Stage = 251.0 mm

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	588	1058.4	1764	68.9
4:1	1040	1872.0	3120	68.9
5:1	1200	2160.0	3600	68.9
6:1	1100	1980.0	3300	68.9
7:1	1100	1980.0	3300	68.9
8:1	1000	1800.0	3000	68.9
9:1	900	1620.0	2700	68.9
10:1	900	1620.0	2700	68.9
14:1	1100	1980.0	3300	65.6
20:1	900	1620.0	2700	65.6
~ DOUBLE STAGE ~				
25:1	1200	2160.0	3600	23.4
30:1	1100	1980.0	3300	23.4
35:1	1100	1980.0	3300	23.4
40:1	1000	1800.0	3000	23.4
45:1	900	1620.0	2700	23.4
50:1	1200	2160.0	3600	23.4
60:1	1100	1980.0	3300	23.4
70:1	1100	1980.0	3300	23.4
80:1	1000	1800.0	3000	23.4
90:1	900	1620.0	2700	23.4
100:1	900	1620.0	2700	23.4
120:1	1100	1980.0	3300	21.8
140:1	1100	1980.0	3300	21.8
160:1	1000	1800.0	3000	21.8
180:1	900	1620.0	2700	21.8
200:1	900	1620.0	2700	21.8

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	3000
Max. Input Speed (rpm)	6000
Torsional Rigidity (Nm/arcmin)	145
Max. Radial Load on Output (N)*	18000
Max. Axial Load on Output (N)*	19500
Efficiency (1 STG / 2 STG) (%)	≥ 95 / ≥ 92
Unit weight (1 STG / 2 STG) (kg)	50.0 / 54.0
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 72

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

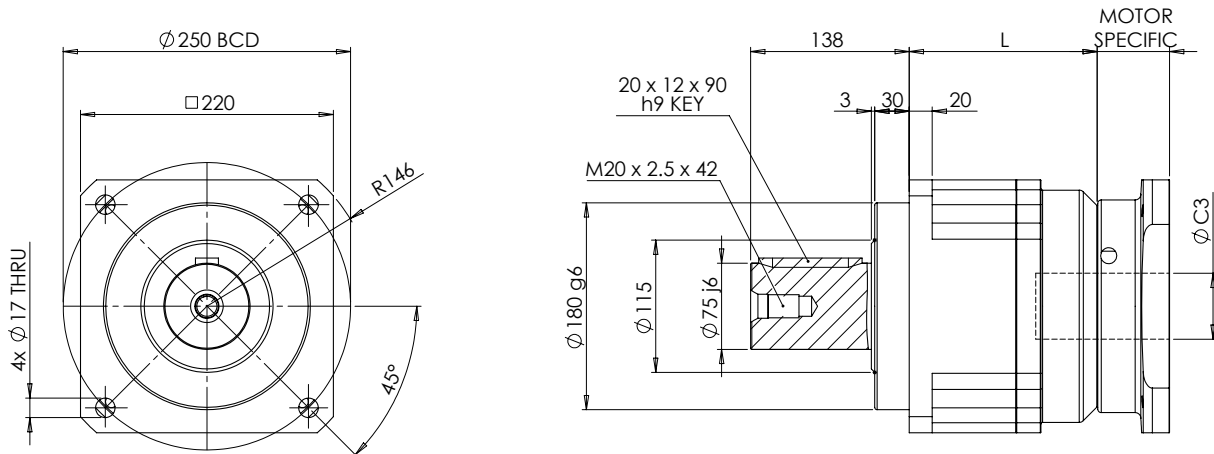
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 6 arcmin	P2
Reduced ≤ 4 arcmin	P1
Micro ≤ 2 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 9 arcmin	P2
Reduced ≤ 7 arcmin	P1
Micro ≤ 4 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF220 – In-line Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 163.5 mm
DIM L Double Stage = 248.0 mm

