

ROBOT Programming

Using MINDSTORMS EV3

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Gyeonggido Office of Education



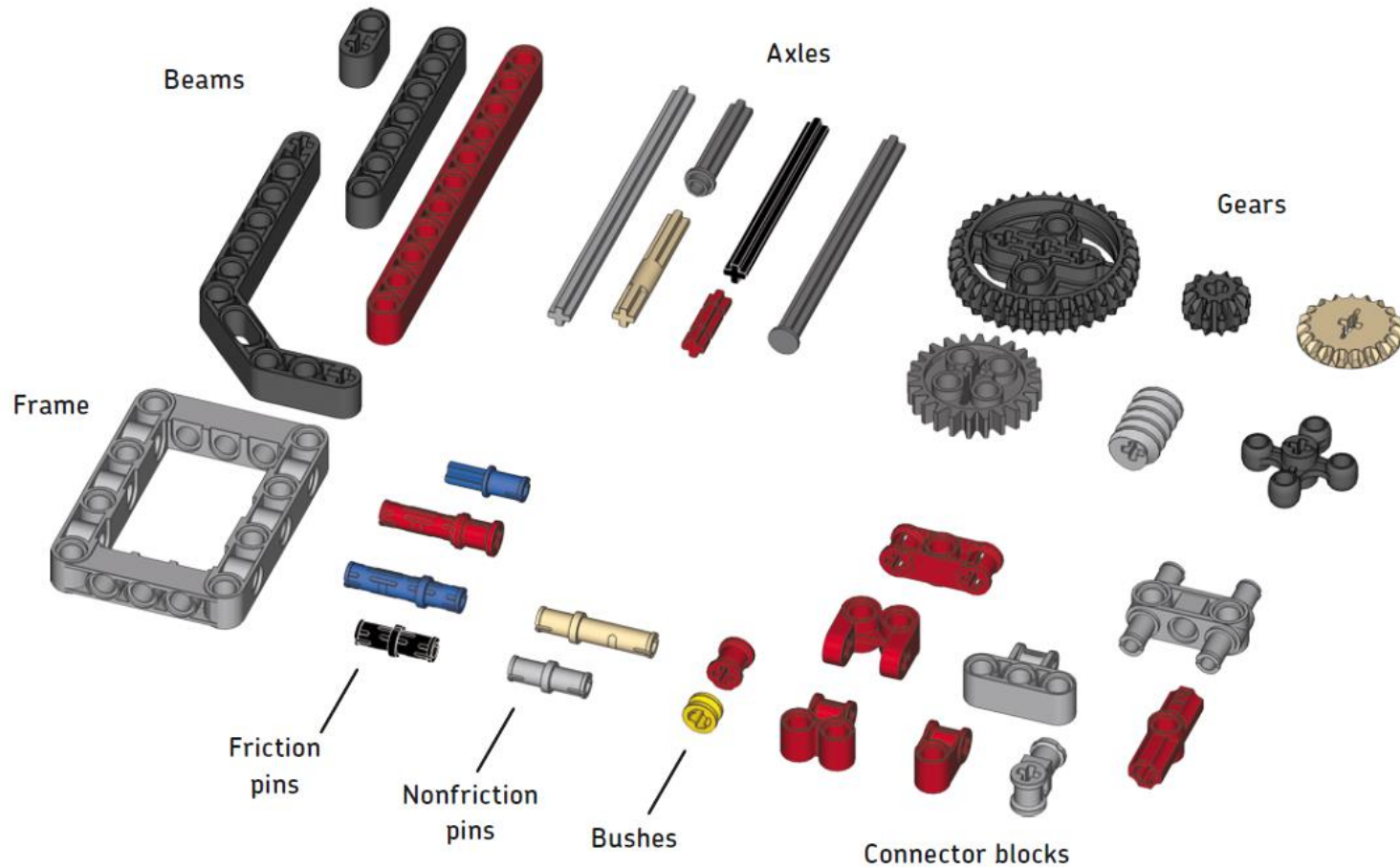
저작자를 밝히면 이용이 가능하지만, 영리 목적으로 이용할 수 없으며, 내용을 수정해서도 안 됩니다

