

# Assun Motor

## Product Manual



For Planetary Gearbox

of

AM-16P Series

1<sup>st</sup> edition. October, 2019.

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# 1. About the Manual

## 1.1 Validity of This Document

The product manual document here is used for AM-16P series product by Assun Motor which is planetary gearbox. The manual has made detailed description to the safety and functional usage of this gearbox product series. It helps the professional user to install and operate the gearbox.

All data in this manual are based on the actual manufacturing and standard testing condition of AM-16P series product. Standard testing condition is when the gearbox installed horizontally and environment temperature is 25°C.

For relevant parameter summaries of the product series, please refer to Appendix 1 “Product Series Parameters”; For specified standard model or customized model, please refer to Appendix 2 “Detailed Product Drawing and Parameter”.

## 1.2 Using This Document

Please read this document carefully before install and set-up the product. Please pay extra attention to the second chapter “Product Safety”, and strictly follow the warnings and instructions.

Please retain this document throughout the entire working life of the product, and keep the document accessible to the operating and, if necessary, maintenance personnel at all times.

Pass a copy of this document on to any subsequent owner or user of the product.

### 1.3 Definition of Terms

Term	Meaning
Reduction Ratio	Speed Reduction Ratio from Input to Output
CW/CCW	Clockwise/Counter Clockwise
RH	Relative Humidity

### 1.4 Definition of Symbols



Caution! Hazard to persons. Disregard may lead to injury.



Warning! Improper operation will cause product damage.



Caution! Hazardous due to hot surface. Disregard may lead to burns.

## 2. Product Safety

### 2.1 Intended Product Usage

The Assun Motor AM-16P series planetary gearbox is suitable for rotating energy output when connected to DC motor, and usually used to reduce output speed and increase output torque. This series of product is high efficiency, low noise, low backlash gearbox suitable for various precision drive systems such as robot driving system and automation actuation devices.

The product must be properly installed when in use, and shall be operated in an environment with good heat dissipation conditions. In normal installation condition, operation parameter of input speed and output torque shall not exceed the rated values.

The product is not suitable for operation in environments with high humid or excessive dust. During the operation, please follow the parameter limits in the appendices to adjust the operation state, so as to achieve the optimum operational output and longest product lifetime.

For usage of product in special environment, please contact our local sales or service staff for consultancy and get the relevant advice or customized service.

This product is NOT SUITABLE for applications where the failure of the product could result in the death of an individual or group of individuals.

### 2.2 Product Usage Safety



The product is a high-speed rotating device. Please make sure the product is properly mounted before commencement of operation to prevent potential hazards to people or equipment. Please refer to Chapter 4.1 of this manual for further installation guidance.



Gearbox surface temperature could be high after long term operation. Please exercise caution when touching or handling the product.



Normal operation must comply the rated input speed and output torque. Improper operation specs will affect the product transmission performance, shorten the lifetime and even damage the gearbox.



During operation, the rotating direction cannot be suddenly changed, otherwise may cause internal structural damage to the gearbox and possibly lead to malfunction out of broken teeth.



Please use the gearbox in well ventilated environment or connect to heat sink. If operate bad heat dissipation environment for long time, the gearbox could overheat and cause transmission efficiency and lifetime to decrease. Overheated gearbox surface will cause hidden danger to safety.



Please use the gearbox according to the parameter limits in the appendix, otherwise it may cause the gearbox overspeed or overload, which could lead to irreversible damage to the gearbox.



The gearbox is not suitable for operating in high humid and dusty environments. High humidity or excessive dust concentration could lower the gearbox performance and shorten the motor lifetime.



The product is a precision planetary gearbox with high accuracy assembly requirements. Personal disassemble is not recommended as may affect the gearbox performance.

## **2.3 Product Disposal/Recycling**

This series of motor products is manufactured with multiple types of metals, alloy materials, chemical adhesives and lubricants. Please dispose it properly as recyclable material. For a detailed product material listing please refer to Chapter 3.1.

## 3. Product Series Information

### 3.1 Product Series Structure Introduction

AM-16P series products is a series planetary gearbox. Case diameter is  $\phi 16\text{mm}$ , case length varies from 18.5mm to 34mm, weight varies from 23-40 grams, based on different stages. For detailed series information and parameters please refer to Appendix 1.

The series product is planetary gearbox, every stage of reduction gear consists of one sun gear and three planetary gears. Gearbox could adopt up to five stages of reduction gears. The more the stages, the larger the reduction ratio. One stage gearbox ration could be as low as 3.3:1, and five stage ratio could be as high as 4592:1.