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	1140	2052.0	3420	69.61
4:1	1700	3060.0	5100	54.37
5:1	2000	3600.0	6000	53.27
6:1	1900	3420.0	5700	51.72
7:1	1800	3240.0	5400	50.97
8:1	1600	2880.0	4800	50.84
9:1	1500	2700.0	4500	50.63
10:1	1500	2700.0	4500	50.56
~ DOUBLE STAGE ~				
15:1	1140	2052.0	3420	23.29
20:1	1700	3060.0	5100	23.29
25:1	2000	3600.0	6000	23.29
30:1	1900	3420.0	5700	23.29
35:1	1800	3240.0	5400	23.29
40:1	1600	2880.0	4800	23.29
45:1	1500	2700.0	4500	23.29
50:1	2000	3600.0	6000	22.51
60:1	1900	3420.0	5700	22.51
70:1	1800	3240.0	5400	22.51
80:1	1600	2880.0	4800	22.51
90:1	1500	2700.0	4500	22.51
100:1	1500	2700.0	4500	22.51

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	2000
Max. Input Speed (rpm)	4000
Torsional Rigidity (Nm/arcmin)	225
Max. Radial Load on Output (N)*	33000
Max. Axial Load on Output (N)*	16300
Efficiency (1 STG / 2 STG) (%)	≥ 97 / ≥ 94
Unit weight (1 STG / 2 STG) (kg)	48.0 / 60.0
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 70

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

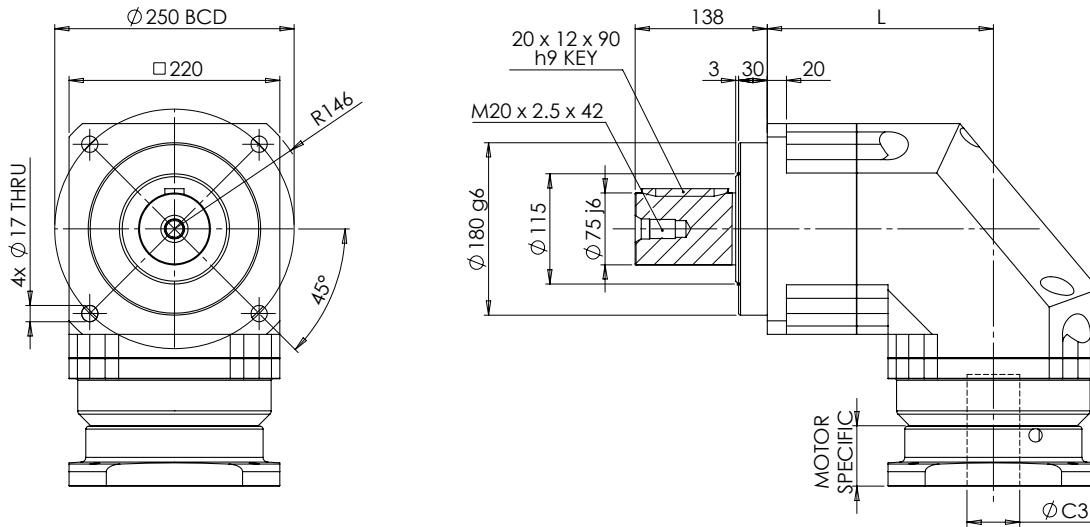
Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 5 arcmin	P2
Reduced ≤ 3 arcmin	P1
Micro ≤ 1 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 7 arcmin	P2
Reduced ≤ 5 arcmin	P1
Micro ≤ 3 arcmin	P0

Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AFR220 – Right Angle Precision Range – Stainless Steel



NOTE: Example gearbox shown with S2 shaft option

DIM L Single Stage = 236.0 mm
DIM L Double Stage = 293.0 mm

AF

Ratio	Nom. Output Torque (Nm)	Max. Acceleration Torque (Nm)	Emergency Stop Torque (Nm)	Mass Moment of Inertia (kg/cm ²)
~ SINGLE STAGE ~				
3:1	1140	2052.0	3420	135.4
4:1	1680	3024.0	5040	135.4
5:1	2000	3600.0	6000	135.4
6:1	1900	3420.0	5700	135.4
7:1	1800	3240.0	5400	135.4
8:1	1600	2880.0	4800	135.4
9:1	1500	2700.0	4500	135.4
10:1	1500	2700.0	4500	135.4
14:1	1800	3240.0	5400	119.8
20:1	1500	2700.0	4500	119.8
~ DOUBLE STAGE ~				
25:1	2000	3600.0	6000	68.9
30:1	1900	3420.0	5700	68.9
35:1	1800	3240.0	5400	68.9
40:1	1600	2880.0	4800	68.9
45:1	1500	2700.0	4500	68.9
50:1	2000	3600.0	6000	68.9
60:1	1900	3420.0	5700	68.9
70:1	1800	3240.0	5400	68.9
80:1	1600	2880.0	4800	68.9
90:1	1500	2700.0	4500	68.9
100:1	1500	2700.0	4500	68.9
120:1	1900	3420.0	5700	65.6
140:1	1800	3240.0	5400	65.6
160:1	1600	2880.0	4800	65.6
180:1	1500	2700.0	4500	65.6
200:1	1500	2700.0	4500	65.6