13 로봇 재미

1. EV3 부품 알아보기
2. 로봇 재미 만들기

1. EV3 부품 알아보기

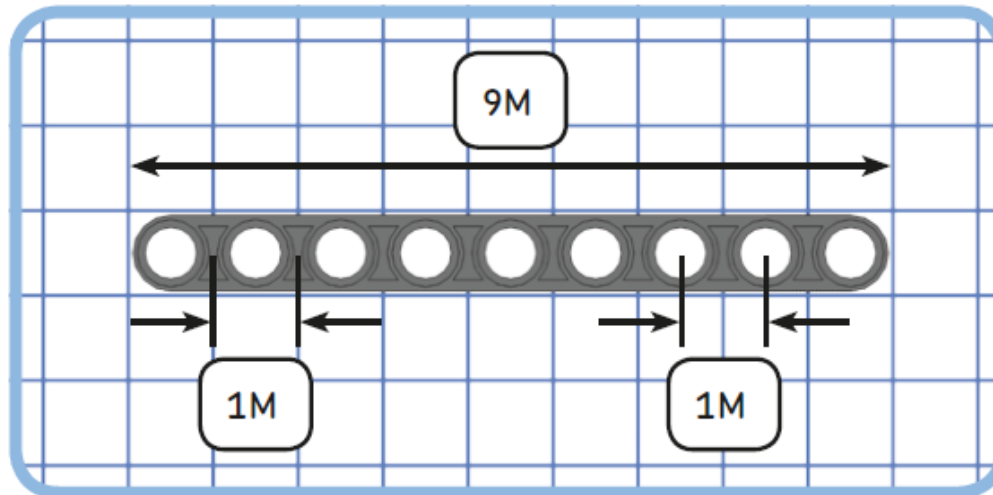
- 빔, 프레임, 축, 기어, 커넥터, 핀 종류



1. EV3 부품 알아보기

- 레고 부품 길이 단위

- M
- 1M은 8mm
- 빔의 경우, 가장 짧은 것은 2M, 가장 긴 것은 15M

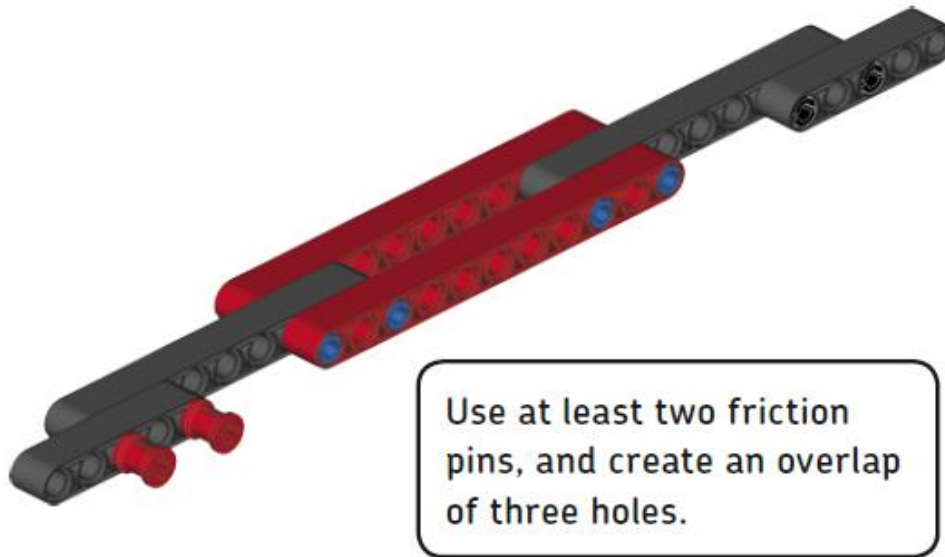


$$9M = 72mm$$

1. EV3 부품 알아보기

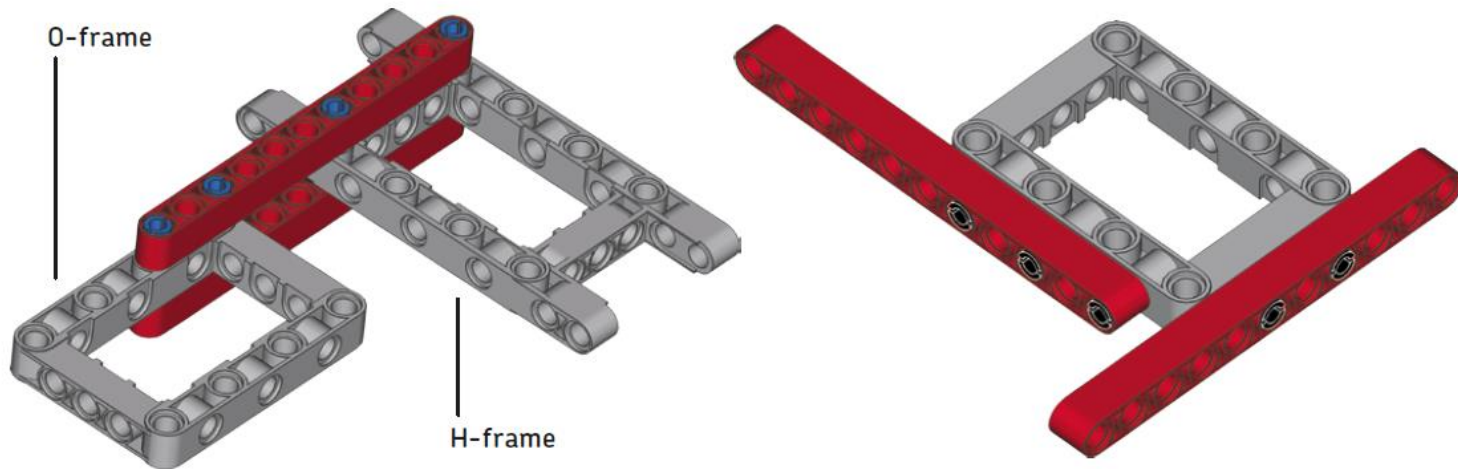
- 빔 연장하기

- 마찰핀을 이용해 중간에 보강 빔 덧댐
- 빔과 빔의 연결에 최소한 두 개 이상의 핀 사용 권장



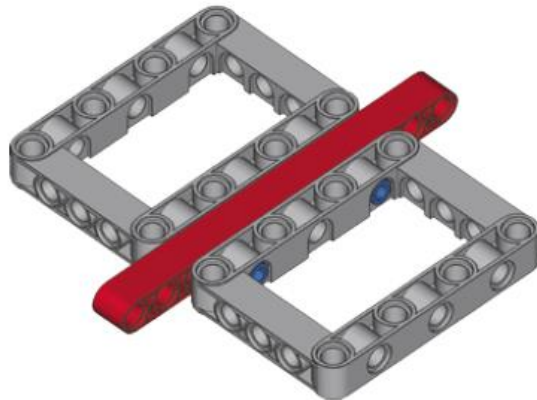
1. EV3 부품 알아보기

- 프레임 용도 및 종류
 - 크고 튼튼한 구조물을 만들 때 사용
 - 종류: O형, H형

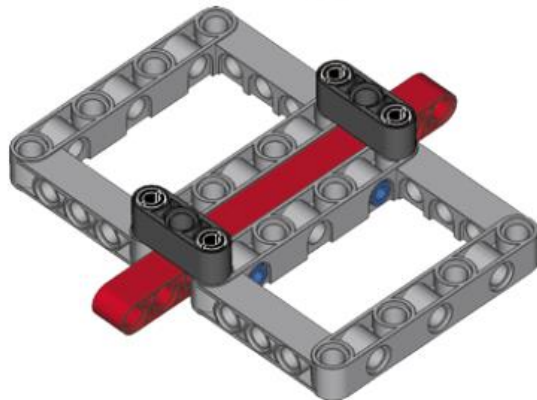


1. EV3 부품 알아보기

- 빔을 이용한 구조물 강화 방법
 - 힘이 가해지는 방향과 직교되게 핀을 결합



위쪽 구조물은,
두 개의 0형 프레임은
바깥 방향으로 당기면
쉽게 분리됨

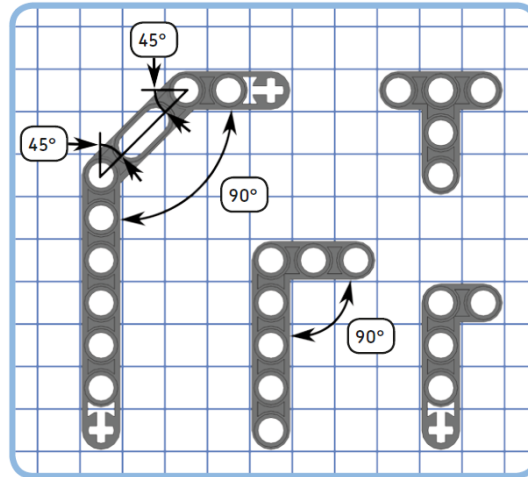


아래쪽 구조물은,
두 개의 3M 빔과 네
개의 마찰핀 덕분에 프
레이밍을 바깥 방향으로
당기는 힘에 매우 강함

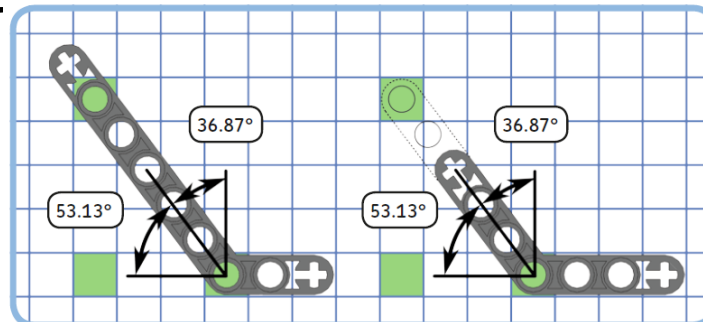
1. EV3 부품 알아보기

- 경사 빔의 종류 및 활용

- 90도 찍인 빔



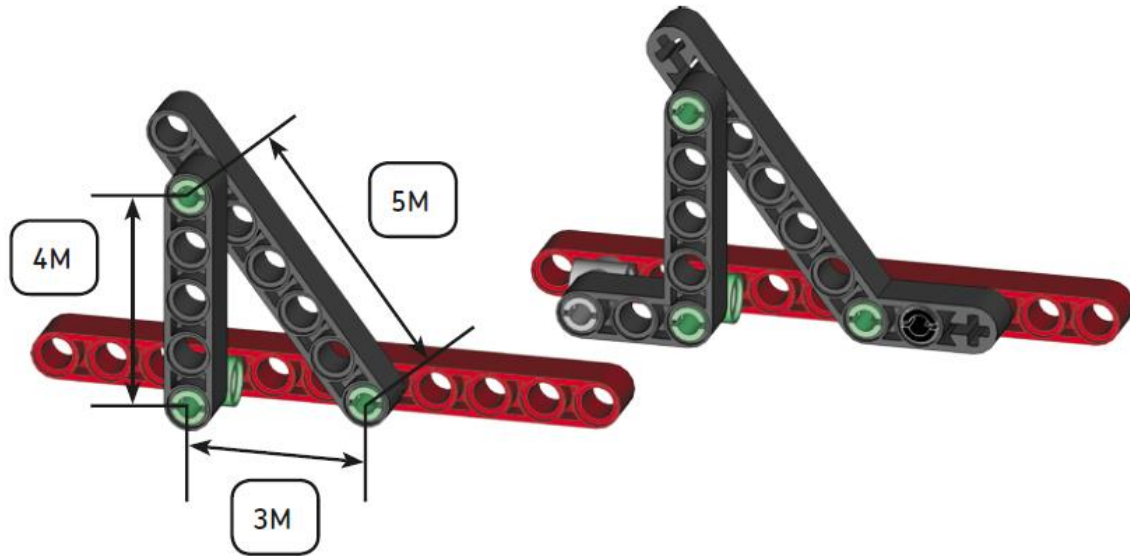
- 53.13도 찍인 빔



1. EV3 부품 알아보기

- 경사 빔의 종류 및 활용

- 일반 빔과 53.13도 꺾인 빔을 사용하여 만든 직각삼각형



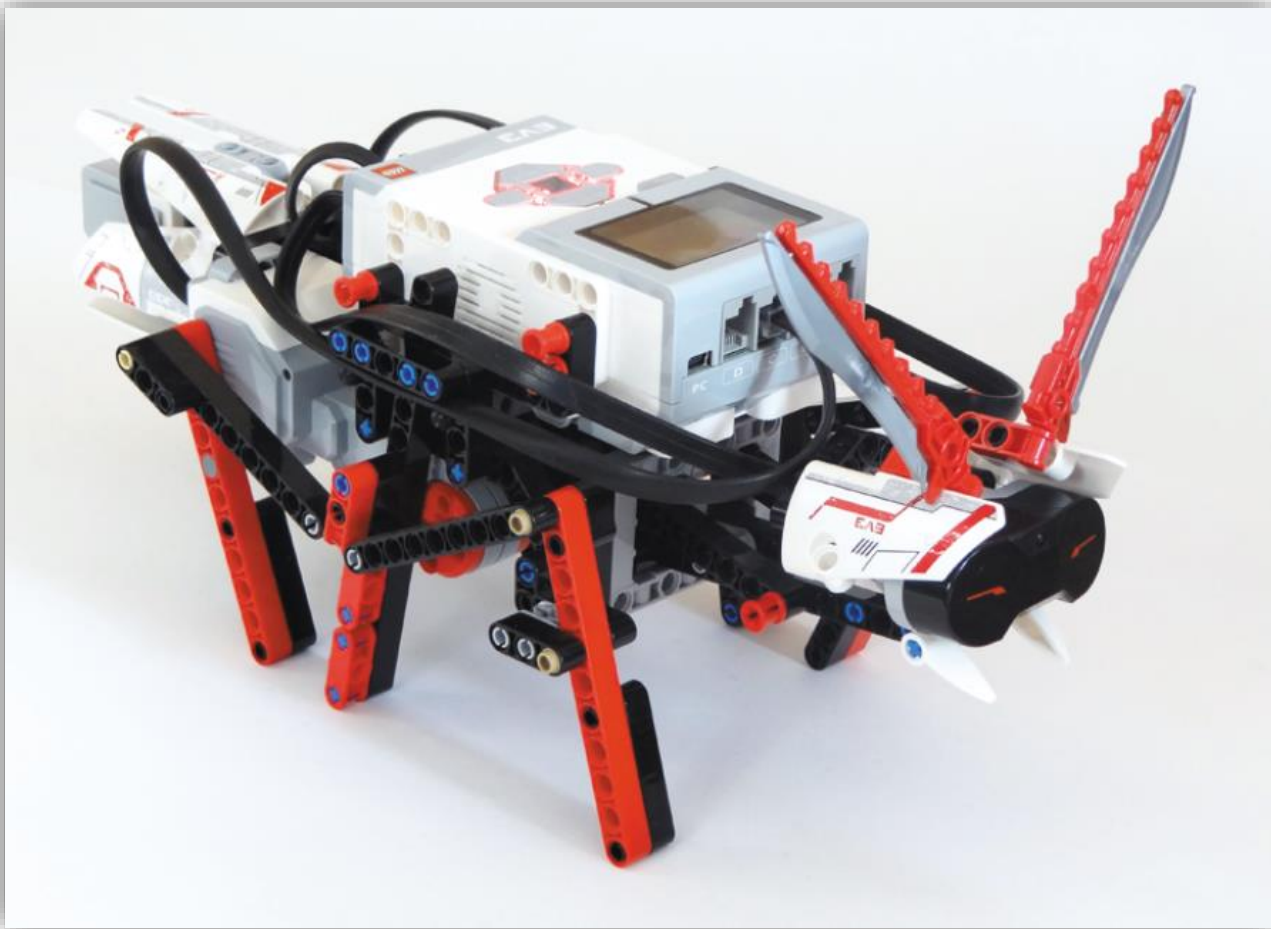
위 구조물 등은 피타고라스의 정리인
“빗변의 제곱은 다른 두 변을 각각 제곱해서 더한 값과 같다”
를 만족하는 값 중 하나인 3, 4, 5를 길이로 하는
3M, 4M, 5M 크기의 직각삼각형

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1. EV3 부품 알아보기
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2. 로봇 개미 만들기

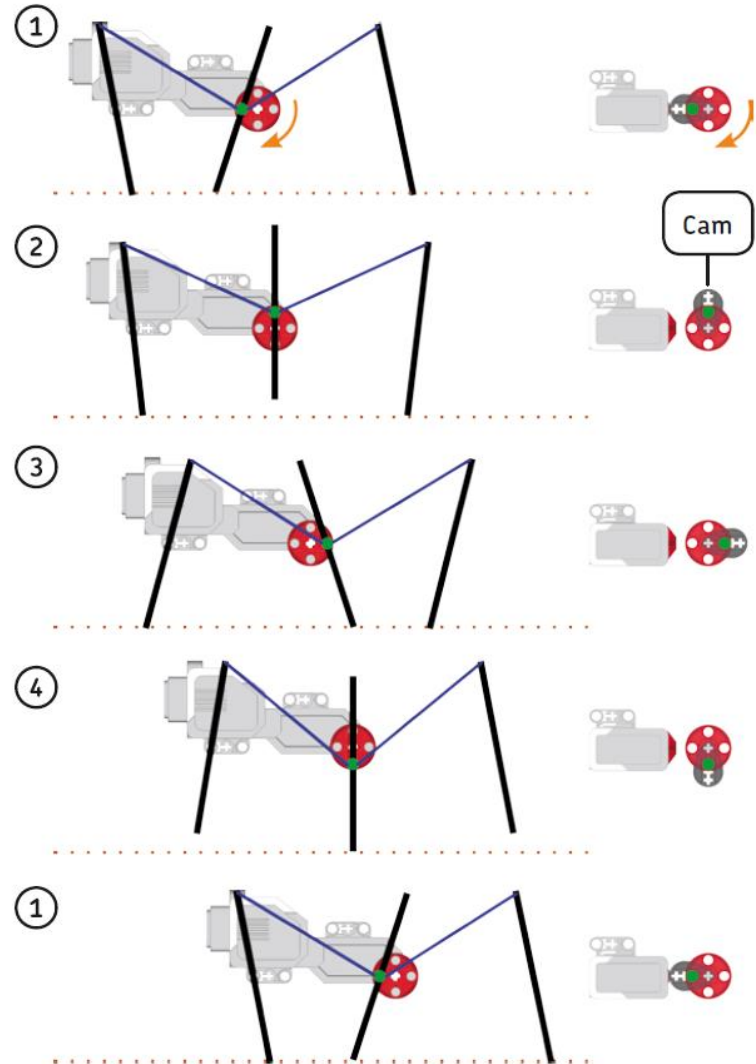
- ANTI



2. 로봇 개미 만들기

• 보행 원리

- 좌측 다리 세 개는 좌측 모터가 구동
- 우측 다리 세 개는 우측 모터가 구동
- 좌측과 우측의 다리를 반대로 배치(①과 ③)
- 좌·우 모터를 같은 방향으로 회전

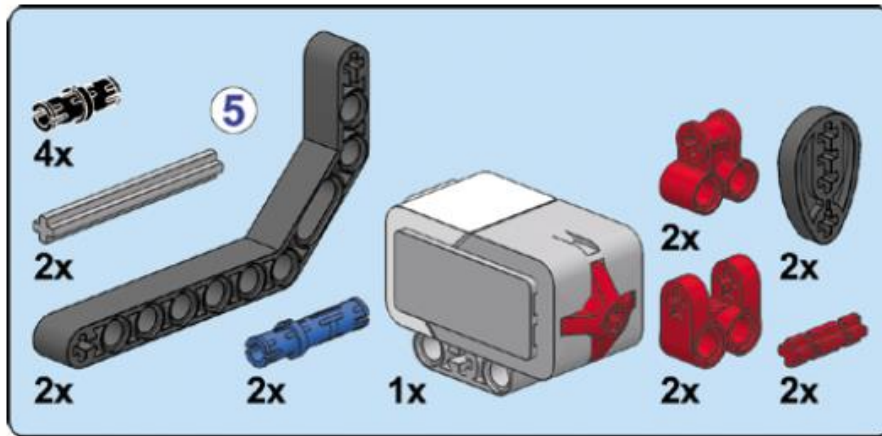


● 비프 그서



2. 로봇 개미 만들기

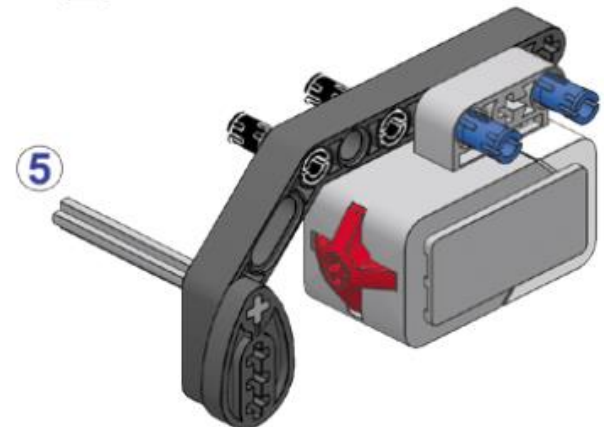
- 「쥘리」 ANTT



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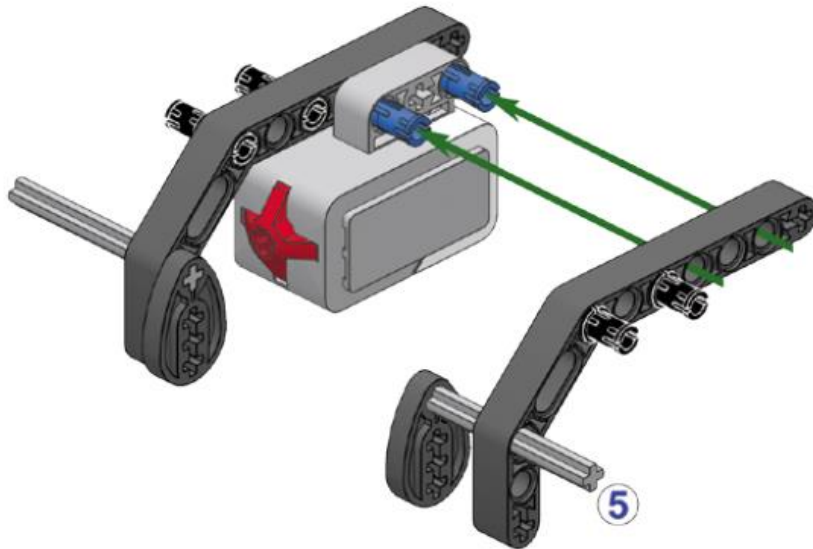
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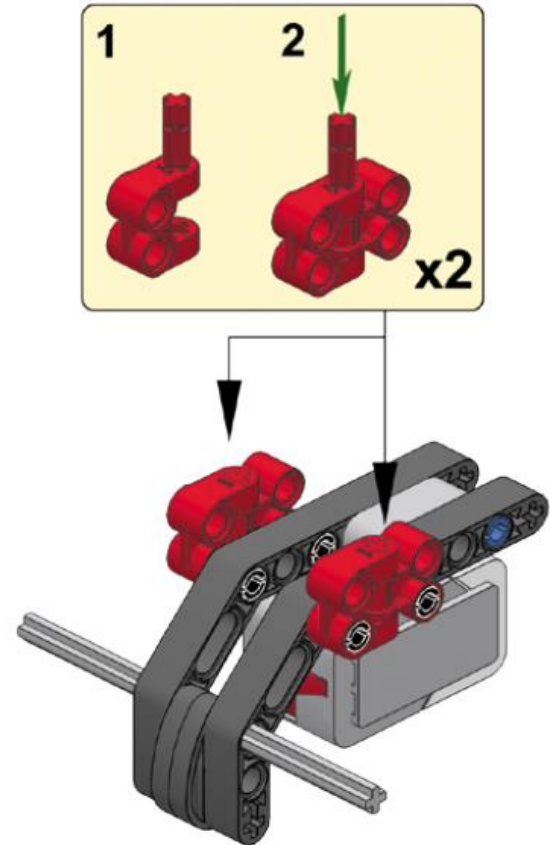
2. 로봇 개미 만들기

- 「조립」 ANTI

3

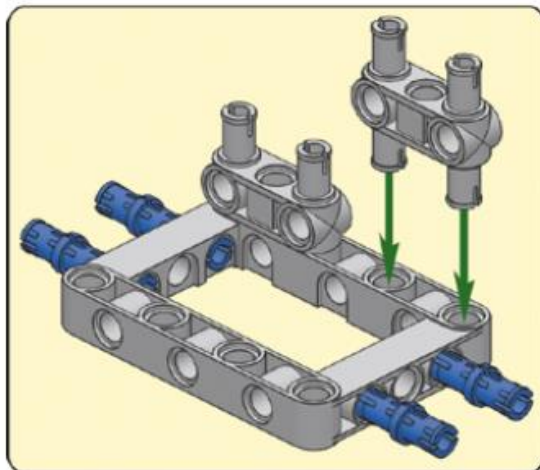
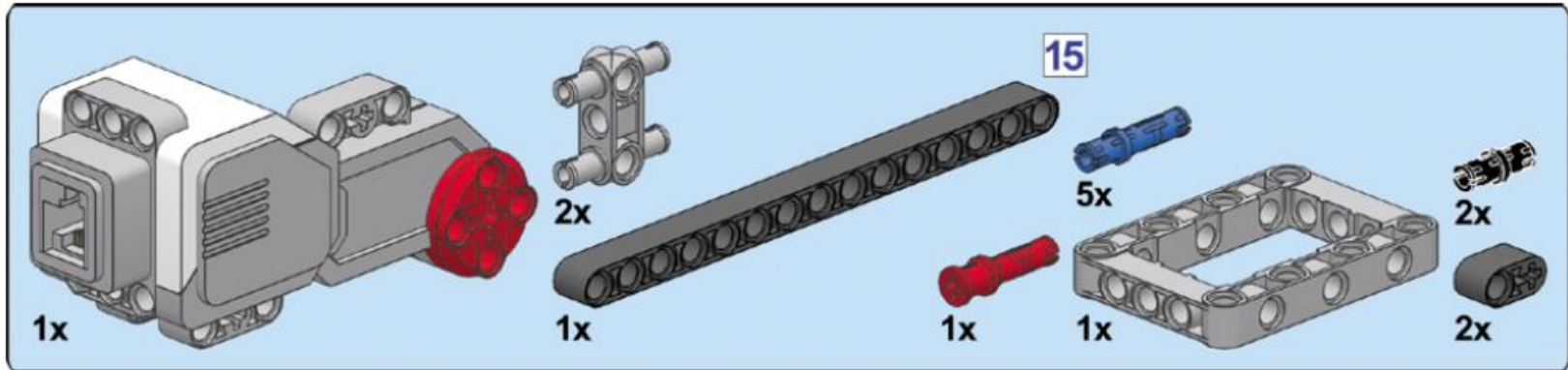