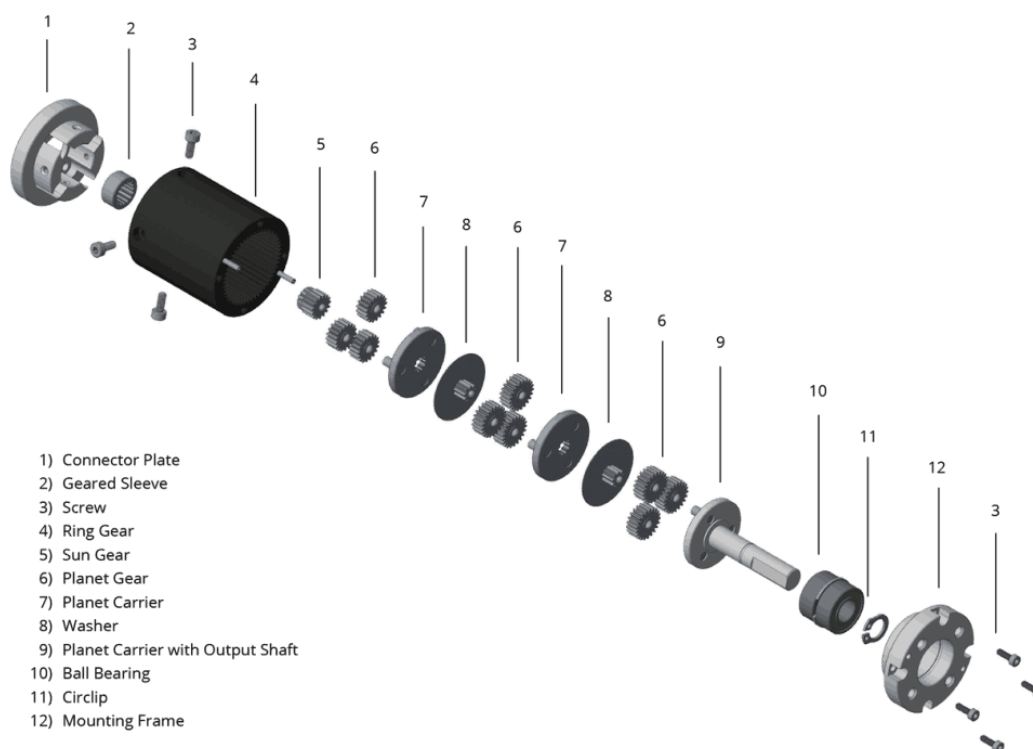


Illustration 1. Exploded Product View



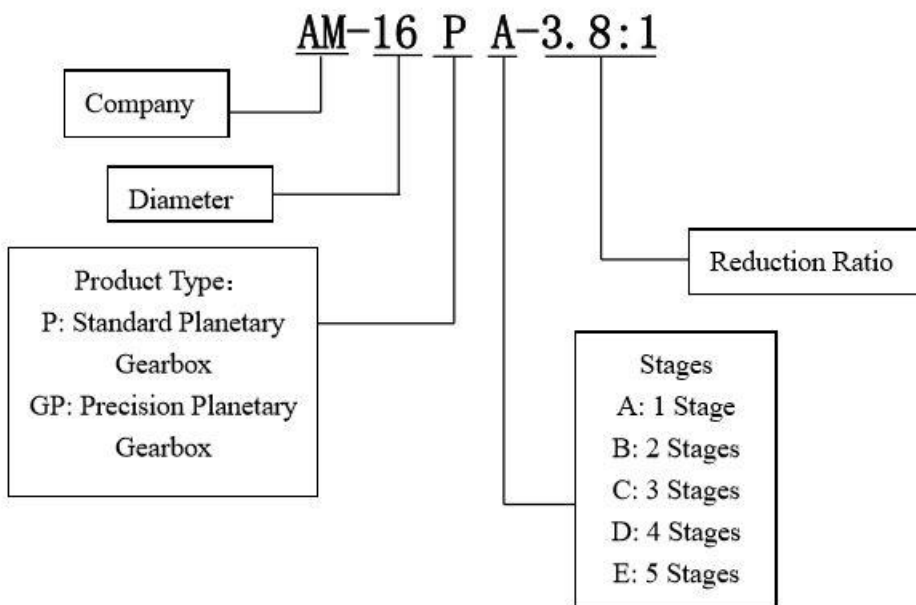
This series of product are manufactured using materials using multi-types of metal, alloy material and chemical products. Specific material usage as shown in Table 1.

**Table 1. Product Material Matrix**

Part	End Cover	Housing	Gear	Bearing	Shaft
Material	Copper	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Part	Screw	Planet Carrier	Circlip	Grease	Cushion
Material	Stainless Steel	Stainless Steel	Stainless Steel	Fluorine Grease	Stainless Steel

### 3.2 Product Model Information

To make it convenient for the customer to choose a specific part number or model and understand the part number methodology, please refer below in Illustration 2 the explanation for model number composition principle.




**Illustration 2. Part Number Nomenclature**

Customers can choose suitable products based on their types and characteristics shown in the part number methodology. If products with special characteristics are required, please contact our regional sales person for customized service.

## 4. Product Function and Usage

### 4.1 Gearbox Installation

Gearbox must be properly and securely mounted., typically utilizing the treaded holes in the front cover to fix the gearbox. It will be proposed to install the gearbox to metal parts, or installed in well ventilated environments for better heat dissipation. On the end cover of the gearbox there are threaded holes used to connect gearbox to motor.

 The first stage sun gear (starting gear) must be installed to the motor front shaft with press fit. In different speed ratio, starting gear have different teeth number, so there are different requirements for motor front shaft diameter. When customer want to install the gearbox to their own motor, please consult to our company about the motor shaft diameter and length, and also the front cover boss dimension.

Starting gear will be provided by the company, when customer want to install the gear to motor shaft, please caution to protect the motor shaft from axial pressing force. Customer may also ask to our company for help with the starting gear.

### 4.2 Rotation Direction and Braking

Gearbox rotating direction will be the same as the driving motor. When gearbox installed to the motor, system rotating inertia will increase. So when customer is designing for acceleration and deceleration for the system, the relevant parameters shall be set lower for better controlling results.

When need to brake, the brake force shall not be more than gearbox intermittent torque, so as to protect the gearbox structure from excessive shock.

## **5. Maintenance**

The product series is maintenance free, please do not disassemble in person. There are no repairable components inside the motor. Regarding any quality issue or maintenance needs, please contact our regional service person for relevant technical support.

Ignoring this warning will void the warranty.

## **Appendix**

### **Appendix 1. Series Product Parameters**

### **Appendix 2. Specified Product Drawing and Parameters**

## Contact

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