Design Parameter	Value
Max. Motor Shaft Ø (C3) (mm)	see page 94
Nom. Input Speed (rpm)	2000
Max. Input Speed (rpm)	4000
Torsional Rigidity (Nm/arcmin)	225
Max. Radial Load on Output (N)*	33000
Max. Axial Load on Output (N)*	16300
Efficiency (1 STG / 2 STG) (%)	≥ 95 / ≥ 92
Unit weight (1 STG / 2 STG) (kg)	83.0 / 95.0
Min. Operating Temperature (°C)	- 10
Max. Operating Temperature (°C)	+ 90
Protection Rating	IP65
Noise (dB)**	≤ 74

* Applied at centre of output shaft (Length/2).
For more information, see page 93

** Based on 10:1 ratio @ 3000 rpm without load

Backlash Option	Order Code
~ SINGLE STAGE ~	
Standard ≤ 6 arcmin	P2
Reduced ≤ 4 arcmin	P1
Micro ≤ 2 arcmin	P0
~ DOUBLE STAGE ~	
Standard ≤ 9 arcmin	P2
Reduced ≤ 7 arcmin	P1
Micro ≤ 4 arcmin	P0

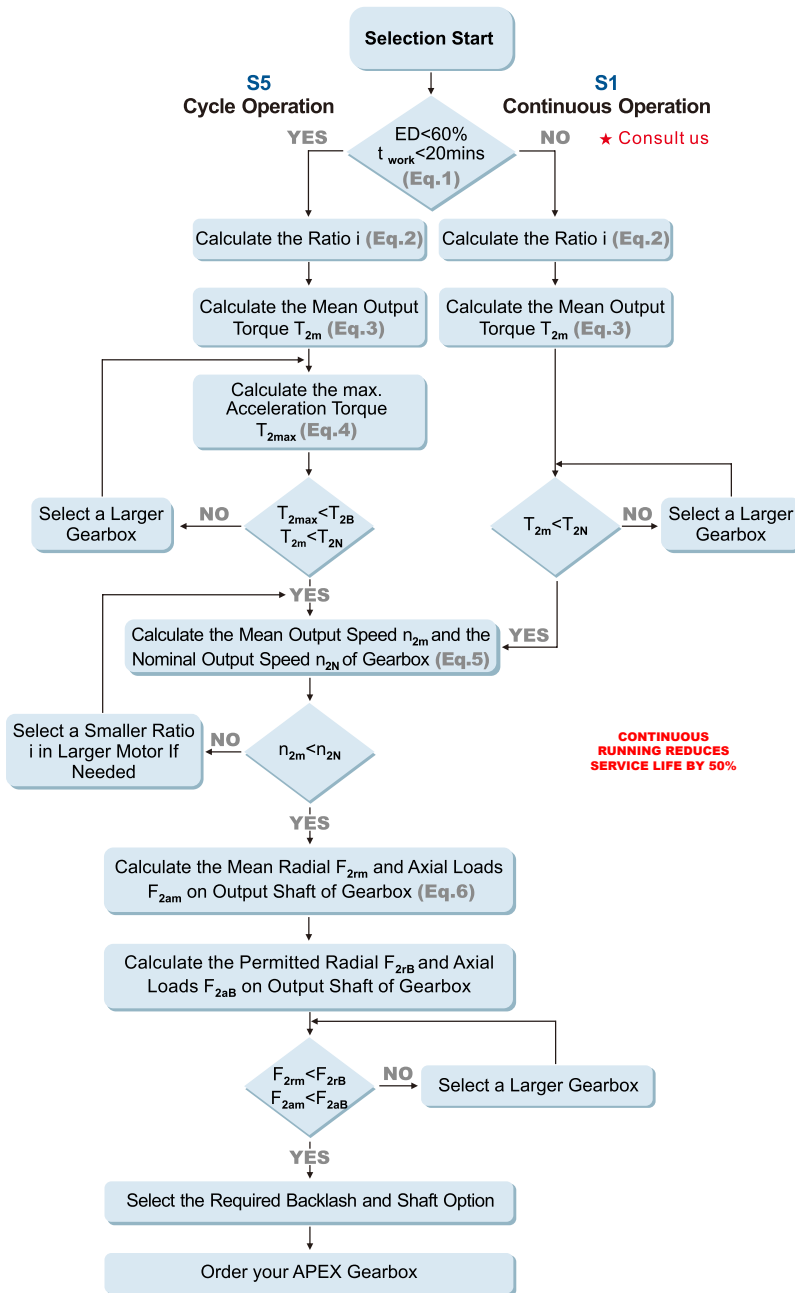
Output Shaft Option	Order Code
Smooth Shaft	S1
Keyed Shaft	S2