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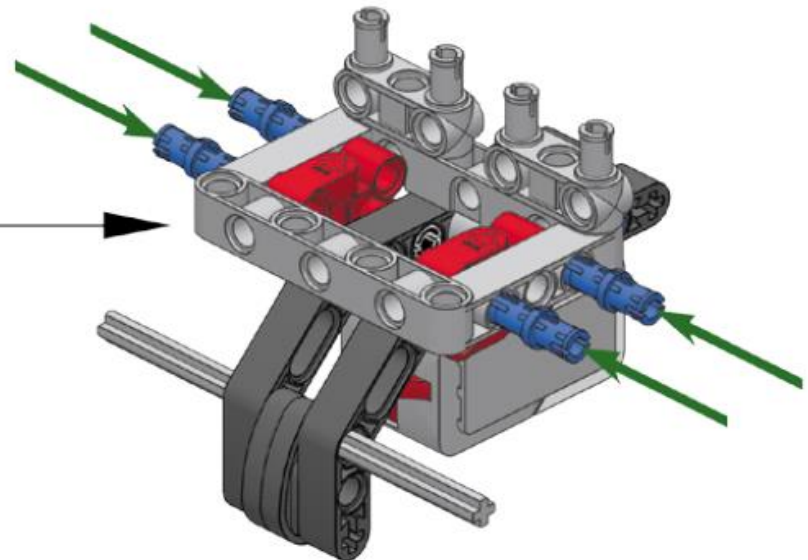


2. 로봇 개미 만들기

- [조립] ANTI

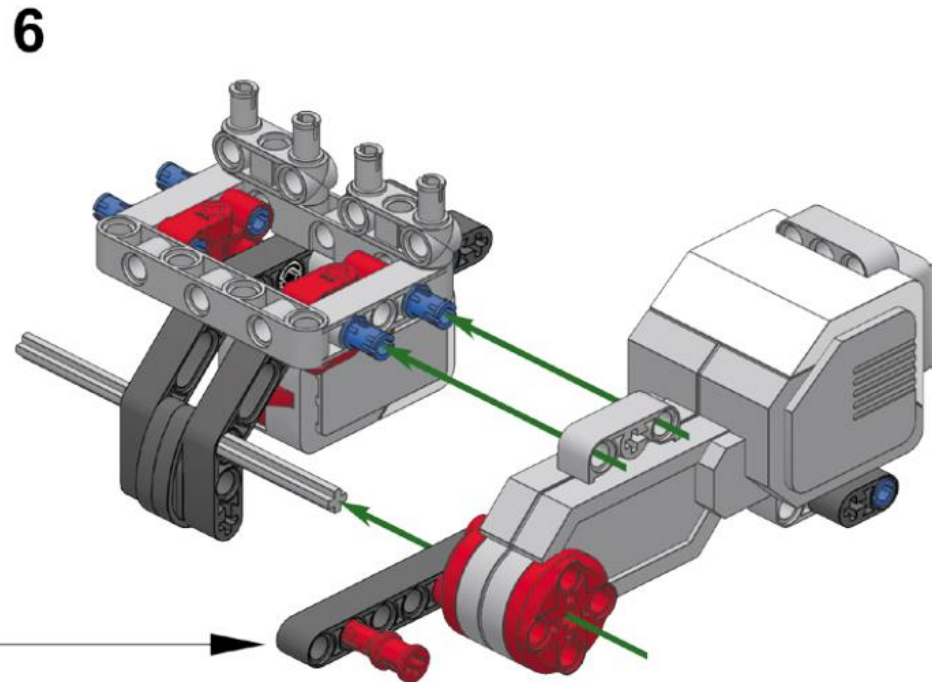
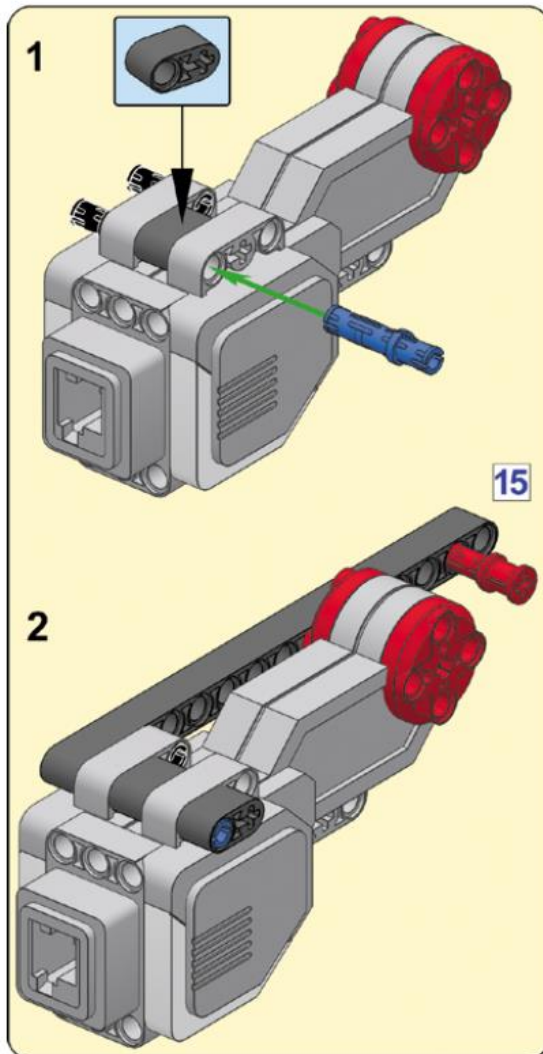


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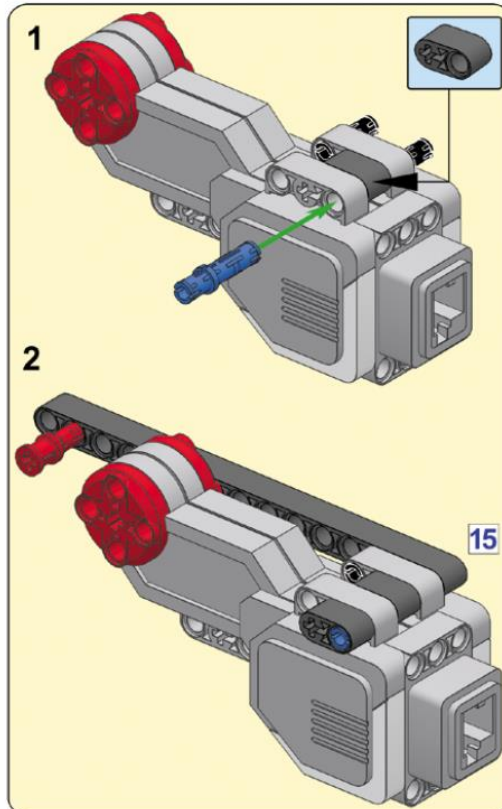
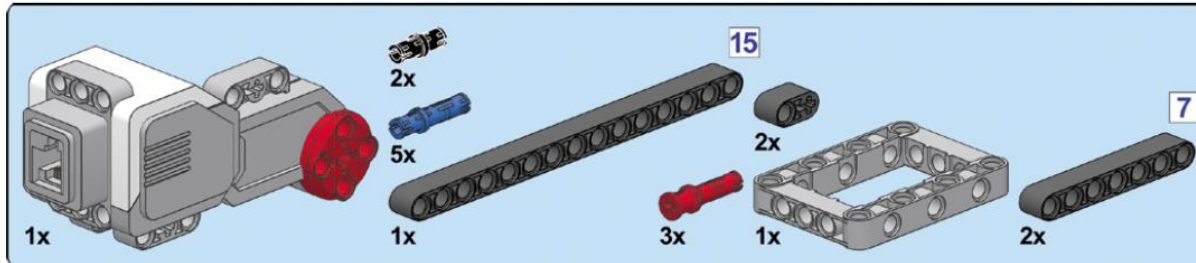
2. 로봇 개미 만들기

- 「조리」 ANT

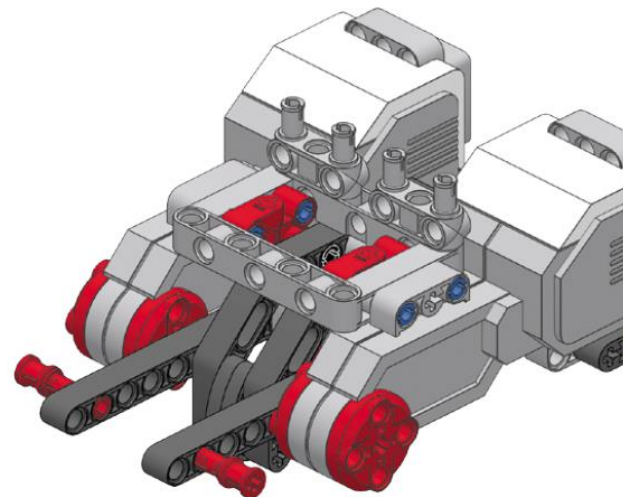


2. 로봇 개미 만들기

- [조립! ANTT

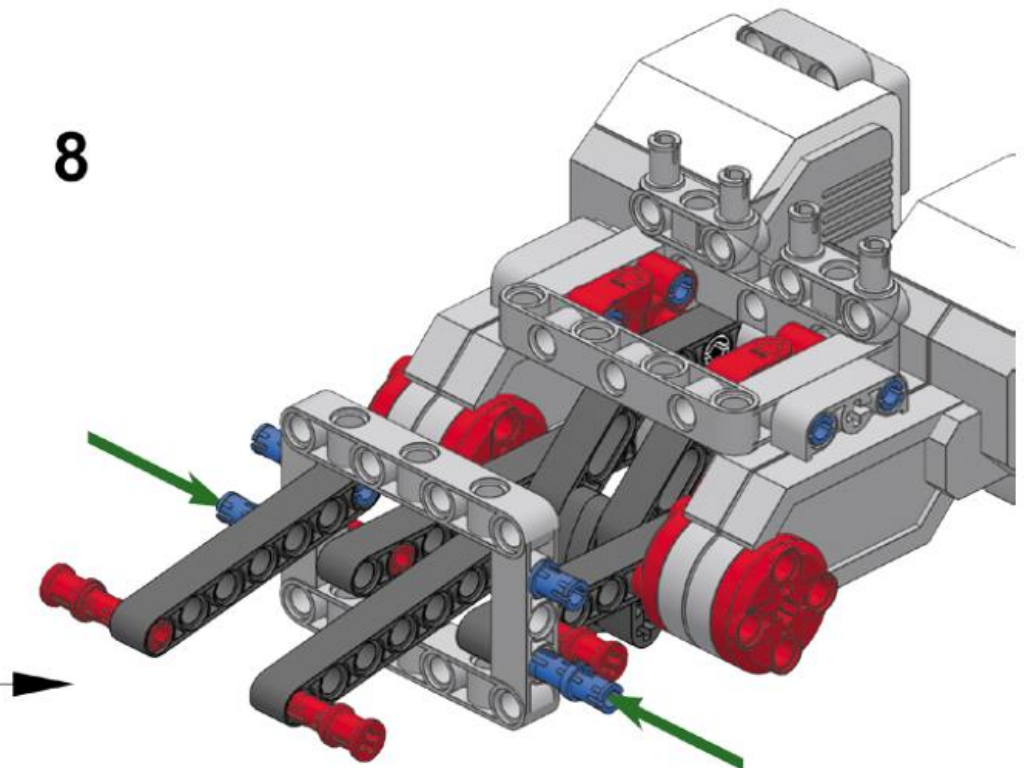
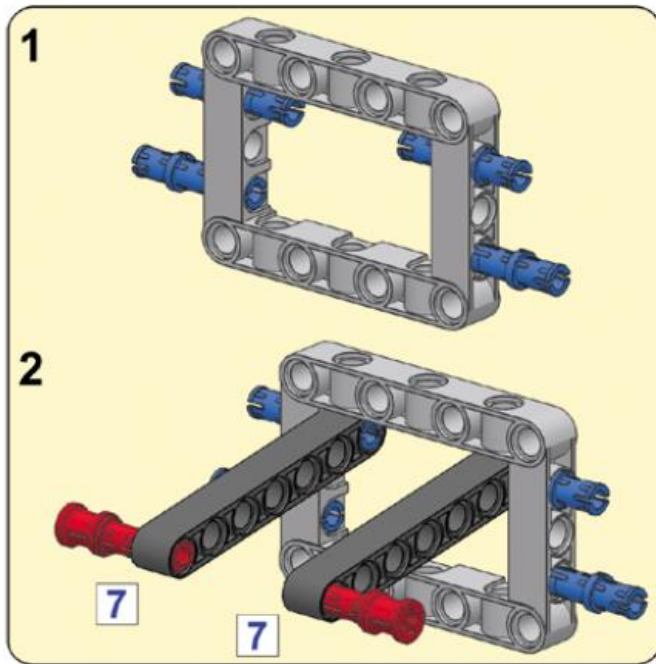


7



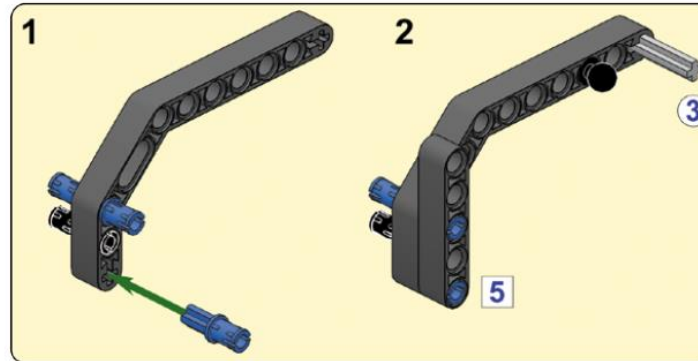
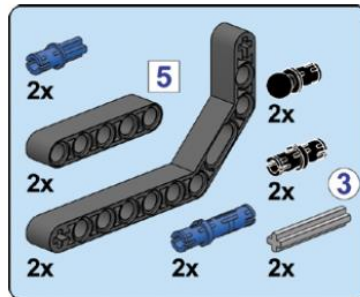
2. 로봇 개미 만들기

- [조립] ANTI

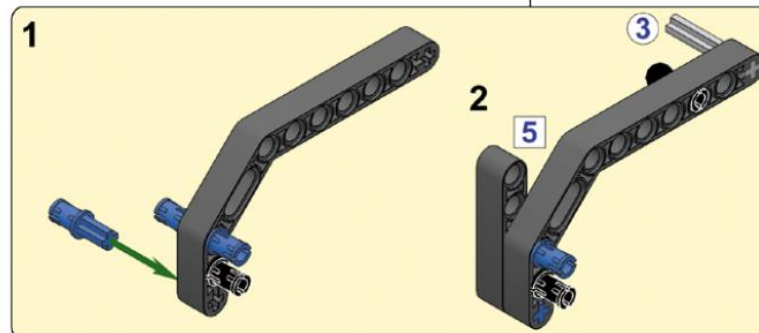
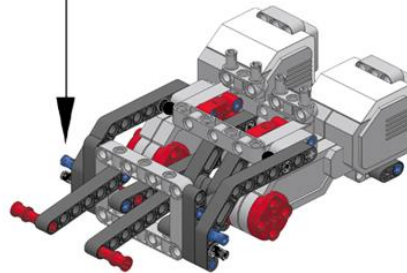


2. 로봇 개미 만들기

- [조립] ANTT

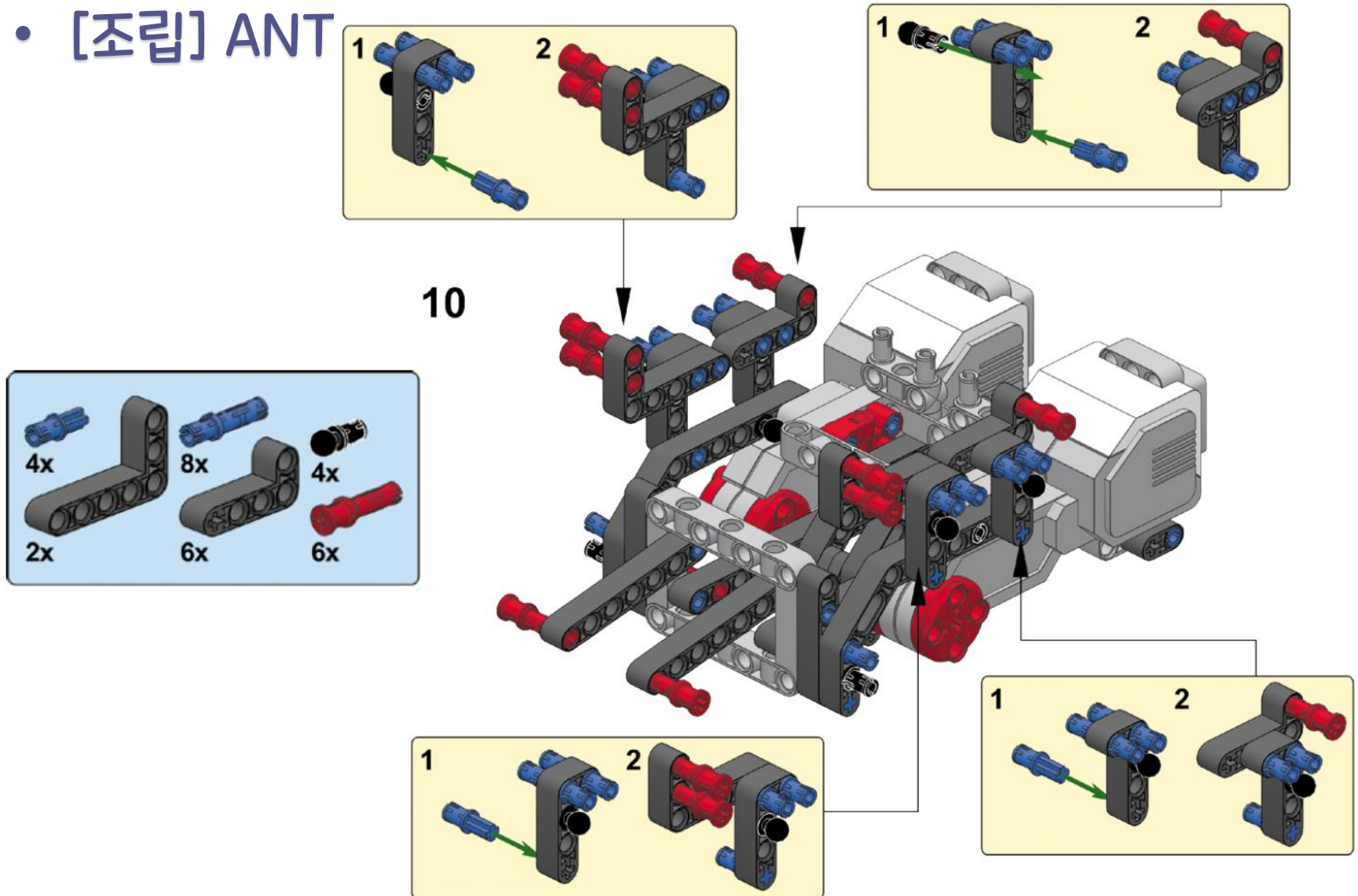


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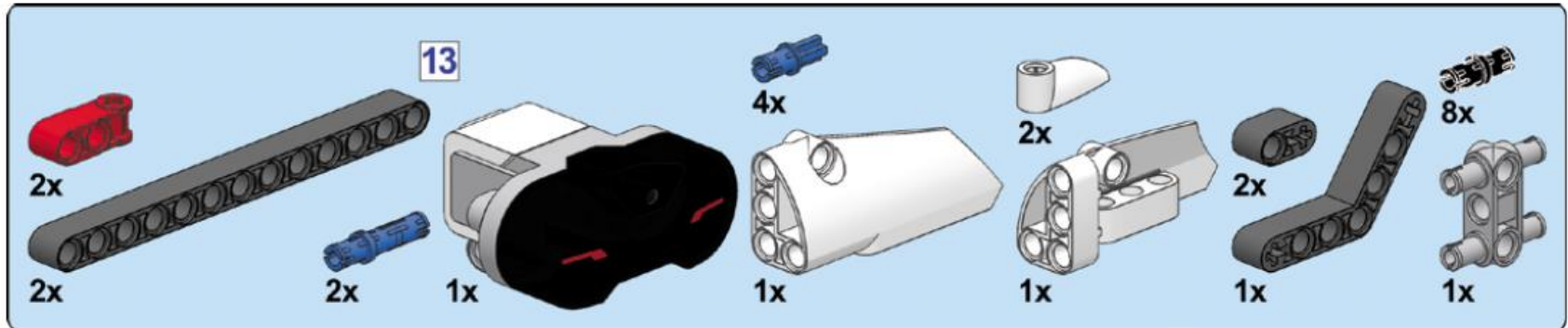
2. 로봇 개미 만들기

- [조립] ANT



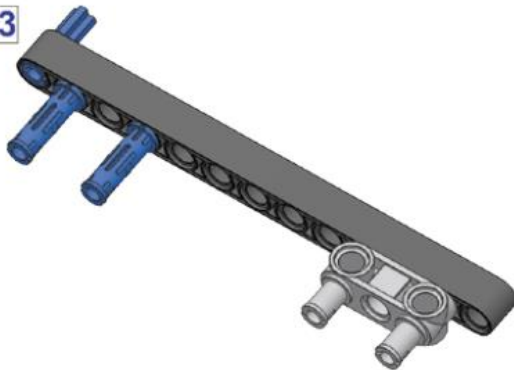
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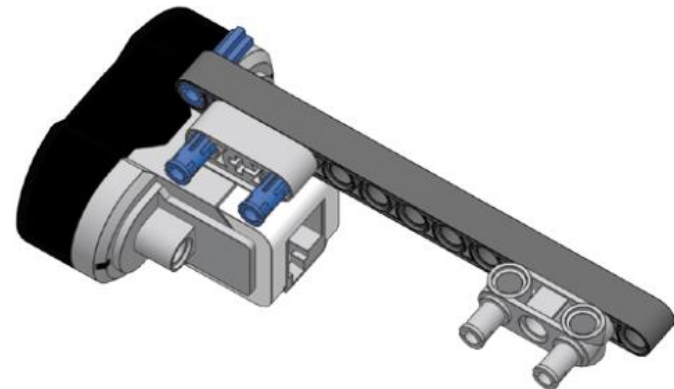


1

13



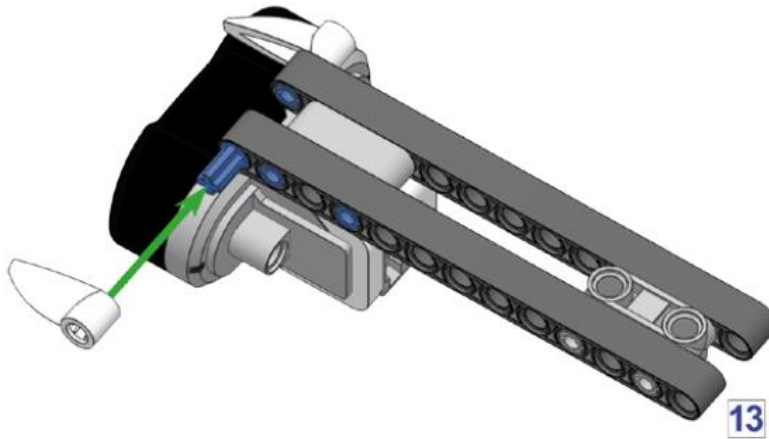
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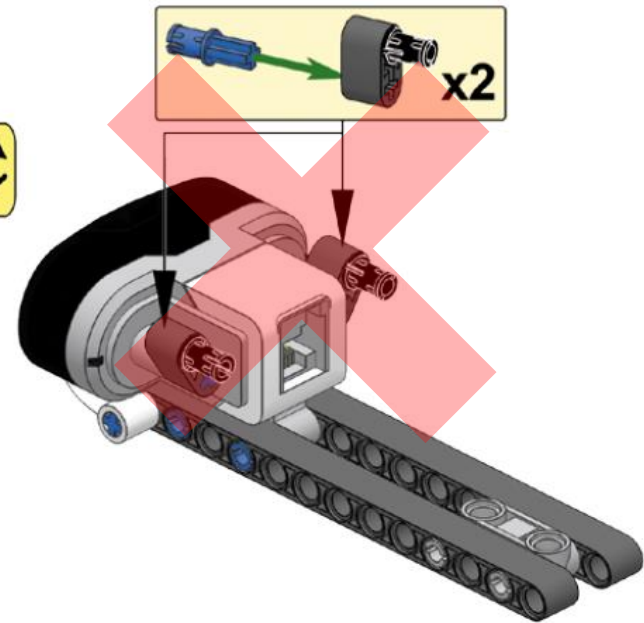
2. 로봇 개미 만들기

- [조립] ANTI

3

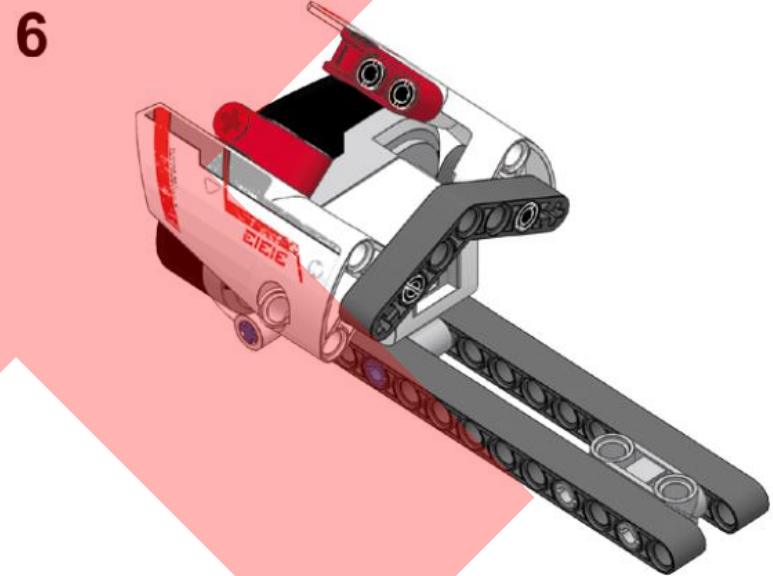
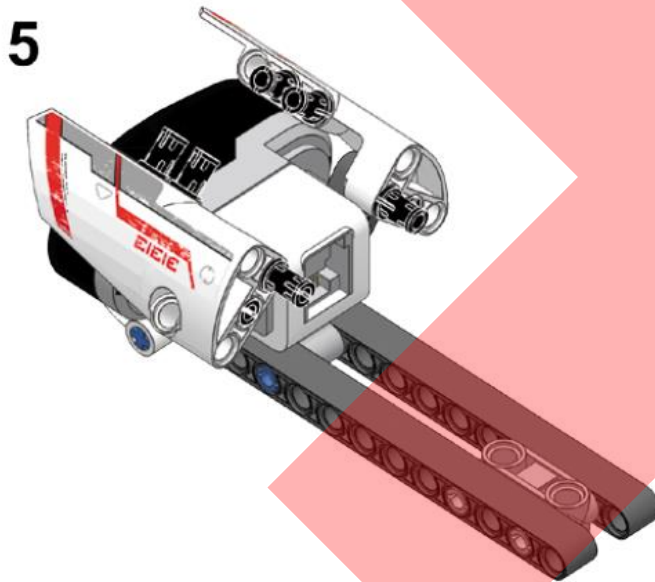


4



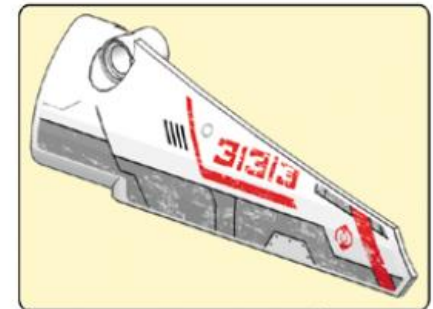
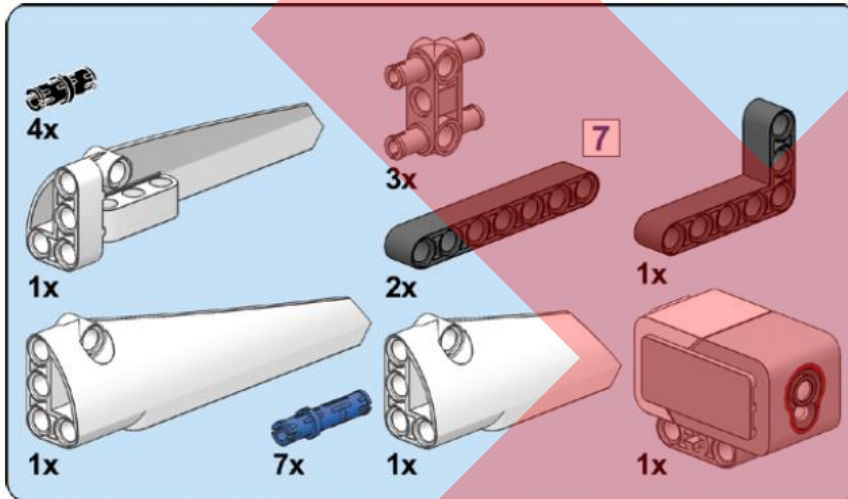
2. 로봇 개미 만들기

- [조립] ANTI



2. 로봇 개미 만들기

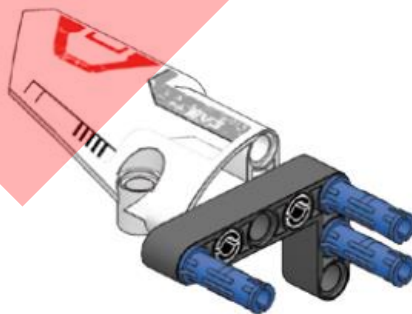
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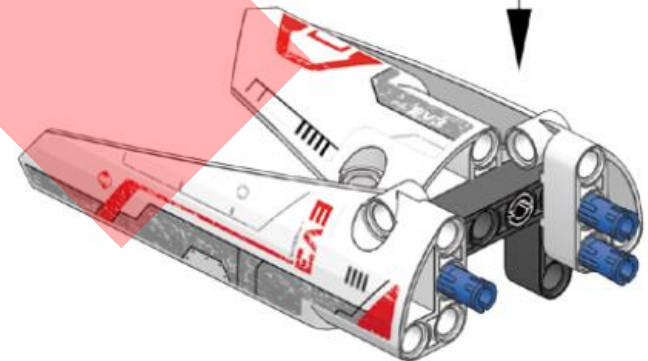
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2