Other Options Available	Order Code
Food Grade Grease	on request
High or Low Temperature Grease	on request
Full Stainless Steel Construction	on request
Vacuum Sealed	on request
IP67 Sealed (wash-down suitable)	on request

ALL APEX GEARBOXES ARE SUPPLIED LUBRICATED FOR LIFE WITH NYE® NYOGEL 792D SYNTHETIC GREASE AND CONFORM WITH ATEX EQUIPMENT-GROUP II CATEGORY 2 AS STANDARD

AF Selection

Selection of the Optimum Gearbox



Recommended (for S5 Cycle Operation)

The general design is given for

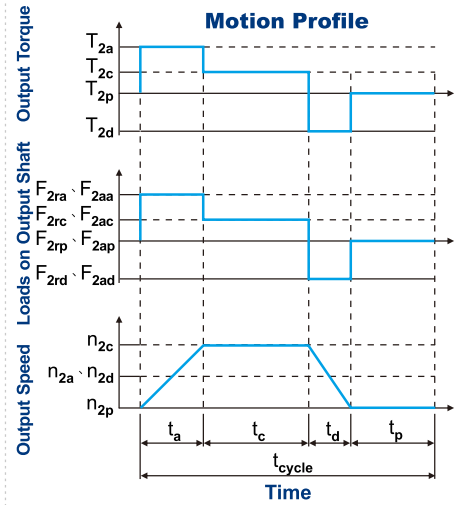
$$\frac{J_L}{i^2} \leq 4 \times J_m$$

The optimal design is given for

$$\frac{J_L}{i^2} \cong J_m$$

J_L Load Inertia

J_m Motor Inertia



$$1. ED = \frac{t_a + t_c + t_d}{t_{cycle}} \times 100\%, t_{work} = t_a + t_c + t_d$$

Index : a. Acceleration, c. Constant,
d. Deceleration, p. Pause (Eq.1)

$$2. i \cong \frac{n_m}{n_{work}}$$

n_m Output Speed of the Motor
 n_{work} Working Speed (Eq.2)

$$3. T_{2m} = \sqrt[3]{\frac{n_{2a} \times t_a \times T_{2a}^3 + n_{2c} \times t_c \times T_{2c}^3 + n_{2d} \times t_d \times T_{2d}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

(Eq.3)

$$4. T_{2max} = T_{mB} \times i \times K_s \times \eta$$

where K_s is

K_s	No. of Cycles / hr
1.0	0 ~ 1,000
1.1	1,000 ~ 1,500
1.3	1,500 ~ 2,000
1.6	2,000 ~ 3,000
1.8	3,000 ~ 5,000

T_{mB} Max. Output Torque of the Motor

η Efficiency of the Gearbox (Eq.4)

$$5. n_{2a} = n_{2d} = -\frac{1}{2} \times n_{2c}$$

$$n_{2m} = \frac{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}{t_a + t_c + t_d}$$

$$n_{2N} = \frac{n_{1N}}{i}$$

(Eq.5)