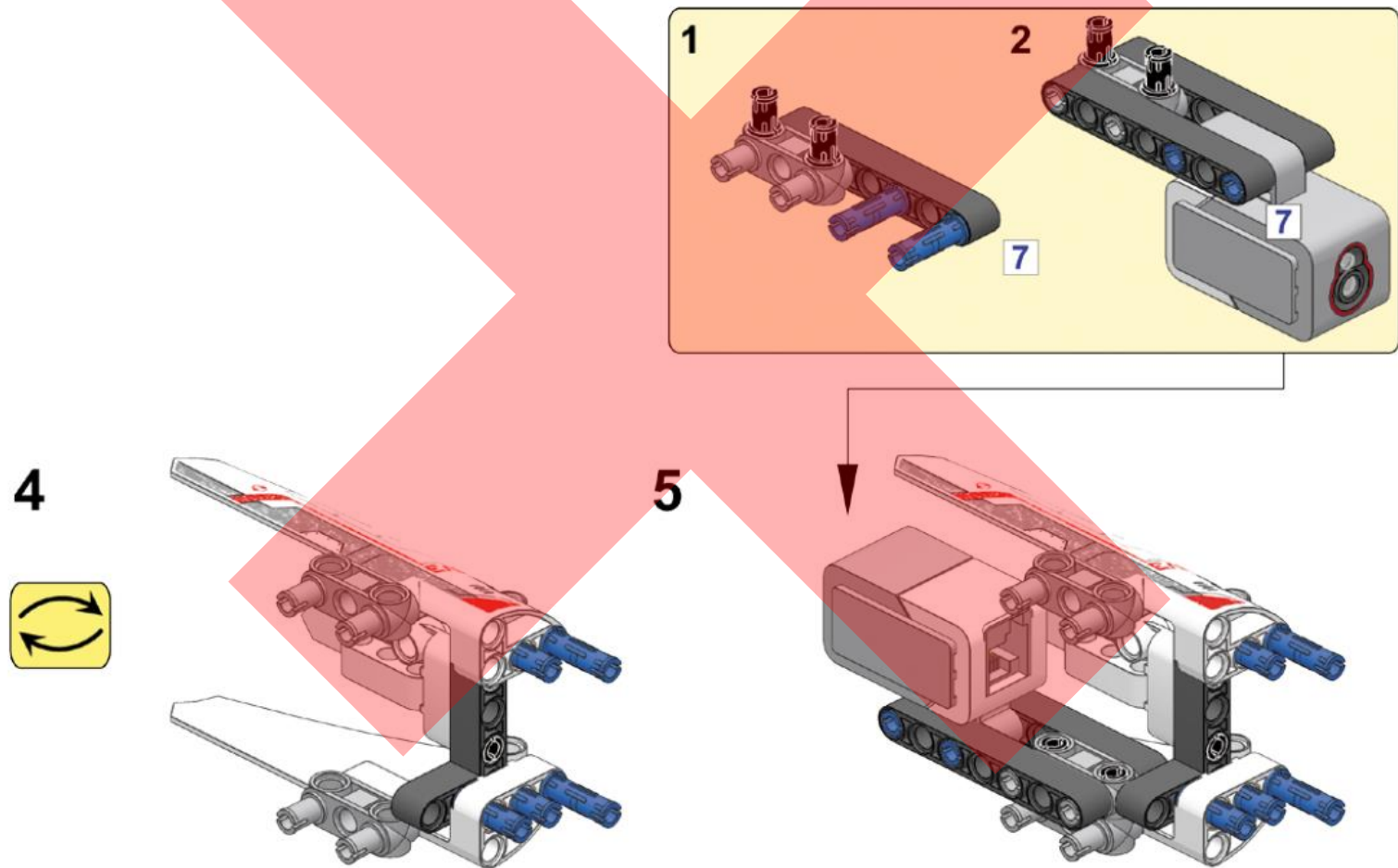


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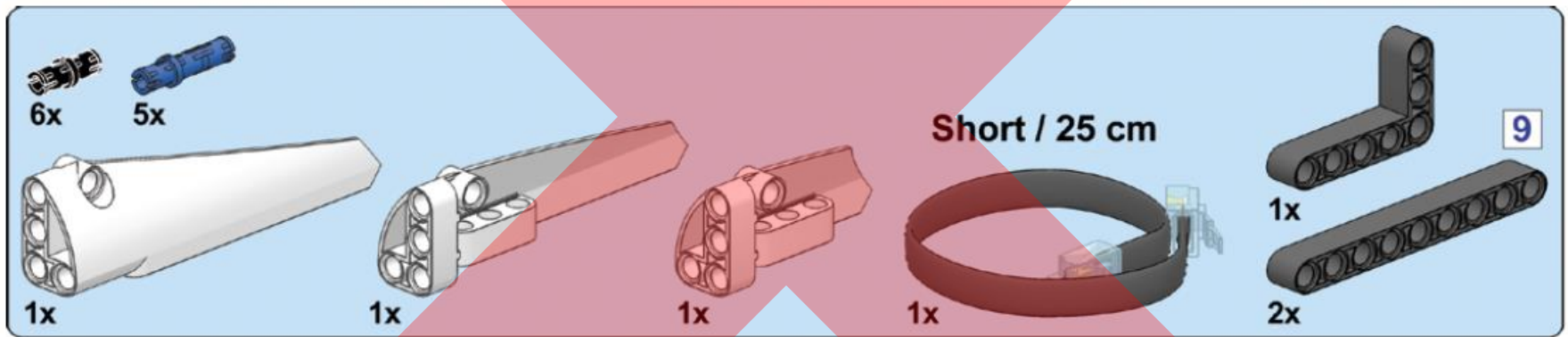
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- [조립] ANTI



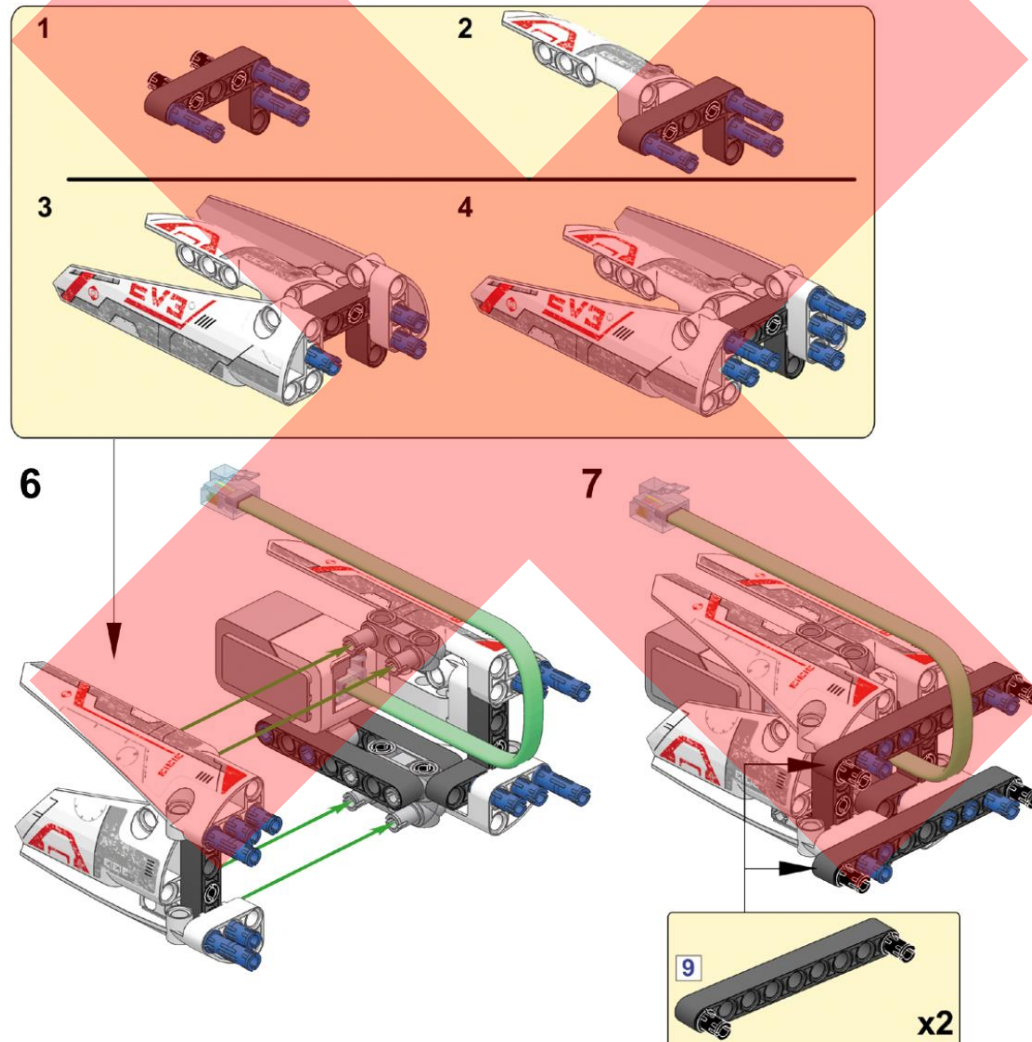
2. 로봇 개미 만들기

- [조립] ANTI



2. 로봇 개미 만들기

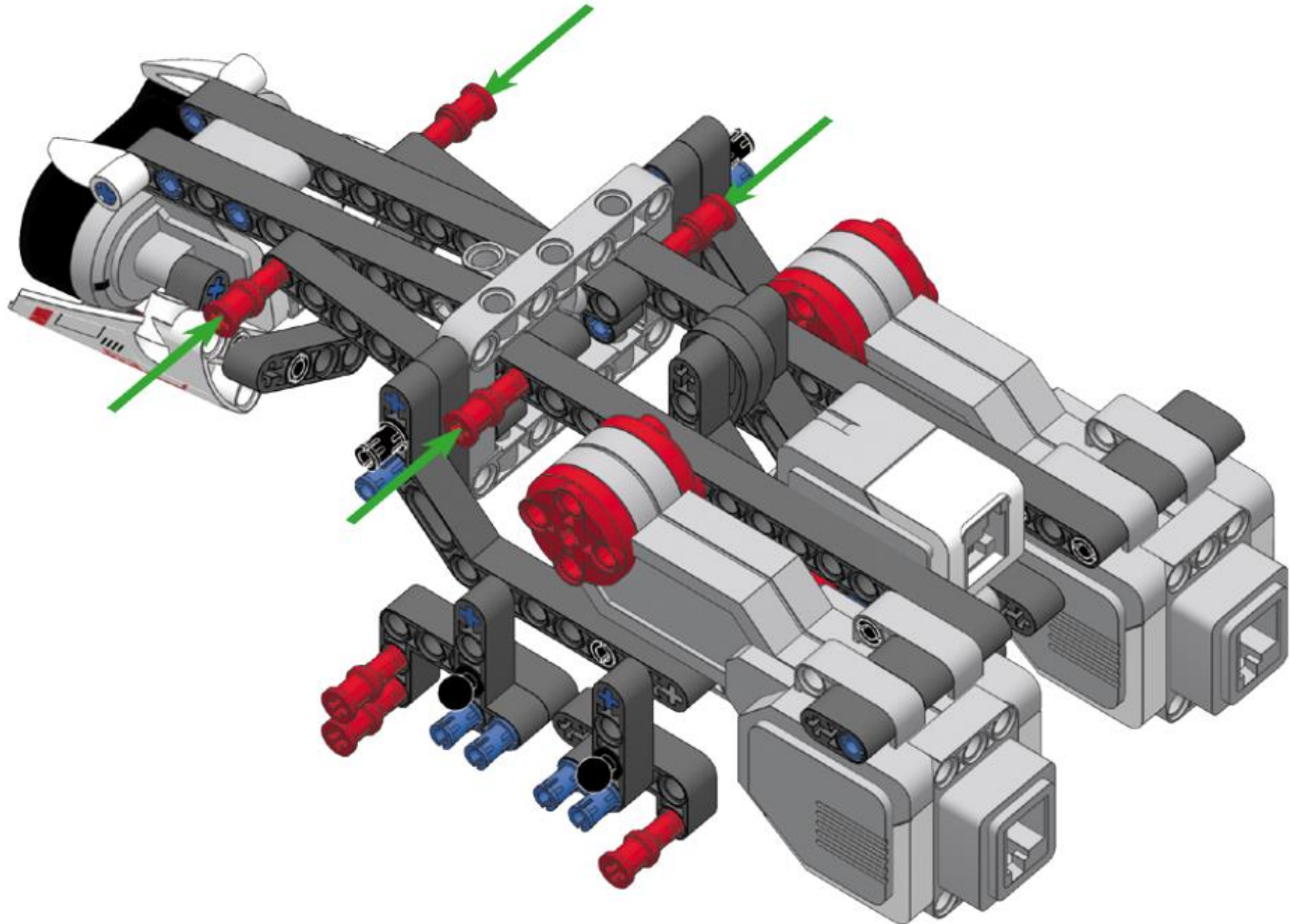
- [조립] ANTT



2. 로봇 개미 만들기

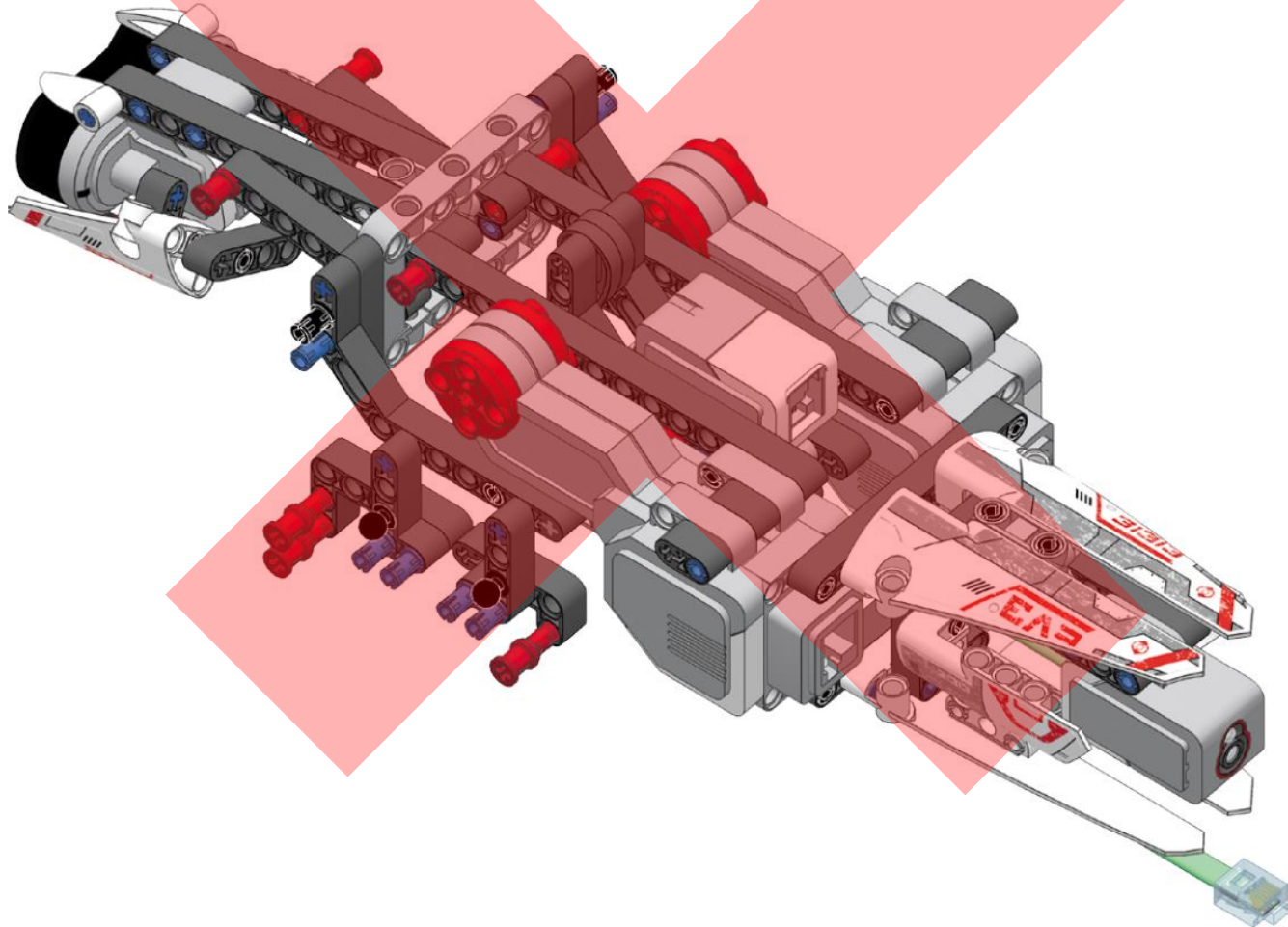
- [조립] ANTI

1



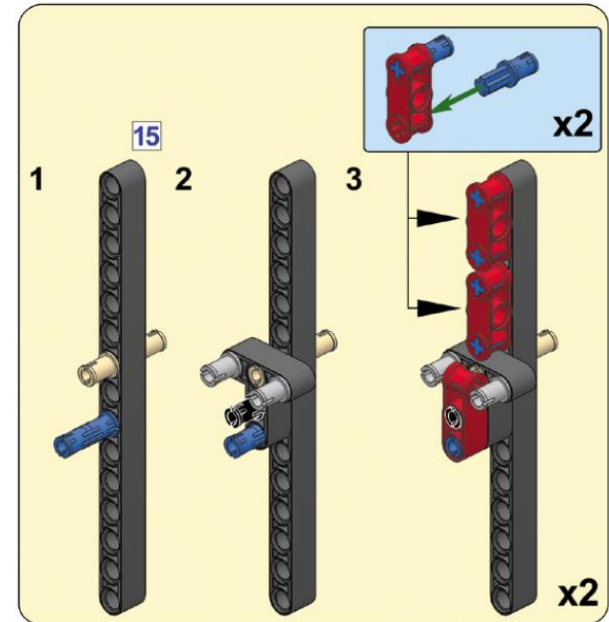
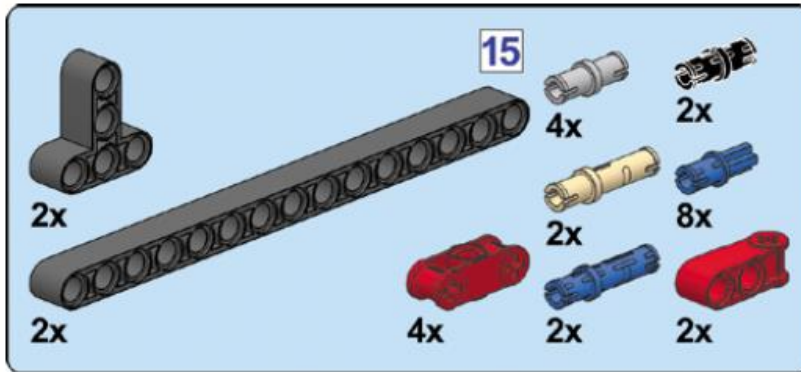
2. 로봇 개미 만들기

- [조리] ANT
2



2. 로봇 개미 만들기

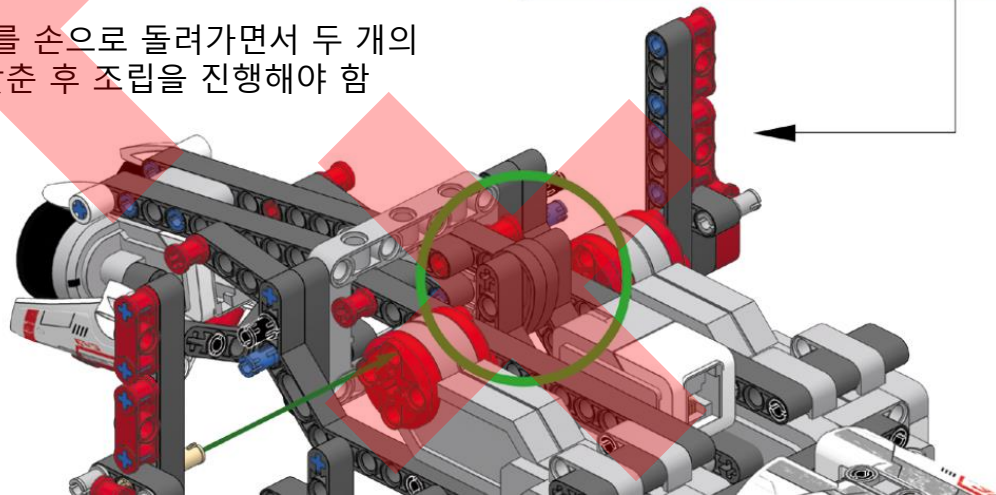
- [조립] ANTI



캠(녹색 원 부분)이 그림에서 보는 바와 같이 같은 방향으로 정렬된 상태에서 다리가 장착 되어야 함

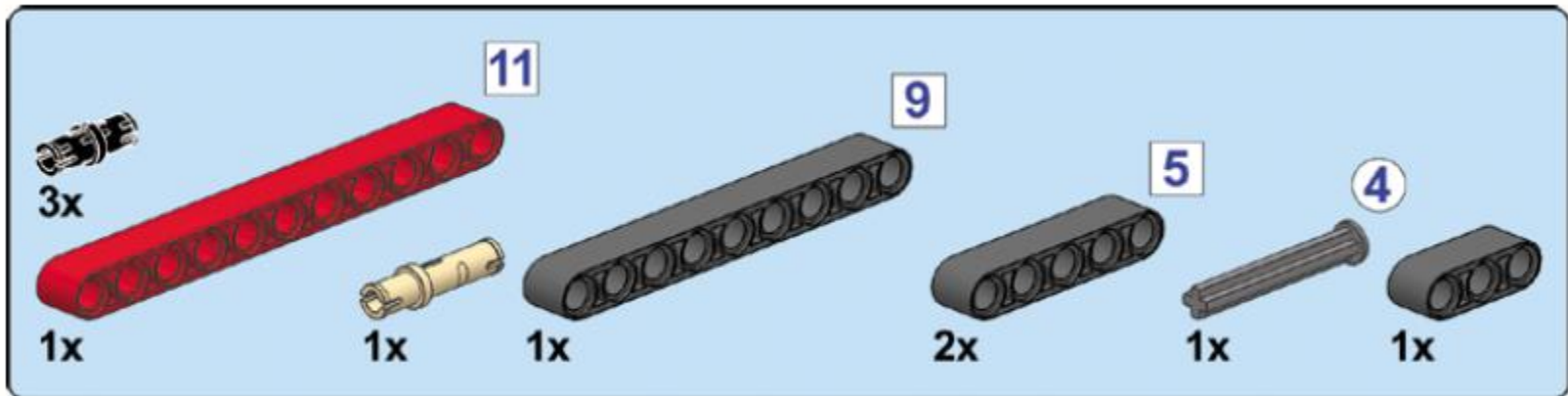
만약 축이 어긋나 있다면 모터를 손으로 돌려가면서 두 개의 캠이 같은 방향이 되도록 맞춘 후 조립을 진행해야 함