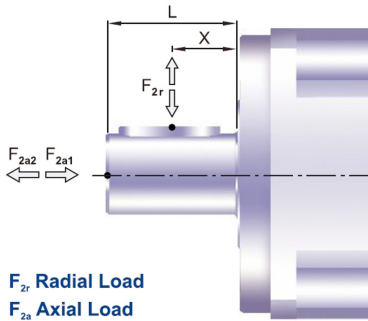
$$6. F_{2rm} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2ra}^3 + n_{2c} \times t_c \times F_{2rc}^3 + n_{2d} \times t_d \times F_{2rd}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

$$F_{2am} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2aa}^3 + n_{2c} \times t_c \times F_{2ac}^3 + n_{2d} \times t_d \times F_{2ad}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

(Eq.6)

FOR TECHNICAL SUPPORT OR QUERIES
PLEASE CONTACT OUR SALES TEAM

AF Output Loads

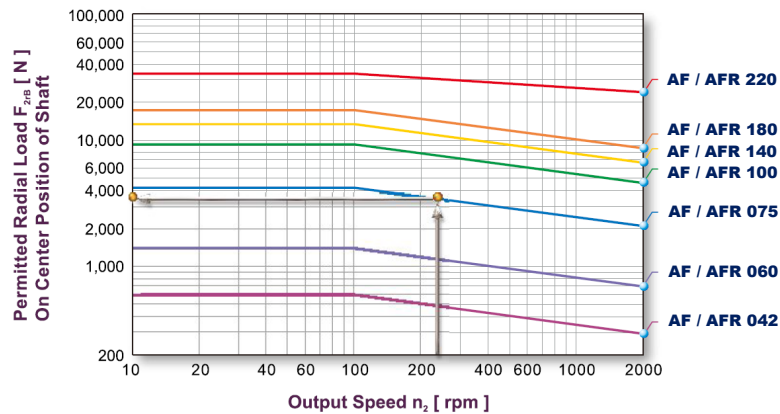


The permitted radial and axial loads on the output shaft of the gearbox is dependant on the design of the output bearing arrangement.

APEX use the extension straddle oversized bearing design thus allowing for heavy loads on both axis.

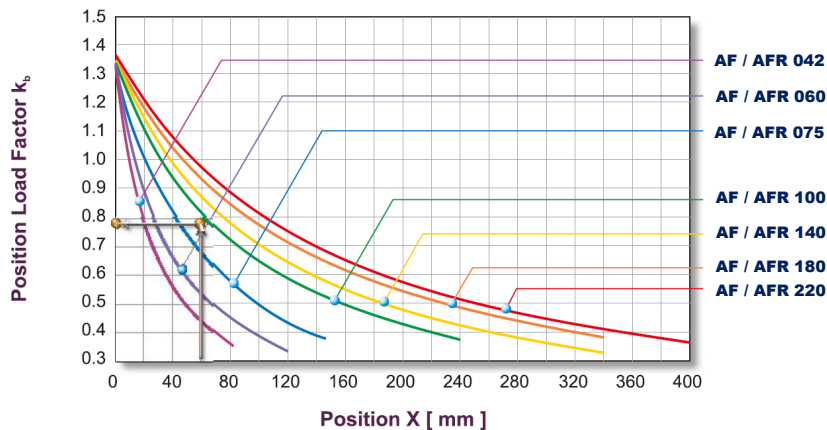
AF

Permitted radial loads are dependant on the nominal output speed of the gearbox as can be seen on the below graph.