3



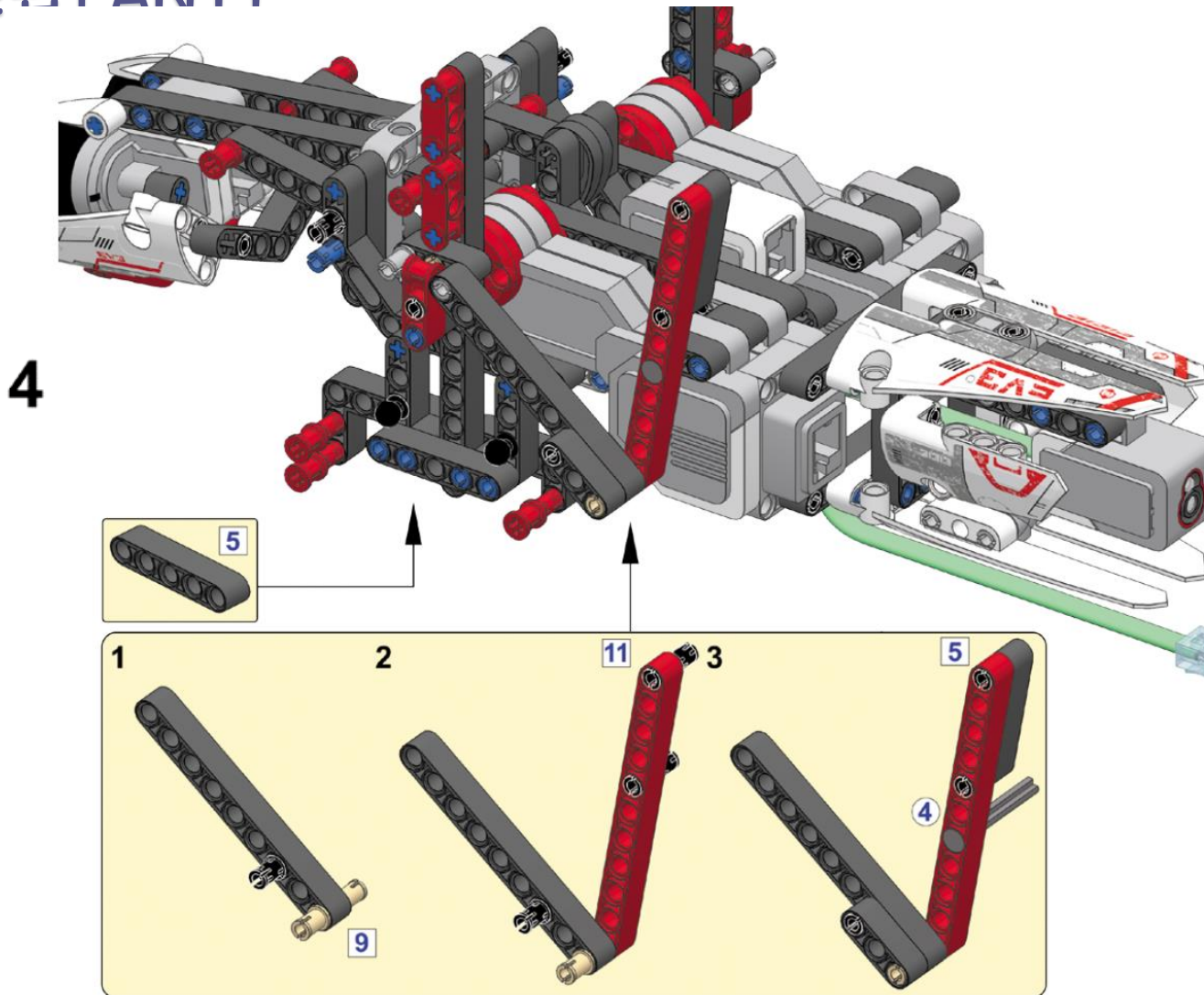
2. 로봇 개미 만들기

- [조립] ANTI



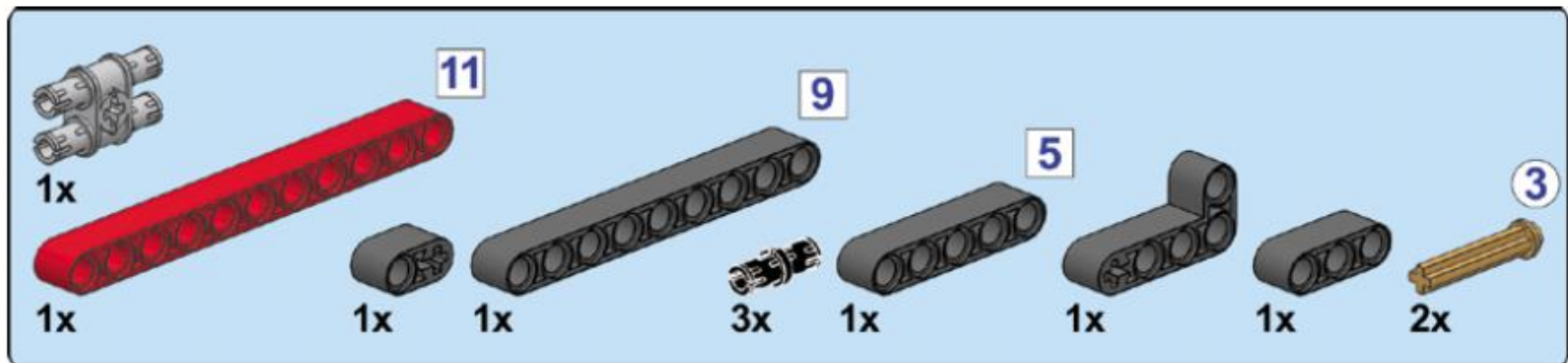
2. 로봇 개미 만들기

- [조립] ANTT



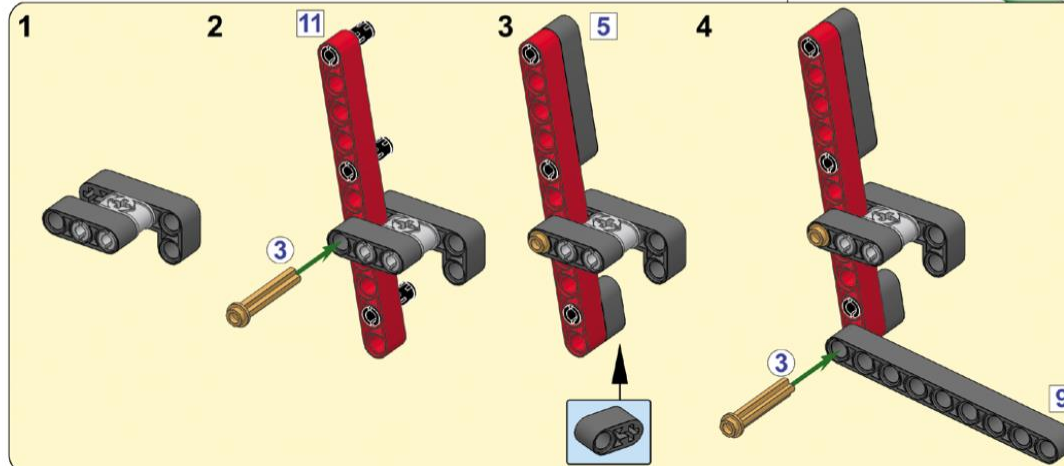
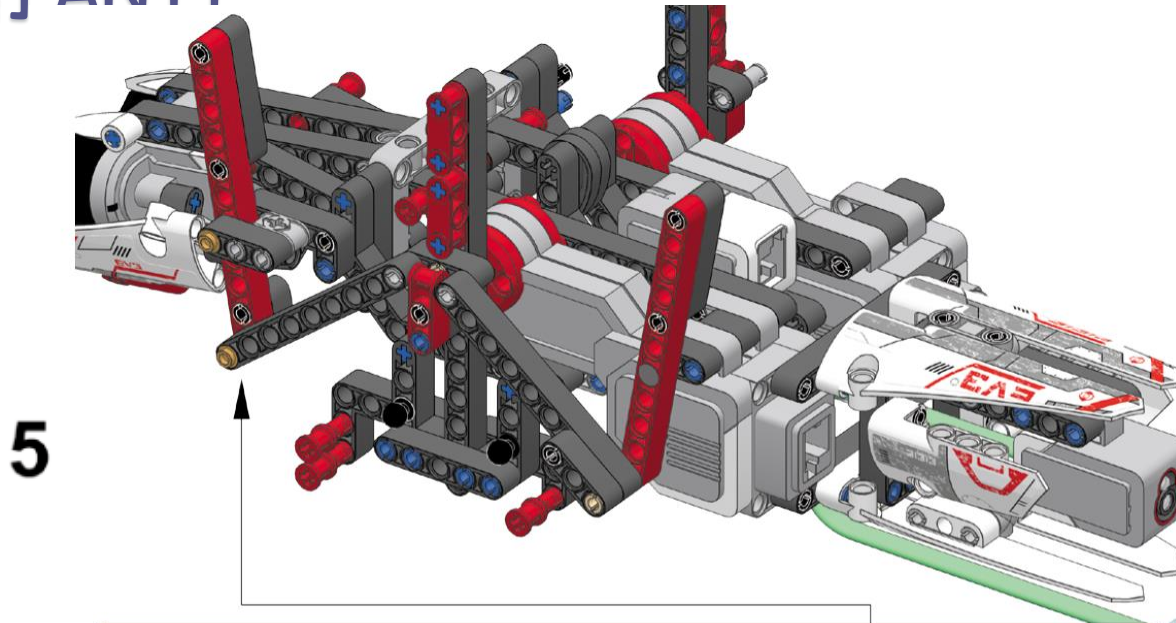
2. 로봇 개미 만들기

- [조립] ANTI



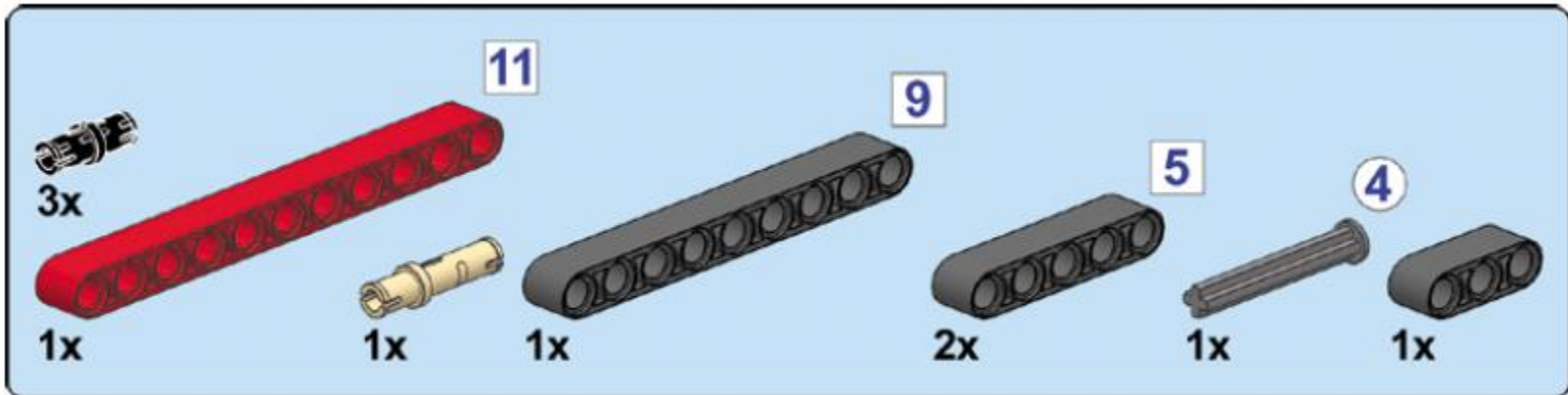
2. 로봇 개미 만들기

- [조립] ANTT



2. 로봇 개미 만들기

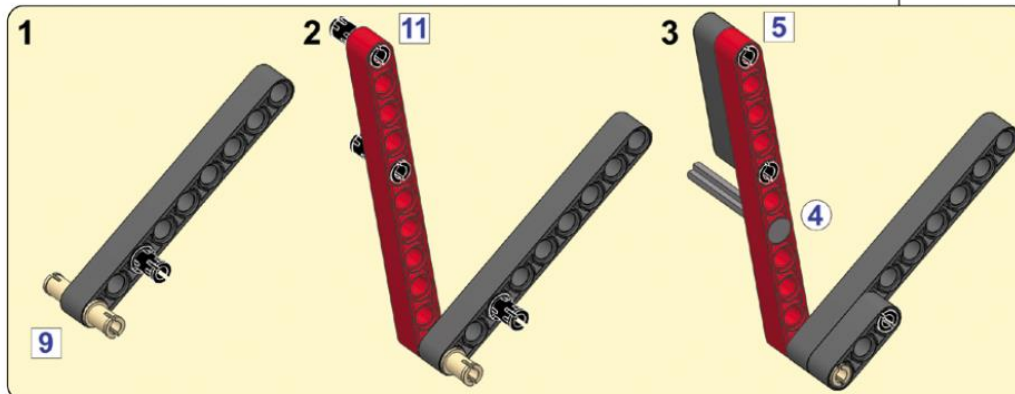
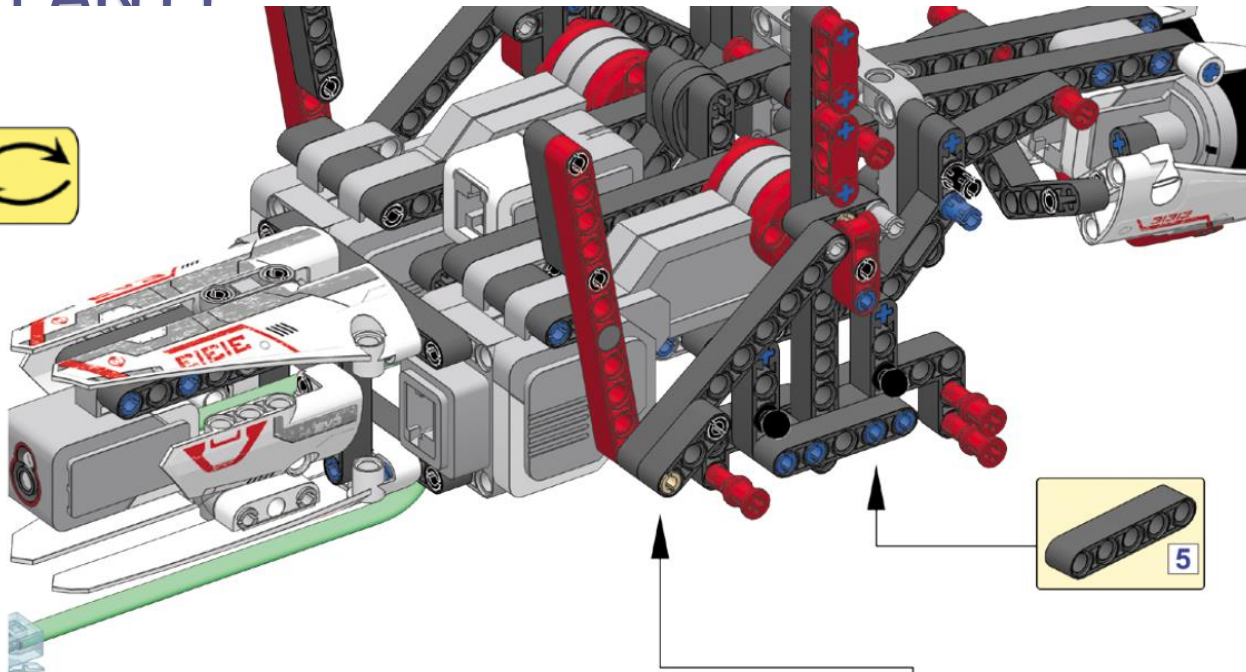
- [조립] ANTI



2. 로봇 개미 만들기

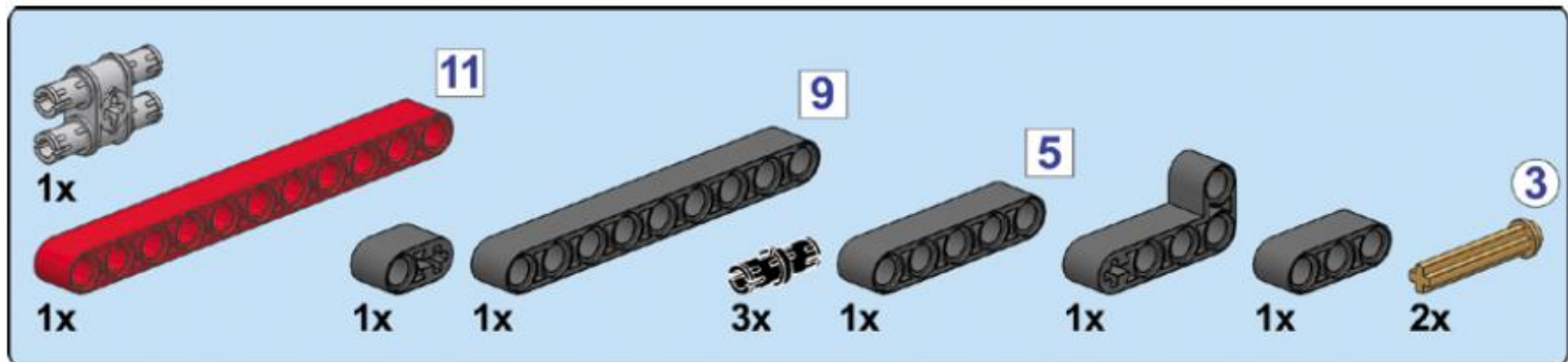
- [조립! ANTT

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2. 로봇 개미 만들기

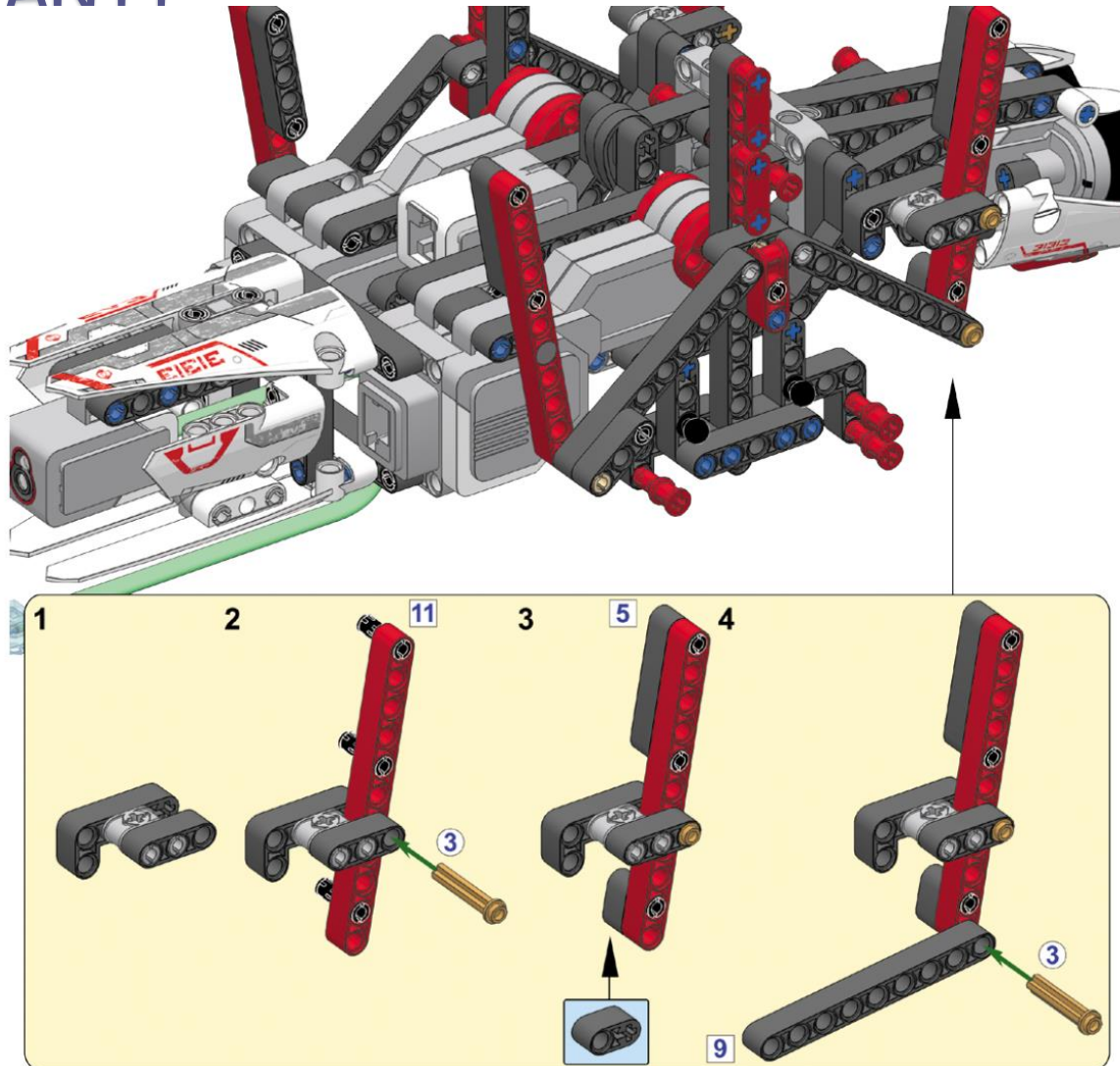
- [조립] ANTI



2. 로봇 개미 만들기

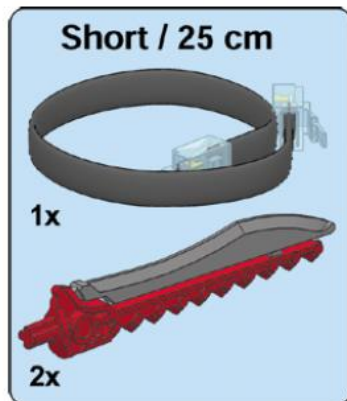
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7

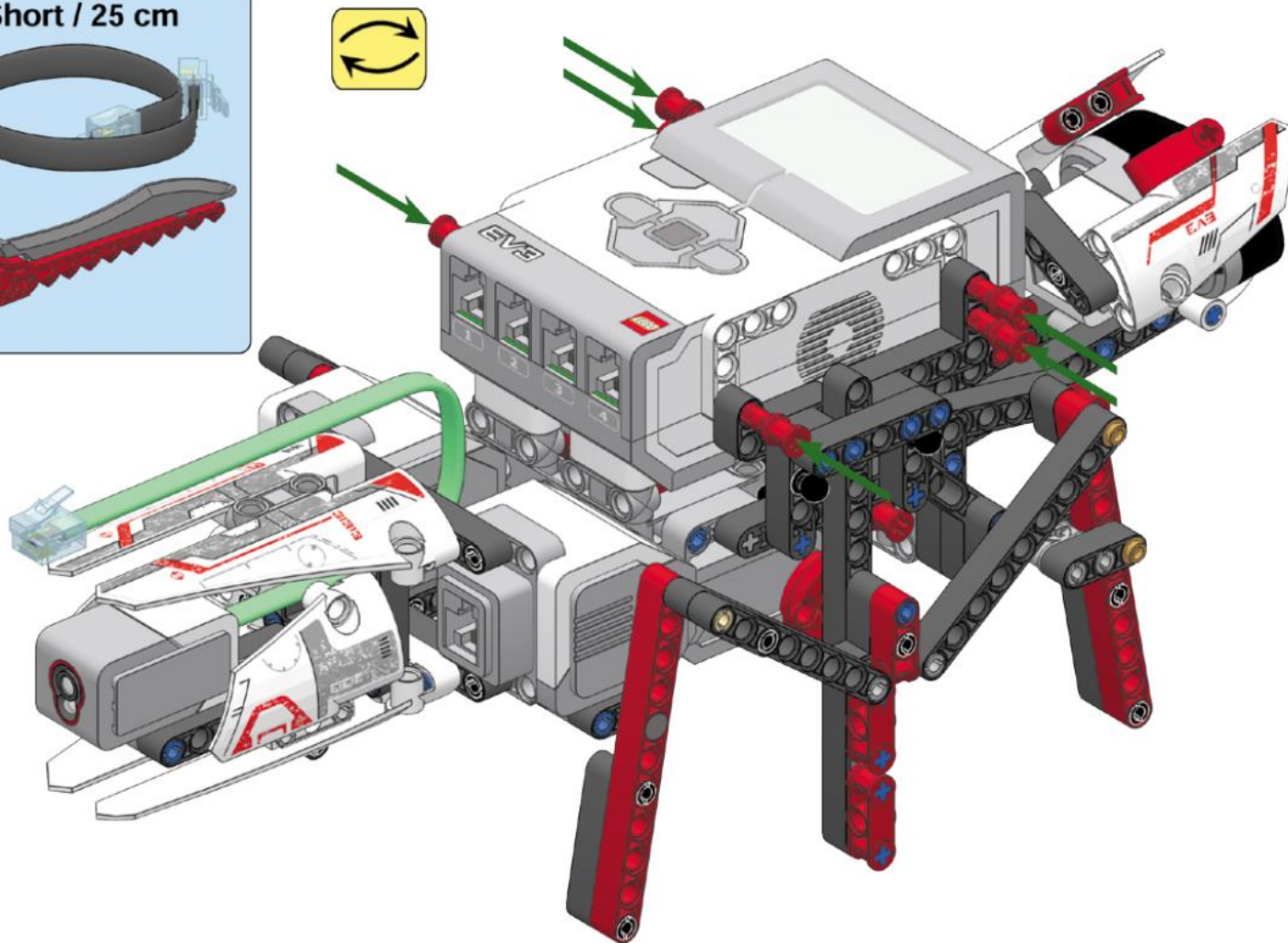


2. 로봇 개미 만들기

- [조립] ANTI

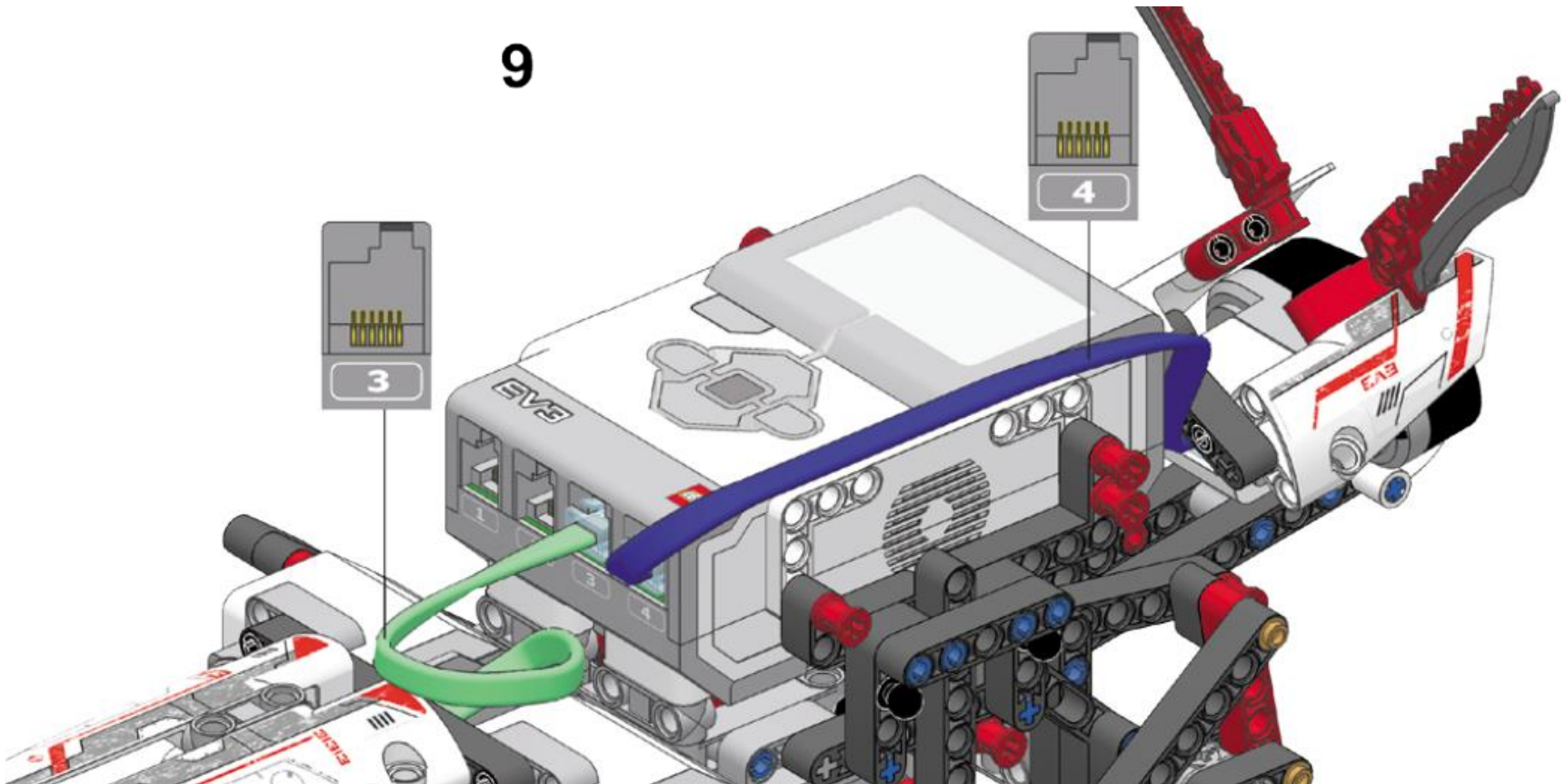


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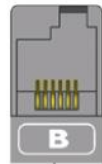
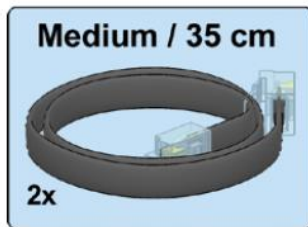
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- [조립] ANTI

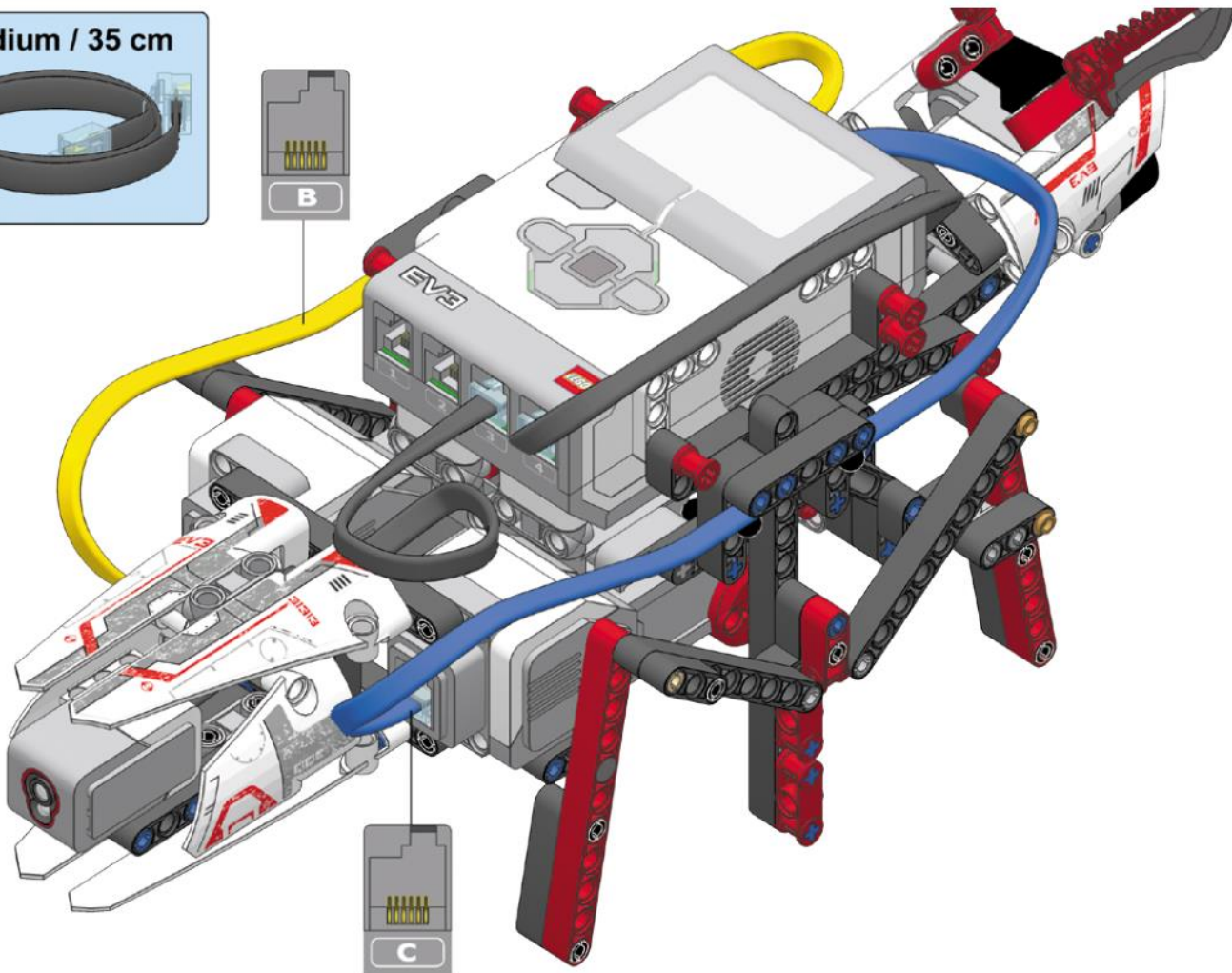


2. 로봇 개미 만들기

- [조립] ANTI

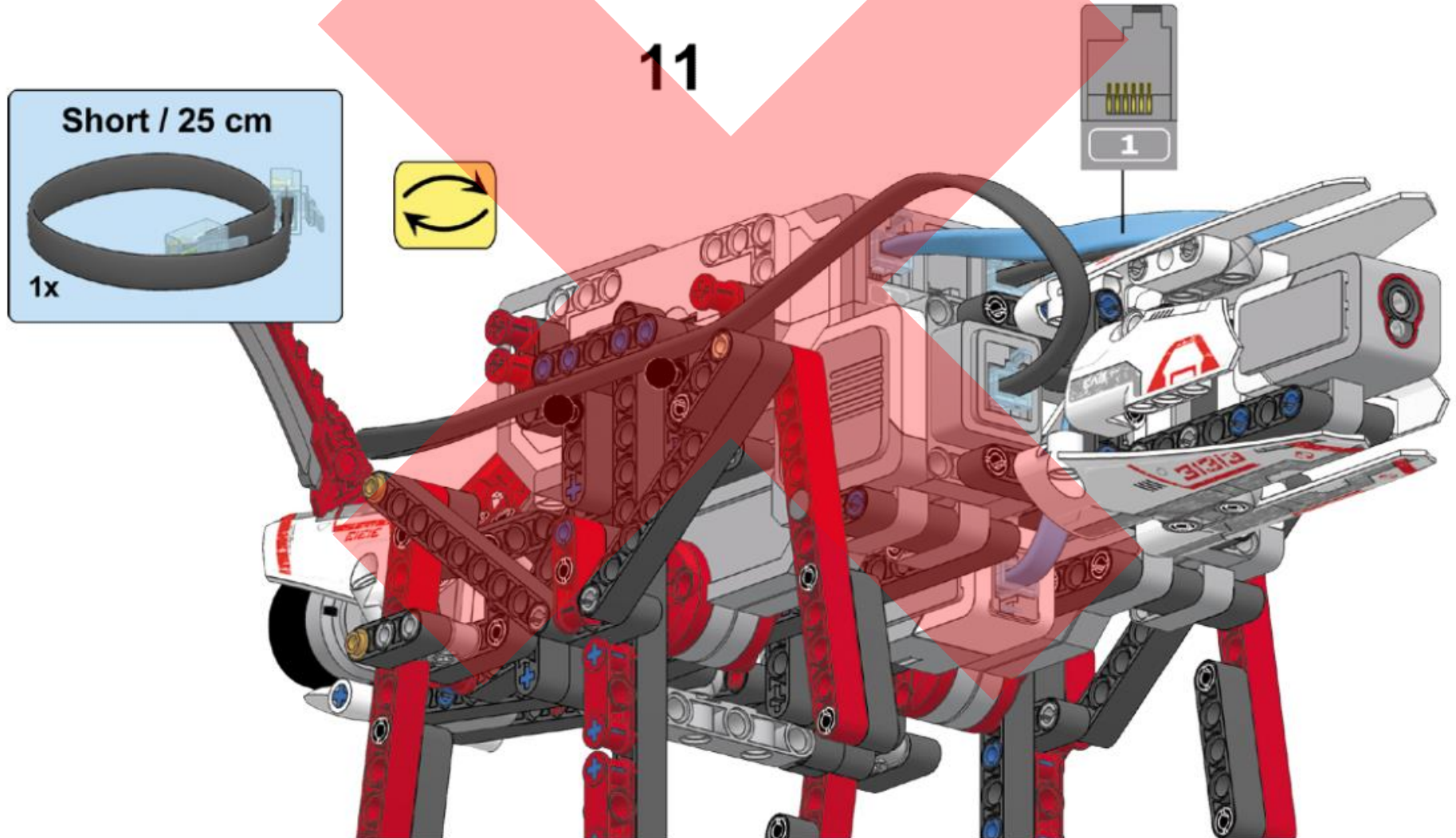


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2. 로봇 개미 만들기

- 「조리! ANTT」



2. 로봇 개미 만들기

- [예제13.1] 장애물 피하기

프로젝트 이름: example13.1

프로그램 이름: ObstacleAvoid