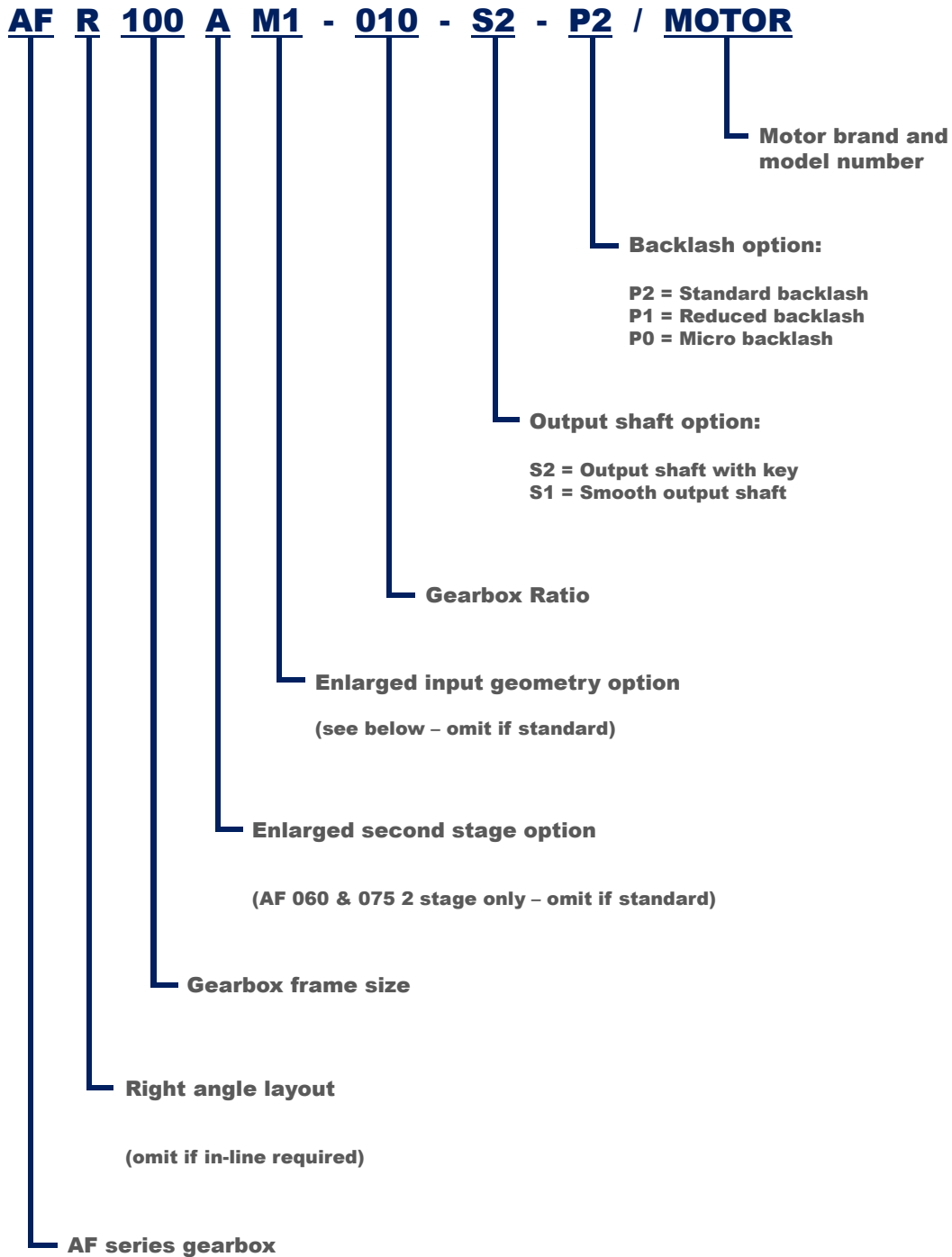
CONTINUOUS RUNNING REDUCES SERVICE LIFE BY 50%

If the radial force is not exerted on the centre of the output shaft (length/2) then the permitted loads can be calculated based on the position load factor as depicted on the below graph.



FOR TECHNICAL SUPPORT OR QUERIES
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AF Order Codes



Example Order Code: **AF100-030-S2-P2 / ALLEN BRADLEY MPL-A230P**

AF Max. \varnothing C3	042		060		060 A	075		075 A	100		140		180		220	
	1 STG	2 STG	1 STG	2 STG	2 STG	1 STG	2 STG	2 STG	1 STG	2 STG	1 STG	2 STG	1 STG	2 STG	1 STG	2 STG
Standard	11	11	14	11	14	19	14	19	32	19	38	32	48	38	55	48
M1	12	12	16	12	16	24	16	24	-	24	-	-	-	-	-	-
M2	-	-	-	-	-	-	5/8"	-	-	-	-	-	-	-	-	-

**FOR ANY NON STANDARD ENQUIRES
PLEASE CONTACT OUR SALES TEAM**